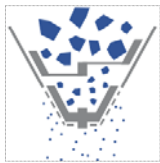
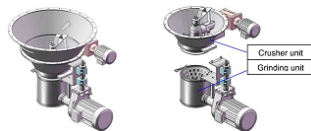


OPERATING INSTRUCTIONS



Milling Installation DelumpWitt (ProFi-Sword / ConiWitt-250)



Customer:

**NOVARTIS SINGAPORE
PHARMACEUTICAL
SG-Singapore**

Ref. :

PRO-11-0076

Serial Nr:

11007635096 - Installation

11007643002 - Crusher Unit (PF-Sword)
11007619050 - Grinding Unit (CW-250)

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- Drawing for material certificate (pos.101 - 456221-CMA hopper)
- Material certificate EN 10204-3.1 - pos.102 - Crusher Unit - ProFi-Sword
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Related documentation

OVERVIEW



DelumpWitt

In one step, the new DelumpWitt takes pharmaceutical and chemical bulk materials that have become hardened and lumpy over time and sizes them into free-flowing powder

DelumpWitt

Excellent for small batch production or for integration in turn-key systems

The DelumpWitt is particularly well-suited for disagglomeration, even of frozen products.

The DelumpWitt design considerably increases efficiency.

In sizing, it sets new benchmarks with regard to modularity, user and maintenance friendliness, while delivering more performance at lower costs.

The advantages are obvious

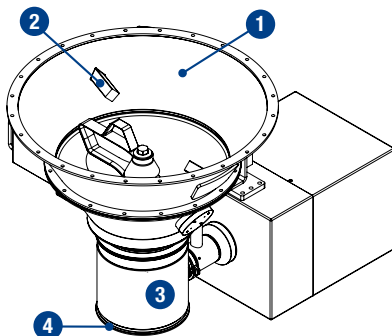
- Pregrinding, fine milling, and desizing with one machine.
- Intelligent design reduces the number of moving parts to a minimum.
- Using tri-clamp connections, the milling head can be swiveled out from the pregrinder in a few easy steps.
- CIP design and low risk of cross contamination. Quick, easy cleaning and maintenance assure higher operational availability at lower operating costs.

Other applications

- For applications in a minimum of available space, as it carries out two process steps in one module.
- It can be operated as a stand-alone-system and can be easily integrated into turnkey production facilities.
- The DelumpWitt is ideal for the demanding production requirements of the pharmaceutical, food, and chemicals industry.



The DelumpWitt Sizing Process



- 1 Inlet funnel for blocks as large as 60 x 30 x 20 cm
- 2 Lump breaker rotor
- 3 Lump rasp with rotor
- 4 Tri-clamp DN 300 outlet connection for fine, free-flowing, disagglomerated powder

The advantages of the round inlet funnel of the DelumpWitt compared to the rectangular inlet funnels of other systems reside in simplified processing of large lumps and in simplified integration in existing overall systems. In one step, the patented design turns blocks as large as 60 x 30 x 20 cm into 500 µm free-flowing powder.

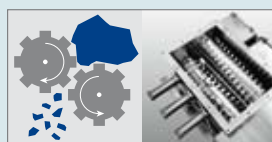
Milling forces



The DelumpWitt quickly and gently processes the product with pressure and grinding forces, and does so at a high flow rate.

The DelumpWitt is part of Frewitt's complete installations.

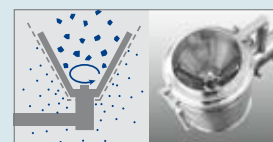
Blocks from 25 kg can be processed in one step to free-flowing powder.



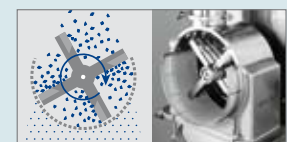
30 cm 2 cm
Crusher
CCD-450
CC-310



5 cm 250 µm
Oscillating sieve mill
MF-Lab
MF-3
MF-6
MF-8



2 cm 150 µm
Conical sieve mill
TC-Lab
ConiWitt-150
ConiWitt-200
ConiWitt-250



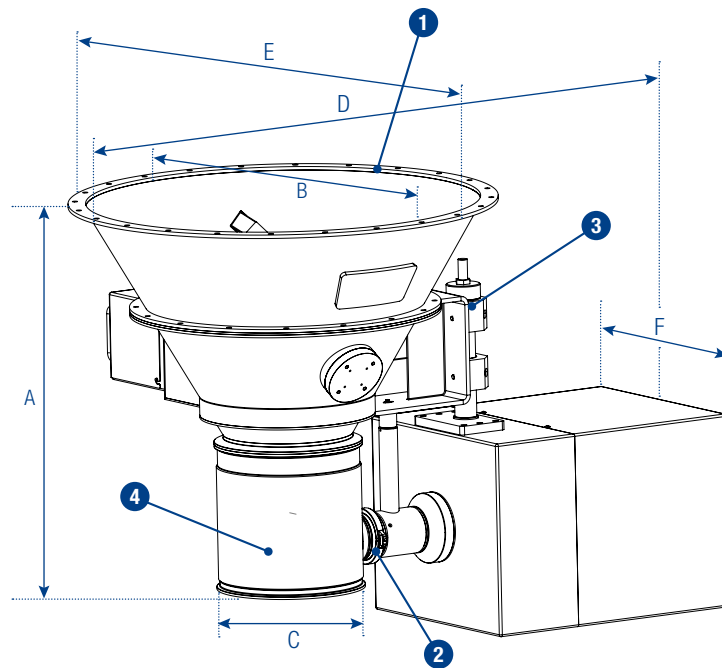
1 cm 50 µm
Hammer mill
HammerWitt-Lab
MFH-6
MFH-15



Particle size



The DelumpWitt in Detail



The DelumpWitt at a Glance

- 1 Inlet funnel for blocks as large as 60 x 30 x 20 cm
- 2 Milling head easily detachable with tri-clamp connections
- 3 Safety prompt (standard), no outside cables
- 4 Conical sieve (assortment of inserts of round/square openings, rasps)
- Lip seal easily replaced with gearbox closed
- Bottom-welded down-driver
- Durable shaft lip seal
- Rated for ATEX Zone 0/20 inside use
- Easy to clean
- Screwless access cover
- Easy to attach

Installation	A	D	E	F	B - INFEED	C - DISCHARGE
DelumpWitt	898	1525	1086	510	Ø980/900 - 24 x Ø12	Tri-clamp DN 300 ISO 2852

Advantages

Ergonomic and User Friendly

- Modular, compact design.
- Rotor and sieve easy to change.
- Mobile base on request.
- Lightweight, detachable milling head.
- The "Error Proof System" guarantees correct installation and removal of rotor and sieve.

Cleaning according to the strictest Health Standards

- Milling head autoclavable.
- The crushing and milling chamber is made from AISI-316L stainless steel.
- The polished, even surfaces allow the product to flow through without friction and without leaving residues.
- Complies with both, the Washing in Place (WIP) and the Cleaning in Place (CIP) standards.

Less Maintenance and greater workplace Safety

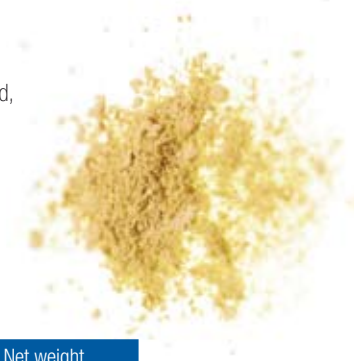
- Lip seal can be changed in only 15 minutes, with the gearbox closed.
- Approved for ATEX Zone 0/20 inside, Zone 1/21 outside.





Significantly more flexibility and performance

- High flow rate: up to 9000 kg/hr (depending on the product).
- Compact, modular design with round inlet and outlet funnels.
- Easily integrated in existing manufacturing processes (turn key systems).
- Batchwise or continuous infeed of blocks, can handle lumps and/or agglomerates (the conical infeed serves as an inlet funnel).
- The desired particle size can be adjusted as needed, by changing screen 7 rasp.
- Sizing and metering can be combined.
- The modular design allows rapid dismantling of the device for inspection and servicing.

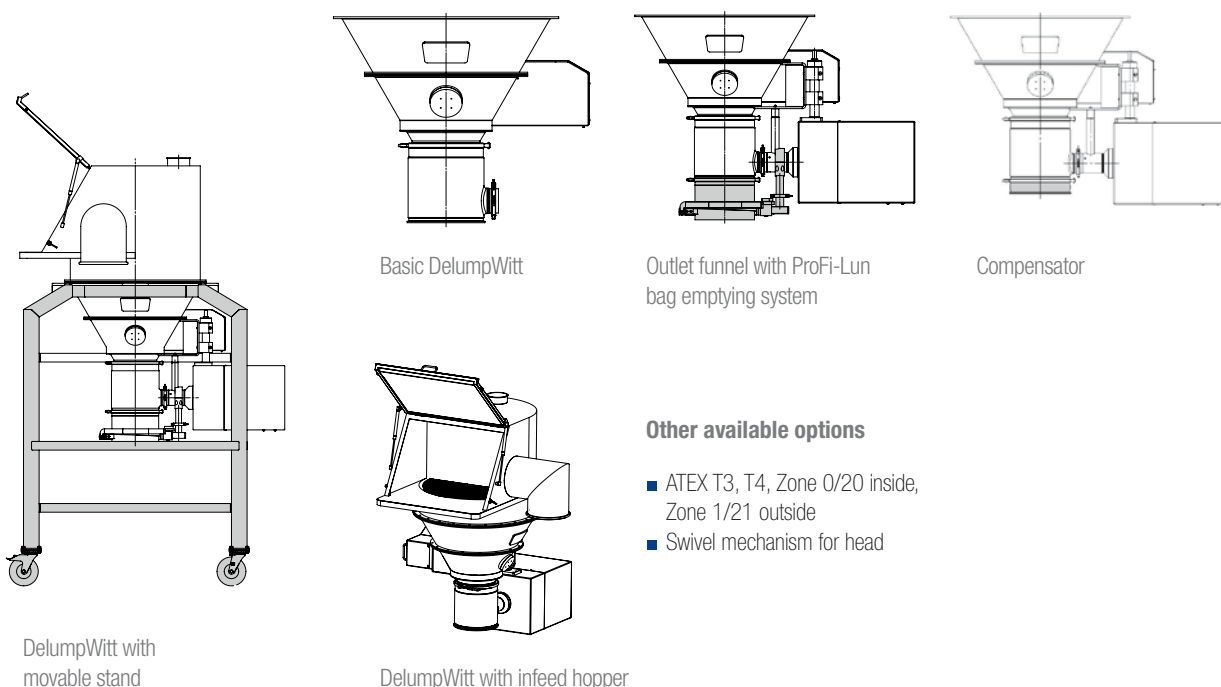


		Flow rate*	Voltage	Rotor speed	Power	Net weight
DelumpWitt	Non Ex	up to 9000 kg/h	400 V	24min-1 / 630 min-1	Max 7.5 kW	~ 370 kg
	ATEX	up to 9000 kg/h	400 V	24min-1 / 630 min-1	Max 5.5 kW	~ 370 kg

* The flow rate depends on the product and its properties

Execution	Parts in contact with the product	Parts not in contact with the product
Material	1.4435 / 1.4404 (AISI-316L)	1.4301 / 1.4305 (AISI-304)
Seals	FDA compliant plastics (EPDM / PTFE)	Various plastics
Surface	Ra ≤ 0.8 µm polished / head Ra ≤ 0.4 µm polished	Ra ≤ 1.4 µm polished
Welding seams	Ground and polished	treated and brushed
Rotor	Rotor with square profile arms	
Sieve / rasp	Round openings Ø 0.5 mm – 10 mm / square openings 3.0 mm – 10.0 mm / rasp 1.1 mm – 8.0 mm	
Distance rotor / sieve	No mechanical contact (metal abrasion)	

Options for custom-made solutions



Other available options

- ATEX T3, T4, Zone 0/20 inside, Zone 1/21 outside
- Swivel mechanism for head



Examples of applications

The DelumpWitt, due to its efficiency, ensures your disagglomeration of raw materials, salts, and many other products, is no longer a problem. The DelumpWitt can be operated as a stand alone unit or integrated into your existing production system. Let us advise you for optimal utilisation, albeit you need a stand alone unit or a complete turnkey oriented solution.



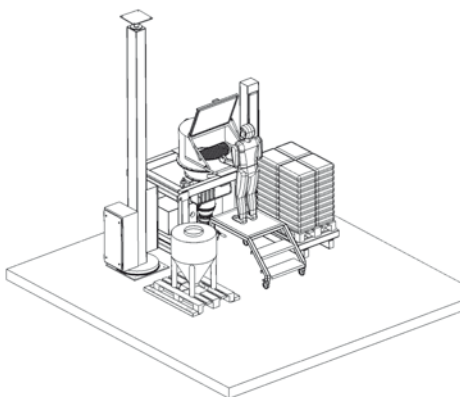
DelumpWitt as a stand alone unit. Large agglomerates are completely broken down into particles as small as 500 µm in the DelumpWitt.



Blocks as large as 60 cm are introduced into the inlet funnel.



In one step from blocks to granules.



DelumpWitt integrated in an existing inline system.



Quick and efficient CIP, employing a the swivel mechanism.



User-friendly inline system. One operator, two process steps in one machine.

Modular in conception, it offers, user friendliness, and easy maintenance, the DelumpWitt can be easily and quickly integrated anywhere. Call us to discuss your application.



Worldwide presence

References

Arena Pharmaceutical GmbH
 Bayer Schering AG
 BASF Orgamol SA
 Boehringer Ingelheim GmbH
 Ciba Spezialitätenchemie AG
 Cilag AG

Clariant Produkte AG
 F. Hoffmann-La Roche AG
 Firmenich SA
 Grünenthal GmbH
 Hobako AG
 Lonza AG

Merck & Cie KG
 Nestlé SA
 Novartis Consumer Health SA
 Pfizer
 Pharmasynthese
 Sanofi Aventis

Sanofi Chimie
 Siegfried LTD
 UCB Farchim SA
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ProFi-Sword/Dos/Bant/Lun

*Discharge, Dosing, and Filling Equipment for High Containment
Powder Processing for all Applications in the Pharmaceutical,
Food and Fine Chemical Industries*

ProFi-Sword/Dos/Bant/Lun

ProFi-Sword

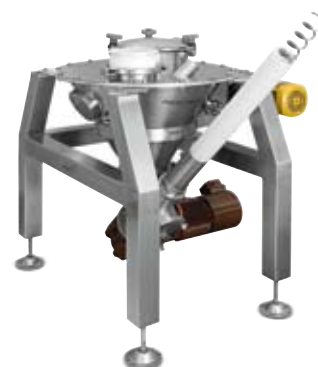
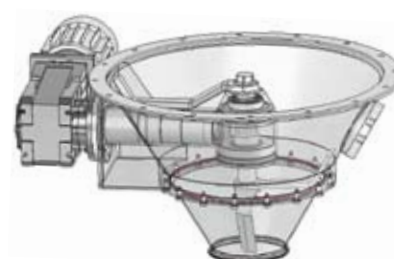
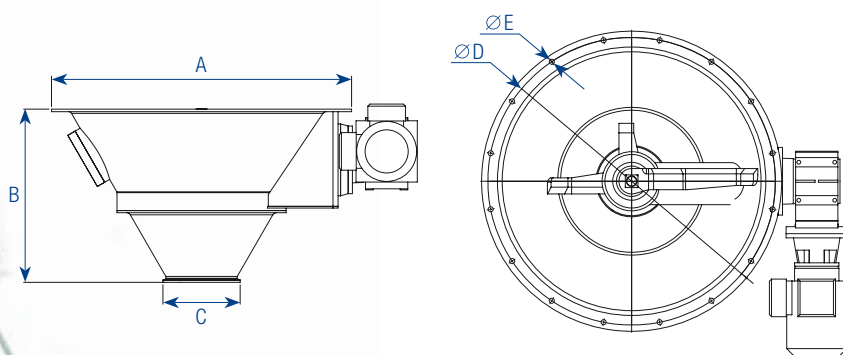
Powder delivered in free-flow

Dust-proof discharge aided with three rotating blades or «swords» (with different shapes) gently maintain the product in constant movement (fluidization).

Brief overview

- Contamination of the product is avoided thanks to the secure drive, bearing, and seal concept
- The ProFi-Sword is used in the pharmaceutical, chemical, and food products industries
- The bottom blades are adapted and aligned to the outlet pipe
- Available in ATEX design
- Delivery of heavy powder (bridging, sticking, settling)

Execution	Parts in contact with the product
Material	1.4435 / 1.4404 (AISI-316L)
Surface quality	Ra ≤ 0.8 µm
Sealing band	EPDM, FEP-O-SEAL, PTFE
Connections	ISO 2852-compliant Tri-Clamp
Weld seams	Ground and polished



	A	B	C	D	E
ProFi-Sword DN 150	Ø 710	410	(Ø 163.1)	Ø 680	16 x Ø 12

	Voltage	Power	Net Weight
ProFi-Sword	3 x 400 V - 50 Hz	0.75 kW	~ 120 kg

ProFi-Dos

The precise dosing device

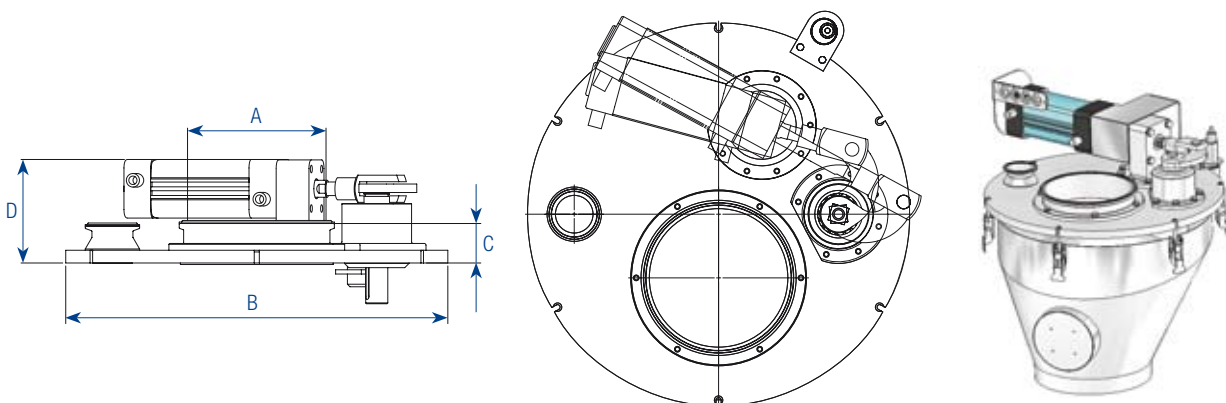
Precise and efficient dosing of powders and granulates.

The ProFi-Dos dosing model consists of a pneumatically operated gate valve. Low installation height combined with highly precise dosing are special features of the ProFi-Dos.

Brief overview

- Three different dosing phases (coarse, medium, fine) assure precise dosing.
- The ProFi-Dos is ideal for use in the pharmaceutical, chemical, and food products industries as:
 - High precision dosing equipment
 - As an OPEN/CLOSE shutoff mechanism
- Low installation height
- Available in ATEX design

Execution	Parts in contact with the product
Material	1.4435 / 1.4404 (AISI-316L)
Surface quality	Ra ≤ 0.8 µm
Sealing band	EPDM, FEP-O-SEAL, PTFE, Silicon
Connections	ISO 2852-compliant Tri-Clamp
Weld seams	Ground and polished



	A	B	C	D
ProFi-Dos DN 150	(∅ 163.1)	∅ 450	46.5	166

	Compressed air	Compressed air flow rate	Net weight
ProFi-Dos DN 150	Min. 5 bar	500 N.L/Min. kW	~ 31 kg





ProFi-Bant

Pneumatic dust-proof bag Holding Device

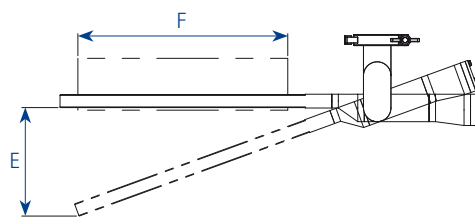
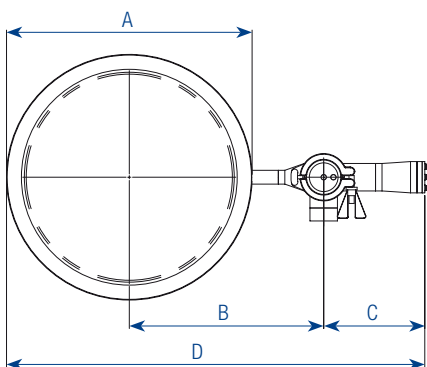
The quick, easy, and efficient inflatable gasket bag attachment method.

Brief overview

- The dust-proof connections prevent contamination of the product
- Operates independently of other power sources such as electricity (all that is needed is compressed air for the inflatable gasket)
- Suitable for filling paper and plastic bags as well as Big Bags
- Quick and easy cleaning
- Designed for use in the pharmaceutical, chemical, and food products industries
- Available in ATEX design



Execution	
Material	1.4301 / 1.4305 (AISI-304L)
Surface quality	Ra ≤ 1.4 µm
Sealing band	Silicon
Weld seams	Ground and polished



	A	B	C	D	E	F
ProFi-Bant DN 200	∅ 274	300	160	596.6	150	∅ 219.1
ProFi-Bant DN 300	∅ 379	300	160	649.1	167.4	∅ 323.9

ProFi-Bant	Compressed air	Net weight
	Max. 1.5 bar	~ 4 kg





ProFi-Lun

Manual dust-proof Big Bag Holding Device

The dust-proof connection system.

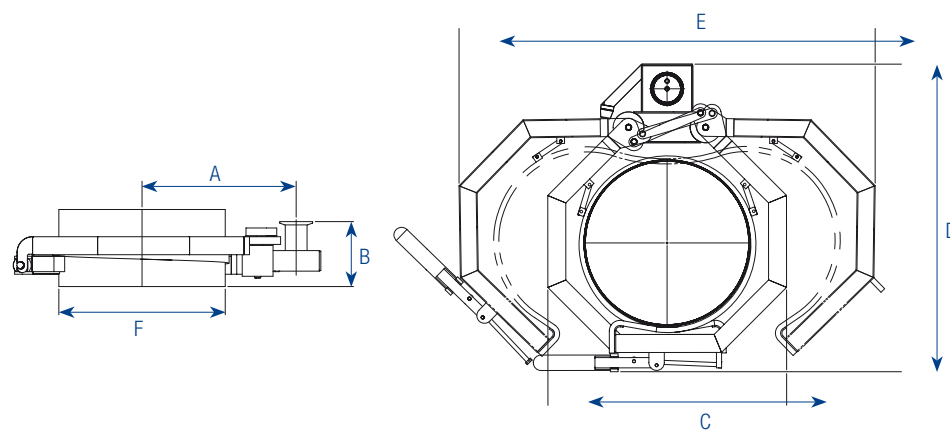
This manually-operated connection device can also be used in areas where there is no additional power source such as compressed air or electricity.

Brief overview

- Compact, space-saving, hygienic design
- Stainless steel construction, compliant with ATEX Directive 94/9/EG
- Quick and easy cleaning
- Designed for use in the pharmaceutical, chemical, and food products industries



Execution	
Material	1.4435 / 1.4404 (AISI-316L)
Surface quality	Ra ≤ 1.4 µm
Sealing band	Silicon, PTFE
Other plastics	CR NEOPREN
Weld seams	Ground and polished



	A	B min.	C	D	E	F
ProFi-Lun DN 200	300	100	380	543	687	∅ 219.1
ProFi-Lun DN 300	300	100	465	599	810	∅ 323.9

	Operation	Net weight
ProFi-Lun	Manual	~ 10 kg





Worldwide presence

References

Arena Pharmaceutical GmbH
 Bayer Schering AG
 BASF Orgamol SA
 Boehringer Ingelheim GmbH
 Ciba Spezialitätenchemie AG
 Cilag AG

Clariant Produkte AG
 F. Hoffmann-La Roche AG
 Firmenich SA
 Grünenthal GmbH
 Hobako AG
 Lonza AG

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 Sanofi Aventis

Sanofi Chimie
 Siegfried LTD
 UCB Farchim SA
 etc.



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 www.frewitt.com/printing

Address agent:



General notes :

1. Material of construction :

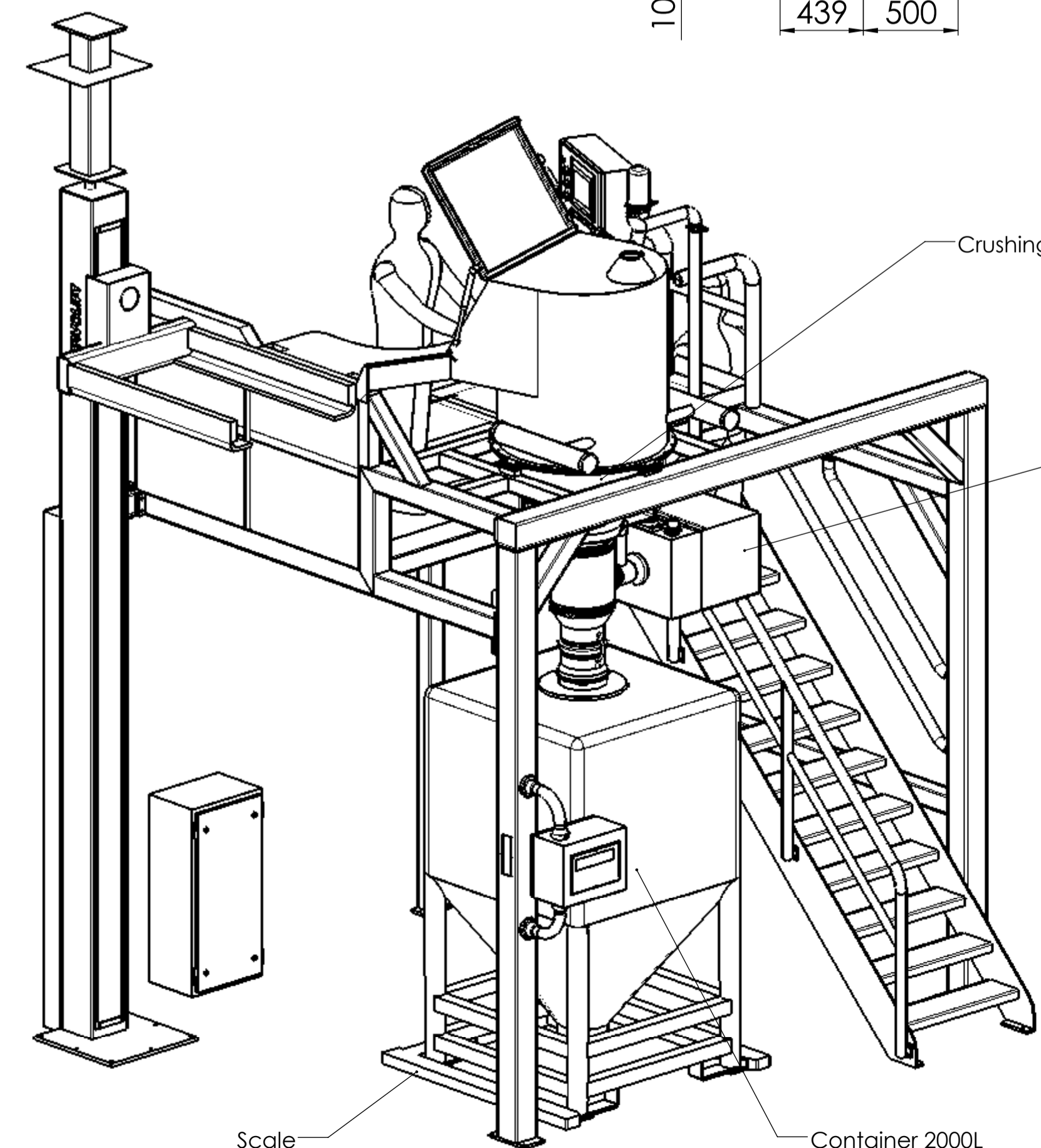
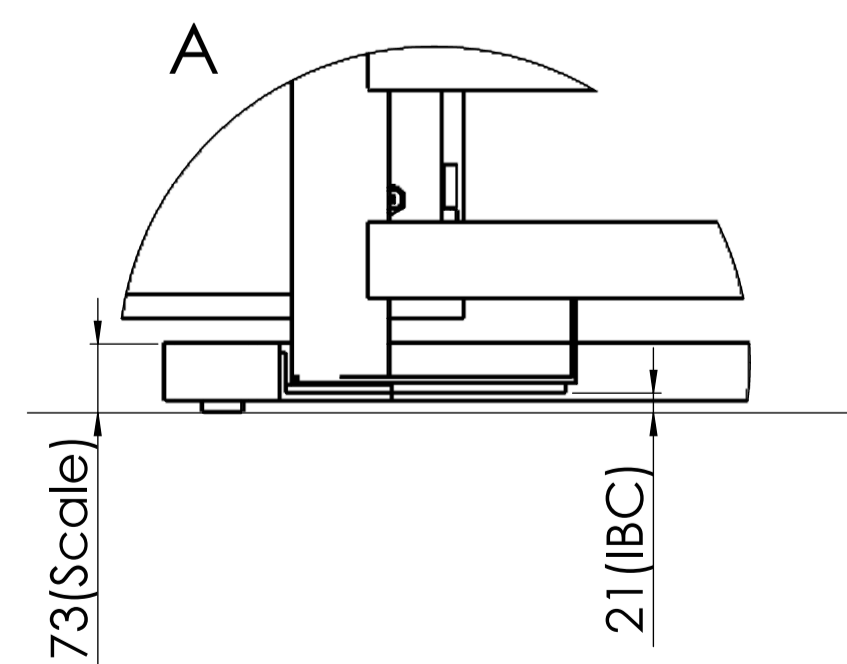
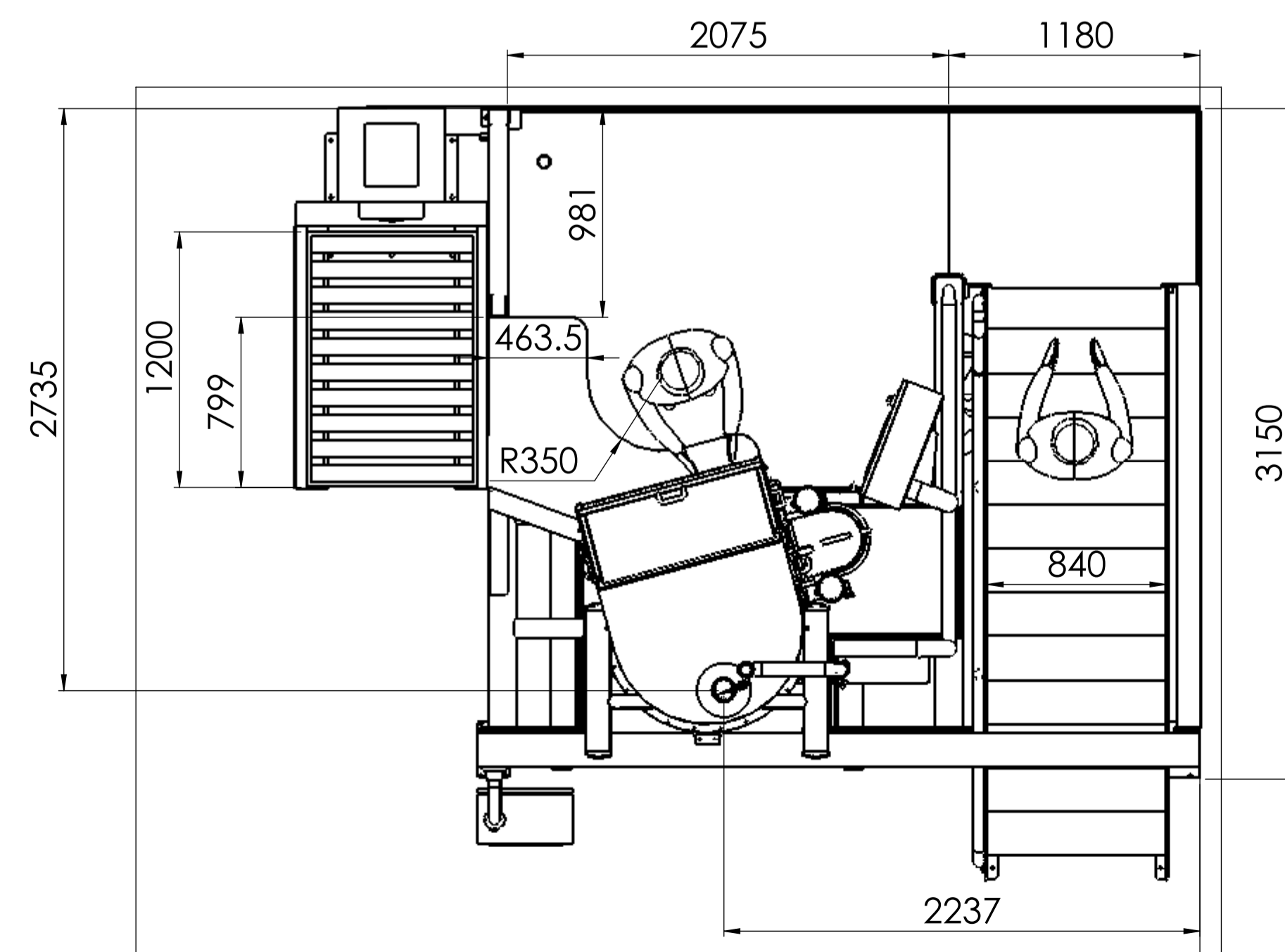
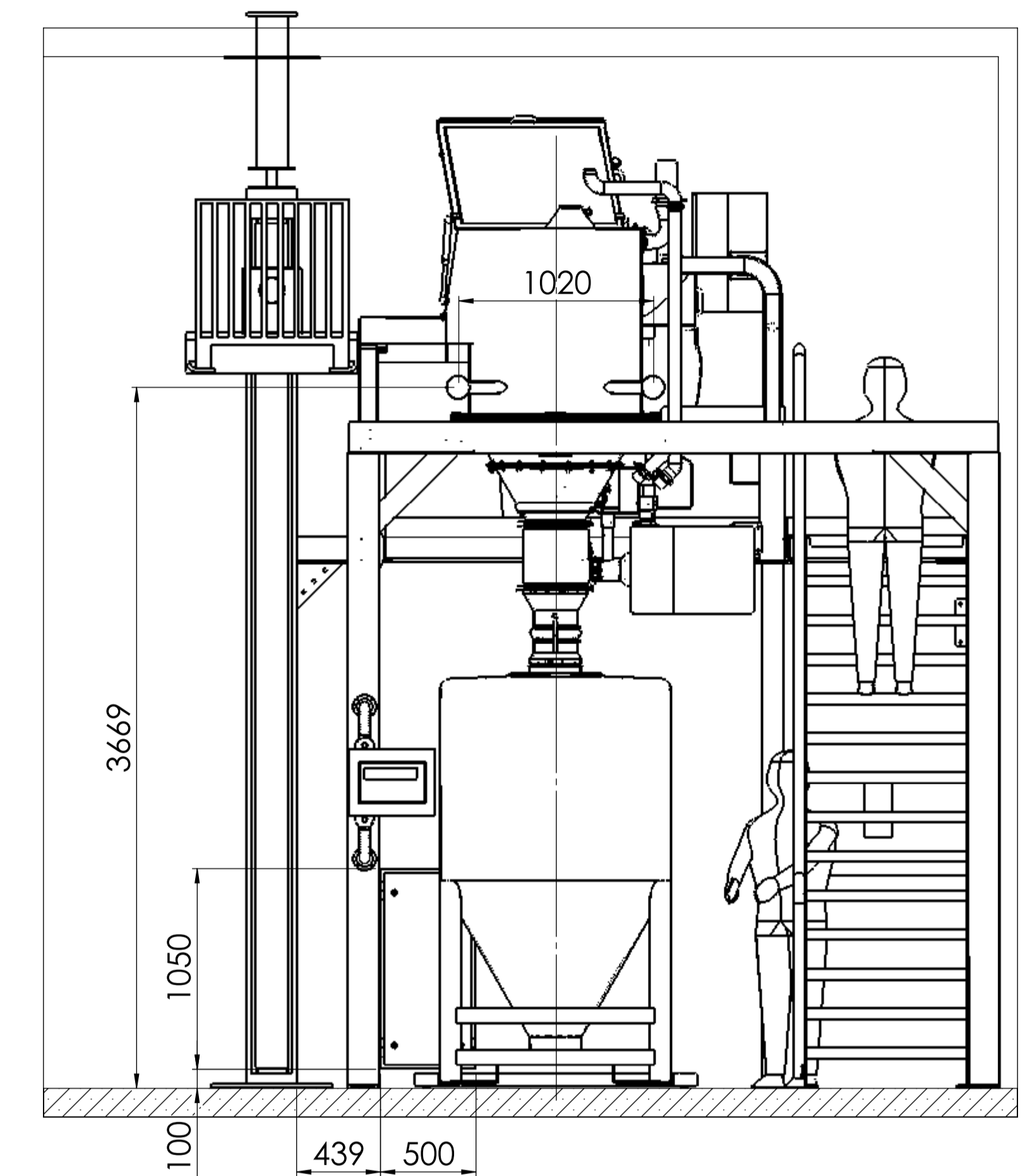
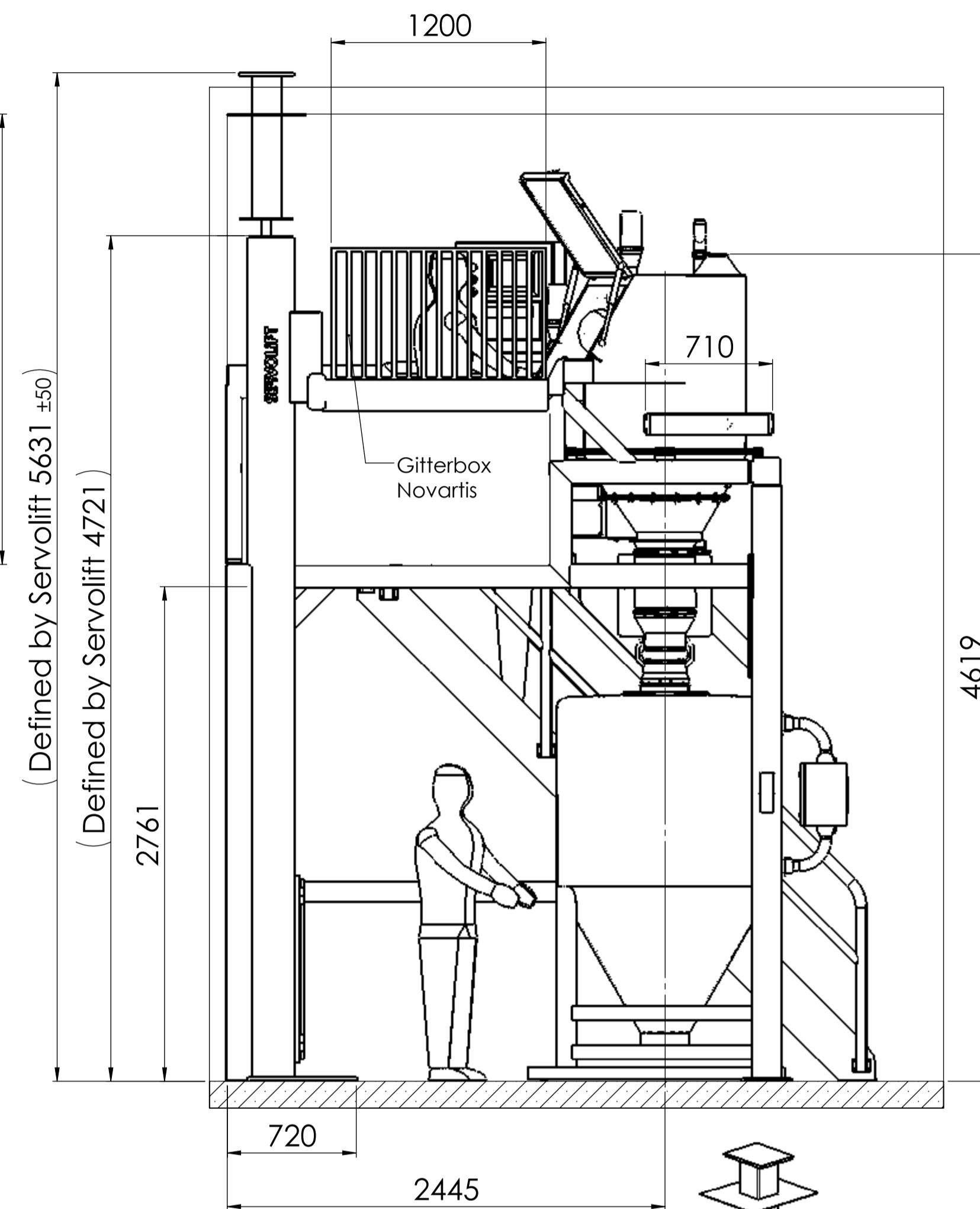
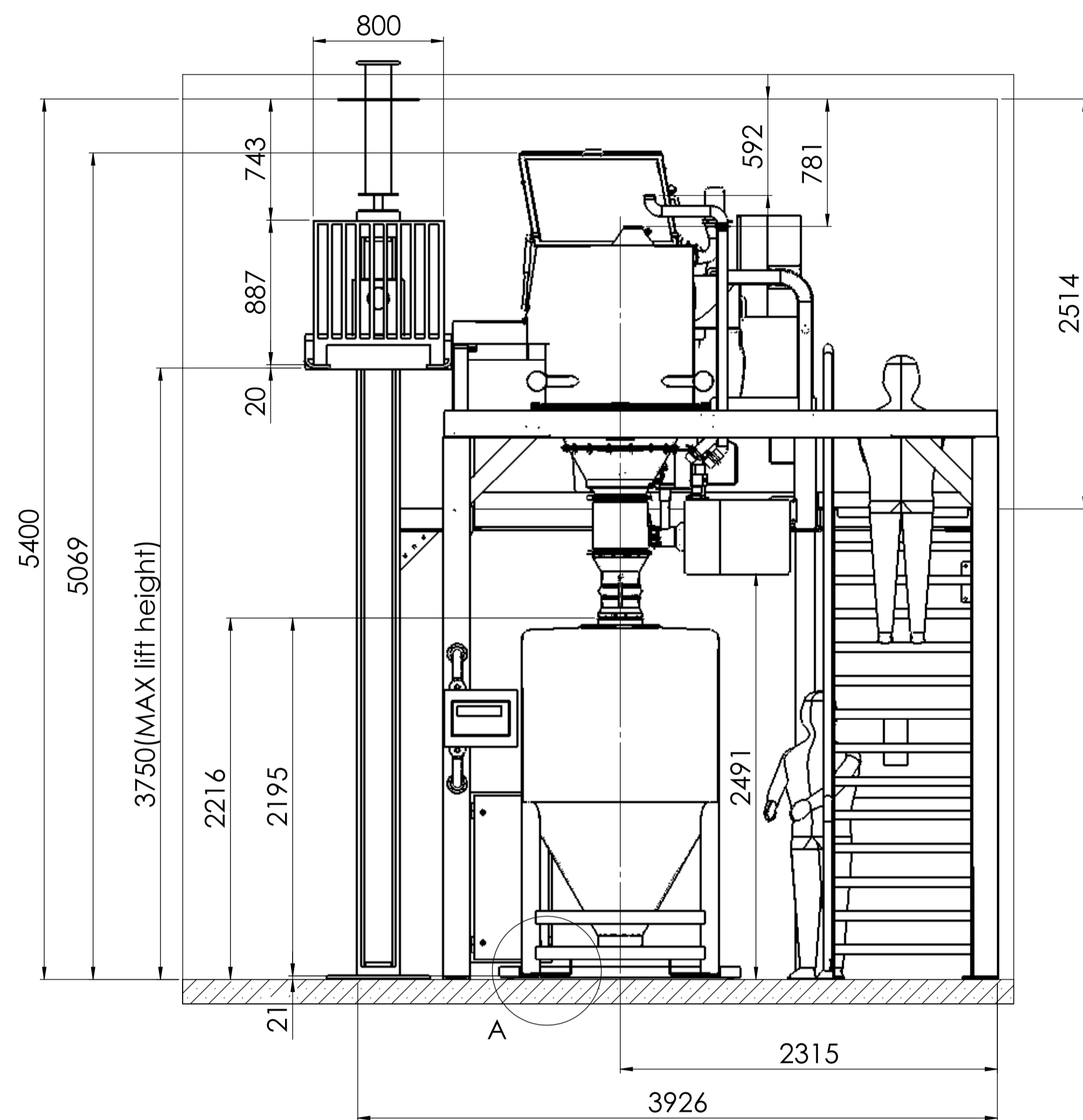
- Product contact parts AISI 316/316L
- Non-product contact parts AISI 304/304L

2. Surface finish :

- Product contact part < Ra 0.4
- Non-product contact parts < Ra 1.4

3. All non-metallic parts in contact with product shall be FDA approved food grade

4. Design fabrication shall comply with GMP requirement with no sharp corners, dead legs, easily drainable and crevices free



Total installed empty weight : 3000kg

Total operating weight : 4000kg

SG.TBP.202.M5214

Sous réserve de modifications
Subject to modifications
Änderungen vorbehalten

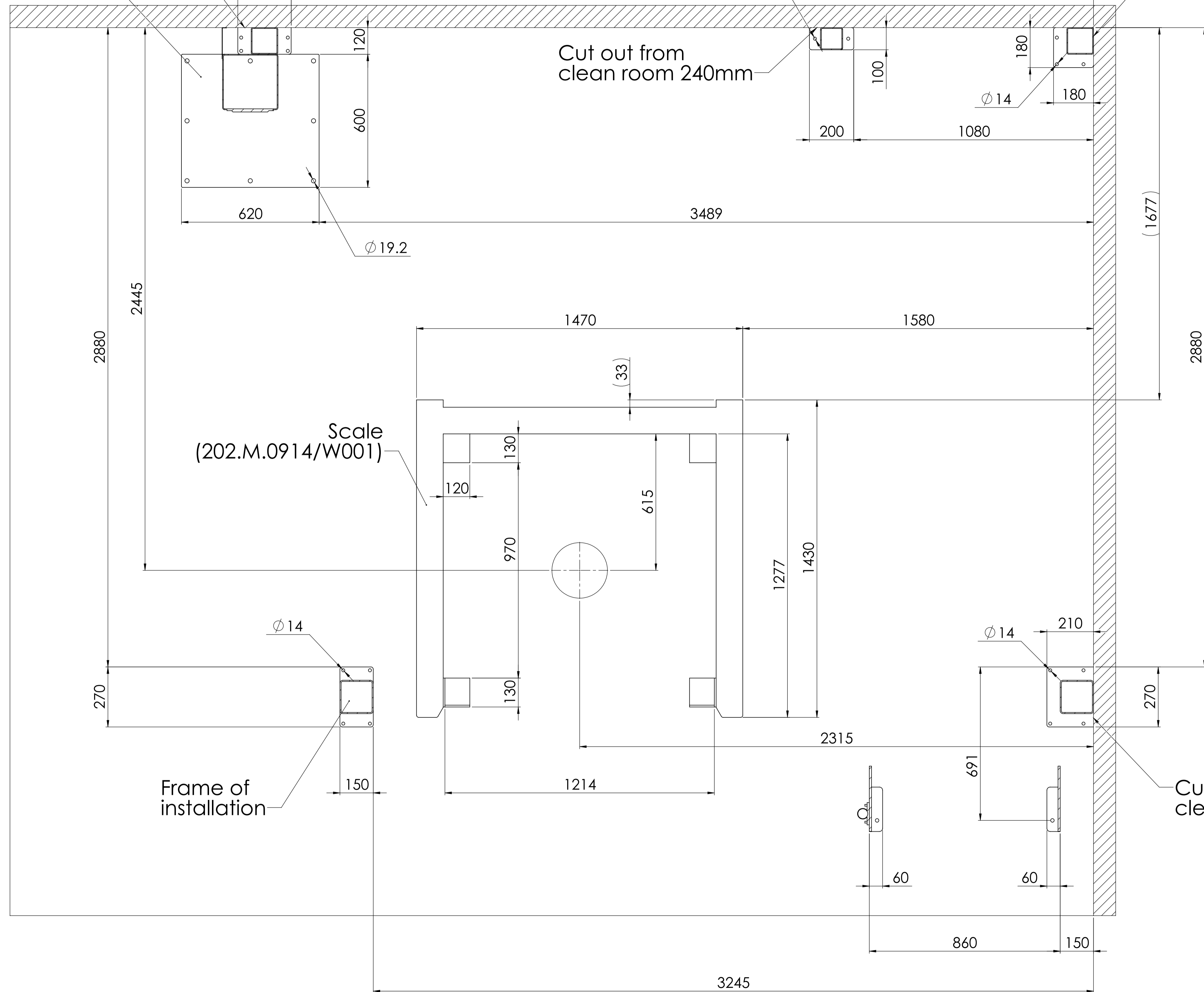
ATEX category	IGD / 3D	Power [kW]	5.5 / 0.75 / 1.5	Scale	Machined dim.	ISO 2768-m
Voltage [V]	400V	Speed [min-1]			Welded dim.	ISO 2768-c
Frequency [Hz]	50Hz				Designed	03/05/2011
					Controlled	23/05/2011
					Revised	23/05/2011
PRO-11-0076 / DelumpWitt				A1	Page	1/2
<small> Freiwitt SA Milling and Handling of Powders P.O. Box 813, CH-1701 Fribourg, SWITZERLAND Tel: +41 26 463 74 00 / Fax: +41 26 463 74 01 info@freiwitt.com / www.freiwitt.com </small>				464770-LAY		

Cut out from clean room 280mm

Servolift

3615

Cut out from clean room 200mm x 200mm



Scale (202.M.0914/W001)

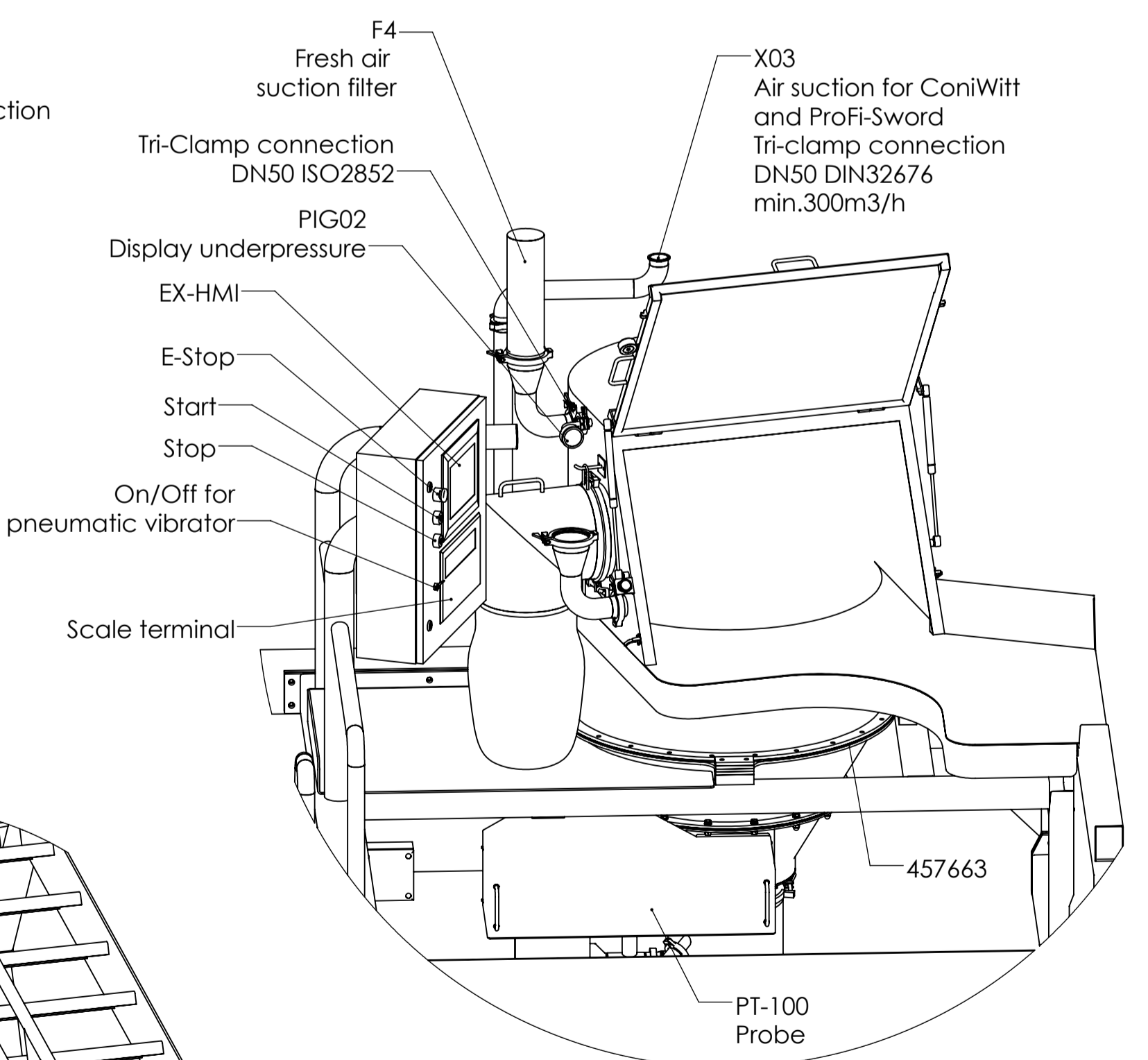
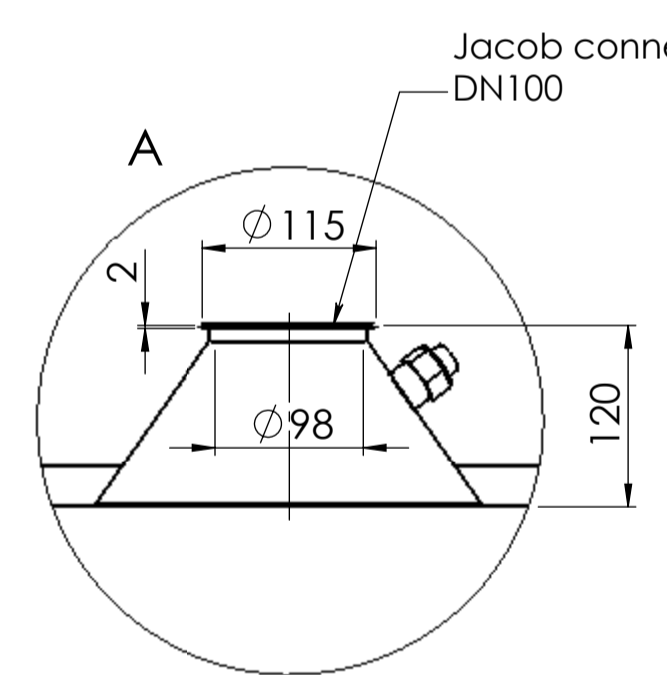
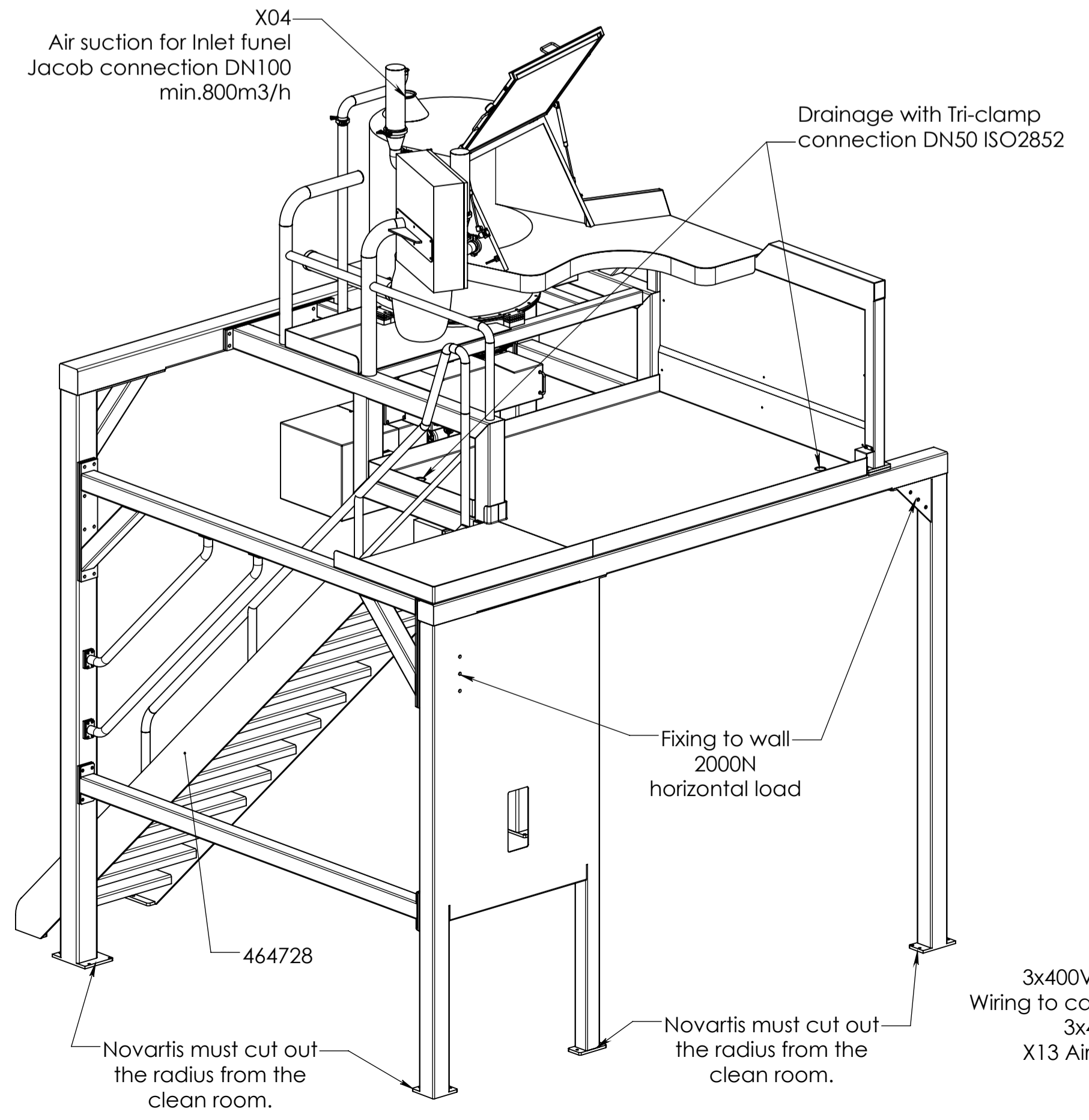
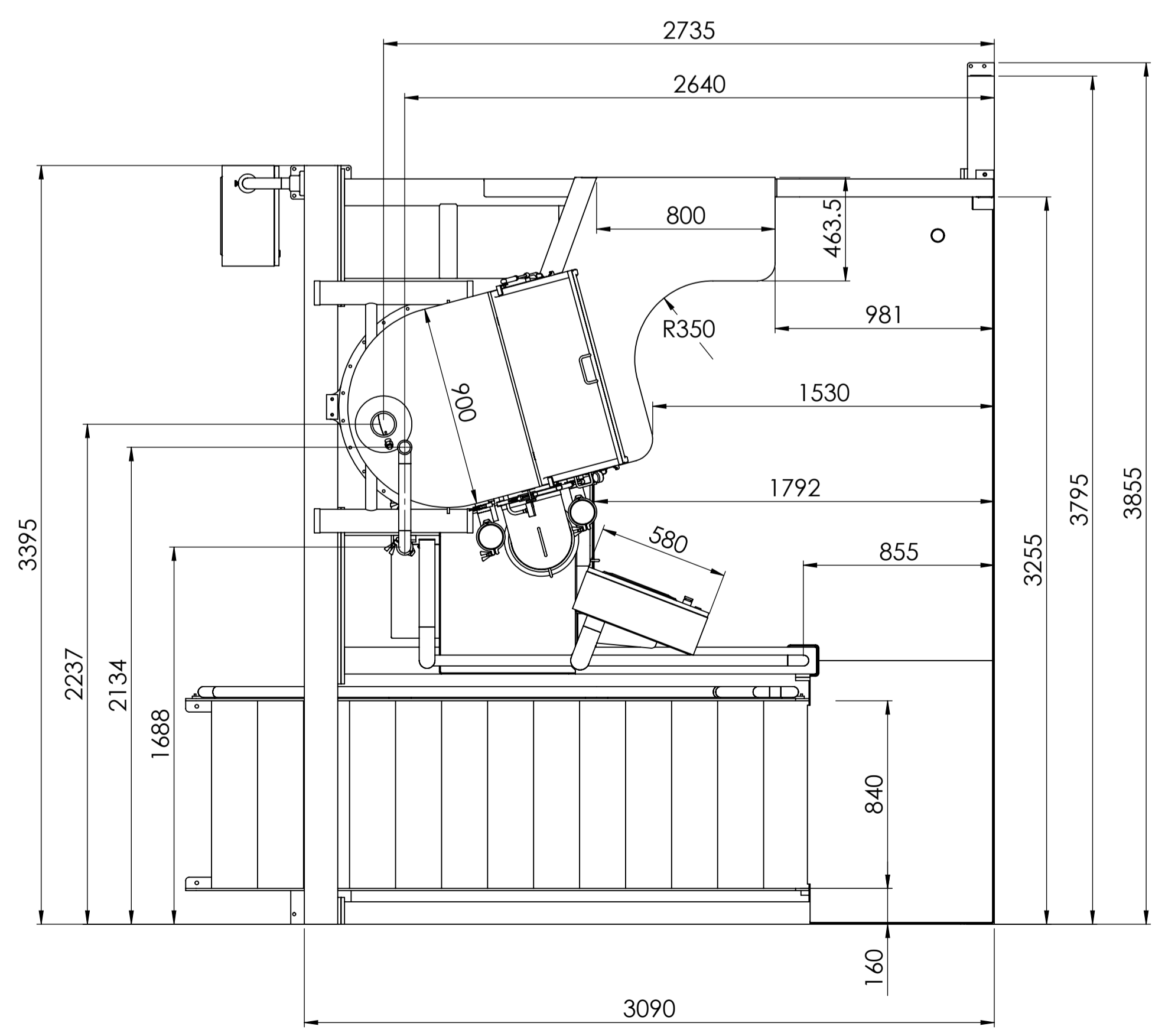
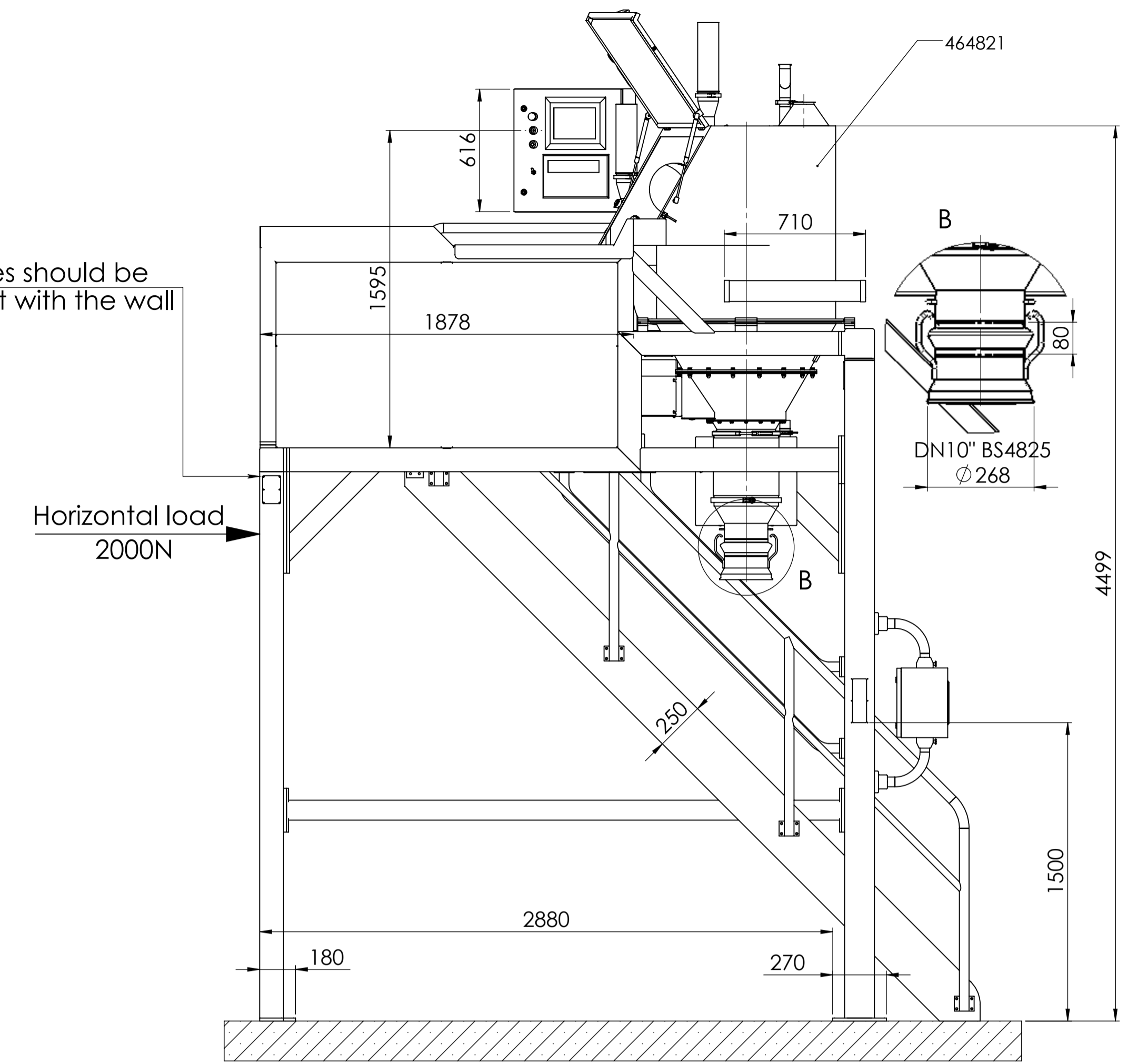
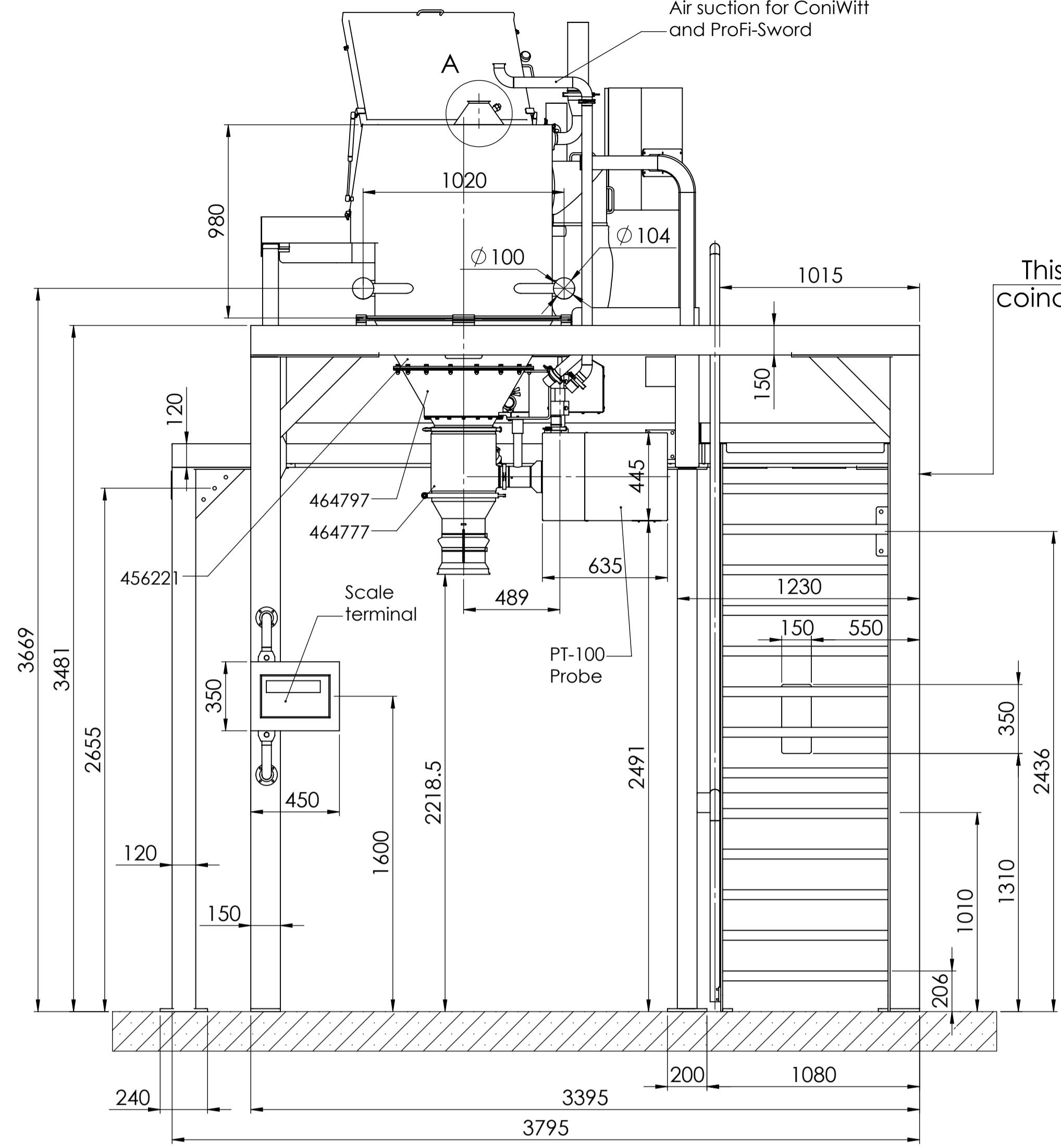
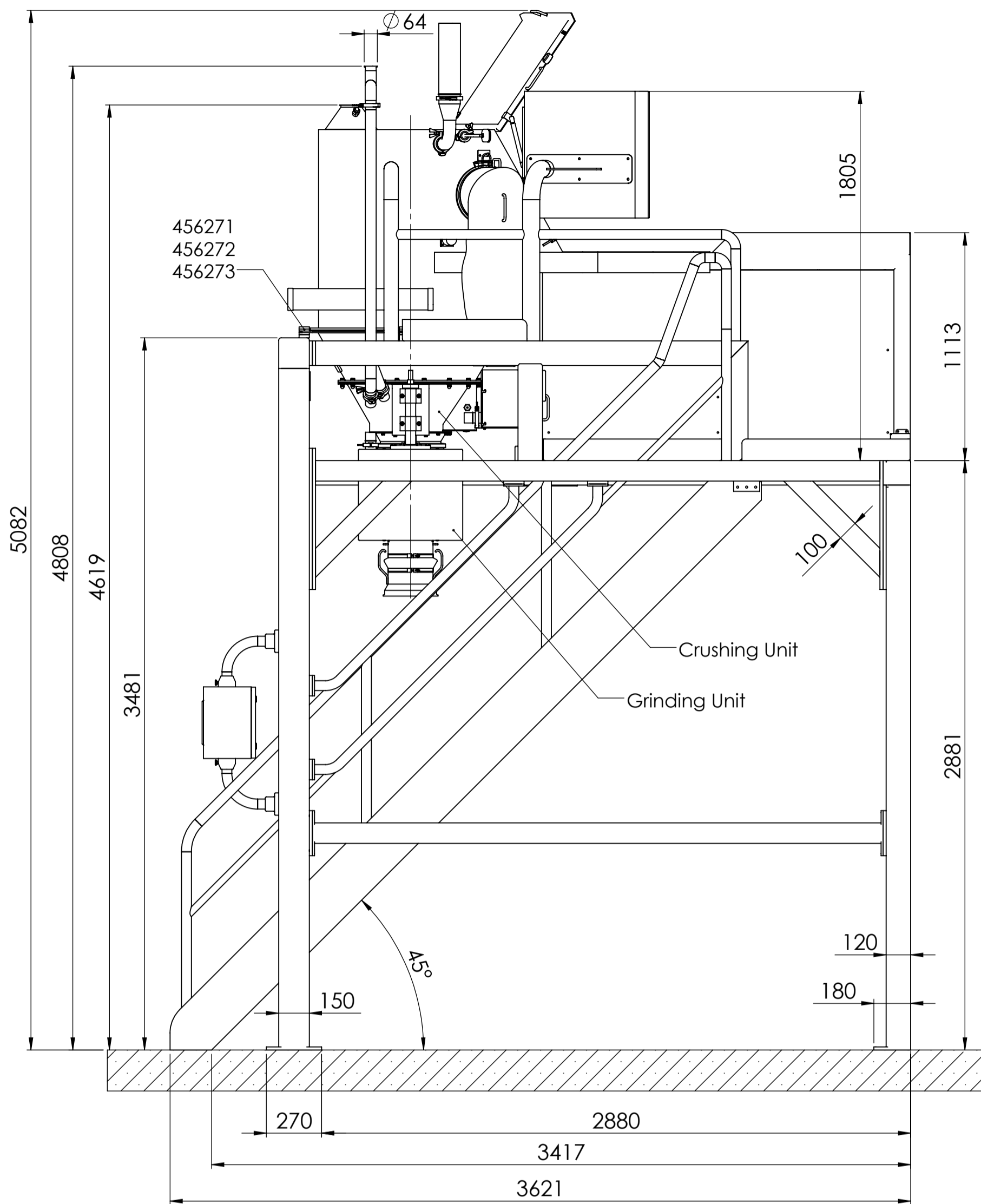
Frame of installation

Cut out from clean room 310mm

SG.TBP.202.M5214

Sous réserve de modifications
Subject to modifications
Änderungen vorbehalten

ATEX category	400V	Power [kW]		Scale	Machined dim.	ISO 2768-m
Voltage [V]	50Hz	Speed [min-1]		%	Welded dim.	ISO 2768-c
Frequency [Hz]					Designed	03/05/2011
PRO-11-0076 / DelumpWitt					Controlled	23/05/2011
				A1	Revised	23/05/2011
					Page	Ver.
					464770-LAY	2/2
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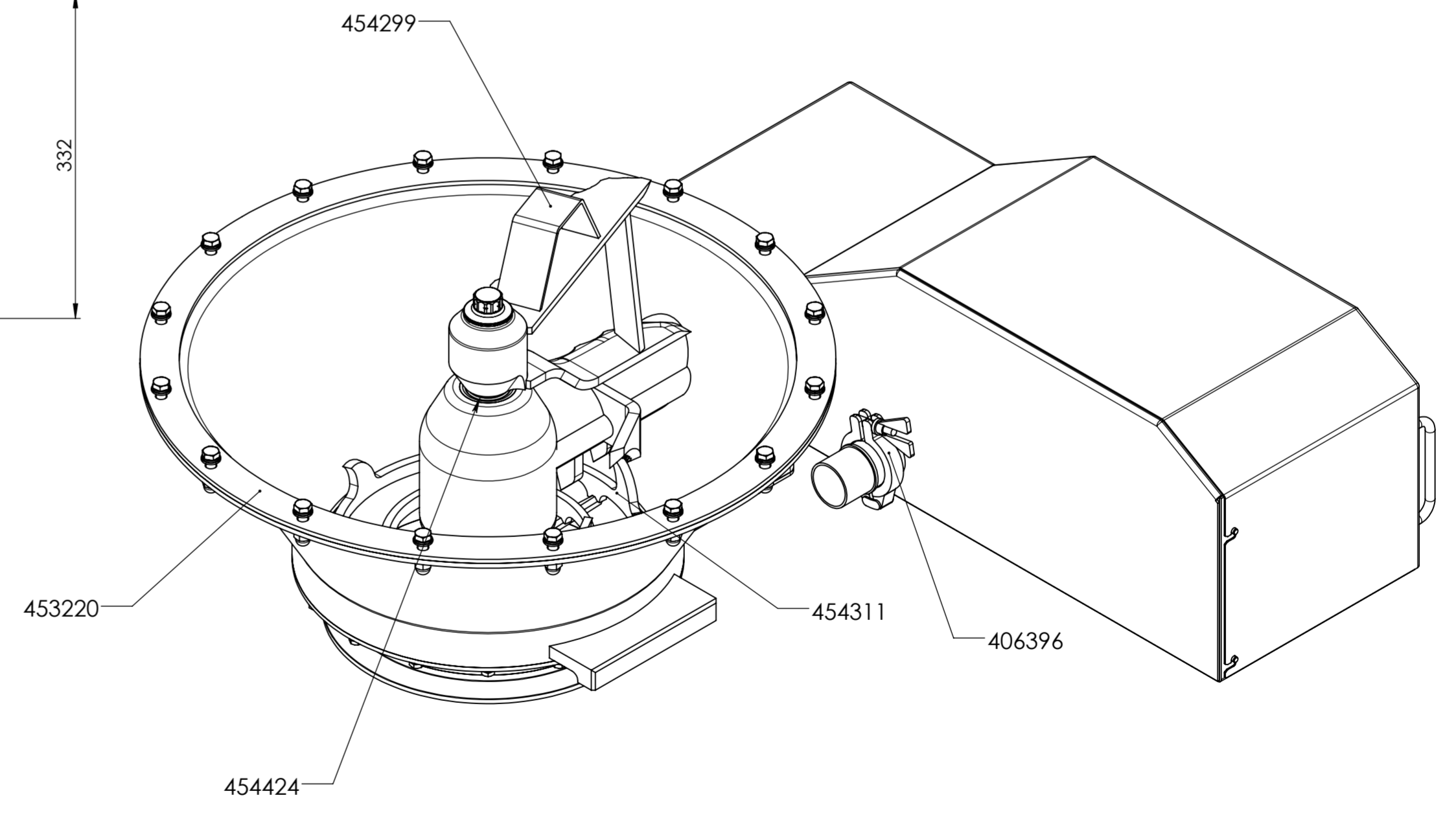
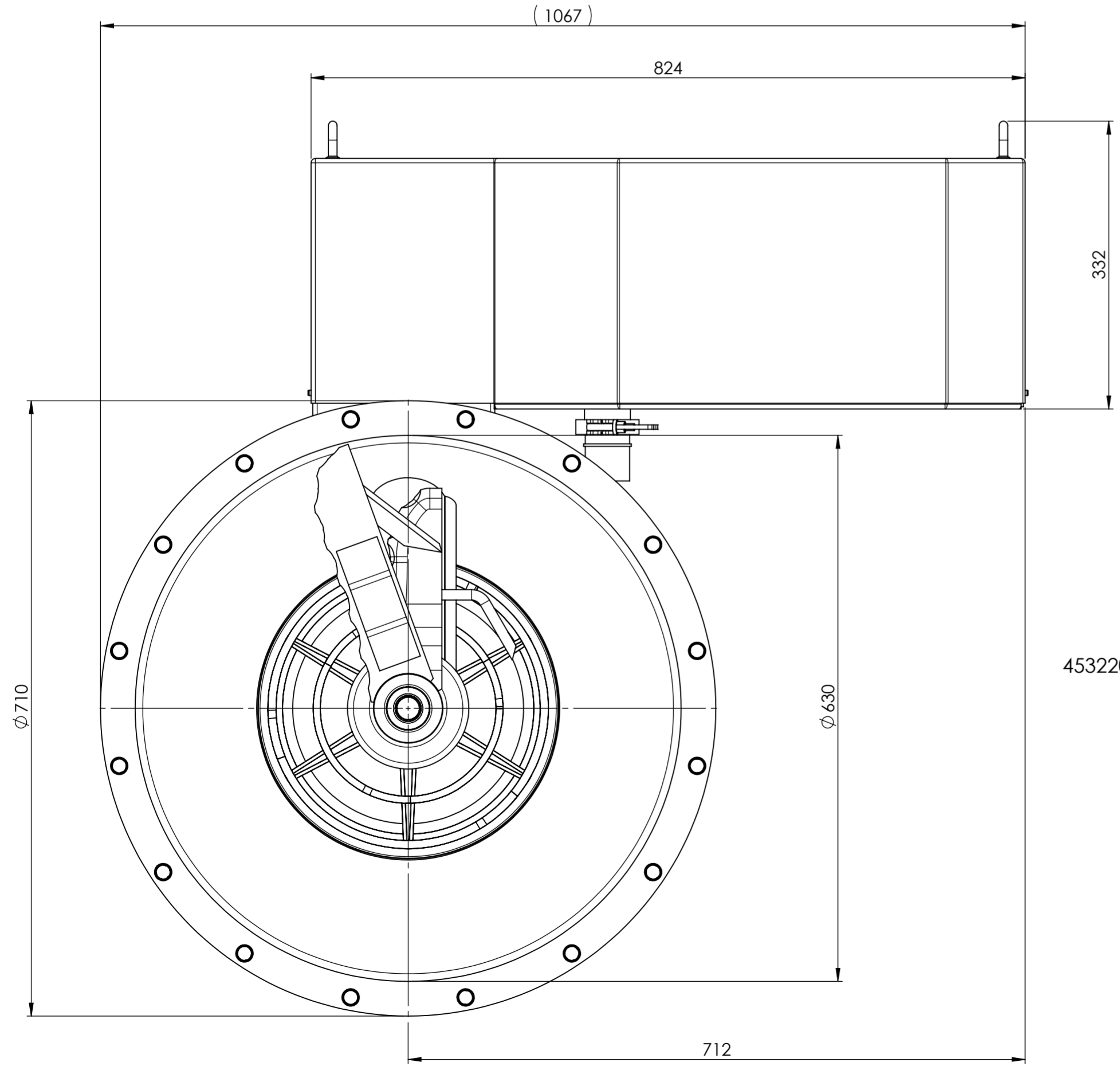
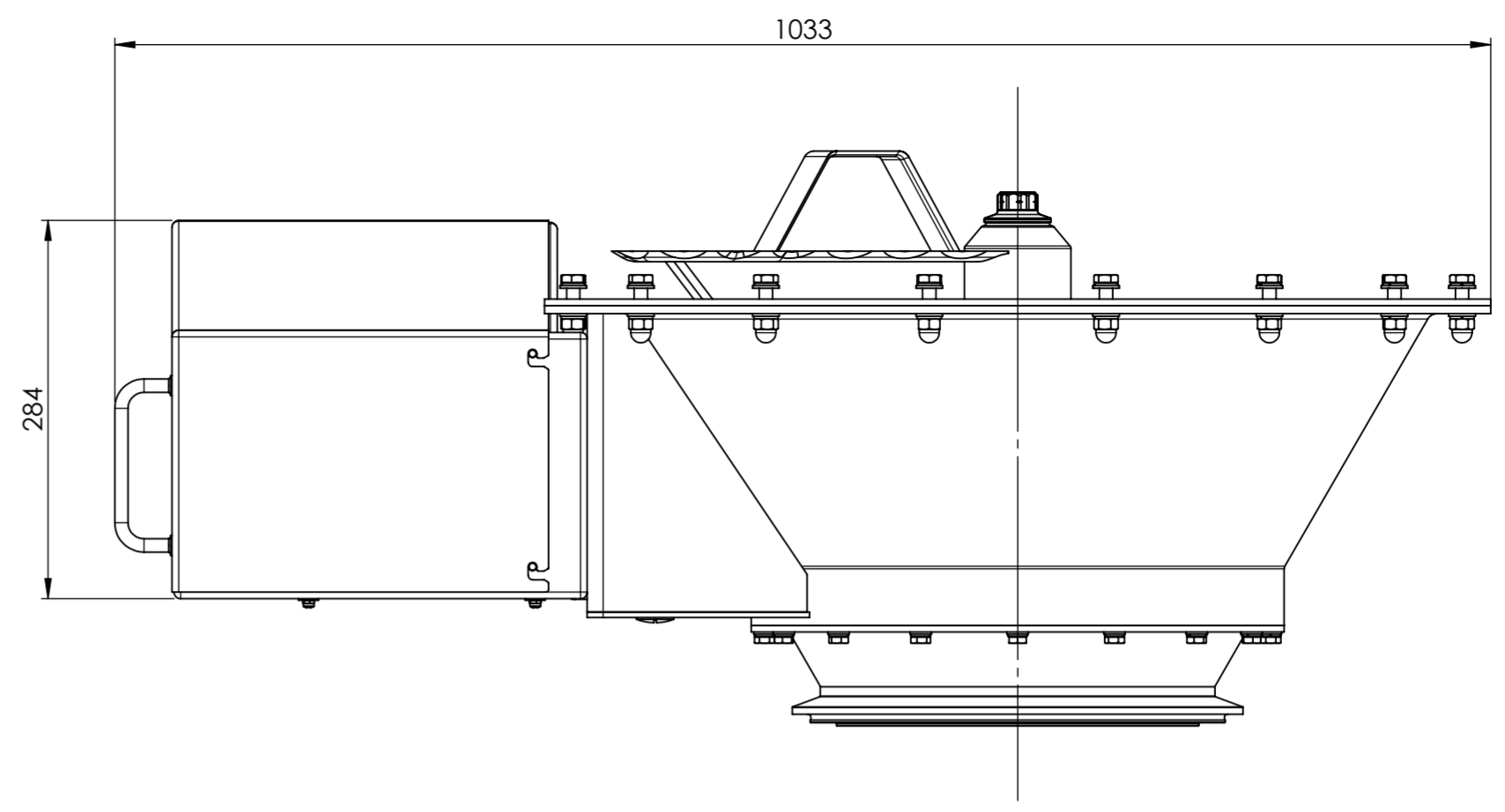
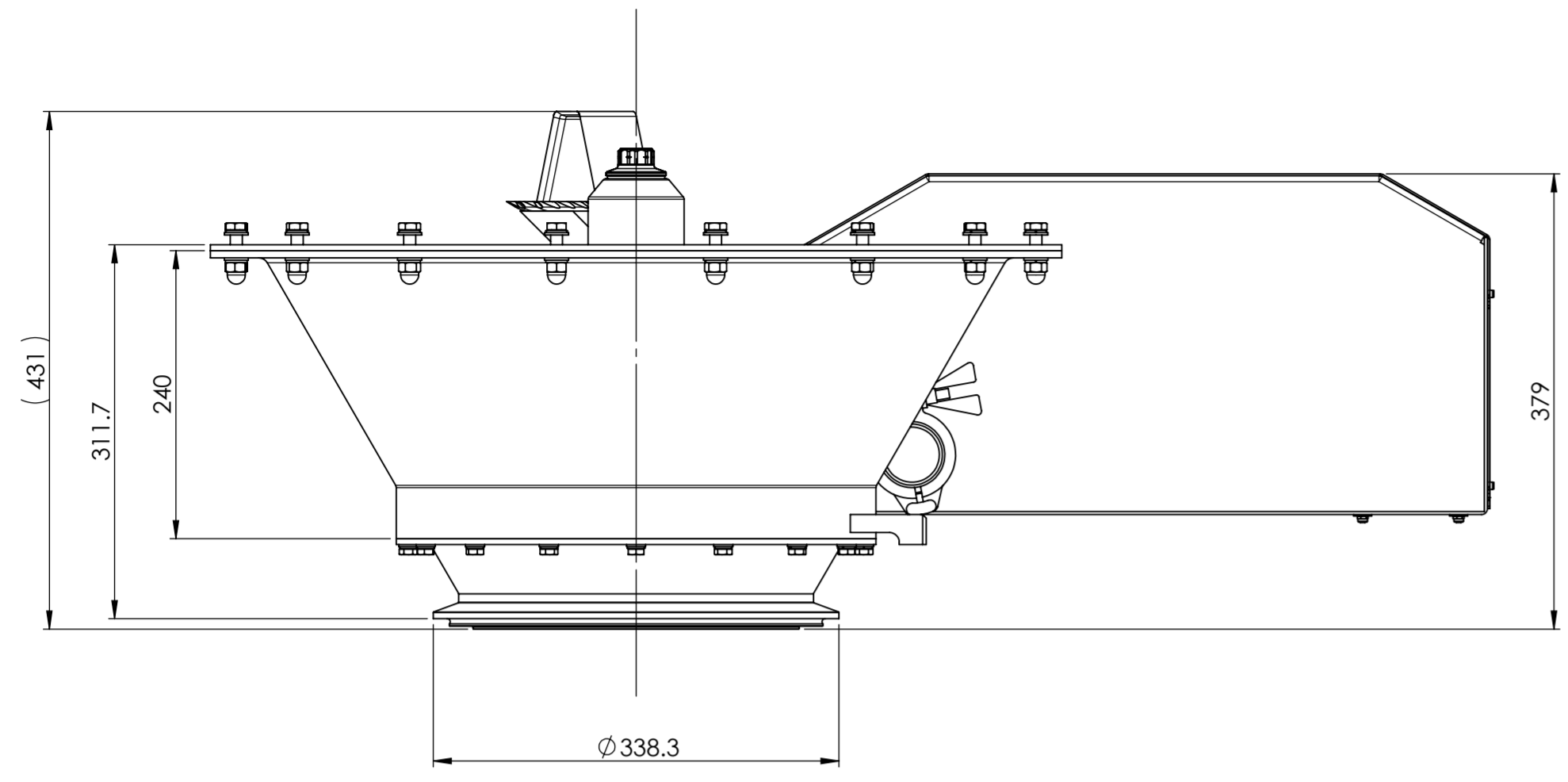


3x400V DelumpWitt
Wiring to cabinet FreWitt
3x400V Servolift
X13 Air & Bar FreWitt

SG.TBP.202.M.5214

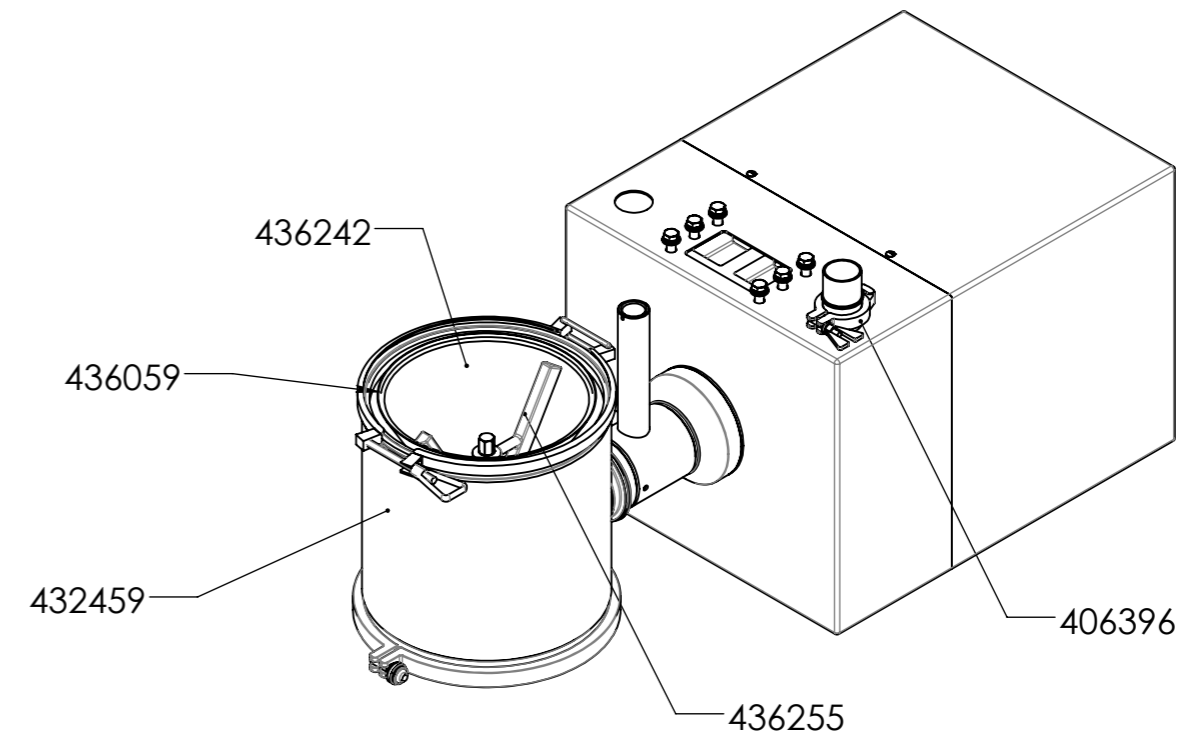
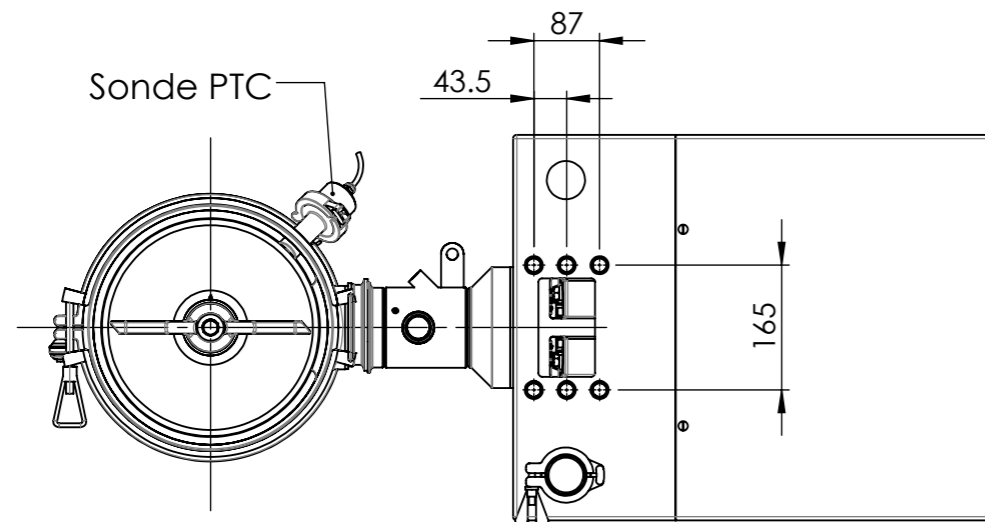
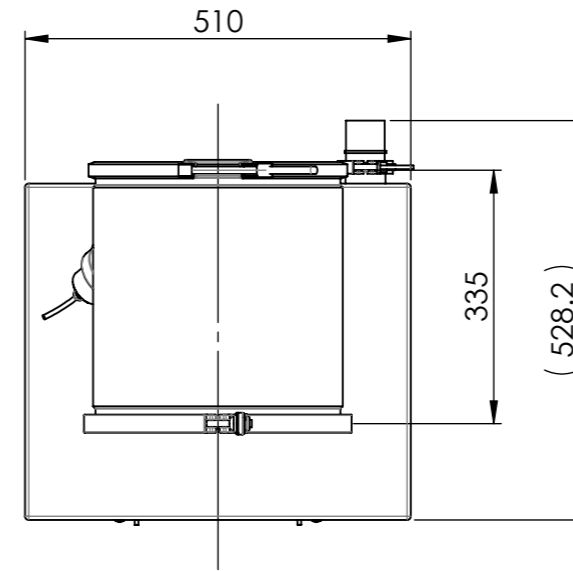
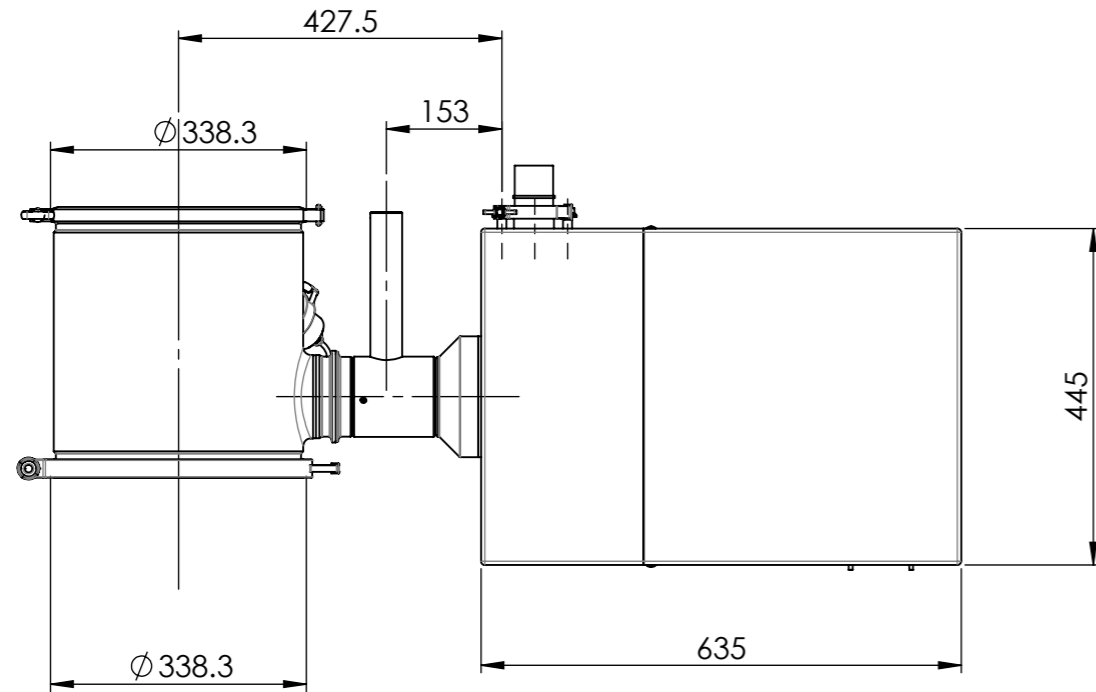
Sous réserve de modifications
Subject to modifications
Änderungen vorbehalten

ATEX category	IGD / 3D	Machined dim.	ISO 2768-m
Voltage [V]	400V	Welded dim.	ISO 2768-c
Frequency [Hz]	50Hz	Designed	03/05/2011
Power [kW]	5.5 / 0.75 / 1.5	Controlled	25/07/2011
Speed [min ⁻¹]		Revised	25/07/2011
PRO-11-0076 / DelumpWitt			
Page			Ver.
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ATEX category	II 1D / II 3D		Machined dim.	ISO 2768-m		
Voltage [V]	400	Power [kW]	0.75	Welded dim.		
Frequency [Hz]	50	Speed [min-1]	13-20	ISO 2768-c		
PRO-11-0076 / ProFi-Sword				Designed	05/05/2011	thle
				Controlled	05/05/2011	thle
<small>Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.</small>				Revised	05/05/2011	thle
						Page

464797-LAY



ATEX category	II 1GD / II3D			Machined dim.	ISO 2768-m	
Voltage [V]	400	Power [kW]	5.5	Welded dim.	ISO 2768-c	
Frequency [Hz]	50	Speed [min ⁻¹]	100-700	Designed	03/05/2011	thle
PRO-11-0076 / ConiWitt-250				Controlled	19/08/2011	ygr
				Revised	19/08/2011	ygr
<small>Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.</small>				<small>Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com</small>		Page
				464777-LAY		Ver.
				1/1		C

Name plate






2

Customer :

Serial Nr :

**Novartis Pharma
SG-Singapore**

11007643002

Swiss Made		CH-1763 Granges-Paccot SWITZERLAND			
Type	ProFi-Sword	Year : 2011	Serial Nr: 11007643002		
Network :	400 V	Frequency :	50 Hz	Amp. :	2A
int.		1258		II	1G cb IIB T4 X 1D cb T157°C IP65 X
ext.		1258		II	3D c T125°C IP65 X
Please read the user manual before start-up !					

Name plate






2

Customer :






Serial Nr :

**Novartis Pharma
SG-Singapore**

11007619050

Swiss Made  CH-1763 Granges-Paccot SWITZERLAND
Type ConiWitt-250 Year : 2011 Serial Nr: 11007619050
Network : 400 V Frequency : 50 Hz Amp. : 13.3 A
int.  1258  II 1G ckb IIB T4 X 1D ckb T157°C IP65 X
ext.  1258  II 3D c Ex tD T125°C IP65 X
Please read the user manual before start-up !

Name plate for the body

Swiss Made  CH-1763 Granges-Paccot SWITZERLAND
Type ConiWitt-250 Year : 2011 Serial Nr: 11007619050
int.  1258  II 1G ckb IIB T4 X 1D ckb T157°C IP65 X
ext.  1258  II 3D c Ex tD T125°C IP65 X
Please read the user manual before start-up !

Name plate for the head

Order address

NOVARTIS SINGAPORE PHARMACEUTICAL
MANUFACTURING PTE LTD
10, Tuas Bay Lane
SG - 69115 Singapore
Singapore

Delivery address

NOVARTIS SINGAPORE
PHARMACEUTICAL
MANUFACTURING PTE LTD
10, Tuas Bay Lane
SG - 637461 Singapore
Singapore

Invoice address

NOVARTIS SINGAPORE PHARMACEUTICAL
MANUFACTURING PTE LTD
10, Tuas Bay Lane
SG - 637461 Singapore
Singapore

Delivery note no. BLC-11-1704

Date :	12.09.2011	Customer document :	4500260529
Customer :	686023	Document date :	15.04.2011
		N° douane :	
Contact Frewitt :	LEFEBVRE Claude	Incoterms 2010 :	_DDU, Novartis Singapore
Phone :	+41 (0)26 460 74 67	Customer contact :	PANICKER Shreekumar
E-mail :	c.lefebvre@frewitt.com		

Position	Product	Designation	Unit	Qty
		our quotation OFC-11-0352-3 dated april 13, 2011		
10	250042	Frewitt DelumpWitt Crusher & Grinding	Pce	1
20	250042	Frewitt MFH-6 Hammermill with explosion proof construction	Pce	1
30	250042	Two pneumatic transport system for filling IBC container	Pce	1
40	250042	Lifting tower with MF-3	Pce	1
50	250042	FAT, site installation, SAT, commissioning, IQ/OQ support, operator training, documentation, packaging, sea transport DDU for DelumpWitt	Pce	1
60	250042	FAT, site installation, SAT, commissioning, IQ/OQ support, operator training, documentation, packaging, sea transport DDU for MFH-6	Pce	1

Professional Milling and Handling of Powders

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IBAN USD: CH92 0483 5036 3818 0215 8
Credit Suisse CH-3001 Bern/Swift CRESCH ZZ80A

Delivery note no. BLC-11-1704

Position	Product	Designation	Unit	Qty
70	250042	FAT, site installation, SAT, commissioning, IQ/OQ support, operator training, documentation, packaging, sea transport DDU for PTS system	Pce	1
80	250042	FAT, site installation, SAT, commissioning, IQ/OQ support, operator training, documentation, packaging, sea transport DDU for MF-3	Pce	1
90	250042	Additional cost for air freight for DelumpWitt	Pce	1
100	250042	Additional cost for air freight for MFH-6	Pce	1
110	250042	Additional cost for air freight for PTS system	Pce	1
120	250042	Additional cost for air freight for MF-3	Pce	1
130	250042	Additional cost for integration of 4 Mettler scales	Pce	1
140	250042	ProFibuscard	Pce	1
150	250042	Spare parts	Pce	1

For details of the packing, see attached packing list FAP-11-0290

FREWITT Fabrique de machines SA

(without signature)

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Date 12/09/2011

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Delivery address

NOVARTIS SINGAPORE
Pharmaceutical Manufacturing Pte Ltd.
10 Tuas Bay
637461 Singapore
Singapore

Contact:

Mr Panicker Shreekumar

Phone: +65 63047129

Fax +65 63047150

Novartis purchase order 4500260529 and 4500276262**Frewitt PRO-11-0075, 11-0076, 11-0077, 11-0078**

Item Nr	Quantity	Description		
Consignment PRO-11-0075 (1 Tri wall pack)				
		TRIWALL PACK: 1 Dimensions: 265cm x160cm x215cm Weight: Net: 933 Kg Gross: 1075 Kg	Secure FRET : 8505 to 8519	
	1	Hammermill Frewitt type MFH-6 consisting of		
		Inlet hopper with gasket		
		Outlet hopper		
		Front door		
		Housing		
		Rotor with 24 fixed hammers		
		Sieve		
		Drive 4.0 KW motor with direct drive		
		Control panel		
		Gas control system		
		Dosing device AL-150 Diary		
		Dosing device AL-200 Diary		
		Support frame for the installation		
Consignment PRO-11-0076 (5 pallets)				
		PALLET 1 Dimensions: 165cm x 105cm x 85cm Weight: 366 Kg Net: Gross: 366 Kg	Secure FRET: 8381 to 8391	
	1	Grinding Unit consisting of		
		Inlet milling head with special Tri-Clamp flange		
		Safety device inlet magnetic safety switch ELOBAU at inlet		
		Outlet milling head with Tri-Clamp flange DN300 (ISO 2852)		
		Bearing rotor drive housing		
		Connection channel between machine head and control box		

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	1	Conical Rasp 3mm 436241		
		Rotor with 2 arms		
		Motor with 5.5KW with frequency converter		
		Motor protection		
		Gas control system		
		Outlet funnel Tri-Clamp		
		Outlet funnel for Cleaning		
464871		Set of spare parts MFH-6 PRO-11-0075		
464871		Set of spare parts DelumWitt PRO-11-0076		
464882		Set of spare parts PTS PRO-11-0077		
465595		Set of spare parts PRO-11-0078		
		<u>PALLET 2</u> Dimensions: 240cm x 220cm x 195cm Weight: 430 Kg Net: Gross: 618 Kg	Secure FRET: 8392 to 8406	
	1	Inlet hopper with inlet cone		
		Control panel		
		PC with printer ATEC		
		Spare parts		
		Tri-Clamp connections		
		Lateral protection for the Frame		
		<u>PALLET 3</u> Dimensions: 155cm x 135cm x 85cm Weight: 155 Kg Net: Gross: 212 Kg	Secure FRET: 8407 to 8417	
	1	Crusher module complete		
		Tools for Crusher module		
		Frame for assembly of the crusher module		
		Ventilation piping		
		<u>PALLET 4</u> Dimensions: 456cm x 240cm x 195cm Weight: 1'650 Kg Net: Gross: 1'980 Kg		
		Tubular steel support frame complete		
		<u>PALLET 5</u> Dimensions: 241cm x 121cm x 94cm Weight: 197 Kg Net: Gross: 300 Kg	Secure FRET: 8418 to 8433	
		Control cabinets for DelumpWitt and PTS		
Consignment PRO-11-0077 (3 pallets)				
		<u>PALLET 1</u> Dimensions: 165cm x 165cm x 235cm Weight: 251 Kg Net: Gross: 336 Kg	Secure FRET: 8462 to 8473	
464871	1	Tank IBC GEA 2000 L		

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		TRI-WALL PACK 2 Dimensions: 290cm x 210cm x 165cm Weight: 525Kg Net: Gross: 725Kg	Secure FRET: 8486 to 8504
	4	Mettler Toledo Scale	
		Multijector vacuum pump	
		Safety filter for vacuum pump	
		Control box pneumatimer	
		Support for PTS	
		Docking system manually	
	2	Mobile Frame	
		2-Way diverter valve DN40	
		Electric Cabinet	
		TRI-WALL PACK 3 Dimensions: 170cm x 170cm x 145cm Weight: 195Kg Net: Gross: 277Kg	Secure FRET: 8474 to 8485
		Multijector vacuum pump	
		Safety filter for vacuum pump	
		Control box pneumatimer	
	2	Wall support for PTS	
		Docking system manually	
		Consignment PRO-11-0078 (1 pallet)	
		PALLET 1 Dimensions: 220cm x 180cm x 195cm Weight: 382Kg Net: Gross: 550Kg	Secure FRET:
	1	Sizing mill Frewitt type MF-3 consisting of	
		Inlet plate with cover	
		Outlet funnel	
		Front door	
		Housing	
		Rotor with 5 arms	
		Sieve	
		Stepless variable drive with motor 1.0 KW with speed adjustment	
		Control panel	
		Gas control system	
		Support frame for the installation	
		Protection over the motor and drive unit, with ventilation	
		Mobile stand for cleaning	
		Drum D375 70L with cover 461236	
		Manual valve 438420	
		Adaptation part for Rubber 461512	
		Adaptation part for Rubber for IBC 465220	
		Drum holder with rotation unit 461237	
		Electrical Cabinet for Servolift hoist	

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Consignment Servolift (3 pallets)		
		<u>PALLET 1</u> Dimensions: 485cm x 70cm x 120cm Weight: 460 Kg Net: Gross: 662 Kg
	1	Column
	1	Transportation band
	2	Headless screws
	2	M10 Clape
	1	Housing connection
	4	Rod seals and cartridges
	12	M12 Clape
	1	Ceiling rosette closure
	7	Sealing cartridges
	7	Sealing rods and dynamic sets Hilti
	1	Hilti cartridge
	7	M12 Cope
	1	Key dig
	1	Closing cover
	4	Fischer M8 pegs
	4	ISO 7090-8 plates
	4	6 sides shallow screws and stopping rings
	4	Rounded screws
	3	Control panels
		<u>PALLET 2</u> Dimensions: 155cm x 115cm x 150cm Weight: 273 Kg Net: Gross: 393 Kg
	1	Control cabinet
	1	Arm
		<u>PALLET 3</u> Dimensions: 45,5cm x 85cm x 125cm Weight: 735 Kg Net: Gross: 970 Kg
	1	Column
	2	Screws headless
	2	M10 Cope
	1	For storage tarp
	1	Cover bow
	4	Upat Multi-cones sealing cartridge
	4	M16 Copes
	4	Sealing rods
	1	V-seal
	6	6 sides shallow screws and stopping rings Nord-Lock
	6	M16 copes
	1	Distribution cabinet
	1	Square head key

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	4	Hex head screws	
	4	SW19 Copes	
		Consignment Assembly Tools (1 pallet)	
		<u>PALLET 1</u> Dimensions: cm x cm x cm Weight: Kg Net: Gross: Kg	SECURE FRET:

Shipment through Interfracht

Best regards

Frewitt fabrique de machines S.A.

ProFilling Division

Aline J. Crettol

Professional Milling and Handling of Powders

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SAFETY

Safety

In order to use the installation in a completely safe manner, it is indispensable to follow the instructions stated in these operating instructions. All safety parts protecting either the operators and/or the machine (such as safety switches, safety grids, etc...) must not in any case be dismantled, modified or bypassed. Follow specifically the guidelines indicated by the following symbols:

Symbols

The following symbols are employed to provide practical guidelines regarding safety and operation of the installation. They advise the user against possible accidents to both person and equipment and provide practical guidelines for the use of the installation.



Danger: This symbol warns you regarding mortal danger or serious injuries. These types of accidents may be produced when the directions within these operating instructions are not strictly or only partially followed.



Warning: This symbol warns you about a potential risk regarding injuries, installation damage or other serious damages. An accident can occur if the directions in the operating instructions are not or only partially followed. Disregard of these may cause the manufacturer's warranty to be void.



Risk of generation of electrostatic charges: This symbol warns you about a risk of fire or explosion that may be generated due to electrostatic discharges. This risk can be substantially decrease by following the directions provided in these operating instructions step by step.



Recommendation: This symbol provides you with complementary indications about installation allowing an optimum use of your installation.



Maintenance: Maintenance or development jobs that are represented by this symbol should only be carried out by qualified maintenance personnel that have the specific skills to do so, and have read these operating instructions. They should only use specific tools designated for this purpose.



Danger cutting hazard: This symbol alerts you that there is a risk of serious injury in case of contact with the moving rotor. Please always wait until the rotor stops completely before reaching inside the housing.

Operators and maintenance staff

Operators and maintenance staff should provide themselves with appropriate personal protection and have prior knowledge of the directions contained within these operating instructions for every use and maintenance intervention.

The start-up of the installation should only be carried out by personnel specifically trained for such purpose. Work on electric components should be carried out only by qualified and trained staff.

Initial adjustments are carried out in the factory. In normal operation mode, installation only requires the supervision of the operator.

Regarding cleaning and maintenance tasks, these should be only carried out by personnel authorized and trained for such activity. The directions provided in these operating instructions should be carefully followed.

In order to avoid any risk of getting trapped or caught up in the machine, users of the installations shouldn't wear baggy clothes. Long hair should be tied back or retained in a proper way (net, rubber band, etc.)

The safety nuts may only be unscrewed during cleaning or maintenance work. Only properly trained cleaning and maintenance staff may have access to the special tools required for the safety nuts

Electrostatic charging hazards

Incorrect earthing may lead to electrostatic charging, which could cause an explosion. Earth connections must be checked regularly.

Electrical hazards

In the event of contact with live or current-carrying parts, there is a risk of electrical discharge which could cause serious injury or death. Never touch damaged cables. Before carrying out any maintenance work on the electrical equipment, the installation must be turned off and disconnected from the power supply. Replace defective cables or fuses immediately.

Compressed air hazards

The release of compressed air gives rise to a mechanical risk of injury, particularly for the eyes but also for the ears. When handling the pneumatic system, wear glasses and ear protection. When servicing the compressed air system, the main inlet for the compressed air must be closed and the system cleared using a discharge valve. The pneumatic oil is toxic. Do not ingest. Avoid contact with the eyes and mucous membranes. Beware of ejection and oil residues.

Product hazards

These operating instructions are only concerned about the installation's operation and use. The specific risks resulting from the products to be transformed are not included in these operating instructions and should be discussed separately. The person responsible for the installation should state clearly in his/her own operating instructions the risks and safety instructions inherent to the products to be transformed. Operators should follow these indications carefully.

Residual risks

Residual risks are those unforeseeable risks that, despite proper safety precautions, cannot be excluded when using the installation. These residual risks are not easy to detect and may be a possible health hazard, related to injuries or danger (see European standards EN ISO 12100-1, paragraph 4). If such a risk arises, the installation should be switched off immediately and the person responsible for the installation should be advised. He/she should apply all appropriate measures in order to definitely avoid these risks. In all such cases the manufacturer should always be informed.

Other risks

The installation under operation can have a high noise level. When operating the installation, wear ears protection.

Integration

If the installation of Frewitt has to be integrated in a final installation, the user should ensure that the proper safety systems are operational in order to avoid the introduction of members at the fragmentation zone near the installation's inlet-outlet.

Warranty Limit

The warranty of Frewitt is valid in so far as the installation is operated within the technical limits, conditions and applications stated in the customer specifications and confirmed by Frewitt. The warranty of Frewitt is not valid if the customer or the user does not comply with operating instructions and/or if modifications are done without the written consent of Frewitt.

Limitation of responsibility of the product manufacturer

Frewitt provides an installation that complies with CE standards regarding safety or the applicable standards in the destination's country. Any damage to people, material and merchandises belonging to the user or a third party due to the use or maintenance of the installation is the exclusive responsibility of the customer, respectively the user.

Emergencies

In the event of an accident involving injury, immediately apply recognised first aid procedures and inform the medical personnel.

Information about explosives zones

Since a dangerous, potentially explosive atmosphere may not exist all the time within an area with an explosion hazard, these areas are divided into zones, according to the probability of the dangerous atmosphere being present. Here an extract of classification.

Gases, vapors, mists

Ex zones	Covers areas in which a dangerous, potentially explosive atmosphere is ...	We are in general...	Operation without effective ignition source.
Zone 0	Present continuously or for lengthy periods. [> 1000 hours/year]	Only inside containers or the space inside apparatus.	<ul style="list-style-type: none"> - Fault-free operation - Rare operational faults - Frequent operational faults
Zone 1	Present occasionally. [10 - 1000 hours/year]	The immediate surroundings of zone 0, of loading openings, filling/emptying devices, etc.	<ul style="list-style-type: none"> - Fault-free operation - Frequent operational faults
Zone 2	Present infrequently and then only for a short time. [<10 hours/year]	The areas surrounding zone 0 and 1 or around flange connections.	<ul style="list-style-type: none"> - Fault-free operation

Dust

Ex zones	Covers areas in which a dangerous, potentially explosive atmosphere is ...	We are in general...	Operation without effective ignition source.
Zone 20	In the form of a combustible cloud of dust in the air. Present continuously or for lengthy periods. [> 1000 hours/year]	Only inside apparatus, containers (mills, dryers, mixers), piping	<ul style="list-style-type: none"> - Fault-free operation - Rare operational faults - Frequent operational faults
Zone 21	In the form of swirls of deposits dust. Present occasionally. [10 - 1000 hours/year]	In surrounding area e.g. by dust removal or at filling stations or areas of dust deposits.	<ul style="list-style-type: none"> - Fault-free operation for whirled-up dust - Rare operational faults for dust deposits
Zone 22	Present infrequently and then only for a short time [<10 hours/year]	In areas in which dust may emerge from seals and from deposits.	<ul style="list-style-type: none"> - Fault-free operation

The installer or operator of an installation must judge whether there is an explosion hazard within an area, and make the zoning accordingly.

For ATEX installations, refer to chapter "ATEX (EN 94/9/CE)"

Type de machine / Maschinentyp / Type of machine: **DelumpWitt**

Appareil de mesure / Messgerät / Measuring unit : **TES 1350**

N° de série / Serien Nr. / Serial Nr. : **971205674**

Norme / Norm / Standard : **dBA (DIN 45635)**

Conditions de mesure

La mesure est faite:

- à 1 m
- à hauteur de la chambre de broyage
- avec l'outillage monté
- avec les accessoires montés
- à vide (sans produit)

Messbedingungen

Die Messung wird gemacht:

- bei einer Distanz von 1 m
- auf Mahlkammerhöhe
- mit montiertem Werkzeug
- mit montiertem Ein- und Auslaufzubehör
- Mahlkammer leer (ohne Produkt)

Measuring conditions

Measurement is made:

- at a distance of 1 m
- at height of milling chamber
- with installed tools
- with installed inlet and outlet accessories
- Milling chamber empty (without product)

		ConiWitt-250	ProFi-Sword	dBA
Vitesse				
Geschwindigkeit	mini	400 T/min	13 T/min	63.4
Speed				
Vitesse				
Geschwindigkeit	maxi	750 T/min	20 T/min	69.1
Speed				

Protocole établi par (visa)

Protokoll erstellt von (Visa)

Report established by (visa)

H.Rey



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on

06.2009

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GENERAL

Description of the unit

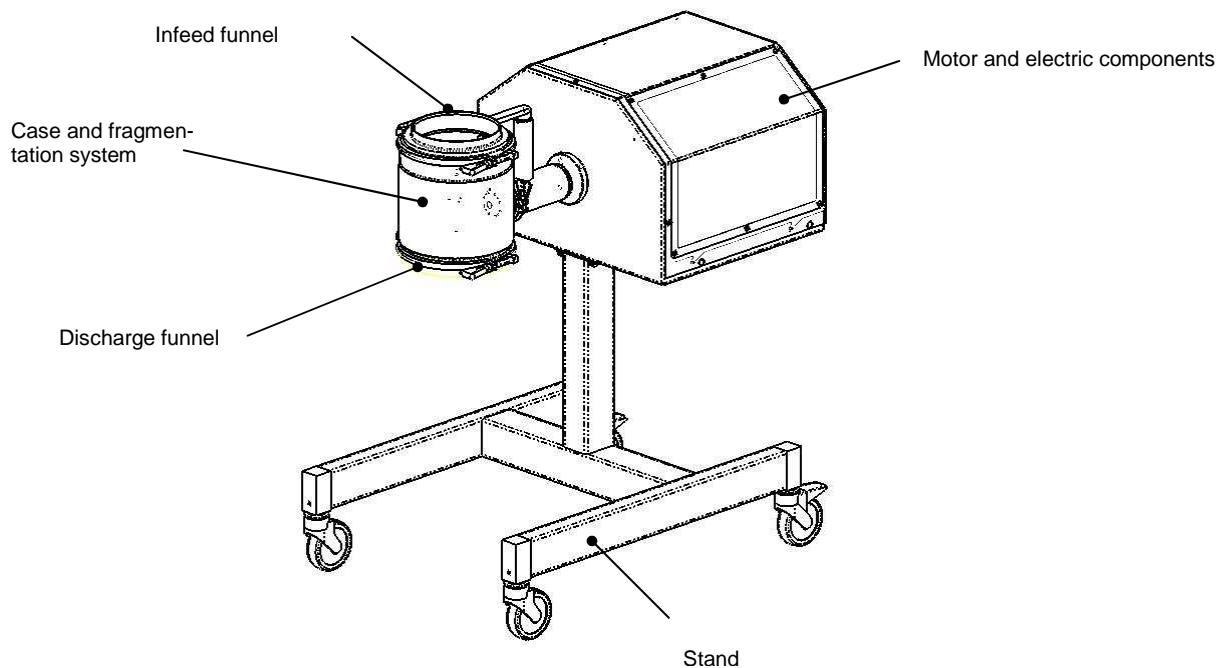
General information

This machine is designed for the fragmentation of a wide diversity of products in the pharmaceutical, chemical, and food industries.

Principle components of the unit

- Case and fragmentation system
- Motor and electric components
- Stand (Optional)
- Infeed funnel
- Discharge funnel

Diagram



Phases

Setup

Personnel qualification

Licensed mechanic or electrician.

Restrictions

The customer must familiarize himself with the service manual prior to setup.

Operation

Personnel qualification

None

Special requirements

- Thorough knowledge of user manual
- Thorough knowledge of the safety rules

Restrictions

None

Maintenance and cleaning

Improper maintenance of the unit is a contributing factor to accidents such as in-service rupture or danger of electrocution.

The safety regulations in effect in the country where the unit is installed must be followed when performing maintenance tasks.

Prohibited

For personnel who have not received minimum instruction on the cleaning and maintenance of the unit

Personnel qualification

None

Special requirements

- Thorough knowledge of user manual
- Thorough knowledge of the safety rules

Restrictions

None

Comments

One must still study the instructions for the new machine even if one has knowledge of the operation of an older Frewitt machine.

Repairs

Prohibited

For personnel who are not licensed mechanics and/or electricians.

Personnel qualification

Licensed mechanic or electrician.

Special requirements

- Thorough knowledge of user manual
- Ability to read and understand technical diagrams and folders
- Thorough knowledge of the safety rules
- The proper tools for dismantling and assembly.

Restrictions

The person performing repair work must use the original documentation supplied with the unit and no other.

Only Frewitt parts may be used.

Comments

One must still study the instructions for the new machine even if one has knowledge of the operation of an older Frewitt machine.

Risk analysis - mechanical

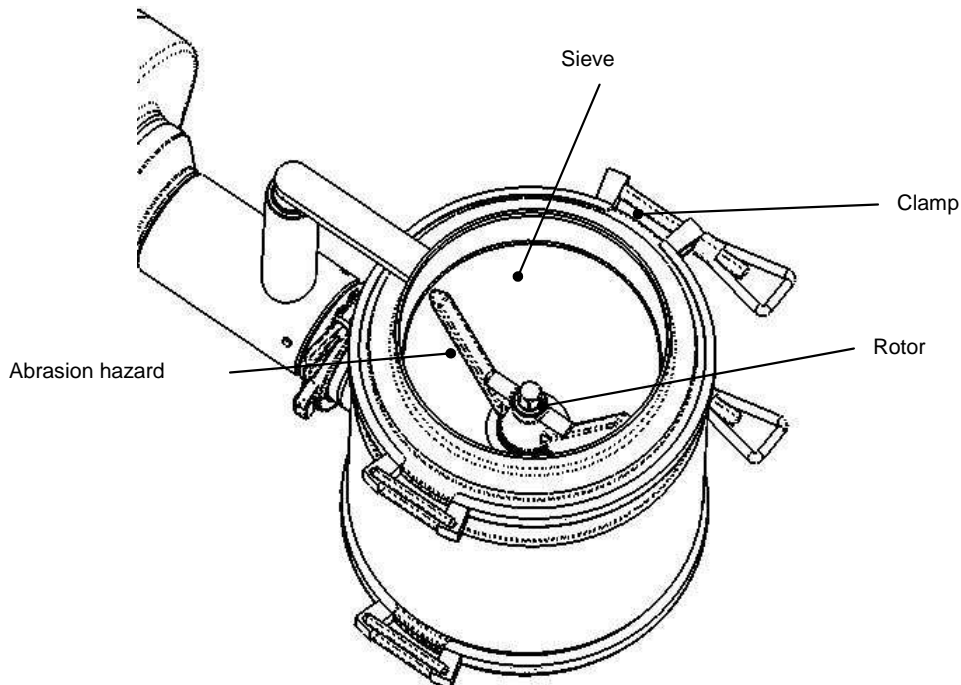
Abrasion

Type of hazard(s) :	Description/location :
Abrasion	Case and fragmentation system

Definition of the hazards:

There is a hazard of abrasion of the rotor against the sieve if the clamp holding the infeed funnel is loosened during the operation of the machine.

Diagram



Precautions:

Always make sure that the machine has stopped before loosening the infeed clamp

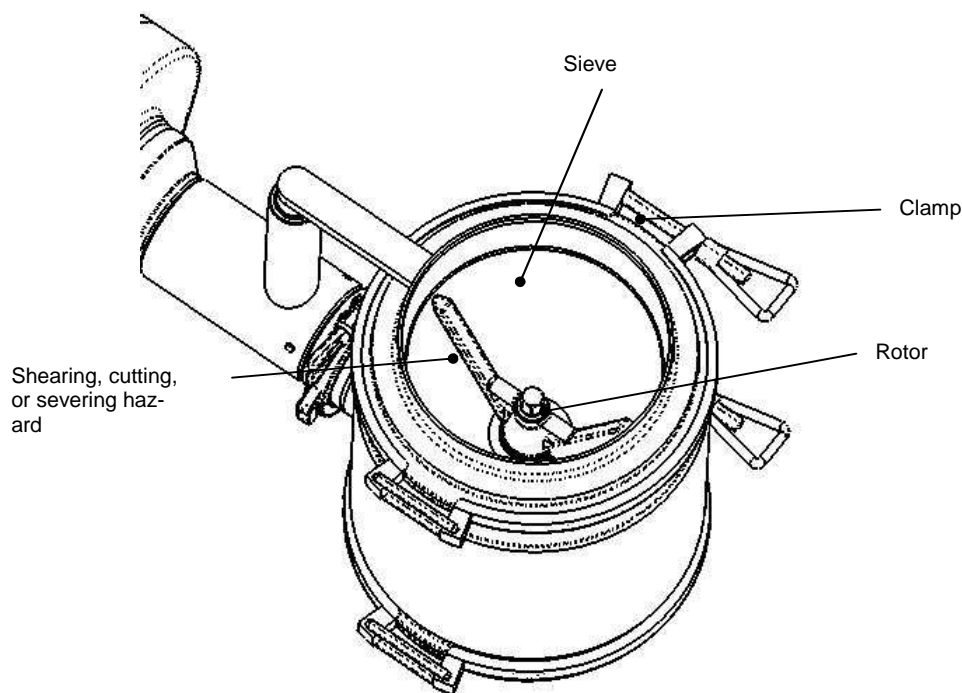
Shearing, cutting, or severing at the infeed

Type of hazard(s):	Description/location :
Shearing, cutting, severing	Case and fragmentation system

Definition of the hazards:

The introduction of upper limbs inside the fragmentation system, between the rotor and the sieve, via the infeed of the machine poses a shearing, cutting, or severing hazard.

Diagram



Precautions:

"Stand alone" Machine:
 None.

In-Line Machine:
 When integrating the machine in the final in-line installation, the user must make sure that adequate safety systems are in place to prevent the introduction of limbs into the fragmentation zone via either the infeed of the machine.

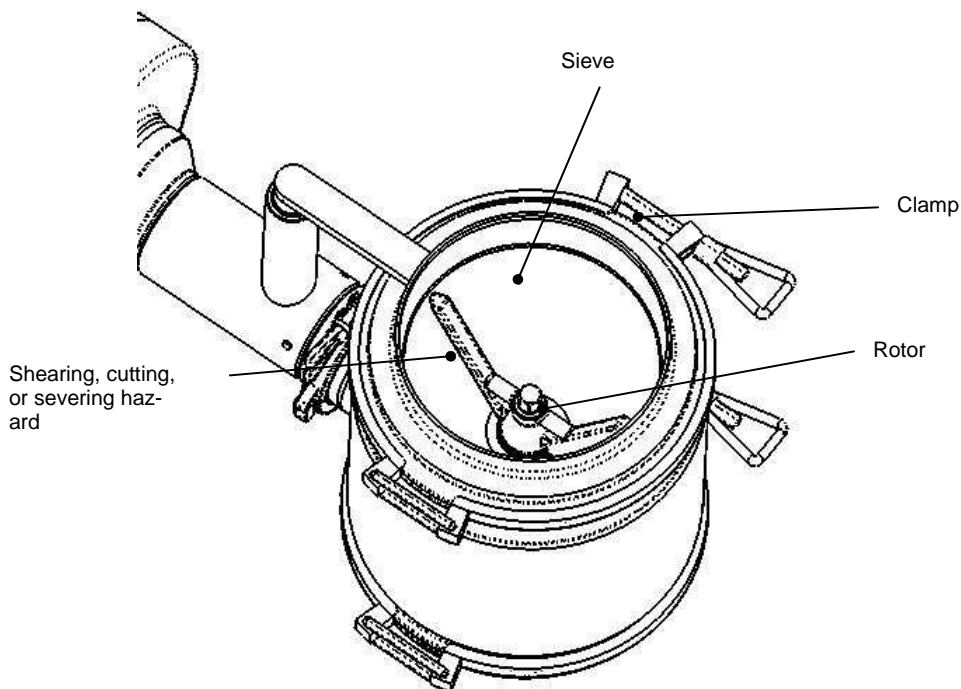
Shearing, cutting, or severing at the discharge

Type of hazard(s) : Shearing, cutting, severing	Description/location : Discharge of the unit
---	--

Definition of the hazards:

The rotor poses a shearing, cutting, or severing hazard to upper limbs if they are introduced via the discharge of the machine into the fragmentation system if the sieve is not installed.

Diagram



Precautions:

"Stand alone" Machine and In-Line Machine

Under no circumstances must the machine be started without the sieve if the rotor is installed. There is a shearing, cutting, or severing hazard to upper limbs introduced via the discharge into the fragmentation system when the system is running without the sieve and with the rotor installed in the machine.

Catching, entanglement (rotor)

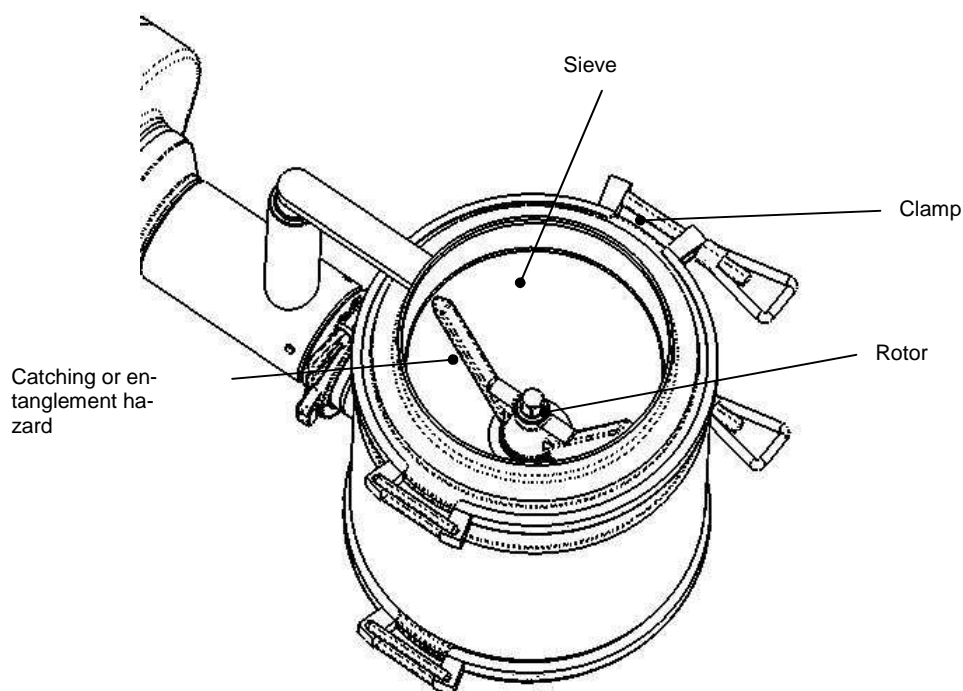
Hazards : Mechanical hazards	Hazard zone : Case and fragmentation system
--	---

Definition of the hazards:

Catching, entanglement hazard

There is a catching or entanglement hazard posed by the rotor if hair or clothing is introduced into the fragmentation system.

Diagram



Precautions:

In order to avoid all risks of catching or entanglement, the users of the unit must not wear clothing that is too loose. Long hair should be tied back or restrained by some suitable means (hair net, rubber band, etc.).

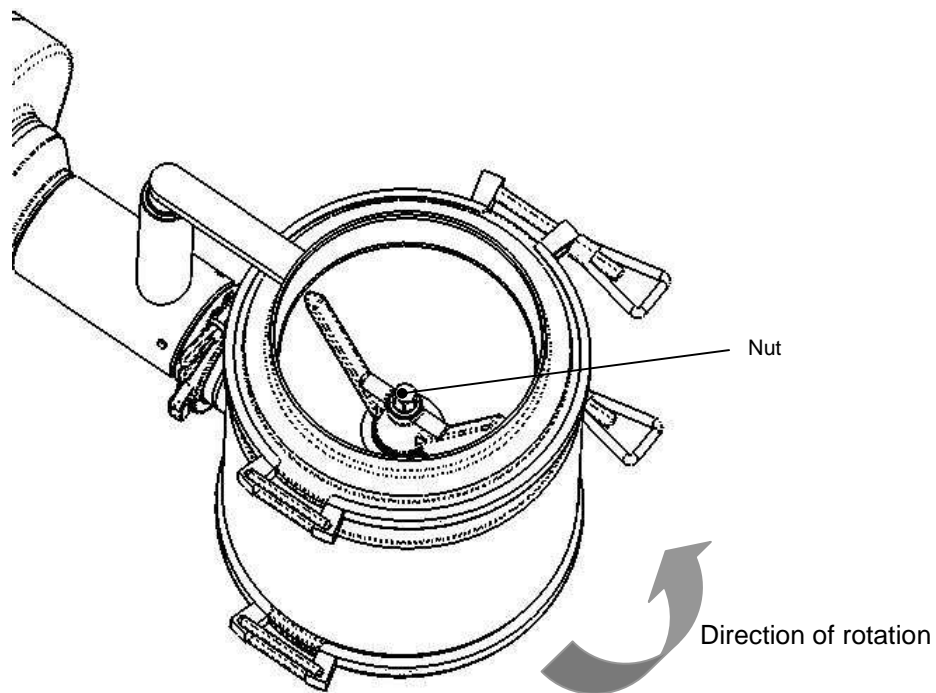
Ejection of objects

Type of hazard(s):	Description/location :
Ejection of objects	Case and fragmentation system

Definition of the hazards:

The fragmentation rotor is held in place on the shaft by a right-hand threaded nut. This nut is tightened by the rotor rotating in the proper direction. If the rotor does not rotate in the proper direction, there is a hazard of this nut being ejected.

Diagram



Precautions:

During setup, make sure that the direction of rotation of the rotor corresponds to the arrow marked on the case of the machine. If the direction of rotation is not correct, reverse the polarity of two power wires on the motor.

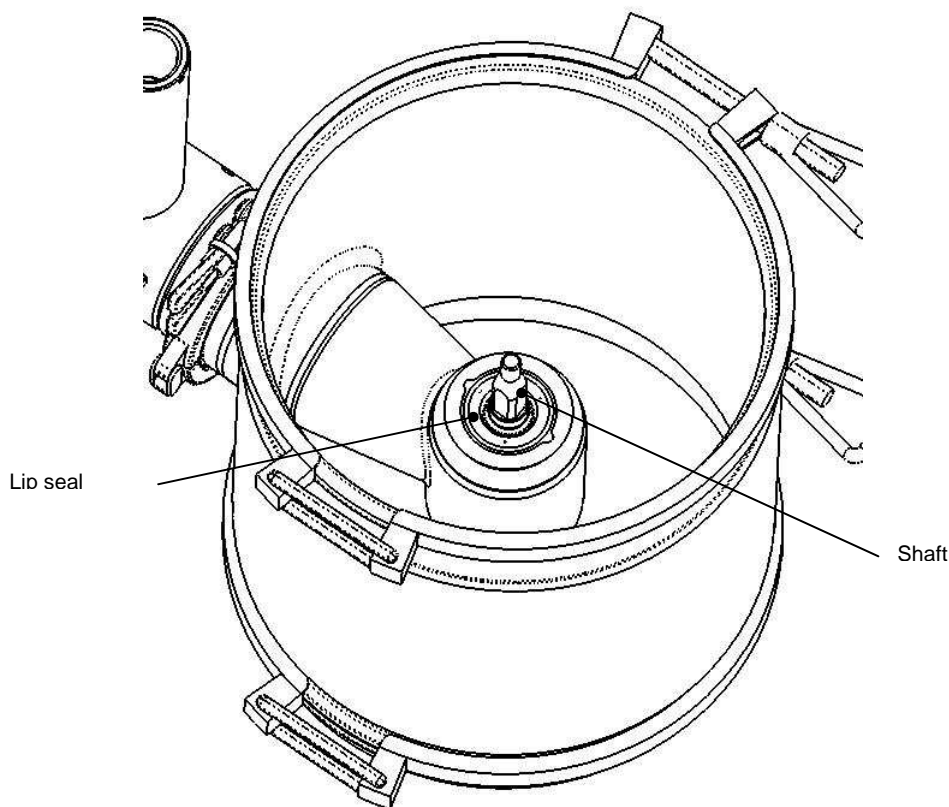
Burns

Type of hazard(s):	Description/location :
Burns	Drive

Definition of the hazards:

The friction of the lip seal against the shaft of the machine causes the shaft to heat up, potentially to very high temperatures (100°C). This heat ing up is limited to ca. 40°C if the rotor is attached to the shaft. As it rotates, the rotor acts as a propeller and generates an airflow that maintains the temperature of the shaft at an acceptable level.

Diagram



Precautions (machine not inertized):

The friction of the lip seal against the shaft of the machine causes the shaft to heat up, potentially to very high temperatures (100°C). This heat ing up is limited to ca. 40°C if the rotor is attached to the shaft. As it rotates, the rotor acts as a propeller and generates an airflow that maintains the temperature of the shaft at an acceptable level. To prevent damage to the lip seal, it is strongly advised not to run the machine without the rotor.

Other risks

Crushing hazard of the unit

Hazards : Crushing hazard	Hazard zone : Machine
-------------------------------------	---------------------------------

Definition of the hazards:

Crushing hazard if the unit tips.

Precautions:

If the unit has casters, they must be removed and the unit must always be fastened to a pallet for transport.

Materials and products

Hazards : Risks posed by the materials and products	Hazard zone : Case and fragmentation system
---	---

Definition of the hazards:

Risks posed by the materials and products

The manufacturer is not familiar with every potential product used in the units. The user of the unit is therefore responsible for the protection of the unit and personnel from damages caused by the products being processed.

Precautions:

The user of the unit is responsible for the protection of the unit and personnel from damages caused by the products being processed.

Hazards from operation under pressure

Hazards : Ejection of fluid under pressure	Hazard zone : Unit
--	------------------------------

Definition of the hazards:

Risks of fluid ejection caused by pressurization of the unit.

Precautions:

It is prohibited to operate the unit under a pressure greater than the value indicated on the unit (CE label).

Personnel must remain at least three meters away from the unit during pressurization.

Temperatures

Hazards : burn	Hazard zone : Installation, infeed plate, discharge funnel
--------------------------	--

Definition of the hazards:

Burn hazard to personnel coming in contact with the case of the unit, the door, the infeed plate, or the discharge funnel.

The sides of the unit may become very hot when it is pressurized with steam.

Precautions:

Do not touch the unit during pressurization.

Wait an hour before touching the unit after depressurization, or use appropriate burn protection means.

Electrostatic charge buildup in the powder

Type of hazard(s):	Description/location : electrostatic charge buildup in the powder
---------------------------	---

Definition of the hazards

When the unit is running, there is a risk of an electrostatic charge building up in the powder. The explosion hazard is proportional to the speed of the rotor.

When moving the unit, there is a risk of an electrostatic charge building up in the powder. The explosion hazard is proportional to how fast the unit is moved.

Precautions:

This user manual refers only to the functioning and operation of the unit. The specific hazards resulting from the products to be processed are not covered in this user manual and must be dealt with separately. The person in charge of the unit must clearly state in his own instructions for use the hazards inherent to the products to be processed, as well as the safety instructions specific to them. Personnel operating the unit must follow these instructions to the letter.

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General

Description of the unit

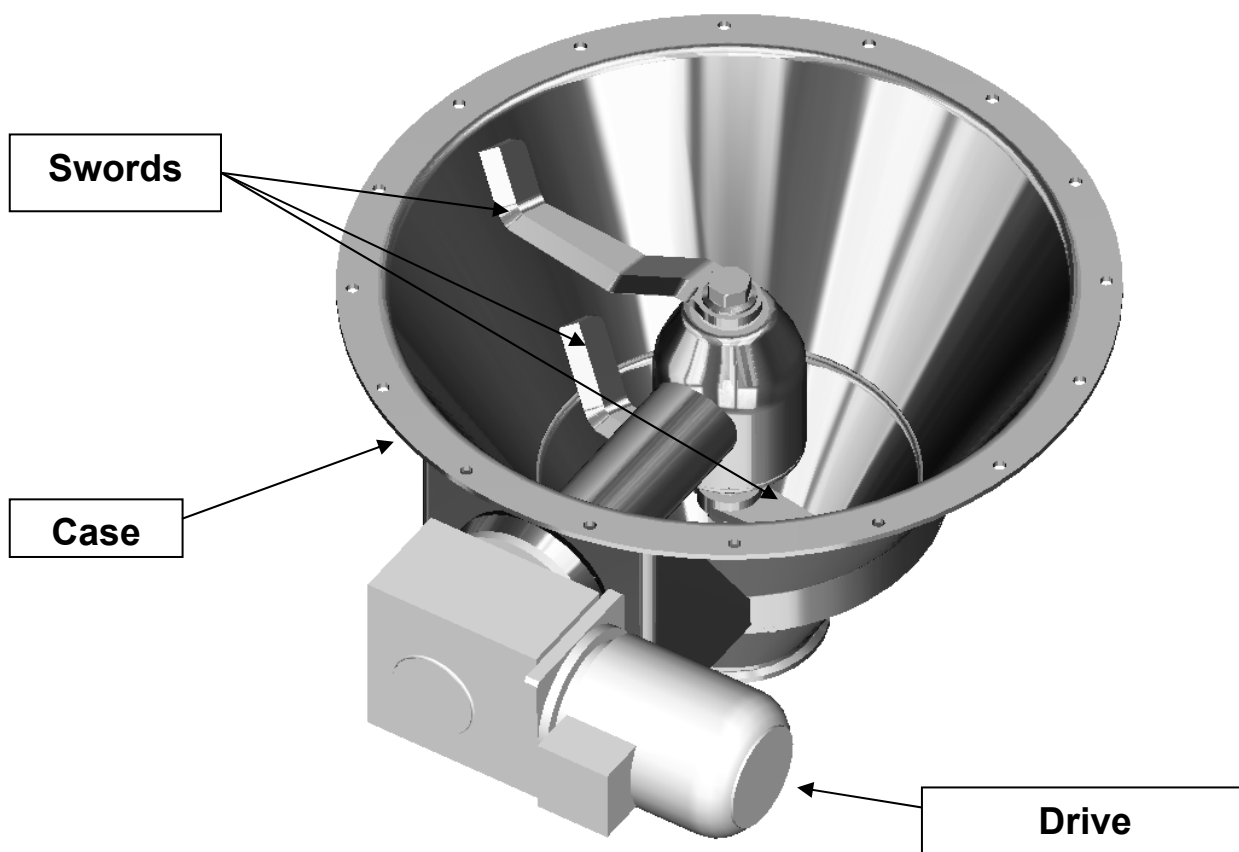
General information

This machine is designed to prevent powder products such as those used in the pharmaceutical, chemical, and food industries from forming bridges in dosing-filling equipment.

Principle components of the unit

- Case
- Cleaning swords (fins)
- Drive, Motor

Diagram



Phases

Setup

Personnel qualification

Licensed mechanic or electrician.

Restrictions

The customer must familiarize himself with the service manual prior to setup.

Operation

Personnel qualification

None

Special requirements

- Thorough knowledge of user manual
- Thorough knowledge of the safety rules

Restrictions

None

Maintenance and cleaning

Improper maintenance of the unit is a contributing factor to accidents such as in-service rupture or danger of electrocution.

The safety regulations in effect in the country where the unit is installed must be followed when performing maintenance tasks.

Prohibited

For personnel who have not received minimum instruction on the cleaning and maintenance of the unit.

Personnel qualification

None

Special requirements

- Thorough knowledge of user manual
- Thorough knowledge of the safety rules

Restrictions

None

Comments

One must still study the instructions for the new machine even if one has knowledge of the operation of an older Frewitt machine.

Repairs

Prohibited

For personnel who are not licensed mechanics and/or electricians.

Personnel qualification

Licensed mechanic or electrician.

Special requirements

- Thorough knowledge of user manual
- Ability to read and understand technical diagrams and folders
- Thorough knowledge of the safety rules
- The proper tools for dismantling and assembly.

Restrictions

The person performing repair work must use the original documentation supplied with the unit and no other.

Only Frewitt parts may be used.

Comments

One must still study the instructions for the new machine even if one has knowledge of the operation of an older Frewitt machine.

Mechanical risks

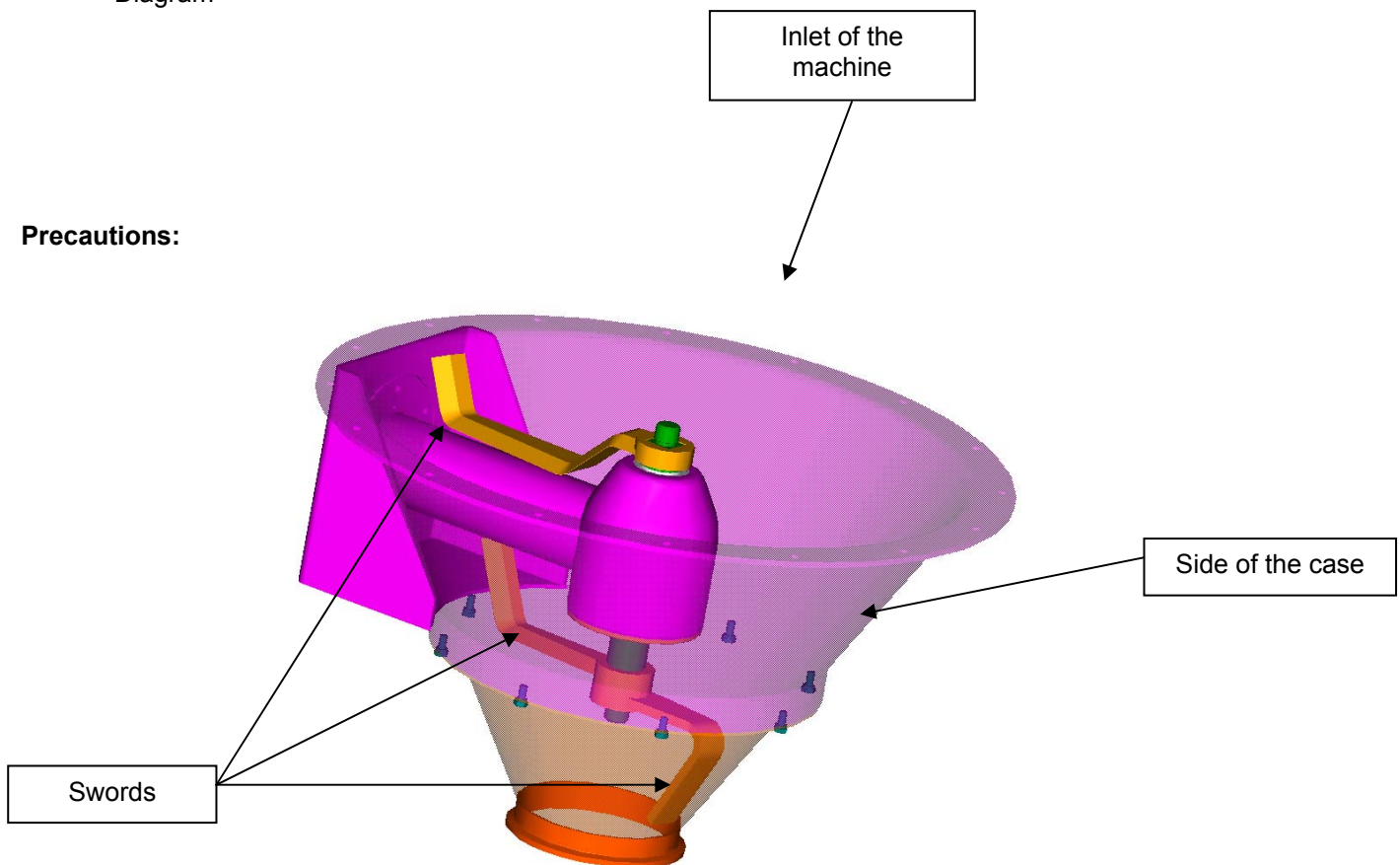
Shearing hazard at the infeed

Hazard(s): Shearing	Danger zone: Case and powder cleaning system
-------------------------------	--

Definition of the hazards:

The introduction of upper limbs inside the powder cleaning system, between the side and the rotating swords, via the infeed of the machine poses a shearing, cutting, or severing hazard.

Diagram



Precautions:

In-Line Machine:

When integrating the machine in the final in-line installation, the user must make sure that adequate safety systems are in place to prevent the introduction of limbs into the danger zone via either the infeed of the machine.

Before performing any maintenance or repair work, all pneumatic or electric lines enabling the ProFi-Sword to be started must be disconnected.

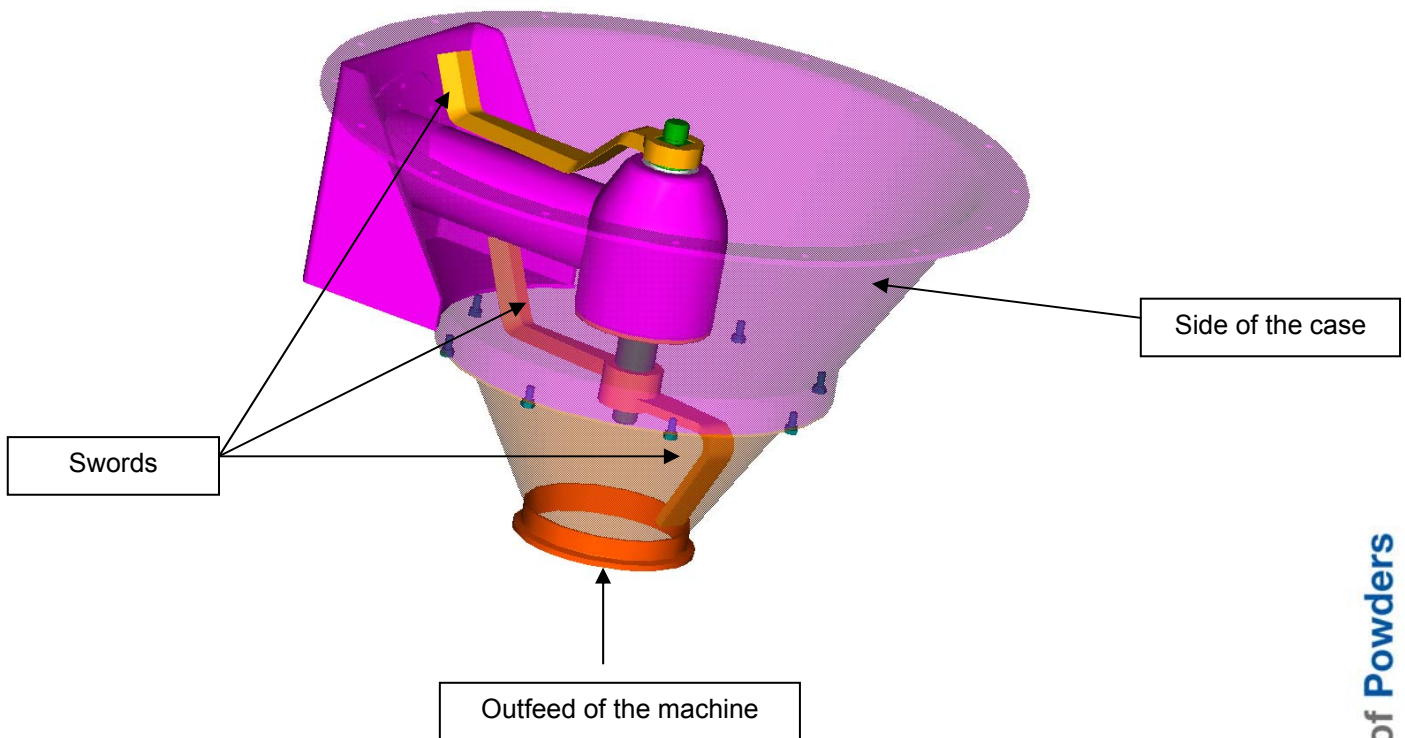
Shearing hazard at the outfeed

Hazard(s): Shearing	Danger zone: Case and powder cleaning system
-------------------------------	--

Definition of the hazards:

The introduction of upper limbs inside the powder cleaning system, between the side and the rotating swords, via the outfeed of the machine poses a shearing, cutting, or severing hazard.

Diagram



Precautions:

"Stand alone" Machine
None.

In-Line Machine:

When integrating the machine in the final in-line installation, the user must make sure that adequate safety systems are in place to prevent the introduction of limbs into the danger zone via either the outfeed of the machine.

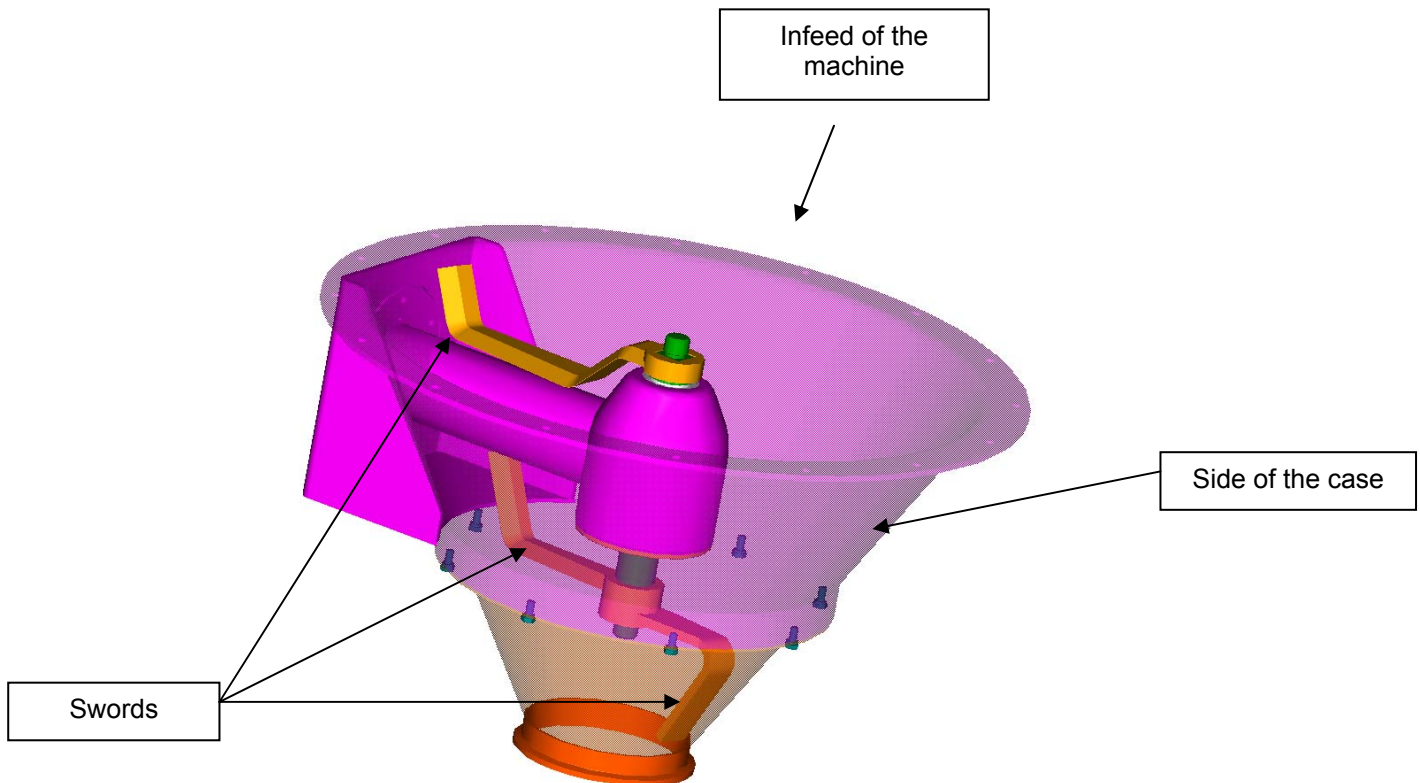
Crushing hazard at the infeed

Hazard(s): Crushing	Danger zone: Case and powder cleaning system
-------------------------------	--

Definition of the hazards:

The introduction of upper limbs inside the powder cleaning system, between the side and the rotating swords, via the infeed of the machine poses a crushing hazard.

Diagram



Precautions:

In-Line Machine:

When integrating the machine in the final in-line installation, the user must make sure that adequate safety systems are in place to prevent the introduction of limbs into the danger zone via either the infeed of the machine.

Before performing any maintenance or repair work, all pneumatic or electric lines enabling the ProFi-Sword to be started must be disconnected.

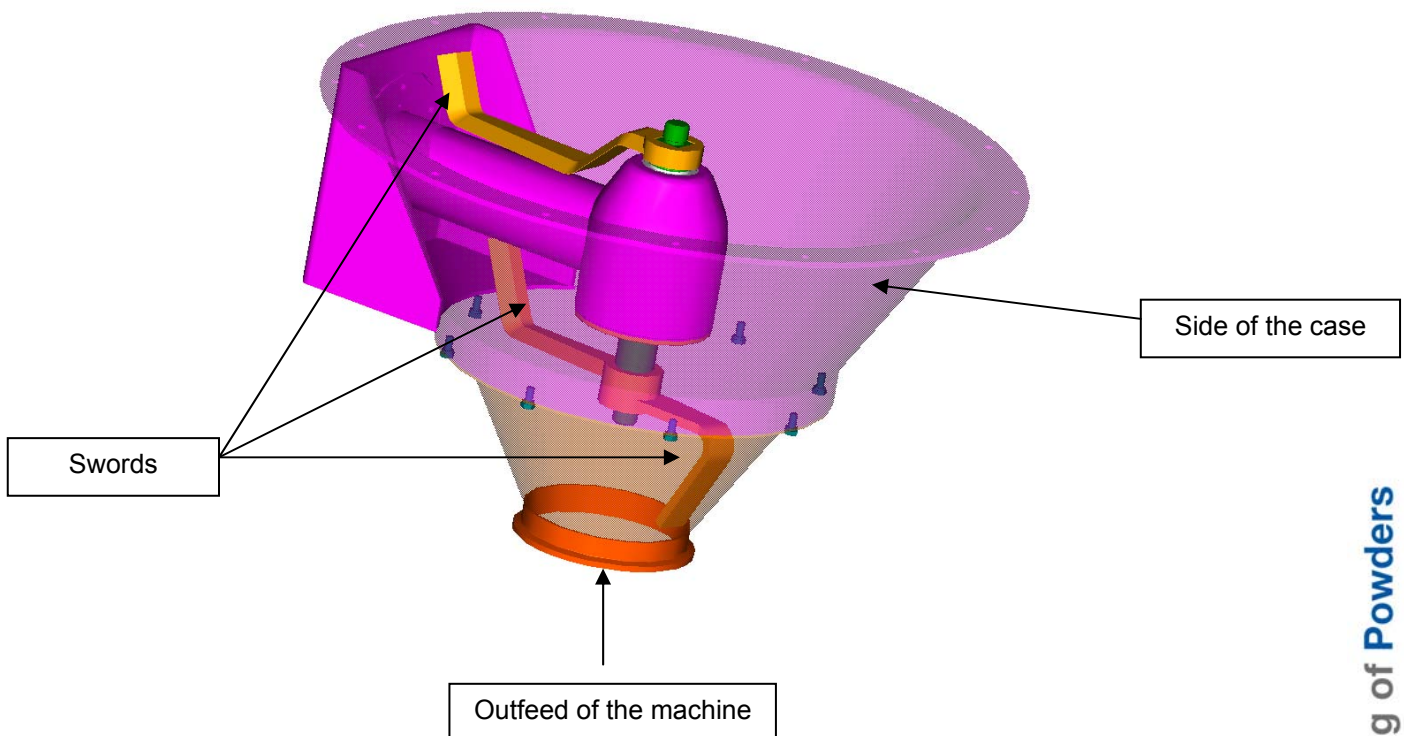
Crushing hazard at the outfeed

Hazard(s): Crushing	Danger zone: Case and powder cleaning system
-------------------------------	--

Definition of the hazards:

The introduction of upper limbs inside the powder cleaning system, between the side and the rotating swords, via the outfeed of the machine poses a crushing hazard.

Diagram



Precautions:

Machine « Stand alone »
None

In-Line Machine:

When integrating the machine in the final in-line installation, the user must make sure that adequate safety systems are in place to prevent the introduction of limbs into the danger zone via either the outfeed of the machine.

Entanglement hazard at the infeed

Hazards:

Mechanical hazards

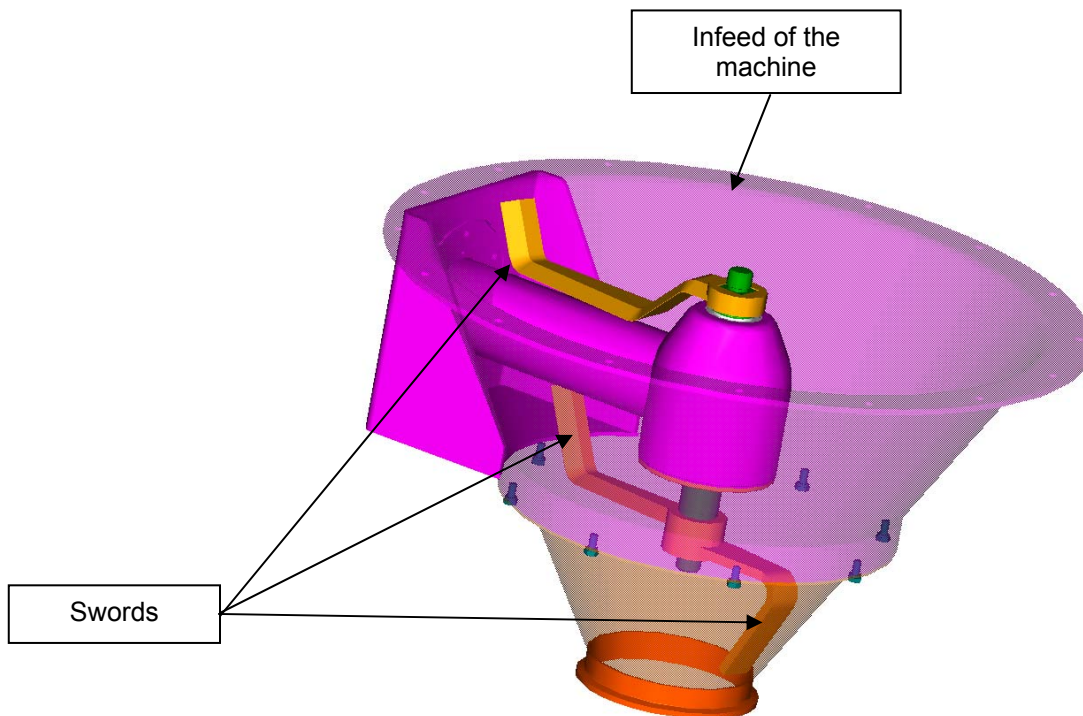
Danger zone:

Case and powder cleaning system

Definition of the hazards:
1.4 Catching, entanglement hazard

There is a catching or entanglement hazard posed by the swords of the ProFi-Sword if hair or clothing is introduced at the infeed into the inside of the machine.

Diagram


Precautions:

In order to avoid all risks of catching or entanglement, the users of the unit must not wear clothing that is too loose. Long hair should be tied back or restrained by some suitable means (hair net, rubber band, etc.).

Before performing any maintenance or repair work, all pneumatic or electric lines enabling the ProFi-Sword to be started must be disconnected.

Entanglement hazard at the outfeed

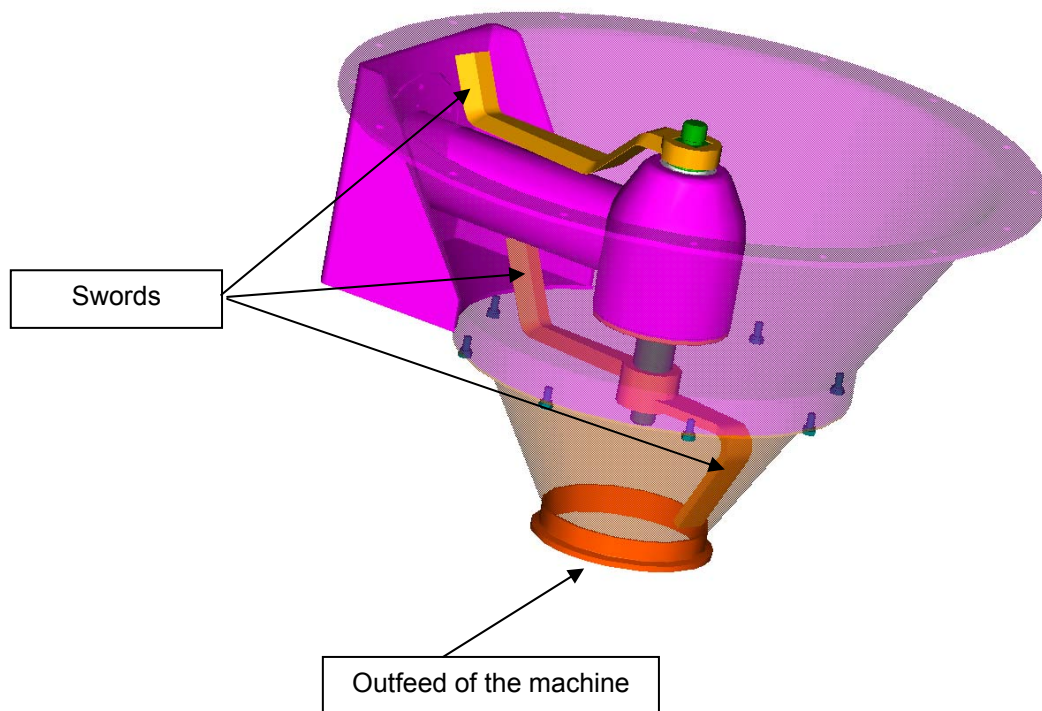
<p>Hazards: Mechanical hazards</p>	<p>Danger zone: Case and powder cleaning system</p>
---	--

Definition of the hazards:

1.4 Catching, entanglement hazard

There is a catching or entanglement hazard posed by the swords of the ProFi-Sword if hair or clothing is introduced at the infeed into the inside of the machine.

Diagram



Precautions:

In order to avoid all risks of catching or entanglement, the users of the unit must not wear clothing that is too loose. Long hair should be tied back or restrained by some suitable means (hair net, rubber band, etc.).

Before performing any maintenance or repair work, all pneumatic or electric lines enabling the ProFi-Sword to be started must be disconnected.

Other risks

Thermal hazard

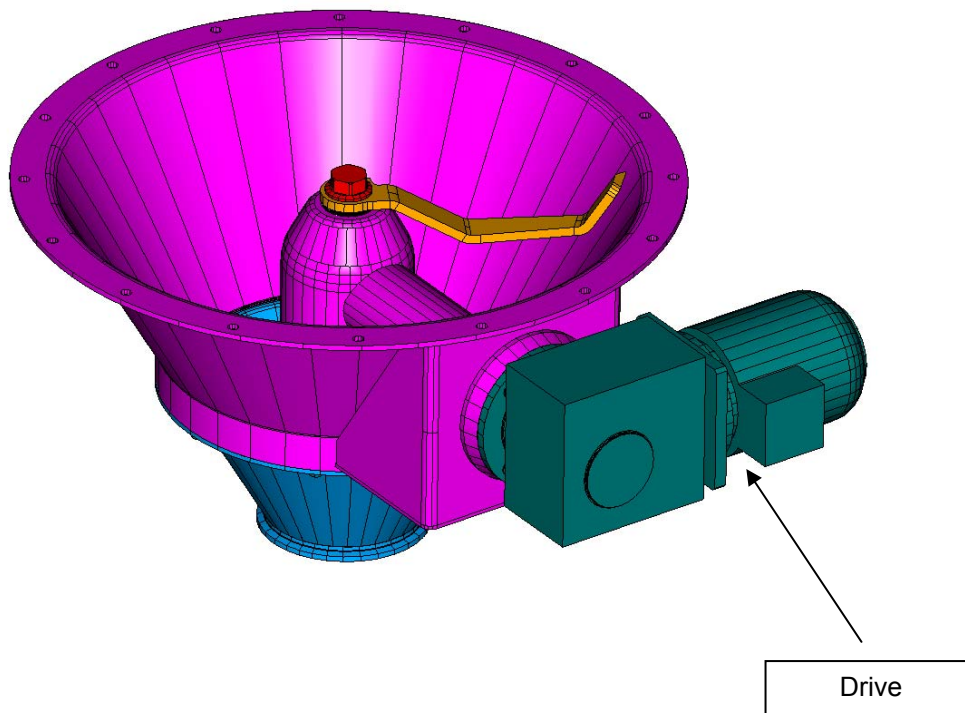
Hazards: Thermal hazards	Danger zone: Drive
------------------------------------	------------------------------

Definition of the hazards:

Burn hazard

After an intensive use of the machine there is a burn hazard, if a person touches the motor or the gear box. The temperature of these elements can reach up to 60-70°C.

Diagram



Precautions:

After an extended use of the machine, the temperature of the drive can be elevated (60-70°C). Therefore we recommend always wearing protective gloves during the operation of the machine.

Abrasion hazard

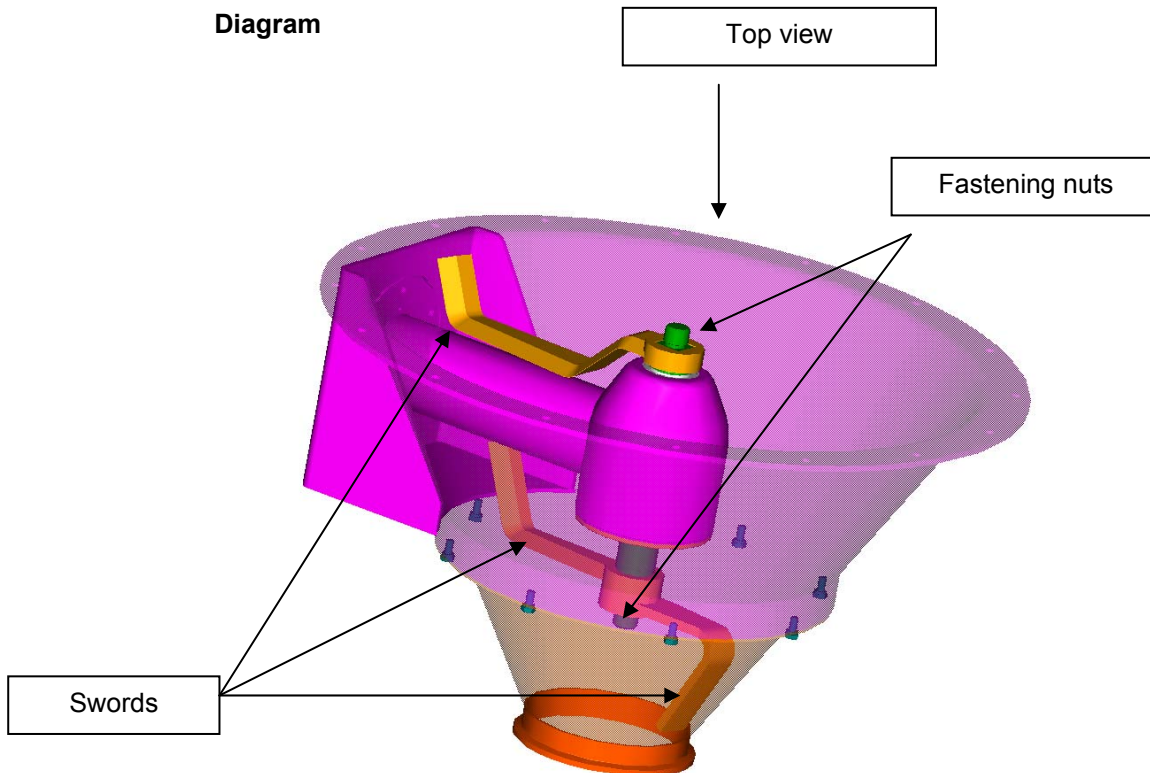
<p>Hazards: Mechanical hazards</p>	<p>Danger zone: Case and swords</p>
---	--

Definition of the hazards:

Abrasion hazard

There is a hazard of abrasion between the two swords and the side of the machine, if the swords were not correctly tightened when mounted or, if during the operation, the sense of rotation of the swords is incorrect and causes the loosening of these fastening nuts.

Diagram



Precautions:

The fastening nuts of the swords must be tightened by a torque wrench with a torque of 50Nm.

Before the setup of the machine, please verify that the swords turn anti-clockwise from top view of ProFi-Sword.

In contrary case inverse the 2 phases of the motor input line.

Crushing hazard of the unit

Hazards: Crushing hazard	Danger zone: Machine
------------------------------------	--------------------------------

Definition of the hazards:

Crushing hazard, if the unit tips.

Precautions:

If the unit has casters, they must be removed and the unit must always be fastened to a pallet for transport.

Materials and products

Hazards: Risks posed by the materials and products	Danger zone: Case and powder cleaning system
--	--

Definition of the hazards:

Risks posed by the materials and products

The manufacturer is not familiar with every potential product used in the units. The user of the unit is therefore responsible for the protection of the unit and personnel from damages caused by the products being processed.

Precautions:

The user of the unit is responsible for the protection of the unit and personnel from damages caused by the products being processed.

Hazards from operation under pressure

Hazards: Ejection of fluid under pressure	Danger zone: Unit
---	-----------------------------

Definition of the hazards:

Risks of fluid ejection caused by pressurization of the unit.

Precautions:

It is prohibited to operate the unit under a pressure greater than the value indicated on the unit (CE label).

Personnel must remain at least three meters away from the unit during pressurization.

Temperatures

Hazards: Burn	Danger zone: Drive
-------------------------	------------------------------

Definition of the hazards:

Burn hazard to personnel coming in contact with the case of the unit, the door, the infeed plate, or the discharge funnel.
The sides of the unit may become very hot when it is pressurized with steam.

Precautions:

Do not touch the unit during pressurization.
Wait an hour before touching the unit after depressurization, or use appropriate burn protection means.

Electrostatic charge buildup in the powder

Hazard(s):	Designation: electrostatic charge buildup in the powder
-------------------	---

Definition of the hazards:

When the unit is running, there is a risk of an electrostatic charge building up in the powder. The explosion hazard is proportional to the speed of the rotor.

When moving the unit, there is a risk of an electrostatic charge building up in the powder. The explosion hazard is proportional to how fast the unit is moved.

Precautions:

This user manual refers only to the functioning and operation of the unit. The specific hazards resulting from the products to be processed are not covered in this user manual and must be dealt with separately. The person in charge of the unit must clearly state in his own instructions for use the hazards inherent to the products to be processed, as well as the safety instructions specific to them. Personnel operating the unit must follow these instructions to the letter.

START-UP

Avant la première mise en service, vérifiez les points suivants:

- Contrôler visuellement l'état de l'installation.
- Contrôler la fixation de l'installation. (peut varier selon l'exécution de l'installation)
- Contrôler le branchement électrique et pneumatique.
- Contrôler la mise à terre si nécessaire.
- Contrôler la fixation du bâti, la bride clamp doit être bien serrée.
- Si l'outillage est monté, contrôler que celui-ci est monté correctement selon chapitre 5.
- Si les accessoires sont montés, contrôler que ceux-ci sont montés correctement selon chapitre 5.

Prüfen Sie folgende Punkte vor der ersten Inbetriebnahme:

- Den Zustand der Anlage optisch kontrollieren
- Die Befestigung der Anlage kontrollieren. (Kann je nach Ausführung ändern)
- Kontrolle des elektrischen und pneumatischen Anschlusses.
- Die Erdung kontrollieren, sofern notwendig.
- Die Befestigung des Gehäuses kontrollieren, der Clamp-Spannring muss fest angezogen sein.
- Sofern die Werkzeuge montiert sind, kontrollieren, ob diese korrekt montiert sind, gemäß Kapitel 5.
- Wenn die Aufsätze montiert sind, kontrollieren, ob diese korrekt montiert sind, gemäß Kapitel 5.

Before first start-up, check the following points:

- Visually control of the installation status.
- Control installation fastening. (May vary according installation's execution)
- Control electric and pneumatic connections.
- Control the grounding if necessary.
- Control the fixing of the housing, the support clamp must be well tight.
- If tools are assembled, control that these are properly assembled according to Chapter 5.
- If accessories are assembled, control that these are properly assembled according to Chapter 5.

Lors du branchement de l'installation au réseau électrique, contrôlez la tension qui doit correspondre à celle indiquée sur la plaquette signalétique.

Beim Anschluss der Anlage an das Stromnetz ist die Spannung zu überprüfen. Sie muss mit den Angaben des Typenschildes der Maschine übereinstimmen.

Check voltage before the installation is connected to the electric network. the voltage must be identical to the indication shown on the type plate.



Le DelumpWitt ne peut pas fonctionner sans convertisseur de fréquence



Die DelumpWitt kann ohne Frequenzumrichter nicht funktionieren



The DelumpWitt can not operate without frequency converter

Le sens de rotation de l'entraînement doit correspondre à la flèche se trouvant sur le bâti.

Die Drehrichtung muss mit dem Pfeil auf dem Gehäuse übereinstimmen.

The direction of rotation of the rotor motion has to correspond to the arrow shown on the housing.

Votre installation est prévue pour

Ihre Installation ist mit...

Your installation is to supply with

400V 50Hz 3LNPE 32A

... zu speisen

Si les installations équipées d'un variateur de fréquence sont branchées sur un réseau électrique équipé d'un disjoncteur différentiel à courant de défaut, celui-ci doit être adapté (>30mA).

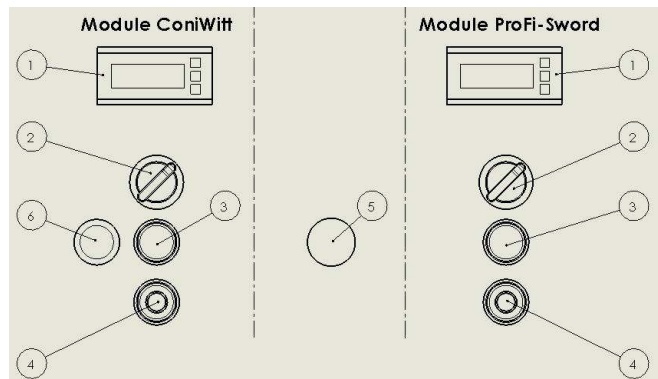
Wenn die Anlagen, die mit einem Frequenzumformer ausgestattet wurden, auf einem Stromversorgungsnetz angeschlossen werden, das mit einem Fehlerstromschutzschalter ausgestattet wurde, muß dieser angepaßt werden (>30mA).

If the installations equipped with a frequency converter are connected to an electrical network including a residual current circuit-breaker, this one must be adapted (>30mA).

OPERATING INSTRUCTIONS

Controls

1. Speedometer
2. Speed control
3. Start
4. Stop
5. Emergency off
6. Gas monitor

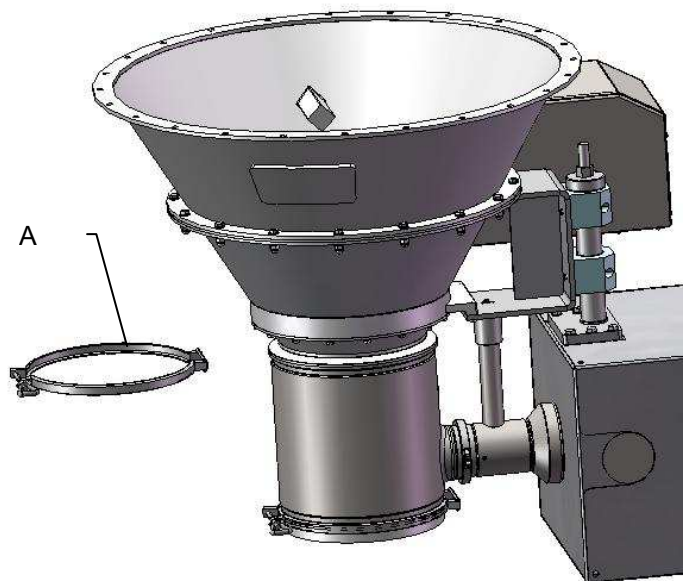


Removing the ConiWitt module

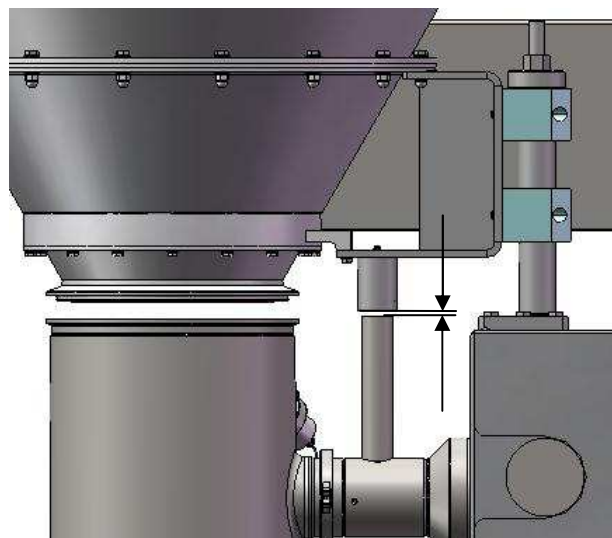
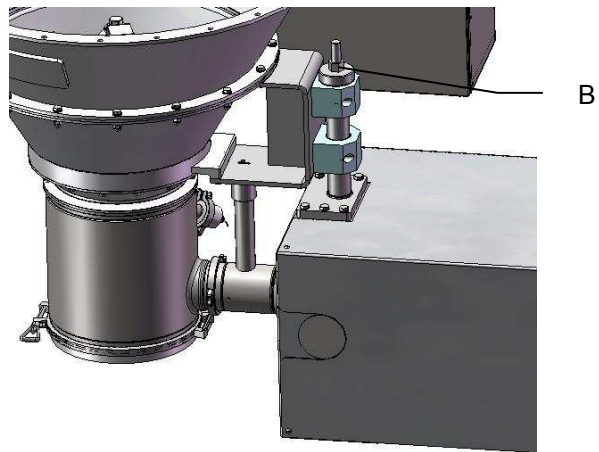


Before performing any work on this unit, it must be turned off and all electric and pneumatic lines must be disconnected. The operator is responsible for preventing risks of contamination by the product.

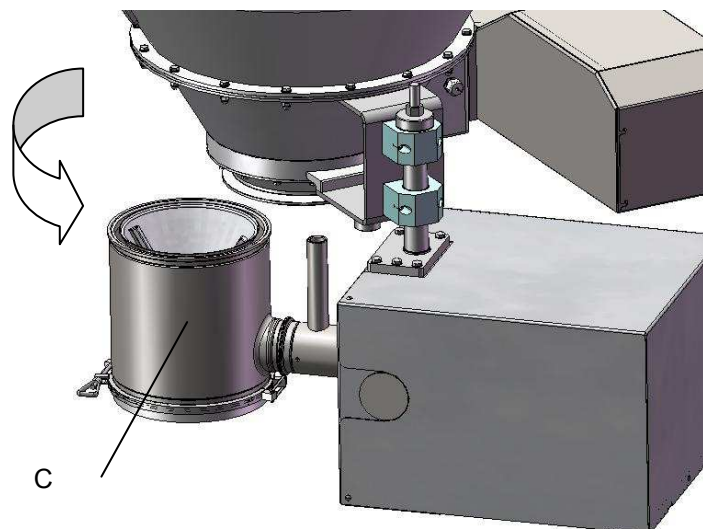
- Remove the clamp (A)



- Loosen the height adjustment screw (B) until the 2 modules are separated



- Pivot the ConiWitt module (C)



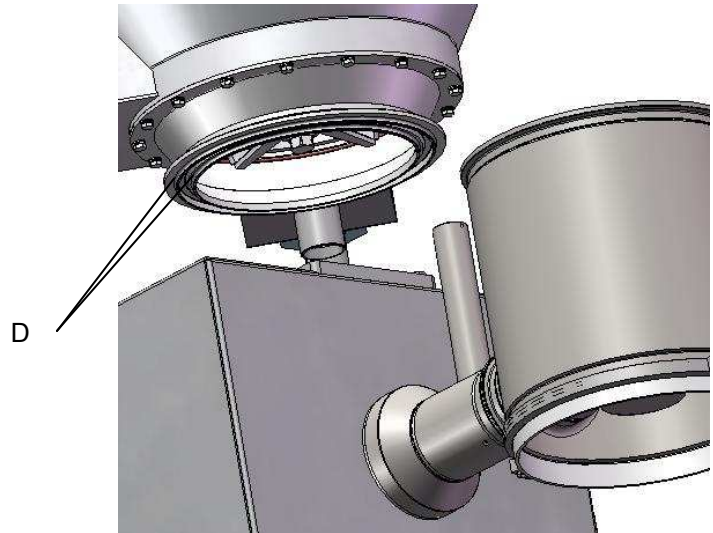
- See chapter 5 –Instructions for operating the ConiWitt

Installing the ConiWitt module

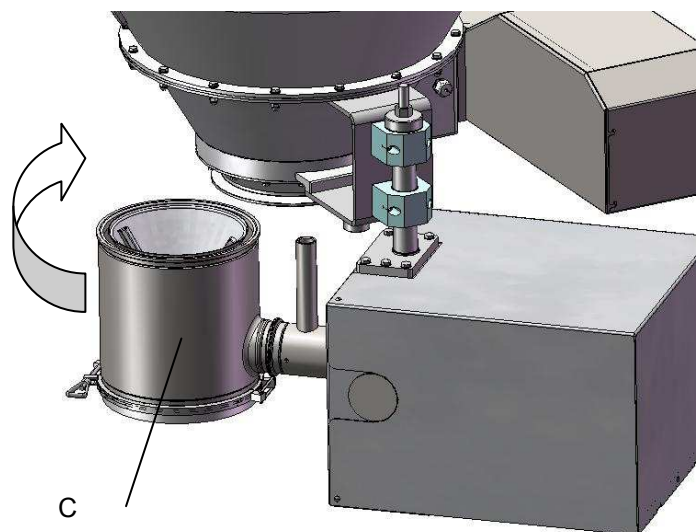


Before performing any work on this unit, it must be turned off and all electric and pneumatic lines must be disconnected.
The operator is responsible for preventing risks of contamination by the product.

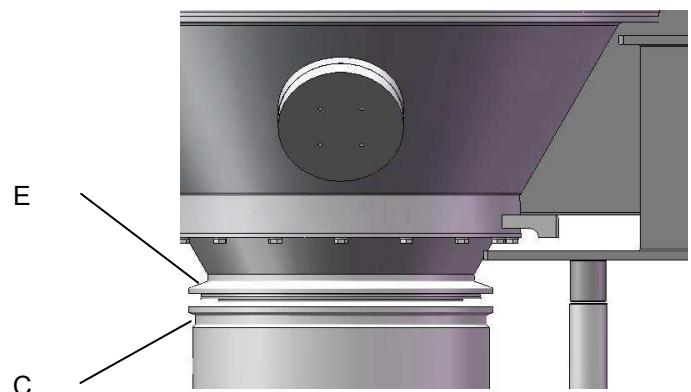
- Check to make sure that the seals (D) are in place and correctly installed.
- See chapter 5 – Installing/removing accessories



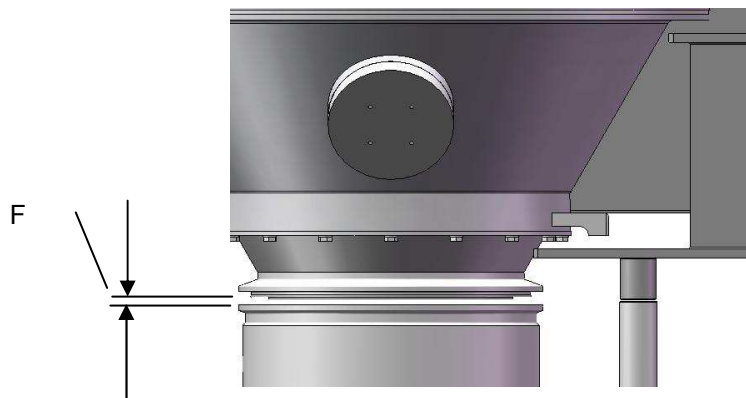
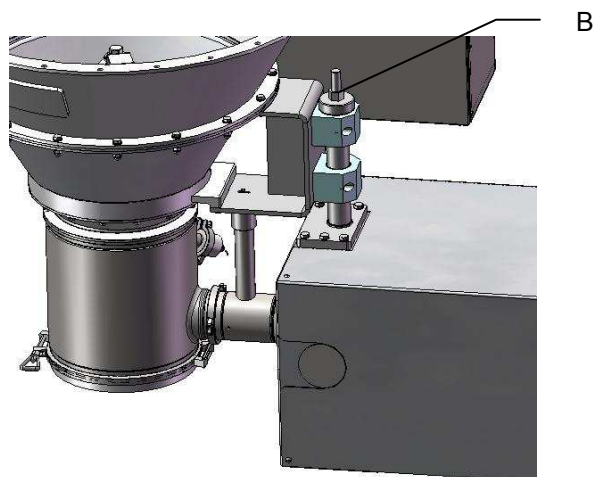
- Pivot the ConiWitt module (C)



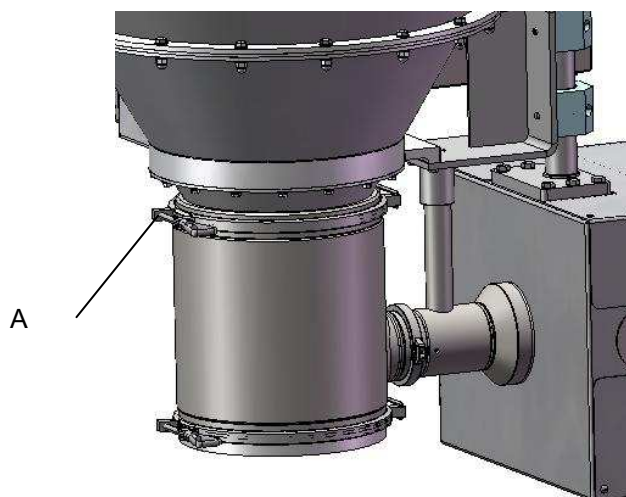
- Align the ConiWitt module (C) with the ProFi-Sword module (E)



- Manually hold the 2 modules in alignment and tighten the screw (B) until the play (F) between the modules is 1 to 2 mm



- Install the clamp (A) as shown in the instructions in chapter 5 - Installing/removing accessories



Voir documents suivants.

Siehe folgende Dokumente.

See following documents

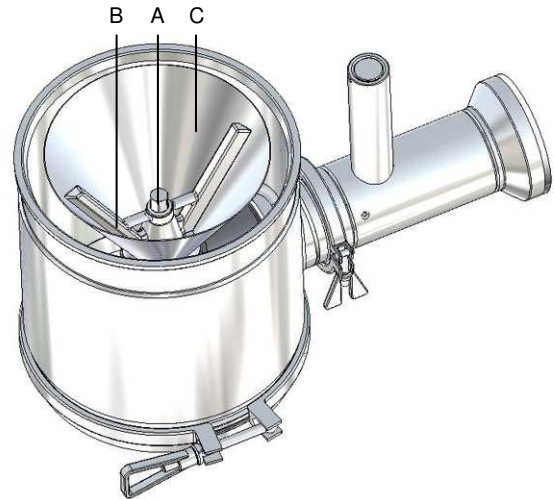
Dismantling the machinery



Prior to any operation, turn off the installation and disconnect the power and pneumatic supplies.

The user must eliminate any risk of contamination by the product.

- Remove the inlet funnel as per chapter 5 - Removal of inlet/outlet funnel.
- Unscrew the nut (A) on the rotor (B) with the socket wrench supplied with the installation.
- Remove the rotor (B).
- Remove the sieve (C).



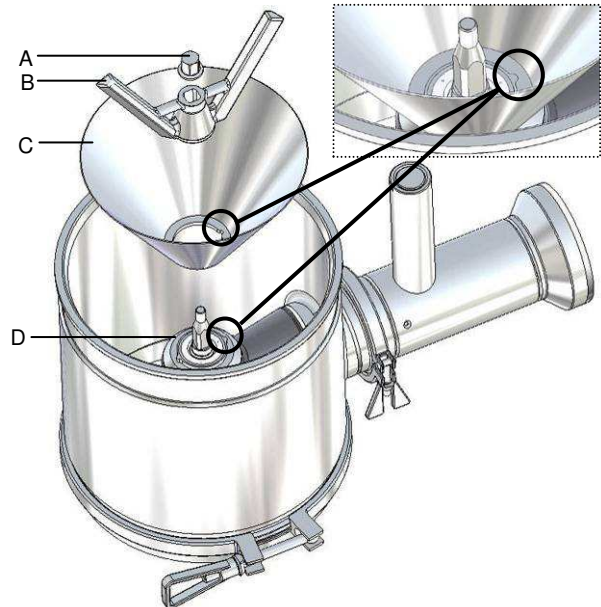
Assembling the machinery



Prior to any operation, turn off the installation and disconnect the power and pneumatic supplies.

The user must eliminate any risk of contamination by the product.

- Attach the sieve (C) by sliding it onto the transmission bearing (D). Ensure the sieve is correctly fitted by checking that the guide pins on the bearing match up with the grooves in the sieve.
- Slide the rotor (B) onto the drive shaft.
- Screw the nut (A) on the rotor (B) and tighten with the socket wrench supplied while holding the rotor with one hand.



How to install the tools plus (optional) temperature sensor



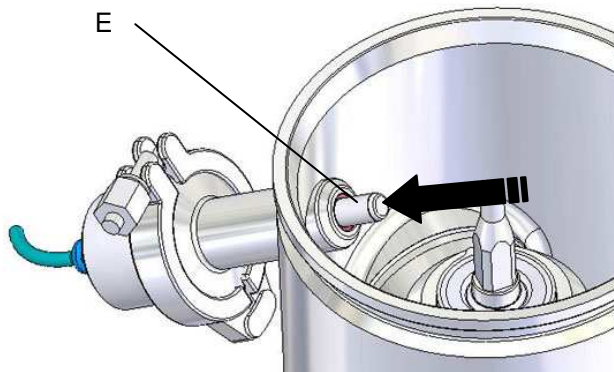
Before performing any work on the unit, it must be turned off and disconnected from the electrical and pneumatic power supplies. The user must avoid any risk of the product contaminating the mechanism.

- Press on the sensor (E) in order to make sure it slides freely.

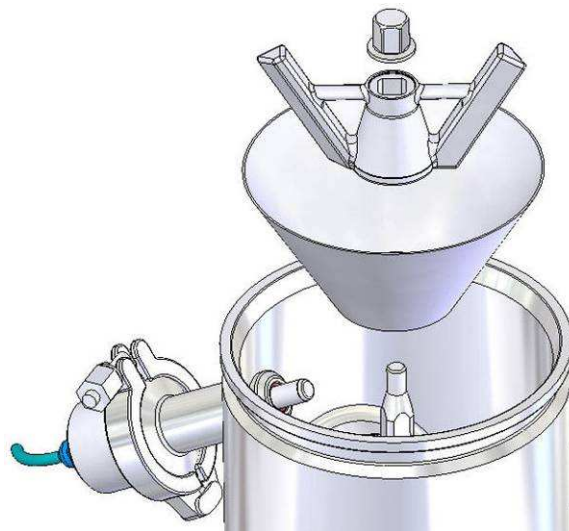


If the sensor does not slide freely, it must be dismantled and cleaned, see chapter 6 – Cleaning instructions.

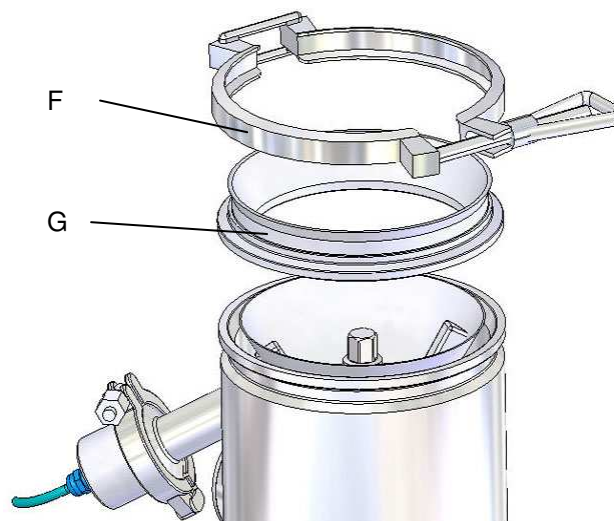
Contact Frewitt customer service if after cleaning the sensor still will not slide, see chapter 5 – Troubleshooting.



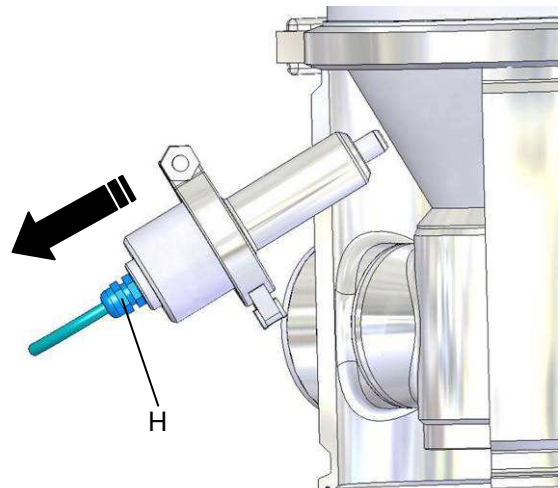
- Install the tools according to chapter 5 – Installing the tools.



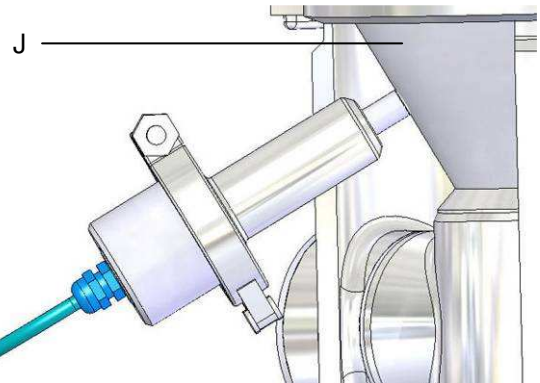
- Install the accessories of the inlet funnel (G) and tighten the clamp (F).



- Grasp the sensor by the cable gland (H) and pull it back to the stop position.



- Release the sensor and let it come to rest against the sieve (J).



Never push the sensor against the sieve. Doing so could damage the sieve.



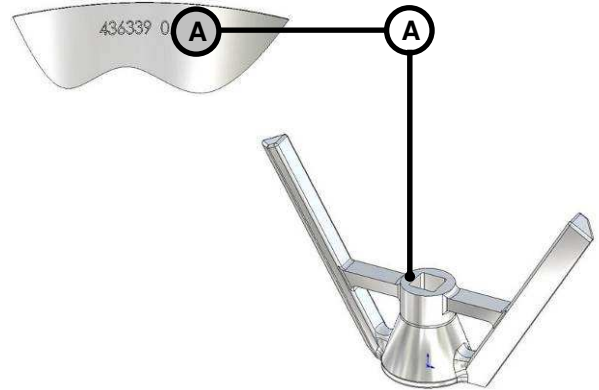
If the screen (or rasp) is not installed in the body, and the machine is running; the rotor will damage the detector.

Compatibility the conical grating plates to the rotor

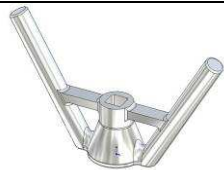



It is essential that the rotor type matches the etching on the cone-shaped rough file as shown in the drawing below, so as to maintain the play between the rotor arm and the cone-shaped rough file.

The etching on the conical grating plates must match the etching on the rotor.



Compatibility the conical screens to the rotor

	Wet crushing (wc), round arms	Dry crushing (dfc), square arms
All conical screens may be fitted with the rotors without etching and with round or square arms.		

Compatibility conical wire screen sieve – to the rotor

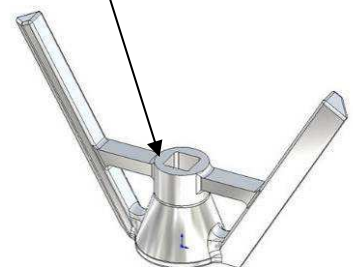
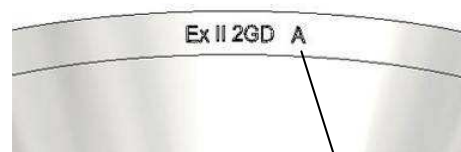


The rotor type must match the etching on the conical sieve/screen as in the drawing below in order to allow the proper play between the rotor arm and the conical sieve/screen.

The etching on the conical wire screen sieves must match the etching on the rotor.



The sieves/screens must not be used in category 0 and 20 explosion zones.



Dismantling the inlet/outlet funnel



Prior to any operation, turn off the installation and disconnect the power and pneumatic supplies.
The user must eliminate any risk of contamination by the product.

- Loosen the mountings of the funnel to be removed.
- Remove the funnel (A) from the housing (may vary according to the design of the installation).
- Be careful not to lose the two O-Ring seals on the inlet funnel (A) and the clamp seal on the outlet funnel (A).



Assembling the inlet/outlet funnel



Prior to any operation, turn off the installation and disconnect the power and pneumatic supplies.
The user must eliminate any risk of contamination by the product.

- Check the two **O-Rings** between the housing and the inlet funnel (E), and the **clamp seal** between the frame and the outlet funnel (E) are present and in good condition. Replace them if necessary.

Montage the seal

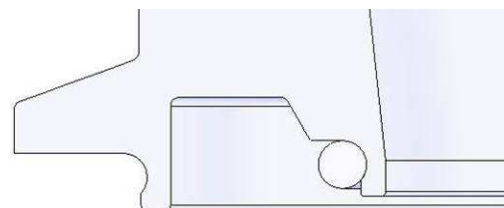
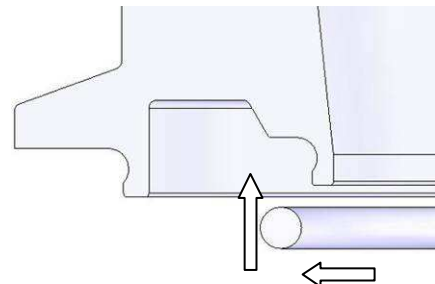
- Extend the seal
- Insert the seal
-



The seal must be mounted properly. He assured the tightness and prevents all contacts between the rotor and the sieve.

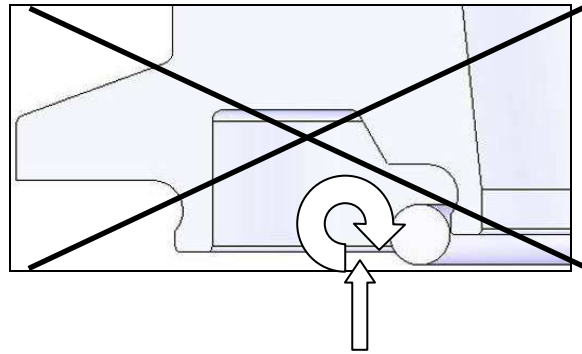


The installation should not function without this seal. The friction between the rotor and the sieve can cause sparks and the risk of explosion is not excluded

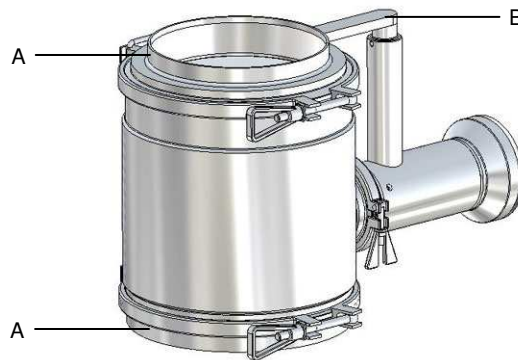




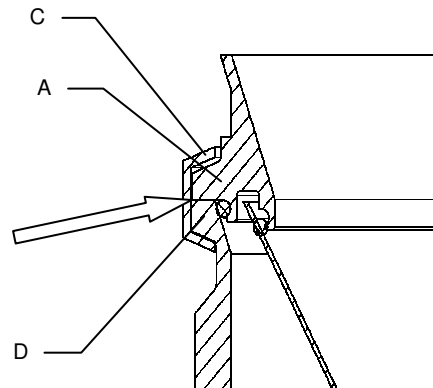
Do not roll the seal because it distorts and stepped out of his groove.



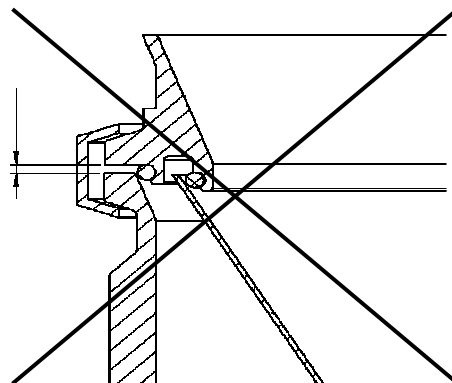
- Place the funnel to be fitted (A) in position (may vary according to the design of the installation).
- Check that safety fitting (B) is correctly aligned with the detector.



- Tighten the clamp (C) until the inlet funnel (A) is in full contact with the side of the housing flange (D).



- It should not be a space between the inlet funnel (A) and the housing (D).



Dismantling the housing



Prior to any operation, turn off the installation and disconnect the power and pneumatic supplies.

The user must eliminate any risk of contamination by the product.



Before loosening the clamp to remove the frame, make sure the frame is appropriately supported so it doesn't fall.

Weight of complete frame with bearing:

ConiWitt 150: 20kg

ConiWitt 200: 24kg

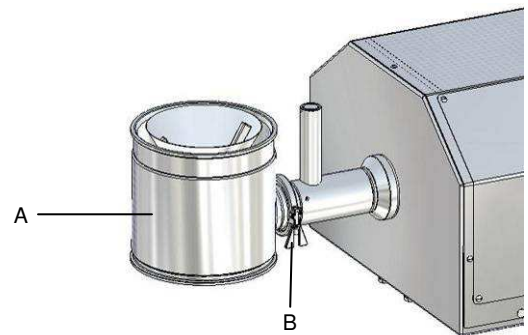
ConiWitt 250: 35kg



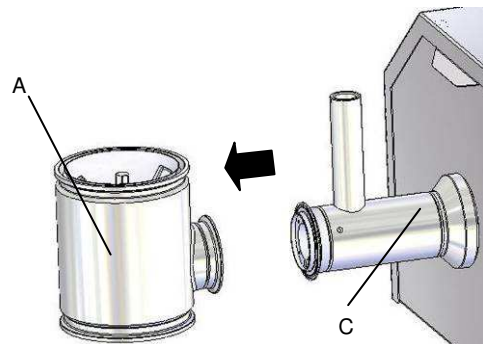
For installations conforming to the ATEX standard:

When dismantling the frame, be particularly careful not to damage the temperature sensor fitted in the arm.

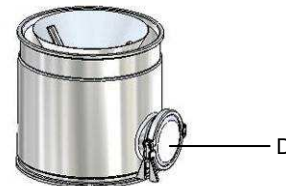
- Remove the inlet/outlet funnels as explained in Section 5 – Removing the inlet/outlet funnel.
- Ensure the housing (A) is appropriately supported so that it doesn't fall when the clamp (B) is loosened.
- Loosen and remove the clamp (B) while holding the housing (A) in place.



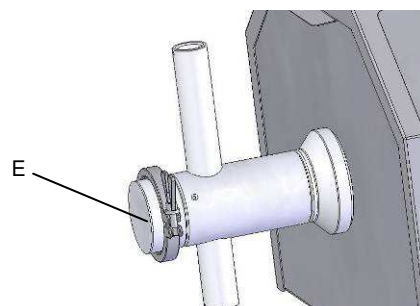
- Carefully pull the housing (A) off the arm (C).



- Fit the cleaning cover (D) on the frame.



- Fit the cleaning cover (E) on the arm (supplied as an optional extra). (auf Wunsch geliefert, siehe Kapitel 6 –Reinigungs-ausrüstung).



Assembling the frame



Prior to any operation, turn off the installation and disconnect the power and pneumatic supplies.

The user must eliminate any risk of contamination by the product.



Before loosening the clamp to remove the housing, make sure the frame is appropriately supported so it doesn't fall.

Weight of complete frame with bearing:

ConiWitt 150: 20kg

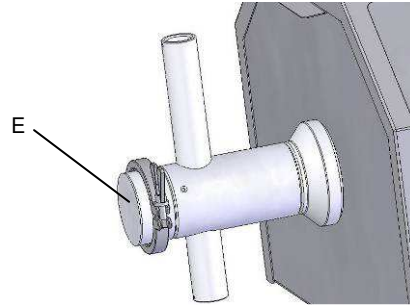
ConiWitt 200: 24kg

ConiWitt 250: 35kg

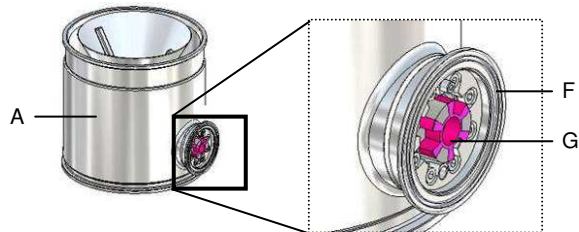
- Remove the cleaning cover (D) from the housing (A).



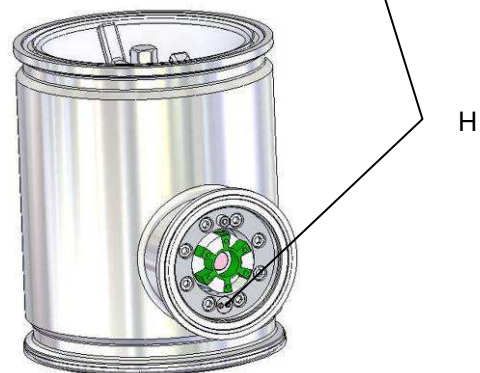
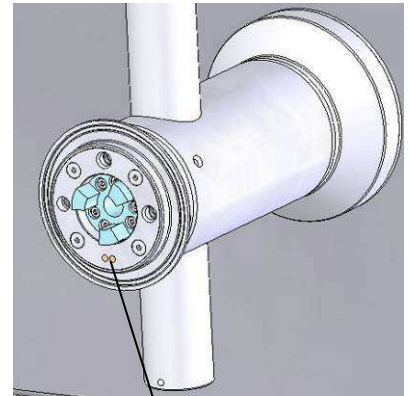
- Remove the cleaning cover (E) from the arm (supplied as an optional extra).



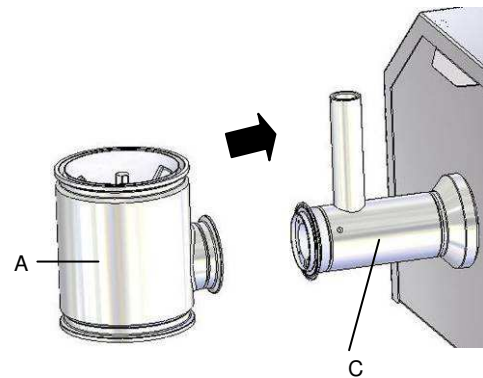
- Check the DN-80 clamp seal (F) between the housing (A) and the arm is present and in good condition. Change if necessary.
- Check the transmission star (G) is fitted to the drive shaft and is in good condition. Change it if necessary, following the directions in Section 7 – Checking and Replacing Elastomer Stars on the Transmission Universal Joint.



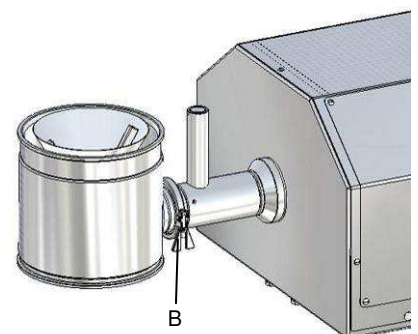
- For installations with temperature sensor in the bearing, control and clean, if necessary, contact (H) into the arm and the head.



- Hold the housing (A) horizontally, in line with the arm (C).
- Carefully push the housing onto the arm.



- Attach and tighten the clamp (B).
- Fit the inlet/outlet funnels as per Section 5 - Fitting the inlet/outlet funnels.

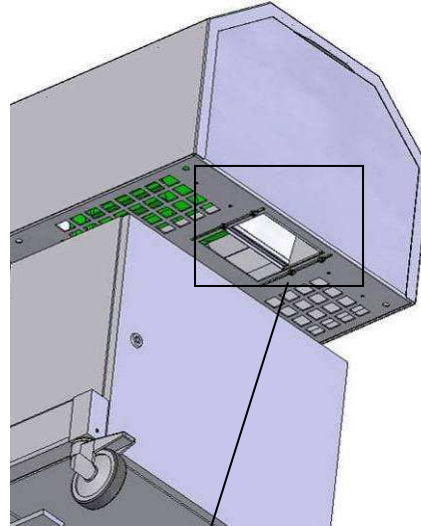


Dismantling the suction filter **only for No Ex systems**



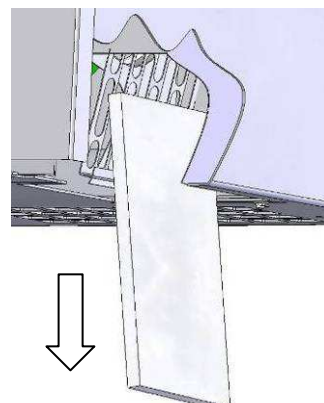
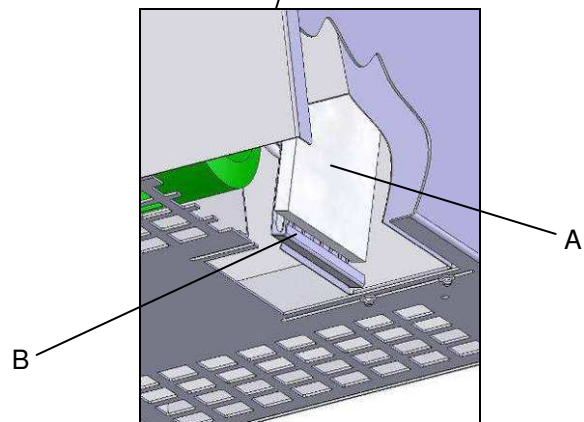
Before any action is taken, the system must be stopped and the power and gas supplies must be turned off.

The user must eliminate any risk of contamination by the product.



- Push the filter (A) upwards to free it from its holder (B).
- Pull the filter (A) downwards to remove it.

For information on how often the filter should be changed, see Section 7 – Maintenance.

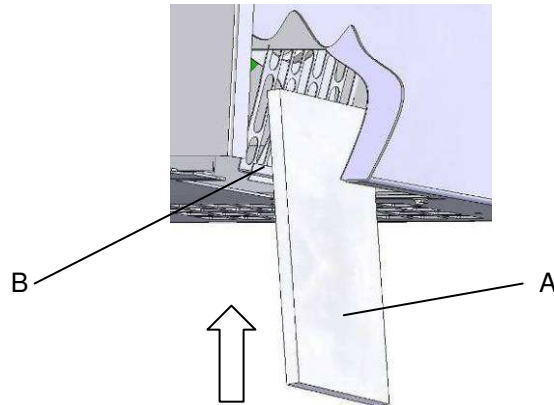


Assembling the suction filter

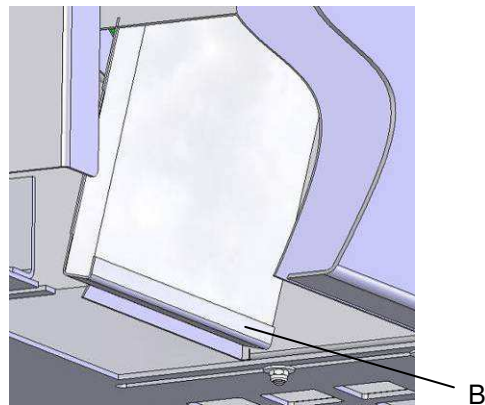
Before any action is taken, the system must be stopped and the power and gas supplies must be turned off.

The user must eliminate any risk of contamination by the product.

- Inspect the condition of the filter (A).
- Insert the filter (A) into its holder (B).



- Push the filter (A) upwards to secure it in its holder (B).

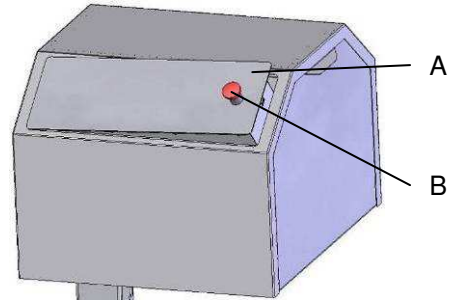


Dismantling the protective casing



Before any action is taken, the system must be stopped and the power and gas supplies must be turned off.
The user must eliminate any risk of contamination by the product.

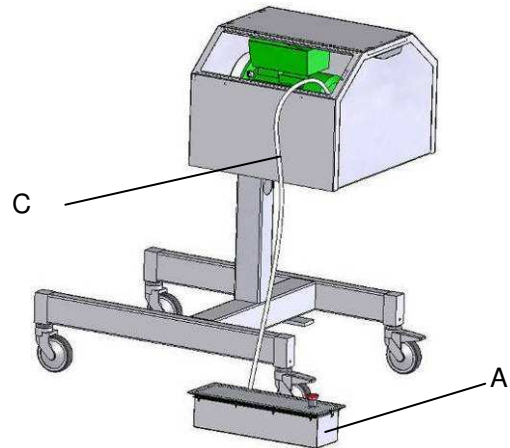
- Free the control box (A) by pulling the control knob (B) located on the right-hand side (may vary depending on the system configuration).



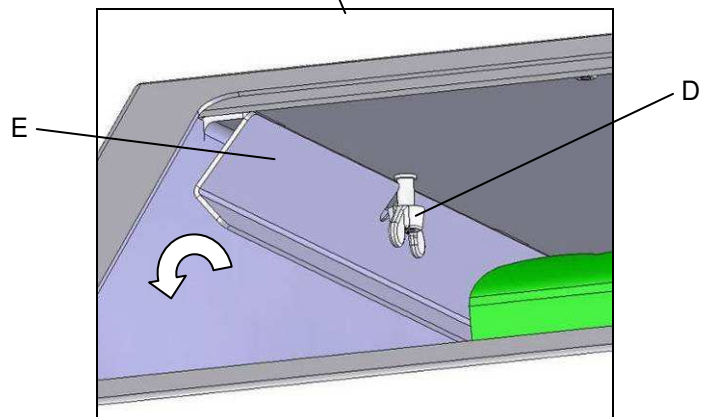
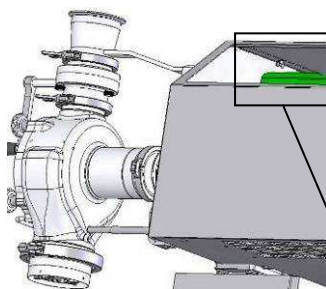
- Place the control box (A) to one side.



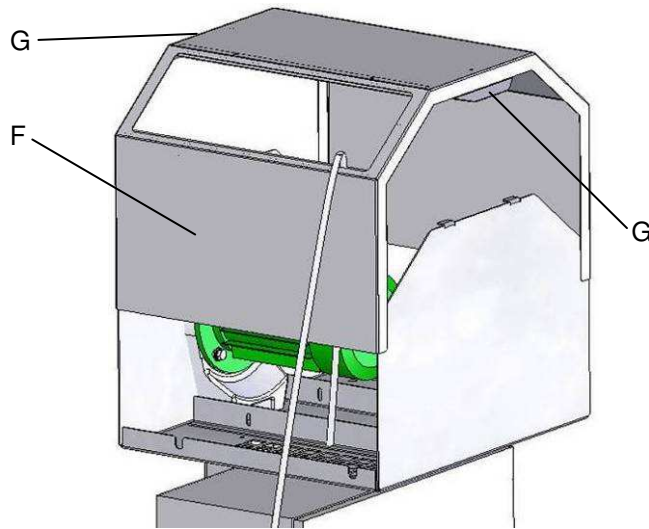
Take the necessary precautions to ensure the electric cable (C) is not damaged.



- Unscrew the nut (D) but do not lift it out.
- Remove the attachment bracket (E) by pivoting it.
- Do the same on the other side of the protective casing.



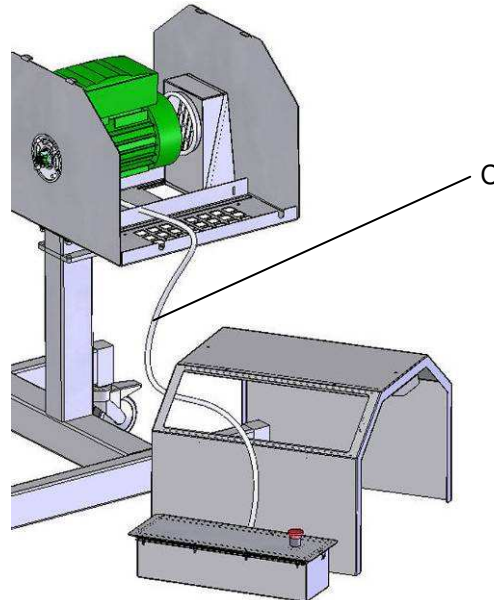
- Lift the cover (F) using the handles (G).



- Place the cover to one side.



Take the necessary precautions to ensure the electric cable (C) is not damaged.

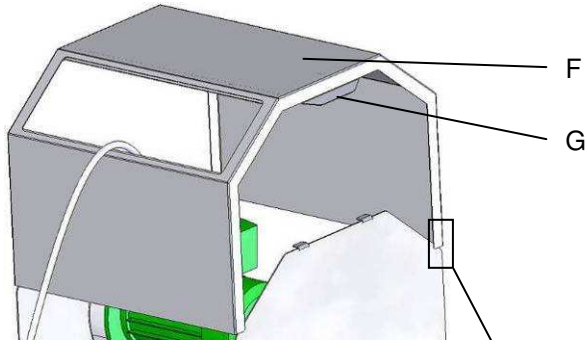


Assembling the protective casing

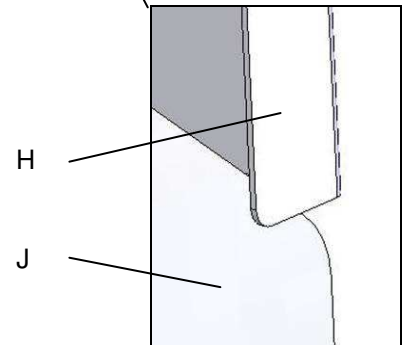


Before any action is taken, the system must be stopped and the power and gas supplies must be turned off.
The user must eliminate any risk of contamination by the product.

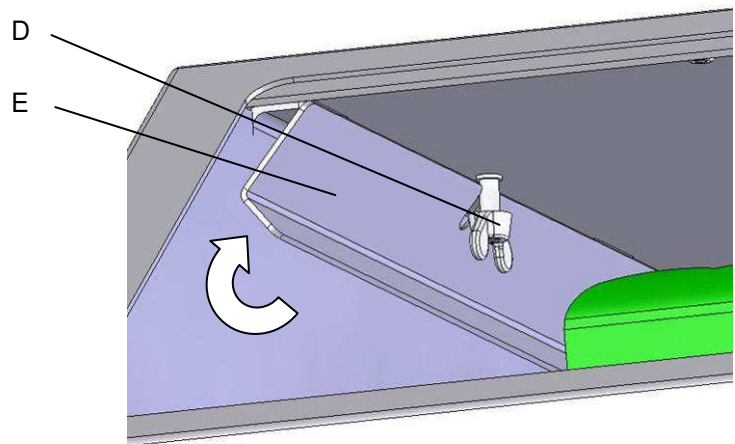
- Slide the cover (F) back on using the handles (G).
- Check that the edges (H) of the cover are outside the fixed casing (J).



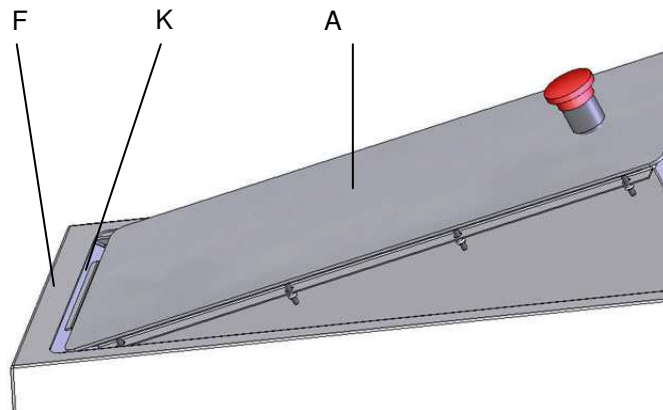
Take the necessary precautions to ensure the electric cable (C) is not damaged.



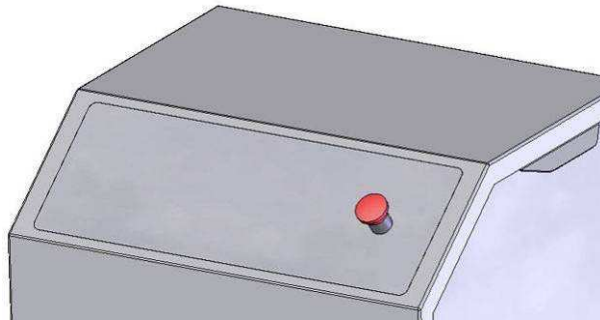
- Mount the attachment bracket (E) by pivoting it.
- Screw in the nut (D).
- Do the same on the other side of the protective casing.



- Insert the control box (A) into the cover (F) by passing the tab (K) through the opening in the cover.
- Place the surplus electric cable inside the protective casing, taking all necessary precautions to ensure it is not damaged.



- Press on the right-hand side of the box so that it clicks into place.

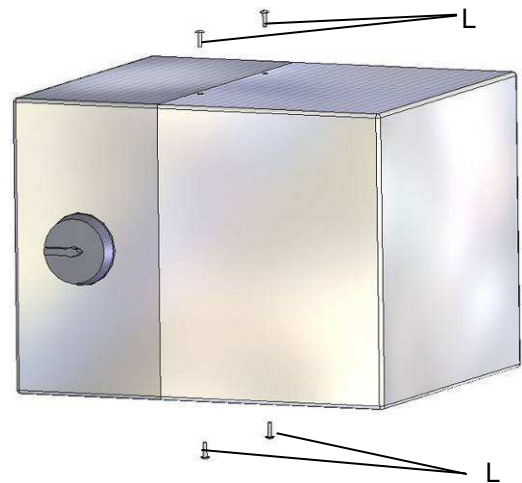


Assembling / Dismantling the little protective casing (optional)

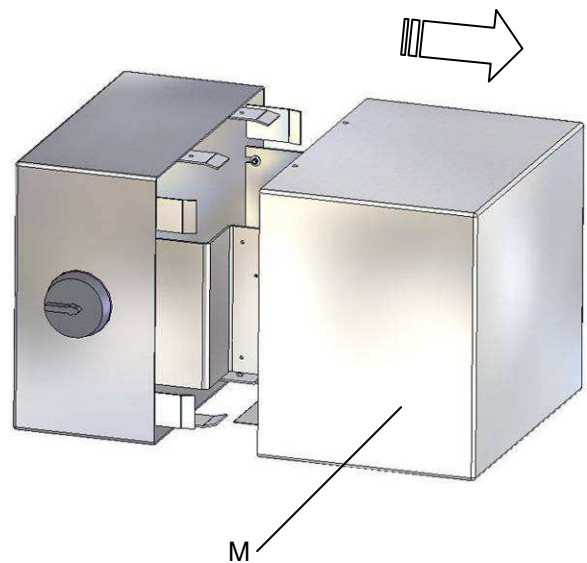


Before any action is taken, the system must be stopped and the power and gas supplies must be turned off.
The user must eliminate any risk of contamination by the product.

- Unscrew the 4 screws (L)



- Remove the cover removable (M)



Tools disassembly



After prolonged use of the machine, the temperature of the drive system may be relatively high (60-70°C). Always wear protective gloves when using the machine.

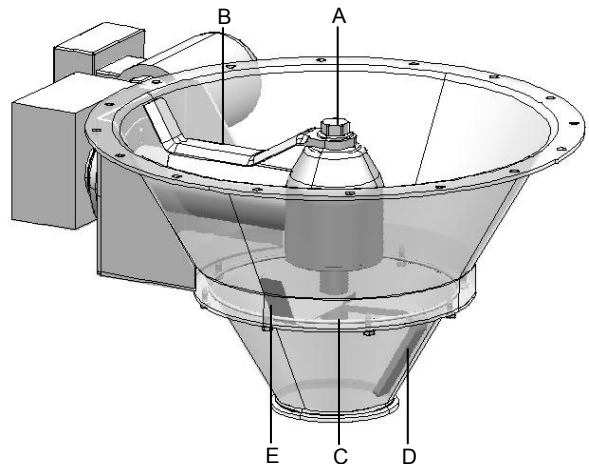


The plant must be turned off and the power and air pressure supplies disconnected before any maintenance work is commenced. The user must eliminate any risk of product contamination.



The tools disassembly requires full access to the ProFi-Sword inlet and outlet.

- Unscrew the nut (A) in an anti-clockwise direction using a socket wrench
- Remove the upper blade (B)
- Unscrew the nut (C) in a clockwise direction using a socket wrench
- Remove the second lower blade (D) by pivoting it to release it from the shaft square end
- Remove the first lower blade (E)



Tools Assembly

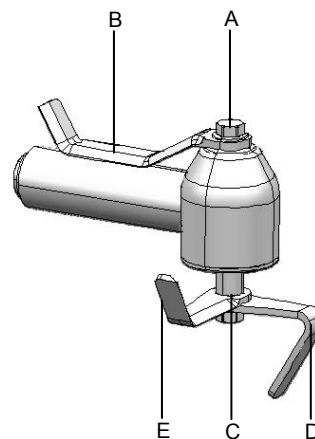


The plant must be turned off and the power and air pressure supplies disconnected before any maintenance work is commenced. The user must eliminate any risk of product contamination.



The tools assembly requires full access to the ProFi-Sword inlet and outlet.

- Place the first lower blade (E) as in the diagram on the right
- Place the second lower blade (D) at 90° to the first lower blade (E) as shown in the diagram on the right
- Screw the nut (C) in an anti-clockwise direction using a socket wrench to the torque specified in section 7 – “Torque”
- Place the upper blade (B) at 180° to the second lower blade (D) as shown in the diagram on the right
- Screw the nut (A) in a clockwise direction using a socket wrench to the torque specified in section 7 – “Torque”

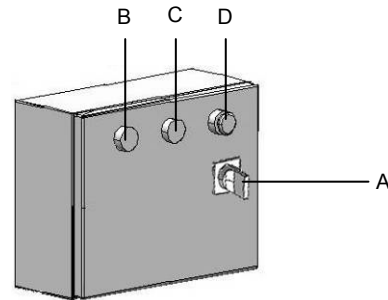


Controls

- (A) Main switch
- (B) On
- (C) Off
- (D) Emergency stop

The position, number, and type of control components, as well as the dimensions and position of the control box may vary depending on the set-up of the plant.

If the ProFi-Sword is part of a plant, the controls may be integrated into a central control panel. In this case, refer to the user manual for the plant.



Les tamis et les râpes sont des pièces de rechange.

Die Siebe und die Raspeln sind Ersatzteile.

The sieve and the rasps are spare parts.



Leur remplacement est nécessaire lorsque, par exemple :

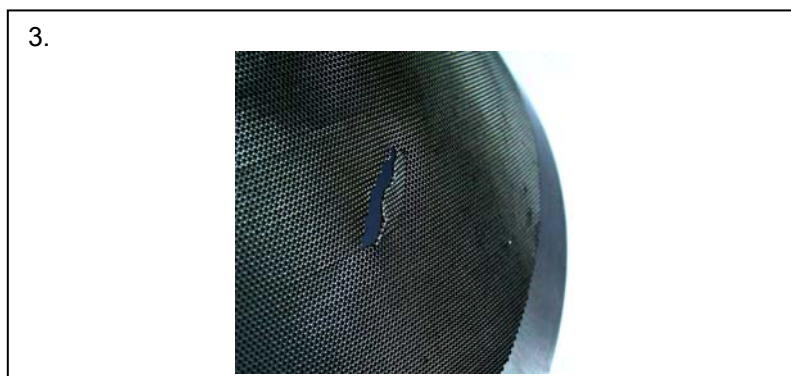
Ihre Ersatz ist nötig wenn, zum Beispiel :

Their replacement is required when, for example :

1. La pièce est déformée
2. La pièce présente des griffures importantes
3. La pièce est endommagée

1. Das Stück ist deformiert
2. Das Stück hat grosse Schrammen
3. Das Stück ist beschädigt

1. The part is deformed
2. The part has significant scratches
3. The part is damaged



Vitesse Geschwindigkeit Speed	HammerWitt-Lab	ConiWitt-150	ConiWitt-200
m/s	rpm	rpm	rpm
0.0		0	0
0.5		70	50
1.0		130	90
1.5		200	140
2.0		270	190
2.5		330	230
3.0		400	280
3.5		460	330
4.0		530	370
4.5		600	420
5.0		660	470
5.5		730	510
6.0		800	560
6.5	650	860	610
7.0		930	660
7.5		990	700
8.0	800	1060	750
8.5		1130	800
9.0		1190	840
9.5		1260	890
10.0	990	1330	940
10.5		1390	980
11.0		1460	1030
11.5		1530	1080
12.0	1190	1590	1120
12.5		1660	1170
13.0		1720	1220
13.5		1790	1260
14.0	1390	1860	1310
14.5		1920	1360
15.0		1990	1400
15.5		2060	1450
16.0	1590	2120	1500

Vitesse Geschwindigkeit Speed	HammerWitt-Lab	ConiWitt-150	ConiWitt-200
m/s	rpm	rpm	rpm
16.5		2190	1540
17.0		2250	1590
17.5		2320	1640
18.0	1790	2390	1690
18.5			1730
19.0			1780
22	2190		
24	2390		
26	2590		
28	2790		
30	2980		
32	3180		
34	3380		
36	3580		
38	3780		
40	3980		
42	4180		
44	4380		
46	4580		
48	4770		
50	4970		
52	5170		
54	5370		
56	5570		
58	5770		
60	5970		
60.3	* 6000		
62	6170		
64	6370		
66	6570		
68	6760		
70	6960		
70.4	* 7000		

*** Remarque**

6000 rpm pour exécution ATEX / für ATEX-Ausführung / for execution ATEX
 7000 rpm pour exécution normale / für normale Ausführung / for normal execution

L'installation ne démarre pas

Déclencher l'interrupteur principal.

Contrôler que l'installation est branchée à une source d'énergie électrique.

Contrôler que l'arrêt d'urgence est déclenché.

Contrôler que toutes les sécurités sont bien positionnées par rapport au détecteur.

Enclencher l'interrupteur principal.

Démarrer l'installation.

Die Anlage läuft nicht an

Hauptschalter ausschalten.

Kontrollieren, ob die Anlage an einer Stromquelle angeschlossen ist.

Kontrollieren, ob der Not-Aus-Schalter nicht betätigt ist.

Kontrollieren, ob alle Sicherheiten gegenüber den Sensoren richtig positioniert sind.

Hauptschalter einschalten.

Installation einschalten.

The installation does not start

Switch off the main switch.

Check that the installation is connected to a electric power supply.

Check that the emergency stop is started.

Check that all safety measures are in place regarding the detector.

Switch on the main switch.

Start the installation.

L'installation ne démarre toujours pas

Pour les installations avec palier ventilés et l'option système de distribution de gaz, contrôler que l'arrivée de gaz est branchée.

Contrôler la pression et le débit de la distribution de gaz.

Pour les installations avec sonde température dans le palier, contrôler l'état des contacts entre le bras et le palier.

Die Anlage läuft immer noch nicht an

Für die Anlagen mit gasespülter Dichtung und der Option Gas-Versorgung, muss kontrolliert werden, ob die Gaszufuhr angeschlossen ist.

Den Druck und die Durchflussmenge der Gas-Versorgung kontrollieren.

Für die Anlagen mit Temperaturfühler in dem Lager, kontrollieren den Zustand der Kontakte zwischen dem Arm und dem Lager.

The installation still does not start

For installations with ventilated bearing and the gas supply option, check connection of the gas input.

Check the gas supply's pressure and flow.

For installations with temperature sensor into the bearing, check the good condition of the contacts between the arm and the bearing.

L'installation ne démarre toujours pas

Contacter le service après-vente de Frewitt.

Die Anlage läuft immer noch nicht an

Kontaktieren Sie den Frewitt Kundendienst.

The installation still does not start

Contact Frewitt after-sales service.

FREWITT SA
phone ++41 / 26 460 74 52 (direct)
fax ++41 / 26 460 74 01
e-mail: customerservice@frewitt.com

CLEANING



“Cleaning Recommendation”

Granules

CIP-Cleaning & Disinfection

PHARMACOS

Application / Method:

Milling

Typical residues:

Granules







Specific application area:

Solid production

Company: Location: Department

Frewitt SA 1763 Granges Paccot

Cleaning interval: After each production batch

Cleaning Procedure & Chemicals	%	°C	min.	Notes
 Pre-cleaning water	-	-	-	Pre-cleaning either with water or steam depending on the solubility or melting point of residue Demineralized water improves the removal of TiO ₂ -residues
 Alkaline Cleaning P3-cosa® CIP 95	2.0	80	20	
 Intermediate Rinse water	-	-	-	Rinse until pH- neutral
 Acid Cleaning P3-cosa® CIP 72	1.5	60	20	We recommend P3-cosa CIP 77 in case of Iron oxide residues (10% P3-cosa CIP 77 // 85°C // 20 min)
 Intermediate Rinse water	-	-	-	
 Final Rinse water	-	-	-	Until quality assurance accepted level

Remark:

USA:

Use P3-cosa CIP 95NA instead of P3-cosa CIP 95

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For any more assistance, do not hesitate to contact your responsible Ecolab service.
Ecolab Technical Pharmacos Support: +49 211 9893729



Important additional remarks!

Due to the diversity of materials and applications the information given below represents only a non binding guideline and is not intended to supersede the manufacturers specifications, limitations and recommendations. It is compulsory to follow the manufacturers limitations, especially concerning pH and temperature stability of the materials. The cleaning process should be individually optimised.



"Cleaning Recommendation"

Manual cleaning

CIP-Cleaning & Disinfection

PHARMACOS

Application / Method:

Small equipment

Typical residues:

All kind of residues

Specific application area:

Manual cleaning

Company:



Frewitt SA

Location:

1763 Granges Paccot

Department

Cleaning interval: After each production batch

Cleaning Procedure & Chemicals	%	°C	min.	Notes
 Pre Rinse water	-	-	-	
Neutral cleaning P3-cosa® FOAM 40	1.0	≥ 45		
 Final Rinse water	-	cold	-	Until quality assurance accepted level

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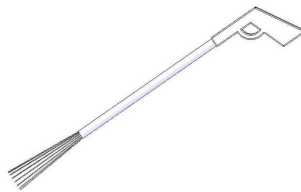
For any more assistance, do not hesitate to contact your responsible Ecolab service.



Important additional remarks!

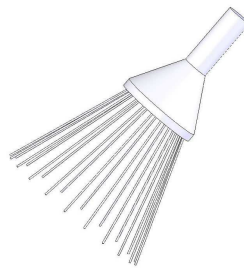
Due to the diversity of materials and applications the information given below represents only a non binding guideline and is not intended to supersede the manufacturers specifications, limitations and recommendations. It is compulsory to follow the manufacturers limitations, especially concerning pH and temperature stability of the materials. The cleaning process should be individually optimised.

Key to the symbols



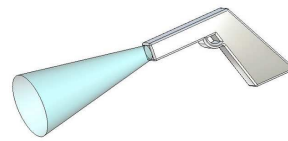
High pressure (> 4 bar)
water jet

Min. cleaning distance
50 cm



Low pressure (\leq 4 bar)
water jet

Min. cleaning distance
50 cm



Compressed air

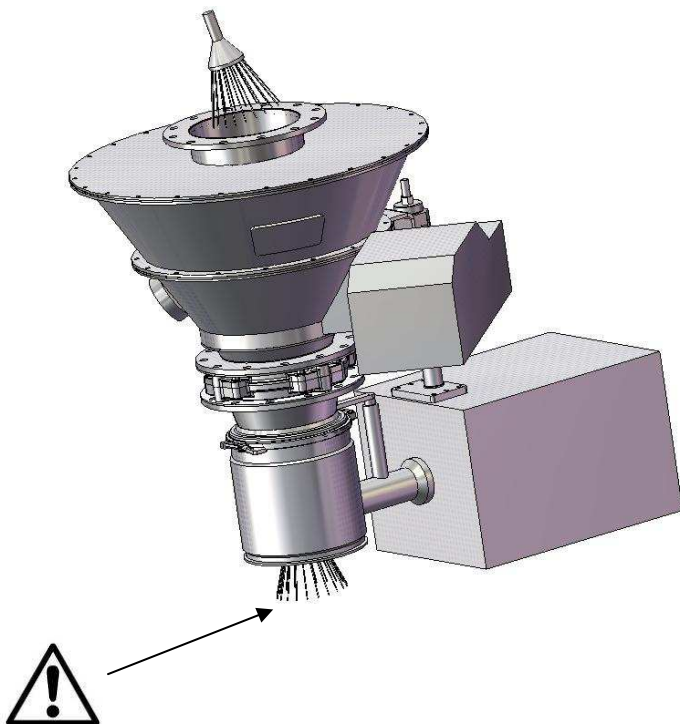
Cleaning the unit

- Flush the unit with water
- Catch the water at the outlet of the case



The water must be able to drain from the case

- Start the unit and let it run for a few minutes
- Turn the unit off



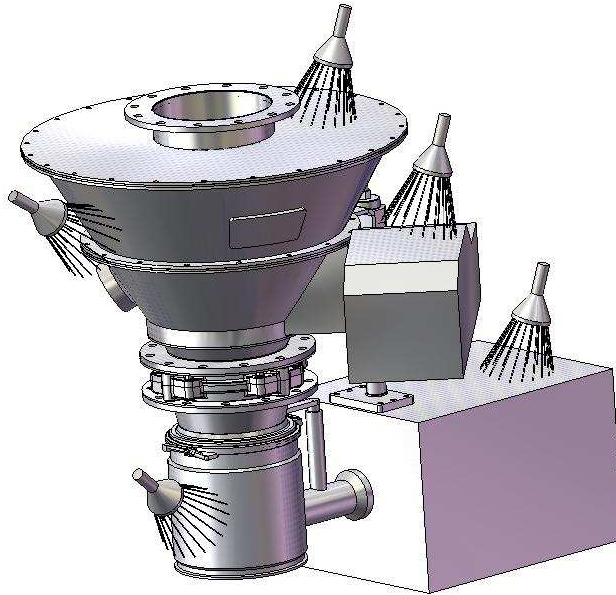


Before performing any work on this unit, it must be turned off and the electric and pneumatic lines must be disconnected.
The operator is responsible for preventing risks of contamination by the product.

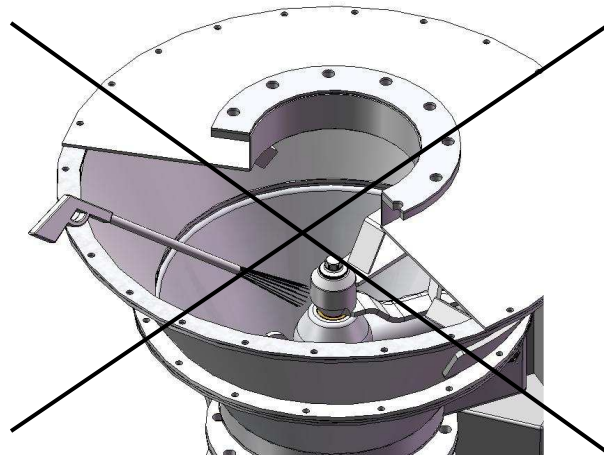
- The unit can be cleaned:
- With a low pressure water jet
or
- With a dry or damp cloth



- Do not use pointed or sharp tools. Doing so may damage the components of the unit.



- Do not use a high pressure water jet to clean the bearing seals

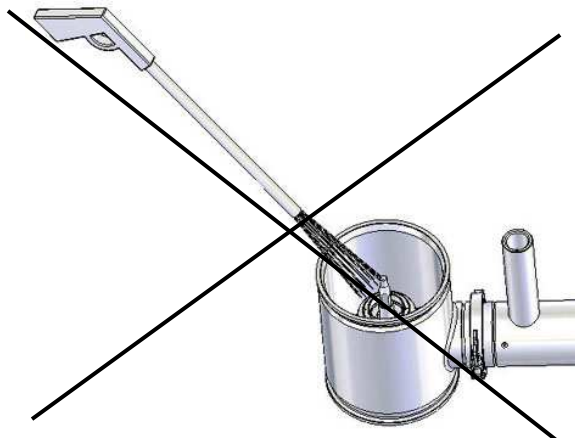


The seals may be cleaned:

- With a low pressure water jet
or
- With a damp cloth

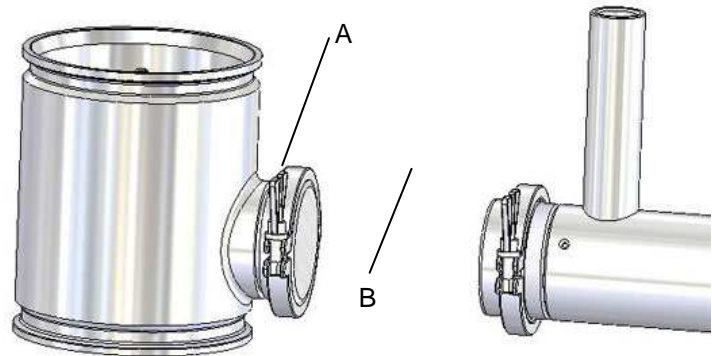


- Do not use any solvents other than alcohol for cleaning the plastic parts.





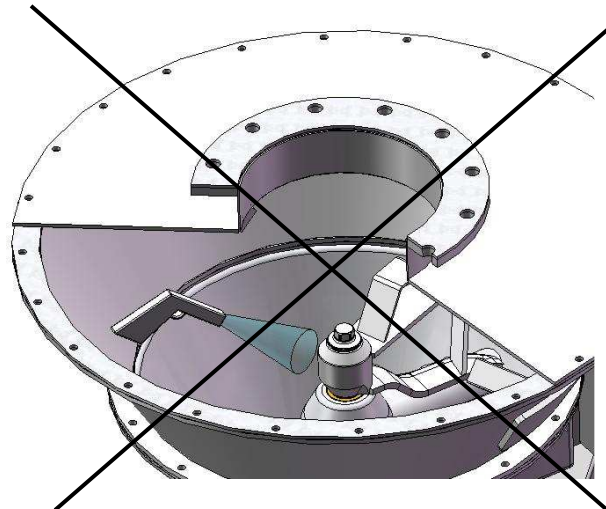
If the case of the ConiWitt module is removed, the covers for the case (A) and the arm (B) absolutely must be installed, see chapter 6- "Cleaning equipment"



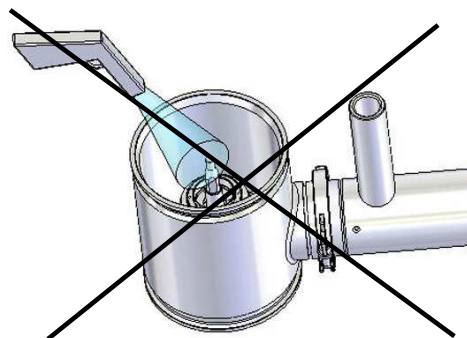
Drying the unit

The unit can be:

- Allowed to air-dry
or
- Dried with a cloth
or
- Dried in an environment heated to 60°C maximum.



- Do not use compressed air to dry the bearing seals. Doing so may damage them.
- Dry the seals with a cloth



Cleaning the tools and the inlet-outlet accessories

- Remove the tools and the accessories as instructed in chapter 5 – "Removing the tools and the inlet-outlet accessories"

The tools/inlet-outlet accessories can be cleaned:

- With a damp cloth
or
- With a low pressure water jet
or
- With a high pressure water jet



- Do not use pointed or sharp tools. Doing so may damage the tools/inlet-outlet accessories.



Sterilization

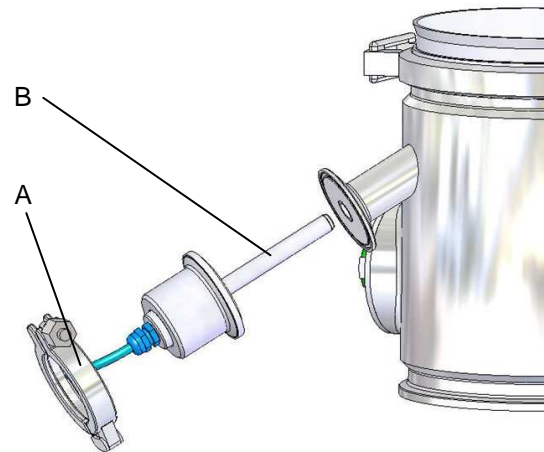
- The case, the tools, and the inlet-outlet accessories can be sterilized at a temperature of 125°C.

Cleaning the case of the ConiWitt module equipped with a temperature sensor (option)

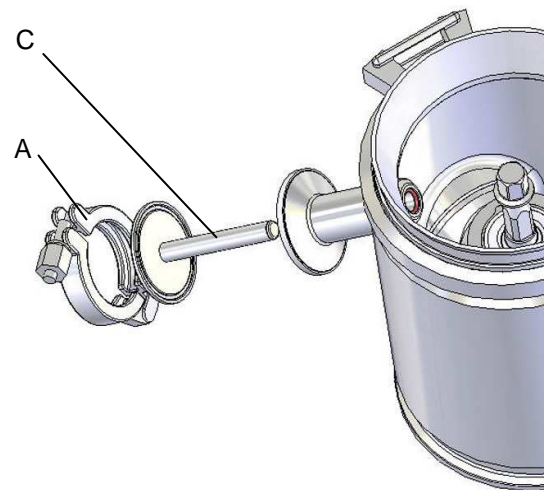


Before performing any work on this unit, it must be turned off and the electric and pneumatic lines must be disconnected. The operator is responsible for preventing risks of contamination by the product.

- Loosen the clamp (A)
- Remove the temperature sensor (B)
- Protect the sensor if necessary

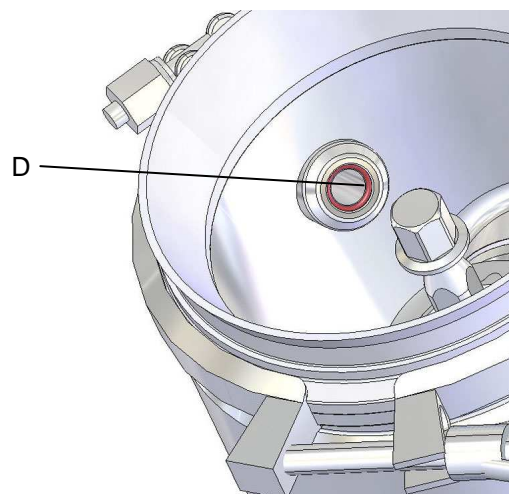


- Insert the plug (C)
- Tighten the clamp (A)
- Clean the case



The sensor bushing must always be kept clean. The sensor must always be able to slide freely within it.

- Check the condition of the seal (D)
- Replace it if necessary



Chemical resistance list

(italiano: vedi pagina 17)

The information on the following pages is based on tests under various different conditions. Many of the values have been determined at room temperature with a reaction time of 7 days (150 hours). In individual cases observations may differ between laboratory and practical tests. Because of differences in conditions of use and the composition of fluids the data given are only guidelines and should not be taken as binding. For these reasons we cannot give any guarantees as to the correctness of our recommendations in individual cases. If your operating conditions are unusual please feel free to discuss them with us.

Definition of information given in the table:

On request:

Information on resistance for ACM, IIR, SBR, AU/EU and NR is available

	NBR	FPM	MVQ	EPDM	CR	MFQ	FFKM	FEP ^①	FPA ^②	PTFE ^②	Nichel alloy X-750 mat. nr. 2.4669 ^③
A											
Acetaldehyde	C	D	B	B	C	D	A ^①	A	A		
Acetamide	A	C	B	A	A	A	A ^①	A			
Acetate of copper	B	D	D	A	B	D	A	A	B		
Acetic acid											
	concentrated (glacial acetic acid)	B	D	B	B	D	D	A	A	B	
	hot	D	D	C	C	D	D	A	A	B	
Acetic anhydride	D	D	B	B	B	D	A	A	B		
Acetoacetic ester	D	D	B	B	D	D	A	A			
Acetone	D	D	D	A	D	D	A	A	A		
Acetophenone	D	D	D	A	D	D	A	A			
Acetyl chloride	D	A	C	D	D	A	A	A	A		
Acetylacetone	D	D	D	A	D	D	A	A			
Acetylene, Ethene	A	A	B	A	B	A	A	A	A		
Acrylic acid ethyl ester	D	D	B	B	D	D	A ^②	A			
Acrylonitrile	D	C	D	D	D	D	A ^①	A			
Aero Shell 7A	A	A	B	D	B	A	A	A			
Aero Shell 17	A	A	B	D	B	A	A	A			
Aero Shell 750	B	A	D	D	D	B	A	A			
Aero Shell Fluid 4	A	A	D	D	D	A	A	A			
Aerosafe 2300	D	D	C	A	D	C	-	A			
Aerosafe 2300 W	D	D	C	A	D	C	-	A			
Air	A	A	A	A	A	A	A	A	A		
Air oil-free											
	100°C	A	A	A	A	A	A	A	A		
	150°C	B	A	A	B	B	A	A	A		
	200°C	D	A	A	D	D	B	A	A		
Alkazene [®]	D	B	D	D	D	B	A	A			
Aluminium acetate	B	D	D	A	B	D	A	A			
Aluminium bromide	A	A	A	A	A	A	A	A			
Aluminium chloride	A	A	B	A	A	A	A	A	B		
Aluminium fluoride	A	A	B	A	A	A	A	A			
Aluminium nitrate	A	A	B	A	A	B	A	A	A		
Aluminium phosphate	A	A	A	A	A	A	A	A			
Aluminium sulphate	A	A	A	A	A	A	A	A	C		
Alums	A	A	B	A	A	D	A	A	A		
Ammonia gas											
	(cold)	A	D	A	A	A	D	A ^①	A	B	
	gas (hot)	D	D	B	B	B	D	A ^①	A	B	
	liquid (anhydrous)	B	D	B	A	A	D	A ^①	A	B	

① depending of compound, we suggest to discuss with us!

② for virgin PTFE O-Rings and O-Rings covered with FEP and PFA

③ for metal O-Rings and C-Rings

A stable

B can be used (static applications)

C limited stability (use not recommended)

D not stable

	NBR	FPM	MVQ	EPDM	CR	MFQ	FFKM	FEP ^① FPA ^② PTFE ^③	Nichel alloy X-750 mat. nr. 2.4669 ^③
Ammonium carbonate	C	B	D	A	A	D	A	A	A
Ammonium chloride	A	A	B	A	A	A	A	A	B
3 molar solution	A	B	A	A	A	A	A	A	A
Ammonium hydroxide concentrated	D	C	A	A	A	A	A ^①	A	A
Ammonium nitrate	A	B	B	A	A	A	A	A	B
Ammonium nitrite	A	-	B	A	A	-	A	A	
Ammonium persulphate	D	-	-	A	A	-	A	A	B
Ammonium persulphate solution	D	-	-	A	A	-	A	A	
Ammonium phosphate	D	-	-	A	A	-	A	A	
Ammonium phosphate									
primary	A	B	B	A	B	B	A	A	B
secondary	A	B	B	A	B	B	A	A	B
tertiary	A	B	B	A	B	B	A	A	B
Ammonium sulphate	A	C	A	A	A	C	A	A	
Ammonium sulphide	A	D	B	A	A	B	A	A	B
Amyl acetate	A	D	B	A	A	B	A	A	
Amyl alcohol	D	D	D	A	D	D	A	A	A
Amyl borate	B	B	D	A	B	A	A	A	A
Amyl chloride	A	A	-	D	A	-	A	A	
Amyl chloronaphthalene	D	A	D	D	D	B	A	A	B
Amyl naphthalene	D	A	D	D	D	B	A	A	
Aniline (aniline oil)	D	A	D	D	D	A	A	A	
Aniline dyes	D	C	D	B	D	C	A	A	B
Aniline hydrochloride	D	B	C	B	B	B	A	A	
Animal fat	A	A	B	B	B	A	A	A	
Aqua regia	D	B	D	C	D	C	A ^①	A	C
Argon	B	B	C	B	D	B	A	A	
Aromatic fuels (Fuel C) 50 %	A	A	A	A	A	A	A	A	
Arsenic acid (arsenic trichloride)	A	D	D	D	B	A	A	A	
Asphalt	A	A	A	A	A	A	A	A	C
ASTM-oil									
No. 1	B	A	D	D	B	B	A	A	A
No. 2	A	A	A	D	A	A	A	A	A
No. 3	A	A	D	D	B	A	A	A	A
No. 4	A	A	C	D	D	A	A	A	A
ASTM-reference									
fuel A	B	A	D	D	D	B	A	A	A
fuel B	A	A	D	D	B	A	A	A	A
fuel C	A	A	D	D	D	A	A	A	A
ATF-oil	B	A	D	D	D	B	A	A	A

B

Barium chloride	A	A	A	A	A	A	A	A	B
Barium hydroxide	A	A	A	A	A	A	A	A	B
Barium sulphide	A	A	A	A	A	A	A	A	
Beer	A	A	A	A	A	A	A	A	A
Benzaldehyde	D	D	D	A	D	D	A	A	B
Benzene	D	A	D	D	D	A	A	A	A
Benzene-sulphonic acid 10 %	D	A	D	D	B	B	A	A	
Benzoic									
acid	D	A	D	B	D	B	A	A	A
benzyl ester	D	A	-	D	D	A	A	A	
methyl ester	D	A	D	D	D	A	A	A	
Benzophenone	-	A	-	B	-	A	A	A	
Benzoyl chloride	D	A	-	A	D	A	A	A	
Benzyl									
alcohol	D	A	B	B	B	B	A	A	A

① depending of compound, we suggest to discuss with us!

② for virgin PTFE O-Rings and O-Rings covered with FEP and PFA

③ for metal O-Rings and C-Rings

A stable

B can be used (static applications)

C limited stability (use not recommended)

D not stable

		NBR	FPM	MVQ	EPDM	CR	MG	FFKM	FEP ^① FPA ^② PTFE ^③	Nichel alloy X-750 mat. nr. 2.4669 ^③
Benzyl chloride		D	A	D	D	D	A	A	A	A
Black liquor		B	A	B	B	B	B	-	-	A
Blast furnace gas		D	A	A	D	D	B	A	A	
Bleaching lye		D	A	B	A	D	B	B	A	
Borax		B	A	B	A	D	B	B	A	A
Bordeaux mixture		B	A	B	A	B	B	A	A	
Boric acid		A	A	A	A	A	A	A	A	B
Boron liquid (HEF)		B	A	D	D	D	B	-	A	
Bromine		D	A	D	D	D	B	A	A	C
	water	D	A	D	D	D	B	A	A	
Bromobenzol		D	A	D	D	D	B	B	B	
Bromochloromethane		D	A	D	B	D	B	A	A	
Bromochlorotrifluoroethane		D	A	D	D	D	B	A	B	
Bromopentafluoride		D	D	D	D	D	D	B	B	
Bromotrifluoride		D	D	D	D	D	D	B	B	
Butadiene (monomer)		D	A	D	D	D	A	A	A	A
Butan-2-one (methyl ethyl ketone, MEK)		D	D	D	A	D	D	A	A	
Butane		A	A	D	D	A	A	A	A	A
Butanol (butyl alcohol)		A	A	B	B	A	A	A	A	A
Butene		B	A	D	D	C	B	A	A	
Butter		A	A	B	A	B	A	A	A	A
Butyl	acetate	D	D	D	B	D	D	A	A	B
	acetylricinoleate	B	A	-	A	B	B	A	A	
	acrylate	D	D	D	D	D	D	A ^①	A	
	alcohol	A	A	B	B	A	A	A	A	A
	butyrate	D	A	-	A	D	A	A	A	
	carbitol	D	C	D	A	C	D	A	A	
	catechol	D	A	-	B	B	A	A	A	
	cellosolve	D	D	D	B	D	D	A	A	
	glycol	C	D	B	B	C	D	A	A	
	glycoladipate	D	B	B	B	D	B	A	A	
	mercaptan	D	A	D	D	D	-	A	A	
	oleate	D	A	-	D	D	B	A	A	
	stearate	B	A	B	D	D	B	A	-	
Butylooo n-Butyl ether		C	D	D	C	D	C	A	A	
Butylamine, n-Butylamine		C	D	B	D	D	D	A ^①	A	
Butyraldehyde		D	D	D	B	D	D	A ^①	A	
Butyric acid		D	B	D	B	D	D	A	A	C

C

Calcium	acetate	B	D	D	A	B	D	A	A	
	bisulphite	A	A	A	D	A	A	A	A	
	chloride	A	A	A	A	A	A	A	A	A
	cyanide	A	-	A	A	A	-	A	A	
	hydroxide	A	A	B	A	A	A	A	A	B
	hypochloride	B	A	B	A	B	B	A	A	C
	lysulphide	A	A	A	A	A	A	A	A	
	nitrate (nitrate of lime)	A	A	B	A	A	A	A	A	A
	silicate	A	A	-	A	A	-	A	A	
	sulphite	A	A	A	A	A	A	A	A	
	thiosulphate	B	A	A	A	A	A	A	A	
Caliche solution (Chile saltpetre)		A	A	B	A	A	A	A	A	

① depending of compound, we suggest to discuss with us!

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③ for metal O-Rings and C-Rings

A stable

B can be used (static applications)

C limited stability (use not recommended)

D not stable

		NBR	FPM	VMQ	EPDM	CR	MFQ	FFKM	FEP ^② FPA ^② PTFE ^③	Nichel alloy X-750 mat. nr. 2.4669 ^③
Caproic aldehyde (Hexanal)		-	D	B	B	-	D	A ^①	A	
Carbamates		D	A	-	B	B	A	A	-	
Carbitol/Diethylene glycol monoethyl ether		B	B	B	B	B	B	A	A	
Carbolic acid (phenol)		D	A	D	D	D	B	A	A	
Carbon dioxide	dry	A	B	B	B	B	B	A	-	A
	moist	A	B	B	B	B	B	A	-	
Carbon	disulphide	D	A	D	D	D	A	A	A	A
	monoxide	A	A	A	A	B	B	A	-	A
	tetrachloride	B	A	D	D	D	B	B	B	A
Carbonic acid		B	A	A	A	A	A	A	A	A
Castor oil		A	A	A	B	A	A	A	A	A
Cellosolve (Ethylene glycol ethyl ether)		D	D	D	B	D	D	A	A	
Cellosolve acetate		D	D	D	B	D	D	A	A	
Cetane (Hexadecane)		A	A	D	D	B	C	A	A	
Chloracetone		D	D	D	A	D	D	A	A	
Chlorax		B	A	-	B	B	A	A	A	
Chlordane		B	A	D	D	C	B	A	A	
Chlordecane		D	A	D	D	D	A	A	A	
Chloracetic acid		D	D	D	B	D	D	A	A	B
Chlorextol		B	A	D	D	B	B	A	A	
Chlorinated carbonic acid ethyl ester		D	A	D	D	D	B	A	A	
Chlorine dioxide		D	A	D	C	D	B	A	A	A
	8 % Cl as CaClO in solution	D	A	D	D	D	B	A	A	
Chlorine	dry	D	B	D	D	D	A	A	A	A
	moist	C	A	-	B	D	B	B	A	
	naphthaline	D	A	D	D	D	B	A	A	
	trifluoride	D	D	D	D	D	D	B	-	
	1-chlorine-1-nitroethane	D	D	D	D	D	D	A	A	
Chloroacetic acid		D	A	D	D	D	B	A	A	
Chlorobenzene (monochlorobenzene)		D	A	D	D	D	B	A	A	B
Chloroform (Trichloromethane)		D	A	D	D	D	B	A	A	A
Chloroprene		D	A	D	D	D	B	A	A	
Chlorosulphonic acid		D	D	D	D	D	D	A	A	B
Chlortoluene		D	A	D	D	D	B	A	A	
Chrome bath electrolyte		D	A	B	B	D	B	A	A	
Chromic alum		A	A	A	A	A	-	A	A	A
Citric acid		A	A	A	A	A	A	A	A	A
Cobalt chloride		A	A	B	A	A	A	A	-	
	2n	A	A	A	A	A	A	A	-	
Coconut oil		A	A	A	C	C	A	A	A	A
Cod liver oil		A	A	B	A	B	A	A	A	A
Coffee		A	A	A	A	A	A	A	A	A
Colamine (ethanolamine)		D	D	B	B	D	D	A ^①	A	
Coliche-solution		B	-	-	B	A	-	-	A	
Compressed air supply (oil-free)		A	A	A	A	A	A	A	A	A
Coolanal (Monsanto), Silicone oil		A	A	D	D	A	B	A	A	
Copper chloride		A	A	A	A	B	A	A	A	A
Copper cyanide		A	A	A	A	A	A	A	-	
Cotton seed oil		A	A	A	C	C	A	A	A	A
Creosote, carbolineum		A	A	D	D	B	A	A	A	A
Cresilic acid		D	A	D	D	D	B	-	A	
Crude oil		B	A	D	D	D	B	A	A	A

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B can be used (static applications)

C limited stability (use not recommended)

D not stable

	NBR	FPM	MVQ	EPDM	CR	MFQ	FFKM	FEP ^①	FPA ^②	PTFE ^③	Nichel alloy X-750 mat. nr. 2.4669 ^③
Cumene (isopropylbenzene)	D	A	D	D	D	B	A	-			
Cyclohexane	A	A	D	D	C	A	A	A			A
Cyclohexanol	A	A	D	D	B	A	A	A			
Cyclohexanon	D	D	D	B	D	D	A	A			

D

Decane	A	A	B	D	C	A	A	A			
Delco brake fluid	C	D	C	A	B	D	A	A			
Denatured alcohol	A	A	A	A	A	A	A	A			
Detergent dissolved in water	A	A	A	A	B	A	A	A			A
Developer (photo)	A	A	A	B	A	A	A	A			
Diacetone alcohol	D	D	D	A	D	D	A	A			
Diazinone (insecticide)	C	B	D	D	C	B	-	A			
Dibenzyl											
ether	D	D	D	B	D	D	A	A			
sebacate	D	B	C	B	D	C	A	A			
Dibromethyl benzol	D	A	D	D	D	B	A	A			
Dibromodifluoromethane	D	-	D	B	D	D	B	-			
Dibutyl											
amine	D	D	C	D	C	D	A ^①	A			
ether	D	C	D	C	D	C	A	A			
phthalate	D	C	C	B	D	C	A	A			
sebacate	D	B	B	B	D	B	A	A			
Dichlorobutane (Tetramethylene chloride)	B	A	D	D	D	B	A	A			
Dichloroisopropylether	D	C	D	C	D	C	A	A			
Dichloromethane (Methylene chloride)	D	B	D	D	D	B	A	A			
Dicyclohexylamine	C	D	D	D	D	D	A ^①	A			
Diesel fuel	A	A	D	D	C	A	A	A			A
Diethyl											
ether	D	D	D	D	C	C	A	A			
sebacate	D	B	B	B	D	B	A	A			
Diethylamine	B	D	B	B	B	D	A ^①	A			
Diethylene glycol	A	A	B	A	A	A	A	A			
Diisobutylene	B	A	D	D	D	C	A	A			
Diisooctyl sebacate	C	B	C	C	D	C	A	A			
Diisopropyl ketone	D	D	D	A	D	D	A	A			
Dilute nitric acid											
3-molar	D	A	D	B	D	C	A	A			C
concentrated	D	A	D	D	D	C	A	A			C
red, fumingoooo	D	B	D	D	D	D	B	A			C
Dimethyl formamide (DMF)	C	D	B	B	C	D	A	A			
2,2-Dimethylbutane	A	A	D	D	B	A	A	A			
2,3-Dimethylbutane	A	A	D	D	B	A	A	A			
Dimethylether (Methylether)	A	A	A	A	C	A	A	A			
Dimethylhydrazine	B	D	D	A	B	D	A	A			
2,4-Dimethylpentane	A	A	D	D	B	C	A	A			
Dimethylphthalate	D	B	-	B	D	B	A	A			
Dinitrogen monoxide (laughing gas)	A	A	A	B	A	A	A	A			
Dinitrotoluene	D	D	D	D	D	D	A	-			
Diocyl phthalate (DOP)	D	B	C	B	D	B	A	A			
Diocyl sebacate (DOS)	D	B	C	B	D	C	A	A			
Dioxan	D	D	D	B	D	D	A	A			
Dioxolan	D	D	D	B	D	D	A	A			
Dipentene (paint solvent)	B	A	D	D	D	C	A	A			
Diphenyl (biphenyl)	D	A	D	D	D	B	A	A			
Diphenyl ether	D	A	C	D	D	B	A	A			A

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		NBR	FPM	MVG	EPDM	CR	MEQ	FFKM	FEP ^② FPA ^② PTFE ^③	Nichel alloy X-750 mat. nr. 2.4669 [®]
Dowtherm A thermal oil		D	A	D	D	D	B	A	A	
Dowtherm E thermal oil		D	A	D	D	D	B	A	A	
Drilling oil		A	A	D	D	B	A	A	A	
Dye solvent		D	B	D	D	D	B	A	A	

E

Electroplating solution	chrome	D	A	B	B	D	B	A	A	
	other metals	-	A	D	A	-	-	A	A	
Epichlorhydrin		D	D	D	B	D	D	A	A	A
Epoxy resins		-	D	-	A	A	-	A	A	
Ethan		A	A	D	D	B	B	A	A	A
Ethane		A	A	B	B	B	A	A	A	A
Ethane thiol		D	B	C	D	C	-	A	A	
Ethanol (ethyl alcohol)		A	C	A	A	A	A	A	A	A
Ethanolamine (Colamin)		B	D	B	B	B	D	A ^①	A	
Ether (various)		D	C	D	C	D	C	A	A	A
Ethyl	acetate	D	D	B	B	D	D	A	A	B
	acrylic acid	D	-	D	B	B	D	A ^①	A	
	alcohol (ethanol)	A	C	A	A	A	A	A	A	A
	benzoate	D	A	D	D	D	A	A	A	
	bromide	B	A	D	D	D	A	A	A	
	chloride	A	A	D	A	A	A	A	A	A
	cyclopentane	A	A	D	D	C	A	A	A	
	dichloride	D	B	D	D	D	B	A	A	
	ether	C	D	D	C	D	C	A	A	A
	oxalate	D	A	D	A	D	B	A	A	
	pentachlorobenzene	D	A	D	D	D	B	A	A	
silicate	A	A	B	A	A	A	A	A		
Ethylbenzene		D	A	D	A	D	A	A	A	A
Ethylcellulose		B	D	B	B	B	D	A	A	B
Ethylene	chlorhydrin	D	A	C	B	B	B	A	A	A
	dibromide	D	A	D	C	D	C	A	A	
	dichloride	D	A	D	C	D	C	A	A	A
	glycol (glycol)	A	A	A	A	A	A	A	A	B
	oxide	D	D	D	C	D	D	A ^①	A	A
	oxide (12 %) and Freon (80 %)	C	D	D	B	D	D	A ^①	A	
	trichloride («Tri»)	D	A	D	D	D	B	A	A	
2-ethyl-1-hexanol (Isooctanol)	A	A	B	A	A	A	A	A		
Ethylenediamine		A	D	A	A	A	D	A ^①	A	

F

Fatty acids		B	A	B	C	B	A	A	A	A
Fluorolub		A	B	A	A	A	B	-	-	
Formaldehyde		C	D	B	B	C	D	A ^①	A	A
Formic acid methylester		D	D	-	B	B	-	A	A	B
Freon	11	B	B	D	D	C	B	B	A	
	12	A	A	D	B	A	D	B	A	
	12 and ASTM oil no. 2 (50 : 50 mix)	B	A	D	D	C	B	B	A	
	12 and Suniso 4G (50 : 50 mix)	B	A	D	D	C	B	B	A	
	13	A	A	D	A	A	D	B	-	
	13 B1	A	A	D	A	A	B	B	-	
14	A	A	D	A	A	B	B	-		

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Freon	21	D	D	D	D	B	B	A	-	
	22	D	D	D	A	A	B	B	A	
	22 and ASTM oil no. 2 (50:50 mix)	D	B	D	D	B	B	B	A	
	31	D	D	D	A	A	B	B	-	
	32	A	D	D	A	A	B	B	-	
	112	B	A	D	D	B	B	B	-	
	113	A	B	D	D	A	D	B	A	
	114	A	A	D	A	A	B	B	-	
	114 B2	B	B	D	D	A	B	B	-	
	115	A	A	D	A	A	B	B	-	
	502	B	B	A	A	A	-	B	-	
	BF	B	A	D	D	B	-	B	-	
	C 318	A	B	D	A	A	B	B	-	
	K-142b	A	D	-	A	A	-	B	-	
	K-152a	A	D	-	A	A	-	B	-	
	MF	B	B	D	D	D	-	B	-	
PCA	A	B	D	D	A	-	B	-		
TF	A	B	D	D	A	D	A	A		
Fuel oil		A	A	D	D	B	A	A	A	A
Fumaric acid		A	B	D	D	B	D	A	A	
Fural (2-furaldehyde)		D	D	D	B	D	D	A ^①	A	B
Furan		D	D	D	D	D	D	A	A	
Furfur alcohol		D	D	D	B	D	D	A	A	
Furyl carbinol		D	-	D	B	D	D	-	A	

G

Gallic acid		B	A	A	B	B	A	A	A	
Gallotannic acid	tannin	A	A	B	A	B	A	A	A	
	10%	A	A	B	A	A	A	A	A	
Gear oil type A		A	A	B	D	B	A	A	A	
Gelatines		A	A	A	A	A	A	A	A	A
Generator gas		A	A	B	D	B	B	A	A	
Girling brake fluid		C	D	-	A	B	D	A	A	
Glacial acetic acid (100 % acetic acid)		B	D	B	B	D	D	A	A	
Glauber salt (Sodium sulphate)		D	A	A	B	B	A	A	A	
Glucose		A	A	A	A	A	A	A	A	A
Glycerine		A	A	A	A	A	A	A	A	A
	triacetate	B	D	B	A	B	D	A	A	
Glycol (ethylene glycol)		A	A	A	A	A	A	A	A	
Green Liquor		B	A	-	A	B	B	A	A	
Groundnut oil		A	A	A	C	C	A	A	A	A

H

Halon 1301		A	A	D	A	A	B	B	A	
Halothane (narcotic)		D	A	D	D	D	B	A	A	
Halowax oil		D	A	D	D	D	A	A	A	
Heavy water		A	A	A	A	B	A	A	A	
Helium		A	A	A	A	A	A	A	A	
n-heptane		A	A	D	D	B	A	A	A	
n-hexaldehyde		D	D	B	A	A	D	A ^①	A	
n-hexane		A	A	D	D	B	A	A	A	
1-n-hexene		B	A	D	D	B	A	A	-	

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Hexylalcohol		A	A	B	C	B	B	A	A	
Houghto-Safe	271 (water/glycol, HFC)	A	B	B	A	B	B	A	A	
	620 (water/glycol, HFC)	A	B	B	A	B	B	A	A	
	1010 (phosphate ester, HFD-R)	D	A	C	A	D	B	A	A	
	1055 (phosphate ester, HFD-R)	D	A	C	A	D	B	A	A	
	1120 (phosphate ester, HFD-R)	D	A	C	A	D	B	A	A	
	5040 (water/oil emulsion)	A	A	C	D	B	B	A	A	
Hydraulic fluid (mineral oil based)		A	A	B	D	B	A	A	A	A
Hydrazine		B	B	B	A	B	B	A	A	C
Hydrobromic acid		D	A	D	A	D	C	A	A	C
Hydrobromic acid 40%		D	A	D	A	D	C	A	A	C
Hydrochloric acid	3-molar	C	A	D	A	C	B	A	A	C
	concentrated	D	A	D	C	D	C	A	A	C
Hydrocyanic acid		B	A	C	A	B	B	A	A	B
	< 65% cold	C	A	D	A	A	D	A ^①	A	B
	> 65% cold	D	A	D	C	D	D	B	A	B
	< 65% hot	D	C	D	D	C	D	B	A	B
	> 65% hot	D	C	D	D	D	D	B	A	B
Hydrofluosilicic acid		B	A	D	A	B	D	B	B	
Hydrogen fluoride (hydrofluoric acid, anhydrous)		D	D	D	A	D	D	B	A	C
Hydrogen gas	cold	A	A	C	A	A	C	A	A	
	hot	A	A	C	A	A	C	A	A	
Hydrogen peroxide	90 %	D	A	B	C	D	B	A	A	B
	dilute	B	A	A	A	A	A	A	A	B
Hydrogen sulphide	dry, cold	A	D	C	A	A	C	A	A	B
	dry, hot	D	D	C	A	B	C	A	A	B
	moist, cold	D	D	C	A	A	C	A	A	B
	moist, hot	D	D	C	A	B	C	A	A	B
Hydroquinone		C	B	D	D	D	B	A	A	A
Hydyn		B	D	D	A	B	D	A	A	
I										
Iodine		B	A	-	B	D	A	A	A	
	pentafluoride	D	D	D	D	D	D	B	-	
Iron chloride		A	A	B	A	B	A	A	A	C
	nitrate	A	A	B	A	A	A	A	A	C
Isobutyl alcohol (isobutanol)		B	A	A	A	A	B	A	A	
Isobutyl-n-butyrate		D	A	-	A	D	A	A	A	
Isododecane		A	A	D	D	B	A	A	A	
Iso-octane		A	A	D	D	B	A	A	A	
Isophoron (ketone)		D	D	D	A	D	D	A	A	
Isopropanol (Isopropyl alcohol)		B	A	A	A	B	B	A	A	
Isopropyl	benzene	D	A	D	D	D	B	A	A	
	chloride	D	A	D	D	D	B	A	A	
Isopropylacetat		D	D	D	B	D	D	A	A	
Isopropylacetate		B	D	D	D	C	C	A	A	
Isopropylalkohol (Isopropanol)		B	A	A	A	B	B	A	A	
J										
JP 3 (MIL-J-5624)		A	A	D	D	D	A	A	A	
JP 4 (MIL-J-5624)		A	A	D	D	D	B	A	A	
JP 5 (MIL-J-5624)		A	A	D	D	D	B	A	A	

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JP 6 (MIL-J-5624)		A	A	D	D	D	B	A	A	
JP X (MIL-F-25604)		A	D	D	D	B	D	-	A	
K										
Kaliumcyanidoooo		A	A	A	A	A	A	A	A	B
Kerosine		A	A	D	D	B	A	A	A	A
L										
Lactams		D	D	-	B	B	D	A	-	
Lactic acid	cold	A	A	B	A	A	A	A	A	B
	hot	D	A	B	D	D	B	A	A	B
Lard, animal fat		A	A	B	B	B	A	A	A	A
Lavender oil		B	A	D	D	D	B	A	A	A
Lead	acetate (sugar of lead)	B	D	D	A	B	D	B	A	A
	nitrate	A	A	B	A	A	A	B	A	A
	sulphate	B	A	B	A	A	A	A	A	
Light crude oil (crude benzene)		A	A	D	D	B	A	A	A	A
Light lubricants		A	A	D	D	D	A	A	A	A
Lime milk		A	A	B	A	B	A	A	A	A
Linoleic acid		B	B	B	D	B	-	A	A	
Linseed oil		A	A	A	C	C	A	A	A	A
Liquid gas (Propane, Butane, Propylene)		A	A	C	D	B	C	A	A	
Liquimoly		A	A	D	D	B	A	A	A	
Lubricating oils	di-ester based	B	A	D	D	C	B	A	A	A
	petroleum based	A	A	D	D	B	A	A	A	A
	SAE 10, 20, 30, 40, 50	A	A	C	D	B	A	A	A	A
M										
Magnesium chloride		A	A	A	A	A	A	A	A	A
	hydroxide	B	A	A	A	B	A	A	A	A
	sulphate	A	A	A	A	A	A	A	A	A
Maize oil		A	A	A	C	C	A	A	A	A
Malathion (insecticide)		B	A	D	D	-	B	A	A	
Maleic acid		D	A	D	D	D	-	A	A	B
	anhydrous	D	D	-	B	D	-	A	A	
Malic acid		A	A	D	D	B	D	A	A	A
Mercury		A	A	A	A	A	A	A	A	A
Mercury	chloride	A	A	A	A	A	A	A	A	C
	vapour	A	A	A	A	A	-	A	A	
Mesityl oxide (ketone)		D	D	D	B	D	D	A	A	
Methacrylic acid		D	C	D	B	B	D	A	A	
Methane		A	A	D	D	B	B	A	A	A
Methyl	2-Methyl pentane	A	A	D	D	B	C	A	A	
	3-Methyl pentane	A	A	D	D	B	C	A	A	
	acetate	D	D	D	B	B	D	A	A	
	aceto acetate	D	D	B	B	D	D	A	A	
	alcohol (methanol)	A	D	A	A	A	A	A	A	A
	bromide	B	A	D	D	D	A	A	A	
	butyl ketone	D	D	D	A	D	D	A	A	
	carbonate	D	A	D	D	D	B	A	A	
	cellulose	B	D	B	B	B	D	A	A	
	chloride	D	A	D	C	D	B	A	A	A

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② for virgin PTFE O-Rings and O-Rings covered with FEP and PFA

③ for metal O-Rings and C-Rings

A stable

B can be used (static applications)

C limited stability (use not recommended)

D not stable

		NBR	FPM	MVQ	EPDM	CR	MEQ	FFKM	FEP ^② FPA ^② PTFE ^②	Nichel alloy X-750 mat. nr. 2.4669 ^③
Methyl	chloroform	D	A	D	D	D	B	A	A	
	ether (dimethyl ether)	A	A	A	A	C	A	A	A	
	ethyl ketone (butanon, MEK)	D	D	D	A	D	D	A	A	B
	ethyl ketone peroxide	D	D	B	D	D	D	A ^①	A	
	glycol	C	D	D	B	C	D	A	A	
	isobutyl ketone (MIBK)	D	D	D	C	D	D	A	A	
	methacrylate	D	D	D	D	D	D	A ^①	-	
	oleate	D	A	-	B	D	B	A	A	
Methylaniline		D	B	-	D	D	-	A	A	
Methylcyclopentane		D	A	D	D	D	B	A	A	
Methylene chloride (dichloromethane)		D	B	D	D	D	B	A	A	
Methylisopropylketone		D	D	D	B	D	D	A	A	
Metilacrilato		D	D	D	B	B	D	A	-	
Milk		A	A	A	A	A	A	A	A	A
Mineral oils		A	A	B	D	B	A	A	A	A
Mixed amines		D	D	B	B	B	D	A ^①	A	
Molten sulphur		D	A	C	C	C	C	A	-	A
Monochlorobenzene (chlorobenzene)		D	A	D	D	D	B	A	A	B
Mopar brake fluid		C	D	C	A	B	D	A	A	

N

Naphtha		B	A	D	D	D	B	A	A	
Naphthaline		D	A	D	D	D	A	A	A	A
Naphthenic acid		B	A	D	D	D	A	A	A	A
Natural gas		A	A	A	D	A	C	A	A	A
n-Butyl benzoate		D	A	-	A	D	A	A	A	
Neat's foot oil		A	A	B	B	D	A	A	A	
Neon		A	A	A	A	A	A	A	A	
Neville and Winther's acid		D	A	D	B	D	B	A	A	
Nickel acetate		B	D	D	A	B	D	A	A	
	chloride	A	A	A	A	B	A	A	A	B
	sulphate	A	A	A	A	A	A	A	A	A
Nitrobenzene		D	B	D	D	D	D	A	A	B
Nitroethane		D	A	D	B	B	D	A	A	
Nitrogen		A	A	A	A	A	A	A	A	A
Nitromethane		D	A	D	B	C	D	A	A	
Nitropropane		D	A	D	B	D	D	A	A	
Nitrotoluene (40 % + dinitrotoluene 60 % mix)		D	C	D	D	D	C	A	A	
Non-mineral oil based brake fluid		C	D	C	A	B	D	A	A	A
n-propyl acetone		D	D	D	A	D	D	A	A	

O

Octachlorotoluene		D	A	D	D	D	B	A	A	
Octadecane		A	A	D	D	B	A	A	A	
Octyl alcohol		B	A	B	A	B	B	A	A	
Oleic acid		C	B	D	D	D	B	A	A	A
Oleum (fuming sulphuric acid)		D	A	D	D	D	D	A	A	A
Olive oil		A	A	A	B	B	A	A	A	
Ortho-chloroethyl benzene		D	A	D	D	D	B	A	A	
Orthochlorophenol		D	A	D	D	D	B	A	A	
Ortho-dichlorobenzene		D	A	D	D	D	B	A	A	
Ortho-n-octane		B	A	D	D	D	B	A	A	

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③ for metal O-Rings and C-Rings

- A stable
 B can be used (static applications)
 C limited stability (use not recommended)
 D not stable

	NBR	FPM	MVQ	EPDM	CR	MFQ	FFKM	FEP ^① FPA ^② PTFE ^③	Nichel alloy X-750 mat. nr. 2.4669 ^③
Oxalic acid	B	A	B	A	B	A	A	A	B
Oxygen, liquid	D	D	D	D	D	D	A ^①	A	A
Ozone	D	A	A	A	C	A	A ^①	A	A
P									
Paint thinners	D	D	D	D	D	D	A	A	A
Paints	B	A	D	D	D	B	A	A	A
Palmitic acid	A	A	D	B	B	A	A	A	A
n-pentane	A	A	D	D	A	C	A	A	
Perchloric acid 2-molar	D	A	D	B	B	A	A	A	
Petrol	A	A	D	D	B	A	A	A	A
Phenol	D	A	D	D	D	B	A	A	A
Phenyl ethyl ether	D	D	D	D	D	D	A	-	
Phenylhydrazine	D	A	D	D	D	D	A	A	
Phoron	D	D	D	A	D	D	A	A	
Phosphate of calcium	A	A	A	A	B	A	A	A	
Phosphoric acid, 3-molar aqueous solution	D	A	B	A	C	B	A	A	A
Phosphoric acid, 3-molar concentrated molten	D	A	C	B	D	B	A	A	A
Phosphoric acid, 3-molar Phosphorous chloride	D	A	D	A	D	A	A	A	
Picric acid	aqueous solution	A	A	B	A	A	B	A	A
	molten	B	A	D	B	B	B	A	A
Pine oil	A	A	D	D	D	A	A	A	
Pinene	B	A	D	D	C	A	A	A	
Piperidine	D	D	D	D	D	D	A ^①	-	
Polyvinyl acetate emulsion	-	-	-	A	B	-	A	A	
Potassium	acetate	B	D	D	A	B	D	A	A
	chloride	A	A	A	A	A	A	A	A
	copper ferricyanide	A	A	A	A	A	A	A	A
	dichromate	A	A	A	A	A	A	A	B
	hydroxide solutions (dilute)	B	B	B	A	B	B	A	A
	hydroxide caustic potash 50 %	B	D	C	A	B	C	A	A
	nitrate	A	A	A	A	A	A	A	B
	sulphate	A	A	A	A	A	A	A	A
sulphite	A	A	A	A	A	A	A	A	
Prestune antifreeze	A	A	A	A	A	A	A	A	
Propane	A	A	D	D	B	B	A	A	A
Propionitrile	A	A	D	D	B	C	A	A	
Propyl	acetate	D	D	D	B	D	D	A	A
	alcohol (Propanol)	A	A	A	A	A	A	A	A
	nitrate	D	D	D	B	D	D	A	A
Propylene	D	A	D	D	D	B	A	A	A
Propylene oxide	D	D	D	B	D	D	A ^①	A	
Pyradine	D	D	D	B	D	D	A	A	A
Pyranol, transformer oil (postchlorinated biphenylene)	A	A	D	D	B	A	A	A	
Pyrolube	D	A	B	B	D	B	-	A	
Pyrrole	D	D	B	D	D	D	A	A	
R									
Radioactive radiation	C	D	C	C	C	D	-	D	
Rape oil	A	A	D	A	B	A	A	A	A

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③ for metal O-Rings and C-Rings

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B can be used (static applications)

C limited stability (use not recommended)

D not stable

		NBR	FPM	MVQ	EPDM	CR	MFQ	FFKM	FEP ^① FPA ^② PTFE ^③	Nichel alloy X-750 mat. nr. 2.4669 ^③
S										
Salicylic acid		B	A	A	A	A	A	A	A	B
Salts of	ammonium	A	B	B	A	B	B	A	A	B
	barium	A	A	A	A	A	A	A	A	
	calcium	A	A	B	A	A	A	A	A	
	copper	A	A	A	A	A	A	A	A	
	magnesium	A	A	A	A	A	A	A	A	A
	nickel	A	A	A	A	B	A	A	A	
	potassium	A	A	A	A	A	A	A	A	A
	sodium	A	A	A	A	B	A	A	A	A
	zinc	A	A	A	A	A	A	A	A	B
Seawater	containing chlorine and salt	D	A	D	D	D	A	A	A	
	salt water	A	A	A	A	A	A	A	A	A
Silicate ester		B	A	D	D	A	A	A	A	A
Silicone greases		A	A	D	A	A	A	A	A	A
Silicone oils		A	A	D	A	A	A	A	A	A
Silver nitrate		B	A	A	A	A	A	A	A	B
Soda (sodium carbonate)		A	A	A	A	A	A	A	A	A
Soapy water		A	A	A	A	B	A	A	A	A
Sodium	acetate	B	D	D	A	B	D	A	A	B
	bicarbonate (baking soda)	A	A	A	A	A	A	A	A	B
	bisulphate ^{oooo}	A	A	A	A	A	A	A	A	B
	borate (Borax)	A	A	A	A	A	A	A	A	
	carbonate (soda) ^{oooo}	A	A	A	A	A	A	A	A	B
	chloride (common salt)	A	A	A	A	A	A	A	A	B
	cyanide	A	A	A	A	A	A	A	A	
	hydroxide (caustic soda) 3 molar	B	B	A	A	B	B	A	A	A
	hypochlorite	C	A	C	C	B	B	A	A	A
	metaphosphate (Calgon)	A	A	-	A	B	A	A	A	A
	metasilicate	A	A	-	A	A	-	A	A	A
	nitrate (saltpetre)	B	A	D	A	B	A	A	A	A
	perborate	B	A	B	A	B	A	A	A	
	peroxide	B	A	D	A	B	A	A	A	B
	phosphate primary	A	A	D	A	B	A	A	A	A
	phosphate secondary	A	A	D	A	B	A	A	A	A
	phosphate tertiary	A	A	A	A	B	A	A	A	A
sulphate (Glauber's salt)	A	A	A	A	A	A	A	A	A	
sulphide	A	A	A	A	A	A	A	A	A	
sulphite	A	A	A	A	A	A	A	A		
thiosulphate (fixer)	B	A	A	A	A	A	A	A		
Soya oil		A	A	A	C	C	A	A	A	A
St										
Stannic chloride		A	A	B	A	D	A	A	A	
	50%	A	A	B	A	D	A	A	A	
Stannous chloride		A	A	B	A	A	A	A		
Steam	below 150°C	D	C	C	A	D	D	A	A	A
	above 150°C	D	D	D	B	D	D	A	A	A
Stearic acid		B	A	B	B	B	A	A	A	A
Styrene (monomer)		D	B	D	D	D	C	A ^①	A	
Sugar cane solution		A	A	A	A	A	A	A	A	A
Sugar solutions		A	A	A	A	B	A	A	A	A
Sugar-beet juice		A	A	A	A	B	A	A	A	A

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		NBR	FPM	MVQ	EPDM	CR	MFQ	FFKM	FEP ^① FPA ^② PTFE ^③	Nichel alloy X-750 mat. nr. 2.4669 ^③
Sulphur		D	A	B	A	A	A	A	A	
Sulphur chloride	D	A	C	D	D	A	A	A	A	
Sulphur dioxide	aqueous	D	D	B	A	B	B	A	A	A
	dry	D	D	B	A	D	B	A	A	A
	liquid under pressure	D	D	B	A	D	B	A	A	
Sulphur hexafluoride		B	C	B	A	A	B	B	-	
Sulphur trioxide, dry		D	A	B	B	D	B	A	A	A
Sulphuric acid	3-molar	D	A	D	B	C	C	A	A	B
	concentrated	D	A	D	D	D	D	A	A	C
	fuming (20/25 % oleum)	D	A	D	D	D	D	A	A	C
Sulphurous acid		B	A	D	B	B	B	A	A	B
Supergrade petrol		A	A	D	D	B	B	A	A	A
T										
Tar (bituminous)		B	A	B	D	C	A	A	A	A
Tartaric acid		A	A	A	B	B	A	A	A	B
Tetrabromethane		D	A	D	D	D	B	A	A	
Tetrabutyl titanate		B	A	-	A	B	A	A	A	
Tetrachloroethylene (perchloroethylene dry cleaning fluid)		B	A	D	D	D	B	B	B	
Tetraethyl lead		B	A	D	D	B	D	A	A	
	chips	B	A	D	D	D	B	A	A	
Tetrahydrofuran		D	D	D	B	D	D	A	A	
Tetraline		D	A	D	D	D	A	A	A	
Titanium (IV) chloride		B	A	D	D	D	B	A	A	
Toluene		D	A	D	D	D	B	A	A	A
Toluylene diisocyanate		D	D	D	B	D	D	A	A	
Transformer oil		A	A	B	D	B	A	A	A	
Transmission fluid type A		A	A	B	D	B	A	A	A	
Triaryl phosphate		D	A	C	A	D	B	A	A	
Tributoxyethyl phosphate		D	A	-	A	D	B	A	A	
Tributyl	mercaptan	D	A	D	D	D	C	A	A	
	phosphate	D	D	D	A	D	D	A	A	
Trichloroacetic acid		B	C	C	B	D	D	A	A	A
Trichloroethane		D	A	D	D	D	B	A	A	A
Trichloroethylene (Trilene)		D	A	D	D	D	B	A	A	B
Trichloromethane (Chloroform)		D	A	D	D	D	B	A	A	
Triethanolamine		C	D	D	B	B	D	A ^①	A	
Trifluoroethane		D	A	D	D	D	B	B	A	
Trinitrotoluene		D	B	-	D	B	B	A	-	
Trioctyl phosphate		D	B	C	A	D	B	A	A	
Trionthocresylphosphate («TOCP»)		D	B	C	A	D	B	A	-	
Tripolyphosphate		D	B	C	A	C	A	A	A	
Tung oil (China wood oil)		A	A	D	D	B	B	A	A	
Turbine oil		A	A	D	D	D	A	A	A	
Turpentine		A	A	D	D	D	B	A	A	A
V										
Vaseline		A	A	D	D	B	A	A	A	
Vegetable oils		A	A	A	C	C	A	A	A	A
Vinegar (5% acetic acid)		B	A	A	A	B	C	A	A	A
Vinyl acetylene		A	A	B	A	B	-	A	A	

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B can be used (static applications)

C limited stability (use not recommended)

D not stable

	NBR	FPM	MVQ	EPDM	CR	MFQ	FFKM	FEP ^②	FPA ^②	PTFE ^③	Nichel alloy X-750 mat. nr. 2.4669 ^③
W											
Waste water	A	A	A	A	B	A	A	A	A		
Water (for industrial use) up to	70 °C	A	B	A	A	B	A	A	A		
	100 °C	B	B	B	A	C	C	A	A		
White oil	A	A	D	D	B	A	A	A			
White pine oil	B	A	D	D	D	A	A	A			
Wine and whisky	A	A	A	A	A	A	A	A			A
Wolman's salt (wood impregnation)?	A	A	A	A	B	A	A	A			
Wood oil	A	A	D	D	B	B	A	A			
Wood vinegar	D	D	-	B	D	D	A	A			
X											
Xenon	A	A	A	A	A	A	A	A			
Xylene	D	A	D	D	D	A	A	A			A
Xylidine (mixture of aromatic amines)	C	D	D	D	D	D	A ^①	A			
Z											
Zeolites	A	A	A	A	A	A	A	A			
Zinc acetate		B	D	D	A	B	D	A	A		
	chloride	A	A	A	A	A	A	A	A		A
	sulphate	A	A	A	A	A	A	A	A		B

① depending of compound, we suggest to discuss with us!

② for virgin PTFE O-Rings and O-Rings covered with FEP and PFA

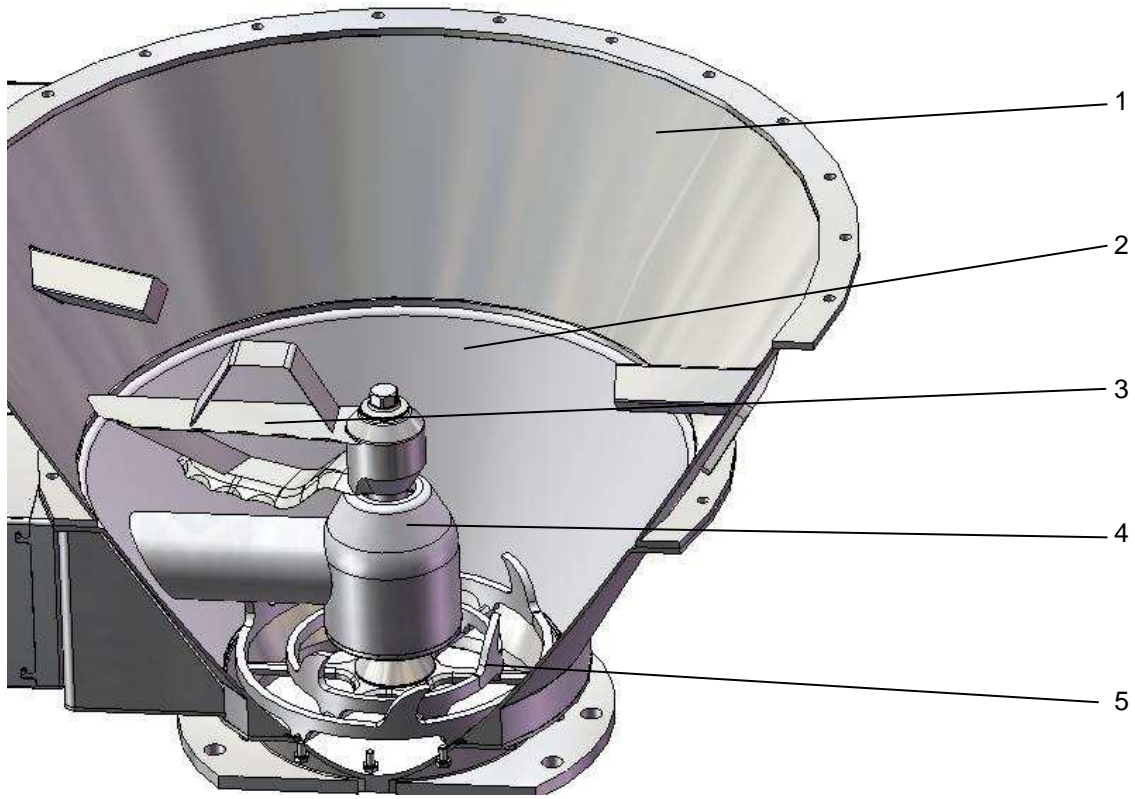
③ for metal O-Rings and C-Rings

A stable

B can be used (static applications)

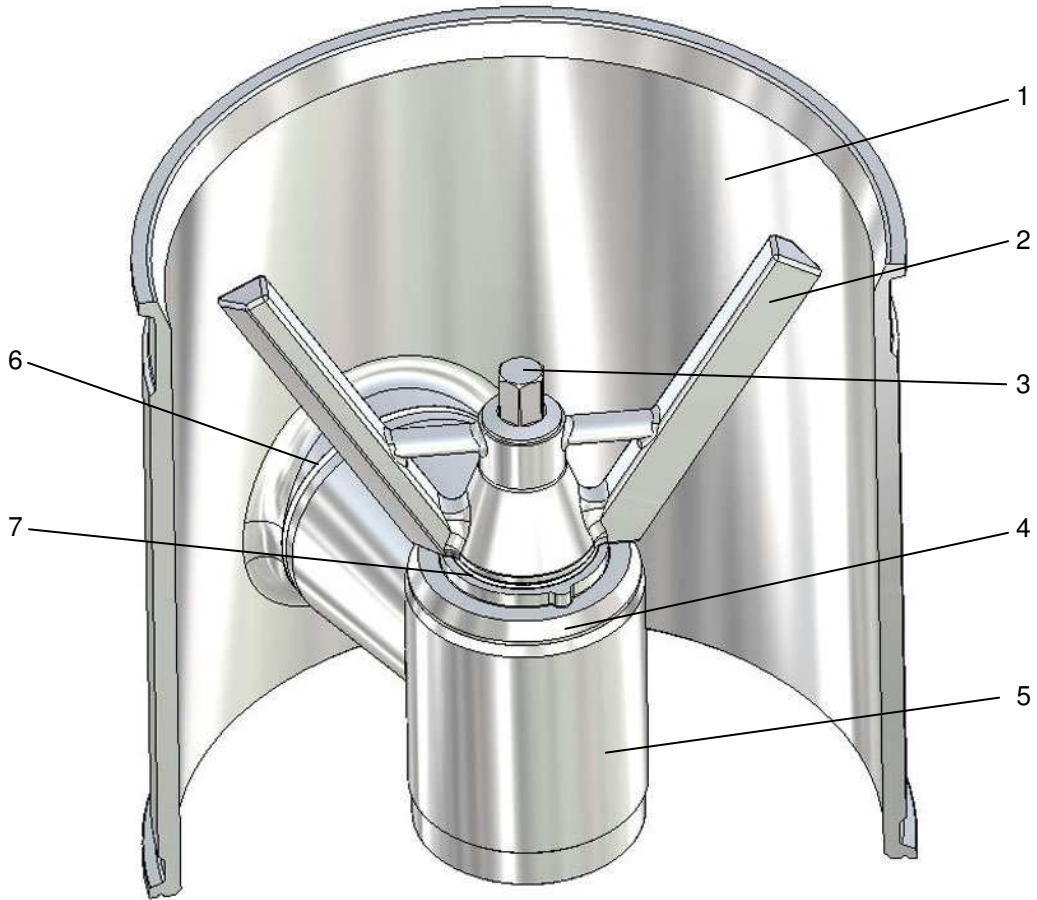
C limited stability (use not recommended)

D not stable



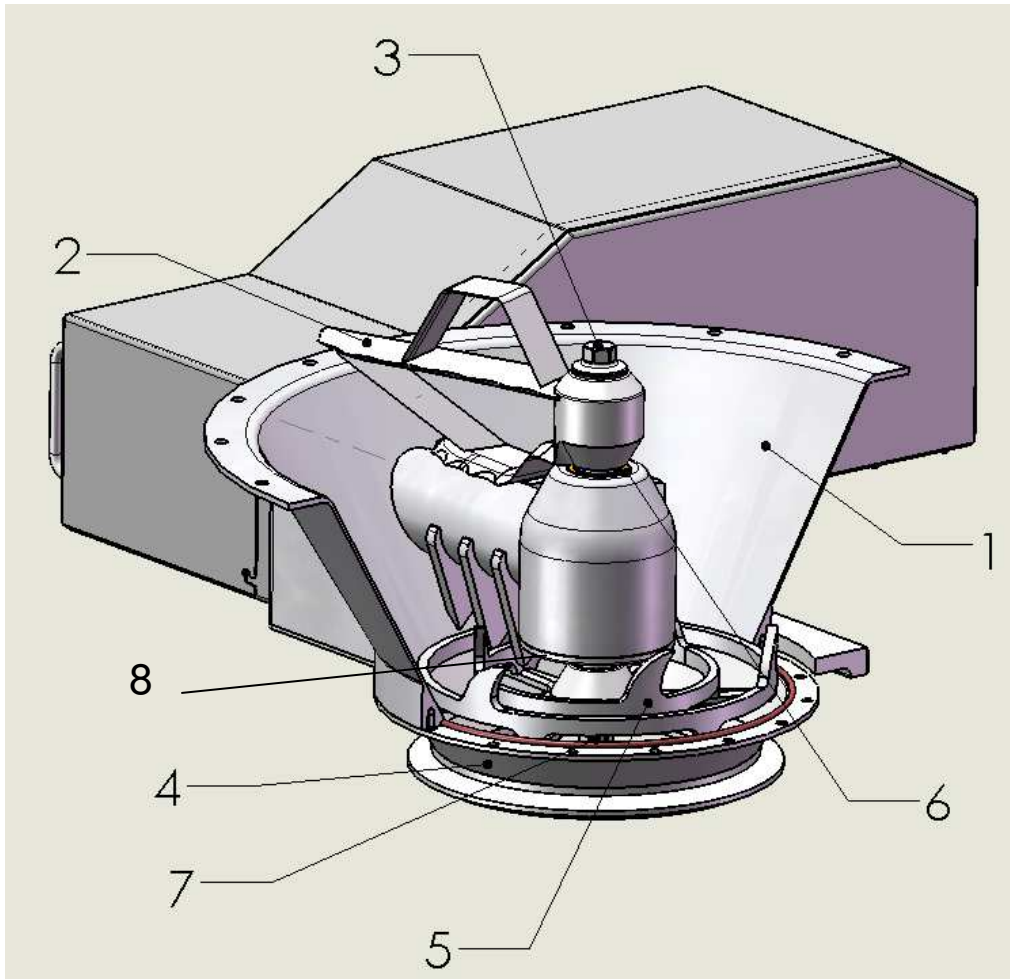
Pos.	Description / Bezeichnung / Description	Quantité Menge Quantity	Surface/cm ² Fläche Area
1	Entonnoir entrée / Einlauftrichter / Inlet funnel	1	6770
2	Bâti / Gehäuse / Housing	1	3902
3	Couteau supérieur / Oberes Messer / Upper knife	1	1271
4	Palier / Lager / Bearing	1	1672
5	Couteau intermédiaire / Mittels Messer / Intermediary knife	1	1554

Total cm² 15169

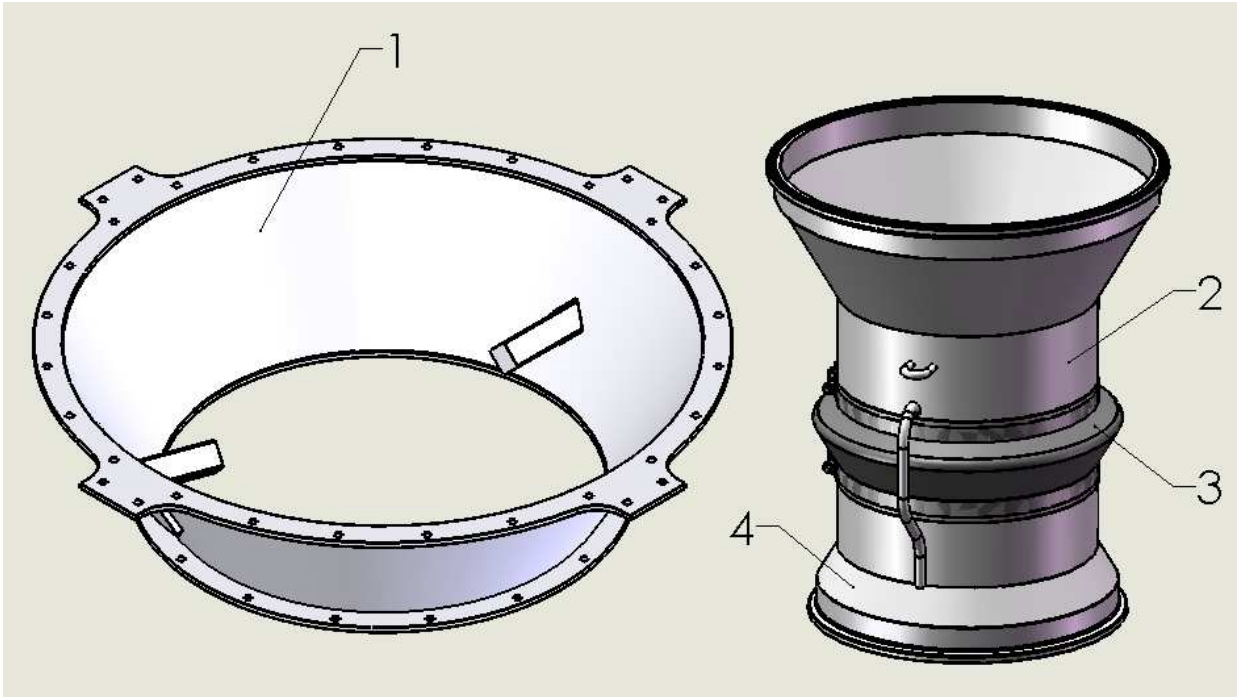


Pos.	Description / Bezeichnung / Description	Quantité Menge Quantity	Surface/cm ² Fläche Area
1	Bâti / Gehäuse / Housing	1	3222
2	Rotor / Rotor / Rotor	1	388
3	Ecrou / Mutter / Nut	1	26.5
4	Couvercle / Deckel / Cover	1	85.5
5	Palier / Lager / Bearing	1	717.5
6	Joint / Dichtung / seal	1	13.5
7	Bague / Ring / Ring	1	6

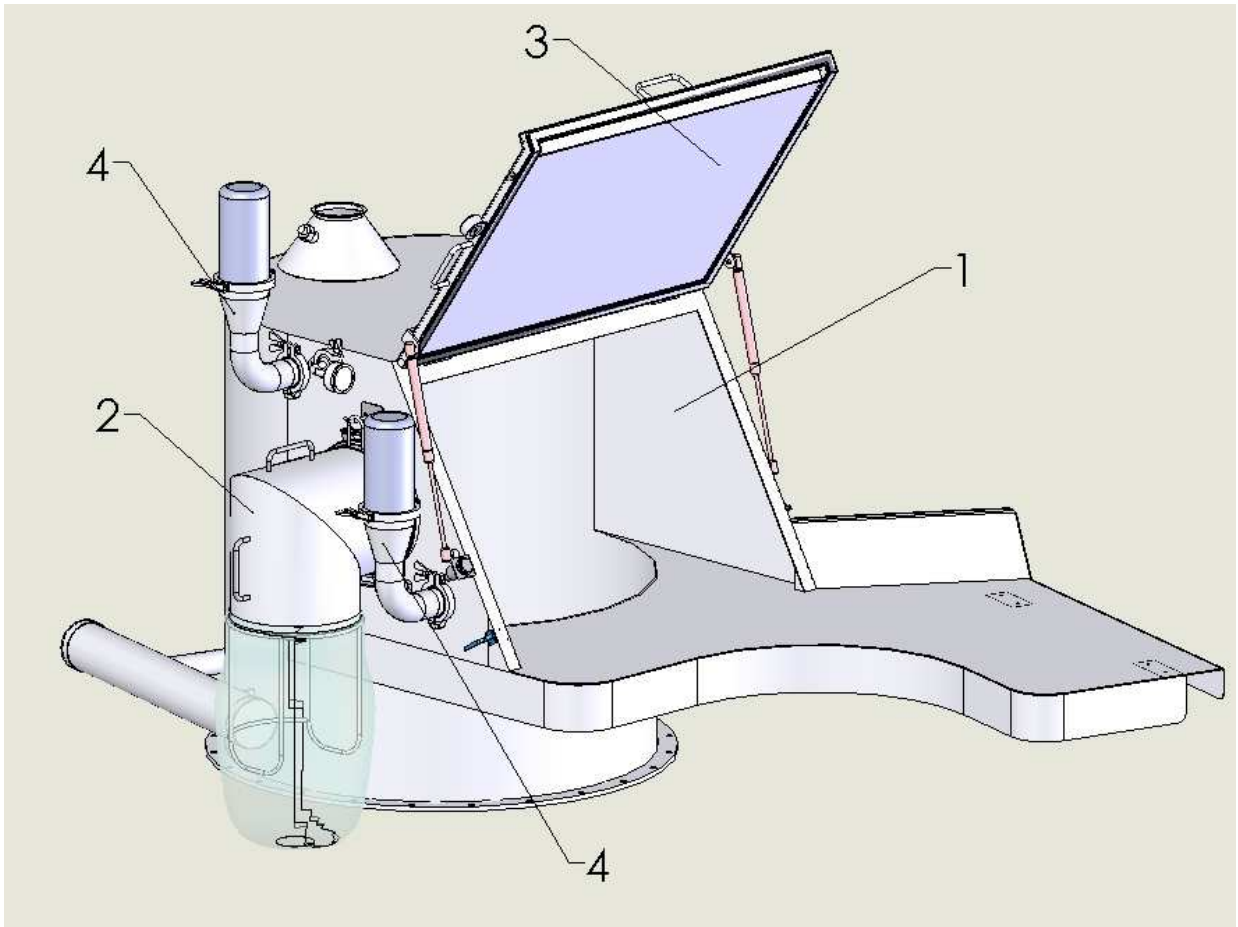
Total cm² **4459**



Pos.	Description / Bezeichnung / Description	Quantité Menge Quantity	Surface/cm ² Fläche Area
1	Bâti / Gehäuse / Housing	1	6059
2	Rotor / Rotor / Rotor	1	1273
3	Ecrou / Mutter / Nut	1	37.54
4	Couvercle / Deckel / Cover	1	815.9
5	Rotor / Rotor / Rotor	1	1517.5
6	Bague / Ring / Ring	1	2.6
7	Ecrou / Mutter / Nut	1	37.54
8	Couvercle / Deckel / Cover	1	173
Total cm²			9916.08



Pos.	Description / Bezeichnung / Description	Quantité Menge Quantity	Surface/cm ² Fläche Area
1	456221 : Frame	1	7039.3
2	464846 : Funel	1	2014.3
3	437890 : Flexible rubber	1	496.2
4	464847 : Funel	1	1019.5
Total cm²			10569.3



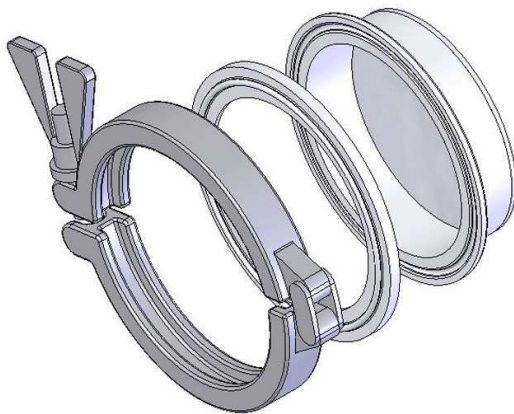
Pos.	Description / Bezeichnung / Description	Quantité Menge Quantity	Surface/cm ² Fläche Area
1	464820 : Housing	1	30235
2	464819 : Pipe	1	3371
3	464820 : Couver	1	6380
4	464904 : Elbow	2	1354
Total cm²			41340

L'équipement de nettoyage ne fait pas partie de la fourniture standard de l'installation. Vous pouvez les commander en indiquant le type de machine et le numéro de série à l'adresse indiquée à la fin de ce document.

Die Reinigungsausrüstung gehört nicht zur Standardausrüstung der Anlage. Sie können diese bestellen, indem Sie den Maschinentyp und die Seriennummer bei der unten aufgeführten Adresse dieses Dokuments angeben.

The cleaning equipment is not included as part of the installation standard supplies. You can order these pieces indicating the type of machine and the serial number at the address indicated at the end of this document.

Couvercle de fermeture du bras
 Abschlussdeckel des Armes
 Closing cover of the arm



	N° article
HammerWitt-Lab	443636
ConiWitt-150/200	
TurboWitt-C20	
ConiWitt-250	443642
TurboWitt-C25	

Bouchon de fermeture (pour sonde)
 Abschlussstopfen (für Fühler)
 Closing cap (for sensor)



	N° article
ConiWitt-150/200	445154
TurboWitt-C20	
ConiWitt-250	
TurboWitt-C25	

Tel: +41 26 460 74 15
 Fax +41 26 460 74 01
 E-mail: customerservice@frewitt.com

MAINTENANCE AND SUPPORT

Liste des lubrifiants utilisés et tableau de graissage.

Liste der angewendeten Schmiermittel und Schmier-Anweisung

Instruction and list of used lubricants and lubrication chart

Réducteur	Stirnradgetriebe	Gearbox
	M2-Q2-T4-F5-3-()	
Surfaces de friction	Gleitflächen	Frictions surfaces
	M3-Q4-T2-F2-()	
Entraînement	Antrieb	Drive
	M1-Q1-T1-F1-1-()	

	Mode de lubrification	Art der Schmierung	Type of lubrication
M1	Garnissage de graisse	Fettpackung	Packed grease
M2	Bain d'huile	Ölbad	Oil bath
M3	Application de graisse	Schmieranwendung	Grease application

	Qualité	Qualität	Quality
Q1	Graisse lubrifiante	Schmierfett	Lubricating grease
Q2	Huile	Getriebeöl	Gearbox oil
Q3	Huile haute pression	Hochdrucköl	High pressure oil
Q4	Pâte de montage	Montagepaste	Paste for assembly

	Type	Typ	Type
T1		Klübersynth UH1 14-151	
T2		Klüberpaste UH1 84-201	
T3		Klüberoil 4UH1-32 N	
T4		Klüberoil 4UH1-220 N	

	Fréquence [H]	Schmierfrequenz [H]	Frequency [H]
F1	Seulement en cas de remplacement entraînement / Nur bei Antriebswechsel / Only for drive change		
F2		4000	
F3		10000	
F4		16000	
F5	Lubrifié à vie	Immerwährende Einmalschmierung	Once for a life lubrication

	Quantité [cc]	Menge [cc]	Quantity [cc]
1		10	
2		700	
3		1200	

	Information complémentaire	Zusatzinformation	Additional information

M2 - Q2 - T4 - F4 - 2 - (ISO VG 220 DIN 51519)

Liste des lubrifiants utilisés et tableau de graissage.

Liste der angewendeten Schmiermittel und Schmier-Anweisung

Instruction and list of used lubricants and lubrication chart

Palier d'entraînement	Antriebslager	Drive bearing
M1-Q1-T1-F1-1-(ISO VG 68 DIN 51519)		
Surfaces de friction	Gleitflächen	Frictions surfaces
M2-Q2-T2-F2-2-()		

	Mode de lubrification	Art der Schmierung	Type of lubrication
M1	Bain d'huile	Oelbad	Oil bad
M2	Application de graisse	Schmieranwendung	Grease application

	Qualité	Qualität	Quality
Q1	Huile lubrifiante synthétique	Synthetisches Schmieroel	Synthetic lubricating oil
Q2	Pâte de montage	Montagepaste	Paste for assembly

	Type	Typ	Type
T1		Klüberoil 4 UH 1 68 N	
T2		Klüberpaste UH1 84-201	

	Fréquence [H]	Schmierfrequenz [H]	Frequency [H]
F1		A vie / lebenslänglich / for life	
F2		4000	

	Quantité [ml]	Menge [ml]	Quantity [ml]
1		CW-150 = 60 CW-200 = 85 CW-250 = 140	
2		---	

	Information complémentaire	Zusatzinformation	Additional information

M1 - Q1 - T1 - F1 - 1 - (ISO VG 68 DIN 51519)

Pièces mécaniques / Mechanische Teile / Mecanical parts

Désignation Beschreibung Description	Fréquence de contrôle Kontrollhäufigkeit Frequency of control	Recommandation de changement Austauschempfehlung Recommendation of change
Palier Lager Bearing		~ 5000 h
Etoile élastomère (1) Stern des Kardansgelen (1) Elastomer star (1)	A chaque démontage Bei jeder Demontage To each disassembly	Selon l'état Je nach Abnutzung Depending on the condition
Cardan (1) Kardanwelle (1) Transmission (1)		
Clamp Klemme Clamp		

Joint / Dichtung / Seal

Désignation Beschreibung Description	Fréquence de contrôle Kontrollhäufigkeit Frequency of control	Recommandation de changement Austauschempfehlung Recommendation of change
Joint à lèvres Lippendichtung Lip gasket	A chaque nettoyage Nach jeder Reinigung To each cleaning	~ 1500 h
Joint plat Flachdichtung Flat gasket		Selon l'état Je nach Abnutzung Depending on the condition
Joint O-Ring O-Ringdichtung O-ring gasket		

Outillage / Werkzeuge / Tools

Désignation Beschreibung Description	Fréquence de contrôle Kontrollhäufigkeit Frequency of control	Recommandation de changement Austauschempfehlung Recommendation of change
Rotor	A chaque nettoyage Nach jeder Reinigung To each cleaning	Selon l'état Je nach Abnutzung Depending on the condition
Tamis (1) Siebtrommel (1) Screen (1)		
Râpe (1) Raspeltrommel (1) Grating (1)		
Couteau supérieur (2) Oberes Messer (2) Upper knife (2)		

Composants électriques / Elektrische Komponente / Electrical components

Désignation Beschreibung Description	Fréquence de contrôle Kontrollhäufigkeit Frequency of control	Recommandation de changement Austauschempfehlung Recommendation of change
Sécurité (accessoire entrée/sortie) Sicherheit (Einlauf/Auslaufsätze) Security (inlet/outlet funnel)	1 x par année 1 x pro Jahr 1 x per year	
Sonde température Temperaturfühler Temperature sensor		

Graissage / Schmierung / Lubrication

Selon chapitre 7 – Tableau de graissage
 Gemäss Kapitel 7 – Schmiertabelle
 According chapter 7 – Lubricating chart

Valable seulement pour / Gültig nur für / Valid only for

- (1) Module ConiWitt
- (2) Module ProFi-Sword

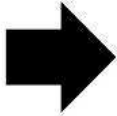
Restriction

Under no circumstances may the customer dismantle the drive of the ProFi-Sword module. Doing so will void the warranty. Contact customer service (see chapter 8 for addresses and phone numbers) if the unit requires maintenance work other than that described in this chapter.

Replacing the upper blade and its seals

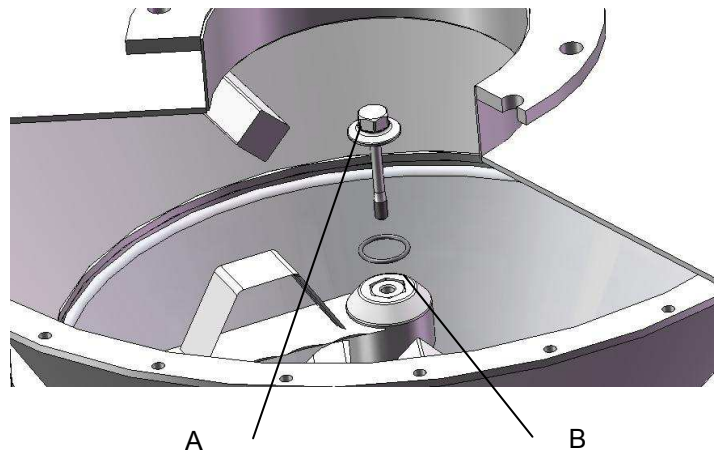


Before performing any work on this unit, it must be turned off and the electric and pneumatic lines must be disconnected. The operator is responsible for preventing any risks of contamination from the product.

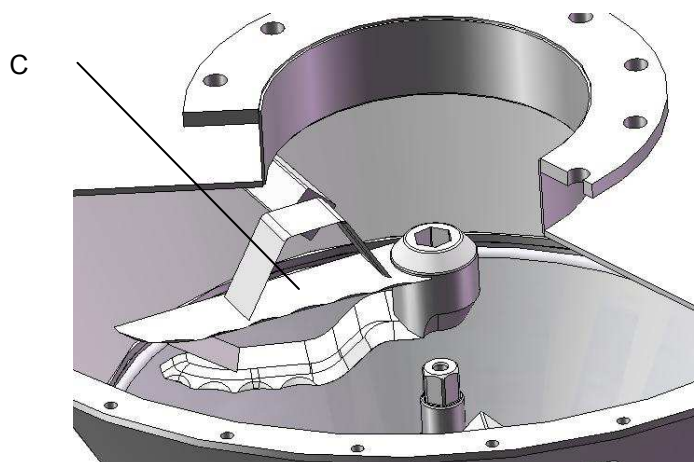


This operation requires complete access to the inlet of the ProFi-Sword module.

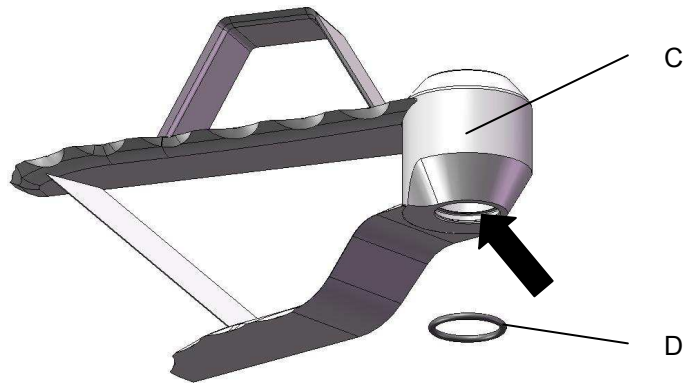
- Loosen the screw (A) by turning it counter-clockwise and remove it.
- Remove the seal (B)



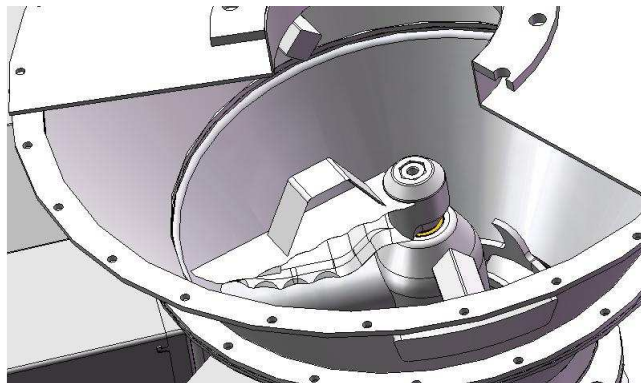
- Remove the blade (C)



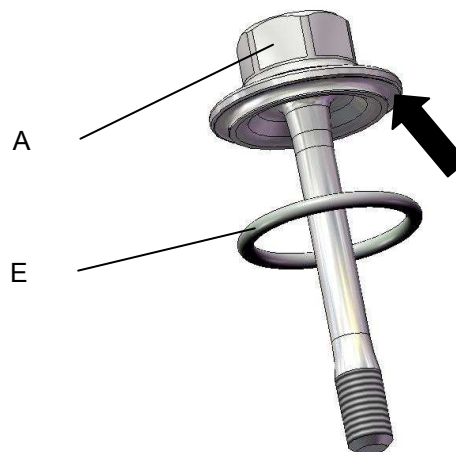
- Place the new seal (D) on the new blade (C)



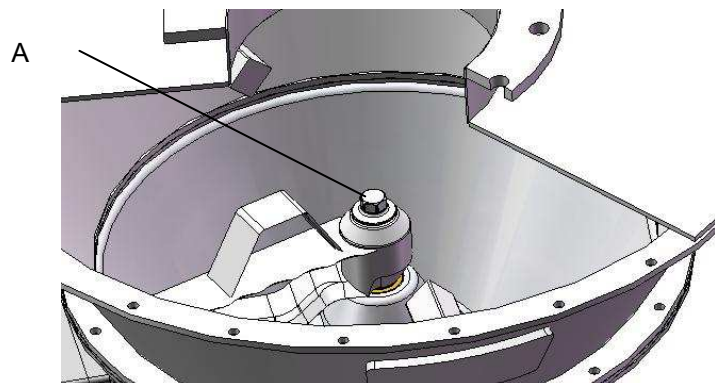
- Install the blade (C)



- Place the new seal (E) on the screw (A)



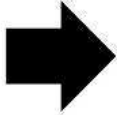
- Tighten the screw (A) by turning it clockwise to the torque specified in chapter 7 – Torques



Replacing the screw seal of the middle blade

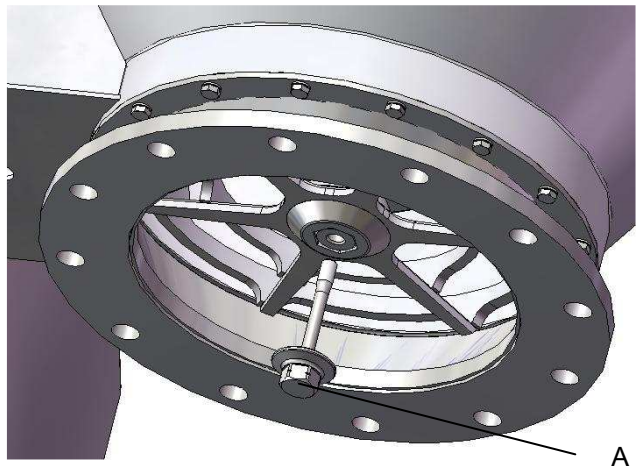


Before performing any work on this unit, it must be turned off and the electric and pneumatic lines must be disconnected. The operator is responsible for preventing any risks of contamination from the product.

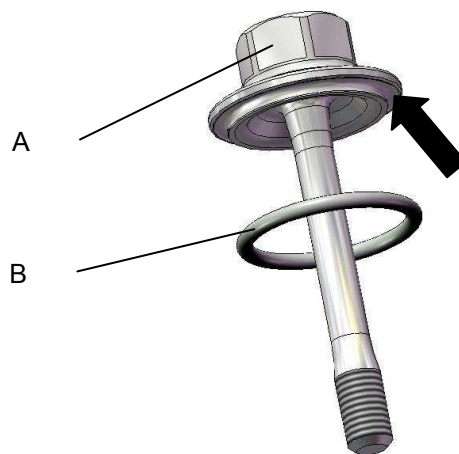


This operation requires complete access to the outlet of the ProFi-Sword module.

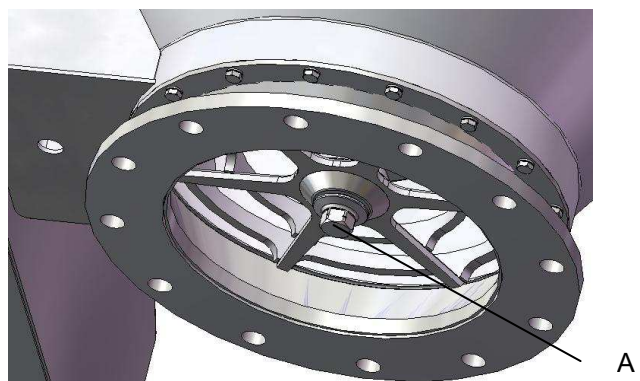
- Loosen the screw (A) **by turning it clockwise** and remove it



- Place the new seal (B) on the screw (A)



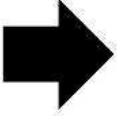
- Tighten the screw (A) **by turning it counter-clockwise** to the torque indicated in chapter 7 – Torques



Replacing the middle blade seal

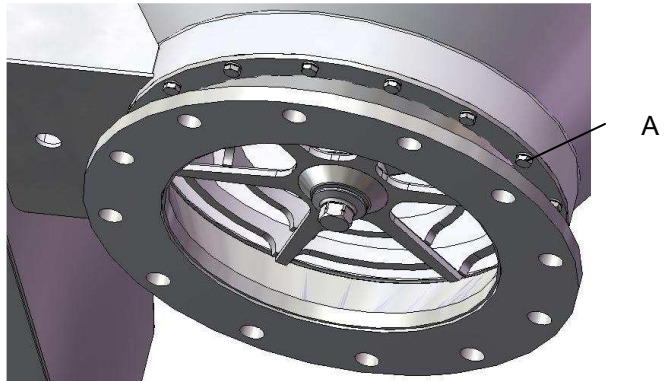


Before performing any work on this unit, it must be turned off and the electric and pneumatic lines must be disconnected.
The operator is responsible for preventing any risks of contamination from the product.

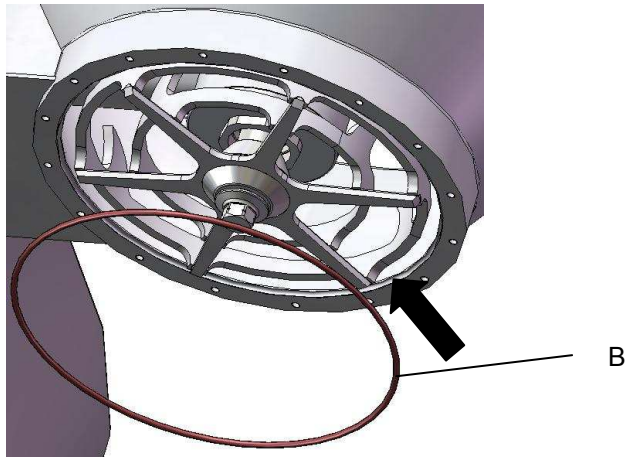


This operation requires complete access to the outlet of the ProFi-Sword module.

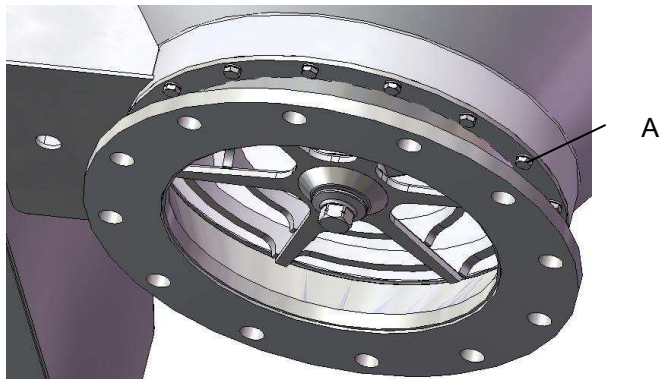
- Loosen and remove the screws (A)



- Remove the old seal and position the new seal (B) in its seating



- Tighten the screws (A) to the torque indicated in chapter 7 – Torques



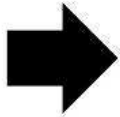
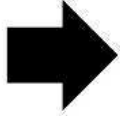
Replacing the lip seals



Before performing any work on this unit, it must be turned off and the electric and pneumatic lines must be disconnected.

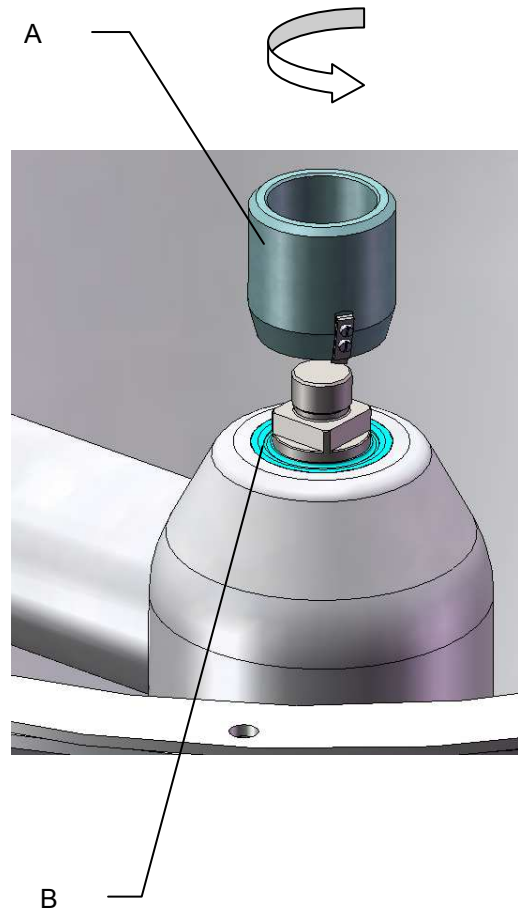
The operator is responsible for preventing any risks of contamination from the product.

This procedure applies to the 2 lip seals (upper and lower bearing). This operation requires complete access to both the inlet and the outlet of the ProFi-Sword module.

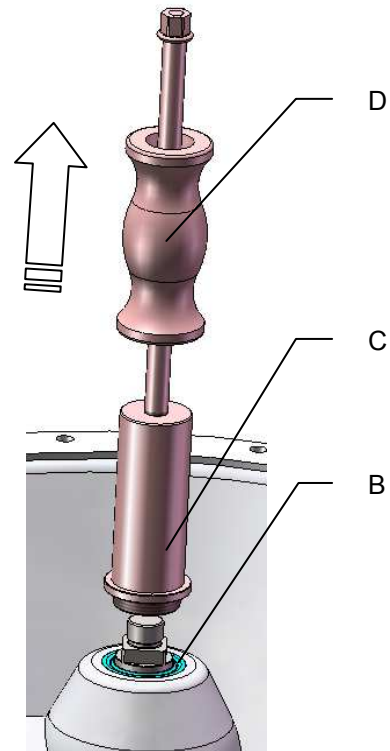


Tools for maintenance, see chapter 7 – Special tools

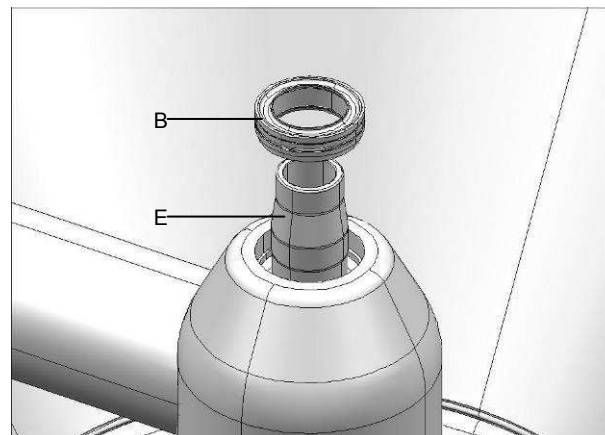
- Place the knife (A)
- Turn for cut the seal (B)



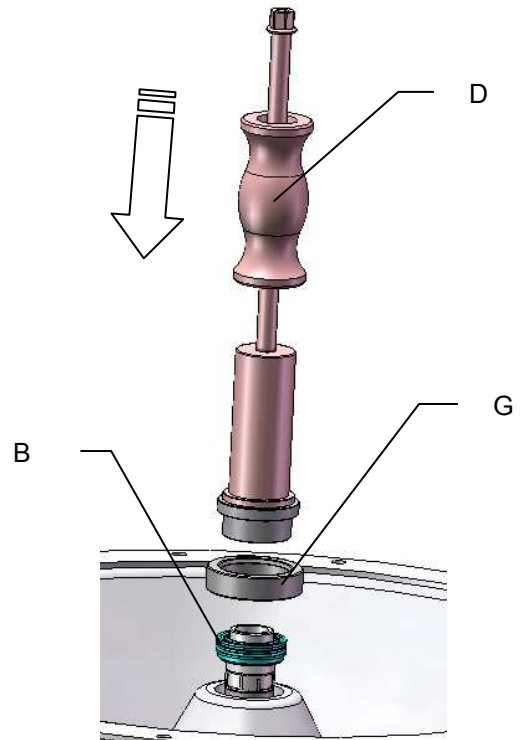
- Screw the extraction tool (C) in the seal (B)
- Pull out the seal (B) with the weight (D)



- Fit the assembly cone (E) onto the shaft
- Grease the surfaces of the new seal (B) around the O-ring
- Slide the new seal (B) onto the assembly cone (E) as far as possible, without forcing it



- Insert the ring (G) into the new seal (B)
- Insert the tool into the ring (G)
- Push the new seal (B) with the weight (D)



The procedure is the same for the second seal that is located in the lower part of the bearing

Voir documents suivants.

Siehe folgende Dokumente.

See following documents

Replacement of the double lip gasket of the bearing



Before performing any work on this unit, it must be shut down and disconnected from all electric and pneumatic power supplies.

The user must eliminate the risks of contamination by the product.



The replacement of the double lip gasket may only be performed by qualified maintenance personnel who possess the specific knowledge required for the job and who have read this instruction manual. They shall only use the proper tools.



The gasket (G) assures that the drive bearing remains sealed during the replacement of the double lip gasket (E).

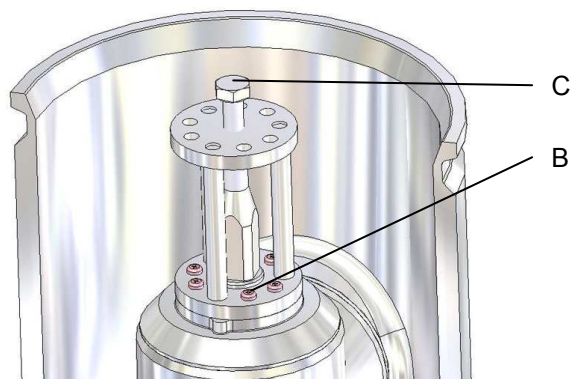
- Dismantle the equipment according to chapter 5 – Dismantling the equipment.



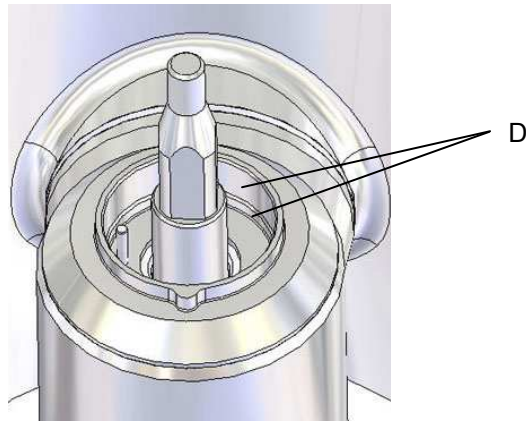
- Insert the seal extraction tool (A), see Section 7 – Special Tools.



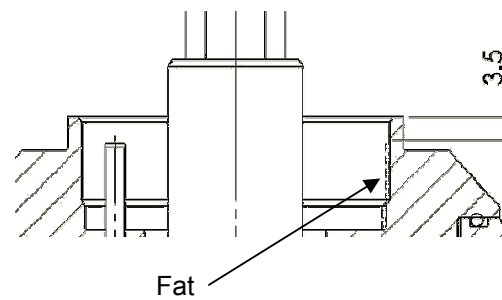
- Screw the screws (B) into the seal.
- Tighten the screw (C) to extract the seal.



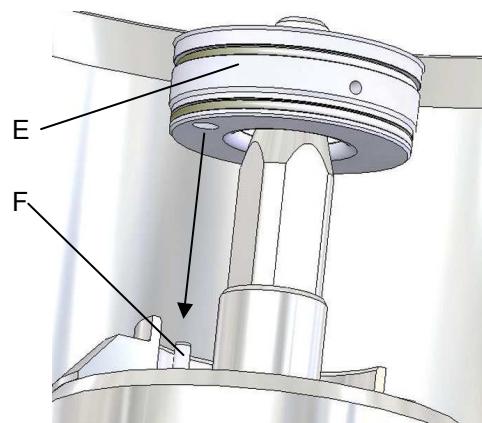
- Clean and degrease the surfaces (D).



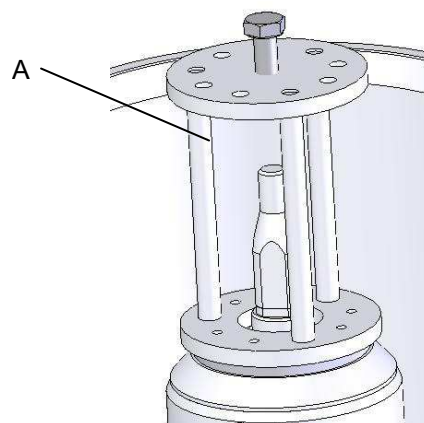
- Grease, according chapter 7 – Table of lubricating, the surface (D) at the distance shown on the sketch.



- Align the hole of the seal with the pin (F)
- Insert the new seal (E).



- Insert the seal extraction tool (A).
- Using a plastic hammer, carefully knock in the seal as far as it will go.



Replacement of the ConiWitt-150 drive bearing



Before performing any work on this unit, it must be shut down and disconnected from all electric and pneumatic power supplies.

The user must eliminate the risks of contamination by the product.



The drive bearing is considered a replacement part. The customer is not authorized to dismantle this element. The only piece that the customer may replace on this element is the double lip gasket.

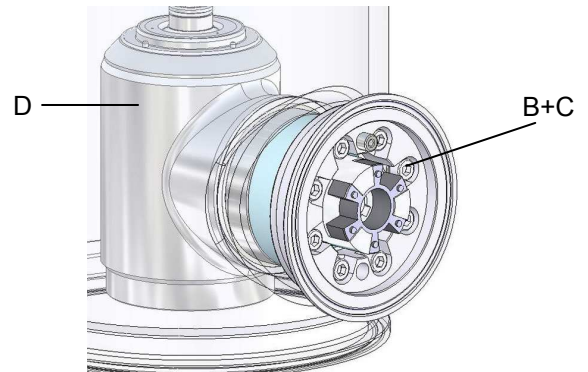


The replacement of the drive bearing may only be performed by qualified maintenance personnel who possess the specific knowledge required for the job and who have read this instruction manual. They shall only use the proper tools.

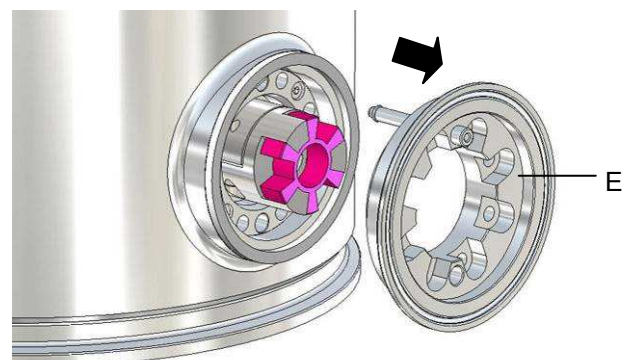
- Remove the ConiWitt case according to the instructions in chapter 5 – Removing the case.
- Remove the cleaning cover (A) from the case (if it is installed).



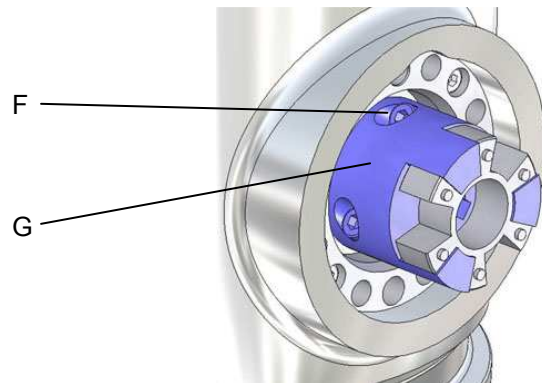
- While holding the drive bearing (D), unscrew and set aside the 8 bearing fastening screws (B) and their corresponding washers (C).



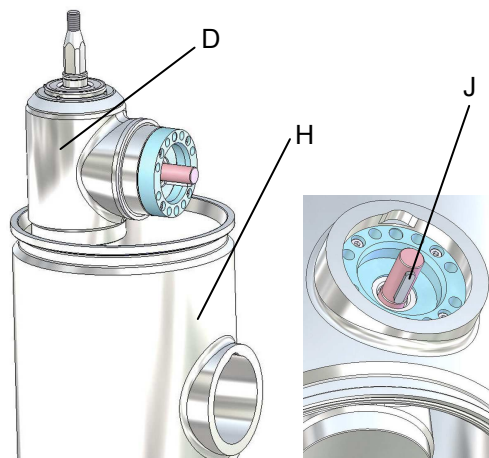
- Remove the case - bearing restraint (E) and clean it.



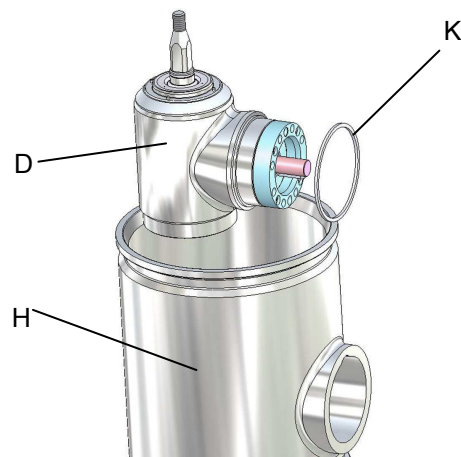
- Unscrew the 2 screws (F) with a shortened wrench (see chapter 7 – Special tools) and remove the hub (G).



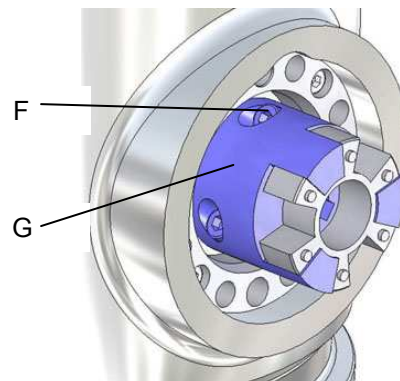
- Carefully remove the drive bearing (D) from the case (H). To make this operation easier, turn the key (J) so that it faces downward.
- Clean the case (H).



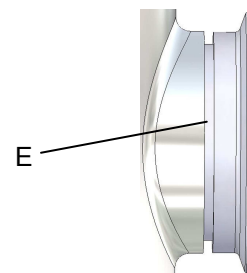
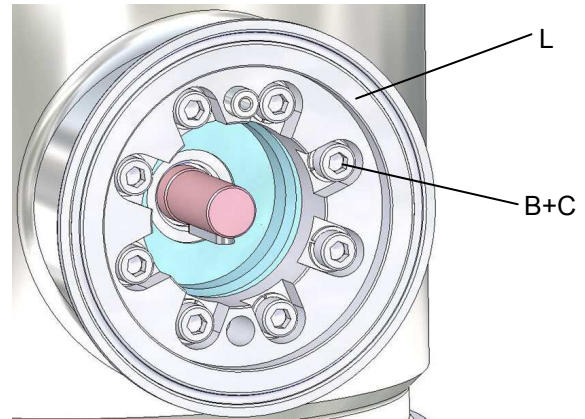
- Grasp the new drive bearing (D).
- Remove the gasket (K). The bearing should only be removed again and the gasket compressed one time.
- Insert the drive bearing (D) in the case (H), positioning the key towards the bottom.



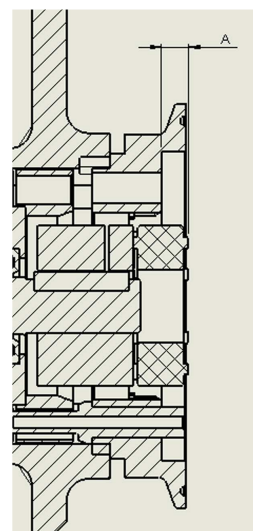
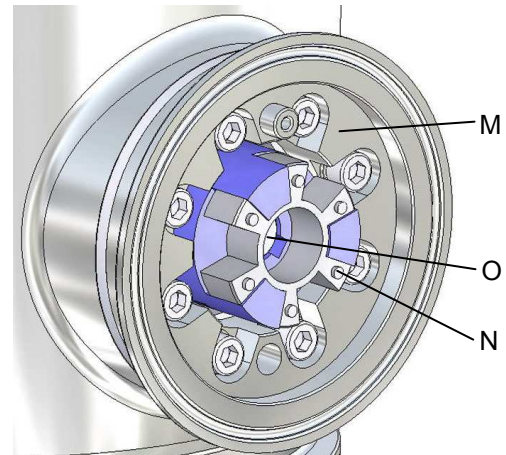
- Attach the hub (G) and screw in the 2 screws (F) with a shortened wrench (see chapter 7 – Special tools).



- Remove the gasket (L). The restraint should only be removed again and the gasket compressed one time.
- Attach the restraint (E).
- Insert the 8 bearing fastening screws (B) with their washers (C) and tighten them gently without jamming them.

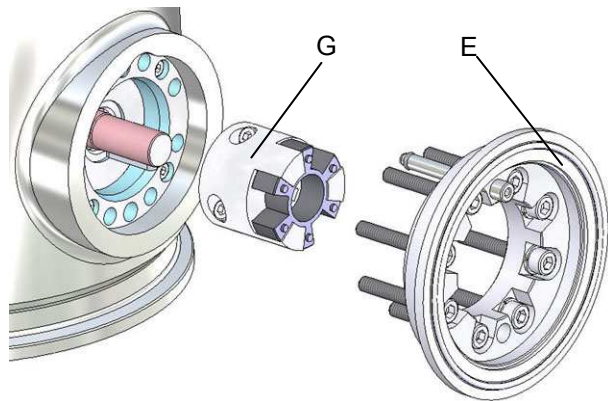


- Measure the distance between the support side (M) and the nipple of the elastomer star (N) on the new bearing.
- The correct distance is given in the sketch below.
- Because the hub must be positioned without the restraint, measure a reference distance, for example: the distance between the end of the shaft (O) and the nipple of the elastomer star (N).

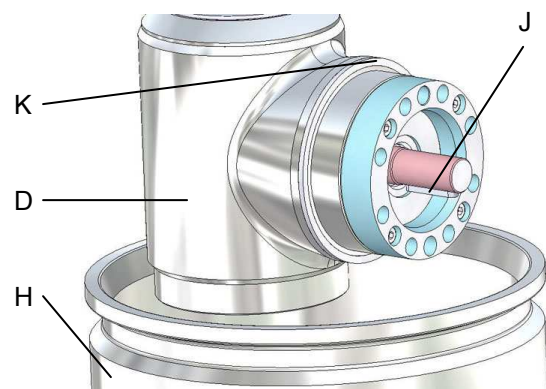


$$A = 7 \quad 0/+0.5$$

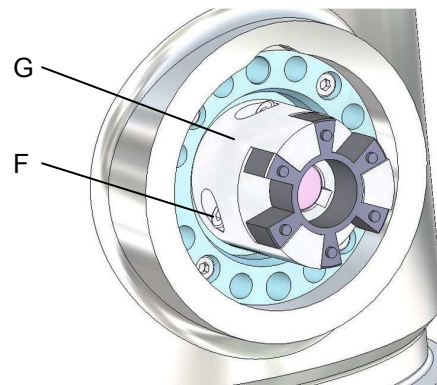
- Remove the case - bearing restraint (E).
- Remove the hub (G).



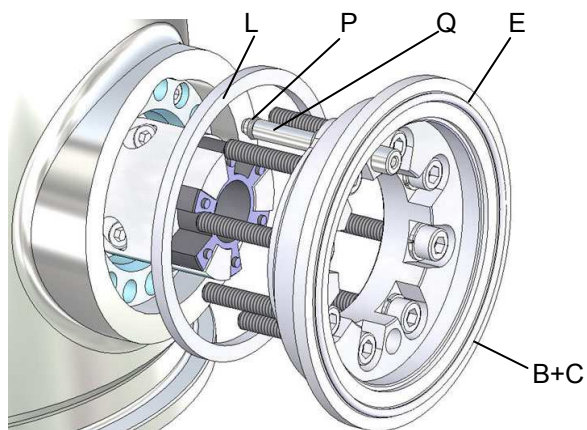
- Gently remove the drive bearing (D) from the case (H). To make this operation easier, turn the key (J) so that it is facing downward.
- Insert the gasket (K).
- Insert the bearing (D) in the case (H).



- Attach the hub (G)
- Adjust the reference distance, taking the difference between the value measured previously and the correct value into account.
- Tighten the screws (F) with a shortened wrench (see chapter 7 – Special tools).



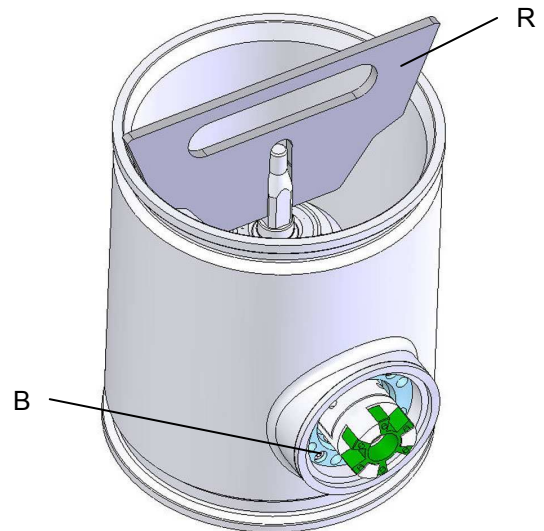
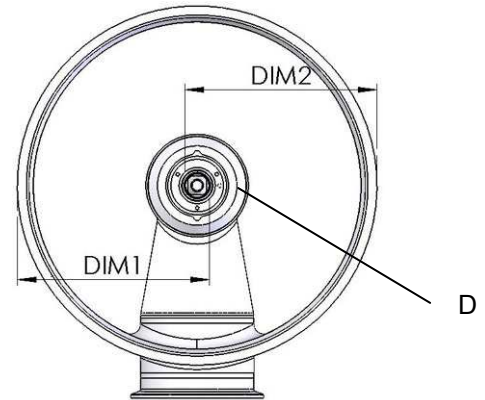
- Insert the gasket (L) on the restraint (E).
- Make sure that there is an O-ring gasket (P) on the inertization tube (Q) and that it is in good condition.
- Insert the screws (B) and the washers (C) in the restraint (E).
- Assemble the restraint (E) in the drive bearing (D).
- Gently screw in the screws (B) without jamming them.



- Center the bearing (D). To do so, take two measurements (DIM1 and DIM2) with the aid of a gauge, as shown in the drawing to the right. The difference between the two measurements must not exceed 0.1 mm.

or

- To use the centring device of bearing (R) (see chapter 7 - special Tools).
- Tighten the 8 bearing fastening screws (B), applying a torque as specified in chapter 7 – Tightening torques.
- Attach the case according to the instructions in chapter 5 – Attaching the case.



Replacement of the ConiWitt-200/250 drive bearing



Before performing any work on this unit, it must be shut down and disconnected from all electric and pneumatic power supplies. The user must eliminate the risks of contamination by the product.

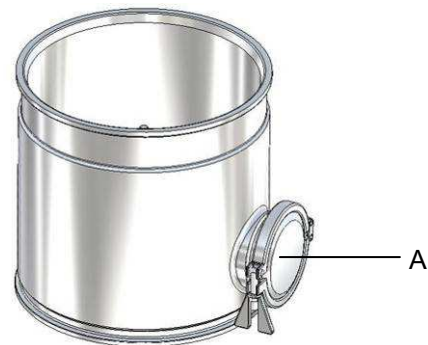


The drive bearing is considered a replacement part. The customer is not authorized to dismantle this element. The only piece that the customer may replace on this element is the double lip gasket.

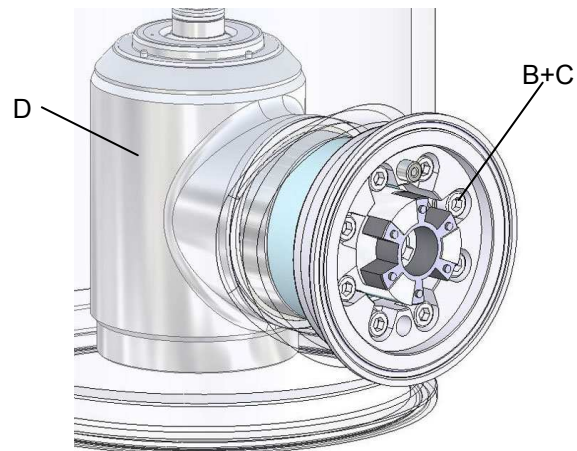


The replacement of the drive bearing may only be performed by qualified maintenance personnel who possess the specific knowledge required for the job and who have read this instruction manual. They shall only use the proper tools.

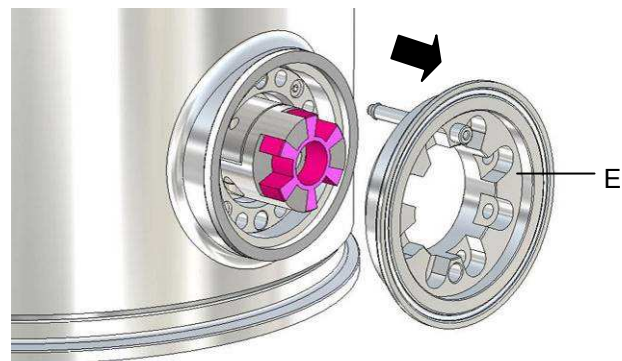
- Remove the ConiWitt case according to the instructions in chapter 5 – Removing the case.
- Remove the cleaning cover (A) [sic] from the case (if it is installed).



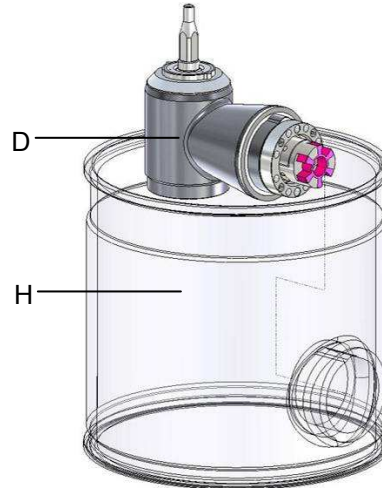
- While holding the drive bearing (D), unscrew and set aside the 8 bearing fastening screws (B) and their corresponding washers (C).



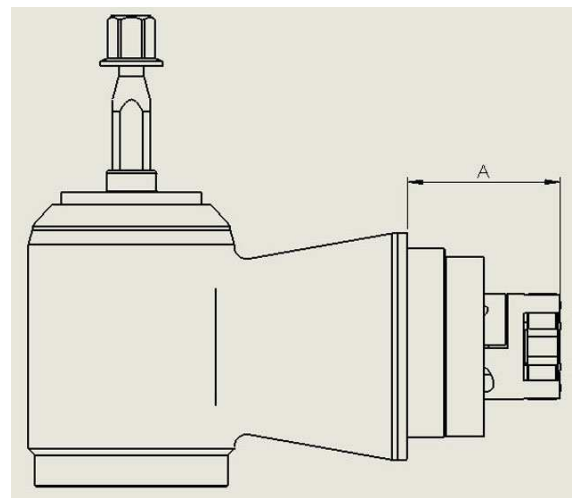
- Remove the case - bearing restraint (E).



- Carefully remove the drive bearing (D) from the case (H).
- Clean the case (H) and the case - bearing restraint (E).

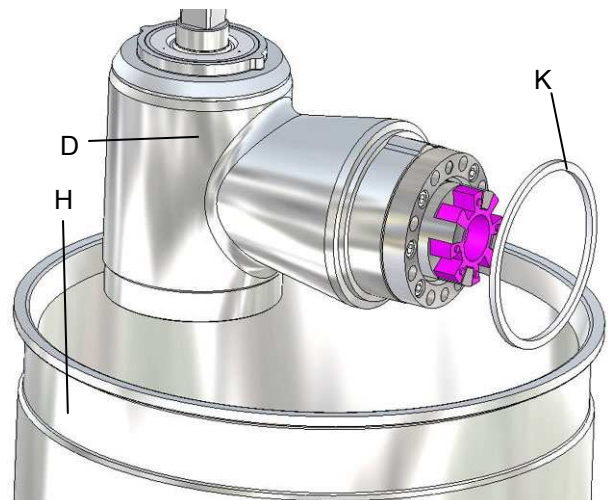


- Grasp the new drive bearing (D).
- Remove the gasket (K).
- Check the distance A.
- If necessary, correct this distance.

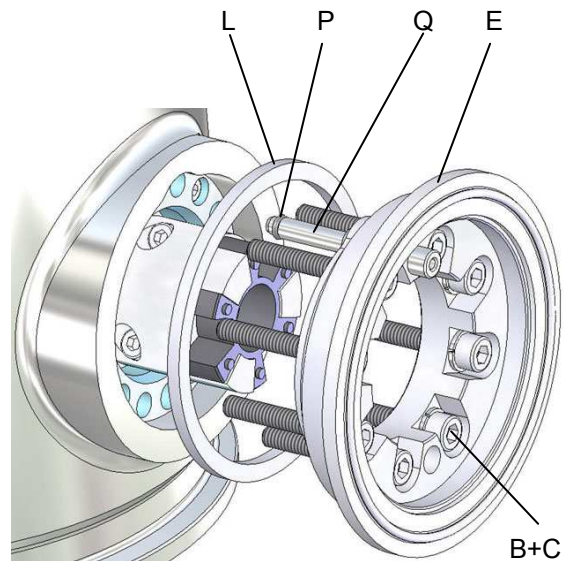


	ConiWitt-200	ConiWitt-250
A	60.9 0/+0.2	61.4 0/+0.2

- Grasp the new bearing (D).
- Insert the gasket (K).
- Insert the bearing (D) in the case (H).

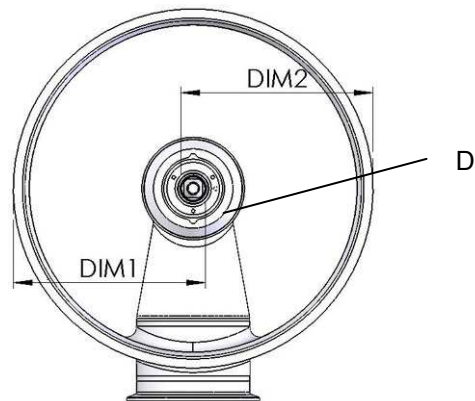


- Insert the gasket (L) on the restraint (E)
- Check to make sure there is an O-ring gasket (P) on the inertization tube (Q) and that it is in good condition.
- Insert the screws (B) and the washers (C) in the restraint (E)
- Assemble the restraint (E) in the drive bearing (D).
- Gently screw in the screws (B) without jamming them.



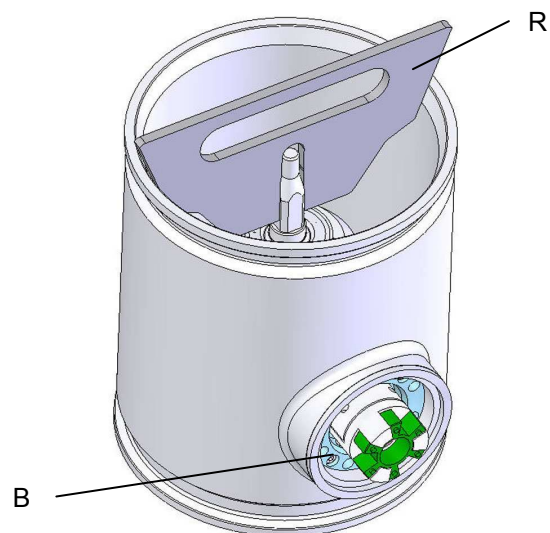
- Center the bearing (D). To do so, take two measurements (DIM1 and DIM2) with the aid of a gauge, as shown in the drawing to the right. The difference between the two measurements must not exceed 0.1 mm.

or



- To use the centring device of bearing (R) (see chapter 7 - special Tools)

- Tighten the 8 bearing fastening screws (B), applying a torque as specified in chapter 7 – Tightening torques.
- Attach the case according to the instructions in chapter 5 – Attaching the case.



Replacing the bearing temperature sensor

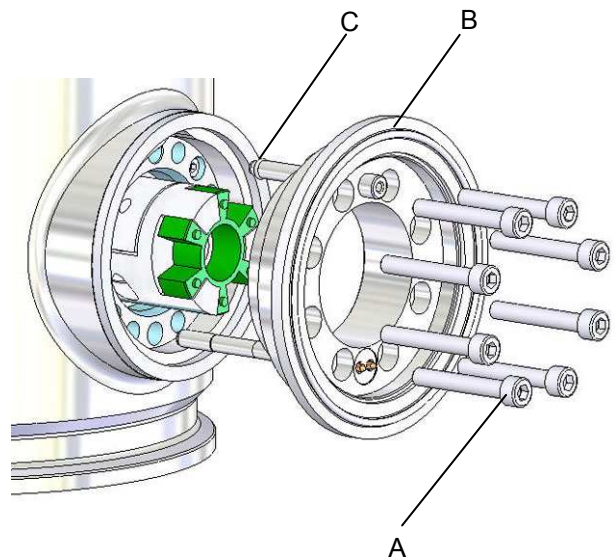


Before performing any work on this unit, it must be shut down and disconnected from all electric and pneumatic power supplies.
The user must eliminate the risks of contamination by the product.



The checking and replacing of the temperature sensor may only be performed by qualified maintenance personnel who possess the specific knowledge required for the task and who have read this instruction manual. They shall only use the proper tools.

- Remove the inlet/outlet funnels according chapter 5 – Removing the inlet/outlet funnels.
- Remove the housing according chapter 5 – Dismantling the housing.
- Unscrew the screws (A).
- Pull out the complete flange (B).
- Check the presence of the seal (C) on the new flange.
- Insert delicately the new flange (B) into the drive bearing.
- Tighten the screws (A) to the torque specified in chapter 7 – Torques.



Checking and replacing the elastomer stars of the universal joint



Before performing any work on this unit, it must be shut down and disconnected from all electric and pneumatic power supplies.

The user must eliminate the risks of contamination by the product.



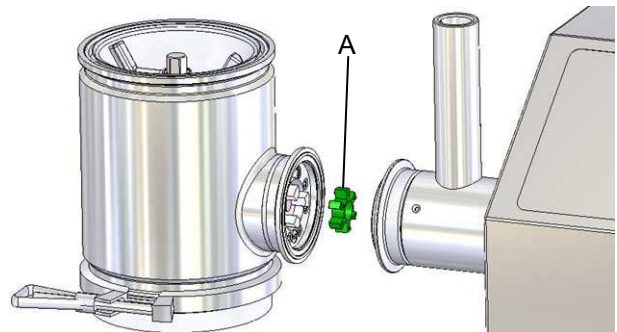
The checking and replacing of the elastomer stars of the universal joint may only be performed by qualified maintenance personnel who possess the specific knowledge required for the task and who have read this instruction manual. They shall only use the proper tools.



A check of the elastomer stars is recommended every 500 hours.

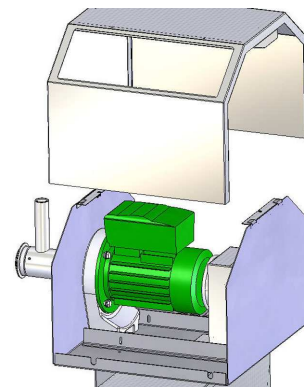
Checking the elastomer stars

- Remove the case according to the instructions in chapter 5 – Removing the case.
- Remove and visually check the universal joint elastomer star (A) on the case side.
- If the universal joint elastomer star (A) shows significant signs of wear or damage, the universal joint elastomer star (A) on the case side **and** the universal joint elastomer star (A) on the motor side must be replaced, according to the following instructions.

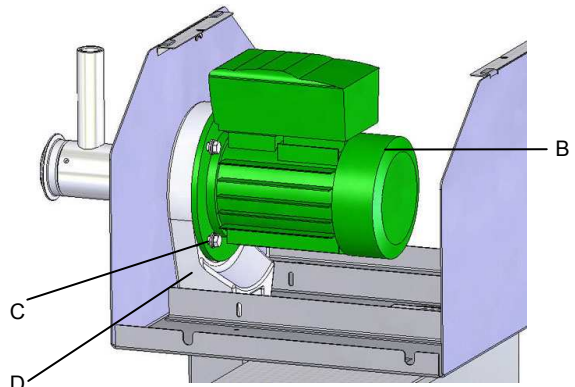


Replacement of the elastomer stars

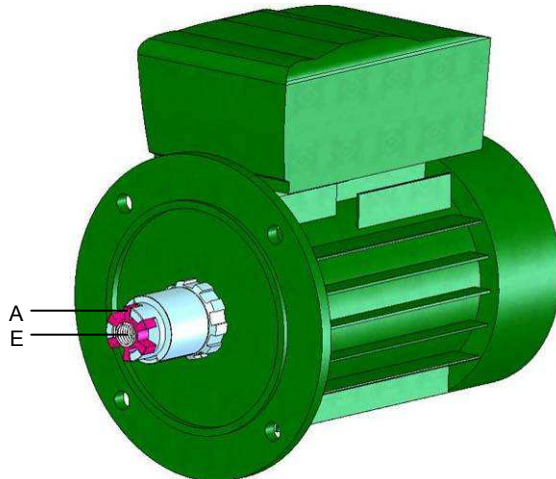
- Remove the housing according chapter 5 - Dismantling the housing.
- Remove the protective casing according chapter 5 – Dismantling the protective casing.



- Support the drive motor (B) (May vary, depending on the design of the unit) with a jacking device suited for this purpose.
- Loosen and remove the drive motor fastening screws (C).
- Gently free the drive motor (B) from the motor support (D).



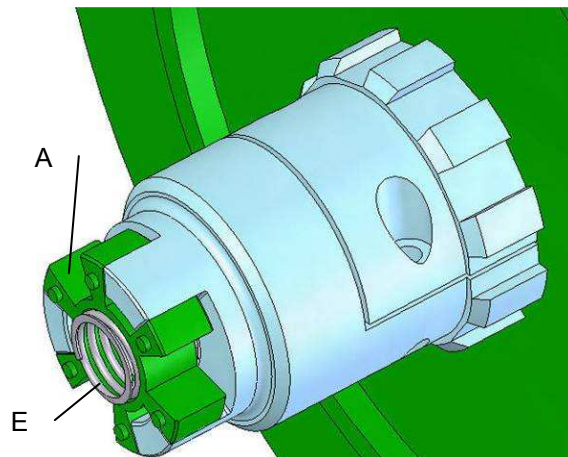
- Remove the elastomer star (A) and the contact spring (E).
- Clean the coupling.



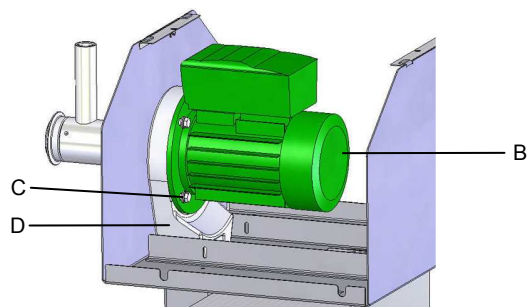
- Fit the elastomer star (A).
- Fit the contact spring (E).



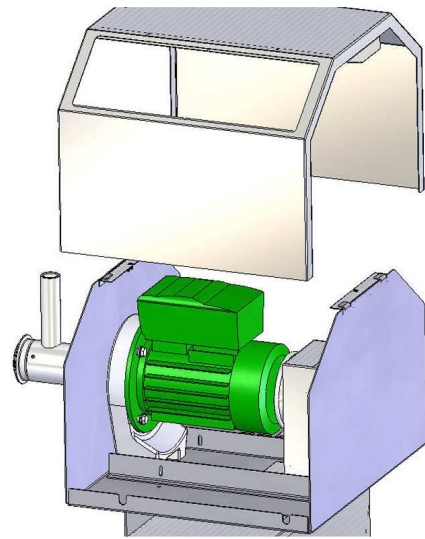
The spring (G) earths the drive system.
Check that it is in place and fitted correctly.



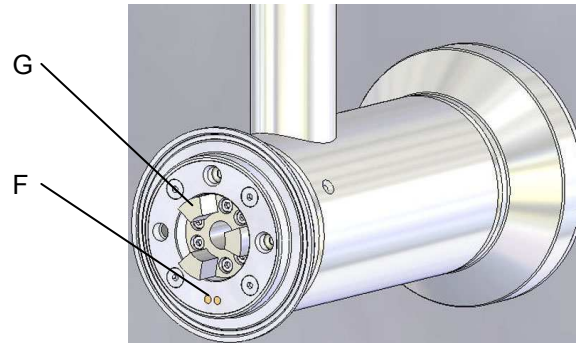
- Place the drive motor (B) in position against the motor support (D).
- Lubricate and screw in the 4 motor fastening screws (C) without forgetting a flat washer and a spring washer for each screw.
- Tighten the 4 motor fastening screws (C), applying a torque as specified in chapter 7 – Tightening torques.



- Assemble the protective casing according chapter 5 – Assembling the protective casing.

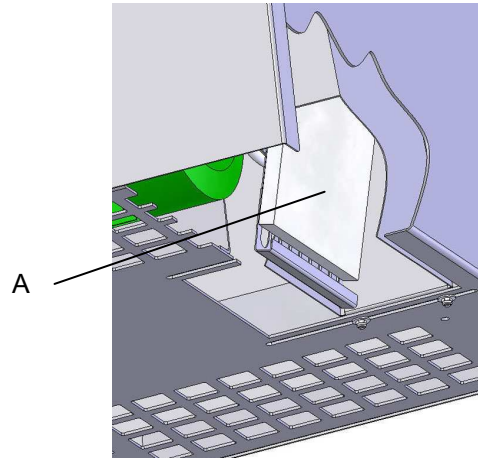


- Clean the coupling (F) and the contacts (G) on the case side.
- Replace the elastomer star (A) on the case side.
- Reattach the case according to chapter 5- Attaching the case.



Replacement of the suction filter (for not Ex machine only)

- Remove the filter holder according to chapter 5
– Removing the air filter.
- Replace the filter (A).
- Reassemble the filter holder according to chapter 5 – Attaching the air filter.



Changing schedule

- Every 3 months for units operated in very dusty areas.
- Every 6 months for units used in normal areas.
- Once a year for units operated in clean rooms.

Dismantling the lip gasket of the temperature sensor 12 bars (optional)

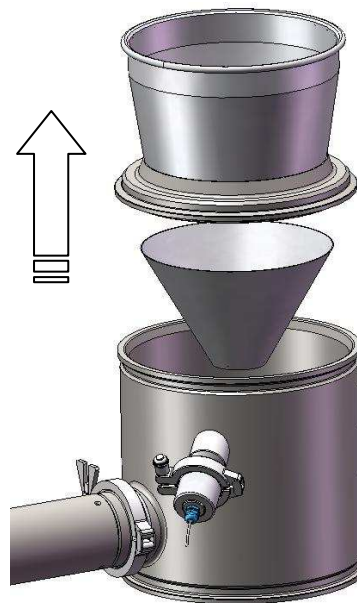


Before performing any work on this unit, it must be shut down and disconnected from all electric and pneumatic power supplies.
The user must eliminate the risks of contamination by the product.

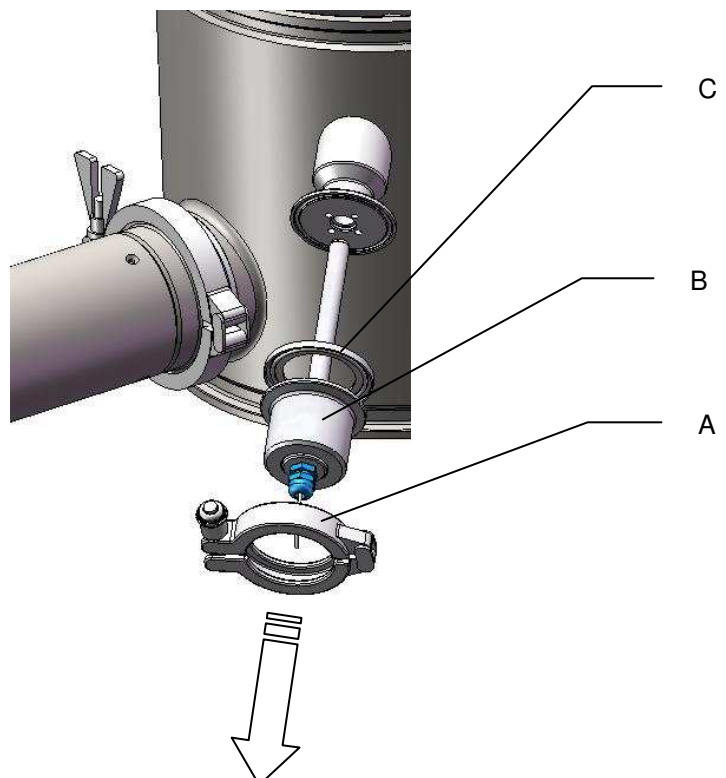


This operation may only be performed by qualified maintenance personnel who possess the specific knowledge required for the job and who have read this instruction manual.
They shall only use the proper tools.

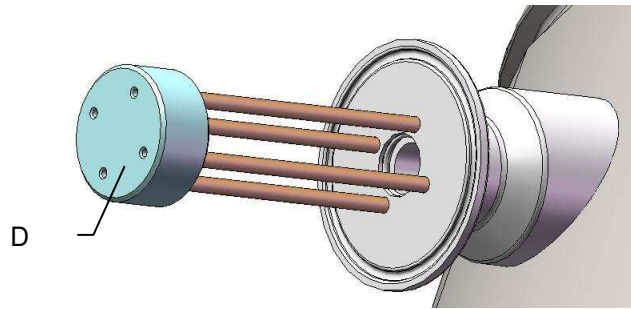
- Remove the equipment according to chapter 5



- Remove the clamp (A)
- Go out cautiously the sensor (B) of the housing
- Remove the seal (C)

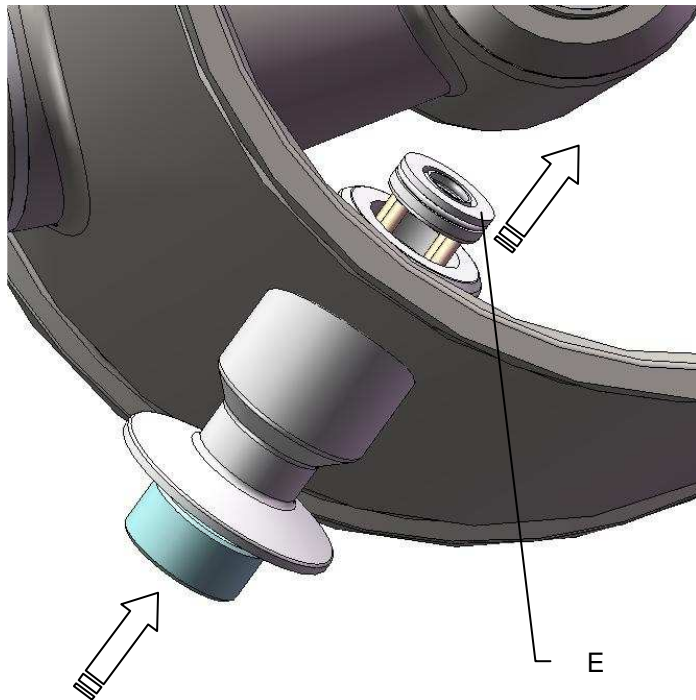


- Insert the tool * (D) in the housing



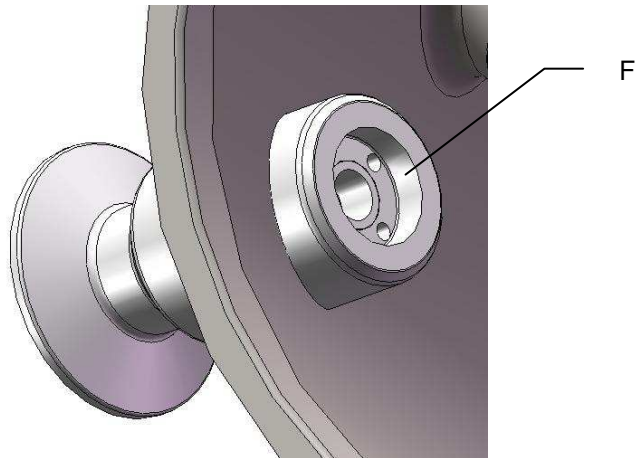
- * Look chapter 7 – Special tools

- Eject the seal (E)

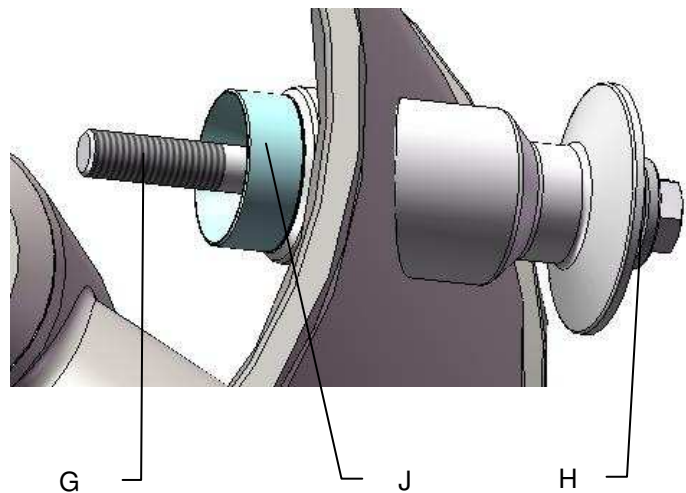


Assembling the lip gasket of the temperature sensor 12 bars (optional)

- Clean and grease light the surface (F)



- Insert the conus (G), the ball bearing (H) and the screw (J) of the special tool *

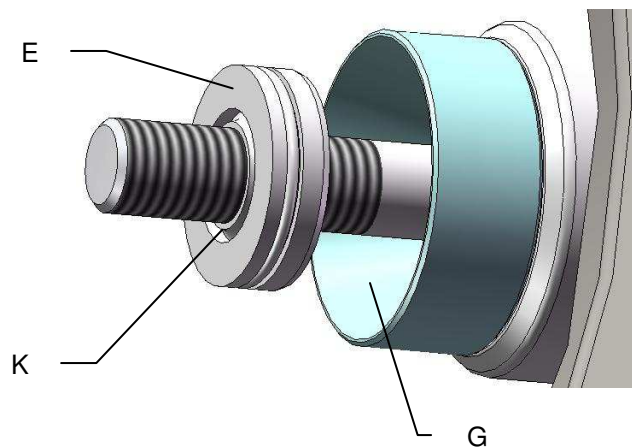


* Look chapter 7 – Special tools

- Insert the new seal (E) in the conus (G)

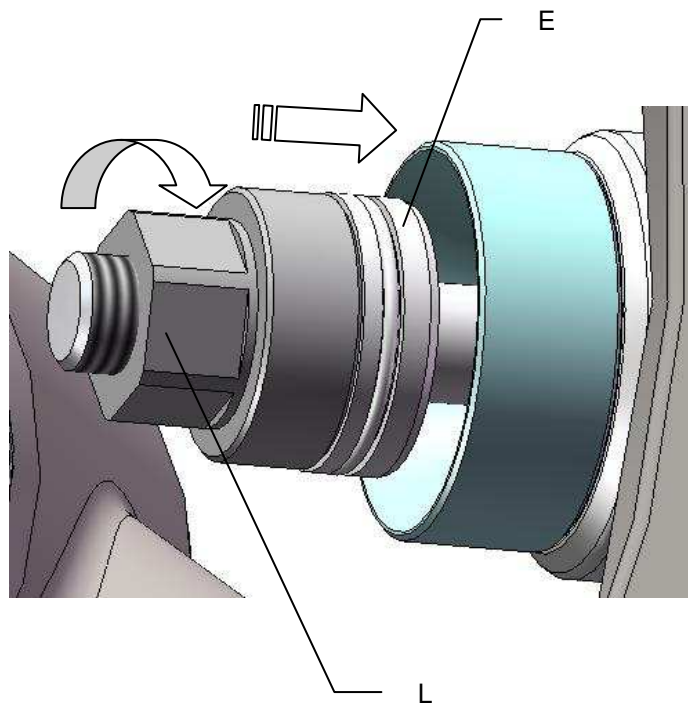


The lip (K) of the seal must be positioned inside the housing

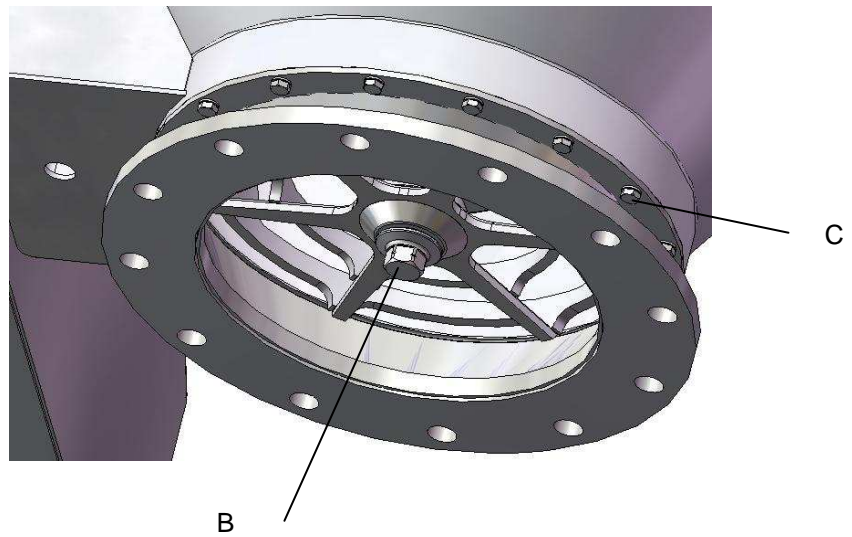
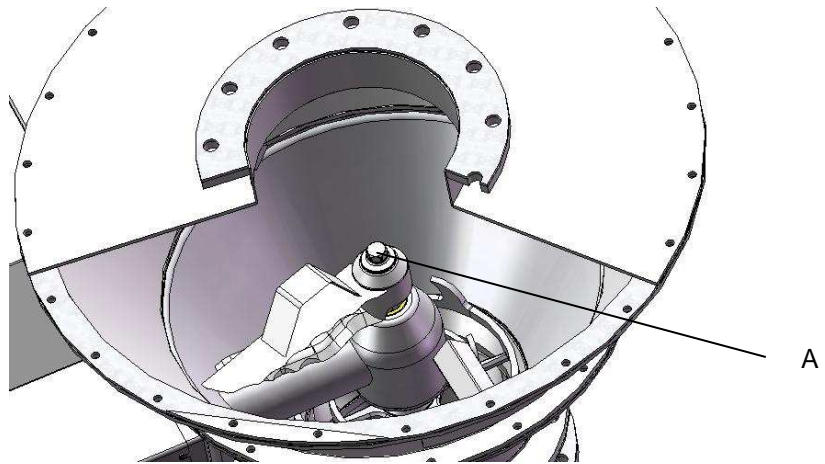


- Screw the nut (L) of the special toll for push the seal (E)

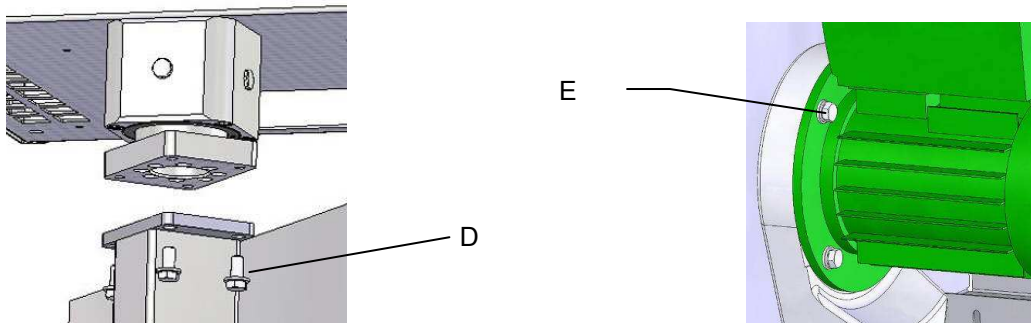
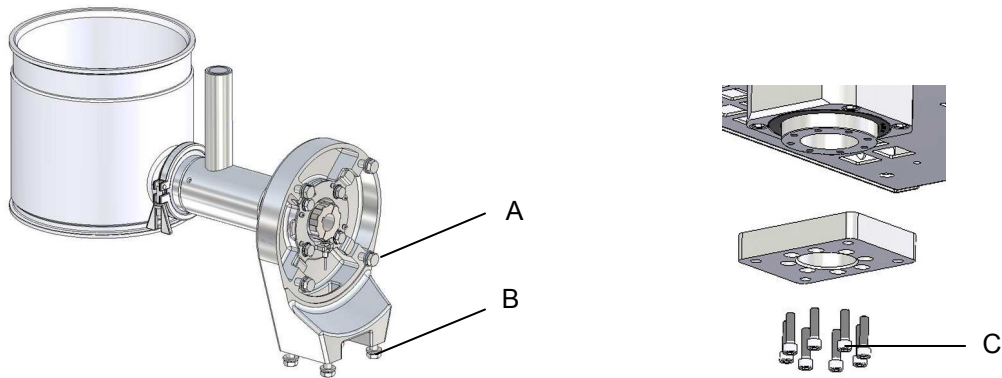
* Look chapter 7 – Special tools



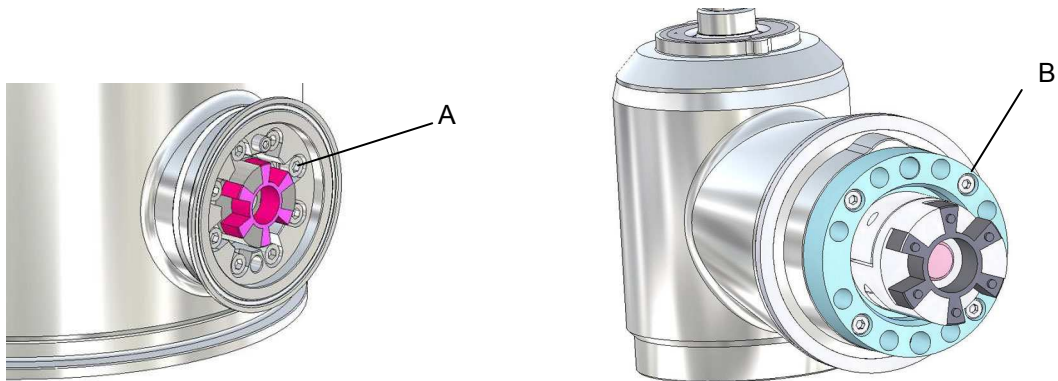
- Reassemble the temperature sensor
- Reassemble the equipment according to chapter 5



	Nm	Remarque / Bermerkungen / Remarks
A	70	Graisser / Einfetten / Grease
B	70	Graisser / Einfetten / Grease
C	21	Graisser / Einfetten / Grease



	ConiWitt 150/200 TurboWitt-C20	ConiWitt 250 TurboWitt-C25	Remarques / Bemerkungen / Remarks
A	44Nm	74 Nm	Graisser / Einfetten / Grease
B	74Nm		Graisser / Einfetten / Grease
C	74Nm		Graisser / Einfetten / Grease
D	21.4 Nm		Graisser / Einfetten / Grease
E	74Nm		Graisser / Einfetten / Grease



	ConiWitt 150/200	ConiWitt 250	Remarques / Bemerkungen / Remarks
A	8.8 Nm	21.4 Nm	Graisser / Einfetten / Grease
B	2.6 Nm	8.8 Nm	Coller / Kleben / Paste

Les outils spéciaux ne font pas partie de la fourniture standard de l'installation. Vous pouvez les commander en indiquant le type de machine et le numéro de série à l'adresse indiquée à la fin de ce document.

Die Spezialwerkzeuge gehören nicht zur Standardausrüstung der Anlage. Sie können die bestellen, indem Sie den Maschinentyp und die Seriennummer bei der unten aufgeführten Adresse dieses Dokuments angeben.

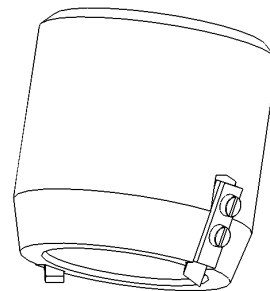
The special tools are not included as part of the installation standard supplies. You can order these pieces indicating the type of machine and the serial number at the address indicated at the end of this document.

Cône de montage
Montagekonus
Assembly cone



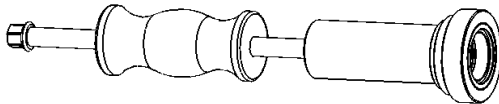
N° article Artikelnummer Item Number
455409

Couteau
Messer
Knife



N° article Artikelnummer Item Number
461088

Outil d'extraction
Abziehwerkzeug
Extraction tool

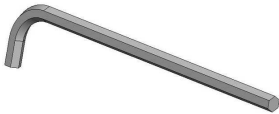



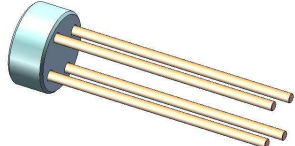
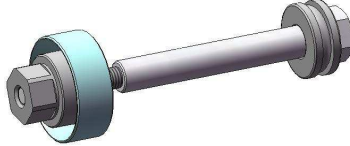


N° article Artikelnummer Item Number
461094

Les outils spéciaux ne font pas partie de la fourniture standard de l'installation. Vous pouvez les commander en indiquant le type de machine et le numéro de série à l'adresse indiquée à la fin de ce document.

Die Spezialwerkzeuge gehören nicht zur Standardausrüstung der Anlage. Sie können die bestellen, indem Sie den Maschinentyp und die Seriennummer bei der unten aufgeführten Adresse dieses Dokuments angeben.

The special tools are not included as part of the installation standard supplies. You can order these pieces indicating the type of machine and the serial number at the address indicated at the end of this document.

<p style="text-align: center;">Clé raccourcie Gekürzter Schlüssel Shortened key</p>  <table border="1"> <thead> <tr> <th></th> <th>N° article</th> </tr> </thead> <tbody> <tr> <td>ConiWitt-150</td> <td>440850</td> </tr> <tr> <td>ConiWitt-200 / TurboWitt-C20</td> <td></td> </tr> <tr> <td>ConiWitt-250 / TurboWitt-C25</td> <td></td> </tr> </tbody> </table>		N° article	ConiWitt-150	440850	ConiWitt-200 / TurboWitt-C20		ConiWitt-250 / TurboWitt-C25		<p style="text-align: center;">Centreur de palier Lagerzentrierwerkzeug Centring device of bearing</p>  <table border="1"> <thead> <tr> <th></th> <th>N° article</th> </tr> </thead> <tbody> <tr> <td>ConiWitt-150</td> <td>441918</td> </tr> <tr> <td>ConiWitt-200 / TurboWitt-C20</td> <td>441035</td> </tr> <tr> <td>ConiWitt-250 / TurboWitt-C25</td> <td>441919</td> </tr> </tbody> </table>		N° article	ConiWitt-150	441918	ConiWitt-200 / TurboWitt-C20	441035	ConiWitt-250 / TurboWitt-C25	441919
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<p style="text-align: center;">Extracteur Abziehwerkzeug Extraction tool</p>  <table border="1"> <thead> <tr> <th></th> <th>N° article</th> </tr> </thead> <tbody> <tr> <td>ConiWitt-150</td> <td rowspan="2">444321</td> </tr> <tr> <td>ConiWitt-200 / TurboWitt-C20</td> </tr> <tr> <td>ConiWitt-250 / TurboWitt-C25</td> <td>444329</td> </tr> </tbody> </table>		N° article	ConiWitt-150	444321	ConiWitt-200 / TurboWitt-C20	ConiWitt-250 / TurboWitt-C25	444329	<p style="text-align: center;">Cône de montage CIP Montagekonus CIP Assembly cone CIP</p>  <table border="1"> <thead> <tr> <th></th> <th>N° article</th> </tr> </thead> <tbody> <tr> <td>ConiWitt-150/200</td> <td>458302</td> </tr> <tr> <td>ConiWitt-250</td> <td>458329</td> </tr> </tbody> </table>		N° article	ConiWitt-150/200	458302	ConiWitt-250	458329			
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	N° article																
ConiWitt-200/250	459651																

Tel: +41 26 460 74 15
Fax +41 26 460 74 01
E-mail: customerservice@frewitt.com

Parameters PactWare-P&F\KFD2-UT-Ex1 (U11-U12)
 Installation: **PRO-11-0076** 11007635096 NOVARTIS SINGAPORE

PACTware[™]



KF*-UT2-* FDT

Description de l'appareil

Fabricant PEPPERL+FUCHS GmbH
 Appareils KF*-UT2-* FDT
 &Description Temperature

Offline Parameters Information

Device		ok
	Device description, read-only	
Serial Number		ok
	Serial number of connected device, read-only	
Firmware Version		ok
	Firmware version of connected device, read-only	
Hardware Version		ok
	Hardware version of connected device, read-only	
Supply Frequency	50Hz	ok
	Mains supply frequency. Improves device noise rejection.	
Quantity of Channels	1 channel Version	ok
	1 or 2 channel version of device	
Output Type	Current Output	ok
	Setting for the correct PACTware display of output units, according to customers device configuration (V or mA)	

Description

Tag Number Input 1	U11	ok
	Unique identity given to input 1	
Tag Description Input 1	PRO-11-0076	ok
	Description of tag number on input 1	

Text Field	Novartis	ok
	Text field for further comments	
Input		
Input 1		
Sensor	PT100	ok
	Sensor type selection. Several RTDs, TCs are available as well as voltage and potentiometer	
Connection Mode	4-wire	ok
	Depending on selected sensor type: 2-, 3-, 4- wire connection, adjustment to TC (read-only) or voltage range	
Unit	°C	ok
	Unit in [°C], [K], [°F], [mV] (voltage only), ratio and ohm (potentiometer only)	
Cold Junction Compensation	Internal (K-CJC)	ok
	For TC sensors: Selection between internal (CJC Sensor) or external cold junction compensation (reference temperature) For using CJC in a mixed configuration, when both TC and RTD sensors are to be used with one device, the TC must always be connected to input 1	
Ext. Ref. Temp.	25.00	ok
	For TC sensors with selected external reference temperature: Value of external reference temperature	
Unité	---	
Zone		
Valeur inférieure	-100.00	
Valeur supérieure	320.00	
Lead Resistance	0.00	ok
	For 2-wire connection: Manual entry of lead resistance	
Unité	Ohm	
Zone		
Valeur inférieure	0.00	
Valeur supérieure	650.00	
Rate	Standard	ok
	Setting of measurement rate (slow, standard)	
Firmware Version	Version >= 1.35	ok
	Preselection of firmware version for offline parameterization	

Detect Sensor Breakage

Active 1 ok

Detect Sensor Short Circuit

Active 1 ok

**Output
Analogue Output 1**

Assigned Input Input 1 ok
 Setting, if analogue output shall represent input 1 or input 2

Charachteristic (1) 0..20mA ok
 This selection must be made manually on HiD2082. Type of analogue output:
 0..20mA (0..5V), 4..20mA (1..5V) limited, 4..20mA (1..5V) unlimited or
 4..20mA (1..5V) according to NE43

Start Value (2) 0.00 ok
 Value which is represented by lower limit of analogue output (0/4mA, 0/1V)
 Unité °C

Zone

Valeur inférieure -200.00

Valeur supérieure 839.50

End Value (3) 100.00 ok
 Value which is represented by upper limit of analogue output (20mA or 5V)
 Unité °C

Zone

Valeur inférieure -189.50

Valeur supérieure 850.00

Error Indication Downscale ok
 Behavior of analogue output in case of fault: Upscale (current / voltage exceeds upper limit), downscale (current / voltage falls below lower limit), hold (current / voltage is held) or up-/downscale (dependent on fault)

Output Invert

Active 0 ok



KF*-UT2-* FDT

Description de l'appareil

Fabricant PEPPERL+FUCHS GmbH
 Appareils KF*-UT2-* FDT
 &Description Temperature

Offline Parameters Information

Device		ok
	Device description, read-only	
Serial Number		ok
	Serial number of connected device, read-only	
Firmware Version		ok
	Firmware version of connected device, read-only	
Hardware Version		ok
	Hardware version of connected device, read-only	
Supply Frequency	50Hz	ok
	Mains supply frequency. Improves device noise rejection.	
Quantity of Channels	1 channel Version	ok
	1 or 2 channel version of device	
Output Type	Current Output	ok
	Setting for the correct PACTware display of output units, according to customers device configuration (V or mA)	

Description

Tag Number Input 1	U12	ok
	Unique identity given to input 1	
Tag Description Input 1	PRO-11-0076	ok
	Description of tag number on input 1	

Text Field Novartis ok
 Text field for further comments

Input Input 1

Sensor PT100 ok
 Sensor type selection. Several RTDs, TCs are available as well as voltage and potentiometer

Connection Mode 4-wire ok
 Depending on selected sensor type: 2-, 3-, 4- wire connection, adjustment to TC (read-only) or voltage range

Unit °C ok
 Unit in [°C], [K], [°F], [mV] (voltage only), ratio and ohm (potentiometer only)

Cold Junction Compensation Internal (K-CJC) ok
 For TC sensors: Selection between internal (CJC Sensor) or external cold junction compensation (reference temperature) For using CJC in a mixed configuration, when both TC and RTD sensors are to be used with one device, the TC must always be connected to input 1

Ext. Ref. Temp. 25.00 ok
 For TC sensors with selected external reference temperature: Value of external reference temperature

Unité ---

Zone

Valeur inférieure -100.00

Valeur supérieure 320.00

Lead Resistance 0.00 ok
 For 2-wire connection: Manual entry of lead resistance

Unité Ohm

Zone

Valeur inférieure 0.00

Valeur supérieure 650.00

Rate Standard ok
 Setting of measurement rate (slow, standard)

Firmware Version Version >= 1.35 ok
 Preselection of firmware version for offline parameterization

Detect Sensor Breakage

Active 1 ok

Detect Sensor Short Circuit

Active 1 ok

**Output
Analogue Output 1**

Assigned Input Input 1 ok
Setting, if analogue output shall represent input 1 or input 2

Charachteristic (1) 0..20mA ok
This selection must be made manually on HiD2082. Type of analogue output: 0..20mA (0..5V), 4..20mA (1..5V) limited, 4..20mA (1..5V) unlimited or 4..20mA (1..5V) according to NE43

Start Value (2) 0.00 ok
Value which is represented by lower limit of analogue output (0/4mA, 0/1V)

Unité °C

Zone

Valeur inférieure -200.00

Valeur supérieure 839.50

End Value (3) 100.00 ok
Value which is represented by upper limit of analogue output (20mA or 5V)

Unité °C

Zone

Valeur inférieure -189.50

Valeur supérieure 850.00

Error Indication Downscale ok
Behavior of analogue output in case of fault: Upscale (current / voltage exceeds upper limit), downscale (current / voltage falls below lower limit), hold (current / voltage is held) or up-/downscale (dependent on fault)

Output Invert

Active 0 ok



Antriebsregler LENZE 8200 VECTOR

Frequency inverter LENZE 8200 VECTOR

Variateur de vitesse LENZE 8200 VECTOR

Anlage / Installation / Installation

DELUMPWITT, CONIWITT250, NOVARTIS Singapore

Serien Nr. / Serial Nr. / N° série

11007619050

Projekt Nr. / Project Nr. / N° projet

PRO-11-0076

Datum; Visum / Date; visa / Date; visa

12.08.2011 (CPI)

Programmierung / Programming / Configuration
mit Integral Motor / with Integral motor / avec moteur integral

Code		Selection
No.	Name	
C0007	Fixed configuration of digital inputs	14
C0008	Fixed configuration of relay output K1 (relay)	1
C0010	Minimum output frequency	7.5
C0011	Maximum output frequency	52.5
C0012	Acceleration time main setpoint	1
C0013	Decelaration time main setpoint	1
C0014	Control mode	2
C0094	User password	250
C0108	Gain analog output X3/62 (AOUT1-GAIN)	214
C0109	Offset analog output X3/62 (AOUT1-OFFSET)	
C0111	Configuration analog output X3/62 (AOUT1-IN)	
C0117	Fixed configuration of digital output (DIGOUT1)	

Programmierung / Programming / Configuration
ohne Integral Motor / withouth Integral motor / sans moteur integral

C0087	Rated motor speed	960
C0088	Rated motor current	13.7
C0089	Rated motor frequency	50
C0090	Rated motor voltage	400
C0091	Motor cos φ	0.77
C0120	I ² t switch off	100%



Antriebsregler LENZE 8200 VECTOR

Frequency inverter LENZE 8200 VECTOR

Variateur de vitesse LENZE 8200 VECTOR

Anlage / Installation / Installation

DELUMPWITT, PROFI-SWORD, NOVARTIS Singapore

Serien Nr. / Serial Nr. / N° série

11007643002

Projekt Nr. / Project Nr. / N° projet

PRO-11-0076

Datum; Visum / Date; visa / Date; visa

12.08.2011 (CPI)

Programmierung / Programming / Configuration
mit Integral Motor / with Integral motor / avec moteur integral

Code		Selection
No.	Name	
C0007	Fixed configuration of digital inputs	14
C0008	Fixed configuration of relay output K1 (relay)	255
C0010	Minimum output frequency	32.46
C0011	Maximum output frequency	45.46
C0012	Acceleration time main setpoint	0.5
C0013	Decelaration time main setpoint	0.5
C0014	Control mode	2
C0094	User password	250
C0108	Gain analog output X3/62 (AOUT1-GAIN)	214
C0109	Offset analog output X3/62 (AOUT1-OFFSET)	
C0111	Configuration analog output X3/62 (AOUT1-IN)	
C0117	Fixed configuration of digital output (DIGOUT1)	
		15ms
		140

Programmierung / Programming / Configuration
ohne Integral Motor / withouth Integral motor / sans moteur integral

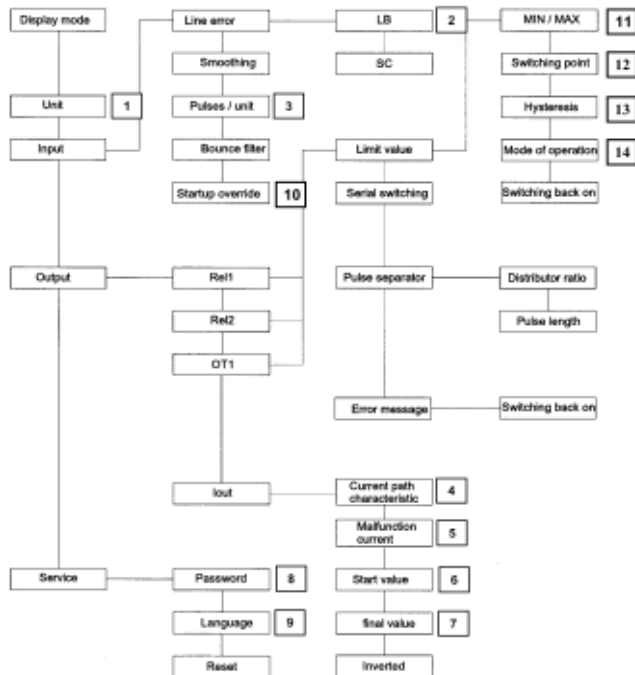
C0087	Rated motor speed	1400
C0088	Rated motor current	2
C0089	Rated motor frequency	50
C0090	Rated motor voltage	400
C0091	Motor cos φ	0.74
C0120	I ² t switch off	100%

Object:	Frequency Converter KFU8-UFC-Ex1.d; Item 417735; Pepperl & Fuchs
Installation:	Delumpwitt, Coniwitt250
Serial Nr.:	11007619050
Project Nr.:	PRO-11-0076
Date; visa:	12.08.2011 (CPI)

Programming

6 Menu overview, using the control panel for parameter assignment

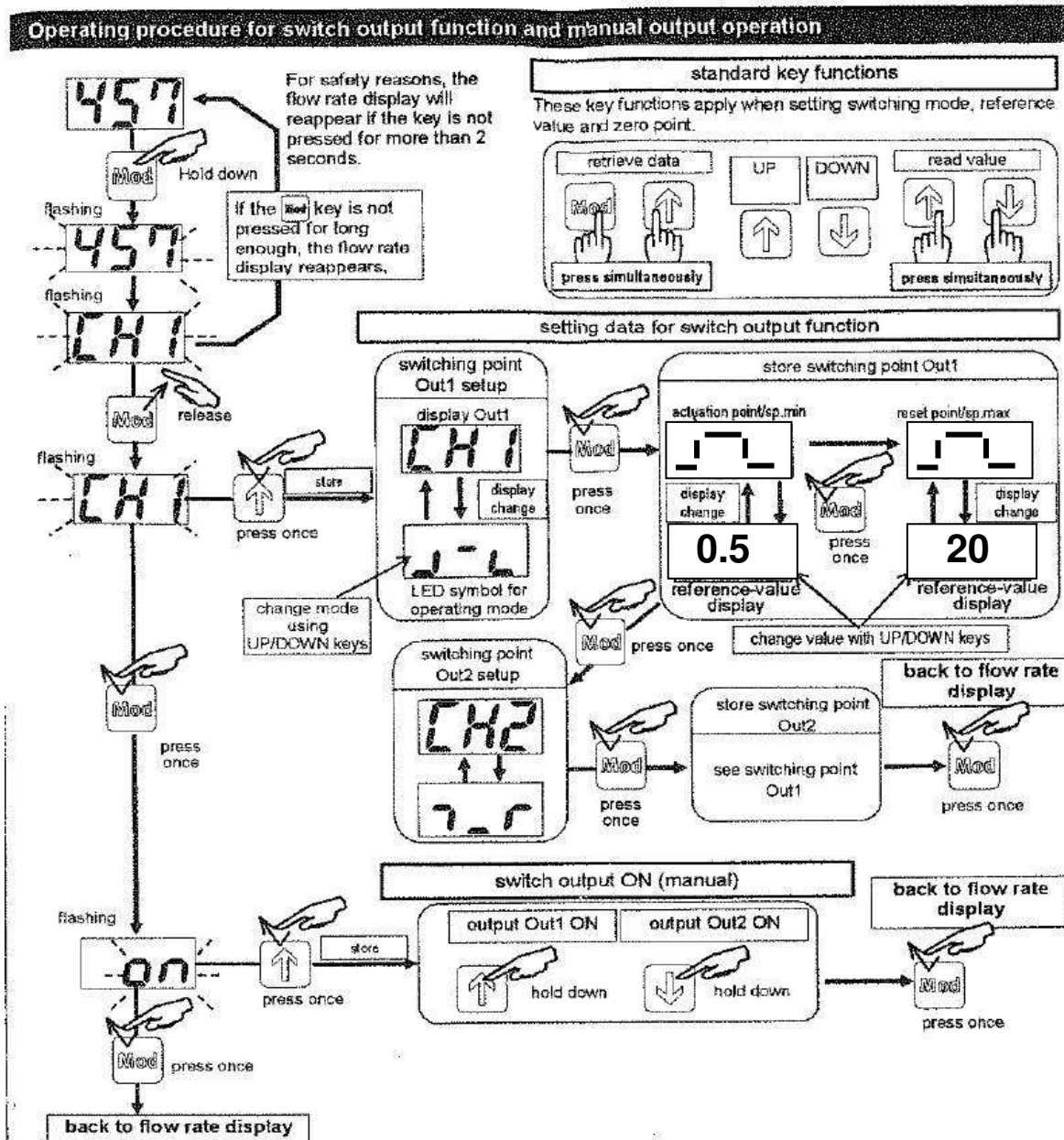
The following illustration should help give you a quick orientation if you are already familiar with how to use the control panel for parameter assignment. For a detailed description, please refer to the instructions in chapter 7.



Nr.	Name	Selection
01	Unit	RPM
02	LB	ON
03	Pulses / unit	10
04	Current path characteristic	0-20 mA
05	Malfunction current	Hold
06	Start value	0
07	Final value	1200
08	Password	1234
09	Language	E
10	Startup override	1
11	min / max	
12	Switching point	
13	Hysteresis	
14	Mode of operation	

Object:	Miniatur flowsensor Serie SFE3
Installation:	DelumpWitt CW-250 NOVARTIS
Serial Nr.:	11007619050
Project Nr.:	PRO-11-0076
Date; visa:	22.08.11 YGR

Attention: NO AIR should be in during the flowsensor calibration



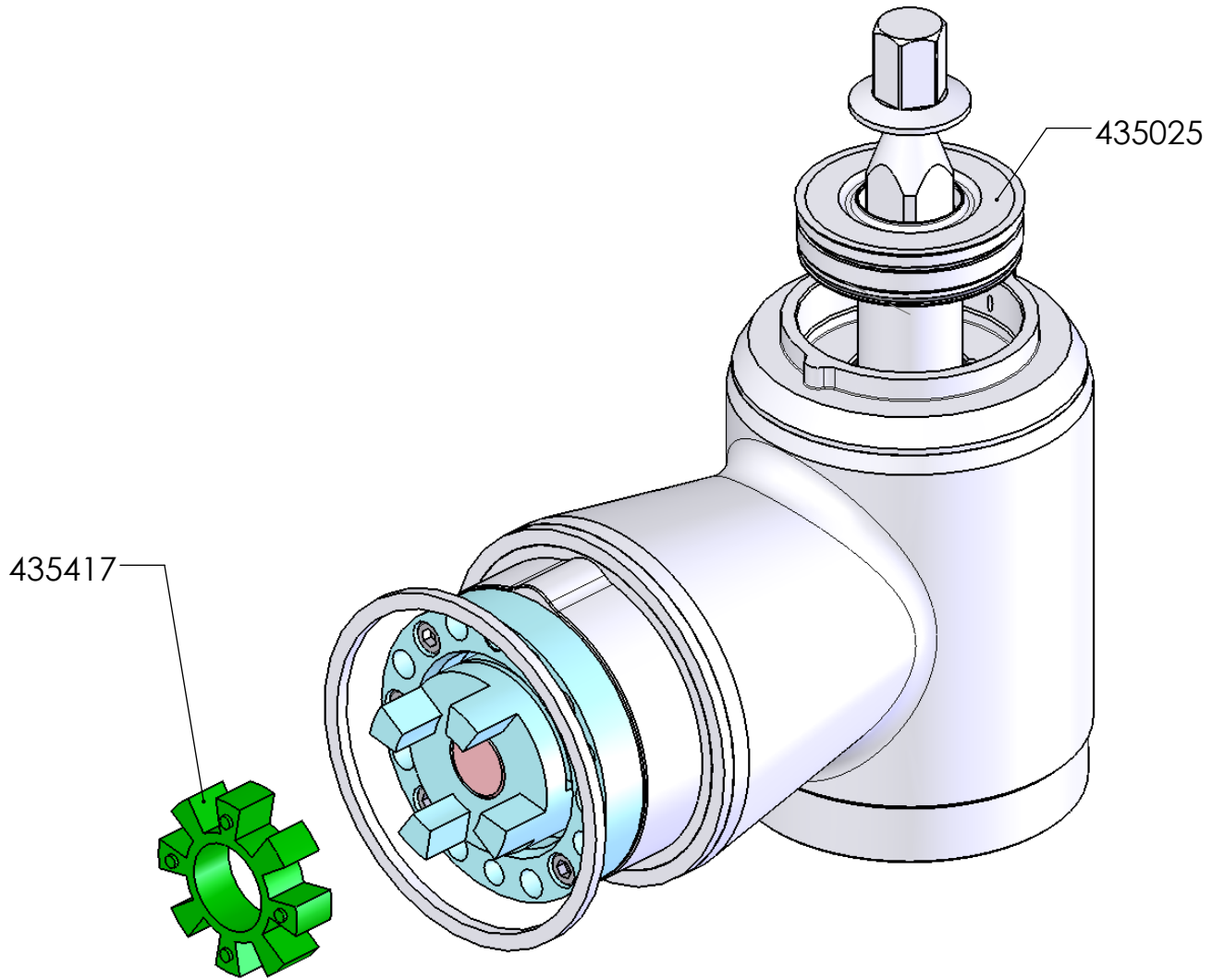
SPARE PARTS


Client: **Kunde:** **Customer:**
NOVARTIS SINGAPORE PHARMACEUTICAL
SG-Singapore

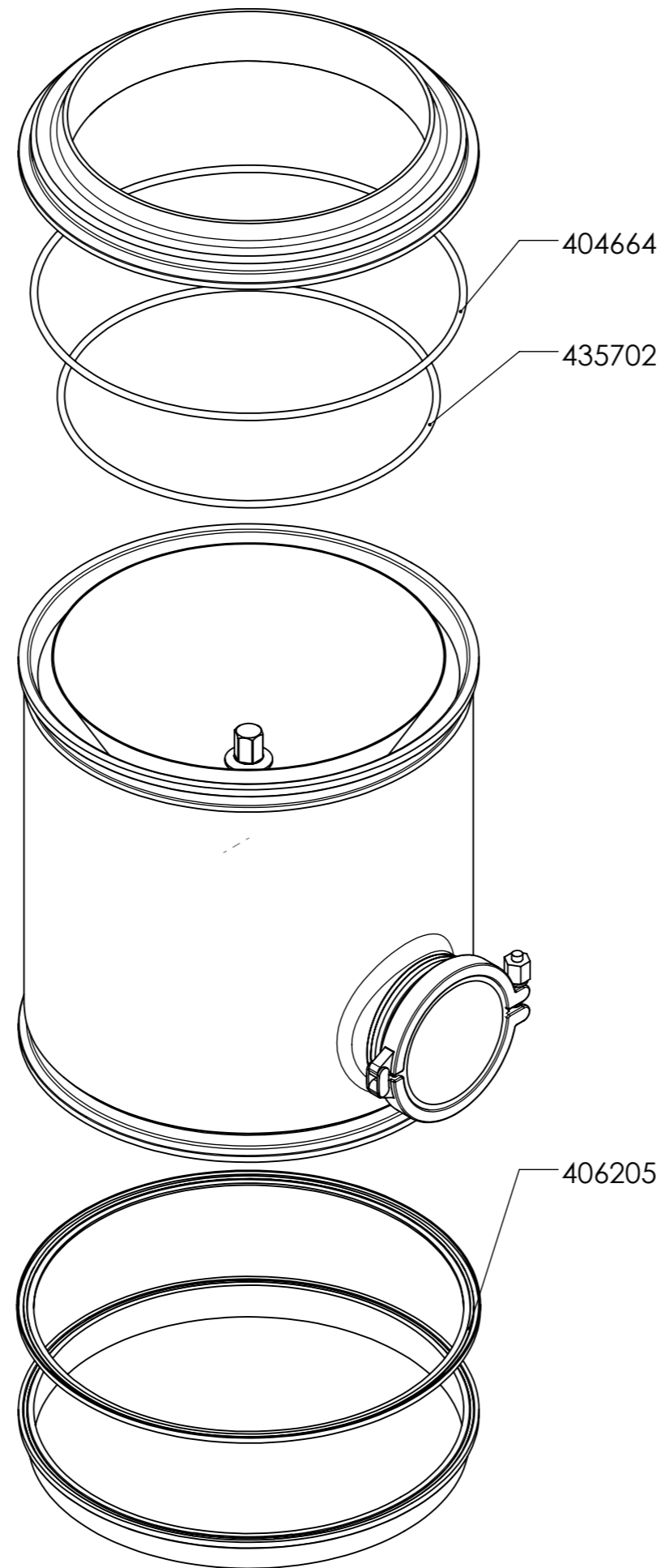
N° Série: **Serien-Nr.** **Serial Nr.**
11007635096
11007643002 - **PF-Sword** / 11007619050 - **CW-250**

464770 / 464769

Article N° Artikel Nr. Article ID.	Description Beschreibung Description	Quantité Menge Quantity	Unité Einheit Unit	No Dessin Zeichnungs-Nr Drawing ID
. 456272	Muffler Typ MH 24-35 12.2111.3510	6.0000	Pce	464769
. 456271	Muffler Typ MH 24-55 12.2111.5510	4.0000	Pce	464769
. 457663	Flat seal rd 980/903x5 novaflon 500	1.0000	Pce	464769
.. 453220	Flat Seal rd 710/630x5 Novaflon 500, FDA	1.0000	Pce	464797
.. 454424	Tightness	1.0000	Pce	464797
... 431768	O-Ring 347.00x5.33 FEP-O-SEAL MVQ	1.0000	Pce	454424
... 451767	Seal Ø40/52x7 Forme A, FKM 80.445-01	1.0000	Pce	454424
... 454357	O-RING 40.00X4.00 FKM 75.5/VA75F HITEC	4.0000	Pce	454424
... 459448	Double lip seal PS Ø40	2.0000	Pce	454424
.. 454299	Cutter (superior)	1.0000	Pce	464797
.. 454311	Cutter (Intermediate)	1.0000	Pce	464797
.. 406396	Seal	1.0000	Pce	464797
.. 406571	Clamp Seal DN250 silikon FDA	1.0000	Pce	464821
.. 453974	Clamp Seal SILICONE ISO50, ID56.3 A 77.5	2.0000	Pce	464821
.. 438974	Clamp Seal ISO15 silicone white, 241.050.019	1.0000	Pce	464821
.. 459561	Silicone seal 25x25/4 profil Ti-Xane 703	1.0000	Pce	464821
.. 436876	Pneumatic Piston Vibrator NTP25B+C SE Inox, Netter, zone 2G/2D, IP65, T4	1.0000	Pce	464821
.. 462542	Clamp Seal (silicone) DIN100	2.0000	Pce	464821
.. 464900	Filter cartridge	2.0000	Pce	464821
.. 436241	Conical rasp 2.0mm, th.1.0mm, ConiWitt-250, 1.4404	1.0000	Pce	464777
.. 432459	Bearing ConiWitt-250	1.0000	Pce	464777
... 435025	Double lip seal ConiWitt-250	1.0000	Pce	432459
... 435417	Elastomer Star R+W EK/60, Type B	1.0000	Pce	432459
... 435417	Elastomer Star R+W EK/60, Type B	1.0000	Pce	445063
... 432332	O-Ring 4.00x2.50 FKM 75.5/VA75F HITEC 11 4007 2504 ORM 0040 25	1.0000	Pce	443044
... 443070	Fixing flange housing-bearing PTC, ConiWitt-250	1.0000	Pce	443054
... 410115	Clamp Seal 4p silicone ID 100.0	1.0000	Pce	443054
.. 436254	Rotor fs pour râpe B, ConiWitt-250	1.0000	Pce	464777
.. 436059	Tightness EPDM-Silicone	1.0000	Pce	464777
... 435702	O-Ring 266.07x5.33 EPDM 70 FDA RAL 1013	1.0000	Pce	436059
... 406205	Seal	1.0000	Pce	436059
... 404664	O-Ring 304.17x5.34 EPDM 70 FDA RAL 1013	1.0000	Pce	436059
.. 406396	Seal	1.0000	Pce	464777
.. 406396	Seal	3.0000	Pce	459307
.. 437890	Bellow EPDM-antistat. Ø260/216x80	1.0000	Pce	464851



Dimensions without tolerance [mm]	above		6	30	120	400	1000	MATERIAL : Matériau <non spécifié>	Scale	Similar	Designed	17/02/2010	wwi		
	up to	6	30	120	400	1000	2000				Controlled	17/02/2010	wwi		
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	Palier	Weight [kg]	Revised	17/02/2010	wwi			
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00				Atex				
									A4	11.992					
Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.									 Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND Tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com			432459-PRE		Page	Ver.
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Dimensions without tolerance [mm]	above		6	30	120	400	1000
	up to	6	30	120	400	1000	2000
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00

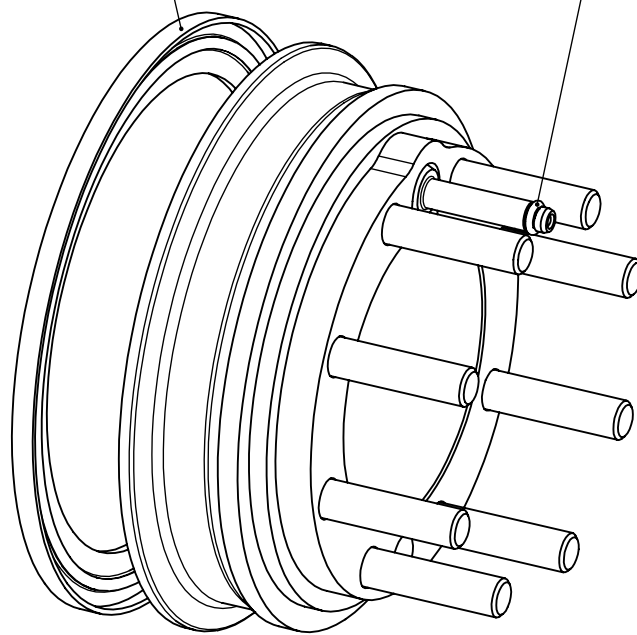
MATERIAL : Matériau <non spécifié>					
Scale	Similar	Designed	27/09/2010	wwi	
%		Controlled	27/09/2010	wwi	
Weight [kg]	A3	Revised	27/09/2010	wwi	
		Atex			
Etanchéité EPDM-silicone					
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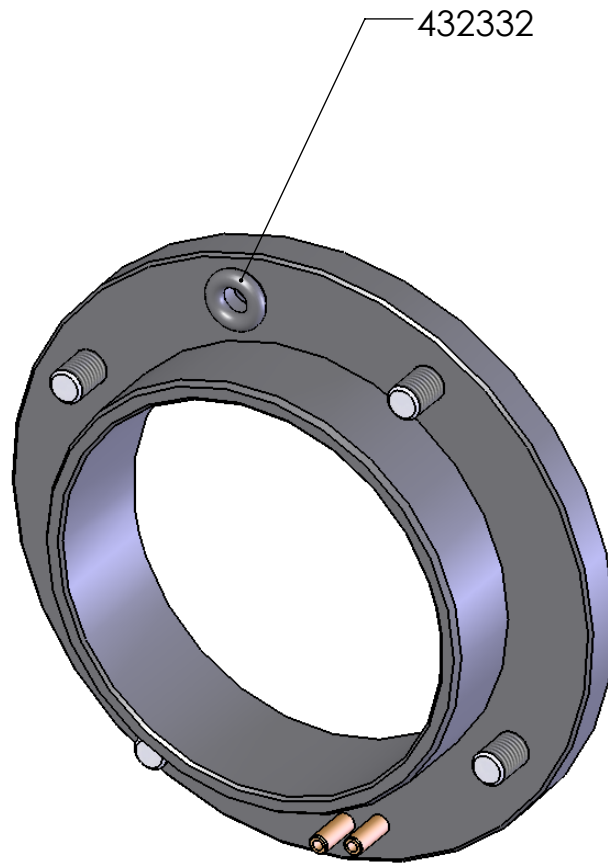
FREWITT F
 Frewitt SA: Milling and Handling of Powders
 P.O.B. 615, CH-1701 Fribourg, SWITZERLAND
 tel: +41 26 460 74 00 / fax: +41 26 460 74 01
 info@frewitt.com / www.frewitt.com


410115

431459

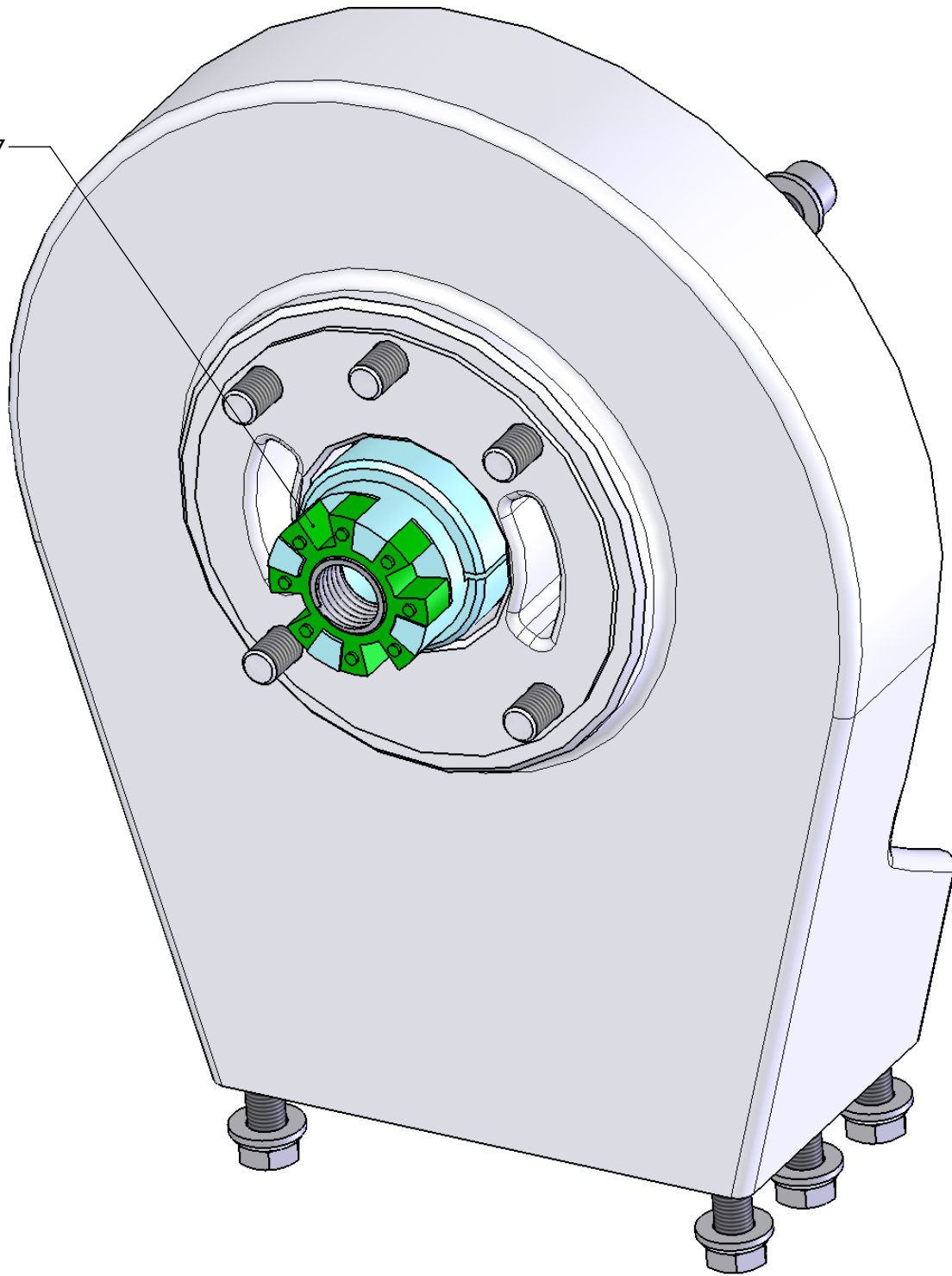


Dimensions without tolerance [mm]	above up to	6	30	120	400	1000	2000	MATERIAL : Matériau <non spécifié>				
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	Scale	Similar	Designed	17/02/2010	wwi
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00	%		Controlled	28/07/2011	jbe
Ens. bride bâti-palier								⊕	Weight [kg]	Revised	28/07/2011	jbe
								A4	1.419	Atex		
								Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.		 Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND Tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com		443022-PRE
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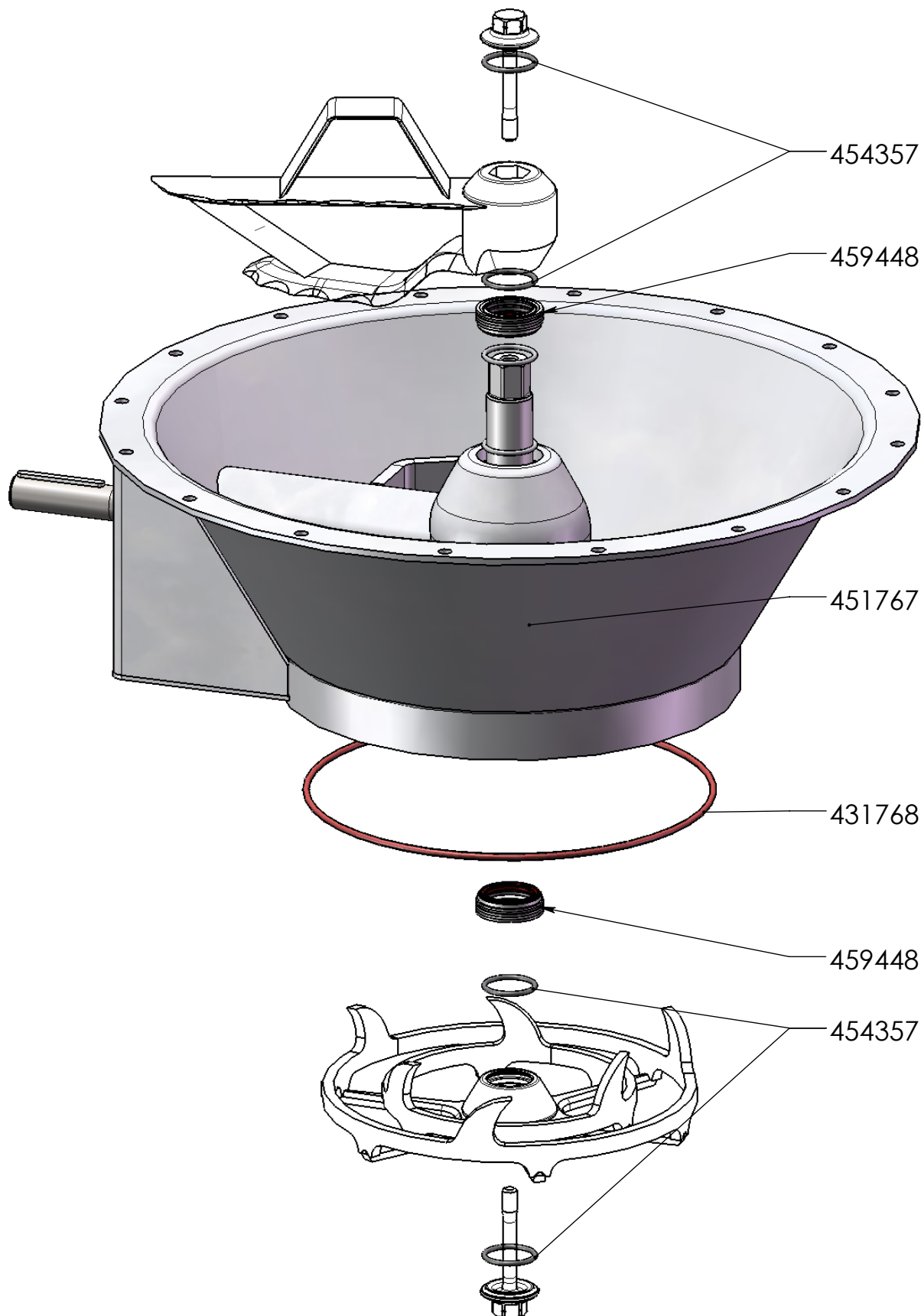


Dimensions without tolerance [mm]	above		6	30	120	400	1000	MATERIAL : Matériau <non spécifié>	Scale	Similar	Designed	18/02/2010	wwi
	up to	6	30	120	400	1000	2000				Controlled	18/02/2010	wwi
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	Bride de retenue cardan	⊕	Weight [kg]	Revised	18/02/2010	wwi
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00				A4	0.036	Atex
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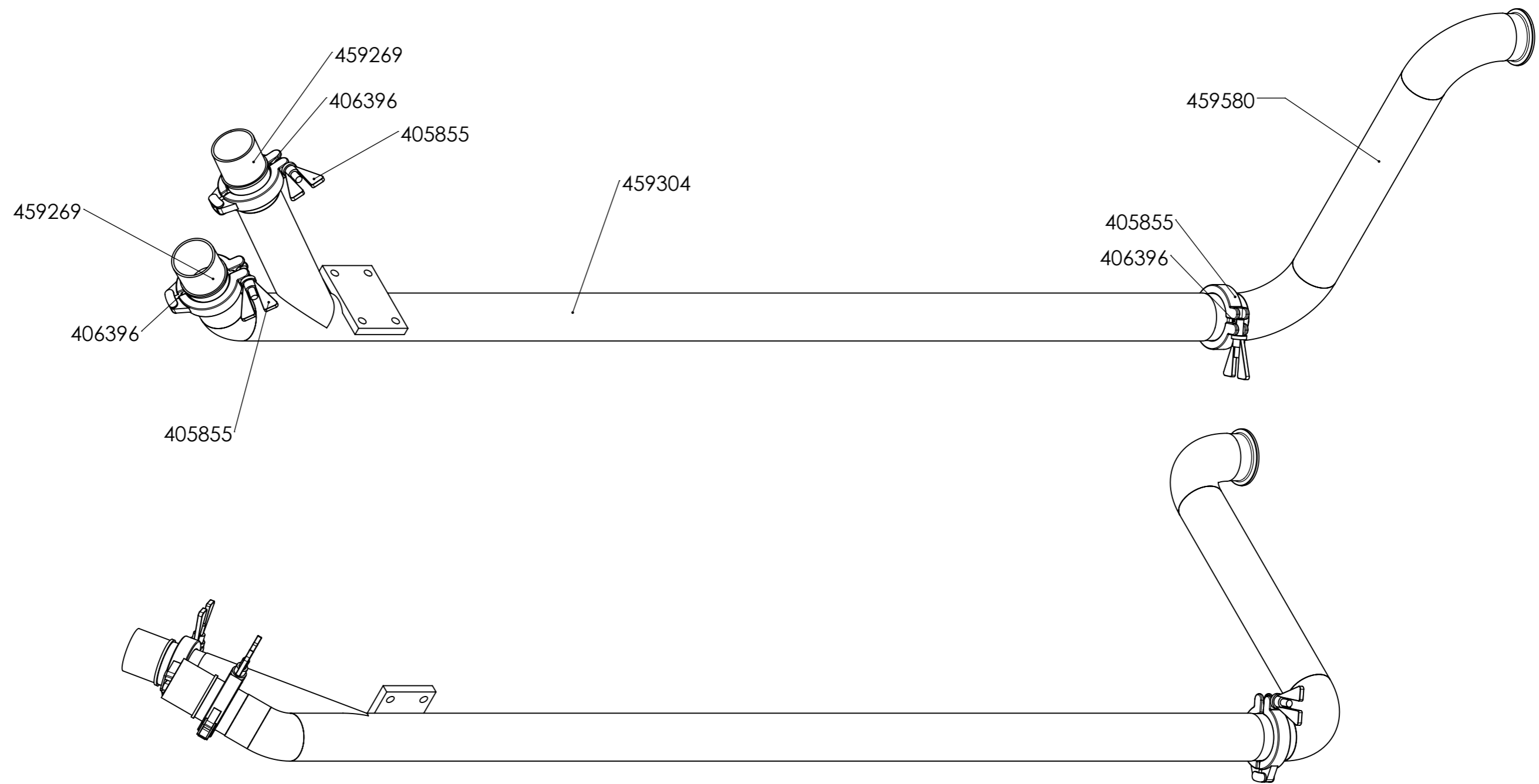
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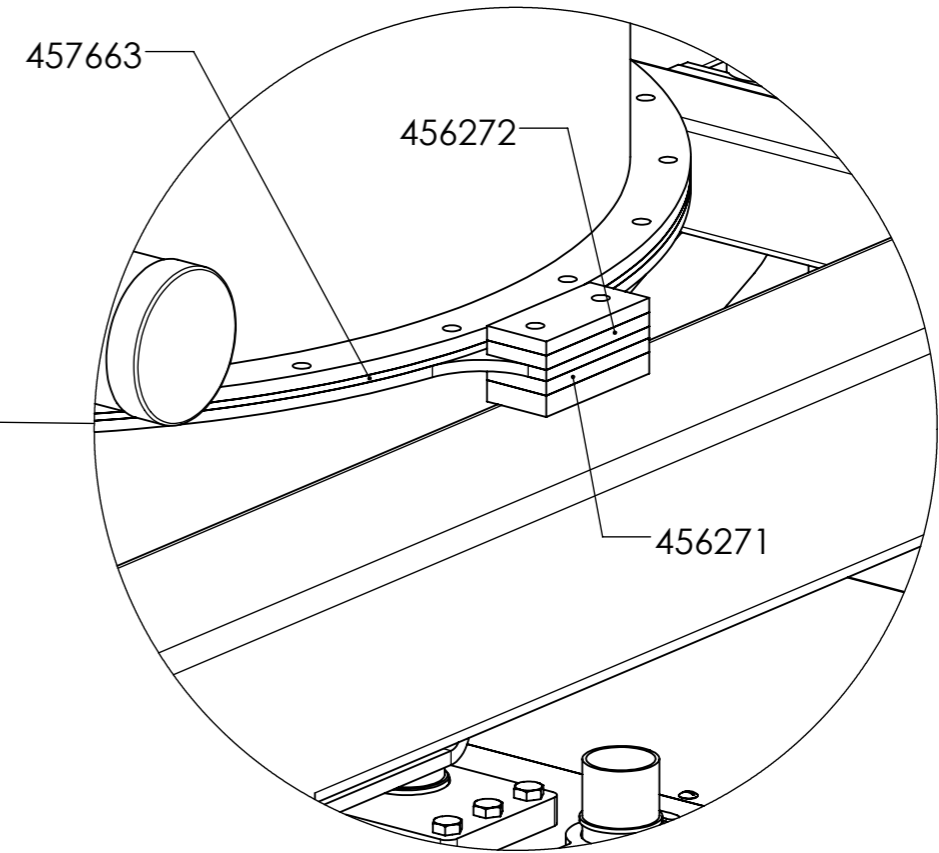
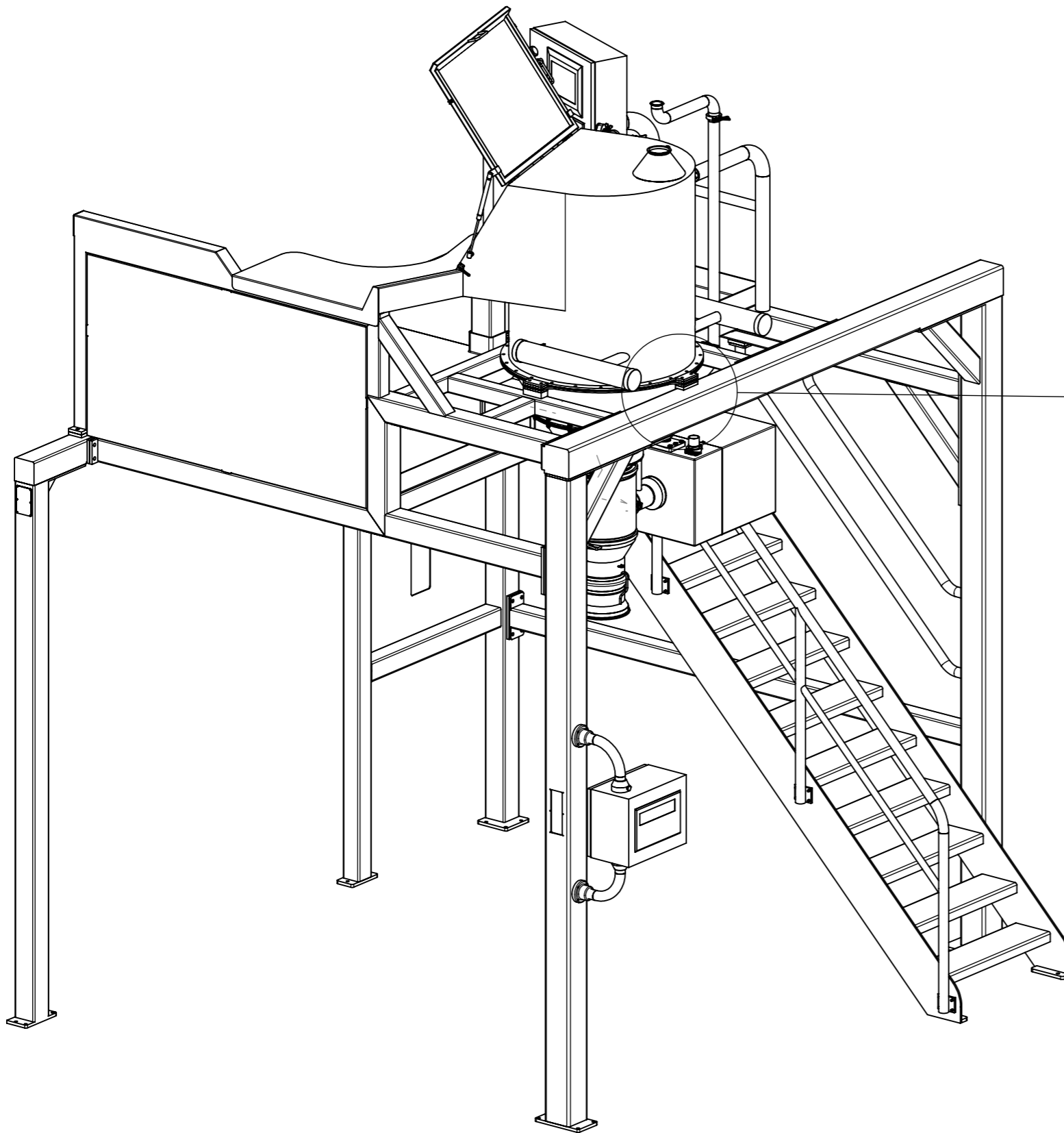
Dimensions without tolerance [mm]	above up to	6	30	120	400	1000	2000	MATERIAL : Matériau <non spécifié>				
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	Scale	Similar	Designed	17/02/2010	wwi
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00	%		Controlled	17/02/2010	wwi
Ensemble support moteur									Weight [kg]	Revised	17/02/2010	wwi
										A4	27.722	Atex
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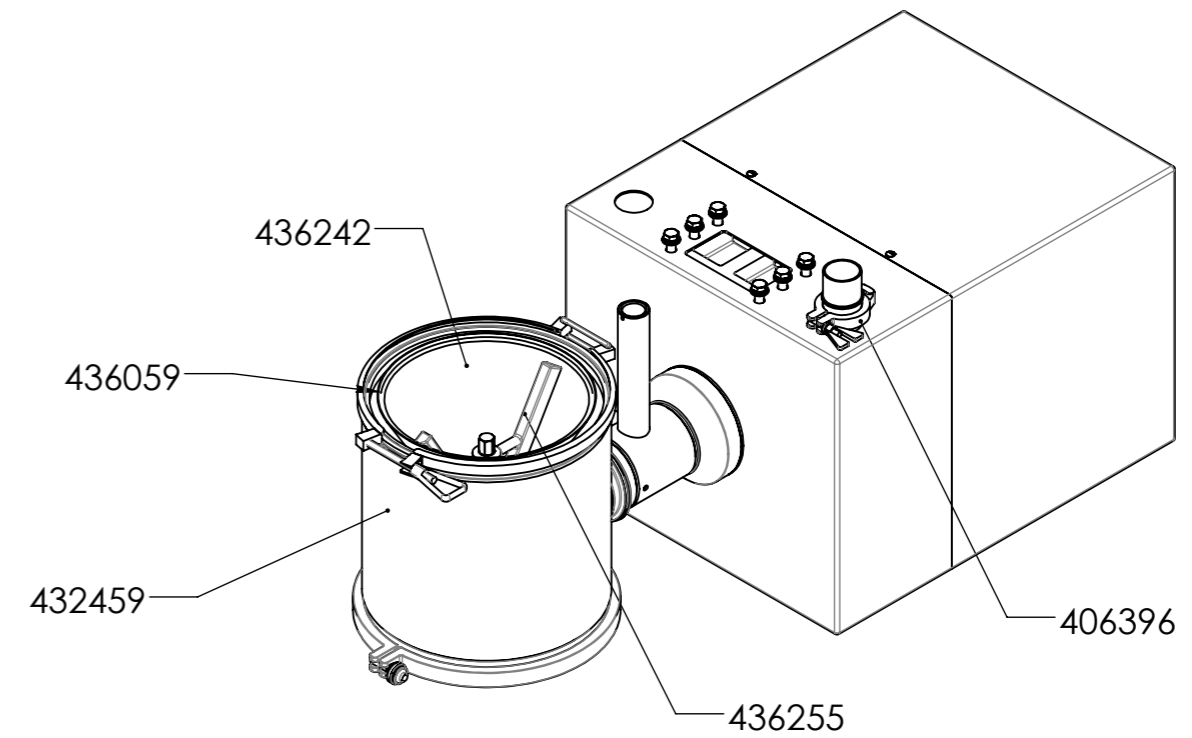
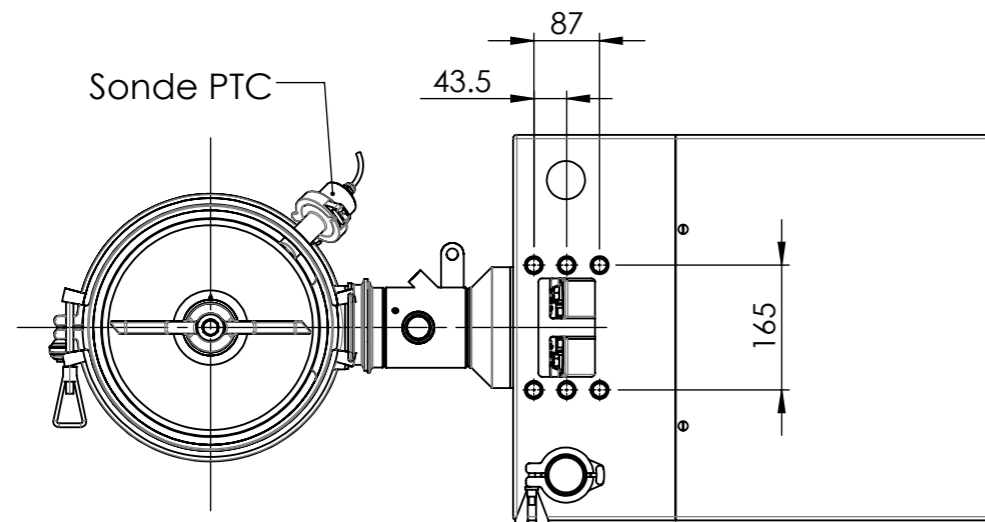
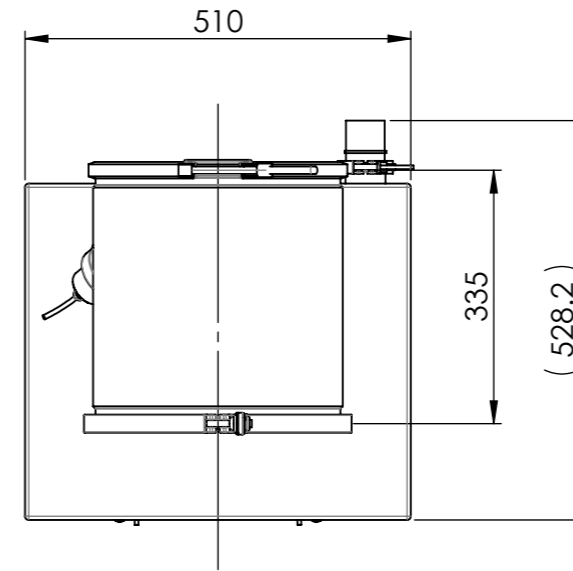
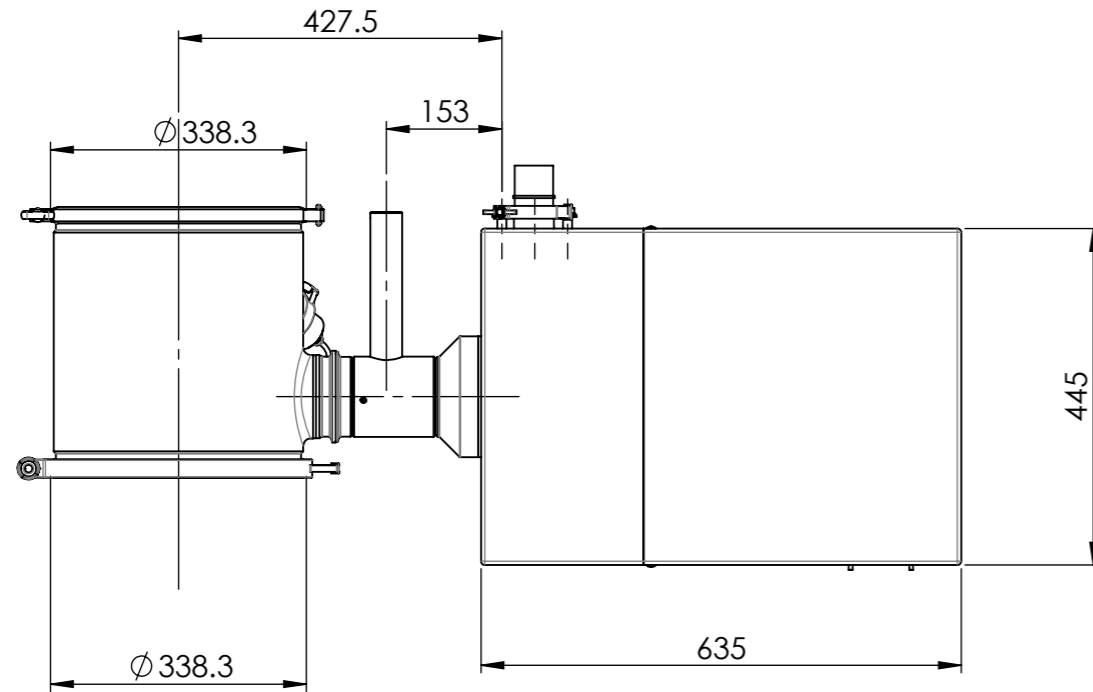
Dimensions without tolerance [mm]	above up to	6	30	120	400	1000	MATERIAL : Matériau <non spécifié>								
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	Scale	Similar	Designed	17/03/2010	tgr			
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00	%		Controlled	25/08/2010	jbe			
Etanchéité									Weight [kg]	Revised	25/08/2010	jbe			
									A4	60.01	Atex				
Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.										Frewitt SA; Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND Tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com		454424-PRE		Page	Ver.
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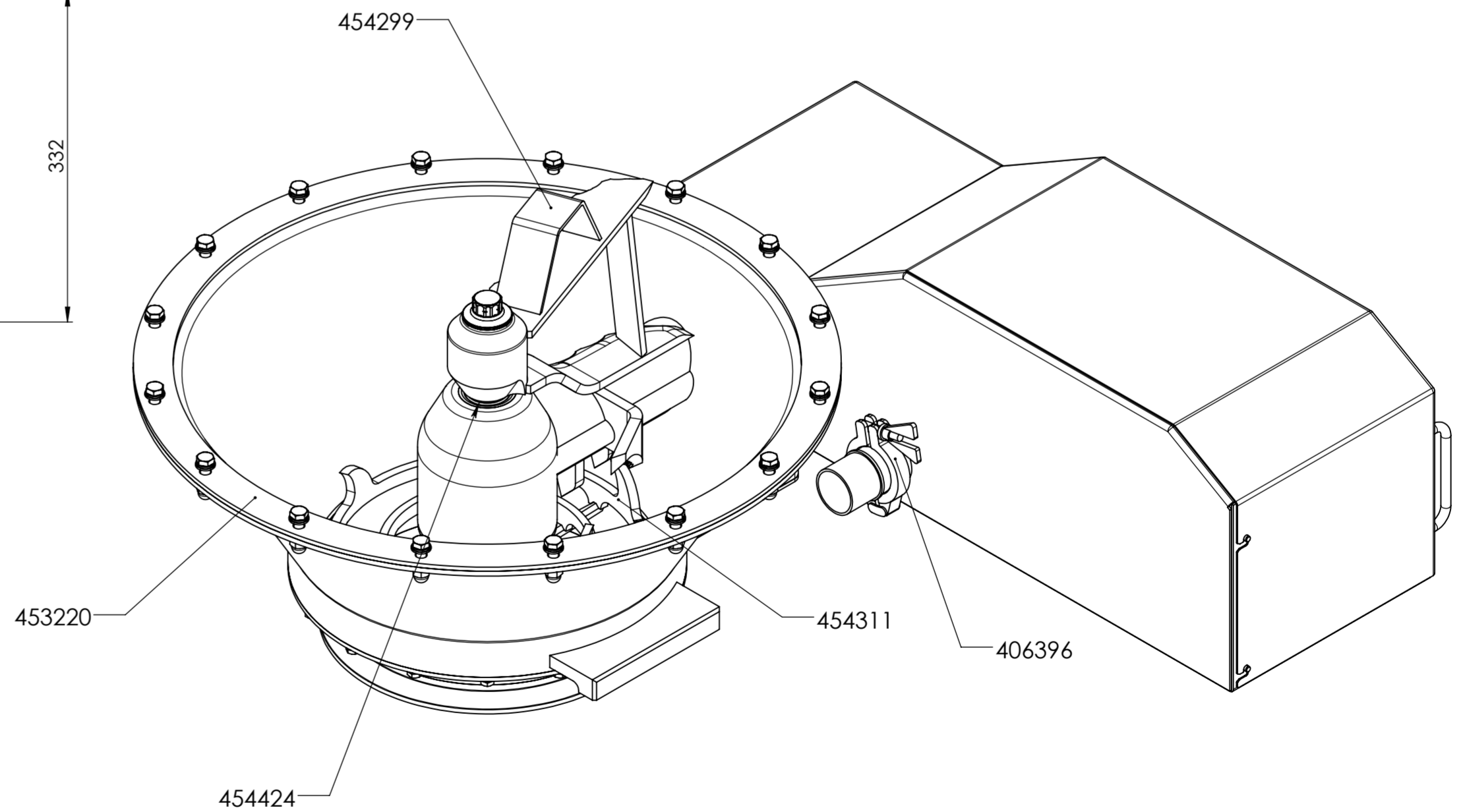
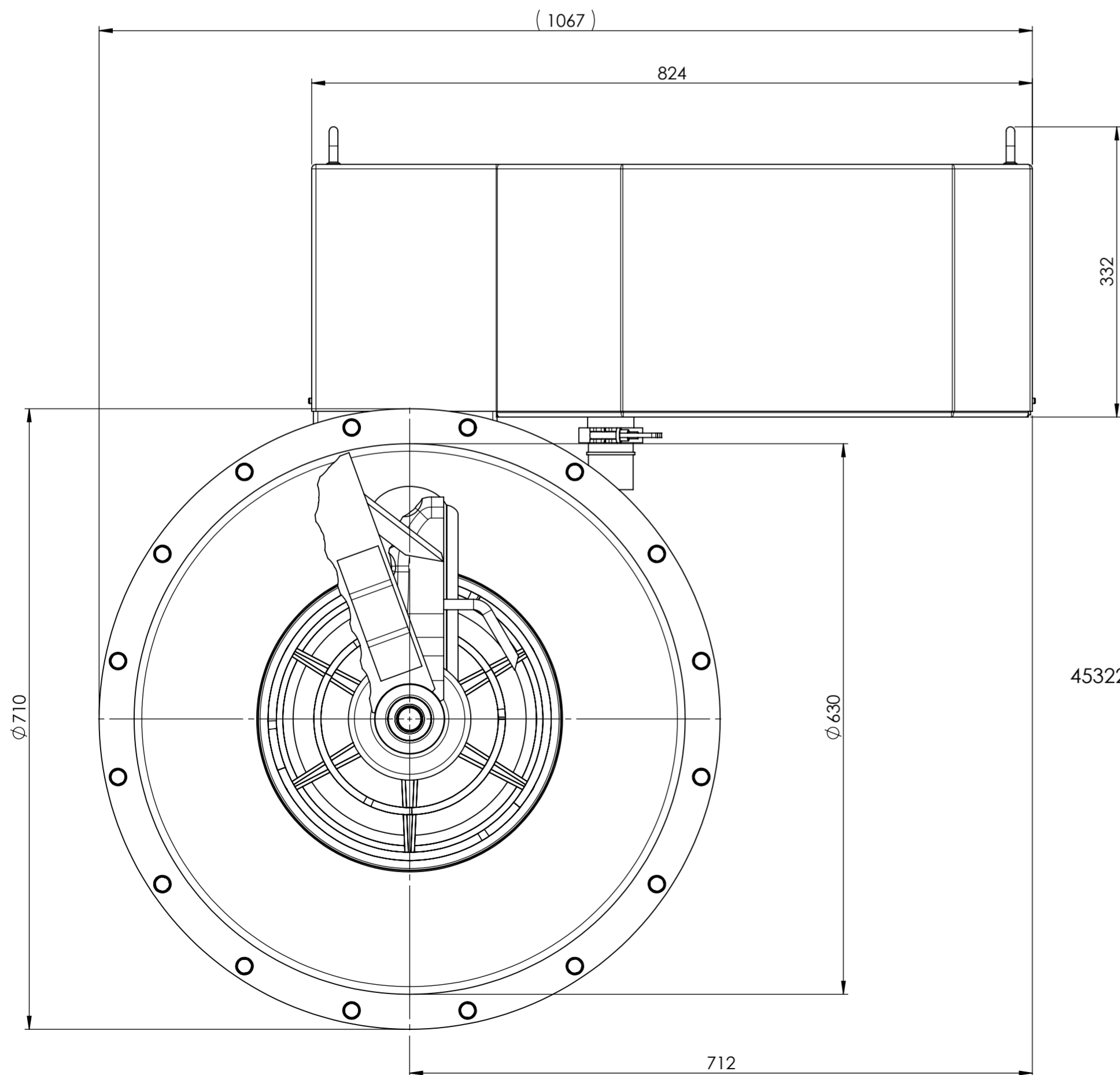
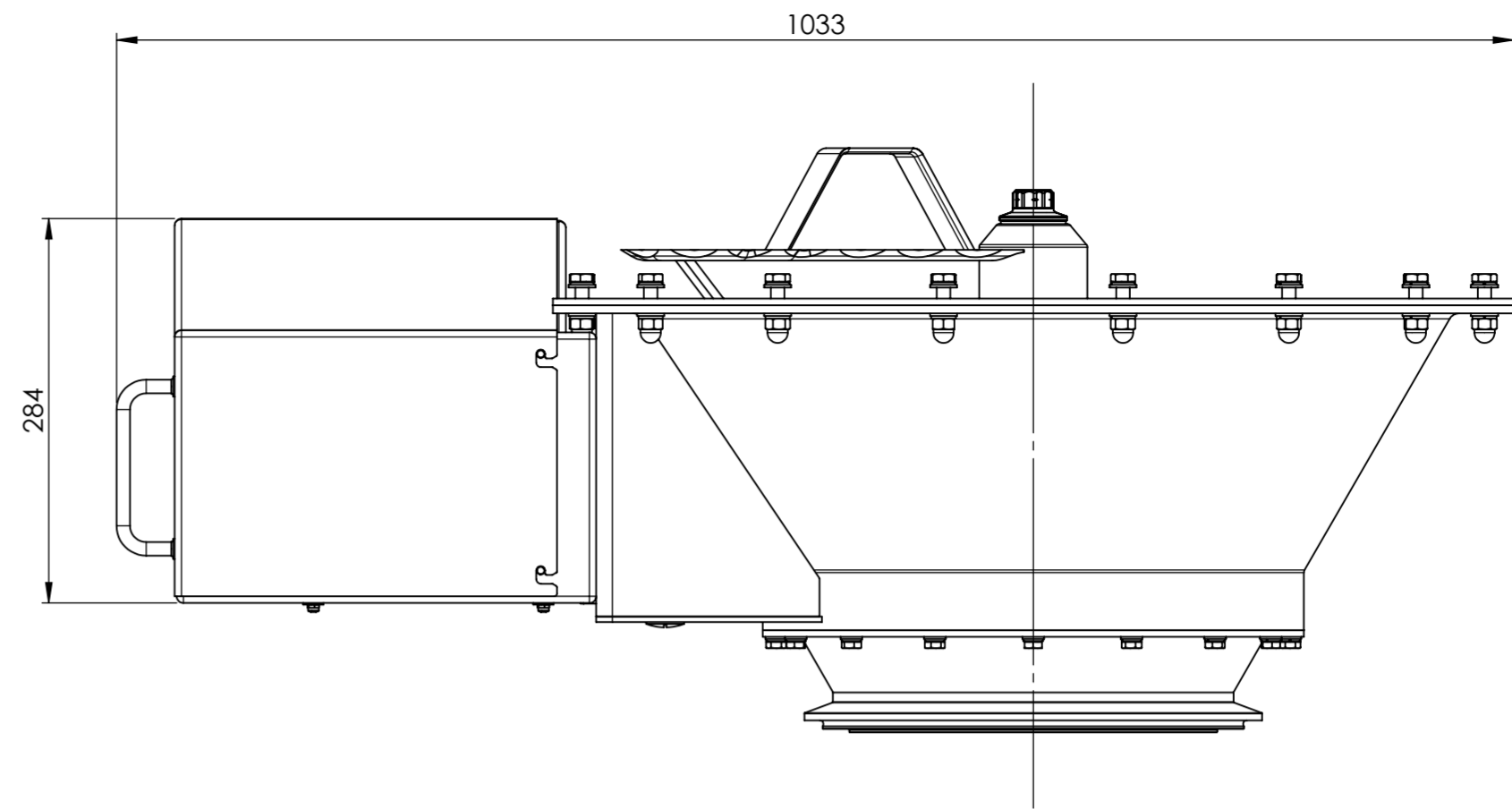
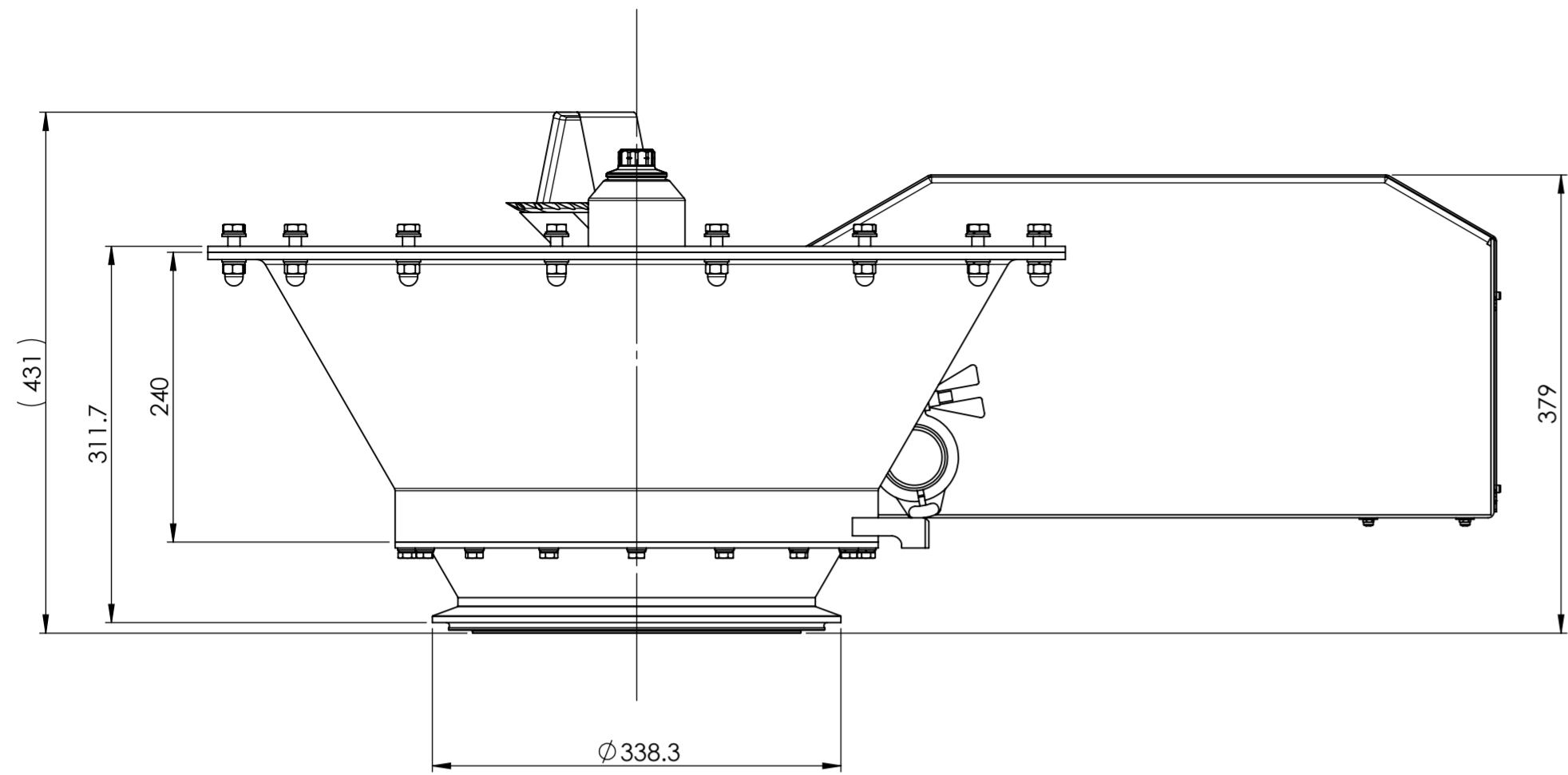
ATEX category				Machined dim.	ISO 2768-m	
Voltage [V]		Power [kW]		Scale	Welded dim.	
Frequency [Hz]		Speed [min-1]		%	Designed	25/02/2010 ygr
tube ventilation ConiWitt-250 ProFi-Sword					Controlled	17/03/2010 ygr
					Revised	17/03/2010 ygr
<small>Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.</small>					<small>Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com</small>	
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Dimensions without tolerance [mm]	above	6	30	120	400	1000	MATERIAL : N/A						
	up to	6	30	120	400	1000					2000		
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	Scale	Similar	Designed	13/05/2011	thle	
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00	%	459317	Controlled	13/05/2011	thle	
PRO-11-0076 / DelumpWitt								Weight [kg]	Revised	13/05/2011	thle		
								A3	N/A	Atex			
<small>Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.</small>										<small>Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com</small>		464769-PRE	
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ATEX category	II 1GD / II3D			Machined dim.	ISO 2768-m	
Voltage [V]	400	Power [kW]	5.5	Welded dim.	ISO 2768-c	
Frequency [Hz]	50	Speed [min ⁻¹]	100-700	Designed	03/05/2011	thle
PRO-11-0076 / ConiWitt-250				Controlled	19/08/2011	ygr
				Revised	19/08/2011	ygr
<small>Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.</small>				<small>Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com</small>		Page
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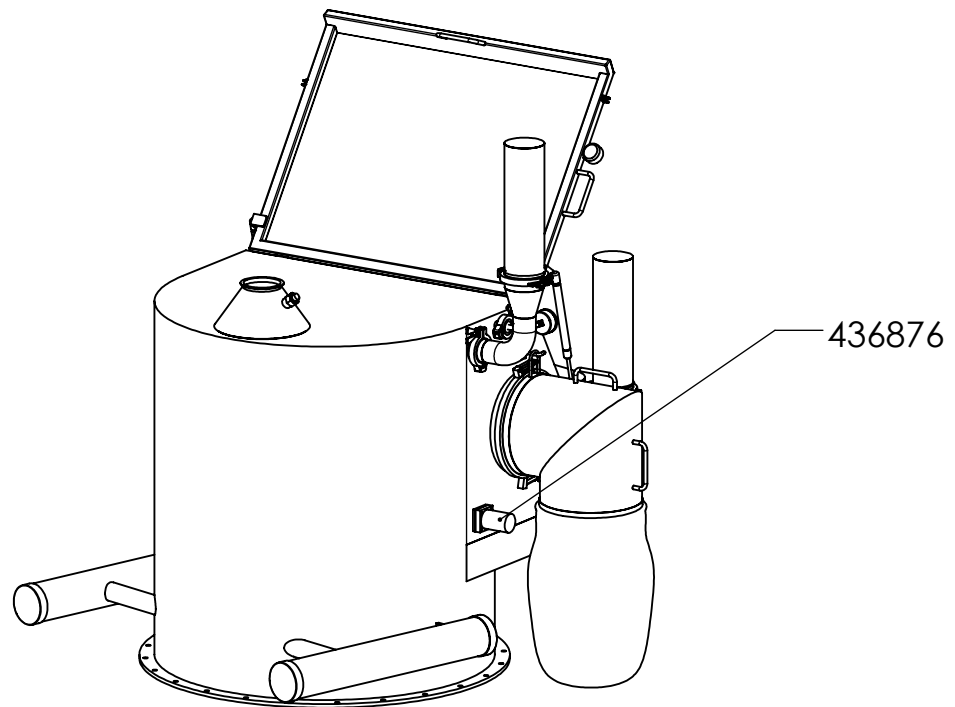
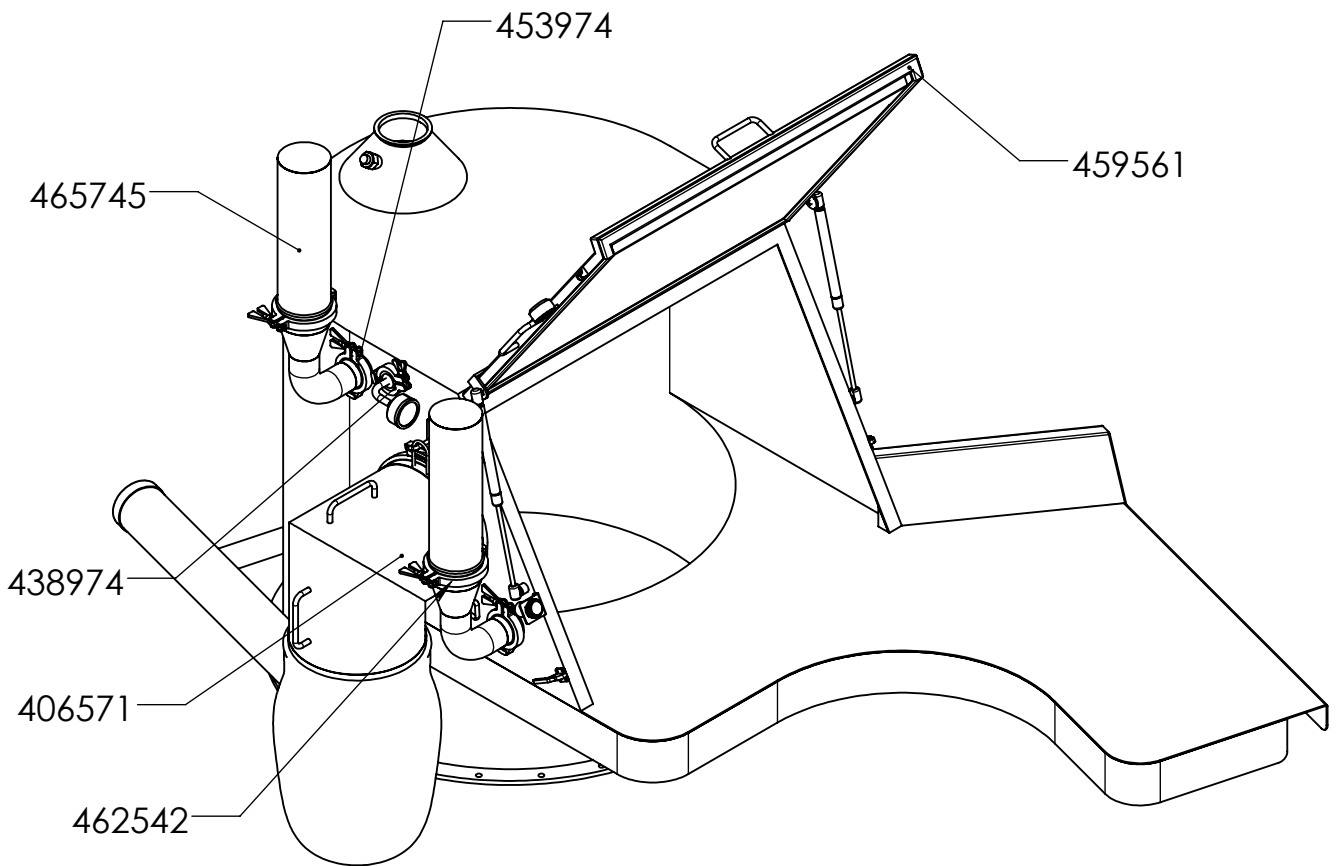
ATEX category	II 1D / II 3D		Machined dim.	ISO 2768-m
Voltage [V]	400	Power [kW]	0.75	Welded dim.
Frequency [Hz]	50	Speed [min-1]	13-20	ISO 2768-c
PRO-11-0076 / ProFi-Sword				Scale
				%
				Designed
				05/05/2011
				thle
				Controlled
				05/05/2011
				thle
				Revised
				05/05/2011
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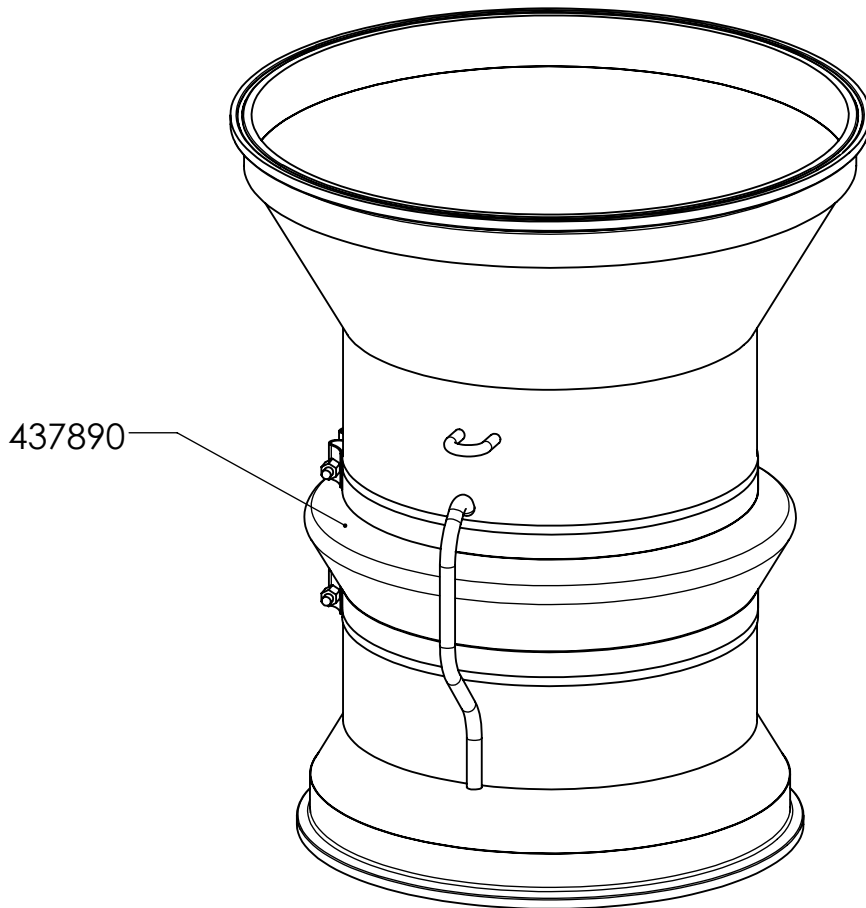
FREWITT SA: Milling and Handling of Powders
 P.O.B. 615, CH-1701 Fribourg, SWITZERLAND
 tel: +41 26 460 74 00 / fax: +41 26 460 74 01
 info@frewitt.com / www.frewitt.com




464797-LAY



Dimensions without tolerance [mm]	above		6	30	120	400	1000	MATERIAL :	Scale	Similar	Designed	09/05/2011	thle
	up to	6	30	120	400	1000	2000						
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	%	459229	Controlled	19/07/2011	thle	
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00	Weight [kg]		Revised	19/07/2011	thle	
Ensemble cuve trémie DN900								⊕		Atex			
								A4	144.381				
Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.				Frewitt SA; Milling and Handling of Powders P.O.B. 615; CH-1701 Fribourg, SWITZERLAND Tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com				464821-PRE		Page	Ver.		
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Dimensions without tolerance [mm]	above		6	30	120	400	1000	MATERIAL : N/A				
	up to	6	30	120	400	1000	2000		Scale	Similar	Designed	12/05/2011
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	%		Controlled	12/05/2011	thle
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00	⊞	Weight [kg]	Revised	12/05/2011	thle
Ensemble entonnoir sortie								A4	N/A	Atex		
								Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.		 Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com		464851-PRE
										1/1	A	

Notre service d'après vente se tient volontiers à votre disposition pour les commandes et demandes d'offre. Vous pouvez nous contacter comme suit:

Für Bestellungen oder Preisfragen für Ersatzteile steht Ihnen unser Kundendienst gerne zur Verfügung. Sie erreichen uns wie folgt :

Our After Sales Service is at your disposal for inquiries, purchase orders for spare parts as well as for any further information you request on your machine. Our contacts are as follows

Responsable Service après vente

Kundendienstleiter

Customer Service Manager

Tel: +41 26 460 74 37
Fax +41 26 460 74 07
E-mail: customerservice@frewitt.com

Commandes / Demandes

Bestellungen / Preisfragen

Purchase orders / Inquiries

Tel: +41 26 460 74 15
Fax +41 26 460 74 07
E-mail: customerservice@frewitt.com

Formulaire de commande / d'offre au verso.

Bestellformular / Angebotsformular auf der Rückseite

Order / Inquiry form on the back

Commande / Bestellung / Purchase order
 Demande d'offre / Preisangabe / Inquiries

N°Commande / Ihre Bestell-Nr. / y/PO N°: _____

Société / Firma / Company: _____
 Tel: _____
 Fax: _____
 E-mail: _____

Adresse de livraison / Lieferanschrift / Delivery address

Adresse de facturation / Rechnungsanschrift / Invoice address

N°art. / Art.Nr / Item N°	Quantité / Menge / Quantity	Description / Bezeich- nung / Description	Type machine / Ma- schinentyp / Machine type	Référence / Referenz / Reference

Professional Milling and Handling of Powders

TOOLS

ConiWitt-250



Râpes coniques
Raspeleinsätze
Conical grating plates

316L



Surface utile Wirksame Fläche Useful surface	994 cm²
--	---------------------------

Article Produkt Product	Perforations Oeffnungen Perforations mm	Epaisseur Blechdicke Thickness mm	Prix Preis Price	Surface ouverte Offene Siebfläche Open area %	Rotor
462029	Ø 1.0	0.6	Sur demande Auf Anfrage On request	14.5	type A 436253
445191	Ø 1.2	0.6		14.5	
445193	Ø 1.5	0.6		15.7	
445196	Ø 2.0	0.6		17.1	
445198	Ø 3.0	0.8		18.8	
445200	Ø 4.0	0.8		19.2	
445202	Ø 5.0	0.8		19.7	
445205	Ø 6.0	0.8		19.4	type B 436254
445207	Ø 8.0	0.8		19.7	
445210	Ø 10.0	0.8		20.1	

Ø = ouvertures rondes / runde Oeffnungen / circular openings



**Use original Frewitt spare and wear parts only.
 Using non Frewitt parts may lead to dangerous situations (explosion or injury)
 and will void the ATEX certification**

ConiWitt-250



Tamis coniques
Konische Siebeinsätze **316L**
Conical screens



Surface utile Wirksame Fläche Useful surface	1023 cm²
--	----------------------------

Article Produkt Product	Perforations Oeffnungen Perforations mm	Epaisseur Blechdicke Thickness mm	Prix Preis Price	Surface ouverte Offene Siebfläche Open area %
444301	Ø 0.50	0.50	Sur demande Auf Anfrage On request	28.50
445158	Ø 0.60	0.60		29.10
445160	Ø 0.70	0.60		28.00
445162	Ø 0.80	0.80		40.00
445170	Ø 1.00	1.00		40.00
444303	Ø 1.20	1.00		40.00
435872	Ø 1.50	1.00		40.00
435881	Ø 2.00	1.00		41.00
435887	Ø 2.50	1.00		46.00
435889	Ø 3.00	1.00		50.00
435894	Ø 3.50	1.00		54.00
435896	Ø 4.00	1.00		57.00
435912	Ø 5.00	1.00		56.00
435917	Ø 6.00	1.00		56.00
435922	Ø 8.00	1.00		58.00
435928	Ø 10.00	1.00		57.00
435958	■ 3.00	0.60		62.00
435967	■ 4.00	1.00		63.00
435969	■ 5.00	1.00		63.00
435971	■ 6.00	1.00		63.00
435973	■ 8.00	1.00	65.00	
435977	■ 10.00	1.00	54.00	

Ø = ouvertures rondes / runde Oeffnungen / circular openings
 ■ = ouvertures carrées / eckige Oeffnungen / square openings



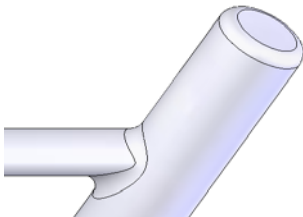
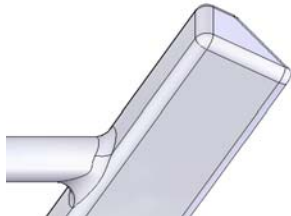
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ConiWitt-250



Rotor

316L

Article Produkt Product		Prix Preis Price	
435384		Sur demande Auf Anfrage On request	Broyage humide Feuchtzerkleinerung Wet milling
435307			Broyage sec Trockenzerkleinerung Dry milling

Rotor pour râpes, voir liste des râpes

Rotor für Raspeleinsätze, siehe Raspelliste

Rotor for conical rasps, see conical rasping sieve

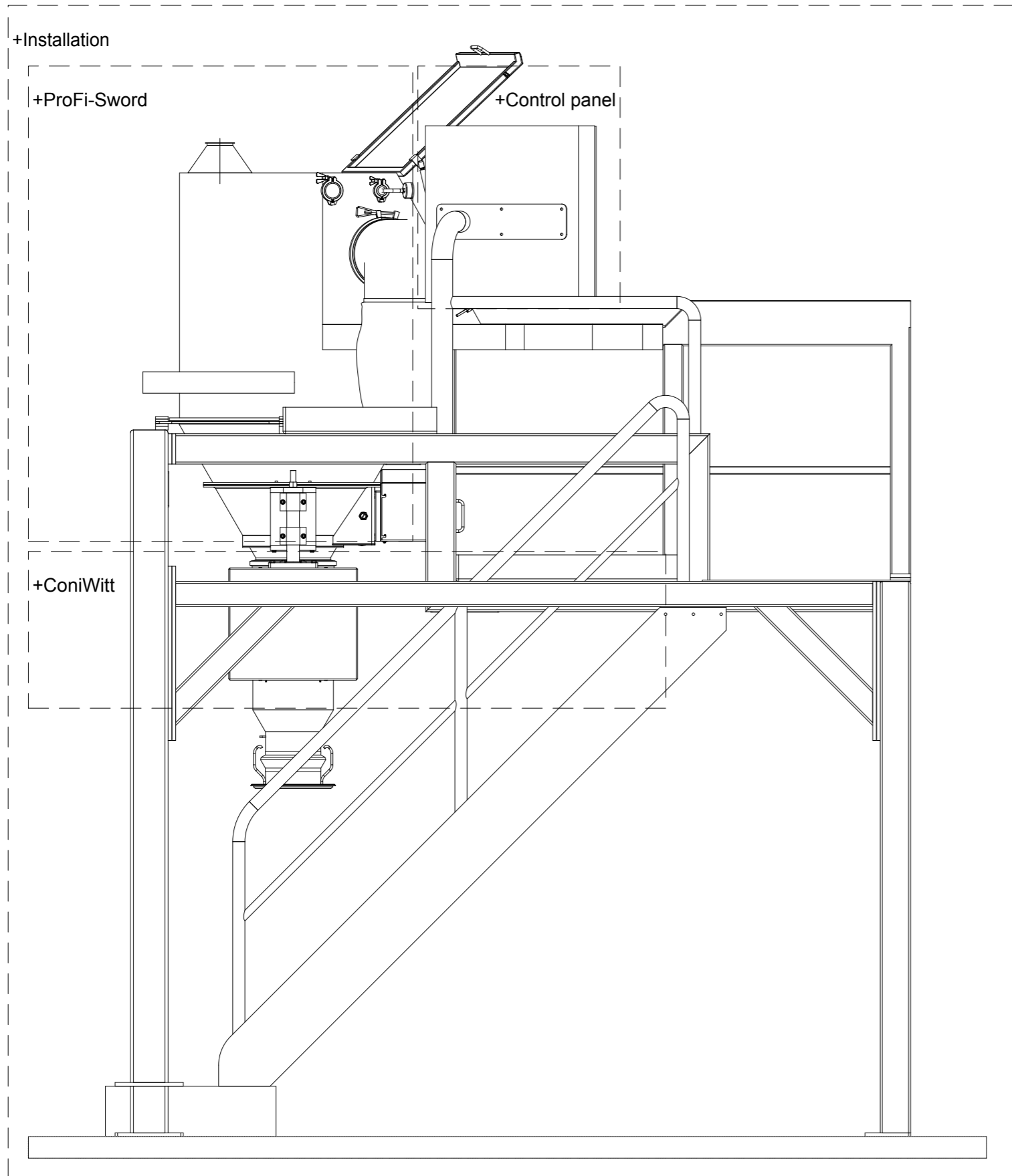


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ELECTRIC / DRIVE / PNEUMATICS

Project : PRO-11-0076

SG.TBP 202.M.5214



Type : PF - Installation
 Carrying out : 400V,50Hz,3P+N+PE



Wire colors :

Power	400VAC	Black
Power	N	Light blue
Power	PE	Green/Yellow
Control voltage	24VDC	Blue
Control voltage	0VDC	White/Blue

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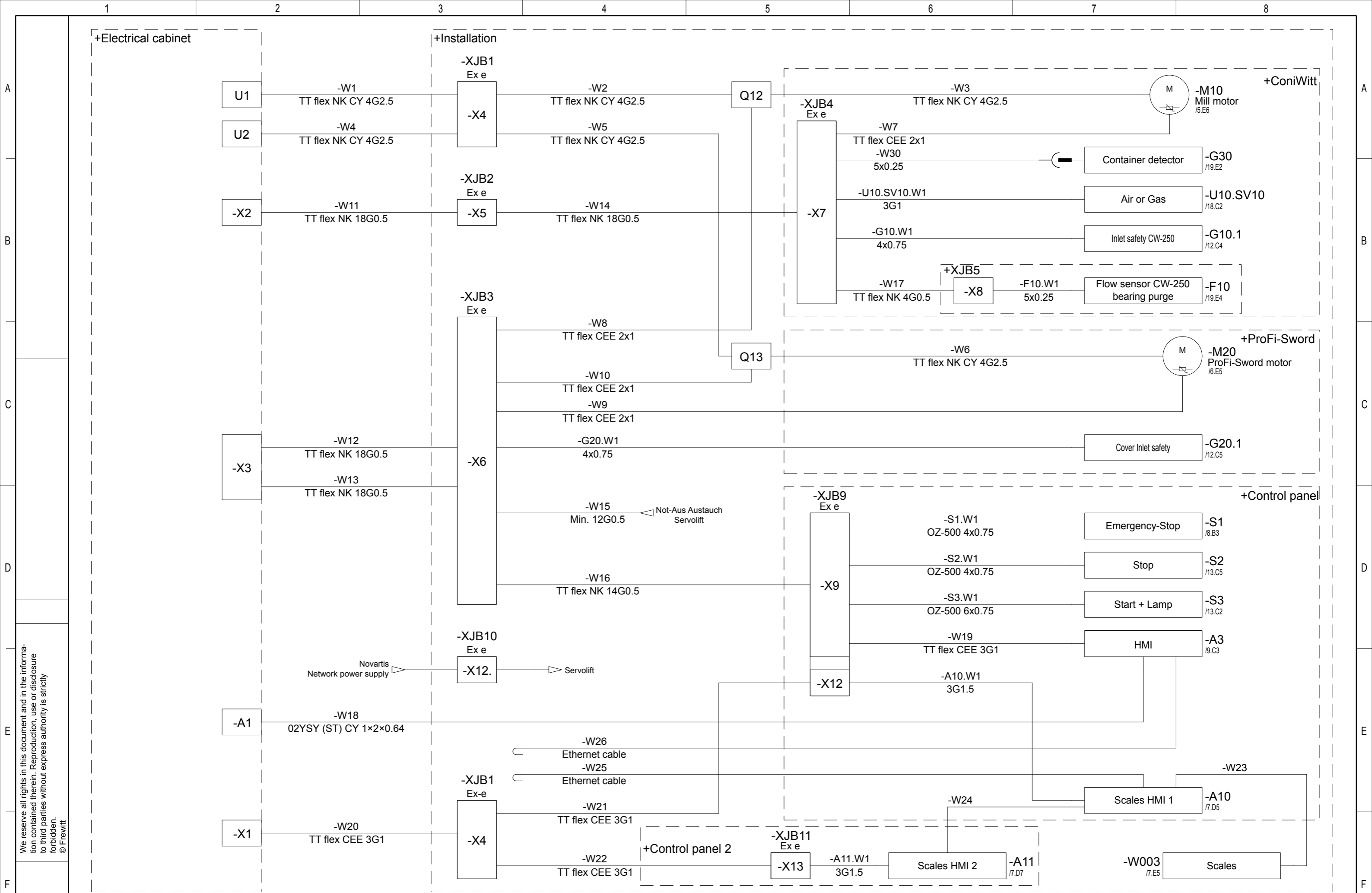
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B	Container det.	06.06.11	lge	User	lge	
C	Project closure	12.09.11	vri	Proved	lge	
Status	change	date	name	Standard	Origin	Repl. f.



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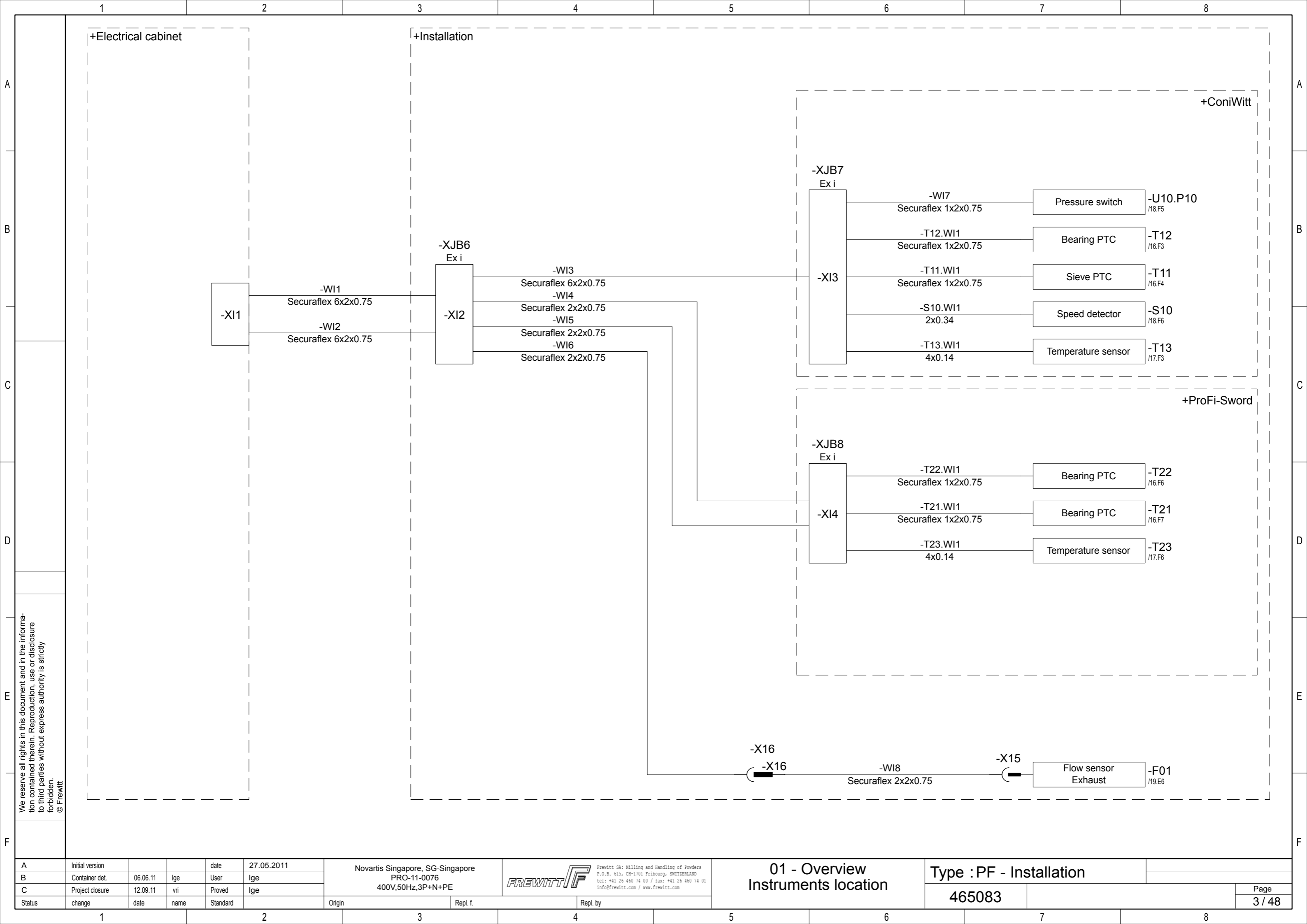
00 - Cover sheet
 DelumpWitt

465083



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B	Container det.	06.06.11	lge	User	lge						2 / 48
C	Project closure	12.09.11	vri	Proved	lge						
Status	change	date	name	Standard	Origin	Repl. f.	Repl. by				



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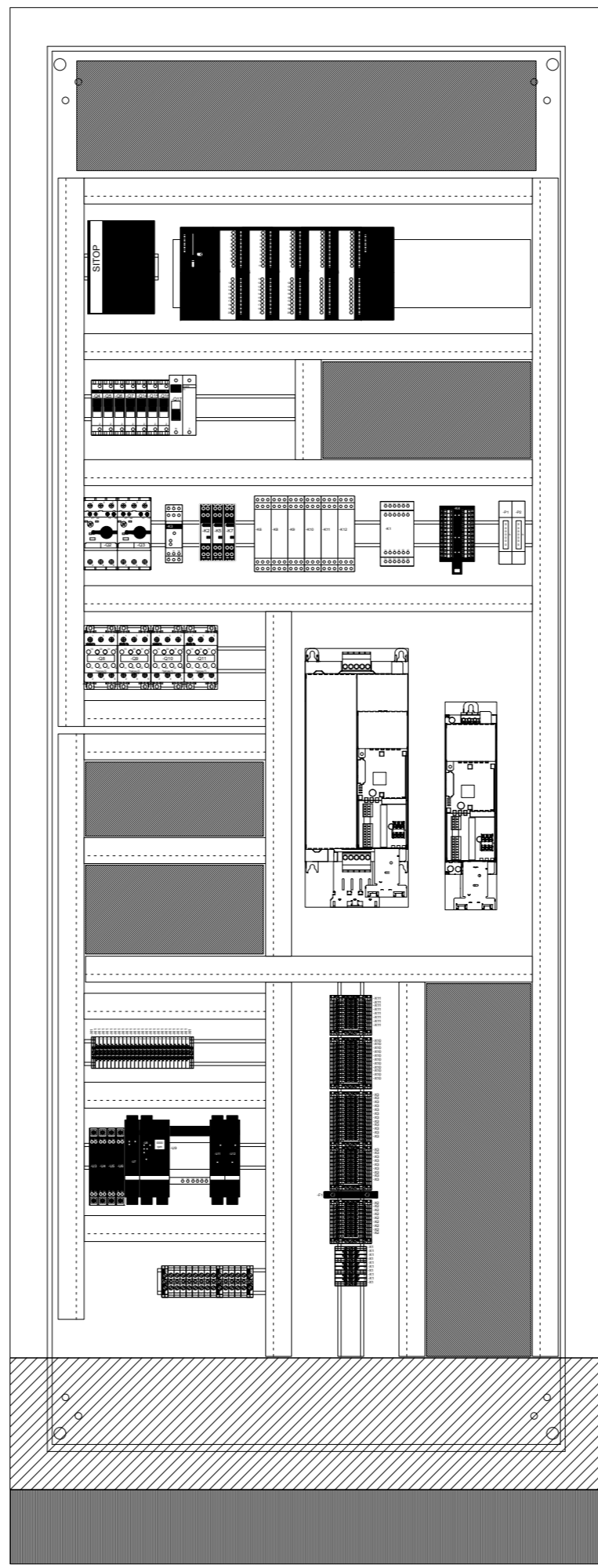
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B	Container det.	06.06.11	lge	User	lge
C	Project closure	12.09.11	vri	Proved	lge
Status	change	date	name	Standard	

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Origin	Repl. f.		Repl. by	

01 - Overview
Instruments location

Type : PF - Installation		
465083		Page 3 / 48

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Space for PTS electrical parts

Plinth for panel

100.00

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C	Project closure	12.09.11	vri	Proved	lge
Status	change	date	name	Standard	

Novartis Singapore, SG-Singapore PRO-11-0076 400V,50Hz,3P+N+PE		Origin	Repl. f.	Repl. by
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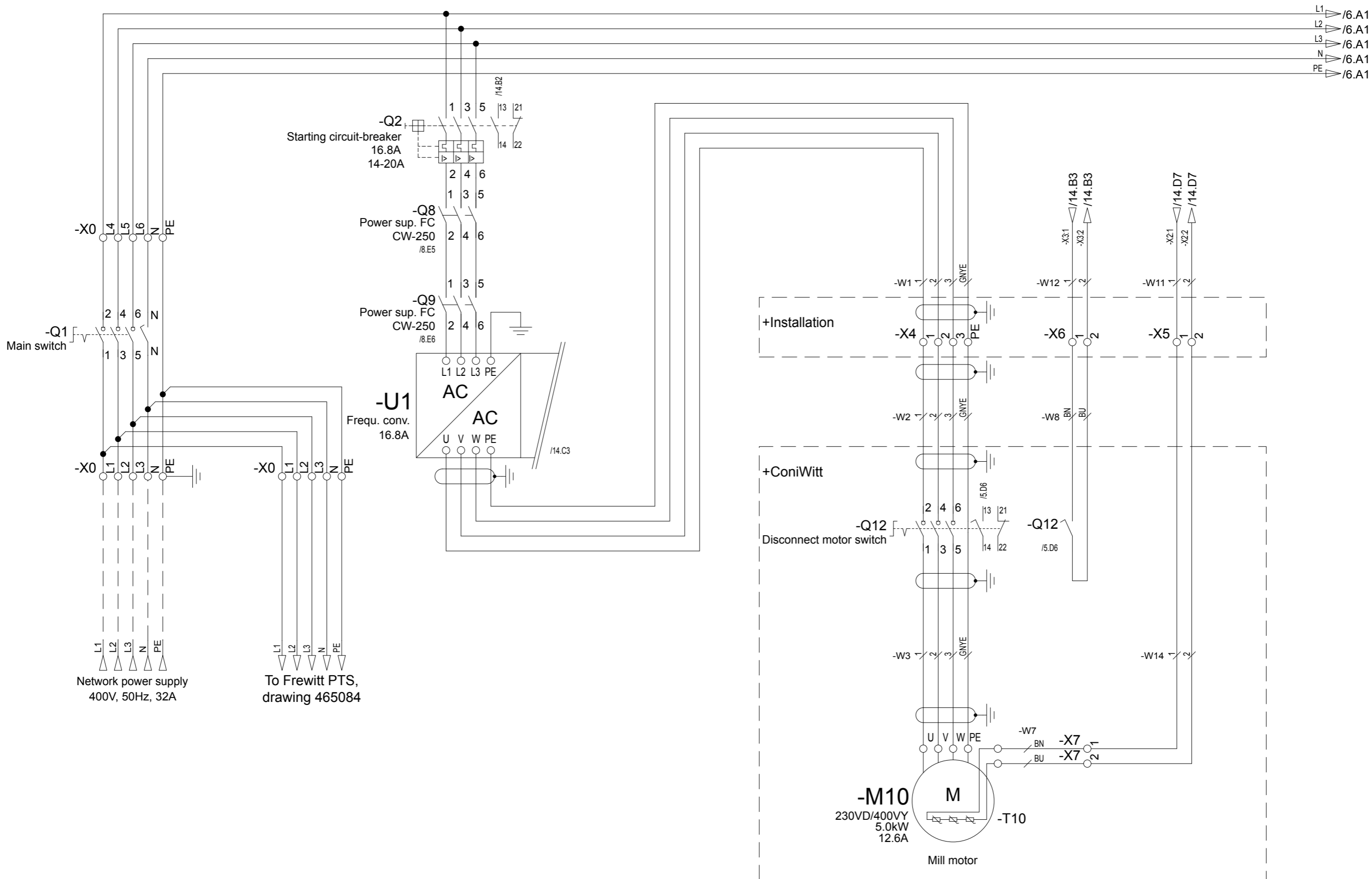


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02 - Electrocabinet details
Electrocabinet details

Type : PF - Installation	+Electrical cabinet
465083	

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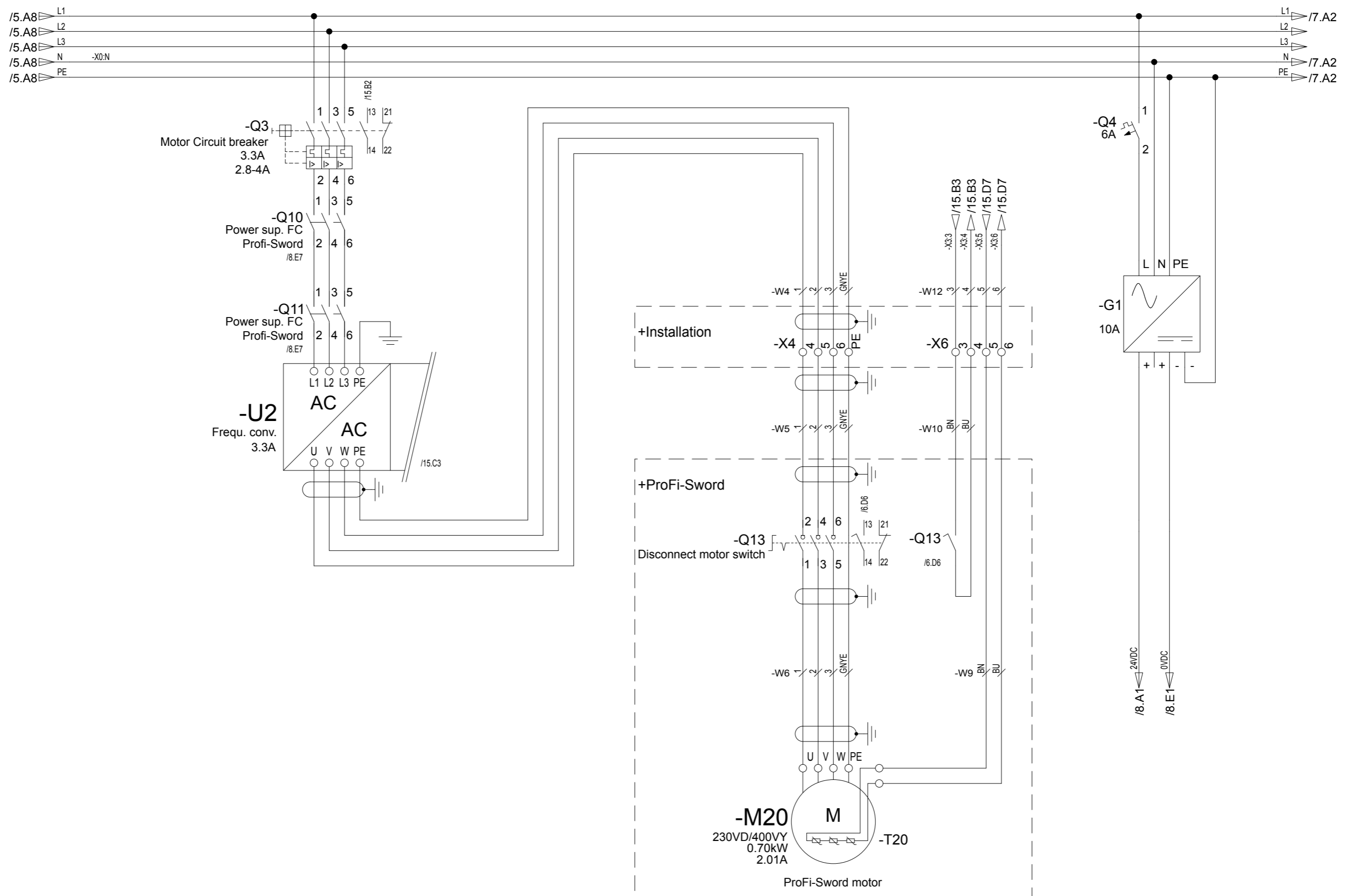
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PRO-11-0076		
400V,50Hz,3P+N+PE		
Origin	Repl. f.	Repl. by

03 - Electrical diagram
Power

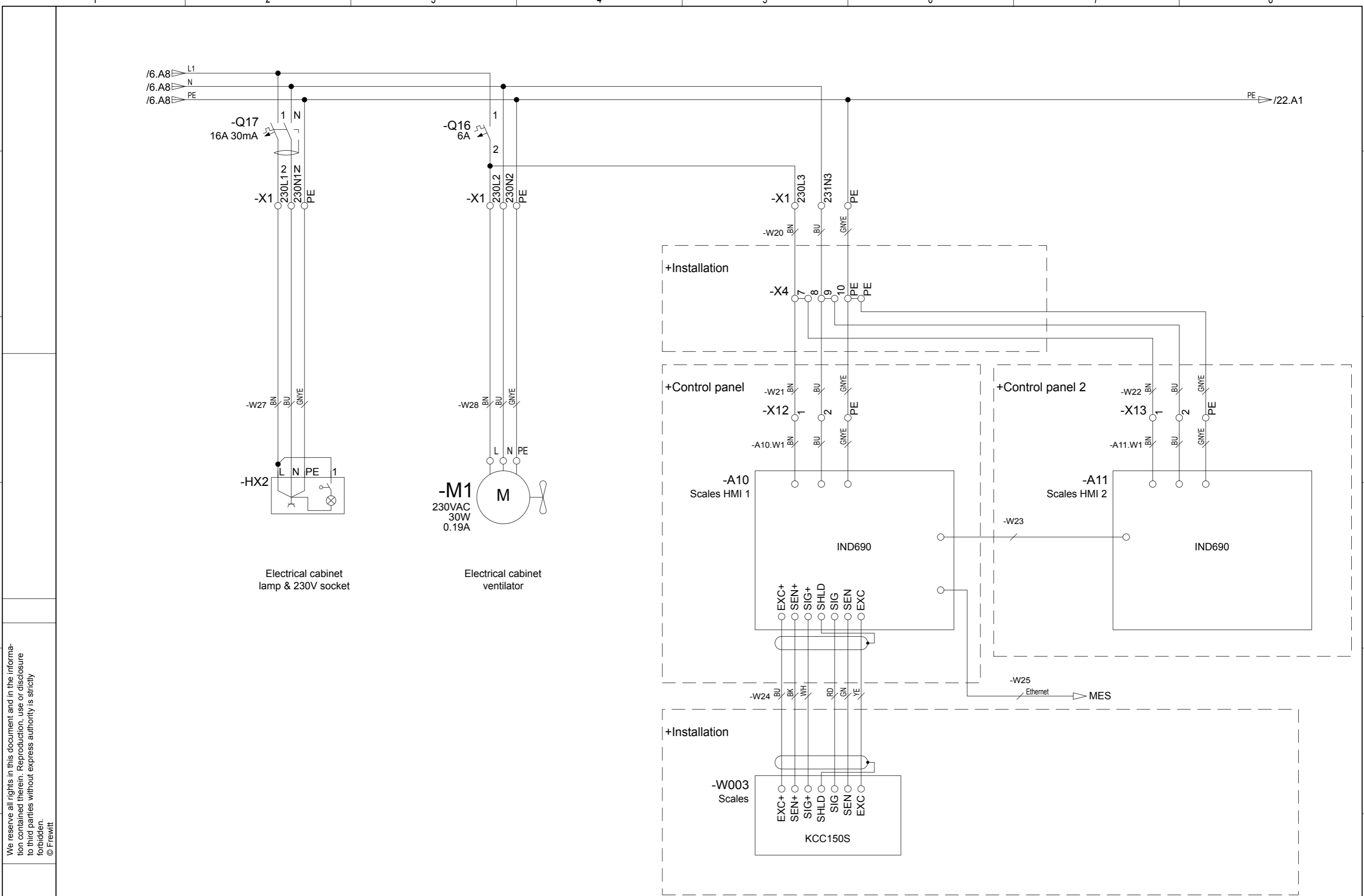
Type : PF - Installation	+Electrical cabinet
465083	Page 5 / 48



Crusher module

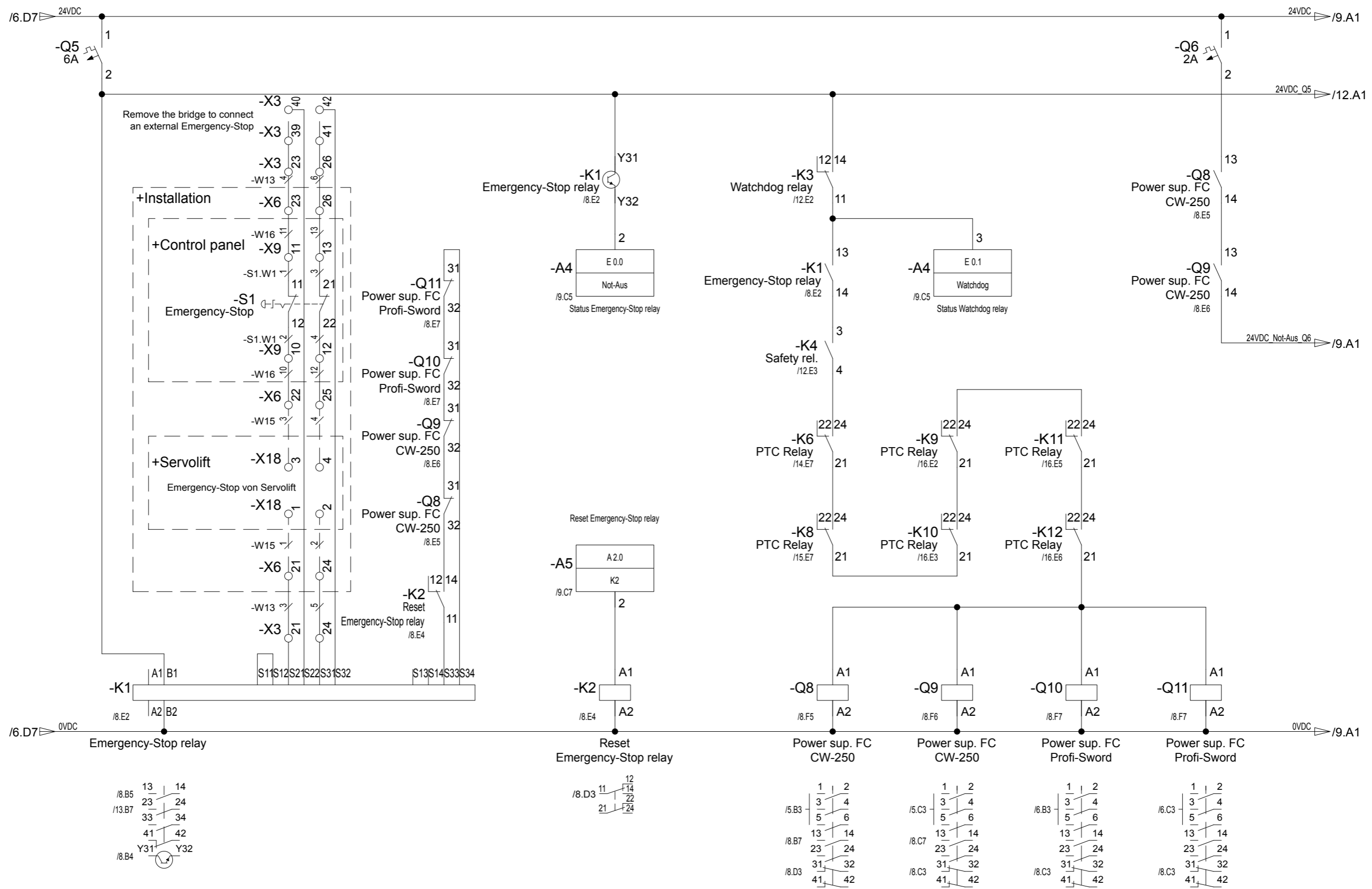
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B	Container det.	06.06.11	lge	User	lge						
C	Project closure	12.09.11	vri	Proved	lge						
Status	change	date	name	Standard		Origin	Repl. f.	Repl. by	465083		



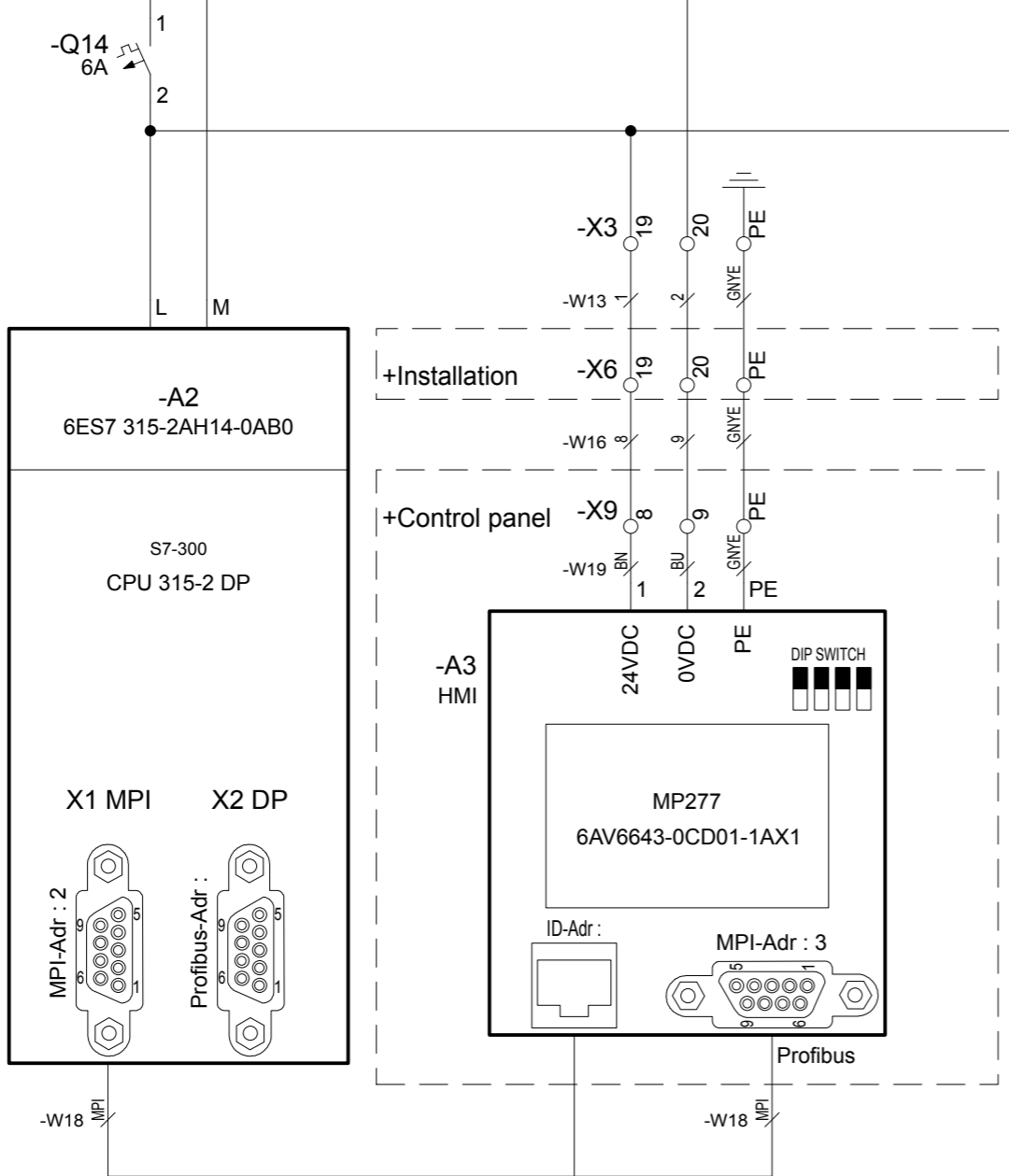
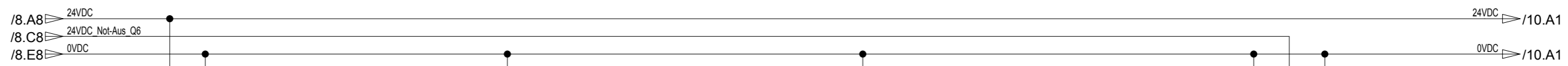
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B	Container det.	06.06.11	lge	User	lge						
C	Project closure	12.09.11	vri	Proved	lge						
Status	change	date	name	Standard	Origin	Repl. f.	Repl. by	465083		7 / 48	



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B	Container det.	06.06.11	lge	User	lge							8 / 48
C	Project closure	12.09.11	vri	Proved	lge							
Status	change	date	name	Standard		Origin	Repl. f.	Repl. by				

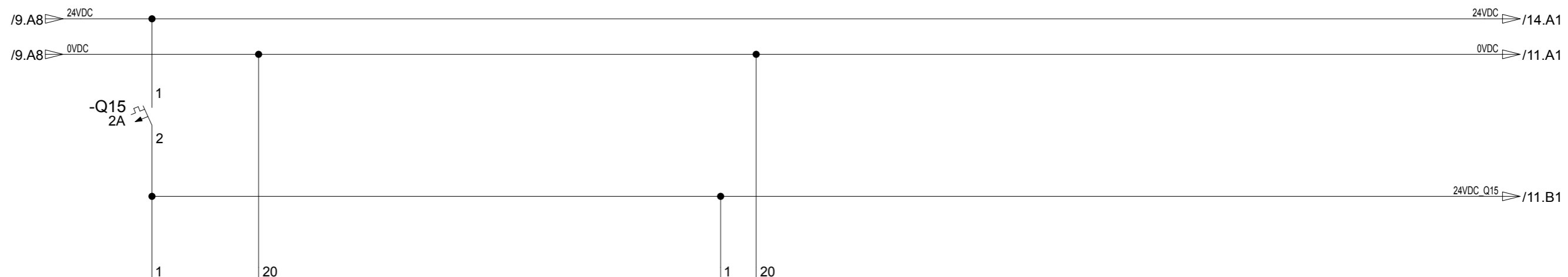


24V DC		-A4		
S7-300		6ES7 321-1BH02-0AA0		
L+	M			
2	E 0.0	/8.B4	Not-Aus	Status Emergency-Stop relay
3	E 0.1	/8.B6	Watchdog	Status Watchdog relay
4	E 0.2	/12.C6	G10	Inlet safety CW-250
5	E 0.3	/14.C6	StörungU1	Default Freq. conv. CW-250
6	E 0.4	/14.C7	T10	PTC Motor CW-250
7	E 0.5	/15.C6	StörungU2	Default Freq. conv. ProFi-Sword
8	E 0.6	/15.D3	M20Blockiert	ProFi-Sword locked signal
9	E 0.7	/15.C8	T20	PTC Motor ProFi-Sword
12	E 1.0	/16.C2	T12	Bearing PTC CW-250
13	E 1.1	/16.C4	T11	Sieve PTC CW-250
14	E 1.2	/16.C5	T22	Bearing PTC ProFi-Sword
15	E 1.3	/16.C7	T21	Bearing PTC ProFi-Sword
16	E 1.4	/18.C5	U10.P10	Pressure switch CW-250
17	E 1.5	/14.C2	Q2	Motor Circuit breaker CW-250
18	E 1.6	/15.C2	Q3	Motor Circuit breaker ProFi-Sword
19	E 1.7	/13.D2	S3Taster	Push button ON

24V DC		-A5		
S7-300		6ES7 322-1BH01-0AA0		
1L+	1M	2L+	2M	
2	A 2.0	/8.D4	K2	Reset Emergency-Stop relay
3	A 2.1	/12.D2	K3Imp	Impulse Watchdog relay
4	A 2.2	/12.D3	K3Res	Reset Watchdog relay
5	A 2.3	/12.D6	K5	Reset Safety rel.
6	A 2.4	/15.D6	RücklaufM20	Reverse rotation direction ProFi-Sword
7	A 2.5	/13.B3	S3Lampe	Lamp ON
8	A 2.6	/20.D2	Reserve	Reserve
9	A 2.7	/20.D3	Reserve	Reserve
12	A 3.0	/14.B4	StartM10	Starting CW-250
13	A 3.1	/15.B4	StartM20	Starting ProFi-Sword
14	A 3.2	/18.B2	U10.SV10	Air or Gas CW-250
15	A 3.3	/20.D4	Reserve	Reserve
16	A 3.4	/20.D5	Reserve	Reserve
17	A 3.5	/20.D6	Reserve	Reserve
18	A 3.6	/20.D6	Reserve	Reserve
19	A 3.7	/20.D7	Reserve	Reserve

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B	Container det.	06.06.11	lge	User							lge
C	Project closure	12.09.11	vri	Proved							lge
Status	change	date	name	Standard	Origin	Repl. f.	Repl. by	465083			

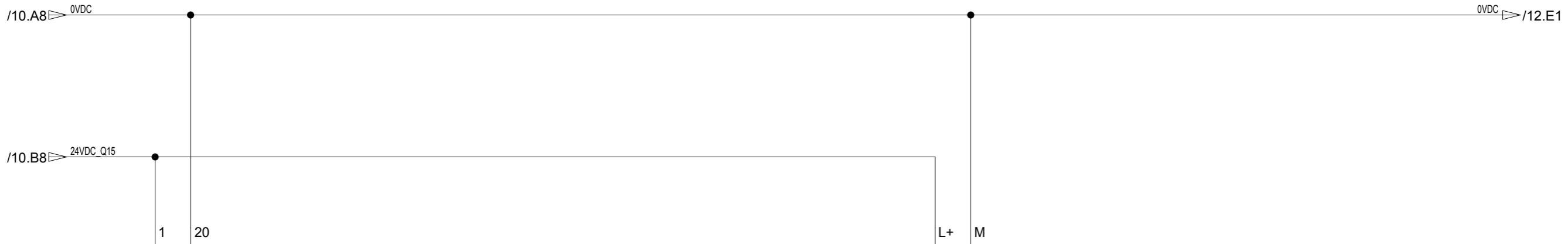


L+ 24V DC S7-300 SM 321		M -A6 6ES7 321-1BH02-0AA0		
○ 2	E 4.0	/13.D4	S2	Stop button
○ 3	E 4.1	/19.C5	F10	Flow sensor CW-250
○ 4	E 4.2	/19.C7	F01	Exhaust measure
○ 5	E 4.3	/14.B3	Q12	ConiWitt Motor disconnect switch
○ 6	E 4.4	/15.B3	Q13	Sword Motor disconnect switch
○ 7	E 4.5	/19.C3	G30	Container detector
○ 8	E 4.6	/20.B3	Reserve	Reserve
○ 9	E 4.7	/20.B4	Reserve	Reserve
○ 12	E 5.0	/20.B5	Reserve	Reserve
○ 13	E 5.1	/20.B6	Reserve	Reserve
○ 14	E 5.2	/20.B6	Reserve	Reserve
○ 15	E 5.3	/20.B7	Reserve	Reserve
○ 16	E 5.4	/21.B2	Reserve	Reserve
○ 17	E 5.5	/21.B2	Reserve	Reserve
○ 18	E 5.6	/21.B3	Reserve	Reserve
○ 19	E 5.7	/21.B4	Reserve	Reserve

L+ M 24V DC S7-300 SM 334		-A7 6ES7 334-0CE01-0AA0		
Channel	U / I	Adresse		
○ 2	MV0+			
○ 3	CH0 M0-MIO+	PEW 128	/18.D7 S10	Speed detector CW-250
○ 4				
○ 5	MV1+			
○ 6	CH1 M1-MI1+	PEW 130	/14.D4 LeistungU1	Power CW-250
○ 7				
○ 8	MV2+			
○ 9	CH2 M2-MI2+	PEW 132	/15.D4 LeistungU2	Power ProFi-Sword
○ 10				
○ 11	MV3+			
○ 12	CH3 M3-MI3+	PEW 134	/21.B5 Reserve	Reserve
○ 13				
○ 14	QV0			
○ 15	CH0 QMANA QI0	PAW 128	/14.B5 GeschwM10	Speed Adjustment CW-250
○ 16				
○ 17	QV1			
○ 18	CH1 QMANA QI1	PAW 132	/15.B5 GeschwM20	Speed Adjustment ProFi-Sword
○ 19				

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B	Container det.	06.06.11	lge	User				lge	465083		
C	Project closure	12.09.11	vri	Proved				lge			
Status	change	date	name	Standard	Origin	Repl. f.	Repl. by				



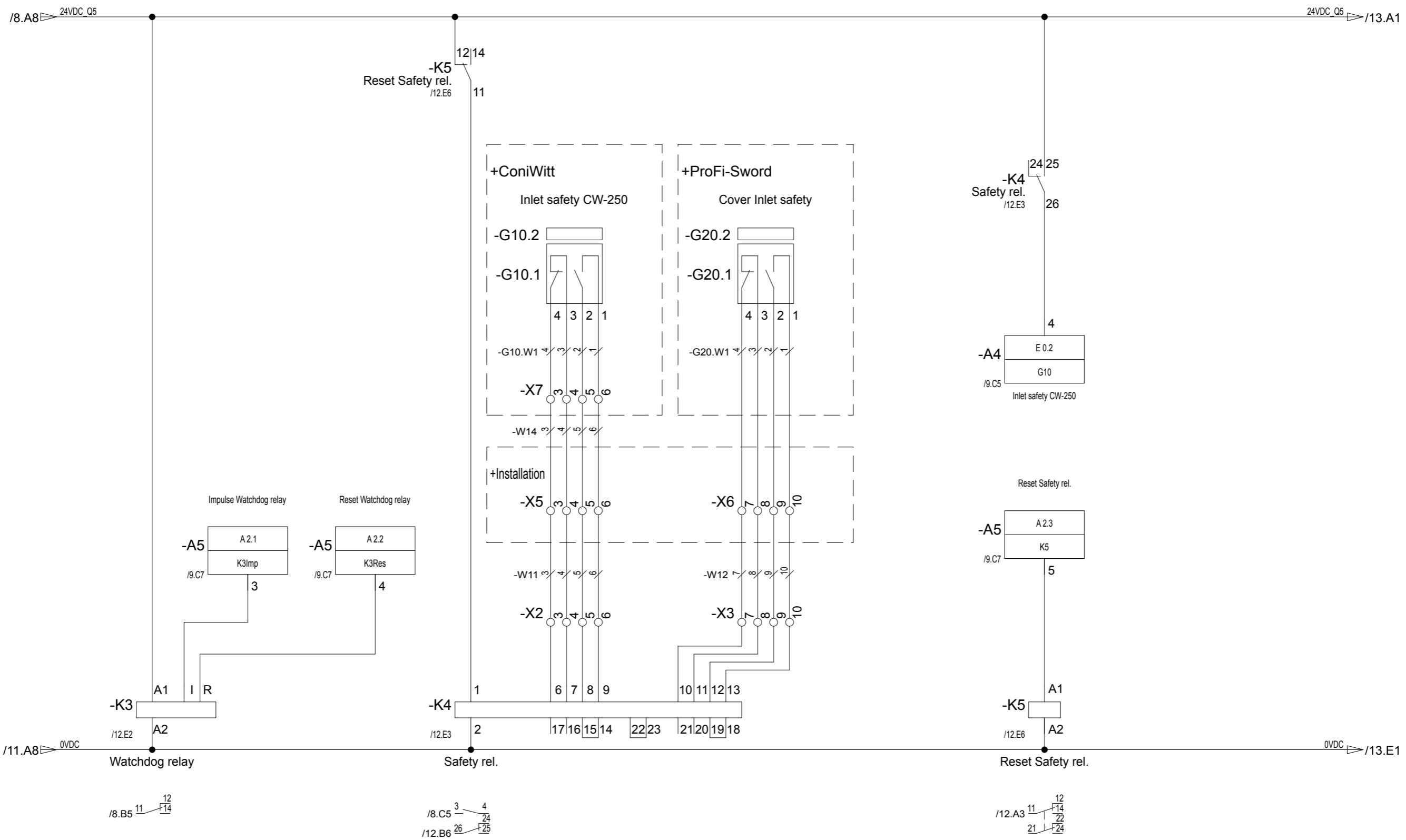
L+		M		24V DC		-A8	
				S7-300		6ES7 334-0CE01-0AA0	
				SM 334			
Channel	U / I	Adresse					
2	MV0+	PEW 136	/17.D4 T13	Temperature control 1			
3	M0-						
4	MI0+						
5	MV1+						
6	M1-	PEW 138	/17.D7 T23	Temperature control 2			
7	MI1+						
8	MV2+						
9	M2-	PEW 140	/21.B7 Reserve	Reserve			
10	MI2+						
11	MV3+						
12	M3-	PEW 142	/21.B7 Reserve	Reserve			
13	MI3+						
14	QV0						
15	QMANA	PAW 134	/21.D7 Reserve	Reserve			
16	QI0						
17	QV1						
18	QMANA	PAW 136	/21.D7 Reserve	Reserve			
19	QI1						



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B	Container det.	06.06.11	lge	User	lge							
C	Project closure	12.09.11	vri	Proved	lge							
Status	change	date	name	Standard		Origin	Repl. f.	Repl. by			465083	Page 11 / 48

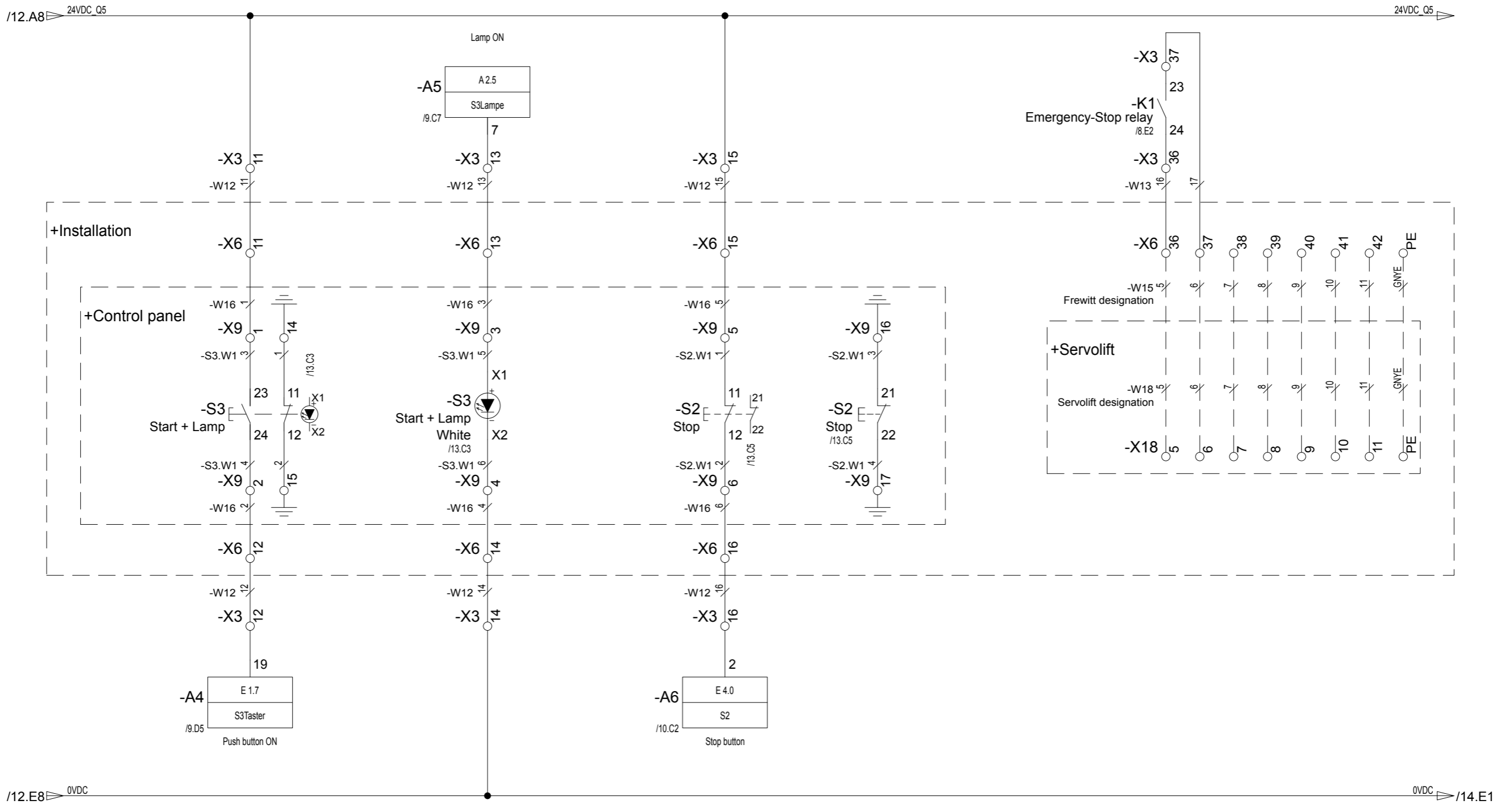
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C	Project closure	12.09.11	vri	Proved lge
Status	change	date	name	Standard

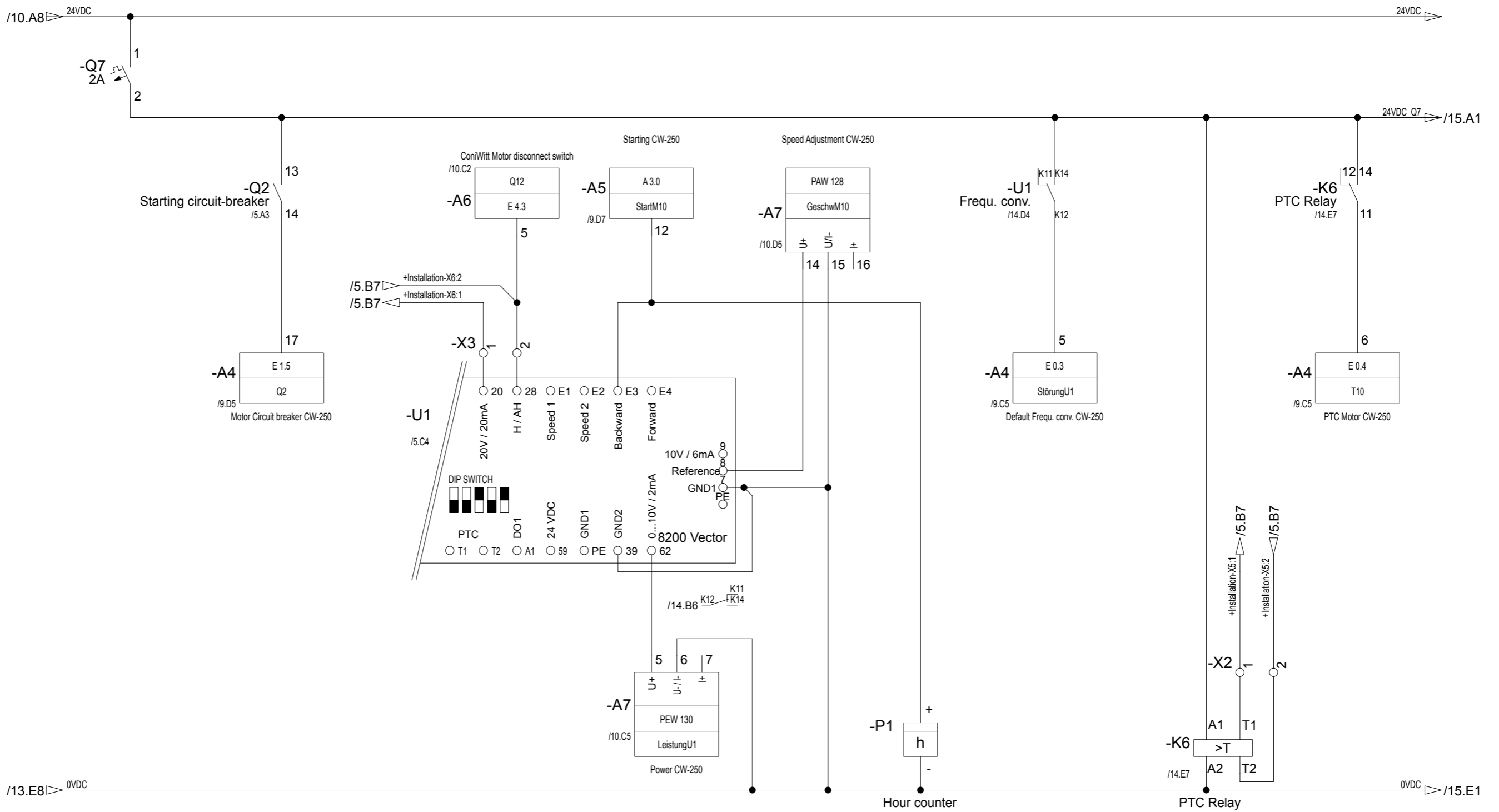
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03 - Electrical diagram Safety		Type : PF - Installation		+Electrical cabinet	
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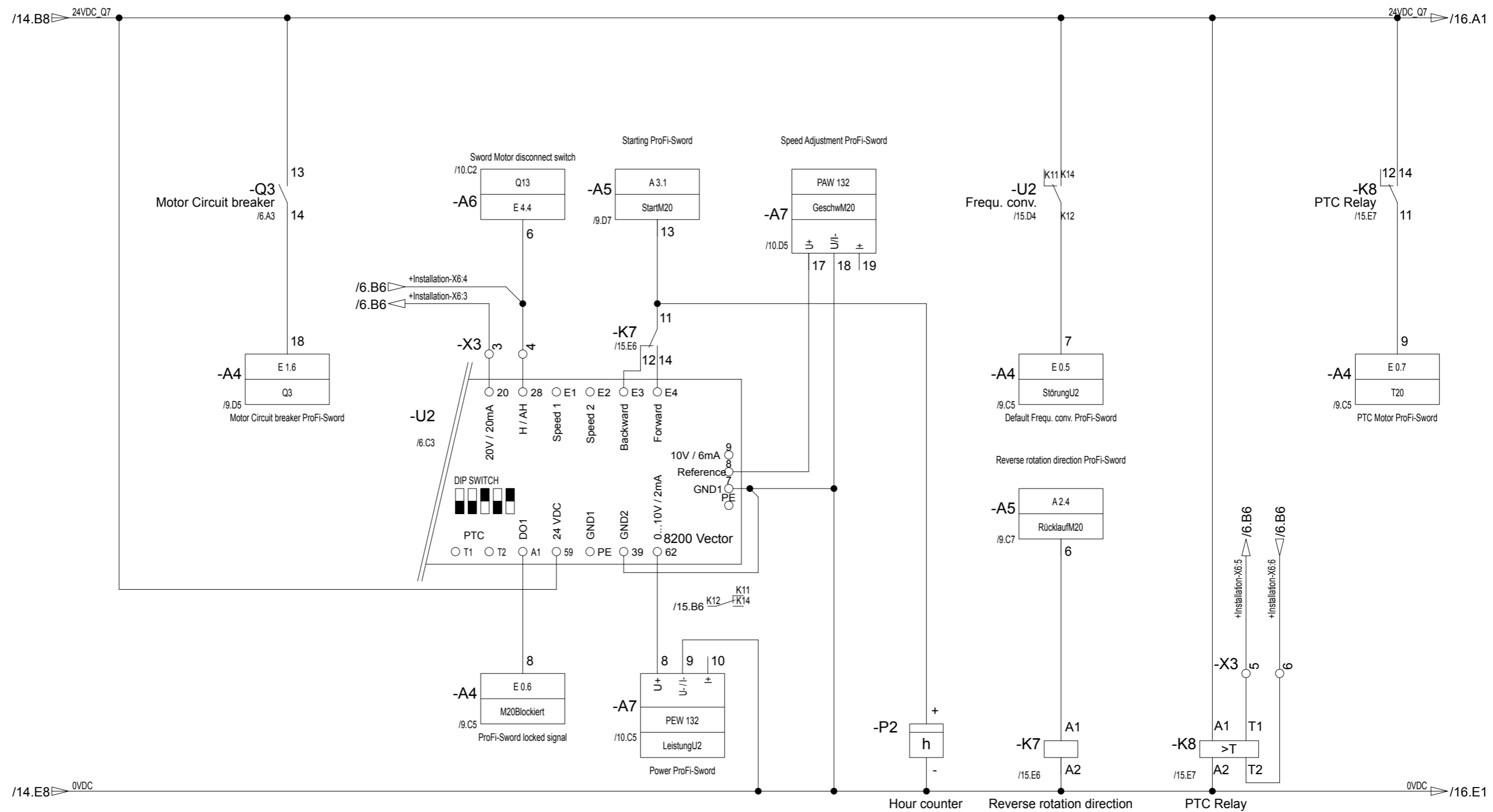
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B	Container det.	06.06.11	lge	User	lge				465083	Page	
C	Project closure	12.09.11	vri	Proved	lge						
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B	Container det.	06.06.11	lge	User	lge									
C	Project closure	12.09.11	vri	Proved	lge									
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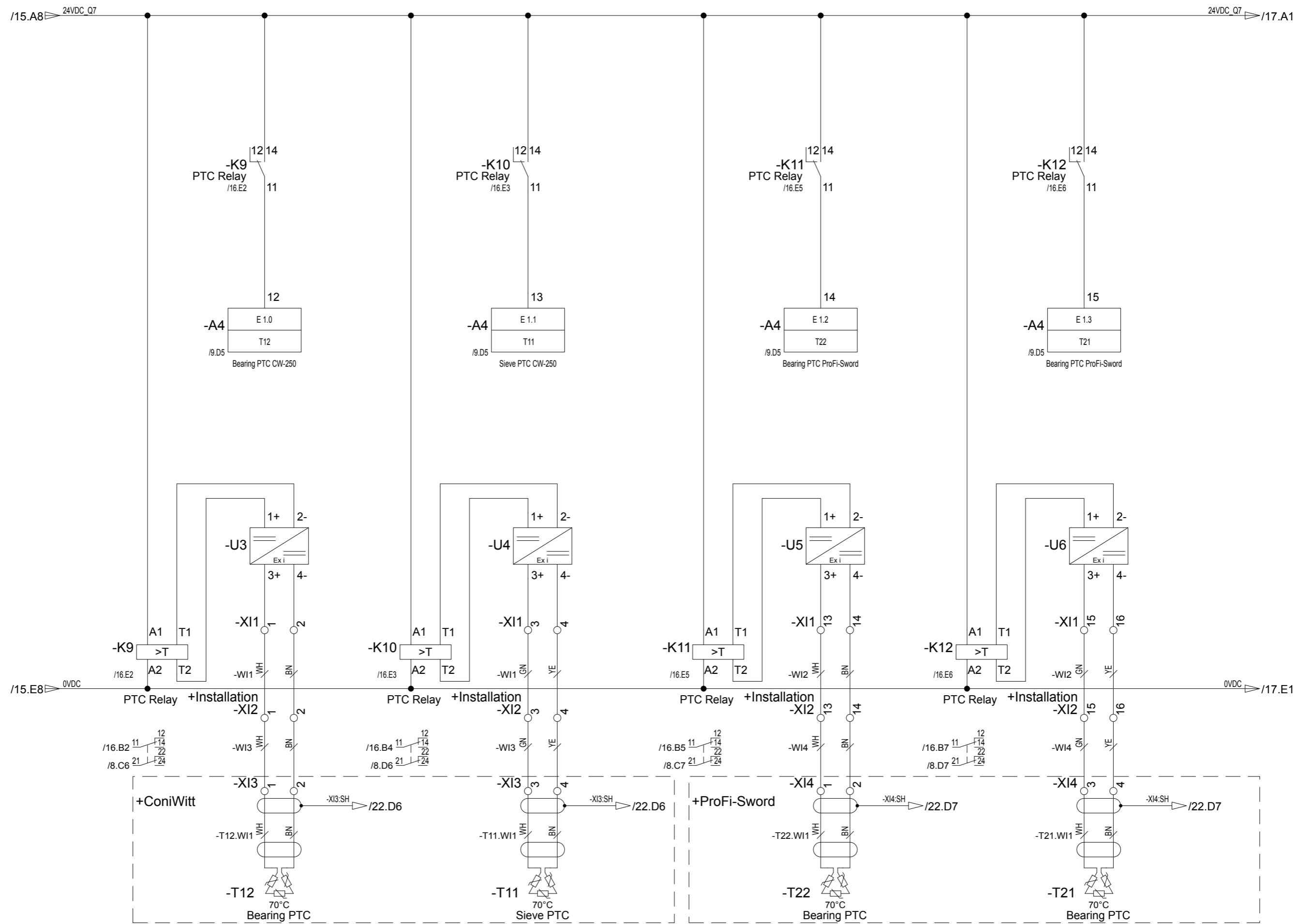


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C	Project closure	12.09.11	vri	Proved	lge
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03 - Electrical diagram ProFi-Sword		Type : PF - Installation			
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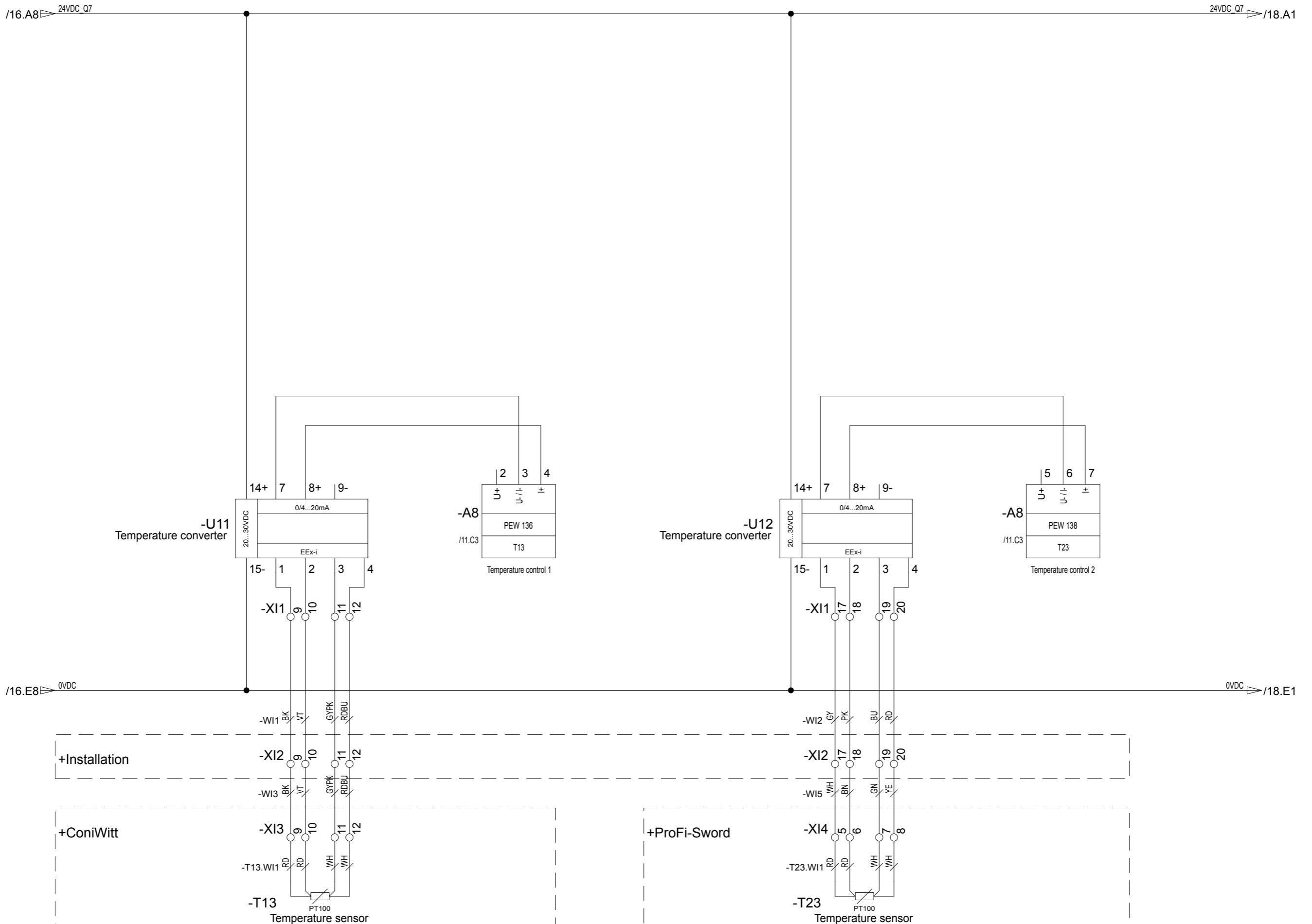
03 - Electrical diagram
PTC

Type : PF - Installation
465083

+Electrical cabinet

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Status	change	date	name	Standard	

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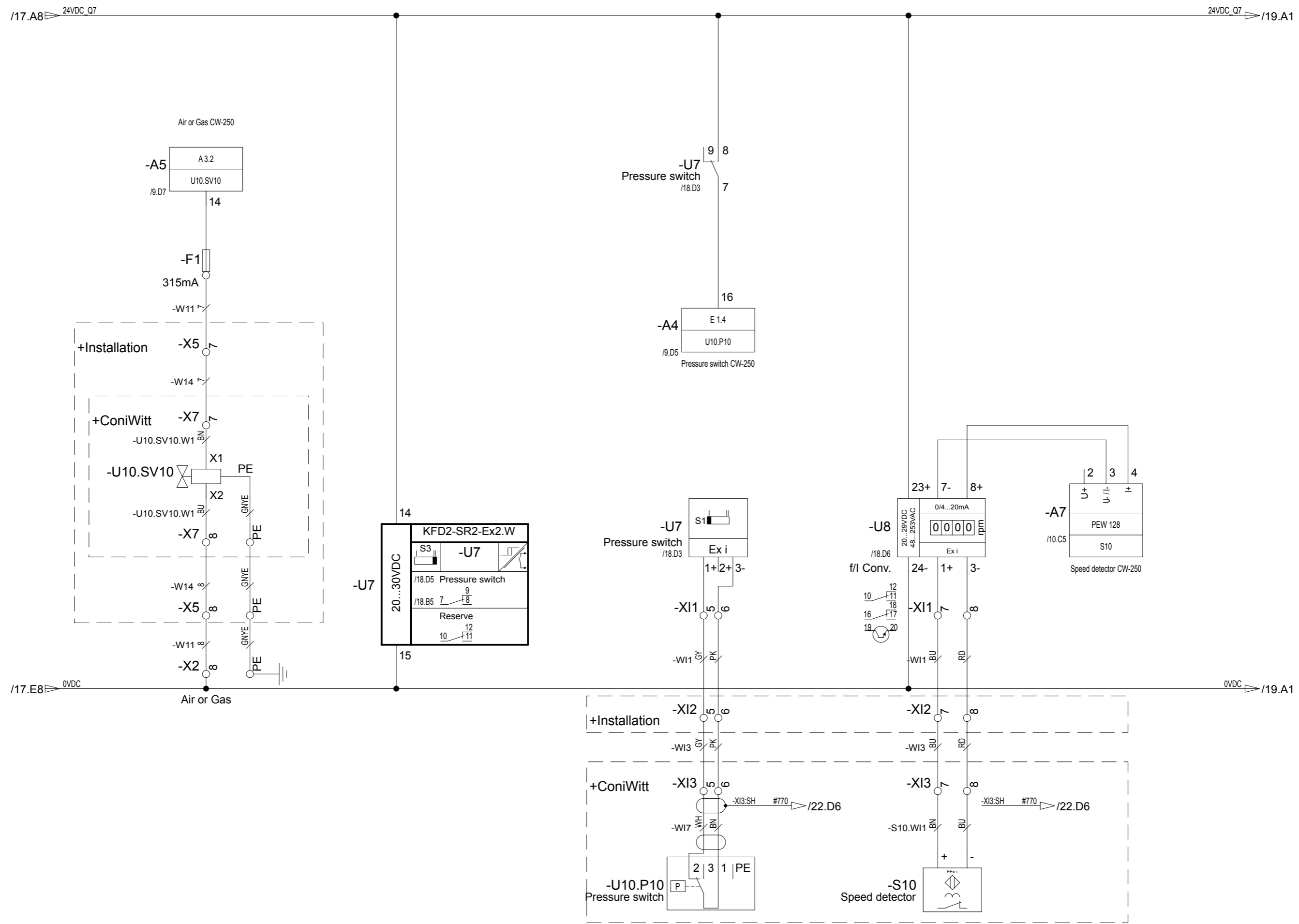
03 - Electrical diagram
PT100

Type : PF - Installation
465083

+Electrical cabinet

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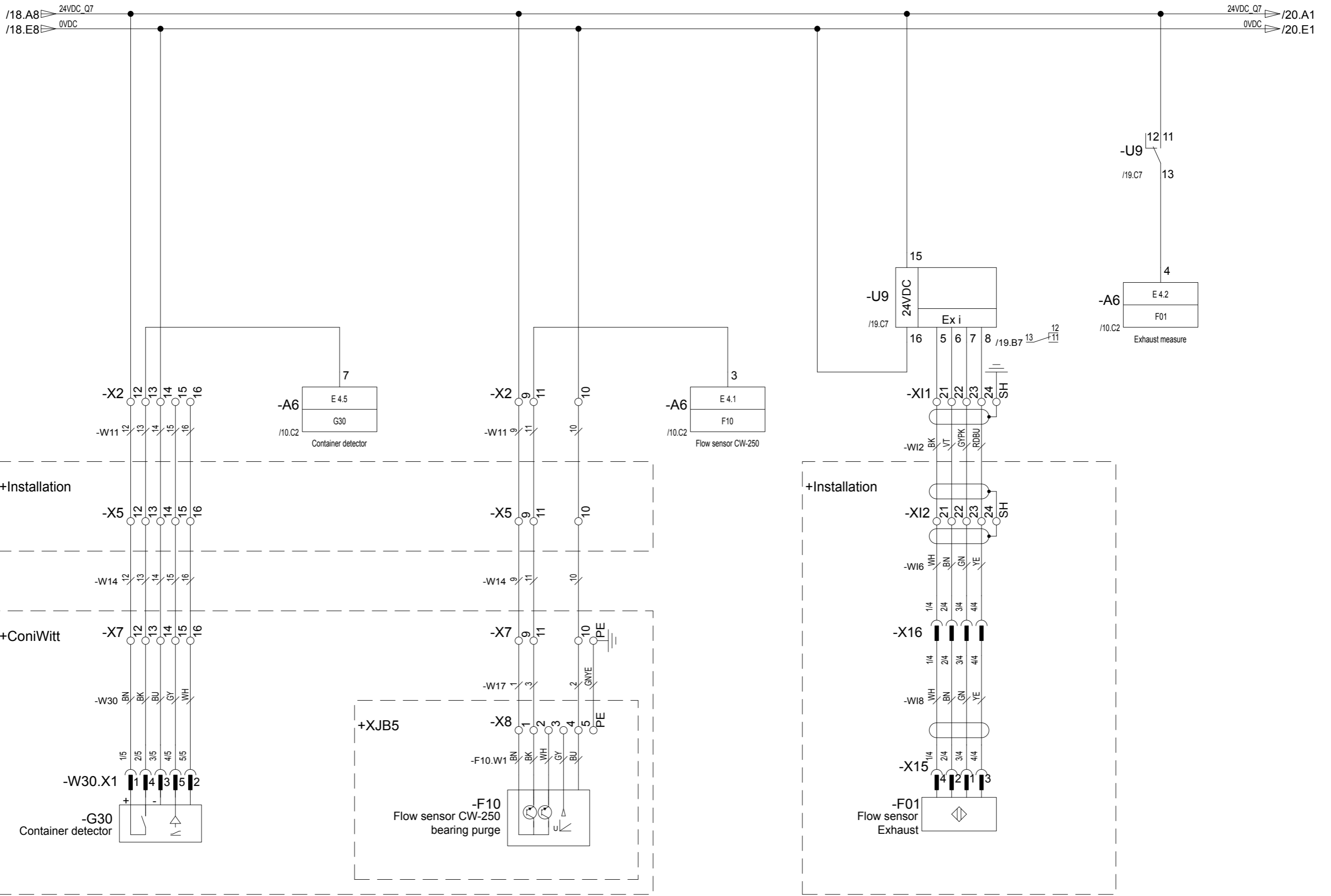
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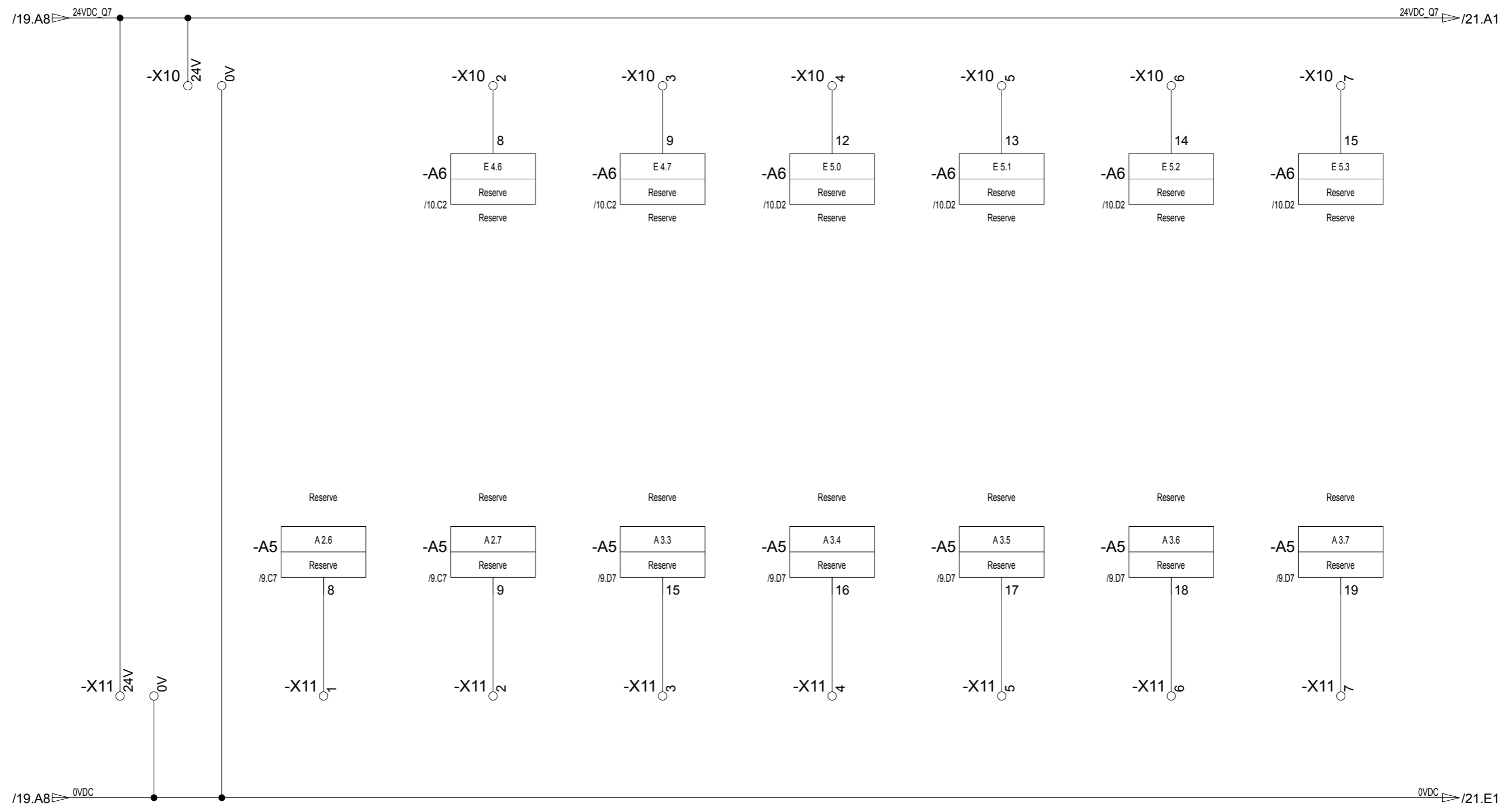
03 - Electrical diagram Air or Gas		Type : PF - Installation	+Electrical cabinet
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B	Container det.	06.06.11	lge	User	lge				465083	Page 19 / 48	
C	Project closure	12.09.11	vri	Proved	lge						
Status	change	date	name	Standard	Origin	Repl. f.	Repl. by				

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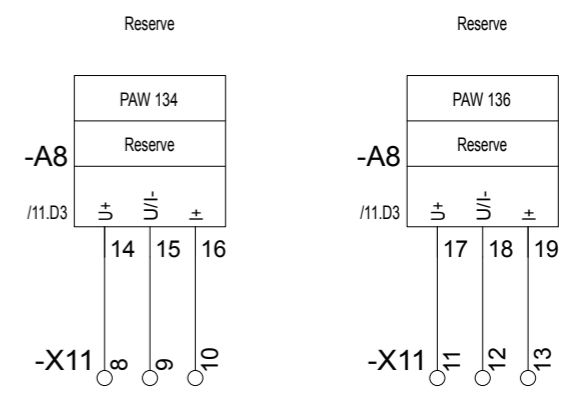
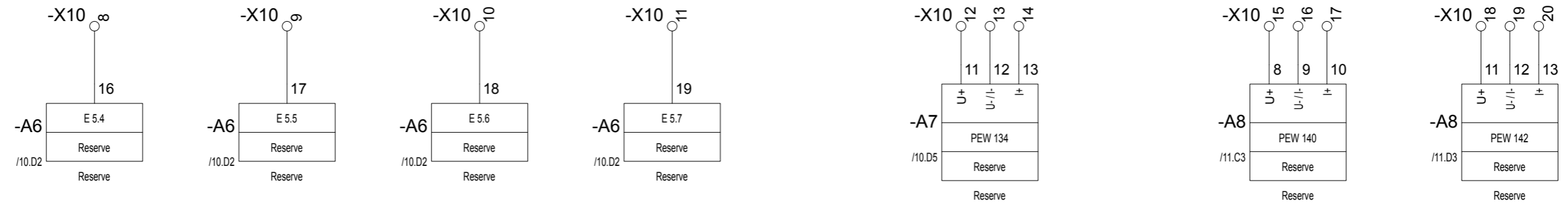
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03 - Electrical diagram
Reserve

Type : PF - Installation		+Electrical cabinet	Page 20 / 48
465083			

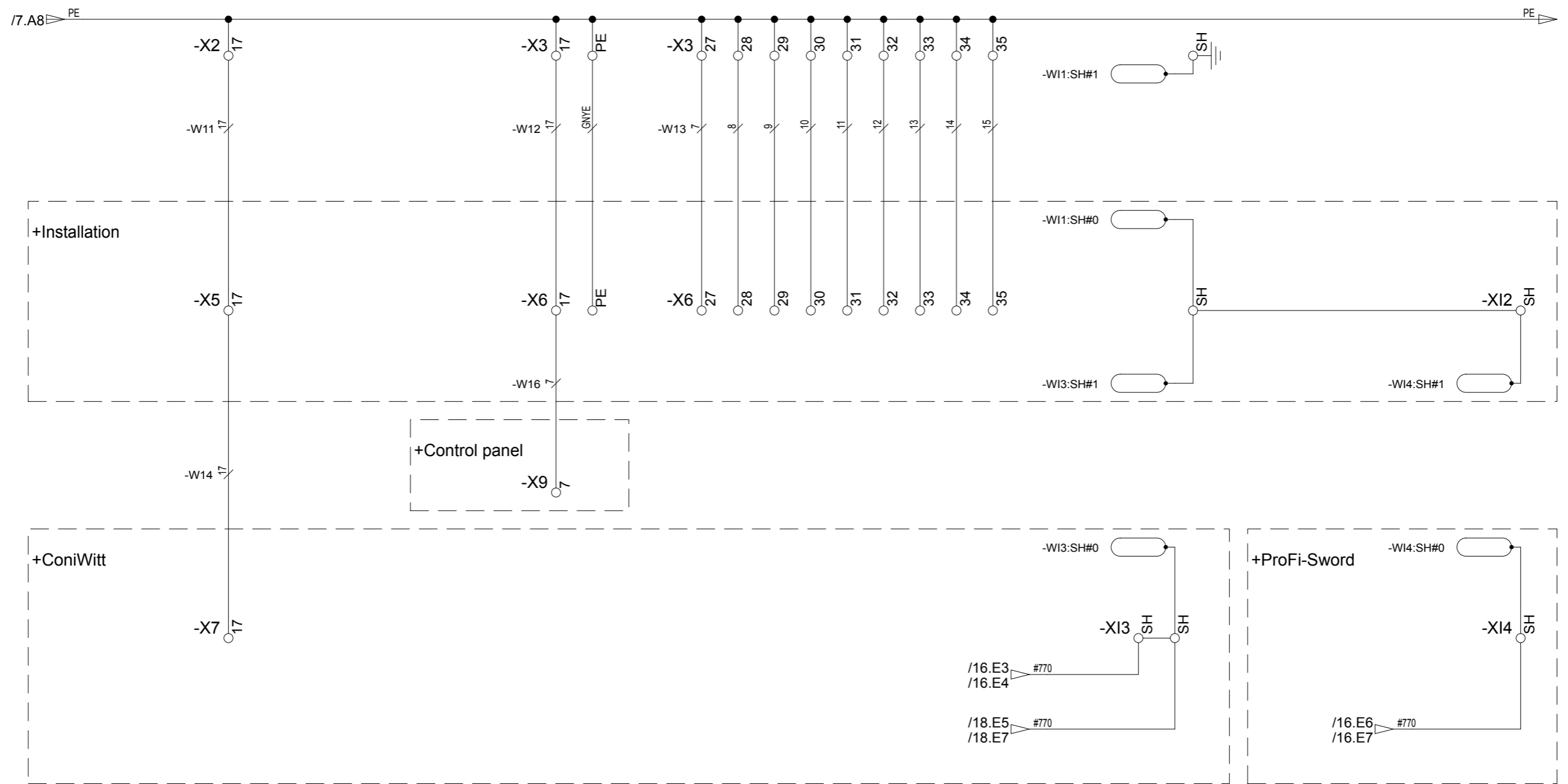
/20.A8 24VDC_Q7 24VDC_Q7



/20.E8 0VDC 0VDC

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B	Container det.	06.06.11	lge	User	lge								21 / 48
C	Project closure	12.09.11	vri	Proved	lge								
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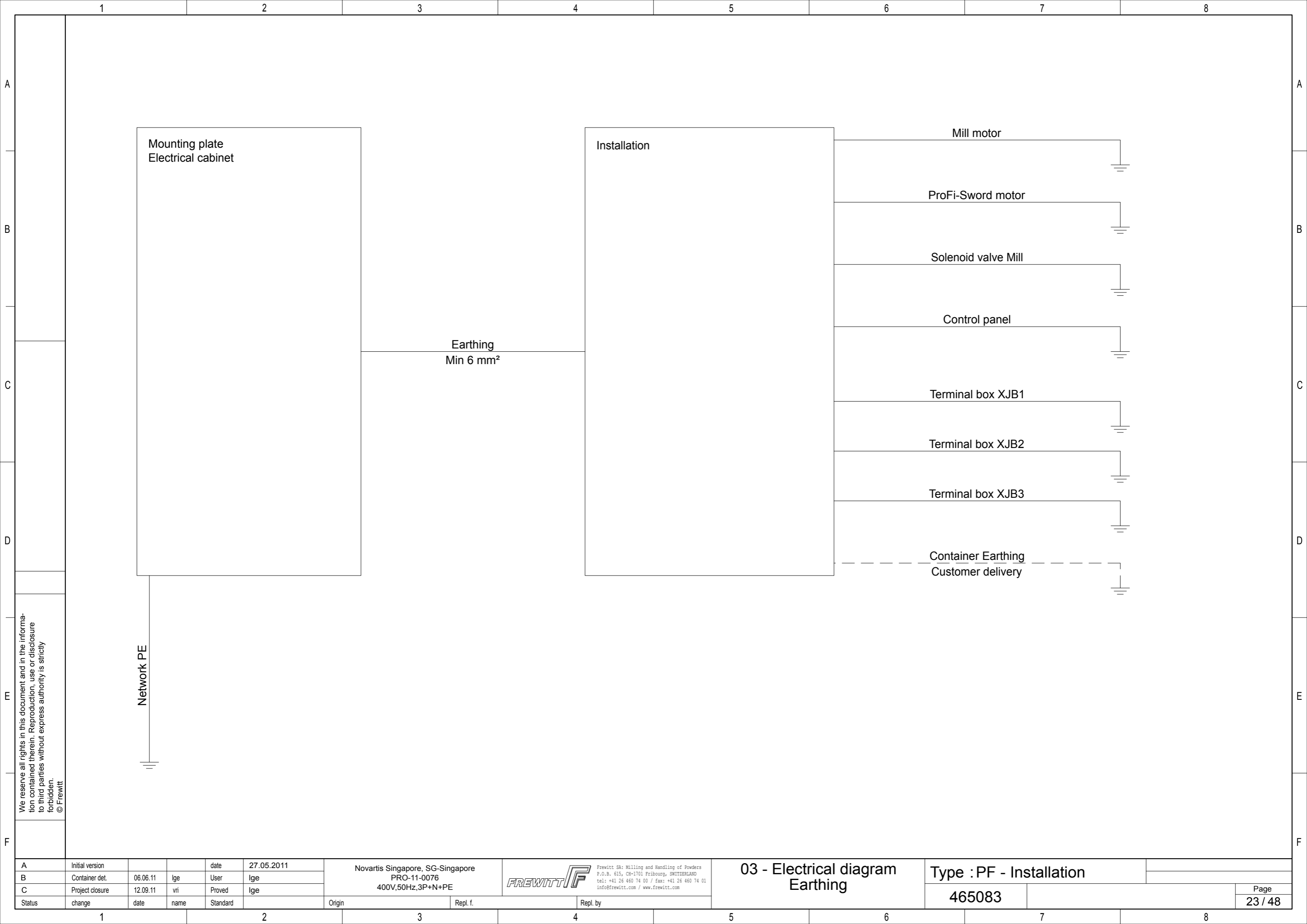
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**03 - Electrical diagram
Spare Cable**

Type : PF - Installation		+Electrical cabinet	
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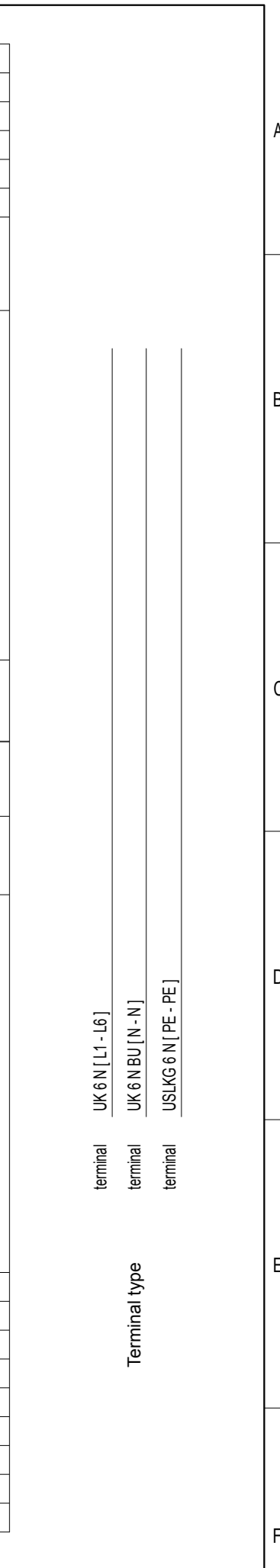
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03 - Electrical diagram
Earthing

Type : PF - Installation		
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terminal strip -X0	cable type		cable designations		Placement in Schematics		
	target Internal	jumper	terminal number			potential	
			target External	target			
				cable type			cable designations
		+		Electrical cabinet -PE 1	/5.D2	PE	PE
		+	Electrical cabinet -Q1	/5.D1	L1	L1	
		+	Electrical cabinet -Q1	/5.D2	L1	L1	
		+	Electrical cabinet -Q1	/5.D1	L2	L2	
		+	Electrical cabinet -Q1	/5.D2	L2	L2	
		+	Electrical cabinet -Q1	/5.D1	L3	L3	
		+	Electrical cabinet -Q1	/5.D2	L3	L3	
		+	Electrical cabinet -Q1	/5.D2	N	N	
		+	Electrical cabinet -Q1	/5.D3	N	N	
				/5.D3	PE	PE	
		+	Electrical cabinet -Q1	/5.B1	L4	L4	
		+	Electrical cabinet -Q1	/5.B1	L5	L5	
		+	Electrical cabinet -Q1	/5.B1	L6	L6	
		+	Electrical cabinet -Q1	/5.B2	N	N	
				/5.B2	PE	PE	

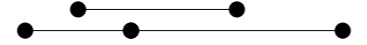


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terminal strip -X2

-X2

cable type		cable designations		jumpers		terminal number		potential		target External		target Internal		Placement in Schematics	
	TT flex NK 18G0.5		-W11			PE	1		:1	+Installation -X5		+Electrical cabinet -K6	/14.D7		
							2		:2	+Installation -X5		+Electrical cabinet -K6	/14.D7		
							3		:3	+Installation -X5		+Electrical cabinet -K4	/12.D4		
							4		:4	+Installation -X5		+Electrical cabinet -K4	/12.D4		
							5		:5	+Installation -X5		+Electrical cabinet -K4	/12.D4		
							6		:6	+Installation -X5		+Electrical cabinet -K4	/12.D4		
							7								
							8	0VDC	:8	+Installation -X5			/18.E2		
							9	24VDC_Q7	:9	+Installation -X5			/19.C4		
							10	0VDC	:10	+Installation -X5			/19.C4		
							11		:11	+Installation -X5		+Electrical cabinet -A6	/19.C4		
							12	24VDC_Q7	:12	+Installation -X5			/19.C2		
							13		:13	+Installation -X5		+Electrical cabinet -A6	/19.C2		
							14	0VDC	:14	+Installation -X5			/19.C2		
							15		:15	+Installation -X5			/19.C2		
							16		:16	+Installation -X5			/19.C2		
							17	PE	:17	+Installation -X5			/22.A2		
							18		:18	+Installation -X5			/18.E2		
									.PE						



terminal UKK 3 [1 - 18]
terminal UKK 5-PE [PE - PE]
terminal

Terminal type

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04 - Terminals Block
-X2

Type : PF - Installation
465083

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terminal strip -X3

cable type		cable designations		target External		potential		terminal number		jumpers		target Internal		Placement in Schematics	
TT flex NK 18G0.5	-W12	1	+Installation -X6	:1	PE	1									/14.C3
TT flex NK 18G0.5	-W13	2	+Installation -X6	:2		2									/14.C4
		3	+Installation -X6	:3		3									/14.C4
		4	+Installation -X6	:4		4									/15.C3
		5	+Installation -X6	:5		5									/15.C4
		6	+Installation -X6	:6		6									/15.C4
		7	+Installation -X6	:7		7									/15.D7
		8	+Installation -X6	:8		8									/15.D7
		9	+Installation -X6	:9		9									/12.D5
		10	+Installation -X6	:10		10									/12.D5
		11	+Installation -X6	:11	24VDC_Q5	11									/12.D5
		12	+Installation -X6	:12		12									/13.B2
		13	+Installation -X6	:13		13									/13.D2
		14	+Installation -X6	:14	0VDC	14									/13.B3
		15	+Installation -X6	:15	24VDC_Q5	15									/13.D3
		16	+Installation -X6	:16		16									/13.B5
		17	+Installation -X6	:17	PE	17									/13.D5
		18				18									/22.A4
		GNVE	+Installation -X6	:PE	PE	PE									/22.A4
		GNVE	+Installation -X6	:PE	PE	PE									/9.B4
		1	+Installation -X6	:19		19									/9.B3
		2	+Installation -X6	:20	0VDC	20									/9.B3
		3	+Installation -X6	:21		21									/8.D3
		4	+Installation -X6	:23		23									/8.B3
		5	+Installation -X6	:24		24									/8.D3
		6	+Installation -X6	:26		26									/8.B3
		7	+Installation -X6	:27	PE	27									/22.A4
		8	+Installation -X6	:28	PE	28									/22.A4
		9	+Installation -X6	:29	PE	29									/22.A5
		10	+Installation -X6	:30	PE	30									/22.A5
		11	+Installation -X6	:31	PE	31									/22.A5
		12	+Installation -X6	:32	PE	32									/22.A5
		13	+Installation -X6	:33	PE	33									/22.A5
		14	+Installation -X6	:34	PE	34									/22.A5
		15	+Installation -X6	:35	PE	35									/22.A5

terminal UKK 3 [1 - 35]
terminal UKK 5-PE [PE - PE]
terminal

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04 - Terminals Block
-X3

Type : PF - Installation
465083

+Electrical cabinet

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terminal strip -X3	cable type	cable designations							
	target Internal	+Electrical cabinet -K1	/13.B7			/8.B3			
	target External	+Electrical cabinet -K1	/13.A7			/8.B3			
	target External	+Electrical cabinet -K1				/8.B3			
	target External	+Electrical cabinet -K1				/8.B3			
	target External	+Electrical cabinet -K1				/8.B3			
	jumpers								
	terminal number	36	37	38	39	40	41	42	PE
	potential								
	target External	+Installation -X6	:36						
	target External	+Installation -X6	:37						
	cable type	cable designations							
TT flex NK 18G0.5	-W13	16	17						

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Terminal type

terminal UKK 3 [36 - 42]

terminal UKK 5-PE [PE]

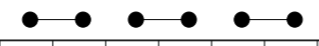
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terminal strip -X4

cable type	cable designations	placement in Schematics	target Internal	jumper	terminal number	potential	target External	cable type	cable designations
TT flex CEE 3G1	-W20				PE				
TT flex NK CY 4G2.5	-W4				1		:2	TT flex NK CY 4G2.5	-W2
TT flex NK CY 4G2.5	-W1	/5.C6	:U		2		:4	TT flex NK CY 4G2.5	-W5
		/5.C6	:V		3		:6	TT flex CEE 3G1	-W21
		/5.C6	:W		PE		:	TT flex CEE 3G1	-W22
		/5.C6	:PE		4		:2		
		/6.C5	:U		5		:4		
		/6.C5	:V		6		:6		
		/6.C5	:W		PE		:		
		/6.C6	:PE		7	L1	:1		
		/7.B5	:230L3		8	L1	:1		
		/7.B5			9	N	:2		
		/7.B5	:231N3		10	N	:2		
		/7.B5			PE	PE	:PE		
		/7.B6	:PE		PE	PE	:PE		



terminal UK 3 N [1 - 10]
terminal USLKG 3 [PE - PE]
terminal

Terminal type

A B C D E F

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terminal strip -X5

terminal number	potential	target External	target Internal	jumpers	Placement in Schematics	cable designations	cable type
PE							TT flex NK 18G0.5
1		+ConiWitt -X7	:1		/5.C7	+Electrical cabinet -X2	-W11
2		+ConiWitt -X7	:2		/5.C7	+Electrical cabinet -X2	
3		+ConiWitt -X7	:3		/12.D4	+Electrical cabinet -X2	
4		+ConiWitt -X7	:4		/12.D4	+Electrical cabinet -X2	
5		+ConiWitt -X7	:5		/12.D4	+Electrical cabinet -X2	
6		+ConiWitt -X7	:6		/12.D4	+Electrical cabinet -X2	
7		+ConiWitt -X7	:7		/18.C2	+Electrical cabinet -F1	
8	0VDC	+ConiWitt -X7	:8		/18.D2	+Electrical cabinet -X2	
9	24VDC_Q7	+ConiWitt -X7	:9		/19.D4	+Electrical cabinet -X2	
10	0VDC	+ConiWitt -X7	:10		/19.D4	+Electrical cabinet -X2	
11		+ConiWitt -X7	:11		/19.D4	+Electrical cabinet -X2	
12	24VDC_Q7	+ConiWitt -X7	:12		/19.D2	+Electrical cabinet -X2	
13		+ConiWitt -X7	:13		/19.D2	+Electrical cabinet -X2	
14	0VDC	+ConiWitt -X7	:14		/19.D2	+Electrical cabinet -X2	
15		+ConiWitt -X7	:15		/19.D2	+Electrical cabinet -X2	
16		+ConiWitt -X7	:16		/19.D2	+Electrical cabinet -X2	
17	PE	+ConiWitt -X7	:17		/22.B2	+Electrical cabinet -X2	
3NVE	PE	+ConiWitt -X7	:PE		/18.D2	+Electrical cabinet -X2	3NVE

terminal UK 3 N [1 - 17]
terminal USLKG 3 [PE - PE]
terminal

Terminal type

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terminal strip -X6

cable type	cable designations	potential	terminal number	jumpers	target	Placement in Schematics	cable type	cable designations
					External			
TT flex NK 14G0.5	-W16							
Min. 12G0.5	-W15							
TT flex CEE 2x1	-W8		1		+ConiWitt-Q12	/5.C7	TT flex NK 18G0.5	-W13
TT flex CEE 2x1	-W10		2		+ConiWitt-Q12	/5.C7	TT flex NK 18G0.5	-W12
TT flex CEE 2x1	-W9		3		+ProFi-Sword-Q13	/6.C6		
4x0.75	-G20.W1		4		+ProFi-Sword-Q13	/6.C6		
TT flex NK 14G0.5	-W16		5		+ProFi-Sword-M20	/6.C6		
Min. 12G0.5	-W15		6		+ProFi-Sword-M20	/6.C6		
			7		+ProFi-Sword-G20.1	/12.D5		
			8		+ProFi-Sword-G20.1	/12.D5		
			9		+ProFi-Sword-G20.1	/12.D5		
			10		+ProFi-Sword-G20.1	/12.D5		
			11		+Control panel-X9	/13.B2		
			12		+Control panel-X9	/13.D2		
			13		+Control panel-X9	/13.B3		
			14		+Control panel-X9	/13.D3		
			15		+Control panel-X9	/13.B5		
			16		+Control panel-X9	/13.D5		
			17		+Control panel-X9	/22.B4		
			18					
			19		+Control panel-X9	/9.B3		
			20		+Control panel-X9	/9.B3		
			21		+Control panel-X9	/9.B4		
			22		+Servolift-X18	/8.D3		
			23		+Control panel-X9	/8.C3		
			24		+Servolift-X18	/8.C3		
			25		+Control panel-X9	/8.C3		
			26		+Servolift-X18	/8.B3		
			27		+Control panel-X9	/22.B4		
			28		+Control panel-X9	/22.B4		
			29		+Control panel-X9	/22.B5		
			30		+Control panel-X9	/22.B5		
			31		+Control panel-X9	/22.B5		
			32		+Control panel-X9	/22.B5		
			33		+Control panel-X9	/22.B5		
			34		+Control panel-X9	/22.B5		
			35		+Control panel-X9	/22.B5		

A	Initial version		date	27.05.2011
B	Container det.	06.06.11	lge	User
C	Project closure	12.09.11	vri	Proved
Status	change	date	name	Standard

Novartis Singapore, SG-Singapore
PRO-11-0076
400V,50Hz,3P+N+PE



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04 - Terminals Block
-X6

Type : PF - Installation
465083

+Installation

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terminal UK 3 N [1 - 35]
terminal USLKG 3 [PE - PE]
terminal

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terminal strip -X7				
target External	potential	terminal number	jumpers	target Internal
+Installation -X5	:1	1		+ConiWitt -M10
+Installation -X5	:2	2		+ConiWitt -M10
+Installation -X5	:3	3		+ConiWitt -G10.1
+Installation -X5	:4	4		+ConiWitt -G10.1
+Installation -X5	:5	5		+ConiWitt -G10.1
+Installation -X5	:6	6		+ConiWitt -G10.1
+Installation -X5	:7	7		+ConiWitt -U10.SV10
+Installation -X5	:8	8		+ConiWitt -U10.SV10
+Installation -X5	:PE	PE		+ConiWitt -U10.SV10
+Installation -X5	:9	9		+XJB5 -X8
+Installation -X5	:10	10		+XJB5 -X8
+Installation -X5	:11	11		+XJB5 -X8
+Installation -X5	:12	12		+ConiWitt -W30.X1
+Installation -X5	:13	13		+ConiWitt -W30.X1
+Installation -X5	:14	14		+ConiWitt -W30.X1
+Installation -X5	:15	15		+ConiWitt -W30.X1
+Installation -X5	:16	16		+ConiWitt -W30.X1
+Installation -X5	:17	17		+XJB5 -X8

terminal UK 3 N [1 - 17]
terminal USLKG 3 [PE - PE]
terminal

Terminal type

	1	2	3	4	5	6	7	8							
A	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: 8px;"> We reserve all rights in this document and in the information contained therein. Reproduction, use or disclosure to third parties without express authority is strictly forbidden. © Frewitt </div> <div style="text-align: center;"> <h2 style="margin: 0;">terminal strip</h2> <h1 style="margin: 0;">-X8</h1> </div> </div>														
B															
C															
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F															
F															
F	5x0.25	+XJB5 -F10.W1	BN	BK	WH	GY	BU								
	cable type	cable designations													
		Placement in Schematics	/19.E4	/19.E4	/19.E4	/19.E4	/19.E4	/19.E4							
	target Internal		:	:	:	:	:								
			+XJB5 -F10	+XJB5 -F10	+XJB5 -F10	+XJB5 -F10	+XJB5 -F10								
		jumpers													
	terminal number	PE	1	2	3	4	5	PE							
	potential		24VDC_Q7				0VDC								
	target External		:9	:11			:10	:PE							
			+ConiWitt -X7	+ConiWitt -X7			+ConiWitt -X7	+ConiWitt -X7							
	cable type	cable designations													
	TT flex NK 4G0.5	-W17	1	3			2	GNVE							
A	Initial version		date	27.05.2011	Novartis Singapore, SG-Singapore PRO-11-0076 400V,50Hz,3P+N+PE			04 - Terminals Block -X8		Type : PF - Installation 465083		+XJB5			
B	Container det.	06.06.11	lge	User										 Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com	
C	Project closure	12.09.11	vri	Proved											
Status	change	date	name	Standard	2	Origin	Repl. f.	Repl. by	Page	34 / 48					
	1	2	3	4	5	6	7	8							

Terminal type

terminal UK 3 N [1 - 5]

terminal USLKG 3 [PE - PE]

terminal

A B C D E F

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terminal strip -X9

cable type	cable designations	terminal number	potential	target External	jumpers	target Internal	Placement in Schematics	cable type	cable designations
TT flex NK 14G0.5	-W16	1	:11 24VDC_Q5	+Installation -X6		+Control panel -S3	/13.C2	OZ-500 4x0.75	-S1.W1
		2	:12	+Installation -X6		+Control panel -S3	/13.C2	TT flex CEE 3G1	-W19
		3	:13	+Installation -X6		+Control panel -S3	/13.C3	OZ-500 4x0.75	-S2.W1
		4	:14 0VDC	+Installation -X6		+Control panel -S3	/13.C3	OZ-500 6x0.75	-S3.W1
		5	:15 24VDC_Q5	+Installation -X6		+Control panel -S2	/13.C5		
		6	:16	+Installation -X6		+Control panel -S2	/13.C5		
		7	:17 PE	+Installation -X6			/22.C4		
		8	:19	+Installation -X6		+Control panel -A3	/9.C3		BN
		9	:20 0VDC	+Installation -X6		+Control panel -A3	/9.C3		BU
		10	:22	+Installation -X6		+Control panel -S1	/8.C3		
		11	:23	+Installation -X6		+Control panel -S1	/8.B3		
		12	:25	+Installation -X6		+Control panel -S1	/8.C3		
		13	:26	+Installation -X6		+Control panel -S1	/8.B3		
		GNVE	:PE	+Installation -X6		+Control panel -A3	/9.C4		GNVE
			:	+Control panel -PE2		+Control panel -S3	/13.C2		
			:	+Control panel -PE4		+Control panel -S3	/13.C2		
			:	+Control panel -PE3		+Control panel -S2	/13.C5		
			:	+Control panel -PE5		+Control panel -S2	/13.C5		

terminal UK 3 N [1 - 17]
terminal USLKG 3 [PE - PE]
terminal

Terminal type

A	Initial version		date	27.05.2011					
B	Container det.	06.06.11	lge	User	lge	Novartis Singapore, SG-Singapore PRO-11-0076 400V,50Hz,3P+N+PE		Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com	
C	Project closure	12.09.11	vri	Proved	lge	04 - Terminals Block		Type : PF - Installation	
Status	change	date	name	Standard	Origin	Repl. f.	Repl. by	-X9	
								465083	+Control panel
								35 / 48	Page

1	2		3		4		5		6		7		8	
A	terminal strip -X10													A
B	cable type	cable designations	Placement in Schematics	target Internal	jumpers	terminal number	potential	target External	cable type	cable designations	terminal type	UKK 3 [0V - 24V]	UKK 5-PE [PE - PE]	terminal
C			/20.A2 /20.A2			PE 24V 0V 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 PE	24VDC_Q7 0VDC							
D				+Electrical cabinet -A6 +Electrical cabinet -A6 +Electrical cabinet -A6 +Electrical cabinet -A6 +Electrical cabinet -A6 +Electrical cabinet -A6 +Electrical cabinet -A6 +Electrical cabinet -A6 +Electrical cabinet -A6 +Electrical cabinet -A6 +Electrical cabinet -A7 +Electrical cabinet -A7 +Electrical cabinet -A7 +Electrical cabinet -A8 +Electrical cabinet -A8 +Electrical cabinet -A8 +Electrical cabinet -A8 +Electrical cabinet -A8										
E														
F														
F	Initial version	date	27.05.2011	Novartis Singapore, SG-Singapore PRO-11-0076 400V,50Hz,3P+N+PE	FREWITT 	Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com	04 - Terminals Block	Type : PF - Installation	+Electrical cabinet	465083	Page	36 / 48		
F	Container det.	06.06.11	lge	User	lge									
F	Project closure	12.09.11	vri	Proved	lge									
F	change	date	name	Standard	Origin	Repl. f.	Repl. by							

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terminal strip -X11

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cable type	cable designations	Placement in Schematics	target Internal	jumpers	terminal number	potential	target External
		/20.D2			PE	24VDC_Q7	
		/20.D2			24V	0VDC	
		/20.D3	:8		1		
		/20.D3	:9		2		
		/20.D4	:15		3		
		/20.D5	:16		4		
		/20.D6	:17		5		
		/20.D7	:18		6		
		/20.D7	:19		7		
		/21.D7	:14		8		
		/21.D7	:15		9		
		/21.D7	:16		10		
		/21.D7	:17		11		
		/21.D8	:18		12		
		/21.D8	:19		13		
					14		
					PE		

Terminal type

terminal	UKK 3 [0V - 24V]
terminal	UKK 5-PE [PE - PE]
terminal	

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terminal strip -XI1

cable type	cable designations	terminal number	potential	target External	jumpers	target Internal	Placement in Schematics
Securaflex 6x2x0.75	-WI1	PE					
		1	:1	+Installation -X12		+Electrical cabinet -U3	/16.D3
		2	:2	+Installation -X12		+Electrical cabinet -U3	/16.D3
		3	:3	+Installation -X12		+Electrical cabinet -U4	/16.D4
		4	:4	+Installation -X12		+Electrical cabinet -U4	/16.D4
		5	:5	+Installation -X12		+Electrical cabinet -U7	/18.D5
		6	:6	+Installation -X12		+Electrical cabinet -U7	/18.D5
		7	:7	+Installation -X12		+Electrical cabinet -U8	/18.D6
		8	:8	+Installation -X12		+Electrical cabinet -U8	/18.D6
		9	:9	+Installation -X12		+Electrical cabinet -U11	/17.D3
		10	:10	+Installation -X12		+Electrical cabinet -U11	/17.D3
		11	:11	+Installation -X12		+Electrical cabinet -U11	/17.D3
		12	:12	+Installation -X12		+Electrical cabinet -U11	/17.D3
		SH					/22.A6
		13	:13	+Installation -X12		+Electrical cabinet -U5	/16.D6
		14	:14	+Installation -X12		+Electrical cabinet -U5	/16.D6
		15	:15	+Installation -X12		+Electrical cabinet -U6	/16.D7
		16	:16	+Installation -X12		+Electrical cabinet -U6	/16.D7
		17	:17	+Installation -X12		+Electrical cabinet -U12	/17.D6
		18	:18	+Installation -X12		+Electrical cabinet -U12	/17.D6
		19	:19	+Installation -X12		+Electrical cabinet -U12	/17.D6
		20	:20	+Installation -X12		+Electrical cabinet -U12	/17.D6
		21	:21	+Installation -X12		+Electrical cabinet -U9	/19.C6
		22	:22	+Installation -X12		+Electrical cabinet -U9	/19.C6
		23	:23	+Installation -X12		+Electrical cabinet -U9	/19.C6
		24	:24	+Installation -X12		+Electrical cabinet -U9	/19.C6
		SH					/19.C6
		SH					
		PE					

Initial version			date	27.05.2011
Container det.	06.06.11	lge	User	lge
Project closure	12.09.11	vri	Proved	lge
Status	change	date	name	Standard

Novartis Singapore, SG-Singapore
PRO-11-0076
400V,50Hz,3P+N+PE

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Terminal type

terminal UK 3 NBUJ1 - 24 , SH - SH]

terminal USLKG 3 [PE - PE]

terminal

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terminal strip -X12				jumper		target Internal		target External		terminal number		potential		Placement in Schematics		cable designations		cable type							
						:1	:2	:3	:4	:5	:6	:7	:8	:9	:10	:11	:12	:13	:14	:15	:16	:17	:18	:19	:20
						+Electrical cabinet -X11	+Electrical cabinet -X11	+Electrical cabinet -X11	+Electrical cabinet -X11	1	2	3	4	WH	BN	GN	YE	WH	BN	GN	YE				
						+Electrical cabinet -X11	+Electrical cabinet -X11	+Electrical cabinet -X11	+Electrical cabinet -X11	5	6	7	8	GY	PK	BU	RD	GY	PK	BU	RD				
						+Electrical cabinet -X11	+Electrical cabinet -X11	+Electrical cabinet -X11	+Electrical cabinet -X11	9	10	11	12	BK	VT	GYPK	RDBU	BK	VT	GYPK	RDBU				
						+Electrical cabinet -X11	+Electrical cabinet -X11	+Electrical cabinet -X11	+Electrical cabinet -X11	13	14	15	16	SH	WH	BN	GN	SH	WH	BN	GN				
						+Electrical cabinet -X11	+Electrical cabinet -X11	+Electrical cabinet -X11	+Electrical cabinet -X11	17	18	19	20	GY	PK	BU	RD	GY	PK	BU	RD				
						+Electrical cabinet -X11	+Electrical cabinet -X11	+Electrical cabinet -X11	+Electrical cabinet -X11	21	22	23	24	BK	VT	GYPK	RDBU	BK	VT	GYPK	RDBU				
										SH	PE														


terminal UK 3 NBU [1 - 24, SH - SH]

terminal USLKG 3 [PE - PE]

terminal

Terminal type

A	Initial version		date	27.05.2011
B	Container det.	06.06.11	lge	User
C	Project closure	12.09.11	vri	Proved
Status	change	date	name	Standard

Novartis Singapore, SG-Singapore PRO-11-0076 400V,50Hz,3P+N+PE		Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1703 Prévessin, SWITZERLAND tel.: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com
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04 - Terminals Block
-X12

Type : PF - Installation	+Installation	Page 39 / 48
465083		

1 2 3 4 5 6 7 8

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**terminal strip
-XI3**

terminal number	potential	target External	target Internal	jumpers	Placement in Schematics	cable type	cable designations
PE							
1	:1	+Installation -XI2	+ConiWitt -T12		/16.E3		-T13.W1
2	:2	+Installation -XI2	+ConiWitt -T12		/16.E3		-S10.W1
3	:3	+Installation -XI2	+ConiWitt -T11		/16.E4		-WI7
4	:4	+Installation -XI2	+ConiWitt -T11		/16.E4		+ConiWitt -T11.W1
5	:5	+Installation -XI2	+ConiWitt -U10.P10		/18.E5		+ConiWitt -T12.W1
6	:6	+Installation -XI2	+ConiWitt -U10.P10		/18.E5		cable type
SH					/22.D6		cable designations
7	:7	+Installation -XI2	-S10		/18.E6		
8	:8	+Installation -XI2	-S10		/18.E6		
9	:9	+Installation -XI2	+ConiWitt -T13		/17.F3		
10	:10	+Installation -XI2	+ConiWitt -T13		/17.F3		
11	:11	+Installation -XI2	+ConiWitt -T13		/17.F3		
12	:12	+Installation -XI2	+ConiWitt -T13		/17.F3		
SH					/22.D6		
PE							

terminal UK3NBUJ1-12.SH-SH]
terminal USLKG3[PE-PE]
terminal

Terminal type

Bill of material

Article Number	Description	Manufacturer	Reference	Device	Quantity
452558	Wiring plan pockets	RITTAL	TS4118.000	-A1	1
452561	Rail for shielding bracket	RITTAL	SZ2388.800	-A1	1
452562	EMC shielding bracket	RITTAL	SZ2388.100	-A1	5
452563	EMC shielding bracket	RITTAL	SZ2388.200	-A1	5
452564	Cable clamp	RITTAL	SZ2388.140	-A1	5
452565	Cable clamp	RITTAL	SZ2388.180	-A1	5
452566	Cable clamp	RITTAL	SZ2388.220	-A1	5
454680	Electrical cabinet	RITTAL	TS8806.500	-A1	1
454681	Side panels	RITTAL	TS8106.235	-A1	1
454682	Plinth front/rear	RITTAL	TS8601.800	-A1	1
454683	Plinth side	RITTAL	TS8601.060	-A1	1
463256	Cable clamp	RITTAL	SZ2388.280	-A1	5
463257	EMC shielding bracket	RITTAL	DK7097.220	-A1	5
418213	CPU	SIEMENS	6ES7 315-2AH14-0AB0	-A2	1
428608	Memory card	SIEMENS	6ES7 953-8LG20-0AA0	-A2	1
454795	Memory card	SIEMENS	6AV6 671-1CB00-0AX2	-A3	1
459106	Operator panel	SIEMENS	6AV6643-0CD01-1AX1	-A3	1
418216	Digital input module	SIEMENS	6ES7 321-1BH02-0AA0	-A4	1
418220	Front connector	SIEMENS	6ES7 392-1AJ00-0AA0	-A4	1
418217	Digital input module	SIEMENS	6ES7 322-1BH01-0AA0	-A5	1
418220	Front connector	SIEMENS	6ES7 392-1AJ00-0AA0	-A5	1
418216	Digital input module	SIEMENS	6ES7 321-1BH02-0AA0	-A6	1
418220	Front connector	SIEMENS	6ES7 392-1AJ00-0AA0	-A6	1
418220	Front connector	SIEMENS	6ES7 392-1AJ00-0AA0	-A7	1
418221	Analog I/O module	SIEMENS	6ES7 334-0CE01-0AA0	-A7	1
418220	Front connector	SIEMENS	6ES7 392-1AJ00-0AA0	-A8	1
418221	Analog I/O module	SIEMENS	6ES7 334-0CE01-0AA0	-A8	1
460068	Communication processor	SIEMENS	6AG1343-1EX30-4XE0	-A9	1
414554	Fuse Terminal	PHOENIX CONTACT	UK5-HESI	-F1	1

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B	Container det.	06.06.11	lge	User							lge
C	Project closure	12.09.11	vri	Proved							lge
Status	change	date	name	Standard	Origin	Repl. f.	Repl. by				

Bill of material

Article Number	Description	Manufacturer	Reference	Device	Quantity
422517	Fuse	SCHURTER	0034.3112	-F1	1
456574	Flow sensor	EGE	STS 212 S P11206	-F01	1
457071	Flow sensor	FESTO	SFE3-F500-L-W18-2PB-K3	-F10	1
426509	Power supply	SIEMENS	6EP1 334-3BA00	-G1	1
404567	Magnet	ELOBAU	304 200 00 V2	-G10	1
404568	Magnet safety switch	ELOBAU	671 271 MU0 5	-G10	1
404567	Magnet	ELOBAU	304 200 00 V2	-G20	1
428806	Magnet safety switch	ELOBAU	671 271 MU0 10	-G20	1
460244	Proximity Switch	TURCK	RUC130-M30-LIAP8X-H1151/3GD	-G30	1
417815	Cable for Cabinet light	RITTAL	SZ4315.100	-HX2	1
452560	Cabinet light	RITTAL	SZ4139.190	-HX2	1
422766	Emergency-Stop relay	PILZ	PNOZ X3 / 774 318	-K1	1
456536	Relay	SIEMENS	LZS:RT4A4L24	-K2	1
452578	Watchdog relay	ABB	CM-WDS	-K3	1
456657	Safety relay	ELOBAU	462 121 E1 01	-K4	1
456536	Relay	SIEMENS	LZS:RT4A4L24	-K5	1
454256	PTC Relay	SIEMENS	3RN10 11-1BB00	-K6	1
456536	Relay	SIEMENS	LZS:RT4A4L24	-K7	1
454256	PTC Relay	SIEMENS	3RN10 11-1BB00	-K8	1
454256	PTC Relay	SIEMENS	3RN10 11-1BB00	-K9	1
454256	PTC Relay	SIEMENS	3RN10 11-1BB00	-K10	1
454256	PTC Relay	SIEMENS	3RN10 11-1BB00	-K11	1
454256	PTC Relay	SIEMENS	3RN10 11-1BB00	-K12	1
464050	Ventilator	RITTAL	SK 3324.607	-M1	1
464051	Filter	RITTAL	SK 3325.267	-M1	1
461226	Motor	LEROY-SOMER	LSPX132M	-M10	1
461218	Motor	LEROY-SOMER	LSPX80L	-M20	1
418219	Rail	SIEMENS	6ES7390-1AE80-0AA0	-MR1	1
463735	Hour counter	ABB	E233-12/48	-P1	1

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B	Container det.	06.06.11	lge	User	lge						
C	Project closure	12.09.11	vri	Proved	lge						
Status	change	date	name	Standard	Origin	Repl. f.	Repl. by		465083		43 / 48

Bill of material

Article Number	Description	Manufacturer	Reference	Device	Quantity
463735	Hour counter	ABB	E233-12/48	-P2	1
456655	Main switch	SIEMENS	3LD2203-1TL53	-Q1	1
456529	Motor Circuit breaker	SIEMENS	3RV10214BA15	-Q2	1
456530	Motor Circuit breaker	SIEMENS	3RV10211EA15	-Q3	1
456538	Protection switch	SIEMENS	5SY6 106-7	-Q4	1
456538	Protection switch	SIEMENS	5SY6 106-7	-Q5	1
456537	Protection switch	SIEMENS	5SY6 102-7	-Q6	1
456537	Protection switch	SIEMENS	5SY6 102-7	-Q7	1
456533	Contactor	SIEMENS	3RT10251BB44	-Q8	1
456533	Contactor	SIEMENS	3RT10251BB44	-Q9	1
456534	Contactor	SIEMENS	3RT10241BB44	-Q10	1
456534	Contactor	SIEMENS	3RT10241BB44	-Q11	1
456715	Motor maintenance switch	SIEMENS	3LD2103-1TP51	-Q12	1
456715	Motor maintenance switch	SIEMENS	3LD2103-1TP51	-Q13	1
456538	Protection switch	SIEMENS	5SY6 106-7	-Q14	1
456537	Protection switch	SIEMENS	5SY6 102-7	-Q15	1
456538	Protection switch	SIEMENS	5SY6 106-7	-Q16	1
465089	Residual current circuit-breaker	SIEMENS	5SU1354-6KK16	-Q17	1
405190	Emergency-Stop button	STAHL	8003/123-010	-S1	1
445287	Pushbutton	STAHL	8003/123-001	-S2	1
438080	Illuminated pushbutton	STAHL	8018/3113	-S3	1
406886	Proximity Switch	PEPPERL+FUCHS	NCB 1.5-8GM25-NO	-S10	1
443351	PTC sensor	ZIEHL	KD60	-T11	1
443351	PTC sensor	ZIEHL	KD60	-T12	1
459090	PT100 sensor	JUMO	902050/10-724-1011-1-6-17-114-11-5000/000	-T13	1
443351	PTC sensor	ZIEHL	KD60	-T21	1
443351	PTC sensor	ZIEHL	KD60	-T22	1
459090	PT100 sensor	JUMO	902050/10-724-1011-1-6-17-114-11-5000/000	-T23	1
418881	Operating module	LENZE	E82ZBC	-U1	1

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Status	change	date	name	Standard	Origin	Repl. f.	Repl. by				

Bill of material

Article Number	Description	Manufacturer	Reference	Device	Quantity
453193	Frequency converter	LENZE	E82EV552K4C	-U1	1
453888	Function module	LENZE	E82ZAFSC100/S	-U1	1
418881	Operating module	LENZE	E82ZBC	-U2	1
453190	Frequency converter	LENZE	E82EV751K4C	-U2	1
453888	Function module	LENZE	E82ZAFSC100/S	-U2	1
425177	Safety barrier Ex-i	STAHL	9002/77-093-300-001	-U3	1
425177	Safety barrier Ex-i	STAHL	9002/77-093-300-001	-U4	1
425177	Safety barrier Ex-i	STAHL	9002/77-093-300-001	-U5	1
425177	Safety barrier Ex-i	STAHL	9002/77-093-300-001	-U6	1
411946	Ex-i Switch Amplifier	PEPPERL+FUCHS	KFD2-SR2-Ex2.W	-U7	1
417735	f/l converter	PEPPERL+FUCHS	KFU8-UFC-Ex1.d	-U8	1
438902	Flow controller	EGE	SZA400 24VDC P10708	-U9	1
453536	Pneumat. preparation unit	Frewitt	453536	-U10	1
=>	Pressure switch	TECSIS	S4210B072001	-U10.P10	1
=>	Solenoid valve	ASCO JOUCOMATIC	PV G356A002VMS	-U10.SV10	1
443422	Ex-i T/I converter	PEPPERL+FUCHS	KFD2-UT2-Ex1	-U11	1
443422	Ex-i T/I converter	PEPPERL+FUCHS	KFD2-UT2-Ex1	-U12	1
403949	Cable	HEINIGER	888 854 043	-W1	1
403949	Cable	HEINIGER	888 854 043	-W2	1
403949	Cable	HEINIGER	888 854 043	-W3	1
403949	Cable	HEINIGER	888 854 043	-W4	1
403949	Cable	HEINIGER	888 854 043	-W5	1
403949	Cable	HEINIGER	888 854 043	-W6	1
411612	Cable	HEINIGER	888 802 023	-W7	1
411612	Cable	HEINIGER	888 802 023	-W8	1
411612	Cable	HEINIGER	888 802 023	-W9	1
411612	Cable	HEINIGER	888 802 023	-W10	1
435708	Cable	HEINIGER	888 830 183	-W11	1
435708	Cable	HEINIGER	888 830 183	-W12	1

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Article Number	Description	Manufacturer	Reference	Device	Quantity
435708	Cable	HEINIGER	888 830 183	-W13	1
435708	Cable	HEINIGER	888 830 183	-W14	1
435942	Cable	HEINIGER	888 830 143	-W16	1
453844	Cable	HEINIGER	888 830 043	-W17	1
432309	Connector	SIEMENS	6ES7 972-0BB52-OXA0	-W18	2
437759	Cable	SIEMENS	6XV1830-OEN50	-W18	1
403954	Cable	HEINIGER	888 802 033	-W19	1
403954	Cable	HEINIGER	888 802 033	-W20	1
403954	Cable	HEINIGER	888 802 033	-W21	1
403954	Cable	HEINIGER	888 802 033	-W22	1
403954	Cable	HEINIGER	888 802 033	-W27	1
403954	Cable	HEINIGER	888 802 033	-W28	1
460278	Connecting cable	TURCK	WAK4.5-2/P00	-W30	1
460279	Safety clip	TURCK	SC-M12/3GD	-W30	1
451303	Cable	HEINIGER	777 923 062	-WI1	1
451303	Cable	HEINIGER	777 923 062	-WI2	1
451303	Cable	HEINIGER	777 923 062	-WI3	1
451301	Cable	HEINIGER	777 923 022	-WI4	1
451301	Cable	HEINIGER	777 923 022	-WI5	1
451301	Cable	HEINIGER	777 923 022	-WI6	1
451300	Cable	HEINIGER	777 923 002	-WI7	1
451301	Cable	HEINIGER	777 923 022	-WI8	1
456540	Terminal	PHOENIX CONTACT	3004524	-X0	9
456542	Terminal	PHOENIX CONTACT	0442079	-X0	3
457042	Terminal	PHOENIX CONTACT	3004977	-X0	3
456539	Terminal	PHOENIX CONTACT	3001501	-X1	3
456541	Terminal	PHOENIX CONTACT	0441083	-X1	4
456548	Terminal	PHOENIX CONTACT	3001514	-X1	3
456543	Terminal	PHOENIX CONTACT	2770011	-X2	9

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Status	change	date	name	Standard	Origin	Repl. f.	Repl. by	465083		Page 46 / 48		

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Article Number	Description	Manufacturer	Reference	Device	Quantity
456544	Terminal	PHOENIX CONTACT	2774211	-X2	2
456543	Terminal	PHOENIX CONTACT	2770011	-X3	21
456544	Terminal	PHOENIX CONTACT	2774211	-X3	4
456539	Terminal	PHOENIX CONTACT	3001501	-X4	10
456541	Terminal	PHOENIX CONTACT	0441083	-X4	5
456539	Terminal	PHOENIX CONTACT	3001501	-X5	17
456541	Terminal	PHOENIX CONTACT	0441083	-X5	2
456539	Terminal	PHOENIX CONTACT	3001501	-X6	42
456541	Terminal	PHOENIX CONTACT	0441083	-X6	4
456539	Terminal	PHOENIX CONTACT	3001501	-X7	17
456541	Terminal	PHOENIX CONTACT	0441083	-X7	3
456539	Terminal	PHOENIX CONTACT	3001501	-X8	5
456541	Terminal	PHOENIX CONTACT	0441083	-X8	2
456539	Terminal	PHOENIX CONTACT	3001501	-X9	17
456541	Terminal	PHOENIX CONTACT	0441083	-X9	3
456543	Terminal	PHOENIX CONTACT	2770011	-X10	11
456544	Terminal	PHOENIX CONTACT	2774211	-X10	2
456543	Terminal	PHOENIX CONTACT	2770011	-X11	8
456544	Terminal	PHOENIX CONTACT	2774211	-X11	2
456539	Terminal	PHOENIX CONTACT	3001501	-X12	2
456541	Terminal	PHOENIX CONTACT	0441083	-X12	1
456539	Terminal	PHOENIX CONTACT	3001501	-X12.	3
456541	Terminal	PHOENIX CONTACT	0441083	-X12.	2
456539	Terminal	PHOENIX CONTACT	3001501	-X13	2
456541	Terminal	PHOENIX CONTACT	0441083	-X13	1
452064	Connector	PEPPERL+FUCHS	V1-G-PG9	-X15	1
406306	Female connector	AMPHENOL	C016 20G003 100 12	-X16	1
406308	Protection cap	AMPHENOL	C016 00U000 010 12	-X16	1
406309	Protection cap	AMPHENOL	C016 00V000 000 12	-X16	1

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C	Project closure	12.09.11	vri	Proved								lge
Status	change	date	name	Standard	Origin	Repl. f.	Repl. by					

Bill of material

Article Number	Description	Manufacturer	Reference	Device	Quantity
409686	Male connector	AMPHENOL	T 3108 001	-X16	1
443449	Protection cap	BINDER	16-0565-00-00	-X16	1
456541	Terminal	PHOENIX CONTACT	0441083	-X11	2
456548	Terminal	PHOENIX CONTACT	3001514	-X11	24
456541	Terminal	PHOENIX CONTACT	0441083	-X12	2
456548	Terminal	PHOENIX CONTACT	3001514	-X12	28
456541	Terminal	PHOENIX CONTACT	0441083	-X13	2
456548	Terminal	PHOENIX CONTACT	3001514	-X13	14
456541	Terminal	PHOENIX CONTACT	0441083	-X14	2
456548	Terminal	PHOENIX CONTACT	3001514	-X14	9
404642	Terminal box	STAHL	8118/132-199	-XJB1	1
404642	Terminal box	STAHL	8118/132-199	-XJB2	1
409713	Terminal box	STAHL	8146/1071-10	-XJB3	1
408500	Terminal box	STAHL	8146/1061-10	-XJB4	1
409319	Terminal box	STAHL	8118/122-199	-XJB5	1
436007	Terminal box	STAHL	8146/2061-10	-XJB6	1
408786	Terminal box	STAHL	8118/222-199	-XJB7	1
408786	Terminal box	STAHL	8118/222-199	-XJB8	1
408500	Terminal box	STAHL	8146/1061-10	-XJB9	1
404642	Terminal box	STAHL	8118/132-199	-XJB10	1
409319	Terminal box	STAHL	8118/122-199	-XJB11	1

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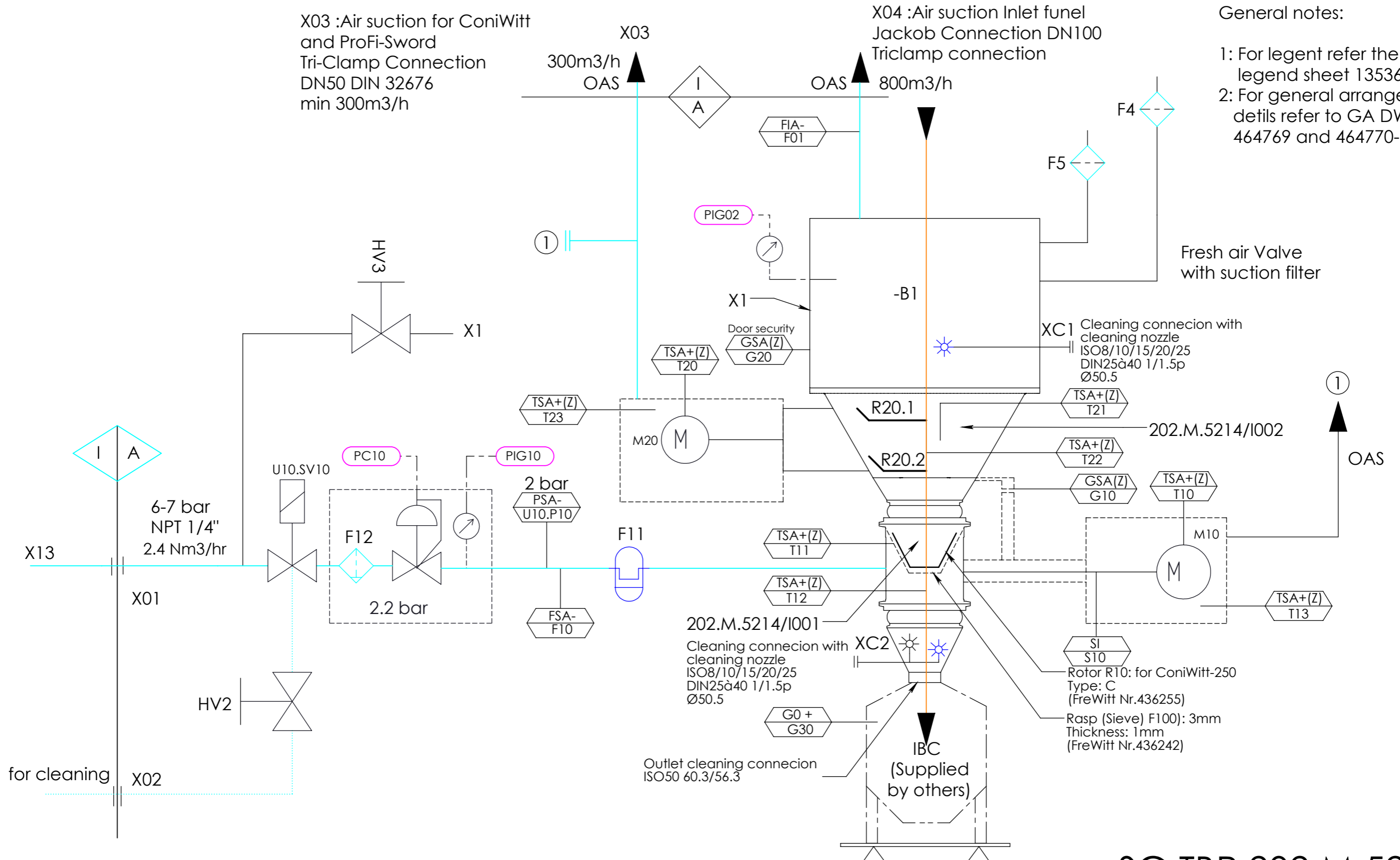
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X03 :Air suction for ConiWitt and ProFi-Sword
Tri-Clamp Connection
DN50 DIN 32676
min 300m3/h

X04 :Air suction Inlet funnel
Jacob Connection DN100
Triclamp connection

General notes:

- 1: For legend refer the legend sheet 135368
- 2: For general arrangement details refer to GA DWG 464769 and 464770-LAY



SG.TBP.202.M.5214

U type Weighing Scale
202.M.0914/W001

I=Infrastructure
A=Installation
(Z)=Security

ATEX category	Int. II 1G/1D Ext. 3D			Machined dim.	ISO 2768-m	
Voltage [V]	400	Power [kW]	5.5 / 0.75 / 1.5	Welded dim.	ISO 2768-c	
Frequency [Hz]	50	Speed [min-1]	200-600	Designed	13/05/2011	ygr
R und I PID PRO-11-0076 / DelumpWitt				Controlled	19/08/2011	ygr
				Revised	19/08/2011	ygr

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Ver. D

Customer: NOVARTIS SINGAPORE

Serial-Nr. DelumpWitt 11007635096

P&ID Diagram 464889 Rev. D

R&I Article R&I Artikel R&I Article	Article N° Artikel Nr. Article ID.	Description Beschreibung Description	Fournisseur Hersteller Supplier	Quantité Menge Quantity
F10	457071	Flow sensor SFE3-F500-L-W18-2PB-K3	FESTO	1
F01	456574	Flow sensor Exi G1/2, Exi, 1G/D, P11206, STS 212 S	BACHOFEN AG	1
F11	457102	Sterile filter for air – P-SRF N 0006 G 1/4" – Element P-SRF N 03/10	Donaldson	1
F12	(453536)	Filter F.01 HA4 G1/4	UNIVER	1
F4	465745	Filter NF 07-351-600 NFIA	FreWitt	1
F5	465745	Filter NF 07-351-600 NFIA	FreWitt	1
G10	404567	Magnet 304 200 00 V2	ELOBAU	1
G10	404568	Magnetic safety switch 671 271 MU0 5	ELOBAU	1
G20	404567	Magnet 304 200 00 V2	ELOBAU	1
G20	404568	Magnetic safety switch 671 271 MU0 5	ELOBAU	1
G30	460244	Proximity Switches RUC130-M30-LIAP8X-H1151/3GD	TURCK	1
HV2	422158	Valve for cleaning	ASCO / NUMATICS GMBH	1
HV3	422158	Valve for Vibrator	ASCO / NUMATICS GMBH	1
M10	461226	Motor 5kW 6P Ex II2D Ex tD IP65 T125°C 400V 50Hz	LEROY-SOMER SA	1
M20	461218	Motor 0.7 kW 4P, 230/400/50, B14, Ex II2D IP65 125°C	LEROY-SOMER SA	1
PC10	(453536)	Regulator R.01 G1/4 0.2-6 bar	TECSIS	1
PIG02	456254	Vacumeter VMA-63-V1/0-1/4-CT-183522 inox	FESTO SA	1
PIG10	(453536)	Manometer P1415B073001 G1/8	UNIVER	1
S10	406886	Proximity Switches EXI M8 NCB 1,5-8GM25-NO	PEPPERL+FUCHS	1
T10	(452856)	PTC Sensor	(LEROY-SOMER SA)	1
T11	443351	Sensor 3XPTC 60°C EN SÉRIE K401300, KD60	TRELCO AG	1
T12	443351	Sensor 3XPTC 60°C EN SÉRIE K401300, KD60	TRELCO AG	1
T20	(450798)	PTC Sensor	(LEROY-SOMER SA)	1
T21	443351	Sensor 3XPTC 60°C EN SÉRIE K401300, KD60	TRELCO AG	1
T22	443351	Sensor 3XPTC 60°C EN SÉRIE K401300, KD60	TRELCO AG	1
T13	459090	PT 100 M10, 902050/40-378-1011-3-10-20-115-11-5000/000	JUMO	1
T23	459090	PT 100 M10, 902050/40-378-1011-3-10-20-115-11-5000/000	JUMO	1
U10.P10	(453536)	Pressure Swiches 40500211211	Layher	1
U10.SV10	(453536)	Solenoid valve PV G356A002VMS	ASCO JOUCOMATIC	1
B1	459229	Sachschütte	FreWitt	1
I002	459271	ProFi-Sword	FreWitt	1
I001	459286	ConiWitt-250	FreWitt	1
XC1	459332	Cleaning connection	FreWitt	1
XC2	456364	Cleaning connection	FreWitt	1
R10	436255	Rotor fs Type C	FreWitt	1
F100	436242	Raspel Sieb 3mm Dicke 1mm	FreWitt	1
R20.1	454299	Rotor ProFi-Sword	FreWitt	1
R20.2	454311	Rotor ProFi-Sword	FreWitt	1
X1	436876	Vibrator NTP25B+C SE Inox	Netter	1

Voir documents suivants.

Siehe folgende Dokumente.

See following documents

461226

Date : 16 août 2010

Induction motor with options

6P LSPX132M 5,0kW Ex II2D Ex tD A21 IP65 T125°C B5 230VD/400VY 50Hz

Thermal protection 1xPTC ;

Utilisation : Environment ATEX standard - Dust ; Ambiance Non corrosive ; Zone 21 - Dusty ; Type of protection Ex II2D Ex tD A21 IP65 T125°C ; General applications ; **Ambient temperature -16 +50 °C** ; Maximum altitude 1000 m ; Maximum surface temperature 125°C



Motor characteristics : Aluminium alloy housing ; Cast iron DE endshield ; Cast iron NDE endshield.

Motor definition

Protection type	Ex II2D Ex tD A21 IP65 T125°C	Rated speed (min-1)	960
Efficiency class	-	Application	General applications
Number of phases	3	Main voltage (V)	400
Number of speed	1V	Connection	DY
Polarity	6P	Starting type	DOL
Motor serie	LSPX	Motor winding (V)	230VD/400VY
Frame size (mm)	132	Rated Frequency (Hz)	50
Length code	M	Operation position	IM3001(IMB5)
HS rated power (kW)	5.00	Index of protection	IP65
LS rated power (kW)	-	Index of cooling	IC411
Starting torque (N.m)	136.00	Insulation class	F

Common definitions

Paint shade	RAL1007 - Yellow
Paint system	1a (1 polyurethane coat 20/30 microns)

Motor mechanical interface

Mounting flange	FF265	Second shaft extension	-
Drive end shaft type	IEC STANDARD shaft end	Diameter NDE shaft (mm)	-
Diameter DE shaft (mm)	38k6	Second shaft end length (mm)	-
Length DE shaft (mm)	80	Drive end bearing type	DE ball bearing
Shaft material type	Steel shaft	DE bearing	6308 ZZ C3
Nuance of shaft material	-	DE bearing mounting	Locked

Motor electrical interface

Connection network type	Terminal box	Number of leads	-
Connection network material	Aluminium alloy	Cable gland material	Brass cable gland
Connection network position	A	Main cable gland type	1xPE CMDEL ISO M20x1.5
Connection network orientation	up	Principal cable gland position	Right (1)
Connection network relative position	0	Auxiliary cable gland type	1xPE ISO M16 -

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N° :

Date : 16 août 2010

Induction motor with options - 6P LSPX132M 5,0kW Ex II2D Ex tD A21 IP65 T125°C B5 230VD/400VY 50Hz

Motor options

Vibration class	A (25µm; 1.6mm/s; 2.5m/s ²)	Cover	Metal cover
Balancing type	Half-key (H)	Drip proof cover option	-
Impregnation type	< 90% ; -16+40°C (T)	Forced ventilation type	-
Thermal protection	1xPTC	Forced ventilation characteristics	-
Space heater	-	Encoder type	-
Draining plugs position	6H	Encoder characteristics	-
Nameplate material	Aluminium nameplate	Screw material	Steel screw

Motor characteristics

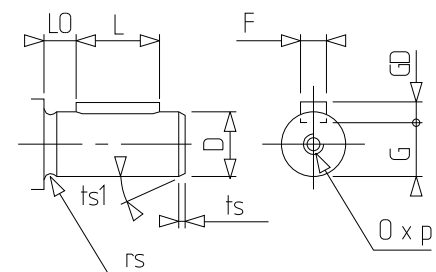
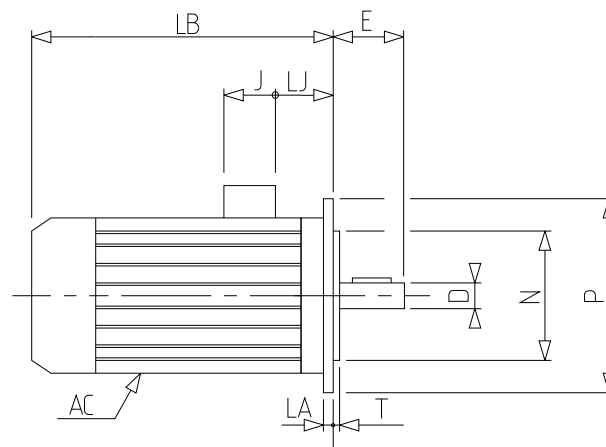
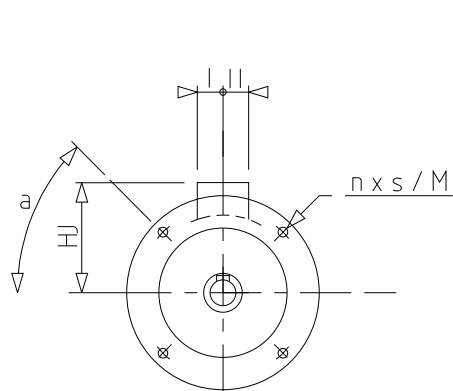
Rated speed (min-1)	960	Motor weight (kg)	59.4
Rated current (A)	13.3	NDE bearing	6207 ZZ C3
No-load current (A)	-	Power factor at 4/4 of the load	0,71
Id / In	5.5	Power factor at 3/4 of the load	0,65
Rated torque (N.m)	54,7	Power factor at 2/4 of the load	0,52
Starting torque (N.m)	136.0	Efficiency at 4/4 (IEC 60 034-2) of the load (%)	84,1
Maximum torque (N.m)	152	Efficiency at 3/4 (IEC 60 034-2) of the load (%)	83,5
Average starting torque (N.m)		Efficiency at 2/4 (IEC 60 034-2) of the load (%)	80
Rotor locked time (cold) (s)		Efficiency at 4/4 (IEC 60 034-2-1) of the load (%)	
Unload maximum starting frequency (d/h)	-	Efficiency at 3/4 (IEC 60 034-2-1) of the load (%)	
Acoustic pressure level (dB(A))	55	Efficiency at 2/4 (IEC 60 034-2-1) of the load (%)	
Moment of inertia J (kg.m ²)	0.0390000		

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N° :

Date : 16 août 2010

Induction motor with options - 6P LSPX132M 5,0kW Ex II2D Ex tD A21 IP65 T125°C B5 230VD/400VY 50Hz



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N° :

Date : 16 août 2010

Induction motor with options - 6P LSPX132M 5,0kW Ex II2D Ex tD A21 IP65 T125°C B5 230VD/400VY 50Hz

Motor
(° & mm)

A	-	LO2	-
a	45	LP	-
AA	-	M	265
AB	-	N	230
AC	280.00	n	4
AD	140	O	M12
AD1	45	OA	-
B	-	P	300
BB	-	p	28
C	-	pA	-
D	38k6	rs	0.5
DA	-	rs2	-
DTP	-	S	14.5
E	80	T	4
EA	-	ts	2
EC	-	ts1	20
F	10	ts2	-
FA	-	ts3	-
G	33	x	-
GB	-		
GD	8		
GF	-		
H	-		
HA	-		
HJ	177.0		
I	57		
IB	-		
II	73		
J	110		
JC	-		
JD	-		
JE	-		
JH	-		
JP	-		
K	-		
L	63		
L2	-		
LA	14		
LB	385.0		
LC	-		
LD	-		
LE	-		
LH	-		
LJ	25.0		
LO	10		

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461218

Date : 16 août 2010

Induction motor with options

4P LSPX80L 0,70kW Ex II2D Ex tD A21 IP65 T125°C B14 230VD/400VY 50Hz

Metal cover ; Thermal protection 1xPTC ;

Utilisation : Environment ATEX standard - Dust ; Ambiance Non corrosive ; Zone 21 - Dusty ; Type of protection Ex II2D Ex tD A21 IP65 T125°C ; General applications ; **Ambient temperature -16 +50 °C** ; Maximum altitude 1000 m ; Maximum surface temperature 125°C



Motor characteristics : Aluminium alloy housing ; Cast iron DE endshield ; Aluminium alloy NDE endshield.

Motor definition

Protection type	Ex II2D Ex tD A21 IP65 T125°C	Rated speed (min-1)	1400
Efficiency class	-	Application	General applications
Number of phases	3	Main voltage (V)	400
Number of speed	1V	Connection	DY
Polarity	4P	Starting type	DOL
Motor serie	LSPX	Motor winding (V)	230VD/400VY
Frame size (mm)	80	Rated Frequency (Hz)	50
Length code	L	Operation position	IM3601(IMB14)
HS rated power (kW)	0.70	Index of protection	IP65
LS rated power (kW)	-	Index of cooling	IC411
Starting torque (N.m)	10.20	Insulation class	F

Common definitions

Paint shade	RAL1007 - Yellow
Paint system	1a (1 polyurethane coat 20/30 microns)

Motor mechanical interface

Mounting flange	FT100	Second shaft extension	-
Drive end shaft type	IEC STANDARD shaft end	Diameter NDE shaft (mm)	-
Diameter DE shaft (mm)	19j6	Second shaft end length (mm)	-
Length DE shaft (mm)	40	Drive end bearing type	DE ball bearing
Shaft material type	Steel shaft	DE bearing	6204 ZZ C3
Nuance of shaft material	-	DE bearing mounting	Locked

Motor electrical interface

Connection network type	Terminal box	Number of leads	-
Connection network material	Aluminium alloy	Cable gland material	Brass cable gland
Connection network position	A	Main cable gland type	1xPE CMDEL ISO M20x1.5
Connection network orientation	up	Principal cable gland position	Right (1)
Connection network relative position	0	Auxiliary cable gland type	1xPE ISO M16 -

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N° : _____ Date : 16 août 2010

Induction motor with options - 4P LSPX80L 0,70kW Ex II2D Ex tD A21 IP65 T125°C B14 230VD/400VY 50Hz

Motor options

Vibration class	A (25µm; 1.6mm/s; 2.5m/s²)	Cover	Metal cover
Balancing type	Half-key (H)	Drip proof cover option	-
Impregnation type	< 90% ; -16+40°C (T)	Forced ventilation type	-
Thermal protection	1xPTC	Forced ventilation characteristics	-
Space heater	-	Encoder type	-
Draining plugs position	6H	Encoder characteristics	-
Nameplate material	Aluminium nameplate	Screw material	Steel screw

Motor characteristics

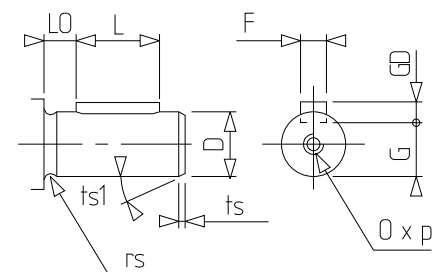
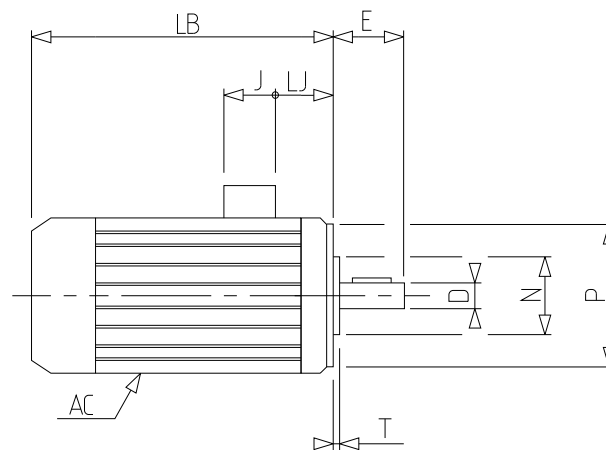
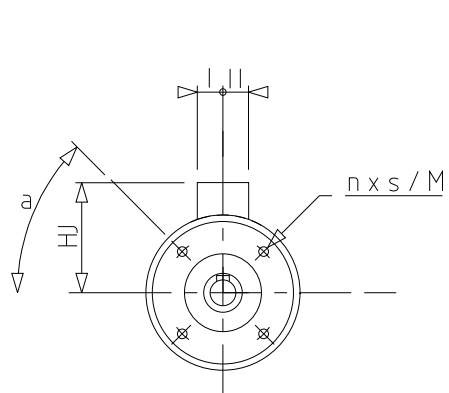
Rated speed (min-1)	1400	Motor weight (kg)	9.3
Rated current (A)	2.01	NDE bearing	6203 CN
No-load current (A)	1.39	Power factor at 4/4 of the load	0,77
Id / In	4.48	Power factor at 3/4 of the load	0,71
Rated torque (N.m)	5,12	Power factor at 2/4 of the load	0,59
Starting torque (N.m)	10.2	Efficiency at 4/4 (IEC 60 034-2) of the load (%)	70
Maximum torque (N.m)	11,2	Efficiency at 3/4 (IEC 60 034-2) of the load (%)	70
Average starting torque (N.m)		Efficiency at 2/4 (IEC 60 034-2) of the load (%)	66
Rotor locked time (cold) (s)		Efficiency at 4/4 (IEC 60 034-2-1) of the load (%)	
Unload maximum starting frequency (d/h)	-	Efficiency at 3/4 (IEC 60 034-2-1) of the load (%)	
Acoustic pressure level (dB(A))	47	Efficiency at 2/4 (IEC 60 034-2-1) of the load (%)	
Moment of inertia J (kg.m2)	0.0018000		

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N° :

Date : 16 août 2010

Induction motor with options - 4P LSPX80L 0,70kW Ex II2D Ex tD A21 IP65 T125°C B14 230V/400V 50Hz



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N° :

Date : 16 août 2010

Induction motor with options - 4P LSPX80L 0,70kW Ex II2D Ex tD A21 IP65 T125°C B14 230VD/400VY 50Hz

Motor
(° & mm)

A	-	LO2	-
a	45	LP	-
AA	-	M	100
AB	-	N	80
AC	170.00	n	4
AD	-	O	M6
AD1	-	OA	-
B	-	P	120
BB	-	p	16
C	-	pA	-
D	19j6	rs	0.5
DA	-	rs2	-
DTP	-	S	M6
E	40	T	3
EA	-	ts	2
EC	-	ts1	20
F	6	ts2	-
FA	-	ts3	-
G	15.5	x	-
GB	-		
GD	6		
GF	-		
H	-		
HA	-		
HJ	134.0		
I	52		
IB	-		
II	52		
J	89		
JC	-		
JD	-		
JE	-		
JH	-		
JP	-		
K	-		
L	30		
L2	-		
LA	0		
LB	216.0		
LC	-		
LD	-		
LE	-		
LH	-		
LJ	25.0		
LO	6		

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No article Frewitt		
Frewitt Artikel Nr.	:	439572
Frewitt Article ID		
Type réducteur		
Typ Getriebe	:	GKR 05-2N HAK/7C-ATEX
Type gearbox		
Rapport de réduction		
Übersetzung	:	I=49.133
Ratio		
Rapport de réduction total min/max		
Übersetzung total Min/Max	:	-
Ratio totally min/max		
Puissance d'entrée maxi	:	0.75 kW
Vitesse de sortie		
Ausgangsdrehzahl	:	28.5 tr/min pour n1=1400 tr/min
Speed		1/min
Couple de sortie		
Drehmoment	:	240
Torque		Nm
Exécution	<input type="checkbox"/> Normale / Normal	<input checked="" type="checkbox"/> 2G <input type="checkbox"/> 3G <input type="checkbox"/> T3 125°C <input type="checkbox"/> Eexk
Ausführung	<input checked="" type="checkbox"/> ATEX II <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C	<input checked="" type="checkbox"/> 2D <input type="checkbox"/> 3D <input checked="" type="checkbox"/> T4 <input checked="" type="checkbox"/> Eexck
Execution		
Arbre de sortie réducteur	:	Arbre creux 30
Abtriebswelle Getriebe	:	-
Output shaft gearbox	:	-
Flasque de sortie réducteur		
Flansch Ausgang Getriebe	:	Bride côté sortie K - 160 trous lisses, pos.5
Flange output gearbox		
Exécution de la flasque du réducteur	:	-
Ausführung Flansch Getriebe	:	-
Execution Flange gearbox	:	-
Forme de construction réducteur		
Bauform Getriebe	:	A - avec pattes, avec centrage
Forme assembly gearbox		
Position de l'arbre de sortie réducteur		
Position Abtriebswelle Getriebe	:	-
Position output shaft gearbox		
Face d'appui de montage	:	Position de montage A
Auflagefläche	:	-
Mounting surface	:	-
Voyant d'huile	:	-
Ölschauglas	:	-
Oil sight glass	:	-
Taille entraînement		
Antriebsgrösse	:	7C
Drive size		

Lubrification	:	CLP HC 220 USDA H1
Schmierung	:	-
Lubrication	:	-
Quantité		
Menge	:	-
Quantity		
Intervalle de vidange	:	-
Ölwechselintervall	:	-
Oil changing interval	:	-

Couleur		
Farbe	:	RAL 7012
Color		

Dossier technique de maintenance		Manuel du moteur en français, allemand et anglais.
Technische Dokumentation	<input checked="" type="checkbox"/>	Betriebsanleitung des Motors auf französisch, deutsch und englisch.
Technical documentation	<input checked="" type="checkbox"/>	Operating instructions in french, german and english.
	<input type="checkbox"/>	Liste de pièces du moteur. Ersatzteilliste. Spare parts list.
	<input checked="" type="checkbox"/>	Liste des huiles et graisses utilisées. Liste der verwendeten Schmiermittel. List of used lubricants.
	<input type="checkbox"/>	Le certificat d'essai du fabricant moteur Prüfbericht des Herstellers. Test report of the manufacturer.

Annexes		Dessin fournisseur
Anhänge	<input type="checkbox"/>	Lieferantenzeichnung
Appendices		Supplier drawing
	<input type="checkbox"/>	Dessin Frewitt Frewitt Zeichnung Frewitt Drawing
	<input type="checkbox"/>	Autre: Anderes: Other:

Certificats		
Zertifikate	<input checked="" type="checkbox"/>	ATEX
Certificates		

Voir documents suivants.

Siehe folgende Dokumente.

See following documents

Doc No: 102674-1

EDK82EV113
13167992



Lenze

D

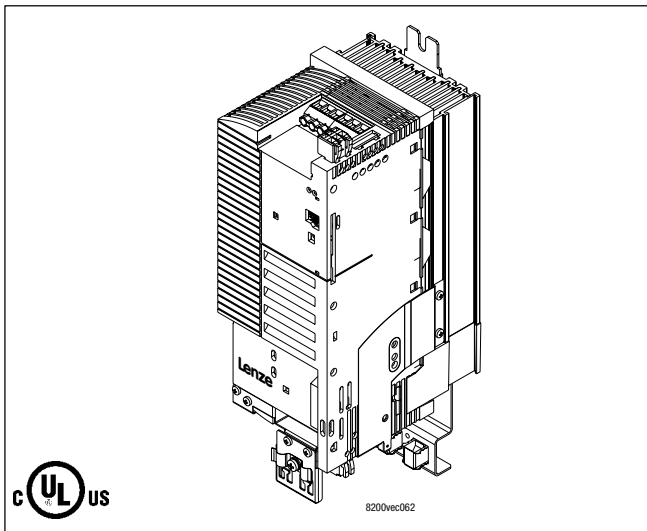
Montageanleitung

GB

Mounting Instructions

F

Instructions de montage



Global Drive

8200 vector

3 kW ... 11 kW



Lesen Sie zuerst die Montageanleitung, bevor Sie mit den Arbeiten beginnen!

Beachten Sie die enthaltenen Sicherheitshinweise.

Das Systemhandbuch mit ausführlicher Information zum Frequenzumrichter 8200 vector können Sie bei Ihrem Lenze-Vertriebspartner bestellen.

Read the Mounting Instructions before you start working!

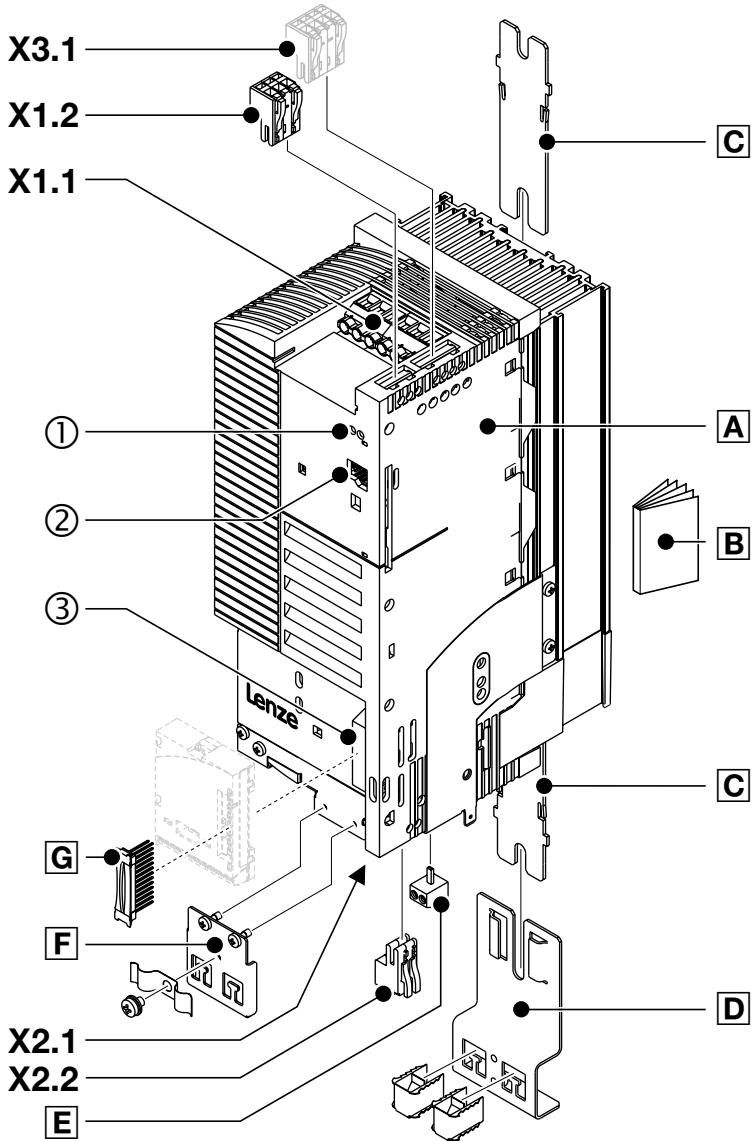
Please observe all safety information given.

The manual with detailed information about the 8200 vector can be ordered directly from Lenze or Lenze representatives.

Lire attentivement les instructions de montage avant toute opération !

Respecter les consignes de sécurité.

Le manuel comprenant une description complète du convertisseur de fréquence 8200 vector peut être commandé auprès de votre agence Lenze.



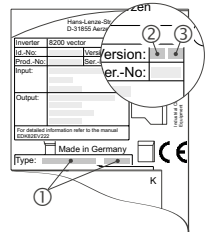
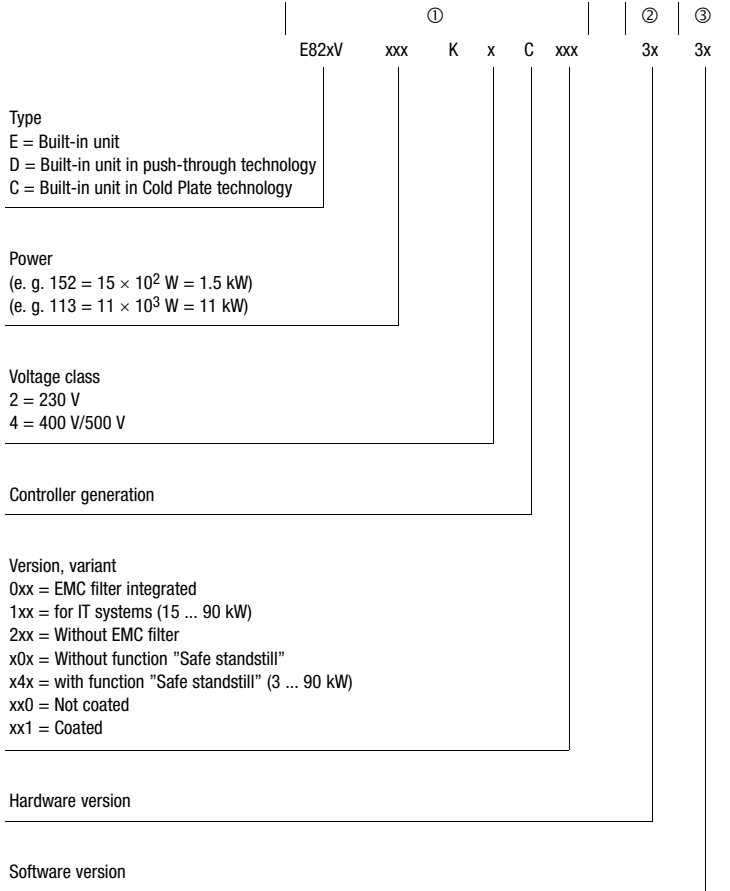
Items supplied

Position	Description	
A	8200 vector frequency inverters	
B	Mounting Instructions and Getting Started	
C	Holder for standard mounting	📖 95
D	EMC shield sheet with shield clips for the motor cable and the supply for the motor temperature monitoring	📖 97
E	2-pole terminal strip for motor PE and motor shield at X2.1	📖 97
F	EMC shield sheet with mounting screws and shield clamps for shielded control cables	📖 97
G	2*13-pole plug connector for function modules at FIF interface	📖 109
X1.1	Mains connection and DC-power supply (integrated terminal strip)	📖 99 📖 102
X1.2	Terminal strip of relay output	📖 106
X2.1	Motor connection, connection brake resistor (option) (integrated terminal strip)	📖 105
X2.2	Terminal strip for PTC connection or thermal contact (NC contact) of the motor	
X3.1	Special design: Terminal strip for feedback contact - only for varian "Safe standstill" E82EVxxxKxCx4x	📖 107

Interfaces and displays

Position	Description	Function	
①	2 LEDs (red, green)	Status display	📖 152
②	AIF interface (Automation interface)	Plug-in station for communication modules keypad E82ZBC, keypad XT EMZ9371BC Fieldbus modules type 21XX, e. g. INTERBUS 2111, PROFIBUS-DP 2133, ...	📖 113
③	FIF interface (Function interface)	With cover for operation with function module	
		or plug-in station for function modules Standard I/O E82ZAFSC Application I/O E82ZAFAC Fieldbus function modules type E82ZAFXC, e. g. INTERBUS E82ZAFIC, PROFIBUS-DP E82ZAFPC, ...	📖 109

This documentation is only valid for 8200 vector frequency inverters as of version:





Note!

Current documentation and software updates for Lenze products can be found on the internet in the "Downloads" area under

<http://www.Lenze.com>



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Safety and application notes for Lenze controllers

(in conformity with Low-Voltage Directive 73/23/EEC)

General

Lenze controllers (frequency inverters, servo inverters, DC controllers) can include live and rotating parts - depending on their type of protection - during operation. Surfaces can be hot.

Non-authorized removal of the required cover, inappropriate use, incorrect installation or operation, creates the risk of severe injury to persons or damage to material assets.

For more detailed information please see the documentation.

All operations concerning transport, installation, and commissioning as well as maintenance must be carried out by qualified, skilled personnel (IEC 364 and CENELEC HD 384 or DIN VDE 0100 and IEC report 664 or DIN VDE 0110 and national regulations for the prevention of accidents must be observed).

According to this basic safety information qualified skilled personnel are persons who are familiar with the installation, assembly, commissioning and operation of the product and who have the qualifications necessary for their occupation.

Application as directed

Drive controllers are components which are designed for installation in electrical systems or machinery. They are not to be used as appliances. They are intended exclusively for professional and commercial purposes according to EN 61000-3-2. The documentation includes information on compliance with the EN 61000-3-2.

When installing the drive controllers in machines, commissioning (i.e. starting of operation as directed) is prohibited until it is proven that the machine complies with the regulations of the EC Directive 98/37/EC (Machinery Directive); EN 60204 must be observed.

Commissioning (i.e. starting of operation as directed) is only allowed when there is compliance with the EMC Directive (89/336/EEC).

The drive controllers meet the requirements of the Low Voltage Directive 73/23/EEC. The harmonised standards of the series EN 50178/DIN VDE 0160 apply to the controllers.

The technical data and information on the connection conditions must be obtained from the nameplate and the documentation. They must be observed in any case.

Warning: The availability of controllers is restricted according to EN 61800-3. These products can cause radio interference in residential areas. In this case, special measures can be necessary.

Transport, storage

Please observe the notes on transport, storage and appropriate handling.

Observe the climatic conditions according to EN 50178.

Installation

The controllers must be installed and cooled according to the regulation and instructions given in the corresponding documentation.

Ensure proper handling and avoid mechanical stress. Do not bend any components and do not change any insulation distances during transport or handling. Do not touch any electronic components and contacts.

Controllers contain electrostatically sensitive components, which can easily be damaged by inappropriate handling. Do not damage or destroy any electrical components since this might endanger your health!

Electrical connection

When working on live drive controllers, the applicable national regulations for the prevention of accidents (e.g. VBG 4) must be observed.

The electrical installation must be carried out according to the appropriate regulations (e.g. cable cross-sections, fuses, PE connection). Additional information can be obtained from the documentation.

The documentation contains information about installation in compliance with EMC (shielding, grounding, filters and cables). These notes must also be observed for CE-marked controllers. The manufacturer of the system or machine is responsible for the compliance with the required limit values demanded by the EMC legislation.

Operation

Systems including controllers must be equipped with additional monitoring and protection devices according to the corresponding standards (e.g. technical equipment, regulations for prevention of accidents, etc.). If necessary, adapt the controllers to your application. Please observe the corresponding information given in the Instructions.

After the controller has been disconnected from the supply voltage, live components and power connection must not be touched immediately since capacitors could be charged. Please observe the corresponding notes on the controller.

All covers and doors must be closed during operation.

Information for UL approved systems with integrated controllers: UL warnings are notes which apply to UL systems. The documentation contains special information about UL.

Safe standstill

Variant V004 of the controller series 9300 and 9300 vector, variante x4x of the controller series 8200 vector and axis controller ECSxAxxx support the function "Safe standstill", protection against unintended start, according to the requirements of Appendix I, No. 1.2.7 of the EC Directive "Machinery" 98/37/EG, DIN EN 954-1 category 3 and DIN EN 1037. It is absolutely necessary to observe the information about the function "Safe standstill" in the corresponding documentation and instructions.

Maintenance and servicing

Please observe the information given in the documentation.

The product-specific safety and application notes in these instructions must also be observed!

Protection of persons

- Before working on the controller check that no voltage is applied to the power terminals, the relay output and the pins of the FIF interface,
 - because the power terminals U, V, W, +UG, -UG, BR1 and BR2 remain live for at least 3 minutes after mains switch-off.
 - because the power terminals L1, L2, L3; U, V, W, +UG, -UG, BR1 and BR2 remain live when the motor is stopped.
 - because the relay outputs K11, K12, K14 can remain live when the controller is disconnected from the mains.
- If you use the non-fail safe function "Selection of direction of rotation" via the digital signal DCTRL1-CW/CCW (C0007 = 0 ... 13, C0410/3 \neq 255):
 - In the event of an open circuit or failure of the control voltage, the drive can change its direction of rotation.
- If you use the function "Flying-restart circuit" (C0142 = 2, 3) with machines with a low moment of inertia and a minimum friction:
 - After controller enable in standstill, the motor can start for a short time or change its direction of rotation for a short time.
- The heatsink of the controller has an operating temperature of $> 80^{\circ}\text{C}$:
 - Direct skin contact with the heatsink results in burnings.

Controller protection

- All pluggable connection terminals must only be connected or disconnected when no voltage is applied!
- **Cyclic** connection and disconnection of the supply voltage can overload and destroy the input current limitation of the controller:
 - In case of cyclic mains switching over a longer period of time three minutes have to pass between two starting operations!

Motor protection

- Depending on the controller settings, the connected motor can be overheated:
 - For instance, longer DC-braking operations.
 - Longer operation of self-ventilated motors at low speed.

Controller/system protection

- Drives can reach dangerous overspeeds (e.g. setting of inappropriately high field frequencies):
 - The controllers do not offer any protection against these operating conditions. For this, use additional components.
- **Contactors in the motor cable** Switching with inhibited controller only.
If contactors in the motor cable are switched with the controller enabled,
 - monitoring functions of the controller can be activated.
 - the controller can be destroyed under unfavourable operating conditions.



Warnings!

- The device has no overspeed protection.
- Must be provided with external or remote overload protection.
- Suitable for use on a circuit capable of delivering not more than 5000 rms symmetrical amperes, 240 V maximum (240 V devices) or 500 V maximum (400/500 V devices) resp.
- Use 60/75 °C or 75 °C copper wire only.
- Shall be installed in a pollution degree 2 macro-environment.

Layout of safety instructions

All safety instructions given in these Instructions have got the same structure:

Pictograph (indicates the type of danger)



Danger! (indicates the degree of danger)

Note (describes the danger and explains how to avoid it)

Pictograph	Signal word		
		Meaning	Consequences if disregarded
 Dangerous electrical voltage	Danger!	Impending danger for persons	Death or most severe injuries
	Warning!	Possible, very dangerous situation for persons	Death or most severe injuries
	Caution!	Possible, dangerous situation for persons	Injuries
 General danger	Stop!	Possible material damage	Damage of the drive system or its surroundings
	Note!	Useful tip If you observe it, handling of the drive system will be easier.	

Normes et application conditions

Standards		
Conformity	CE	Low-Voltage Directive (73/23/EEC)
Approvals	UL 508C	Power Conversion Equipment (File-No. E132659)

Environmental conditions			
Climatic conditions			
Storage	IEC/EN 60721-3-1	1K3 (-25 ... +60 °C)	< 6 month
		1K3 (-25 ... +40 °C)	> 6 month > 2 years: anodizing of DC-bus capacitors
Transport	IEC/EN 60721-3-2	2K3 (-25 ... +70 °C)	
Operation	IEC/EN 60721-3-3	3K3 (-10 ... +55 °C) 8200 vector 15 ... 90 kW: 3K3 (-10 ... +50 °C) Power derating above +40 °C: 2.5 %/°C	
Installation height		0 ... 4000 m amsl Power derating at 1000 ... 4000 m amsl: 5 %/1000 m	
Pollution	EN 61800-5-1	Degree of pollution 2	
Vibration resistance	Germanischer Lloyd	General conditions: acceleration resistance up to 0.7g	

Application conditions			
Mounting positions		vertical	
Free space			
above/below		≥100 mm	
to the sides		Side-by-side mounting with a distance of 3 mm	
Max. permissible motor cable length	For rated mains voltage and chopper frequency of 8 kHz without additional output filters		
shielded		50 m	For compliance with EMC regulations, the permissible cable lengths must be changed
unshielded		100 m	
DC group drives		possible, except E82xV251K2C und E82xV371K2C	

General technical data

EMC	Compliance with EN 61800-3/A11		
Noise emission	Compliance with limit value classes A and B to EN 55011		
	E82EVxxxKxC0xx	without additional measures	
	E82EVxxxKxC2xx	by means of external filters	
Noise immunity	Requirements to EN 61800-3 incl. A11		
	Requirements	Standard Severities	
	ESD	EN 61000-4-2	3, i.e. 8 kV with air discharge, 6 kV with contact discharge
	high frequency in cables	EN 61000-4-6	150 kHz ... 80 MHz, 10 V/m 80 % AM (1kHz)
	RF interference (enclosure)	EN 61000-4-3	80 MHz ... 1000 MHz, 10 V/m 80 % AM (1kHz)
	Burst	EN 61000-4-4	3/4, i. e. 2 kV/5 kHz
	Surge (Surge on mains cable)	EN 61000-4-5	3, i.e. 1,2/50 µs, 1 kV phase-phase, 2 kV phase-PE
Insulation resistance	Overvoltage category III acc. to VDE 0110		
Discharge current to PE (to EN 50178)	> 3.5 mA, i. e. fixed installation and double PE connection are required.		
Enclosure	IP20		
Protection measures against	Short circuit, earth fault (earth-fault protected during operation, limited earth-fault protection during power up), motor stalling, motor overtemperature (input for PTC or thermal contact, I ^{2t} monitoring)		
Insulation of control circuits	Safe mains isolation: Double/reinforced insulation to EN 61800-5-1		
permissible mains types	Operation at TT systems, TN systems or systems with grounded star point without additional measures		
	Operation at IT systems is only possible with a variant		
Permissible mains voltage ranges	Frequency range		
	45 Hz - 0 % ... 65 Hz + 0 %	DC power supply	
1/N/PE AC 230/240 V	180 V - 0 % ... 264 V + 0 %	DC 140 V - 0 % ... 370 V + 0 %	
2/N/PE AC 230/240 V			
3/PE AC 230/240 V	100 V - 0 % ... 264 V + 0 %	DC 140 V - 0 % ... 370 V + 0 %	
3/PE AC 400 V	320 V - 0 % ... 440 V + 0 %	DC 450 V - 0 % ... 625 V + 0 %	
3/PE AC 500 V	320 V - 0 % ... 550 V + 0 %	DC 450 V - 0 % ... 775 V + 0 %	

Operation with rated power (normal operation)

Type	Power [kW]	Rated mains voltage	Mains current [A]		Output current [A] ¹⁾		Weight [kg]
			①	②	I _r	I _{max} (60 s) ²⁾	
E82EV302K2C	3.0	3/PE AC 230/240 V 50 Hz DC 325 V	15.6	12.0	12.0	18.0	2,9
E82EV402K2C	4.0		21.3	16.0	16.5	24.8	
E82EV552K2C	5.5		29.3	21.0	22.5	33.8	3.6
E82EV752K2C	7.5		-	28.0	28.6	42.9	
E82EV302K4C	3.0	3/PE AC 400 V 50 Hz DC 565 V	9.0	7.0	7.3	11.0	2,9
E82EV402K4C	4.0		12,3	8.8	9,5	14.2	
E82EV552K4C	5.5		16.8	12.0	13.0	19.5	3.6
E82EV752K4C	7.5		21.5	15.0	16.5	24.8	
E82EV113K4C	11.0		-	21.0	23.5	35.3	
E82EV302K4C	3.0	3/PE AC 500 V 50 Hz DC 710 V	7.2	5.6	5.8	11.0	2,9
E82EV402K4C	4.0		9,8	7.0	7.6	14.2	
E82EV552K4C	5.5		13.4	9.6	10.4	19.5	3.6
E82EV752K4C	7.5		17.2	12.0	13.2	24.8	
E82EV113K4C	11.0		-	16.8	18.8	35.3	

① without mains choke

② With mains choke

1) With rated mains voltage and chopper frequency of 8 kHz

2) Currents for periodic load change: 1 min overcurrent with I_{max} and 2 min basic load with 75 % I_r

Operation with increased rated power

Under the application conditions described here the controller can be operated in continuous operation with a motor of higher performance. The overload capacity is reduced to 120 %.

Typical applications are pumps with square-law load characteristic or blowers.



Note!

Operation with increased rated power is only permissible

- with the drive controllers mentioned
- within the mains voltage range mentioned
- with the chopper frequency mentioned
- with the prescribed fuses, cable cross-sections and mains chokes

Type	Power [kW]	Rated mains voltage	Mains current [A]		Output current [A] ¹⁾	
			①	②	I _r	I _{max} (60 s) ²⁾
E82EV302K2C	3.0	3/PE AC 230/240 V 50 Hz DC 325 V	18.7	14.4	14.4	18.0
E82EV402K2C	4.0		Operation not possible			
E82EV552K2C	5.5		-	25.7	27	33.8
E82EV752K2C	7.5		Operation not possible			
E82EV302K4C	3.0	3/PE AC 400 V 50 Hz DC 565 V	10.8	8.4	8.7	11.0
E82EV402K4C	4.0		-	10.6	11.4	14.2
E82EV552K4C	5.5		Operation not possible			
E82EV752K4C	7.5		-	18.0	19.8	24.8
E82EV113K4C	11.0		Operation not possible			

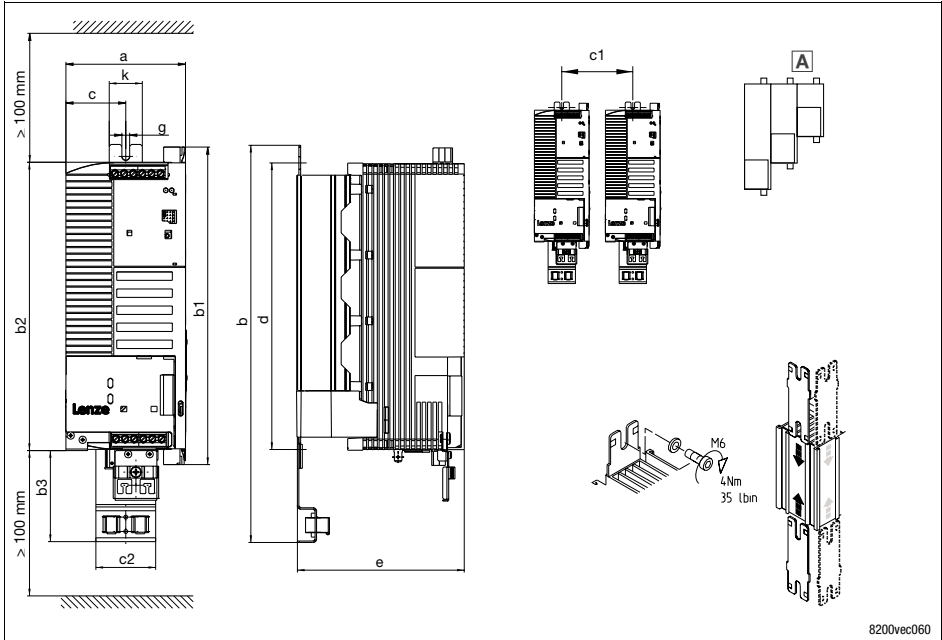
① without mains choke

② With mains choke

1) For rated mains voltage and chopper frequency 2 kHz or 4 kHz

2) Currents for periodic load change: 1 min overcurrent with I_{max} and 2 min basic load with 75 % I_r

8200 vector 3 ... 11 kW



8200vec060

A Different sizes can only be mounted side-by-side when the smaller units are mounted to the right-hand-side of the bigger units!

Dimensions in mm	a	b	b1	b2	b3	c	c1	c2	d	e	g	k						
E82EV302K2C	100	333	268	240	78	50	103	50	255	140	6.5	28						
E82EV402K2C							103											
E82EV552K2C ¹⁾	125	333				359 ²⁾	62.5		128	103			255	140				
E82EV752K2C ¹⁾									128									
E82EV302K4C	100	333				268	240		78	50			103	50	255	140	6.5	28
E82EV402K4C													103					
E82EV552K4C	125	333	359 ²⁾	62.5	128			103		255	140							
E82EV752K4C ¹⁾					128													
E82EV113K4C ¹⁾	128																	

¹⁾ Side mounting only possible with swivel holding unit E82ZJ006 (accessories)

²⁾ with E82ZJ006

3

Electrical installation

Wiring of terminal strips

The enclosed terminal strips are tested according to the specifications of the

- DIN VDE 0627:1986-06 (partially)
- DIN EN 60999:1994-04 (partially)

Checked and tested are, for instance, mechanical, electrical and thermal load, vibration, damage of conductors, loose conductors, corrosion, ageing.

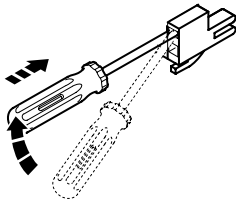


Stop!

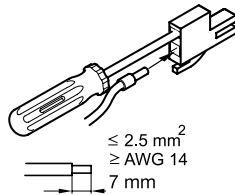
Proceed as follows to avoid damage of the contacts:

- Mount only when the controller is not connected to the mains.
- Wire the terminal strips before connecting them!
- Unused terminal strips must also be plugged in to protect the contacts.

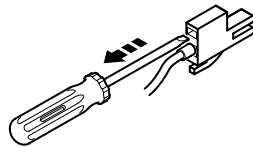
①



②



③



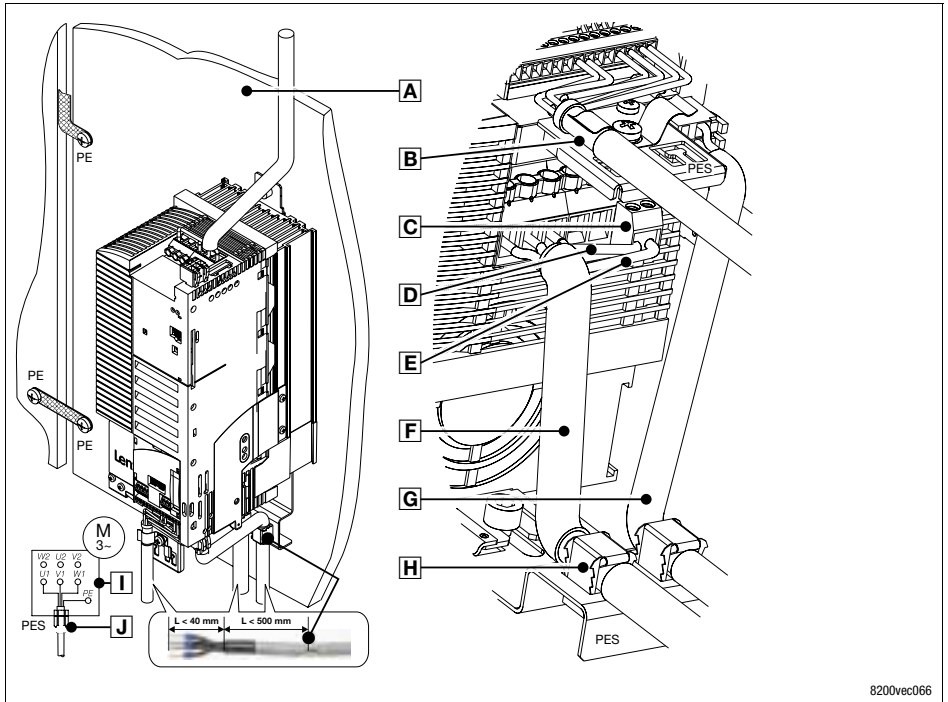
8200vec015



Note!

Wiring without wire end ferrules is always possible.


Installation according to EMC requirements (CE-typical drive system)



8200vec066

3

Electrical installation**Installation according to EMC requirements (CE-typical drive system)****Stop!**

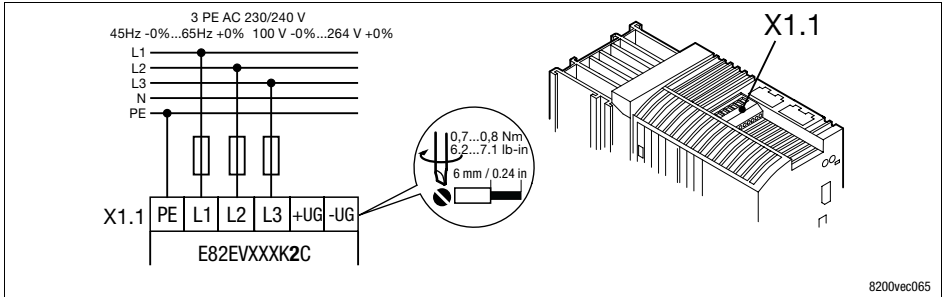
- Control cables and mains cables must be separated from the motor cable to avoid interferences.
- Control cable must always be shielded.
- We recommend to shield the supply cable for the PTC or thermal contact and route it separately from the motor cable.
- If the cores for motor connection and PTC or thermal contact are together in one cable with a common shield:
 - In order to reduce interference injections on the PTC cable, we recommend to install additionally the PTC module type E82ZPE.
- An optimum HF shield connection of the motor cable can be reached by using the terminal  for motor PE and motor shield.

A	Mounting plate with electrically conductive surface
B	Control cable to function module, connect the shielding to the EMC shield sheet (PES) with a surface as large as possible
C	2-pole terminal for motor PE and motor shield
D	PE of the motor cable
E	Shield of the motor cable
F	shielded motor cable, low.capacity (core/core up to 1,5 mm ² ≤ 75 pF/m; from 2,5 mm ² ≤ 100 pF/m; core/shield ≤ 150 pF/m)
G	shielded PTC cable or thermal contact cable
H	Connect cable shields to the EMC shield sheet (PES) with a surface as large as possible. Use enclosed clamps.
I	Star or delta connection as indicated on the motor nameplate
J	EMC-cable connector (not included in the delivery package)



Stop!

- Controller type E82EVxxxK **2C** must only be connected to a mains voltage of 3/PE AC 100 ... 264 V. Higher mains voltages will destroy the controller!
- The discharge current to PE is > 3.5 mA. EN 50178 requires a fixed installation. Double PE connection required.



E82EV752K2C	Operation only with mains choke
X1.1/+UG, X1.1/-UG	DC supply (DC-bus operation - see Operating Instructions)

Fuses and cable cross-section (operation with rated power)

		Operation without mains choke					FI	
		Installation to EN 60204-1			Installation to UL 1)			
8200 vector		mains	①	②	L1, L2, L3, PE [mm ²]	①	L1, L2, L3, PE [AWG]	FI
Type	[kW]							
E82EV302K2C	3.0	3/PE AC 100 ... 264 V; 45 ... 65 Hz	M20 A	B20 A	4	20 A	12	≥ 300 mA ²⁾ ≥ 30 mA ³⁾
E82EV402K2C	4.0		M25 A	B25 A	4	25 A	10	
E82EV552K2C	5.5		M35 A	-	6 ⁴⁾	35 A	8	
E82EV752K2C	7.5		Operation only with mains choke					

		Operating with mains choke					FI	
		Installation to EN 60204-1			Installation to UL 1)			
8200 vector		mains	①	②	L1, L2, L3, PE [mm ²]	①	L1, L2, L3, PE [AWG]	FI
Type	[kW]							
E82EV302K2C	3.0	3/PE AC 100 ... 264 V; 45 ... 65 Hz	M16 A	B16 A	2.5	15 A	14	≥ 300 mA ²⁾ ≥ 30 mA ³⁾
E82EV402K2C	4.0		M20 A	B20 A	4	20 A	12	
E82EV552K2C	5.5		M25 A	B25 A	4	25 A	10	
E82EV752K2C	7.5		M35 A	-	6 ⁴⁾	35 A	8	

① Fuse

② E.I.c.b.

- Use UL-approved cables, fuses and fuse holders only.
UL fuse: voltage 240 V, tripping characteristic "H", "K5" or "CC"
- All-current sensitive e.I.c.b. for use with E82EVxxxK2C0xx
- All-current sensitive e.I.c.b. for use with E82EVxxxK2C2xx
- Flexible cable can only be connected using pin end connectors.

Observe national and regional regulations (e. g. VDE 0113, EN 60204)

Fuses and cable cross-sections (operation with increased rated power)

			Operation without mains choke					FI
			Installation to EN 60204-1			Installation to UL 1)		
8200 vector		mains	①	②	L1, L2, L3, PE [mm ²]	①	L1, L2, L3, PE [AWG]	FI
Type	[kW]		①	②	①	②		
E82EV302K2C	3.0	3/PE AC	M25 A	B25 A	4	25 A	10	≥ 300 mA ²⁾ ≥ 30 mA ³⁾
E82EV552K2C	5.5	100 ... 264 V; 45 ... 65 Hz	Operation only with mains choke					

			Operating with mains choke					FI
			Installation to EN 60204-1			Installation to UL 1)		
8200 vector		mains	①	②	L1, L2, L3, PE [mm ²]	①	L1, L2, L3, PE [AWG]	FI
Type	[kW]		①	②	①	②		
E82EV302K2C	3.0	3/PE AC	M20 A	B20 A	4	20 A	12	≥ 300 mA ²⁾ ≥ 30 mA ³⁾
E82EV552K2C	5.5	100 ... 264 V; 45 ... 65 Hz	M32 A	B32 A	6 ⁴⁾	35 A	8	

① Fuse

② E.I.c.b.

1) Use UL-approved cables, fuses and fuse holders only.
UL fuse: voltage 240 V, tripping characteristic "H", "K5" or "CC"

2) All-current sensitive e.I.c.b. for use with E82EVxxxK2C0xx

3) All-current sensitive e.I.c.b. for use with E82EVxxxK2C2xx

4) Flexible cable can only be connected using pin end connectors.

Observe national and regional regulations (e. g. VDE 0113, EN 60204)

Please observe the following when using e.I.c.bs:

- E.I.c.bs must only be installed between mains supply and controller.
- E.I.c.bs can trip incorrectly because of
 - capacitive leakage currents of the cable shields during operation (especially with long, shielded motor cables),
 - simultaneous connection of several controllers to the mains supply,
 - use of additional RFI filters.

3

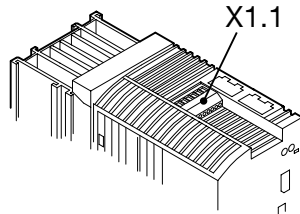
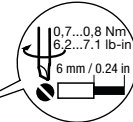
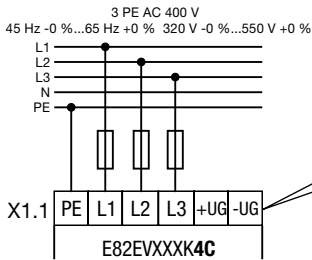
Electrical installation

Mains connection 400 V/500 V



Stop!

- Controller type E82EVxxxK **4C** must only be connected to a mains voltage of 3/PE AC 320 ... 550 V. Higher mains voltages will destroy the controller!
- The discharge current to PE is > 3.5 mA. EN 50178 requires a fixed installation. Double PE connection required.



8200vec067

X1.1/+UG, X1.1/-UG

DC supply (DC-bus operation - see Operating Instructions)

Fuses and cable cross-section (operation with rated power)

		Operation without mains choke						FI
		Installation to EN 60204-1			Installation to UL ¹⁾			
8200 vector		mains	①	②	L1, L2, L3, PE	①	L1, L2, L3, PE	FI
Type	[kW]				[mm ²]		[AWG]	
E82EV302K4C	3.0	3/PE AC 320 ... 550 V; 45 ... 65 Hz	M16 A	B16 A	2.5	15 A	14	≥ 300 mA ²⁾ ≥ 30 mA ³⁾
E82EV402K4C	4.0		M16 A	B16 A	2.5	15 A	14	
E82EV552K4C	5.5		M25 A	B25 A	4	20 A	12	
E82EV752K4C	7.5		M32 A	B32 A	6 ⁴⁾	25 A	10	
E82EV113K4C	11		Operation only with mains choke					

		Operating with mains choke						FI
		Installation to EN 60204-1			Installation to UL ¹⁾			
8200 vector		mains	①	②	L1, L2, L3, PE	①	L1, L2, L3, PE	FI
Type	[kW]				[mm ²]		[AWG]	
E82EV302K4C	3.0	3/PE AC 320 ... 550 V; 45 ... 65 Hz	M10 A	B10 A	1.5	10 A	16	≥ 300 mA ²⁾ ≥ 30 mA ³⁾
E82EV402K4C	4.0		M16 A	B16 A	2.5	15 A	14	
E82EV552K4C	5.5		M20 A	B20 A	4	20 A	12	
E82EV752K4C	7.5		M20 A	B20 A	4	20 A	12	
E82EV113K4C	11		M32 A	B32 A	6 ⁴⁾	25 A	10	

① Fuse

② E.l.c.b.

1) Use UL-approved cables, fuses and fuse holders only.
UL fuse: Voltage 500 ... 600 V, tripping characteristic "H", "K5" or "CC"

2) All-current sensitive e.l.c.b. for use with E82EVxxxK4C0xx

3) All-current sensitive e.l.c.b. for use with E82EVxxxK4C2xx

4) Flexible cable can only be connected using pin end connectors.

Observe national and regional regulations (e. g. VDE 0113, EN 60204)

Fuses and cable cross-sections (operation with increased rated power)

			Operation without mains choke					FI
			Installation to EN 60204-1			Installation to UL 1)		
8200 vector		mains	①	②	L1, L2, L3, PE [mm ²]	①	L1, L2, L3, PE [AWG]	≥ 300 mA ²⁾ ≥ 30 mA ³⁾
Type	[kW]							
E82EV302K4C	3.0	3/PE AC	M16 A	B16 A	2.5	15 A	14	
E82EV402K4C	4.0	320 ... 440 V;	Operation only with mains choke					
E82EV752K4C	7.5	45 ... 65 Hz	Operation only with mains choke					

			Operating with mains choke					FI
			Installation to EN 60204-1			Installation to UL 1)		
8200 vector		mains	①	②	L1, L2, L3, PE [mm ²]	①	L1, L2, L3, PE [AWG]	≥ 300 mA ²⁾ ≥ 30 mA ³⁾
Type	[kW]							
E82EV302K4C	3.0	3/PE AC	M10 A	B10 A	1.5	10 A	16	
E82EV402K4C	4.0	320 ... 440 V;	M16 A	B16 A	2.5	15 A	14	
E82EV752K4C	7.5	45 ... 65 Hz	M25 A	B25 A	4	25 A	10	

① Fuse

② E.l.c.b.

1) Use UL-approved cables, fuses and fuse holders only.

UL fuse: Voltage 500 ... 600 V, tripping characteristic "H", "K5" or "CC"

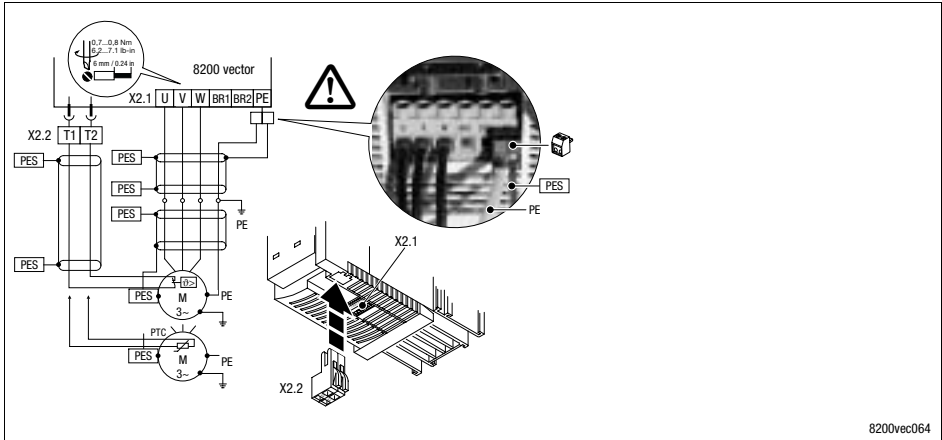
2) All-current sensitive e.l.c.b. for use with E82EVxxxK4C0xx

3) All-current sensitive e.l.c.b. for use with E82EVxxxK4C2xx

Observe national and regional regulations (e. g. VDE 0113, EN 60204)

Please observe the following when using e.l.c.bs:

- E.l.c.bs must only be installed between mains supply and controller.
- E.l.c.bs can trip incorrectly because of
 - capacitive leakage currents of the cable shields during operation (especially with long, shielded motor cables),
 - simultaneous connection of several controllers to the mains supply,
 - use of additional RFI filters.



8200vec064

Use low-capacity motor cables! (core/core up to 1.5 mm² ≤ 75 pF/m; from 2.5 mm² ≤ 100 pF/m; core/shield ≤ 150 pF/m)
The shorter the motor cables, the better the drive response!

PES	HF-shield end by PE connection through shield bracket or EMC cable connection.
X2.1/PE	Earthing of the 8200 vector at the output side
X2.1/BR1, X2.1/BR2	Connection terminals for the brake resistor (For information about the operation with brake resistor see the Operating Instructions)
X2.2/T1, X2.2/T2	Connection terminals motor temperature monitoring through PTC thermistors or thermal contacts Activate motor temperature monitoring under C0119 (e. g. C0119 = 1)!

Cable cross-sections U, V, W, PE

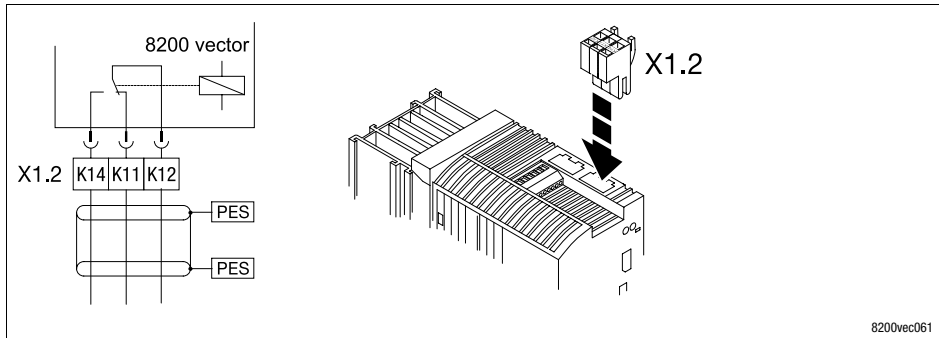
Type	mm ²	AWG	Type	mm ²	AWG
E82EV302K2C	2.5	12	E82EV302K4C	1	16
E82EV402K2C	4	10	E82EV402K4C	1.5	14
E82EV552K2C	6	10	E82EV552K4C	2.5	12
E82EV752K2C	6	10	E82EV752K4C	4	10
			E82EV113K4C	4	10



Danger!

- After the connection of a PTC thermistor or thermal contact all control terminals only have a basic insulation (single insulating distance).
- Protection against contact in the event of a defective insulating distance can only be ensured by external measures (e.g. double insulation).

5

Electrical installation**Connection of relay output**

8200vec061

	Function	Relay position set	Message (Lenze setting)	Technical data
X1.2/K11	Relay output normally-closed contact	open	TRIP	AC 250 V/3 A DC 24 V/2 A ... DC 240 V/0.16 A
X1.2/K12	Mid position contact			
X1.2/K14	Relay output - normally-open contact	closed	TRIP	
PES	HF-shield end by PE connection through shield bracket.			

**Note!**

- For switching the control signals use shielded cables and establish an HF shield termination by PE connection.
- For mains potential switching unshielded cables are sufficient.
- With inductive or capacitive loads a corresponding protective circuit is required in order to protect the relay contacts!
- The service life of the relay depends on the type of load (ohmic, inductive or capacitive) and the value of the switching capacity.
- The output message can be changed under C0008 or C0415/1.

Connection of relay output K_{SR} for "Safe standstill"

(only active at variant E82EVxxxK4Cx 4 x)

Variant x 4 x of the controller supports the safety function "Safe standstill", protection against unexpected start, according to the requirements of the EN 954-1 "control category 3" and EN 1037.

For this purpose the controllers have an integrated safety relay with feedback contact. The safety relay switches off the voltage supply of the optocoupler for pulse transfer to the IGBT. It must be externally controlled with DC +24 V.

- Only skilled personnel is authorized to install and commission the function "Safe standstill".
- All safety-relevant external cables (e.g. control cable for the safety relay, feedback contact) must be protected, e. g. in the cable duct. Ensure that short-circuits and lateral connection cannot occur!
- If external forces act on the drive axes, additional brakes are necessary. Especially consider the force of gravity acting on suspended loads!
- After the initial commissioning the operator must check the function of the safety circuits. This must be repeated periodically.

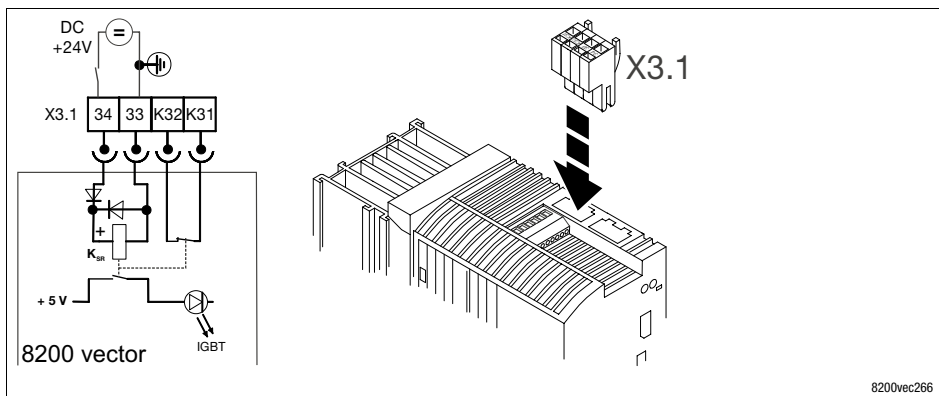
**Danger!**

- The electrical reference point for the coil of the safety relay must be connected with the protective circuit (DIN EN 60204-1 Abs. 9.4.3)!
 - Only in this way the protection against faulty operation is guaranteed.
- Without additional measures the function "Safe standstill" does not provide an "Emergency-off":
 - There is neither an electrical isolation between motor and controller nor a "service switch" or a "repair switch"
 - An "Emergency-off" requires an electrical isolation, e.g. by means of a central mains contactor!

5

Electrical installation

Connection of relay output K_{SR} for "Safe standstill"



8200vec266

Fig. 1 Relay K_{SR}

Terminal assignment		Data		
33	Reference potential for the input safety shutdown	Safety relay	Coil voltage at +40°C	DC +24 V (+19.5 ... 36 V)
			Coil current at 24 V DC	30 mA
34	Input safety shutdown	Safety relay	Test voltage contact → coil	AC 1500 V _{eff} for 1 min
			Test voltage contact → contact	AC 1500 V _{eff} for 1 min
			Electrical endurance at rated load	~ 10 ⁷ switching operations
			Mechanical endurance	~ 10 ⁷ switching operations
K31	Feedback contact	Feedback contact	Switching voltage	DC 24 V
K32			Continuous current	5 ... 700 mA

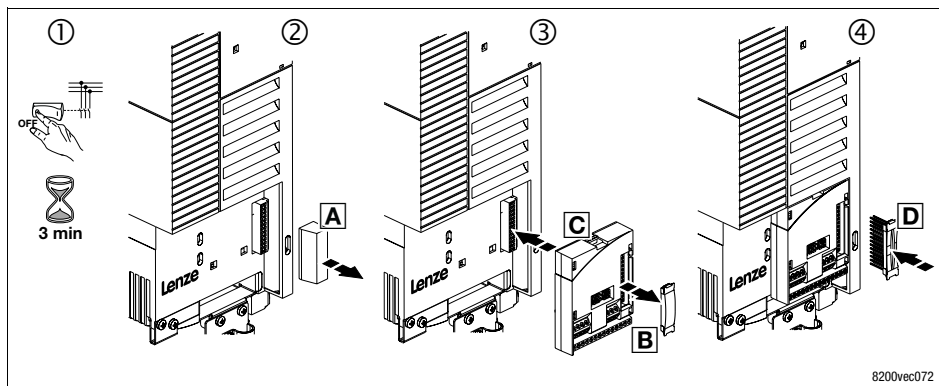
Important notes

The basic controller version is not equipped with control terminals. The controllers can be equipped with control terminals by using different I/O function modules for the FIF interface.

Dismount the function module only if it is absolutely necessary (e.g. when the controller is replaced).

The plug connector which is used to connect the function module is part of the contact system of the controller. It has not been designed for repeated connection and disconnection of the function module.

Mounting of function modules



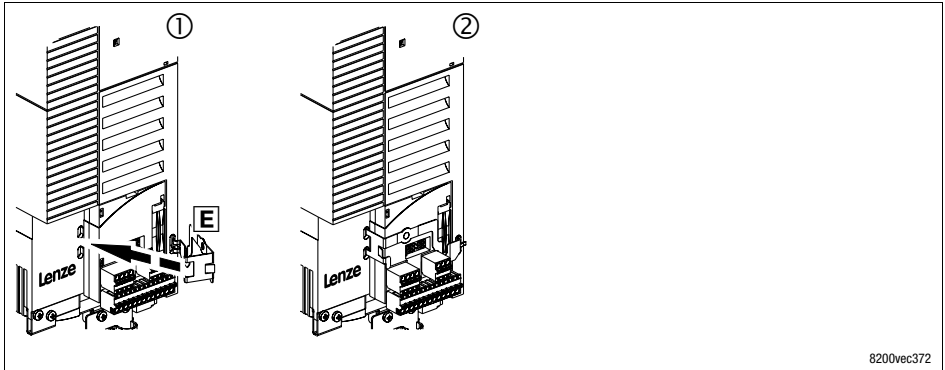
8200vec072

1. **Disconnect the controller from the mains and wait for at least 3 minutes!**
2. Remove the FIF protection cover **A** and keep it.
3. Remove the protection cover **B** of the function module.
4. Plug the function module **C** onto the FIF interface.
5. Plug the plug connector **D** into the contact bank of the function module until it is snapped into place.
6. For wiring see Mounting Instructions for the function module.


6 *Function module (optional)*

Mounting

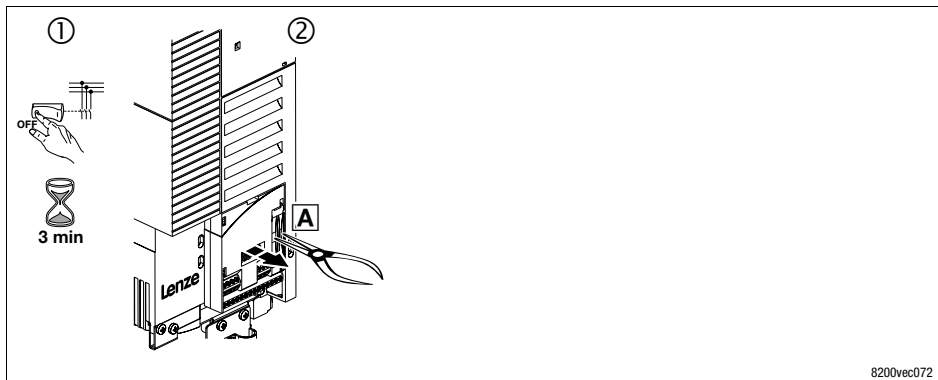
Mounting of function modules in "PT" version



In addition fix the safety clip, so that the module is prevented from being pulled out together with the terminal strips:

1. Turn the safety clip  in the openings.
2. Fold the safety clip over the function module until it snaps into place.

Dismounting of the function modules

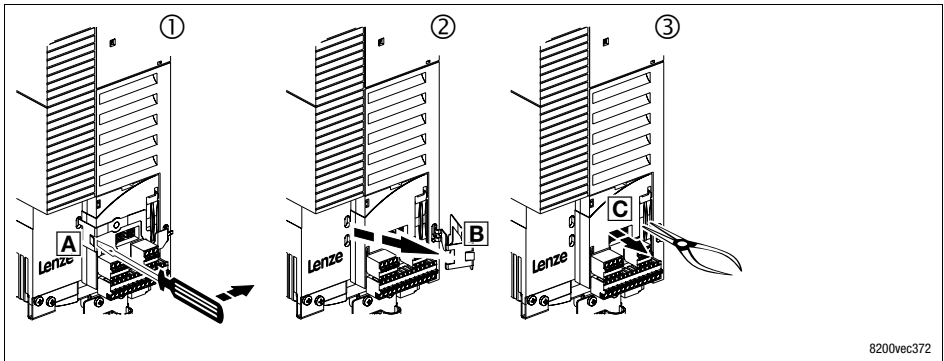


1. **Disconnect the controller from the mains and wait for at least 3 minutes!**
2. Catch the bar of the plug connector with pliers and pull. **A** Plug connector and function module are dismounted together.

6 Function module (optional)

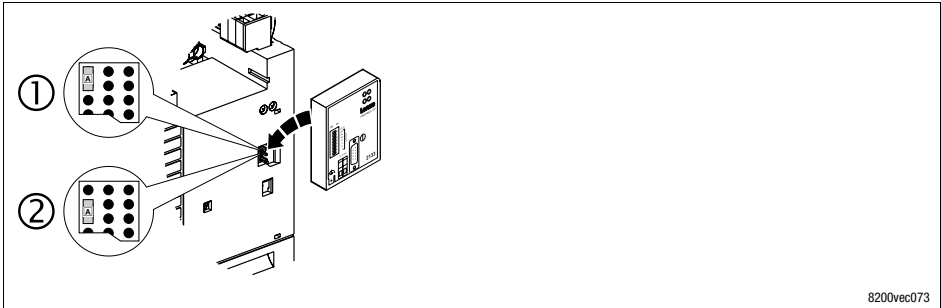
Dismounting

Dismounting of the function module version "PT"



After the function module version "PT" has been switched off, first of all the safety clip must be removed.

1. Position the screw driver between safety clip and function module **A**. The safety clip is disengaged by pressing to the right.
2. Turn the safety clip **B** to the right.
3. Catch the bar of the plug connector with pliers and pull **C**. Plug connector and function module are dismantled together.



8200vec073

- Ⓐ Jumper for selecting the voltage supply
- ① External voltage supply (delivery state)
- ② Voltage supply via internal voltage source

Attach/detach the communication module to/from the AIF interface. This is also possible during operation.

Possible combinations	Communication module on AIF								
	Keypad E82ZBC ¹⁾ Keypad XT EMZ9371BC ¹⁾	LECOM -A/B 2102.V001 -LI 2102.V003 -A 2102.V004 ¹⁾	LECOM-B (RS485) 2102.V002	INTERBUS 2111/2113 INTERBUS- Loop 2112	PROFIBUS- DP 2131/2133	System bus (CAN) 2171/2172	CANopen / DeviceNet 2175	LON 2141	
Standard I/O	E82ZAFSC	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	
Application I/O	E82ZAFAC	✓✓	✓	✓	✓	✓	✓	✓	
INTERBUS	E82ZAFIC	✓✓	(✓)	☒	☒	☒	☒	☒	
PROFIBUS-DP	E82ZAFPC	✓✓	(✓)	☒	☒	☒	☒	☒	
LECOM-B (RS485)	E82ZAFLC	✓✓	(✓)	☒	☒	☒	☒	☒	
System bus (CAN)	E82ZAFCC								
System bus I/O-RS	E82ZAFCC100	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	
System bus I/O	E82ZAFCC200								
CANopen / DeviceNet ²⁾	E82ZAFD	✓✓	✓✓	☒	☒	☒	☒	☒	
AS-i	E82ZAFFC	✓✓	✓✓	☒	☒	☒	☒	☒	

- 1) Independently of the jumper position always supplied internally.
- 2) In preparation
- ✓✓ Combination possible, internal or external supply of the communication module
- ✓ Combination possible, external supply!
- (✓) Combination possible, communication module can only be used for parameter setting.
- ☒ Combination not possible

**Note!**

- Do not change the switch-on sequence.
- In the event of an error during commissioning, please see the chapter "Fault detection and elimination".

To avoid injury to persons or damage to property, check...

... before the mains voltage is connected:

- The wiring for completeness, short circuit and earth fault
- "Emergency-off" function of the whole system
- Motor connection (star/delta) must be adapted to output voltage of controller.
- If you do not use a function module, ensure that the FIF cover is mounted properly (as delivered).
- If the internal voltage supply X3/20 of e.g. the standard I/O is used, the terminals X3/7 and X3/39 must be jumpered.

... the most important drive parameter settings before the controller is enabled:

- Are the drive parameters relevant for your application set correctly?
 - E.g. configuration of analog and digital inputs and outputs

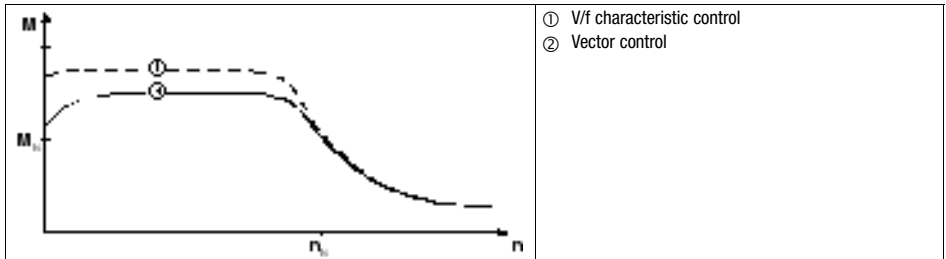
Selection of the correct operating mode

The following table helps you to find the correct control mode for standard applications. You can choose between V/f characteristic control, vector control and sensorless torque control:

V/f characteristic control is the classic control mode for standard applications.

The vector control provides better control features than the V/f characteristic control because of:

- a higher torque over the whole speed range
- higher speed accuracy and smooth running features
- higher efficiency



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Commissioning**Selection of the correct operating mode**

Application	Operating mode	
	Setting in C0014	
Stand-alone drives	recommended	alternatively
with extremely alternating loads	4	2
with heavy start conditions	4	2
with speed control (speed feedback)	2	4
with high dynamic response (e. g. positioning and infeed drives)	2	-
with torque setpoint	5	-
with torque limitation (power control)	2	4
Three-phase AC reluctance motors	2	-
Three-phase sliding rotor motors	2	-
Three-phase motors with fixed frequency-voltage characteristic	2	-
Pump and fan drives with square-law load characteristic	3	2 or 4
Group drives (several motors connected to controller)		
identical motors and identical loads	2	-
different motors and/or changing loads	2	-

C0014 = 2: linear V/f characteristic control

C0014 = 3: square-law V/F characteristic control

C0014 = 4: Vector control

C0014 = 5: sensorless torque control

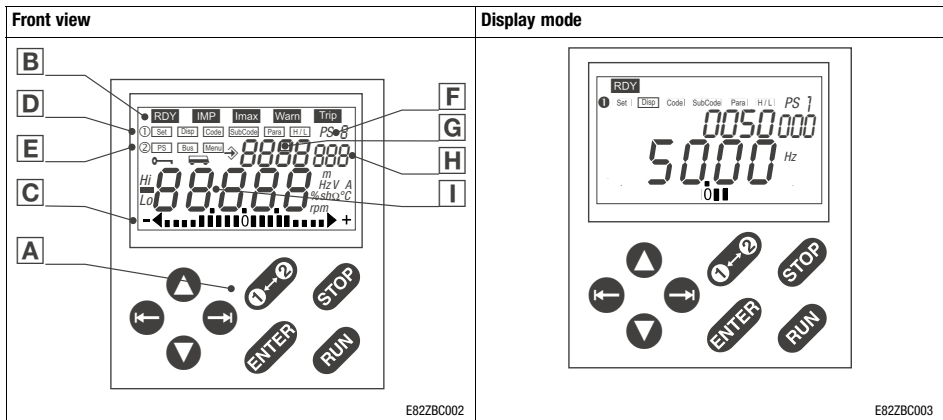
Using the keypad E82ZBC - Parameter setting

Description

The keypad is available as accessory. A full description of the keypad can be obtained from the Instructions included in the keypad delivery.








Plugging in the keypad

It is possible to plug in the keypad onto the AIF interface or remove it during operation. As soon as the keypad is supplied with voltage, it carries out a self-test. The keypad is ready for operation if it is in display mode.



Displays and operating elements

A	Function keys	
Press key	Function	Explanation
RUN	Enable controller	For operation with function module, the terminal X3/28 must be set to HIGH level
STOP	Inhibit controller (CINH) or quick stop (QSP)	Configuration in C0469
1-2	Change to function bar 1 ↔ Function bar 2	
←	To right/left in active function bar	The current function is framed
▲▼	Increase/decrease value Quick change: Keep key pressed.	Only blinking values can be changed
ENTER	Parameters can be stored if → blinking Confirmation by STO-E in the display	

B Status display		
Display	Meaning	Explanation
RDY	Ready for operation	
IMP	Pulse inhibit active	Power outputs inhibited
Imax	Adjusted current limitation is exceeded in motor-mode or generator-mode	C0022 (motor mode) or C0023 (generator mode)
Warn	Warning active	
Trip	Fault active	
C Bargraph display		
	Value set under C0004 in % (Lenze setting: Controller load C0056)	Display range: - 180 % ... + 180 % (every bar = 20 %)
D Function bar 1		
Function	Meaning	Explanation
Set	Setpoint selection via 	Not possible when password protection is active (display = "L0c")
Disp	Display function: • User menu, memory location 1 (C0517/1), display • Display active parameter set	Active after every main connection
Code	Code selection	Display of active code in 4-digit display 
SubCode	Subcode selection	Display of active subcode number in 3-digit display 
Para	Change of parameter value of a (sub)code	Display of current value in 5-digit display 
H/L	Display of values longer than 5 digits H: higher value locations L: lower value locations	Display "HI" Display "LO"
E Function bar 2		
Function	Meaning	Explanation
PS	Select parameter set 1 ... parameter set 4 for changing	<ul style="list-style-type: none"> • Display, e.g. PS 2 () • The parameter sets can only be activated via digital signals (configuration with C0410)
Bus	Selection of system bus (CAN) devices	The selected device can be parameterised by the current drive  = function active
Menu	Select menu The user menu is active after mains switching	 SEr List of codes in the user menu (C0517) ALL List of all codes Func1 Only specific codes for bus function modules, e.g. INTERBUS, PROFIBUS-DP and LECOM-B

Using the keypad E82ZBC - Parameter setting

Change and save parameters

**Note!**

The menu *STO-E* is active after mains switching. Change to the menu *ALL* to address all codes.

Action	Keys	Result	Note
1. Plug in the keypad		[Disp] XX.XX Hz	Function [Disp] is activated. The first code in the user menu will be displayed (C0517/1, Lenze setting: C0050 = output frequency).
2. If necessary change to the menu "ALL"	0-2	2	Change to function bar 2
3.	←→	[Menu]	
4.	↕	<i>ALL</i>	Select menu "ALL" (list of all codes)
5.	0-2	1	Confirm selection and change to function bar 1
6. Inhibit controller	STOP	RDY IMP	Only necessary if you want to change C0002, C0148, C0174 and/or C0469
7. Set parameters	←→	[Code]	
8.	↕	XXXX	Select code
9.	⊖	[SubCode] 001	For codes without subcodes: Jump automatically to [Para]
10.	↕	XXX	Select subcode
11.	⊖	[Para]	
12.	↕	XXXXX	Set parameters
13.	ENTER	<i>STO-E</i>	Confirm entry if ↔ blinking
	←→		Confirm entry if ↔ is not blinking; ENTER is not active
14.			Restart the "loop" at 7. to set other parameters.

Menu structure

All parameters for controller setting or monitoring are saved in codes. The codes are numbered and labelled in the documentation with a "C". Some codes store the parameters in numbered "subcodes", so that a clear parameter setting is ensured (e. g.: C0517 User menu).

The codes are described in detail in the system manual of the drive controller.

For easy operation the codes are divided in two groups:

- The menu *USER*
 - is active after every mains switching or keypad attachment during operation.
 - contains all codes for a standard application with linear V/f characteristic control (Lenze setting).
 - can be modified as required under C0517.
- The menu *ALL*
 - contains all codes.
 - shows a list of all codes in ascending order.

Using the keypad E82ZBC - Parameter setting

The menu $\cup 5E_r$ - The 10 most important drive parameters

After mains switching or plugging in the keypad during operation, the 10 codes defined in code C0517 are immediately available.

In default setting the menu $\cup 5E_r$ contains all codes required for a standard application with linear V/f characteristic control.

Code	Name	Lenze setting				
C0050	Output frequency		Display: Output frequency without slip compensation			
C0034	Setpoint selection range	0	Standard I/O	X3/8:	0 ... 5 V / 0 ... 10 V / 0 ... 20 mA	
			Application I/O	X3/1U:	0 ... 5 V / 0 ... 10 V	
C0007	Fixed configuration of digital inputs	0	E4	E3	E2	
			CW/CCW	DCB	JOG2/3	JOG1/3
			CW/CCW rotation	DC injection brake	Selection of fixed setpoints	
C0010	Minimum output frequency	0.00 Hz				
C0011	Maximum output frequency	50.00 Hz				
C0012	Acceleration time main setpoint	5.00 sec				
C0013	Deceleration time main setpoint	5.00 sec				
C0015	V/f rated frequency	50.00 Hz				
C0016	V_{\min} boost	Depending on the controller				
C0002	Parameter set management		Restore default setting; Transfer parameter sets with keypad; save, load or copy own basic settings			

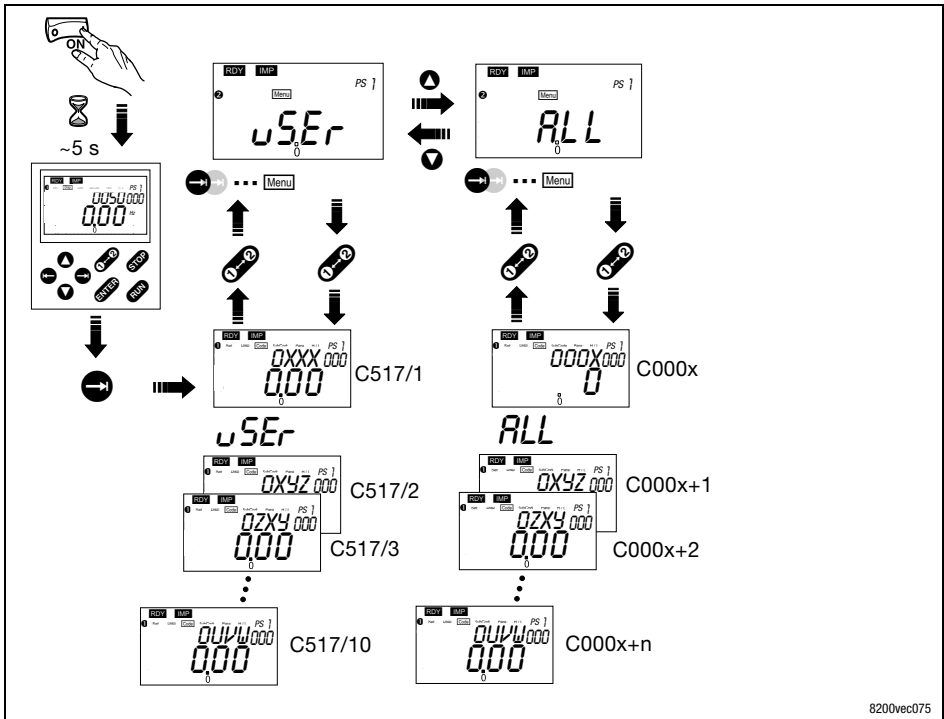
**Note!**

Use C0002 "Parameter set transfer/restorage of default setting" to transfer configurations from one controller to the other with keypad or restore the default setting by loading the Lenze setting (e.g. if you lost track during parameter setting).

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Commissioning

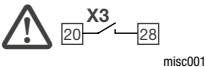
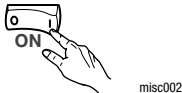




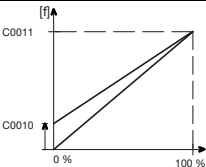
Using the keypad E82ZBC - Parameter setting



8200vec075

Using the keypad E82ZBC - Linear V/f characteristic control

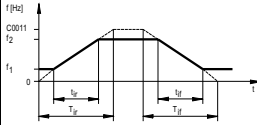
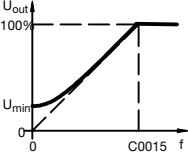
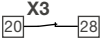

The following instructions apply to controllers equipped with a standard-I/O function module and a three-phase AC motor which has been selected according to a power-based assignment.

Switch-on sequence		Note	
1.	Attach the keypad		
2.	Ensure that controller inhibit is active after mains connection.		Terminal X3/28 = LOW
3.	Switch on the mains		
4.	The keypad is in "Disp" mode after approx. 2 s and indicates the output frequency (C0050)		The menu <i>USER</i> is active
5.	Change to the Code mode to configure the basic settings for your drive		Blinking on the display: <i>0050</i>
6.	Adapt the voltage range/current range to the analog setpoint (C0034) Lenze setting: -0-, (0 ... 5 V/0 ... 10 V/0 ... 20 mA)		Set the DIP switch on the standard I/O to the same range (see Mounting Instructions for the standard I/O)
7.	Adapt the terminal configuration to the wiring (C0007) Lenze setting: -0-, i. e. E1: JOG1/3 fixed setpoint selection E2: JOG2/3 E3: DCB DC brake E4: CW/CCW operation		
8.	Set the minimum output frequency (C0010) Lenze setting: 0.00 Hz		
9.	Set the maximum output frequency (C0011) Lenze setting: 50.00 Hz		

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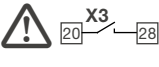
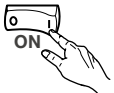

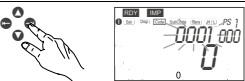
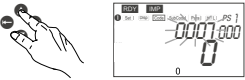
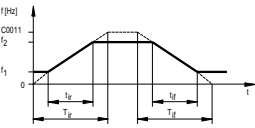
Commissioning

Using the keypad E82ZBC - Linear V/f characteristic control

Switch-on sequence		Note	
10.	Set the acceleration time T_{ir} (C0012) Lenze setting: 5.00 s		
11.	Set the deceleration time T_{if} (C0013) Lenze setting: 5.00 s		
12.	Set the V/f-rated frequency (C0015) Lenze setting: 50.00 Hz		
13.	Set the V_{min} boost (C0016) Lenze settings: Depending on the controller type		
14.	If you want to change the settings, please go to the menu <i>ALL</i> .	activate e. g. JOG frequencies (C0037, C0038, C0039) or motor temperature monitoring (C0119)	
When you are ready with parameter setting:			
15.	Setpoint selection	e. g. via potentiometer at the terminals 7, 8, 9	
16.	Enable the controller.	 misc002	Terminal X3/28 = HIGH
17.	The drive should be running now at e.g. 30 Hz		If the drive does not start, press RUN in addition.

Using the keypad E82ZBC - Vector control



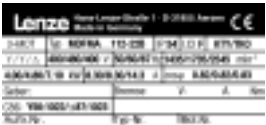

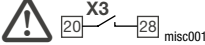
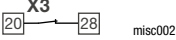
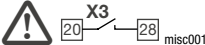
The following instructions apply to controllers equipped with a standard-I/O function module and a three-phase AC motor which has been selected according to a power-based assignment.

Switch-on sequence	Note	
1. Attach the keypad		
2. Ensure that controller inhibit is active after mains connection.	 misc001	
3. Switch on the mains	 misc002	
4. The keypad is in "Disp" mode after approx. 2 s and indicates the output frequency (C0050)		
5. Change to the menu <i>ALL</i>		
6. Change to the Code mode to configure the basic settings for your drive		
7. Adapt the terminal configuration to the wiring (C0007) Lenze setting: 0, i. e. E1: JOG1/3 fixed setpoint selection E2: JOG2/3 E3: DCB DC brake E4: CW/CCW operation		
8. Set the minimum output frequency (C0010) Lenze setting: 0.00 Hz		
9. Set the maximum output frequency (C0011) Lenze setting: 50.00 Hz		
10. Set the acceleration time T_{ir} (C0012) Lenze setting: 5.00 s		$T_{ir} = t_{ir} \cdot \frac{C0011}{f_2 - f_1}$ $t_{ir} = \text{acceleration time wanted}$
11. Set the deceleration time T_{if} (C0013) Lenze setting: 5.00 s		$T_{if} = t_{if} \cdot \frac{C0011}{f_2 - f_1}$ $t_{if} = \text{deceleration time wanted}$

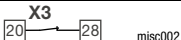

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Commissioning

Using the keypad E82ZBC - Vector control

Switch-on sequence		Note	
12.	Activate the control mode "vector control" (C0014 = 4) Lenze setting: Linear V/f characteristic control (C0014 = 2)		
13.	Adapt the voltage/current range to the analog setpoint (C0034) Lenze setting: 0, (0 ... 5 V/0 ... 10 V/0 ... 20 mA)		Set the DIP switch on the standard-I/O to the same range (see Mounting Instructions for the standard-I/O)
14.	Enter the motor data		See motor nameplate
A	Rated motor speed (C0087) Lenze setting: 1390 rpm		
B	Rated motor current (C0088) Lenze setting: Depending on the controller		Enter the value for the motor connection type (star/delta) selected!
C	Rated motor frequency (C0089) Lenze setting: 50 Hz		
D	Rated motor voltage (C0090) Lenze setting: Depending on the controller		Enter the value for the motor connection type (star/delta) selected!
E	Motor-cosφ (C0091) Lenze setting: Depending on the controller		
15.	Start the motor parameter identification (C0148)		Only when the motor is cold!
A	Ensure that the controller is inhibited		Terminal X3/28 = LOW
B	Set C0148 = 1	Press ENTER in addition	
C	Enable the controller.		<ul style="list-style-type: none"> Terminal X3/28 = HIGH The identification starts: <ul style="list-style-type: none"> The segment IMP Off The motor makes a high-pitched tone. The motor does not rotate!
D	If the segment becomes active after approx. 30 s, IMP inhibit the controller once again		<ul style="list-style-type: none"> Terminal X3/28 = LOW Identification is completed. Calculated and stored: <ul style="list-style-type: none"> V/f rated frequency (C0015) Slip compensation (C0021) Motor stator inductance (C0092) Measured and stored: <ul style="list-style-type: none"> Motor stator resistance (C0084) = Total resistance of motor cable and motor

Using the keypad E82ZBC - Vector control

Switch-on sequence		Note
16.	If necessary, adjust more parameters	Activate e. g. JOG frequencies (JOG) (C0037, C0038, C0039 or motor parameter monitoring (C0119))
After parameter setting:		
17.	Setpoint selection	E.g. via potentiometer at terminals 7, 8, 9
18.	Enable the controller.	 Terminal X3/28 = HIGH
19.	The drive should now be running at e.g. 30 Hz	 If the drive does not start, press RUN in addition

Vector control optimisation

In general, the vector control is ready for operation after the motor parameters have been identified. Vector control must only be optimised for the following drive performance:

Drive performance	Remedy
Rough motor run and motor current (C0054) > 60 % rated motor current in idle running (stationary operation)	<ol style="list-style-type: none"> 1. Reduction of motor inductance (C0092) by 10 % 2. Check of motor current under C0054 3. If the motor current (C0054) > 50 % rated motor current: <ul style="list-style-type: none"> – C0092 must be reduced until the motor current amounts to 50 % of the rated motor current – Reduce C0092 by max. 20 %!
Torque too low for frequencies $f < 5$ Hz (starting torque)	Increase of motor resistance (C0084) or increase of motor inductance (C0092)
Poor constant speed at high loads (setpoint and motor speed are not proportional).	Increase of slip compensation (C0021) Overcompensation results in drive instability!
Error messages OC1, OC3, OC4 or OC5 during acceleration times (C0012) < 1 s (drive controller is no longer able to follow the dynamic processes)	Change readjustment time of the I_{\max} controller (C0078): <ul style="list-style-type: none"> • Reduction of C0078 = I_{\max} controller becomes quicker (more dynamic) • Increase of C0078 = I_{\max} controller becomes slower ("smoother")

7 Commissioning

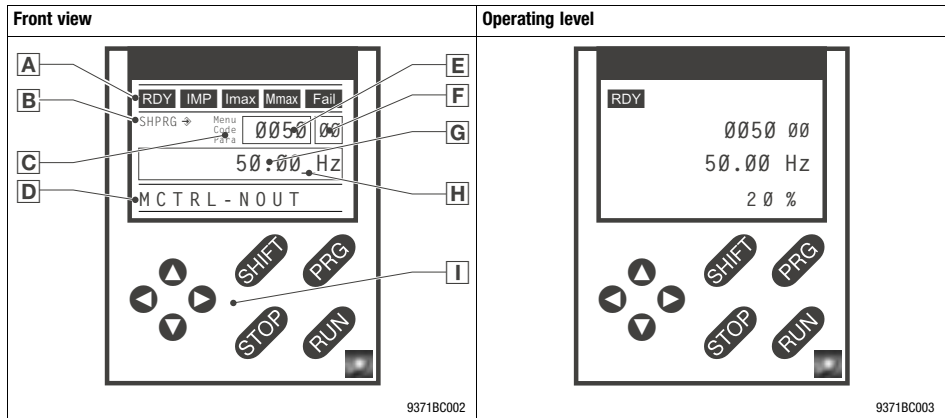
Using the keypad XT EMZ9371BC - Parameter setting

Description

The keypad is available as accessory. A full description of the keypad can be obtained from the Instructions included in the keypad delivery.

Plug in the keypad

It is possible to plug in the keypad onto the AIF interface or remove it during operation. As soon as the keypad is supplied with voltage, it carries out a self-test. The operation level indicates, when the keypad is ready for operation.



Display elements

A Status display basic device		
Display	Meaning	Explanation
RDY	Ready for operation	
IMP	Pulse inhibit active	Power outputs inhibited
Imax	Adjusted current limitation is exceeded in motor-mode or generator-mode	
Mmax	Speed controller 1 in limitation	Drive torque-controlled
Fail	Active fault	

Using the keypad XT EMZ9371BC - Parameter setting

B	Adoption of parameters		
	Display	Meaning	Explanation
	→	Parameters are adopted immediately	Basic device operates immediately with the new parameter value
	SHPRG →	Parameter must be confirmed with SHIFT PRG	Basic device operates with the new parameter value, after it was confirmed
	SHPRG	In case of controller inhibit the parameter must be confirmed with SHIFT PRG	Basic device operates with the new parameter value, after the controller has been enabled
none	Display parameter	Change not possible	
C	Active level		
	Display	Meaning	Explanation
	Menu	Menu level active	Select main menu and submenus
	Code	Code level active	Select codes and subcodes
	Para	Parameter level active	Change parameters in the codes or subcodes
	none	Operation level active	Display operation parameters: <ul style="list-style-type: none"> • User menu, memory location 1 (C0517/1) • Status display C0004 in % • Active fault
D	Short text		
	Display	Meaning	Explanation
	max. 13 characters	Contents of menus, meaning of codes and parameters In operation level display of C0004 in % and active fault	
E	Number		
	Active level	Meaning	Explanation
	Menu level	Menu number	Display only active when operating with the basic device series 8200 vector or 8200 motec
Code level	four-digit code number		
F	Number		
	Active level	Meaning	Explanation
	Menu level	Submenu number	Display only active when operating with the basic device series 8200 vector or 8200 motec
Code level	two-digit subcode number		
G	Parameter value		
		Parameter value with unit	
H	Cursor		
		In the parameter level the number above the cursor can be directly changed	
I	Function keys		
		For description see the following table	

Function keys**Note!**

Press the key combinations with **SHIFT**:

SHIFT and keep them pressed, then additionally press the second key.

Press key	Function			
	Menu level	Code level	Parameter level	Operation level
PRG		Change to the parameter level	Change to the operation level	Change to the code level
SHIFT PRG	Load predefined configurations in the menu "Short setup" ¹⁾		Accept parameter, if SHPRG → or SHPRG is displayed	
▲ ▼	Change between menu points	Change code number	Change number above cursor	
SHIFT ▲ SHIFT ▼	Change quickly between menu points	Change code quickly	Change number above cursor quickly	
▶ ◀	Change between main menu, submenus and code level		Cursor to the right Cursor to the left	
RUN	Cancel function of key STOP the LED in the key disappears			
STOP	Inhibit the controller, LED in the key lights up			
	Reset fault (TRIP-Reset): 1. Remove cause of malfunction 2. STOP press 3. RUN press			

¹⁾ only active when operating with the basic device series 8200 vector or 8200 motec

Using the keypad XT EMZ9371BC - Parameter setting

Change and save parameters

All parameters for controller setting or monitoring are saved in codes. The codes are numbered and labelled in the documentation with a "C". Some codes store the parameters in numbered "subcodes", so that a clear parameter setting is ensured (e. g.: C0517 User menu).

The codes are described in detail in the system manual of the drive controller.

**Note!**

Your settings in the menus are always stored in the parameter set 1.

If you want to store settings in the parameter set 2, 3 or 4, two menus can be used:

- In menu 2 "Code list" it is possible to access to all available codes.
- In menu 7 "Param managm" it is possible to copy parameter set 1 into the other parameter sets.
 - **Please note, that with copying the "own basic setting" will be overwritten by the settings of parameter set 1!**

Step	Keys	Action
1. Select menu	⬅ ➡ ⬆ ⬇	Select the desired menu with arrow keys
2. Change to the code level	➡	Display of first code in the menu
3. Select code or subcode	⬇ ▲	Display of current parameter value
4. Change to parameter level	PRG	
5. If SHPRG is displayed, inhibit controller	STOP	The drive is idling
6. Change parameters		
	A ➡ ⬅	Move cursor under the digit to be changed
	B ⬇ ▲	Change digit
	SHIFT ⬇	Change digit quickly
	SHIFT ▲	
7. Accept changed parameter		
	Display of SHPRG or SHPRG ⇄ SHIFT PRG	Confirm change to accept parameter Display "OK"
	Display ⇄ -	The parameter was accepted immediately
8. If necessary, enable controller	RUN	The drive should be running again
9. Change to the code level		
	A PRG	Display of operation level
	B PRG	Display of the code with changed parameters
10. Change further parameters		Restart "loop" at step 1. or step 3.

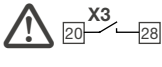
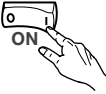
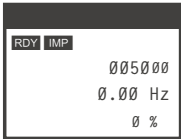



Menu structure

Main menu		Submenus		Description
No.	Display	No.	Display	
1	USER menu			Defined codes in C0517
2	Code list			All available codes
		2.1	ALL	All available codes in ascending order (C0001 ... C7999)
		2.2	Para set 1	Codes in parameter set 1 (C0001 ... C1999)
		2.3	Para set 2	Codes in parameter set 2 (C2001 ... C3999)
		2.4	Para set 3	Codes in parameter set 3 (C4001 ... C5999)
		2.5	Para set 4	Codes in parameter set 4 (C6001 ... C7999)
3	Remote para	See description of the keypad		Remote parameter setting Only active with function module system bus (CAN)
4	Quick start			Quick commissioning of standard applications
		4.1	Keypad quick	Function check Linear V/f-characteristic control Frequency setpoint via keypad
		4.2	V/f quick	Linear V/f-characteristic control Frequency setpoint selectable analogically via potentiometer, fixed setpoints (JOG) selectable via terminal
		4.3	VectorCtrl qu	Vector control Frequency setpoint selectable analogically via potentiometer, fixed setpoints (JOG) selectable via terminal
5	Short setup	See description of the keypad		Quick configuration of predefined applications
6	Diagnostic			Diagnostics
		6.1	Fault history	Error analysis with history buffer
		6.2	Status words	Display of status words
		6.3	Monit drive	Display codes in order to monitor drive
		6.4	Monit FIF	Display codes in order to monitor a field bus function module
7	Param managm			Parameter set management
		7.1	Load/Store	Parameter set transfer, restore delivery status
		7.2	Copy PAR1 ->2	Copy parameter set 1 into parameter set 2
		7.3	Copy PAR1 ->3	Copy parameter set 1 into parameter set 3
		7.4	Copy PAR1 ->4	Copy parameter set 1 into parameter set 4

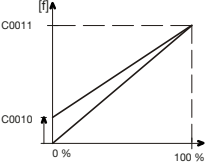
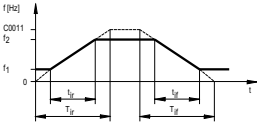
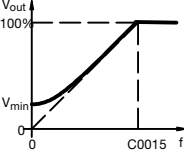
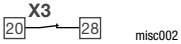
Using the keypad XT EMZ9371BC - Parameter setting

Main menu		Submenus		Description
No.	Display	No.	Display	
8	Main FB	See description of the keypad		Configuration of function blocks
9	Controller	See description of the keypad		Configuration of internal control parameters
10	Terminal I/O	See description of the keypad		Linkage of inputs and outputs with internal signals and display of the signal levels at the terminals
11	LECOM/AIF	See description of the keypad		Configuration of operation with communication modules
12	FIF system bus	See description of the keypad		Configuration of operation with function module system bus (CAN) and display of the contents of the CAN objects Only active with function module system bus (CAN)
13	FIF-field bus	See description of the keypad		Configuration of operation with field bus function modules Only active with fieldbus function module
14	Motor/Feedb.			Input of motor data, configuration of speed feedback
		14.1	Motor data	Motor data
		14.2	Feedback DFIN	Frequency input, encoder
15	Identify			Identification
		15.1	Drive	Software version controller
		15.2	Keypad	Software version keypad
		15.3	FIF module	Software version and function module type

The following instructions apply to controllers equipped with a standard-I/O function module and a three-phase AC motor which has been selected according to a power-based assignment.

Switch-on sequence		Note	
1.	Attach the keypad		
2.	Ensure that controller inhibit is active after mains connection.	 misc001	Terminal X3/28 = LOW
3.	Switch on the mains	 misc002	
4.	The keypad is in the operation level and indicates the output frequency (C0050) and device load (C0056)	 9371BC004	
5.	For quick commissioning select the menu "Quick start"	 9371BC007	The submenu "V/f quick" contains the codes you need for the commissioning of a standard application. The digital inputs are configured in the Lenze setting: X3/E1, X3/E2: Activation of JOG setpoints X3/E3: Activation of DC-injection brake (DCB) X3/E4: CW rotation/CCW rotation
A	Change to the menu level with PRG		
B	Change to the menu "Quick start" and there select the submenu "V/f quick" with ▲ ▲ ▲ ▲		
C	Change to the code level in order to parameterise you drive with ▶	  9371BC008	
6.	Adapt the voltage range/current range to the analog setpoint (C0034) Lenze setting: 0, (0 ... 5 V/O ... 10 V/O ... 20 mA)		Set the DIP switch on the standard I/O to the same range (see Mounting Instructions for the standard I/O)
7.	If necessary, adapt the JOG setpoints.		
A	JOG 1 (C0037) Lenze setting: 20 Hz		Activation: X3/E1 = HIGH, X3/E2 = LOW
B	JOG 2 (C0038) Lenze setting: 30 Hz		Activation: X3/E1 = LOW, X3/E2 = HIGH
C	JOG 3 (C0039) Lenze setting: 40 Hz		Activation: X3/E1 = HIGH, X3/E2 = HIGH

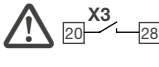
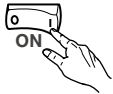
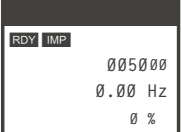


Using the keypad XT EMZ9371BC - Linear V/f characteristic control

Switch-on sequence		Note
8. Set the minimum output frequency (C0010) Lenze setting: 0.00 Hz		
9. Set the maximum output frequency (C0011) Lenze setting: 50.00 Hz		
10. Set the acceleration time T_{ir} (C0012) Lenze setting: 5.00 s		$T_{ir} = t_{ir} \cdot \frac{C0011}{f_2 - f_1}$ $t_{ir} = \text{acceleration time wanted}$
11. Set the deceleration time T_{if} (C0013) Lenze setting: 5.00 s		$T_{if} = t_{if} \cdot \frac{C0011}{f_2 - f_1}$ $t_{if} = \text{deceleration time wanted}$
12. Set the V/f-rated frequency (C0015) Lenze setting: 50.00 Hz		
13. Set the V_{min} boost (C0016) Lenze setting: dependent on the controller type		The Lenze setting is suitable for all common applications
14. Activate the motor temperature monitoring (C0119) if a PTC or thermal contact is connected to the terminal X2.2. Lenze setting: switched-off		Setting possibilities: (□) 148
15. Setpoint selection	e. g. via potentiometer at the terminals 7, 8, 9	
16. Enable the controller.		Terminal X3/28 = HIGH
17. The drive should be running now		CW rotation: X3/E4 = LOW CCW rotation: X3/E4 = HIGH If the drive does not start, press RUN

**Note!**

In the menu "Diagnostic" the most important drive parameters can be monitored

The following instructions apply to controllers equipped with a standard-I/O function module and a three-phase AC motor which has been selected according to a power-based assignment.

Switch-on sequence		Note	
1.	Attach the keypad		
2.	Ensure that controller inhibit is active after mains connection.	 misc001	Terminal X3/28 = LOW
3.	Switch on the mains	 misc002	
4.	The keypad is in the operation level after approx. 3 sec and indicates the output frequency (C0050) and device load (C0056)	 9371BC004	
5.	For quick commissioning select the menu "Quick start"	 9371BC006  9371BC008	The submenu "VectorCtrl qu" contains the codes you need for the commissioning of a standard application. The digital inputs are configured in the Lenze setting: X3/E1, X3/E2: Activation of JOG setpoints X3/E3: Activation of DC-injection brake (DCB) X3/E4: CW rotation/CCW rotation
A	Change to the menu level with PRG		
B	Change to the menu "Quick start" and there select the submenu "VectorCtrl qu" with ▲ ▲ ▲ ▲ ▲		
C	Change to the code level in order to parameterise you drive with ▶		
6.	Adapt the voltage range/current range to the analog setpoint (C0034) Lenze setting: 0, (0 ... 5 V/O ... 10 V/O ... 20 mA)		Set the DIP switch on the standard I/O to the same range (see Mounting Instructions for the standard I/O)
7.	If necessary, adapt the JOG setpoints.		
A	JOG 1 (C0037) Lenze setting: 20 Hz		Activation: X3/E1 = HIGH, X3/E2 = LOW
B	JOG 2 (C0038) Lenze setting: 30 Hz		Activation: X3/E1 = LOW, X3/E2 = HIGH
C	JOG 3 (C0039) Lenze setting: 40 Hz		Activation: X3/E1 = HIGH, X3/E2 = HIGH




Using the keypad XT EMZ9371BC - Vector control

Switch-on sequence			Note
9.	Set the minimum output frequency (C0010) Lenze setting: 0.00 Hz		
10.	Set the maximum output frequency (C0011) Lenze setting: 50.00 Hz		
10.	Set the acceleration time T_{ir} (C0012) Lenze setting: 5.00 s		$T_{ir} = t_{ir} \cdot \frac{C0011}{f_2 - f_1}$ $t_{ir} = \text{acceleration time wanted}$
11.	Set the deceleration time T_{if} (C0013) Lenze setting: 5.00 s		$T_{if} = t_{if} \cdot \frac{C0011}{f_2 - f_1}$ $t_{if} = \text{deceleration time wanted}$
12.	Set the control mode "Vector control" (C0014 = 4) Lenze setting: Linear V/f characteristic control (C0014 = 2)		
13.	Enter the motor data		
A	Rated motor speed (C0087) Lenze setting: 1390 rpm		See motor nameplate
B	Rated motor current (C0088) Lenze setting: Depending on the controller		Enter the value for the motor connection type (star/delta) selected!
C	Rated motor frequency (C0089) Lenze setting: 50 Hz		
D	Rated motor voltage (C0090) Lenze setting: Depending on the controller		Enter the value for the motor connection type (star/delta) selected!
E	Motor-cosφ (C0091) Lenze setting: Depending on the controller		

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Commissioning

Using the keypad XT EMZ9371BC - Vector control

Switch-on sequence		Note
14.	Start the motor parameter identification (C0148)	Only when the motor is cold!
A	Ensure that the controller is inhibited	 X3 20 → 28 misc001
B	Set C0148 = 1	SHIFT PRG press
C	Enable the controller.	X3 20 → 28 misc002 <ul style="list-style-type: none">Terminal X3/28 = HIGHThe identification starts:<ul style="list-style-type: none">The segment IMP OffThe motor makes a high-pitched tone. The motor does not rotate!
D	If the segment becomes active after approx. 30 s, IMP inhibit the controller once again.	 X3 20 → 28 misc001 <ul style="list-style-type: none">Terminal X3/28 = LOWIdentification is completed.Calculated and stored:<ul style="list-style-type: none">V/f rated frequency (C0015)Slip compensation (C0021)Motor stator inductance (C0092)Measured and stored:<ul style="list-style-type: none">Motor stator resistance (C0084) = Total resistance of motor cable and motor
15.	Activate the motor temperature monitoring (C0119), if a PTC or thermal contact is connected to the terminal X2.2 Lenze setting: switched-off	Setting possibilities:  148
16.	Setpoint selection	e. g. via potentiometer at the terminals 7, 8, 9
17.	Enable the controller.	X3 20 → 28 misc002 Terminal X3/28 = HIGH
18.	The drive should be running now	CW rotation: X3/E4 = LOW CCW rotation: X3/E4 = HIGH If the drive does not start, press RUN

**Note!**

In the menu "Diagnostic" the most important drive parameters can be monitored

Using the keypad XT EMZ9371BC - Vector control

Vector control optimisation

In general, the vector control is ready for operation after the motor parameters have been identified. Vector control must only be optimised for the following drive performance:

Drive performance	Remedy
Rough motor run and motor current (C0054) > 60 % rated motor current in idle running (stationary operation)	<ol style="list-style-type: none"> 1. Reduction of motor inductance (C0092) by 10 % 2. Check of motor current under C0054 3. If the motor current (C0054) > 50 % rated motor current: <ul style="list-style-type: none"> – C0092 must be reduced until the motor current amounts to 50 % of the rated motor current – Reduce C0092 by max. 20 %!
Torque too low for frequencies $f < 5$ Hz (starting torque)	Increase of motor resistance (C0084) or increase of motor inductance (C0092)
Poor constant speed at high loads (setpoint and motor speed are not proportional).	Increase of slip compensation (C0021) Overcompensation results in drive instability!
Error messages OC1, OC3, OC4 or OC5 during acceleration times (C0012) < 1 s (drive controller is no longer able to follow the dynamic processes)	Change readjustment time of the I_{\max} controller (C0078): <ul style="list-style-type: none"> • Reduction of C0078 = I_{\max} controller becomes quicker (more dynamic) • Increase of C0078 = I_{\max} controller becomes slower ("smoother")



Note!

- The following table describes in detail the codes mentioned in the examples for commissioning!
- Do not change codes, the meaning of which is unknown to you! All codes are described in detail in the System Manual.

How to read the code table

Column	Abbreviation		Meaning
Code	Cxxxx		Code Cxxxx
	1		Subcode 1 of Cxxxx
	2		Subcode 2 of Cxxxx
	*	Parameter value of the code is the same in all parameter sets	
	ENTER	Keypad E82ZBC	Changed parameters will be accepted after pressing ENTER
		Keypad XT EMZ9371BC	Changed parameters will be accepted after pressing SHIFT PRG
	STOP	Keypad E82ZBC	Changed parameters will be accepted after pressing ENTER if the controller is inhibited
		Keypad XT EMZ9371BC	Changed parameters will be accepted after pressing SHIFT PRG if the controller is inhibited
	(A)	Code, subcode or selection are only available when using an Application-I/O	
	USER	With Lenze setting the code is available in the USER-menu	
Name	Name of the code		
Lenze	Lenze setting (value at delivery or after restoring the delivery state with C0002)		
	→ Further information can be obtained from "IMPORTANT"		
Selection	1 {%}	99	Min. value {unit} Max. value
IMPORTANT	-		Brief, important explanations

The most important codes for commissioning

Code		Possible settings		IMPORTANT		
No.	Name	Lenze	Selection			
C0002* STOP 5Er	Parameter set management	0	0 Ready	PAR1 ... PAR4: <ul style="list-style-type: none"> Parameter sets of the controller PAR1 ... PAR4 also contain parameters for Standard-I/O, Application-I/O, AS interface or system bus (CAN) FPAR1: <ul style="list-style-type: none"> Module-specific parameter set of the fieldbus function modules INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen FPAR1 is saved in the function module 		
	Restorage of default setting		1		Lenze setting ⇔ PAR1	Restorage of default setting in the selected parameter set
			2		Lenze setting ⇔ PAR2	
			3		Lenze setting ⇔ PAR3	
			4		Lenze setting ⇔ PAR4	
			31		Lenze setting ⇔ FPAR1	Restorage of default setting in the fieldbus function module
			61		Lenze setting ⇔ PAR1 + FPAR1	Restorage of default setting in the selected parameter set of the controller and the fieldbus function module
			62		Lenze setting ⇔ PAR2 + FPAR1	
			63		Lenze setting ⇔ PAR3 + FPAR1	
	64	Lenze setting ⇔ PAR4 + FPAR1				
C0002* STOP 5Er (cont.)	Parameter set transfer using the keypad		Keypad ⇔ Controller	Use the keypad to transfer parameter sets to other controllers. During transfer the parameters cannot be accessed via other channels! All available parameter sets (PAR1 ... PAR4, and FPAR1) are overwritten with the corresponding keypad data		
			70		With function module Application-I/O, INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen	
			10		With all other function modules	

Code		Possible settings		IMPORTANT	
No.	Name	Lenze	Selection		
C0002* STOP 5Er (cont.)	Parameter set transfer using the keypad		Keypad ⇒ PAR1 (+ FPAR1)	Overwrite selected parameter set and, if necessary, FPAR1 with the corresponding keypad data	
			71		With function module Application-I/O, INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen
			11		With all other function modules
			72		Keypad ⇒ PAR2 (+ FPAR1)
			72		With function module Application-I/O, INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen
			12		With all other function modules
			73		Keypad ⇒ PAR3 (+ FPAR1)
			73		With function module Application-I/O, INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen
			13		With all other function modules
			74		Keypad ⇒ PAR4 (+ FPAR1)
74	With function module Application-I/O, INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen				
14	With all other function modules				
80	Controller ⇒ Keypad	All available parameter sets (PAR1 ... PAR4, and FPAR1) are copied to the keypad			
80	With function module Application-I/O, INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen				
20	With all other function modules	Overwrite the module-specific parameter set FPAR1 only			
40	Keypad ⇒ Function module				
40	Only with function module INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen	Copy the module-specific parameter set FPAR1 only			
50	Function module ⇒ Keypad				
50	Only with function module INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen				

The most important codes for commissioning

Code		Possible settings		IMPORTANT
No.	Name	Lenze	Selection	
C0002* STOP ↳SEr (cont.)	Saving of own settings		9 PAR1 ⇔ Own settings	<p>You can save your own basic settings for a controller (e.g. machine delivery status):</p> <ol style="list-style-type: none"> 1. Ensure that parameter set 1 is active 2. Controller inhibit 3. Set C0003 = 3, acknowledge with ENTER 4. Set C0002 = 9, acknowledge with ENTER, to save your own basic settings 5. Set C0003 = 1, acknowledge with ENTER 6. Enable the controller.
C0002* STOP ↳SEr (cont.)	Loading/copying of your own basic settings			Using this function, PAR1 can be copied to parameter sets PAR2 ... PAR4
			5 Own settings ⇔ PAR1	Restorage of own basic setting in the selected parameter set
			6 Own settings ⇔ PAR2	
			7 Own settings ⇔ PAR3	
	8 Own settings ⇔ PAR4			
C0003* ENTER	Non-volatile parameter saving	1	0 Parameter not saved in EEPROM	Data loss after mains disconnection
			1 Parameter always saved in EEPROM	<ul style="list-style-type: none"> • Active after every mains connection • Cyclic parameter changes via bus module are not allowed.
			3 Own settings saved in EEPROM	Subsequently save parameter set 1 as own basic setting with C0002 = 9

Code		Possible settings				IMPORTANT		
No.	Name	Lenze	Selection					
C0007 ENTER ↵SEr	Fixed configuration of digital inputs	0	E4	E3	E2	E1	<p>Change under C0007 will be copied to the corresponding subcode of C0410. Free configuration under C0410 sets C0007 = 255!</p> <ul style="list-style-type: none"> • CW/CCW = CW rotation/CCW rotation • DCB = DC injection brake • QSP = Quick stop • PAR = Parameter set changeover (PAR1 ↔ PAR2) <ul style="list-style-type: none"> – PAR1 = LOW, PAR2 = HIGH – The terminal must be assigned to the function "PAR" in PAR1 and PAR2. – Configurations with "PAR" are only allowed if C0988 = 0 • TRIP set = external fault 	
			0	CW/CCW	DCB	JOG2/3		JOG1/3
			1	CW/CCW	PAR	JOG2/3		JOG1/3
			2	CW/CCW	QSP	JOG2/3		JOG1/3
			3	CW/CCW	PAR	DCB		JOG1/3
			4	CW/CCW	QSP	PAR		JOG1/3
			5	CW/CCW	DCB	TRIP set		JOG1/3
			6	CW/CCW	PAR	TRIP set		JOG1/3
			7	CW/CCW	PAR	DCB		TRIP set
			8	CW/CCW	QSP	PAR		TRIP set
			9	CW/CCW	QSP	TRIP set		JOG1/3
10	CW/CCW	TRIP set	UP	DOWN				
C0007 ENTER ↵SEr (cont.)			E4	E3	E2	E1	<ul style="list-style-type: none"> • JOG1/3, JOG2/3 = Selection of fixed setpoints <ul style="list-style-type: none"> – Activate JOG1: JOG1/3 = HIGH; JOG2/3 = LOW – Activate JOG2: JOG1/3 = LOW; JOG2/3 = HIGH – Activate JOG3: JOG1/3 = HIGH; JOG2/3 = HIGH • UP/DOWN = motor potentiometer functions 	
			11	CW/CCW	DCB	UP		DOWN
			12	CW/CCW	PAR	UP		DOWN
			13	CW/CCW	QSP	UP		DOWN
			14	CCW/QSP	CW/QSP	DCB		JOG1/3
			15	CCW/QSP	CW/QSP	PAR		JOG1/3
			16	CCW/QSP	CW/QSP	JOG2/3		JOG1/3
			17	CCW/QSP	CW/QSP	PAR		DCB
			18	CCW/QSP	CW/QSP	PAR		TRIP set
19	CCW/QSP	CW/QSP	DCB	TRIP set				

The most important codes for commissioning

Code		Possible settings				IMPORTANT		
No.	Name	Lenze	Selection					
C0007 ENTER ↵SEr (cont.)			E4	E3	E2	E1	<ul style="list-style-type: none"> • H/Re = Hand/remote changeover • PCTRL1-I-OFF = Switch off process controller I component • DFIN1-ON = Digital frequency input 0 ... 10 kHz • PCTRL1-OFF = Switch off process controller 	
			20	CCW/QSP	CW/QSP	TRIP set		JOG1/3
			21	CCW/QSP	CW/QSP	UP		DOWN
			22	CCW/QSP	CW/QSP	UP		JOG1/3
			23	H/Re	CW/CCW	UP		DOWN
			24	H/Re	PAR	UP		DOWN
			25	H/Re	DCB	UP		DOWN
			26	H/Re	JOG1/3	UP		DOWN
			27	H/Re	TRIP set	UP		DOWN
			28	JOG2/3	JOG1/3	PCTRL1-I-OFF		DFIN1-ON
			29	JOG2/3	DCB	PCTRL1-I-OFF		DFIN1-ON
30	JOG2/3	QSP	PCTRL1-I-OFF	DFIN1-ON				
C0007 ENTER ↵SEr (cont.)			E4	E3	E2	E1		
			31	DCB	QSP	PCTRL1-I-OFF		DFIN1-ON
			32	TRIP set	QSP	PCTRL1-I-OFF		DFIN1-ON
			33	QSP	PAR	PCTRL1-I-OFF		DFIN1-ON
			34	CW/QSP	CCW/QSP	PCTRL1-I-OFF		DFIN1-ON
			35	JOG2/3	JOG1/3	PAR		DFIN1-ON
			36	DCB	QSP	PAR		DFIN1-ON
			37	JOG1/3	QSP	PAR		DFIN1-ON
			38	JOG1/3	PAR	TRIP set		DFIN1-ON
			39	JOG2/3	JOG1/3	TRIP set		DFIN1-ON
40	JOG1/3	QSP	TRIP set	DFIN1-ON				

Code		Possible settings				IMPORTANT		
No.	Name	Lenze	Selection					
C0007 ENTER SEr (cont.)				E4	E3	E2	E1	
			41	JOG1/3	DCB	TRIP set	DFIN1-ON	
			42	QSP	DCB	TRIP set	DFIN1-ON	
			43	CW/CCW	QSP	TRIP set	DFIN1-ON	
			44	UP	DOWN	PAR	DFIN1-ON	
			45	CW/CCW	QSP	PAR	DFIN1-ON	
			46	H/Re	PAR	QSP	JOG1/3	
			47	CW/QSP	CCW/QSP	H/Re	JOG1/3	
			48	PCTRL1-OFF	DCB	PCTRL1-OFF	DFIN1-ON	
			49	PCTRL1-OFF	JOG1/3	QSP	DFIN1-ON	
			50	PCTRL1-OFF	JOG1/3	PCTRL1-OFF	DFIN1-ON	
			51	DCB	PAR	PCTRL1-OFF	DFIN1-ON	
			255	Free configuration under C0410				
C0010 SEr	Minimum output frequency	0.00	0.00 → 14.5 Hz	{0.02 Hz}	650.00	<ul style="list-style-type: none"> • C0010 is not effective with bipolar setpoint selection (-10 V ... + 10 V) • C0010 only limits the analog input 1 		
C0011 SEr	Maximum output frequency	50.00	7.50 → 87 Hz	{0.02 Hz}	650.00	→ Speed setting range 1 : 6 for Lenze geared motors: Setting absolutely required for operation with Lenze geared motors.		
C0012 SEr	Acceleration time main setpoint	5.00	0.00	{0.02 s}	1300.00	Reference: frequency change 0 Hz ... C0011 <ul style="list-style-type: none"> • Additional setpoint ⇔ C0220 • Acceleration times can be activated via digital signals ⇔ C0101 		
C0013 SEr	Deceleration time main setpoint	5.00	0.00	{0.02 s}	1300.00	Reference: frequency change C0011 ... 0 Hz <ul style="list-style-type: none"> • Additional setpoint ⇔ C0221 • Deceleration times can be activated via digital signals ⇔ C0103 		

The most important codes for commissioning

Code		Possible settings			IMPORTANT	
No.	Name	Lenze	Selection			
C0014 <small>ENTER</small>	Operating mode	2	2	V/f characteristic control $V \sim f$ (Linear characteristic with constant V_{\min} boost)	<ul style="list-style-type: none"> Commissioning without motor parameter identification possible Benefit of identification with C0148: <ul style="list-style-type: none"> – Improved smooth running at low speed – V/f rated frequency (C0015) and slip (C0021) are calculated and stored. They do not have to be entered 	
			3	V/f characteristic control $V \sim f^2$ (Square-law characteristic with constant V_{\min} boost)		
			4	Vector control		
			5	Sensorless torque control with speed limitation <ul style="list-style-type: none"> Torque setpoint via C0412/6 Speed limitation via setpoint 1 (NSET1-N1), if C0412/1 is assigned, if not via max. frequency (C0011) 		
C0015 <small>SEr</small>	V/f rated frequency	50.00	7.50	{0.02 Hz}	960.00	<ul style="list-style-type: none"> C0015 is calculated and stored under C0148 when the motor parameters are identified Settings applies to all possible mains voltages
C0016 <small>SEr</small>	U_{\min} boost	→	0.00	{0.01 %}	40.00	→ Depending on the controller Setting applies to all mains voltages permitted
C0034* <small>ENTER</small> <small>SEr</small>	Setpoint selection range Standard-I/O (X3/8)		0	0	Unipolar voltage 0 ... 5 V / 0 ... 10 V Current 0 ... 20 mA	Observe the switch position of the function module!
			1	1	Current 4 ... 20 mA	
			2	2	Bipolar voltage -10 V ... +10 V	<ul style="list-style-type: none"> Minimum output frequency (C0010) not effective Individual adjustment of offset and gain
			3	3	Current 4 ... 20 mA open-circuit monitored	TRIP Sd5, if $I < 4$ mA Changing the direction of rotation is only possible with a digital signal.

Code		Possible settings			IMPORTANT	
No.	Name	Lenze	Selection			
C0034* ENTER (A) uSEr	Setpoint selection range Application I/O				Observe the jumper setting of the function module!	
1	X3/1U, X3/1I	0	0	Unipolar voltage 0 ... 5 V / 0 ... 10 V		
2	X3/2U, X3/2I		1	Bipolar voltage -10 V ... +10 V	Minimum output frequency (C0010) not effective	
			2	Current 0 ... 20 mA		
			3	Current 4 ... 20 mA	Changing the direction of rotation is only possible with a digital signal.	
			4	Current 4 ... 20 mA open-circuit monitored	Changing the direction of rotation is only possible with a digital signal. TRIP Sd5 if I < 4 mA	
C0037	JOG1	20.00	-650.00	{0.02 Hz}	650.00	JOG = fixed setpoint
C0038	JOG2	30.00	-650.00	{0.02 Hz}	650.00	Additional fixed setpoints ⇔ C0440
C0039	JOG3	40.00	-650.00	{0.02 Hz}	650.00	
C0087	Rated motor speed	→	300	{1 rpm}	16000	→ Depending on the controller
C0088	Rated motor current	→	0.0	{0.1 A}	650.0	→ Depending on the controller 0.0 ... 2.0 x rated output current of the controller
C0089	Rated motor frequency	50	10	{1 Hz}	960	
C0090	Rated motor voltage	→	50	{1 V}	500	→ 230 V with 230 V controllers, 400 V with 400 V controllers
C0091	Motor cos φ	→	0.40	{0.1}	1.0	→ Depending on the controller
C0119 ENTER	Configuration of motor temperature monitoring (PTC input) / earth fault detection	0	0	PTC input not active	Earth fault detection active	<ul style="list-style-type: none"> Signal output configuration under C0415 If several parameter sets are used, the monitoring must be separately adjusted for each parameter set. Deactivate the earth fault detection, if it has been activated unintentionally. If the earth fault detection is active, the motor starts after controller enable with a delay of approx. 40 ms.
			1	PTC input active, TRIP set		
			2	PTC input active, Warning set		
			3	PTC input not active	Earth fault detection inactive	
			4	PTC input active, TRIP set		
			5	PTC input active, Warning set		

The most important codes for commissioning

Code		Possible settings			IMPORTANT	
No.	Name	Lenze	Selection			
C0140*	Additive frequency setpoint (NSET1-NADD)	0.00	-650.00	{0.02 Hz}	650.00	<ul style="list-style-type: none"> Selection via function [Set] of the keypad or the parameter channel Is added to main setpoint Value is stored when switching the mains or removing the keypad
C0148* STOP	Motor parameter identification	0	0	Ready		<p>Only when the motor is cold!</p> <ol style="list-style-type: none"> Inhibit controller, wait until drive is in standstill Enter the correct motor data under C0087, C0088, C0089, C0090, C0091 (see motor nameplate). C0148 = set 1 by [ENTER] Enable controller The identification <ul style="list-style-type: none"> starts, [IMP] is off takes approx. 30 s is completed when [IMP] is on again Controller inhibit
C0517* ENTER	User menu					<ul style="list-style-type: none"> After mains switching or when using the function [Disp] the code from C0517/1 will be displayed. In Lenze setting, the user menu contains the most important codes for starting-up the control mode "V/f characteristic control with linear characteristic" When the password protection is activated, only the codes entered under C0517 are freely accessible. Enter the required code numbers in the subcodes. <p>Codes, which are only active when being used together with an Application-I/O, cannot be entered!</p>
1	Memory 1	50	C0050	Output frequency (MCTRL1-NOUT)		
2	Memory 2	34	C0034	Analog setpoint selection range		
3	Memory 3	7	C0007	Fixed configuration - digital input signals		
4	Memory 4	10	C0010	Minimum output frequency		
5	Memory 5	11	C0011	Maximum output frequency		
6	Memory 6	12	C0012	Acceleration time main setpoint		
7	Memory 7	13	C0013	Deceleration time main setpoint		
8	Memory 8	15	C0015	V/f rated frequency		
9	Memory 9	16	C0016	U _{min} boost		
10	Memory 10	2	C0002	Parameter set transfer		

Fault	Cause	Remedy
Motor does not rotate	DC-bus voltage too low (Red LED is blinking every 0.4 s; keypad display <i>LL</i>)	Check mains voltage
	Controller inhibited (Green LED is blinking, keypad display: IMP)	Remove the controller inhibit, controller inhibit can be set through several sources
	Automatic start inhibited (C0142 = 0 or 2)	LOW-HIGH edge at X3/28 If necessary, correct start condition (C0142)
	DC injection brake (DCB) active	Deactivate DC injection brake
	Mechanical motor brake is not released	Manual or electrical release of mechanical motor brake
	Quick stop (QSP) active (keypad display: IMP)	Remove quick stop
	Setpoint = 0	Select setpoint
	JOG setpoint activated and JOG frequency = 0	Select JOG setpoint (C0037 ... C0039)
	Active fault	Eliminate fault
	Wrong parameter set active	Change to correct parameter set via terminal
	Operating mode C0014 = -4-, -5-, but no motor parameter identification executed	Motor parameter identification (C0148)
	Under C0410 several functions which exclude each other, are assigned to the same signal source.	Correct configuration in C0410
	Use of internal voltage source X3/20 for function modules Standard I/O, INTERBUS, PROFIBUS-DP or LECOM-B (RS485): Jumper between X3/7 and X3/39 is missing	Jumper terminals
Motor does not rotate smoothly	Defective motor cable	Check motor cable
	Maximum current set too low (C0022, C0023)	Adapt settings to the application
	Motor underexcited or overexcited	Check parameter setting (C0015, C0016, C0014)
	C0084, C0087, C0088, C0089, C0090, C0091 and/or C0092 are not adapted to the motor data	Manual adaptation or identification of motor parameters (C0148)
Current consumption of motor too high	Setting of C0016 too high	Correct setting
	Setting of C0015 too low	Correct setting
	C0084, C0087, C0088, C0089, C0090, C0091 and/or C0092 are not adapted to the motor data	Manual adaptation or identification of motor parameters (C0148)
Motor rotates, setpoints are "0"	With the function Set of the keypad a setpoint has been selected.	Set the setpoint to "0" via C0140 = 0

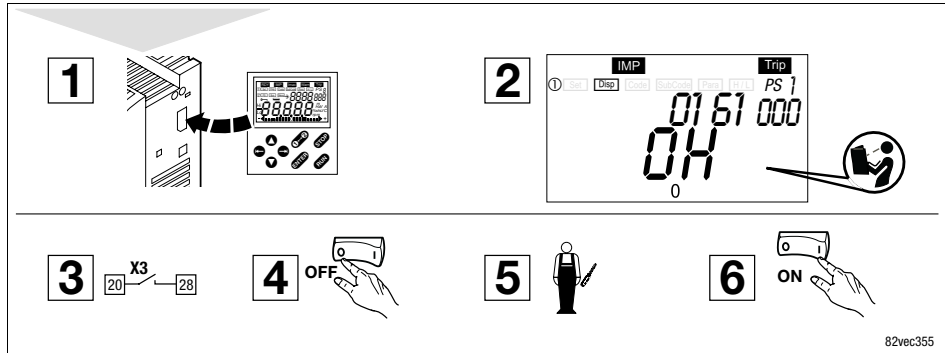
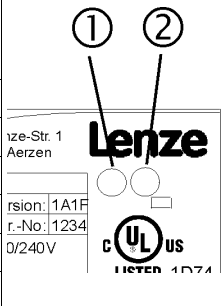
Fault	Cause	Remedy
Motor parameter identification stops with error LP1	Motor too small compared with rated device power	
	DC injection brake active via terminal	
Unacceptable drive response with vector control	various	Optimise vector control (□ 127)
Torque dip in the field weakening range	various	Contact Lenze
Stalling of the motor when operating in the field weakening range		

8 Fault detection and elimination

Fault messages

LED's at the drive controller (status display)

LED		Operating status
red ①	green ②	
off	on	Controller enabled
on	on	Mains switched on and automatic start inhibited
off	slowly blinking	Controller inhibited
off	fast blinking	Motor parameter identification
fast blinking	off	Undervoltage switch-off
slowly blinking	off	Fault active, check under C0161



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Reset the drive controller in this way if a fault occurs (TRIP reset):

1. Plug the keypad onto the AIF interface during operation.
2. Read and take down fault message on the keypad display.
3. Inhibit controller.
4. Disconnect controller from the mains.
5. Carry out a fault analysis and eliminate the faults.
6. Restart the controller.

Error messages at the keypad or in the parameter setting program Global Drive Control

Keypad	PC ¹⁾	Error	Cause	Remedy
nDEr	0	No fault	-	-
ccr Trip	71	System fault	Strong interferences on control cables Ground or earth loops in the wiring	Shield control cables
cE0 Trip	61	Communication fault to AIF (configurable in C0126)	Faulty transmission of control commands via AIF	Insert the communication module into the hand terminal
cE1 Trip	62	Communication fault to CAN-IN1 with Sync control	CAN-IN1 object receives faulty data or communication is interrupted	<ul style="list-style-type: none"> ● Plug-in connection - bus module ↔ ● Check FIF ● Check transmitter ● Increase monitoring time under C0357/1 if necessary
cE2 Trip	63	Communication error to CAN-IN2	CAN-IN2 object receives faulty data or communication is interrupted	<ul style="list-style-type: none"> ● Plug-in connection - bus module ↔ ● Check FIF ● Check transmitter ● Increase monitoring time under C0357/2 if necessary
cE3 Trip	64	Communication error to CAN-IN1 with event or time control	CAN-IN1 object receives faulty data or communication is interrupted	<ul style="list-style-type: none"> ● Plug-in connection - bus module ↔ ● Check FIF ● Check transmitter ● Increase monitoring time under C0357/3 if necessary
cE4 Trip	65	BUS-OFF (many communication faults occurred)	Controller has received too many incorrect telegrams via the system bus and has been disconnected	<ul style="list-style-type: none"> ● Check whether bus terminator available ● Check screen contact of the cables ● Check PE connection ● Check bus load, if necessary, reduce the baud rate
cE5 Trip	66	CAN Time-Out (configurable in C0126)	For remote parameter setting via system bus (C0370): Slave does not answer. Communication monitoring time exceeded. For operation with module in FIF: Internal fault	<ul style="list-style-type: none"> ● Check system bus wiring ● Check system bus configuration Contact Lenze
cE6 Trip	67	Function module system bus (CAN) on FIF has set "Warning" or "BUS-OFF" (configurable in C0126)	CAN controller sets "Warning" or "BUS OFF"	<ul style="list-style-type: none"> ● Check whether bus terminator available ● Check screen contact of the cables ● Check PE connection ● Check bus load, if necessary, reduce the baud rate

Keypad	PC ¹⁾	Error	Cause	Remedy
cE7 Trip	68	Communication fault during remote parameter setting via system bus (C0370) (configurable in C0126)	Participant does respond or is not available	<ul style="list-style-type: none"> • Check whether bus terminator available • Check screen contact of the cables • Check PE connection • Check bus load, if necessary, reduce the baud rate
EEr Trip	91	External fault (TRIP-SET)	A digital input assigned to the TRIP-Set function has been activated.	Check external encoder
H05 Trip	105	Internal fault		Contact Lenze
IdI Trip	140	Faulty parameter identification	Motor not connected	Connect motor
LPI Trip	32	Fault in motor phase (is displayed if C0597 = 1)	<ul style="list-style-type: none"> • Failure of one/several motor phase(s) • Motor current too low 	<ul style="list-style-type: none"> • Check motor cables • Check V_{\min} boost • Connect motor to corresponding power or adapt the motor under C0599.
LPI	182	Fault in motor phase (is displayed if C0597 = 2)		
LU IMP	-	DC-bus undervoltage	Mains voltage too low	Check mains voltage
			DC-bus voltage too low	Check supply module
			400 V controller connected to 240 V mains	Connect controller to the appropriate mains voltage
DC1 Trip	11	Short circuit	Short circuit	<ul style="list-style-type: none"> • Find reason for short circuit; check motor cable • Check braking resistor and cable for braking resistor
			Excessive capacitive charging current of the motor cable	Use shorter motor cables with lower charging current
DC2 Trip	12	Earth fault	Grounded motor phase	Check motor, check motor cable
			Excessive capacitive charging current of the motor cable	Use shorter motor cables with lower charging current
				Deactivate earth-fault detection for testing purposes
DC3 Trip	13	Overload inverter during acceleration or short circuit	Acceleration time too short (C0012)	<ul style="list-style-type: none"> • Increase acceleration time • Check drive selection
			Defective motor cable	Check wiring
			Interturn fault in the motor	Check motor
DC4 Trip	14	Overload controller during deceleration	Deceleration time set too short (C0013)	<ul style="list-style-type: none"> • Increase deceleration time • Check size of external brake resistor
DC5 Trip	15	Controller overload in stationary operation	Frequent and long overload	Check drive selection

Keypad	PC ¹⁾	Error	Cause	Remedy
OC6 Trip	16	Motor overload ($I^2 \times t$ overload)	Motor is thermally overloaded, for instance, because of <ul style="list-style-type: none"> impermissible continuous current frequent or too long acceleration processes 	<ul style="list-style-type: none"> Check drive selection Check setting of C0120
OH Trip	50	Heat sink temperature > +85 °C	Ambient temperature too high	Allow controller to cool and ensure better ventilation
OH Warn	-	Heat sink temperature > +80 °C	Heat sink very dirty Impermissibly high currents or too frequent and too long acceleration	Clean heat sink <ul style="list-style-type: none"> Check drive selection Check load, if necessary, replace defective bearings
OHS Trip	53	PTC monitoring (TRIP) (is displayed if C0119 = 1 or 4)	Motor too hot because of excessive currents or frequent and too long accelerations PTC not connected	Check drive selection Connect PTC or switch off monitoring
OH4 Trip	54	Controller overtemperature	Controller too hot inside	<ul style="list-style-type: none"> Reduce controller load Improve cooling Check fan in the controller
OHS1	203	PTC monitoring (is displayed if C0119 = 2 or 5)	Motor too hot because of excessive currents or frequent and too long accelerations PTC not connected	Check drive selection Connect PTC or switch off monitoring
OU IMP	-	DC-bus overvoltage	Mains voltage too high Braking operation Earth leakage on the motor side	Check voltage supply <ul style="list-style-type: none"> Prolong deceleration times. Operation with external brake resistor: <ul style="list-style-type: none"> Check dimensioning, connection and cable of the brake resistor. Increase the deceleration times Check motor cable and motor for earth fault (disconnect motor from inverter)

8

Fault detection and elimination**Fault messages**

Keypad	PC ¹⁾	Error	Cause	Remedy
<i>P_r</i> Trip	75	Faulty parameter transfer when using the keypad	All parameter sets are defective	It is absolutely necessary to repeat the data transfer or load the Lenze setting before enabling the controller.
<i>P_{r-1}</i> Trip	72	Wrong PAR1 transfer when using the keypad.	PAR1 is defective.	
<i>P_{r-2}</i> Trip	73	Wrong PAR2 transfer when using the keypad.	PAR2 is defective.	
<i>P_{r-3}</i> Trip	77	Wrong PAR3 transfer when using the keypad.	PAR3 is defective	
<i>P_{r-4}</i> Trip	78	Wrong PAR4 transfer when using the keypad.	PAR4 is defective	
<i>P_{r-5}</i> Trip	79	Internal fault		Contact Lenze
<i>P_{t-5}</i> Trip	81	Time fault during parameter set transfer	Data flow from keypad or PC interrupted, e. g. keypad was disconnected during transfer	It is absolutely necessary to repeat the data transfer or load the Lenze setting before enabling the controller.
<i>r5t</i> Trip	76	Faulty auto-TRIP reset	More than 8 fault messages in 10 minutes	Depends on the error message
<i>Sd5</i> Trip	85	Wire breakage analog input 1	Current at analog input < 4 mA at setpoint range 4 ... 20 mA	Close circuit at analog input
<i>Sd7</i> Trip	87	Wire breakage analog input 2		

¹⁾ LECOM-fault number, display in parameter setting program Global Drive Control (GDC)

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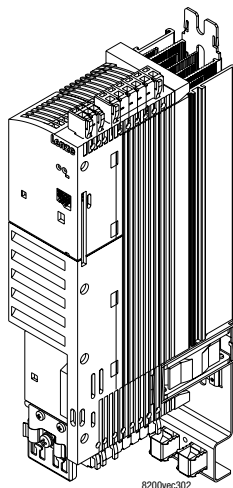
Montageanleitung

GB

Mounting Instructions

F

Instructions de montage



Global Drive

8200 vector

0.25 kW ... 2.2 kW



Lesen Sie zuerst die Montageanleitung, bevor Sie mit den Arbeiten beginnen!

Beachten Sie die enthaltenen Sicherheitshinweise.

Das Systemhandbuch mit ausführlicher Information zum Frequenzumrichter 8200 vector können Sie bei Ihrem Lenze-Vertriebspartner bestellen.

Read the Mounting Instructions before you start working!

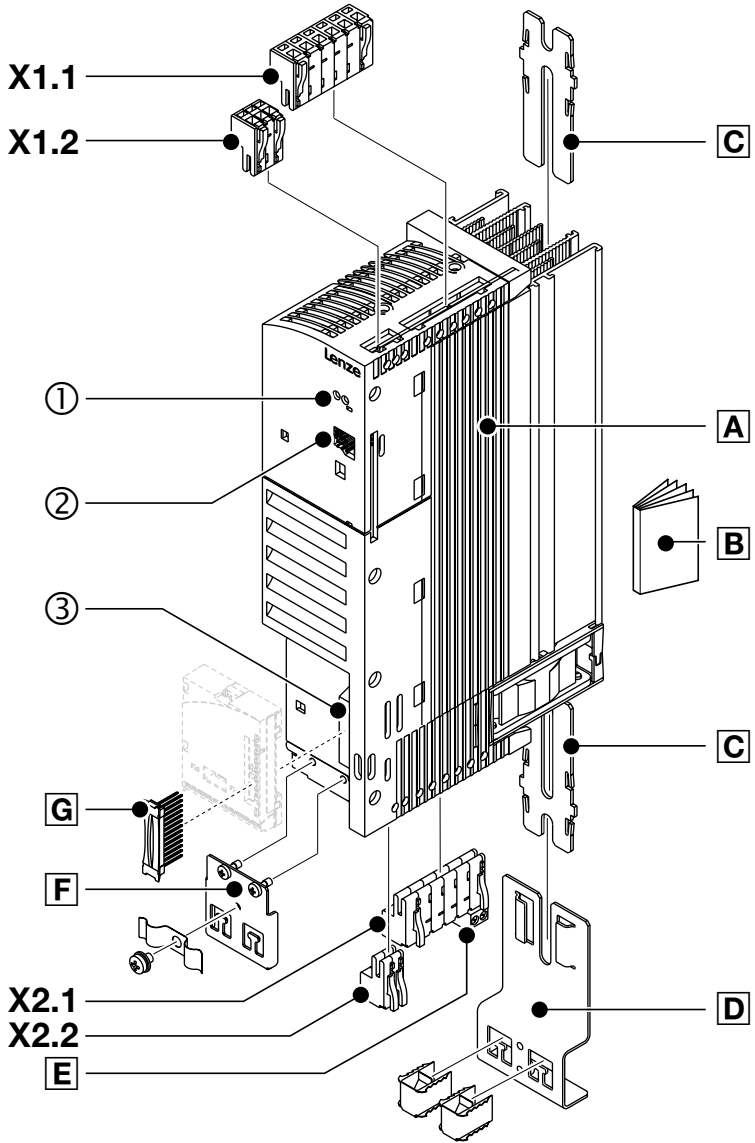
Please observe all safety information given.

The manual with detailed information about the 8200 vector can be ordered directly from Lenze or Lenze representatives.

Lire attentivement les instructions de montage avant toute opération !

Respecter les consignes de sécurité.

Le manuel comprenant une description complète du convertisseur de fréquence 8200 vector peut être commandé auprès de votre agence Lenze.



Items supplied

Position	Description	
A	8200 vector frequency inverter	
B	Mounting Instructions and Getting Started	
C	Holder for standard mounting	📖 93
D	EMC shield sheet with shield clips for the motor cable and the supply for the motor temperature monitoring	📖 95
E	2-pole terminal strip for motor PE and motor shield at X2.1	📖 95
F	EMC shield sheet with mounting screws and shield clamps for shielded control cables	📖 95
G	2*13-pole plug connector for function modules at FIF interface	📖 106
X1.1	Terminal strip for mains connection, DC-power supply (3 - 7-pole according to controller type)	📖 97 📖 101
X1.2	Terminal strip of relay output	📖 105
X2.1	Terminal strip for motor connection, connection brake resistor (option)	
X2.2	Terminal strip for PTC connection or thermal contact (NC contact) of the motor	📖 104

Interfaces and displays

Position	Description	Function	
①	2 LEDs (red, green)	Status display	📖 149
②	AIF interface (Automation interface)	Plug-in station for communication modules keypad E82ZBC, keypad XT EMZ9371BC Fieldbus modules type 21XX, e. g. INTERBUS 2111, PROFIBUS-DP 2133, ...	📖 110
③	FIF interface (Function interface)	With cover for operation with function module or plug-in station for function modules Standard I/O E82ZAFSC Application I/O E82ZAFAC Fieldbus function modules type E82ZAFXC, e. g. INTERBUS E82ZAFIC, PROFIBUS-DP E82ZAFPC, ...	📖 106

This documentation is only valid for 8200 vector frequency inverters as of version:

①
②
③

E82xV
xxx
K
x
C
xxx
3x
3x

Type

E = Built-in unit

D = Built-in unit in push-through technology

C = Built-in unit in Cold Plate technology

Power

(e. g. 152 = $15 \times 10^2 \text{ W} = 1.5 \text{ kW}$)

(e. g. 113 = $11 \times 10^3 \text{ W} = 11 \text{ kW}$)

Voltage class

2 = 230 V

4 = 400 V/500 V

Controller generation

Version, variant

0xx = EMC filter integrated

1xx = for IT systems (15 ... 90 kW)

2xx = Without EMC filter

x0x = Without function "Safe standstill"

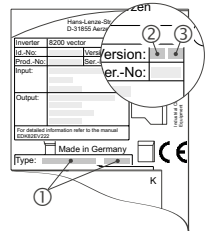
x4x = with function "Safe standstill" (3 ... 90 kW)

xx0 = Not coated

xx1 = Coated

Hardware version

Software version





Note!

Current documentation and software updates for Lenze products can be found on the internet in the "Downloads" area under

<http://www.Lenze.com>



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Safety and application notes for Lenze controllers

(in conformity with Low-Voltage Directive 73/23/EEC)

General

Lenze controllers (frequency inverters, servo inverters, DC controllers) can include live and rotating parts - depending on their type of protection - during operation. Surfaces can be hot.

Non-authorized removal of the required cover, inappropriate use, incorrect installation or operation, creates the risk of severe injury to persons or damage to material assets.

For more detailed information please see the documentation.

All operations concerning transport, installation, and commissioning as well as maintenance must be carried out by qualified, skilled personnel (IEC 364 and CENELEC HD 384 or DIN VDE 0100 and IEC report 664 or DIN VDE 0110 and national regulations for the prevention of accidents must be observed).

According to this basic safety information qualified skilled personnel are persons who are familiar with the installation, assembly, commissioning and operation of the product and who have the qualifications necessary for their occupation.

Application as directed

Drive controllers are components which are designed for installation in electrical systems or machinery. They are not to be used as appliances. They are intended exclusively for professional and commercial purposes according to EN 61000-3-2. The documentation includes information on compliance with the EN 61000-3-2.

When installing the drive controllers in machines, commissioning (i.e. starting of operation as directed) is prohibited until it is proven that the machine complies with the regulations of the EC Directive 98/37/EC (Machinery Directive); EN 60204 must be observed.

Commissioning (i.e. starting of operation as directed) is only allowed when there is compliance with the EMC Directive (89/336/EEC).

The drive controllers meet the requirements of the Low Voltage Directive 73/23/EEC. The harmonised standards of the series EN 50178/DIN VDE 0160 apply to the controllers.

The technical data and information on the connection conditions must be obtained from the nameplate and the documentation. They must be observed in any case.

Warning: The availability of controllers is restricted according to EN 61800-3. These products can cause radio interference in residential areas. In this case, special measures can be necessary.

Transport, storage

Please observe the notes on transport, storage and appropriate handling.

Observe the climatic conditions according to EN 50178.

Installation

The controllers must be installed and cooled according to the regulation and instructions given in the corresponding documentation.

Ensure proper handling and avoid mechanical stress. Do not bend any components and do not change any insulation distances during transport or handling. Do not touch any electronic components and contacts.

Controllers contain electrostatically sensitive components, which can easily be damaged by inappropriate handling. Do not damage or destroy any electrical components since this might endanger your health!

Electrical connection

When working on live drive controllers, the applicable national regulations for the prevention of accidents (e.g. VBG 4) must be observed.

The electrical installation must be carried out according to the appropriate regulations (e.g. cable cross-sections, fuses, PE connection). Additional information can be obtained from the documentation.

The documentation contains information about installation in compliance with EMC (shielding, grounding, filters and cables). These notes must also be observed for CE-marked controllers. The manufacturer of the system or machine is responsible for the compliance with the required limit values demanded by the EMC legislation.

Operation

Systems including controllers must be equipped with additional monitoring and protection devices according to the corresponding standards (e.g. technical equipment, regulations for prevention of accidents, etc.). If necessary, adapt the controllers to your application. Please observe the corresponding information given in the Instructions.

After the controller has been disconnected from the supply voltage, live components and power connection must not be touched immediately since capacitors could be charged. Please observe the corresponding notes on the controller.

All covers and doors must be closed during operation.

Information for UL approved systems with integrated controllers: UL warnings are notes which apply to UL systems. The documentation contains special information about UL.

Safe standstill

Variant V004 of the controller series 9300 and 9300 vector, variante x4x of the controller series 8200 vector and axis controller ECSxAxxx support the function "Safe standstill", protection against unintended start, according to the requirements of Appendix I, No. 1.2.7 of the EC Directive "Machinery" 98/37/EG, DIN EN 954-1 category 3 and DIN EN 1037. It is absolutely necessary to observe the information about the function "Safe standstill" in the corresponding documentation and instructions.

Maintenance and servicing

Please observe the information given in the documentation.

The product-specific safety and application notes in these instructions must also be observed!

Protection of persons

- Before working on the controller check that no voltage is applied to the power terminals, the relay output and the pins of the FIF interface,
 - because the power terminals U, V, W, +UG, -UG, BR1 and BR2 remain live for at least 3 minutes after mains switch-off.
 - because the power terminals L1, L2, L3; U, V, W, +UG, -UG, BR1 and BR2 remain live when the motor is stopped.
 - because the relay outputs K11, K12, K14 can remain live when the controller is disconnected from the mains.
- If you use the non-fail safe function "Selection of direction of rotation" via the digital signal DCTRL1-CW/CCW (C0007 = 0 ... 13, C0410/3 ≠ 255):
 - In the event of an open circuit or failure of the control voltage, the drive can change its direction of rotation.
- If you use the function "Flying-restart circuit" (C0142 = 2, 3) with machines with a low moment of inertia and a minimum friction:
 - After controller enable in standstill, the motor can start for a short time or change its direction of rotation for a short time.
- The heatsink of the controller has an operating temperature of > 80°C:
 - Direct skin contact with the heatsink results in burnings.

Controller protection

- All pluggable connection terminals must only be connected or disconnected when no voltage is applied!
- **Cyclic** connection and disconnection of the supply voltage can overload and destroy the input current limitation of the controller:
 - In case of cyclic mains switching over a longer period of time three minutes have to pass between two starting operations!

Motor protection

- Depending on the controller settings, the connected motor can be overheated:
 - For instance, longer DC-braking operations.
 - Longer operation of self-ventilated motors at low speed.

Controller/system protection

- Drives can reach dangerous overspeeds (e.g. setting of inappropriately high field frequencies):
 - The controllers do not offer any protection against these operating conditions. For this, use additional components.
- **Contactors in the motor cable** Switching with inhibited controller only.
If contactors in the motor cable are switched with the controller enabled,
 - monitoring functions of the controller can be activated.
 - the controller can be destroyed under unfavourable operating conditions.



Warnings!

- The device has no overspeed protection.
- Must be provided with external or remote overload protection.
- Suitable for use on a circuit capable of delivering not more than 5000 rms symmetrical amperes, 240 V maximum (240 V devices) or 500 V maximum (400/500 V devices) resp.
- Use 60/75 °C or 75 °C copper wire only.
- Shall be installed in a pollution degree 2 macro-environment.

Layout of safety instructions

All safety instructions given in these Instructions have got the same structure:

Pictograph (indicates the type of danger)



Danger! (indicates the degree of danger)

Note (describes the danger and explains how to avoid it)

Pictograph	Signal word		
		Meaning	Consequences if disregarded
 Dangerous electrical voltage	Danger!	Impending danger for persons	Death or most severe injuries
	Warning!	Possible, very dangerous situation for persons	Death or most severe injuries
	Caution!	Possible, dangerous situation for persons	Injuries
 General danger			
	Stop!	Possible material damage	Damage of the drive system or its surroundings
	Note!	Useful tip If you observe it, handling of the drive system will be easier.	

Standards and application conditions

Conformity	CE	Low-Voltage Directive (73/23/EEC)
Approvals	UL 508C	Underwriter Laboratories (File-No. E132659) Power Conversion Equipment
Max. permissible motor cable length	For rated mains voltage and chopper frequency of 8 kHz without additional output filters	
shielded	50 m	For compliance with EMC regulations, the permissible cable lengths must be changed
unshielded	100 m	
Vibration resistance	Acceleration resistance up to 0.7g (Germanischer Lloyd, general conditions)	
Climatic conditions	Class 3K3 to EN 50178 (without condensation, average relative humidity 85 %)	
Degree of pollution	VDE 0110 part 2 pollution degree 2	
Packaging (DIN 4180)	Dust packaging	
Permissible temperature ranges		
Transport	-25 °C ... +70 °C	
storage	-25 °C ... +60 °C	
operation	-10 °C ... +55 °C	above +40 °C the rated output current is to be reduced by 2,5 %/°C
Permissible installation height	0 ... 4000 m amsl	above 1000 m amsl the rated output current is to be reduced by 5 %/1000 m
Mounting positions	vertical	
Free space		
above/below	≥100 mm	
to the sides	Side-by-side mounting with a distance of 3 mm	
DC group drives	possible, except E82EV251K2C and E82EV371K2C	

General technical data

EMC	Compliance with EN 61800-3/A11	
Noise emission	Compliance with limit value classes A and B to EN 55011	
	E82EVxxxKxC0xx	without additional measures
	E82EVxxxKxC2xx	by means of external filters

Noise immunity	Requirements to EN 61800-3 incl. A11		
	Requirements	Standard	
	ESD	EN 61000-4-2	
	high frequency in cables	EN 61000-4-6	
	RF interference (enclosure)	EN 61000-4-3	
	Burst	EN 61000-4-4	
Surge (Surge on mains cable)	EN 61000-4-5	3, i.e. 8 kV with air discharge, 6 kV with contact discharge	
		150 kHz ... 80 MHz, 10 V/m 80 % AM (1kHz)	
		80 MHz ... 1000 MHz, 10 V/m 80 % AM (1kHz)	
		3/4, i. e. 2 kV/5 kHz	
		3, i.e. 1,2/50 µs, 1 kV phase-phase, 2 kV phase-PE	
Insulation resistance	Overvoltage category III acc. to VDE 0110		
Discharge current to PE (to EN 50178)	> 3.5 mA, i. e. fixed installation and double PE connection are required.		
Enclosure	IP20		
Protection measures against	Short circuit, earth fault (earth-fault protected during operation, limited earth-fault protection during power up), motor stalling, motor overtemperature (input for PTC or thermal contact, I ² t monitoring)		
Insulation of control circuits	Safe mains isolation: Double/reinforced insulation to EN 50178		
permissible mains types	Operation at TT systems, TN systems or systems with grounded star point without additional measures		
	Operation at IT systems is only possible with a variant (in preparation)		
Permissible mains voltage ranges	Frequency range		
		45 Hz - 0 % ... 65 Hz + 0 %	
			DC power supply
	1/N/PE AC 230/240 V	180 V - 0 % ... 264 V + 0 %	DC 140 V - 0 % ... 370 V + 0 %
	2/N/PE AC 230/240 V		
	3/PE AC 230/240 V	100 V - 0 % ... 264 V + 0 %	DC 140 V - 0 % ... 370 V + 0 %
3/PE AC 400 V	320 V - 0 % ... 440 V + 0 %	DC 450 V - 0 % ... 625 V + 0 %	
3/PE AC 500 V	320 V - 0 % ... 550 V + 0 %	DC 450 V - 0 % ... 775 V + 0 %	
Operation in public supply networks	Limitation of harmonic currents according to EN 61000-3-2		
	Total power connected to the mains	Compliance with the requirements ¹⁾	
	< 0.5 kW	With mains choke	
	0.5 kW ... 1 kW	with active filter (in preparation)	
	> 1 kW	without additional measures	

¹⁾ The additional measures described only ensure that the controllers meet the requirements of the EN 61000-3-2. The machine/system manufacturer is responsible for the compliance with the regulations of the machine!

Operation with rated power (normal operation)

Type	Power [kW]	Rated mains voltage	Mains current [A]		Output current [A] ¹⁾		Weight [kg]
			①	②	I _r	I _{max} (60 s) ²⁾	
E82EV251K2C ³⁾	0.25	1/N/PE AC 230/240 V 2/PE AC 230/240 V 50 Hz DC 325 V	3.4	3.0	1.7	2.5	0.8
E82EV371K2C ³⁾	0.37		5.0	4.2	2.4	3.6	
E82EV551K2C	0.55		6.0	5.6	3.0	4.5	1.2
E82EV751K2C	0.75		9.0	7.5	4.0	6.0	
E82EV152K2C	1.5		15.0	12.5	7.0	10.5	1.6
E82EV222K2C	2.2	-	18.0	9.5	14.2		
E82EV551K2C	0.55	3/PE AC 230/240 V 50 Hz DC 325 V	3.9	2.7	3.0	4.5	1.2
E82EV751K2C	0.75		5.2	3.6	4.0	6.0	
E82EV152K2C	1.5		9.1	6.3	7.0	10.5	1.6
E82EV222K2C	2.2		12.4	9.0	9.5	14.2	
E82EV551K4C	0.55		3/PE AC 400 V 50 Hz DC 565 V	2.5	2.0	1.8	2.7
E82EV751K4C	0.75	3.3		2.3	2.4	3.6	
E82EV152K4C	1.5	5.5		3.9	3.9	5.9	1.6
E82EV222K4C	2.2	7.3		5.1	5.6	8.4	
E82EV551K4C ⁴⁾	0.55	3/PE AC 500 V 50 Hz DC 710 V		2.0	1.4	1.4	2.7
E82EV751K4C ⁴⁾	0.75		2.6	1.8	1.9	3.6	
E82EV152K4C ⁴⁾	1.5		4.4	3.1	3.1	5.9	1.6
E82EV222K4C ⁴⁾	2.2		5.8	4.1	4.5	8.4	

① Without mains choke

② With mains choke

1) For rated mains voltage and chopper frequency of 8 kHz

2) Currents for periodic load change: 1 min overcurrent with I_{max} and 2 min basic load with 75 % I_{rx}

3) DC power supply not possible

4) For the variants of basic devices ...0xx with mains voltages of 484 V -0% ... 550 V +0%:
The operation is only permitted with a brake resistor.

Operation with increased rated power

Under the application conditions described here the controller can be operated in continuous operation with a motor of higher performance. The overload capacity is reduced to 120 %.

Typical applications are pumps with square-law load characteristic or blowers.



Note!

Operation with increased rated power is only permissible

- with the drive controllers mentioned
- within the mains voltage range mentioned
- with the chopper frequency mentioned
- with the prescribed fuses, cable cross-sections and mains chokes

Type	Power [kW]	Rated mains voltage	Mains current [A]		Output current [A] ¹⁾	
			①	②	I _r	I _{max} (60 s) ²⁾
E82EV251K2C ³⁾	0.25	1/N/PE AC 230/240 V 2/PE AC 230/240 V 50 Hz DC 325 V	4.1	3.6	2.0	2.5
E82EV371K2C ³⁾	0.37		Operation not possible			
E82EV551K2C	0.55		-	6.7	3.6	4.5
E82EV751K2C	0.75		-	9.0	4.8	6.0
E82EV152K2C	1.5		18	15	8.4	10.5
E82EV222K2C	2.2	Operation not possible				
E82EV551K2C	0.55	3/PE AC 230/240 V 50 Hz DC 325 V	-	3.3	3.6	4.5
E82EV751K2C	0.75		-	4.4	4.8	6.0
E82EV152K2C	1.5		10.4	7.6	8.4	10.5
E82EV222K2C	2.2		Operation not possible			
E82EV551K4C	0.55		2.9	2.4	2.2	2.7
E82EV751K4C	0.75	-	2.8	2.9	3.6	
E82EV152K4C	1.5	Operation not possible				
E82EV222K4C	2.2	-	6.1	6.7	8.4	

① Without mains choke

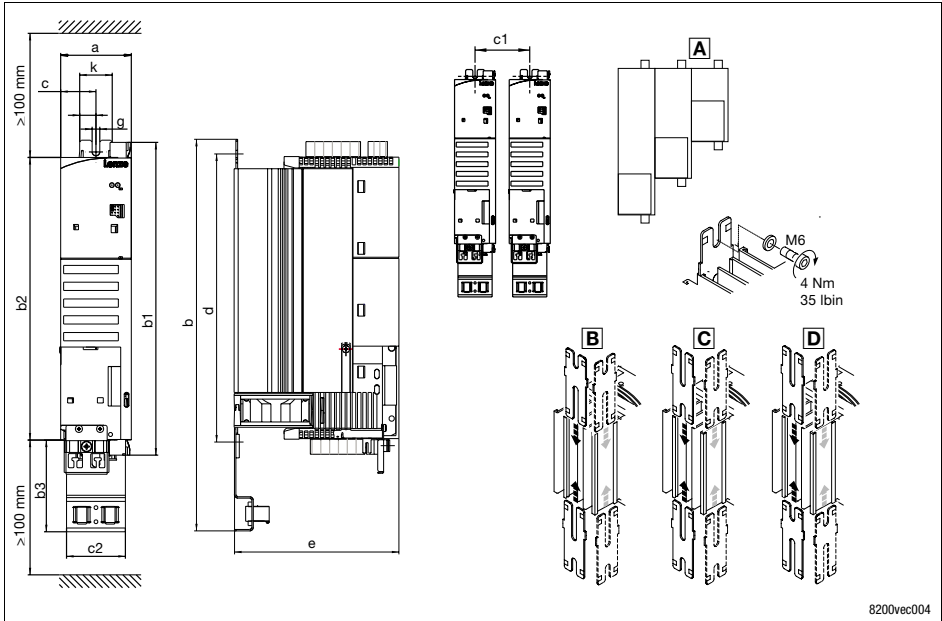
② With mains choke

1) For rated mains voltage and chopper frequency 2 kHz or 4 kHz

2) Currents for periodic load change: 1 min overcurrent with I_{max} and 2 min basic load with 75 % I_r

3) DC power supply not possible

8200 vector 0.25 ... 2.2 kW



8200vec004

- A** Different sizes can only be mounted side-by-side when the smaller units are mounted to the right-hand-side of the bigger units!

Dimensions in mm	a	b			b1	b2	b3	c	c1	c2	d			e	g	k
		B	C	D							B	C	D			
E82EV251K2C E82EV371K2C	60	213	243	263	148	120	78	30	63	50	130...140	120...170	110...200	140	6.5	28
E82EV551KxC E82EV751KxC		273	303	323	208	180					190...200	180...230	170...260			
E82EV152KxC 1) E82EV222KxC 1)		333 359 2)	363	-	268	240					250...260 280...295 2)	240...290	-	140 162 2)	6.5	28

- 1) Lateral mounting only possible with swivel mounting unit E82ZJ001 (accessories)
2) with E82ZJ001

3

Electrical installation

Wiring of terminal strips

The enclosed terminal strips are tested according to the specifications of the

- DIN VDE 0627:1986-06 (partially)
- DIN EN 60999:1994-04 (partially)

Checked and tested are, for instance, mechanical, electrical and thermal load, vibration, damage of conductors, loose conductors, corrosion, ageing.

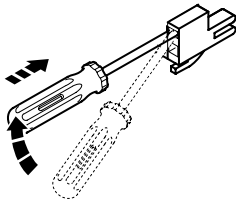


Stop!

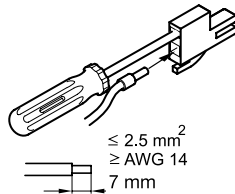
Proceed as follows to avoid damage of the contacts:

- Mount only when the controller is not connected to the mains.
- Wire the terminal strips before connecting them!
- Unused terminal strips must also be plugged in to protect the contacts.

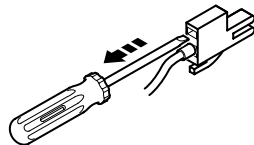
①



②



③



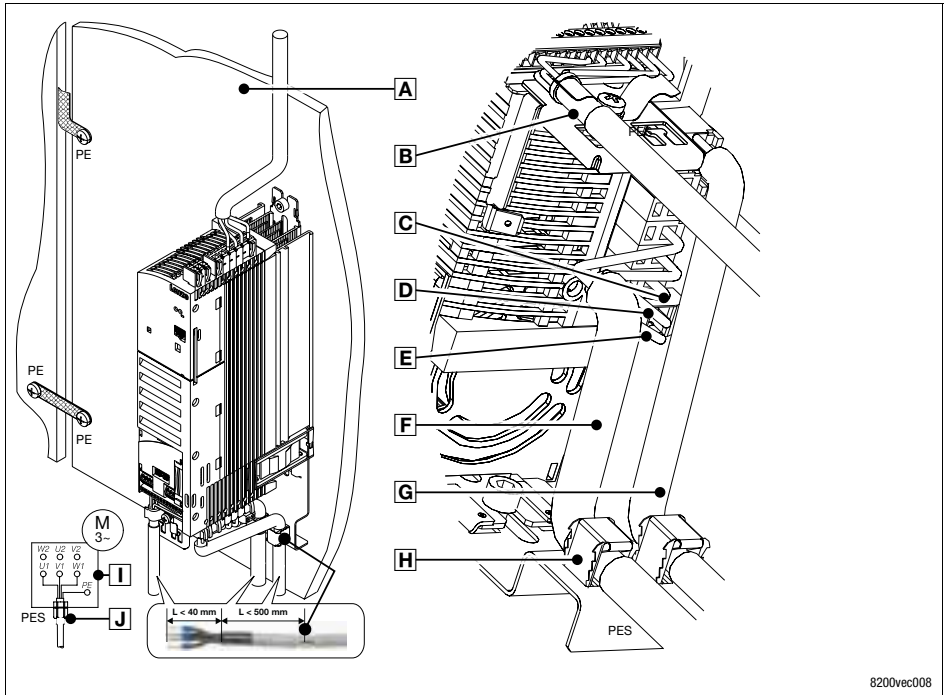
8200vec015



Note!

Wiring without wire end ferrules is always possible.

Installation according to EMC requirements (CE-typical drive system)



8200vec008


3

Electrical installation

Installation according to EMC requirements (CE-typical drive system)



Stop!

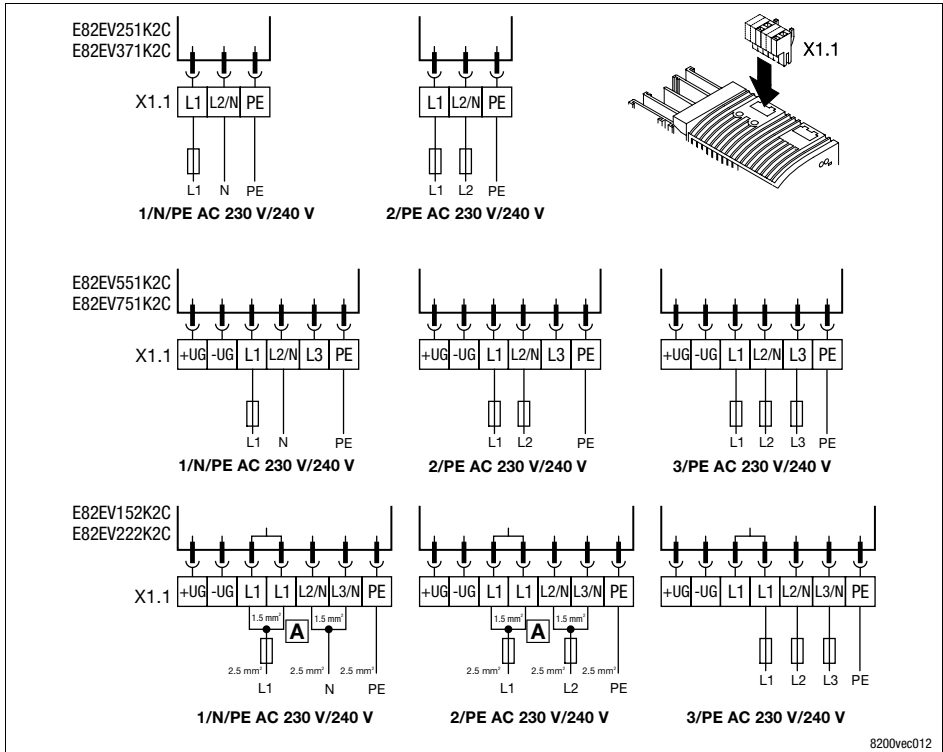
- Control cables and mains cables must be separated from the motor cable to avoid interferences.
- Control cable must always be shielded.
- We recommend to shield the supply cable for the PTC or thermal contact and route it separately from the motor cable.
- If the cores for motor connection and PTC or thermal contact are together in one cable with a common shield:
 - In order to reduce interference injections on the PTC cable, we recommend to install additionally the PTC module type E82ZPE.
- An optimum HF shield connection of the motor cable can be reached by using the terminal  for motor PE and motor shield.

A	Mounting plate with electrically conductive surface
B	Control cable to function module, connect the shielding to the EMC shield sheet (PES) with a surface as large as possible
C	2-pole terminal for motor PE and motor shield
D	PE of the motor cable
E	Shield of the motor cable
F	shielded motor cable, low.capacity (core/core up to 1,5 mm ² ≤ 75 pF/m; from 2,5 mm ² ≤ 100 pF/m; core/shield ≤ 150 pF/m)
G	shielded PTC cable or thermal contact cable
H	Connect cable shields to the EMC shield sheet (PES) with a surface as large as possible. Use enclosed clamps.
I	Star or delta connection as indicated on the motor nameplate
J	EMC-cable connector (not included in the delivery package)



Stop!

- Controller type E82EVxxxK **2C** must only be connected to a mains voltage of 1/N/PE AC 180 ... 264 V or 3/PE AC 100 ... 264 V. Higher mains voltages will destroy the controller!
- The discharge current to PE is > 3.5 mA. EN 50178 requires a fixed installation. Double PE connection required.



8200vec012

E82EV222K2C	Operation only with mains choke
A	Use two separate cables 1.5 mm ² to connect the terminals!
X1.1/+UG, X1.1/-UG	DC supply (DC-bus operation - see Operating Instructions)

Fuses and cable cross-sections (operation with rated power)

		Operation without mains choke					FI	
		Installation to EN 60204-1			Installation to UL 1)			
8200 vector		mains	①	②	L1, L2, L3, PE [mm ²]	①	L1, L2, L3, PE [AWG]	
Type	[kW]							
E82EV251K2C	0.25	1/N/PE AC	M10 A	C10 A	1.5	10 A	16	≥ 30 mA ²⁾
E82EV371K2C	0.37		M10 A	C10 A	1.5	10 A	16	
E82EV551K2C	0.55	2/PE AC	M10 A	B10 A	1.5	10 A	16	
E82EV751K2C	0.75	180 ... 264 V; 45 ... 65 Hz	M16 A	B16 A	2.5	15 A	14	
E82EV152K2C	1.5		M20 A	B20 A	2 x 1.5	20 A	2 x 16	
E82EV222K2C	2.2		Operation only with mains choke					
E82EV551K2C	0.55	3/PE AC 100 ... 264 V; 45 ... 65 Hz	M6 A	B6 A	1	5 A	18	≥ 30 mA ³⁾
E82EV751K2C	0.75		M10 A	B10 A	1.5	10 A	16	
E82EV152K2C	1.5		M16 A	B16 A	2.5	15 A	14	
E82EV222K2C	2.2		M16 A	B16 A	2.5	15 A	14	

		Operating with mains choke					FI	
		Installation to EN 60204-1			Installation to UL 1)			
8200 vector		mains	①	②	L1, L2, L3, PE [mm ²]	①	L1, L2, L3, PE [AWG]	
Type	[kW]							
E82EV251K2C	0.25	1/N/PE AC	M10 A	C10 A	1.5	10 A	16	≥ 30 mA ²⁾
E82EV371K2C	0.37		M10 A	C10 A	1.5	10 A	16	
E82EV551K2C	0.55	2/PE AC	M10 A	B10 A	1.5	10 A	16	
E82EV751K2C	0.75	180 ... 264 V; 45 ... 65 Hz	M10 A	B10 A	1.5	10 A	16	
E82EV152K2C	1.5		M16 A	B16 A	2 x 1.5	15 A	2 x 16	
E82EV222K2C	2.2		M20 A	B20 A	2 x 1.5	20 A	2 x 16	
E82EV551K2C	0.55	3/PE AC 100 ... 264 V; 45 ... 65 Hz	M6 A	B6 A	1	5 A	18	≥ 30 mA ³⁾
E82EV751K2C	0.75		M6 A	B6 A	1	5 A	18	
E82EV152K2C	1.5		M10 A	B10 A	1.5	10 A	16	
E82EV222K2C	2.2		M10 A	B10 A	1.5	10 A	16	

① Fuse

② E.I.c.b.

1) Use UL-approved cables, fuses and fuse holders only.

UL fuse: 240 V voltage, tripping characteristic "H", "K5" or "CC"

2) Pulse-current or universal-current sensitive earth leakage circuit breaker

3) All-current sensitive e.I.c.b.

Observe national and regional regulations (e. g. VDE 0113, EN 60204)

Fuses and cable cross-sections (operation with increased rated power)

			Operation without mains choke					FI
			Installation to EN 60204-1			Installation to UL 1)		
			①	②	L1, L2, L3, PE [mm ²]	①	L1, L2, L3, PE [AWG]	
8200 vector		mains						
Type	[kW]							
E82EV251K2C	0.25	1/N/PE AC 180 ... 264 V; 45 ... 65 Hz	M10 A	C10 A	1.5	10 A	16	
E82EV551K2C	0.55		Operation only with mains choke					≥ 30 mA ²⁾
E82EV751K2C	0.75		Operation only with mains choke					
E82EV152K2C	1.5		M20 A	B20 A	2 x 1.5	20 A	2 x 16	
E82EV551K2C	0.55	3/PE AC 100 ... 264 V; 45 ... 65 Hz	Operation only with mains choke					≥ 30 mA ³⁾
E82EV751K2C	0.75		Operation only with mains choke					
E82EV152K2C	1.5		M16 A	B16 A	2.5	15 A	14	

			Operating with mains choke					FI
			Installation to EN 60204-1			Installation to UL 1)		
			①	②	L1, L2, L3, PE [mm ²]	①	L1, L2, L3, PE [AWG]	
8200 vector		mains						
Type	[kW]							
E82EV251K2C	0.25	1/N/PE AC 180 ... 264 V; 45 ... 65 Hz	M10 A	C10 A	1.5	10 A	16	
E82EV551K2C	0.55		M10 A	B10 A	1.5	10 A	16	
E82EV751K2C	0.75		M10 A	B10 A	1.5	10 A	16	
E82EV152K2C	1.5		M16 A	B16 A	2 x 1.5	15 A	2 x 16	
E82EV551K2C	0.55	3/PE AC 100 ... 264 V; 45 ... 65 Hz	M6 A	B6 A	1	5 A	18	
E82EV751K2C	0.75		M10 A	B10 A	1.5	10 A	16	
E82EV152K2C	1.5		M10 A	B10 A	1.5	10 A	16	

① Fuse

② E.l.c.b.

1) Use UL-approved cables, fuses and fuse holders only.

UL fuse: 240 V voltage, tripping characteristic "H", "K5" or "CC"

2) Pulse-current or universal-current sensitive earth leakage circuit breaker

3) All-current sensitive e.l.c.b.

Observe national and regional regulations (e. g. VDE 0113, EN 60204)

3

Electrical installation

Mains connection 230 V/240 V

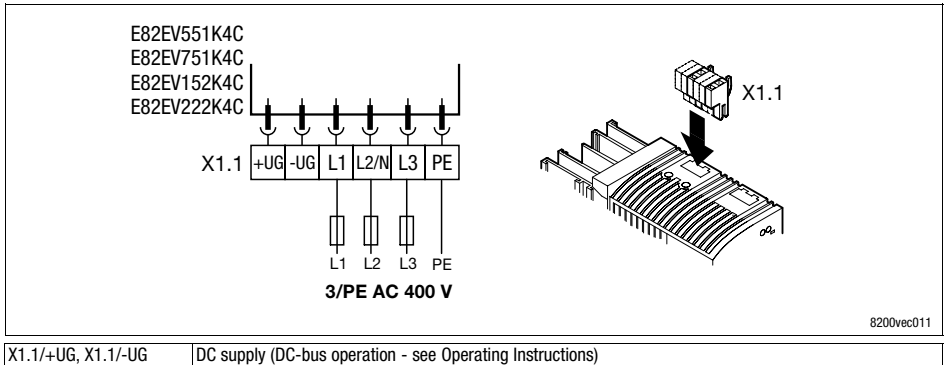
Please observe the following when using e.l.c.bs:

- E.l.c.bs must only be installed between mains supply and controller.
- E.l.c.bs can trip incorrectly because of
 - capacitive leakage currents of the cable shields during operation (especially with long, shielded motor cables),
 - simultaneous connection of several controllers to the mains supply,
 - use of additional RFI filters.



Stop!

- Controller type E82EVxxxK **4C** must only be connected to a mains voltage of 3/PE AC 320 ... 550 V. Higher mains voltages will destroy the controller!
- The discharge current to PE is > 3.5 mA. EN 50178 requires a fixed installation. Double PE connection required.



Fuses and cable cross-sections (operation with rated power)

		Operation without mains choke					FI	
		Installation to EN 60204-1		Installation to UL 1)				
8200 vector		mains	①	②	L1, L2, L3, PE [mm ²]	①	L1, L2, L3, PE [AWG]	FI
Type	[kW]							
E82EV551K4C	0.55	3/PE AC 320 ... 550 V; 45 ... 65 Hz	M6 A	B6 A	1	5 A	18	≥ 300 mA ²⁾ ≥ 30 mA ³⁾
E82EV751K4C	0.75		M6 A	B6 A	1	5 A	18	
E82EV152K4C	1.5		M10 A	B10 A	1.5	10 A	16	
E82EV222K4C	2.2		M10 A	B10 A	1.5	10 A	16	

		Operating with mains choke					FI	
		Installation to EN 60204-1		Installation to UL 1)				
8200 vector		mains	①	②	L1, L2, L3, PE [mm ²]	①	L1, L2, L3, PE [AWG]	FI
Type	[kW]							
E82EV551K4C	0.55	3/PE AC 320 ... 550 V; 45 ... 65 Hz	M6 A	B6 A	1	5 A	18	≥ 300 mA ²⁾ ≥ 30 mA ³⁾
E82EV751K4C	0.75		M6 A	B6 A	1	5 A	18	
E82EV152K4C	1.5		M10 A	B10 A	1.5	10 A	16	
E82EV222K4C	2.2		M10 A	B10 A	1.5	10 A	16	

① Fuse

② E.l.c.b.

1) Use UL-approved cables, fuses and fuse holders only.

UL fuse: Voltage 500 ... 600 V, tripping characteristic "H", "K5" or "CC"

2) All-current sensitive e.l.c.b. for the use with E82EVxxxK4C0xx

3) All-current sensitive e.l.c.b. for the use with E82EVxxxK4C2xx

Observe national and regional regulations (e. g. VDE 0113, EN 60204)

Fuses and cable cross-sections (operation with increased rated power)

			Operation without mains choke					FI
			Installation to EN 60204-1			Installation to UL 1)		
8200 vector		mains	①	②	L1, L2, L3, PE [mm ²]	①	L1, L2, L3, PE [AWG]	≥ 300 mA ²⁾ ≥ 30 mA ³⁾
Type	[kW]							
E82EV551K4C	0.55	3/PE AC	M6 A	B6 A	1	5 A	18	
E82EV751K4C	0.75	320 ... 440 V;	Operation only with mains choke					
E82EV222K4C	2.2	45 ... 65 Hz	Operation only with mains choke					

			Operating with mains choke					FI
			Installation to EN 60204-1			Installation to UL 1)		
8200 vector		mains	①	②	L1, L2, L3, PE [mm ²]	①	L1, L2, L3, PE [AWG]	≥ 300 mA ²⁾ ≥ 30 mA ³⁾
Type	[kW]							
E82EV551K4C	0.55	3/PE AC	M6 A	B6 A	1	5 A	18	
E82EV751K4C	0.75	320 ... 440 V;	M6 A	B6 A	1	5 A	18	
E82EV222K4C	2.2	45 ... 65 Hz	M10 A	B10 A	1.5	10 A	16	

① Fuse

② E.I.c.b.

1) Use UL-approved cables, fuses and fuse holders only.

UL fuse: Voltage 500 ... 600 V, tripping characteristic "H", "K5" or "CC"

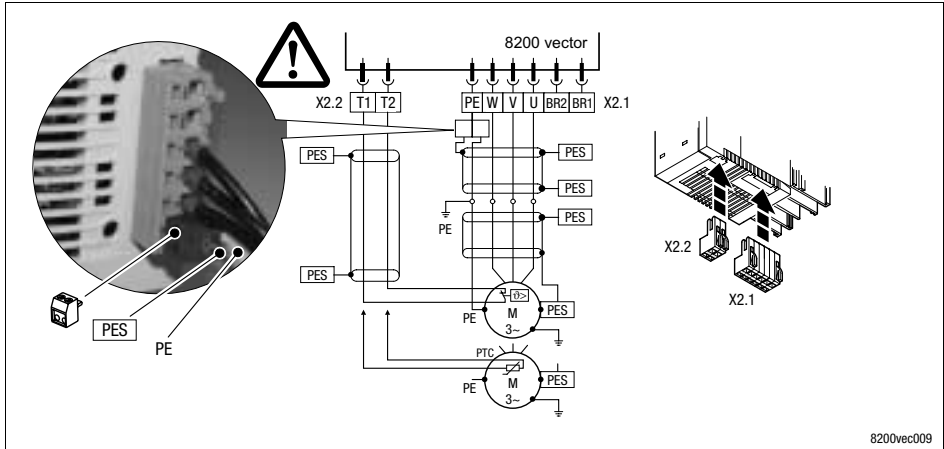
2) All-current sensitive e.I.c.b. for the use with E82EVxxxK4C0xx

3) All-current sensitive e.I.c.b. for the use with E82EVxxxK4C2xx

Observe national and regional regulations (e. g. VDE 0113, EN 60204)

Please observe the following when using e.I.c.bs:

- E.I.c.bs must only be installed between mains supply and controller.
- E.I.c.bs can trip incorrectly because of
 - capacitive leakage currents of the cable shields during operation (especially with long, shielded motor cables),
 - simultaneous connection of several controllers to the mains supply,
 - use of additional RFI filters.



Use low-capacity motor cables! (core/core up to 1.5 mm² ≤ 75 pF/m; from 2.5 mm² ≤ 100 pF/m; core/shield ≤ 150 pF/m)
The shorter the motor cables, the better the drive response!

PES HF-shield end by PE connection through shield bracket or EMC cable connection.

X2.1/PE Earthing of the 8200 vector at the output side

X2.1/BR1, X2.1/BR2 Connection terminals for the brake resistor
(For information about the operation with brake resistor see the Operating Instructions)

X2.2/T1, X2.2/T2 Connection terminals motor temperature monitoring through PTC thermistors or thermal contacts
Activate motor temperature monitoring under C0119 (e. g. C0119 = 1)!

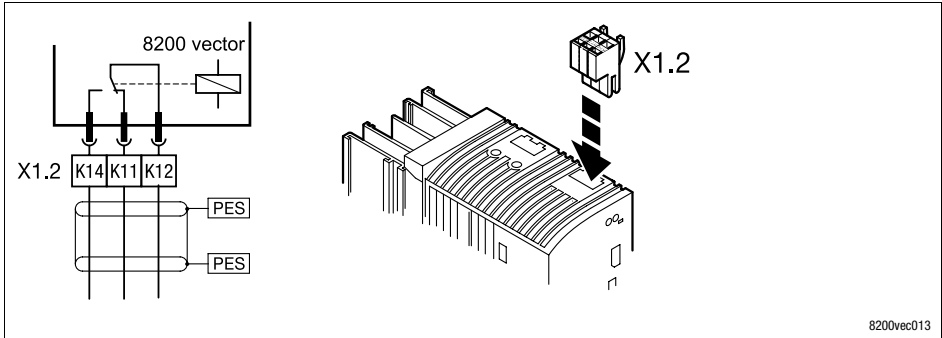
Cable cross-sections U, V, W, PE

Type	mm ²	AWG	Type	mm ²	AWG
E82EV251K2C / E82EV371K2C	1	18			
E82EV551K2C / E82EV751K2C	1	18	E82EV551K4C / E82EV751K4C	1	18
E82EV152K2C / E82EV222K2C	1.5	16	E82EV152K4C / E82EV222K4C	1.5	16



Danger!

- After the connection of a PTC thermistor or thermal contact all control terminals only have a basic insulation (single insulating distance).
- Protection against contact in the event of a defective insulating distance can only be ensured by external measures (e.g. double insulation).



	Function	Relay position set	Message (Lenze setting)	Technical data
X1.2/K11	Relay output normally-closed contact	open	TRIP	AC 250 V/3 A DC 24 V/2 A ... DC 240 V/0.16 A
X1.2/K12	Mid position contact			
X1.2/K14	Relay output - normally-open contact	closed	TRIP	
PES	HF-shield end by PE connection through shield bracket.			



Note!

- For switching the control signals use shielded cables and establish an HF shield termination by PE connection.
- For mains potential switching unshielded cables are sufficient.
- With inductive or capacitive loads a corresponding protective circuit is required in order to protect the relay contacts!
- The service life of the relay depends on the type of load (ohmic, inductive or capacitive) and the value of the switching capacity.
- The output message can be changed under C0008 or C0415/1.

6 Function module (optional)

Mounting

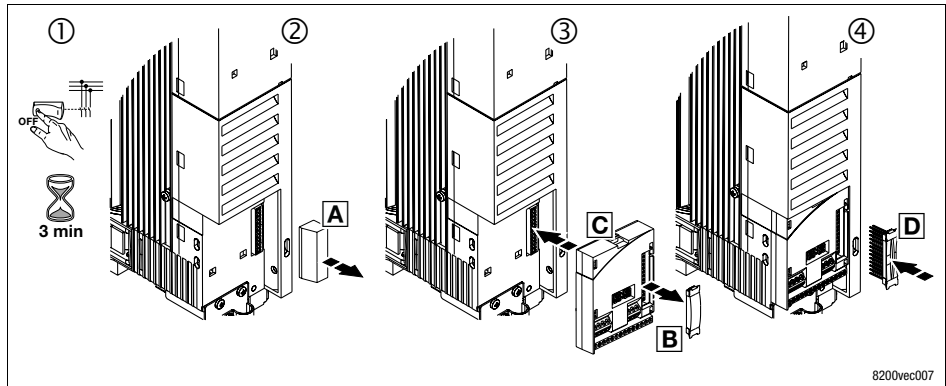
Important notes

The basic controller version is not equipped with control terminals. The controllers can be equipped with control terminals by using different I/O function modules for the FIF interface.

Dismount the function module only if it is absolutely necessary (e.g. when the controller is replaced).

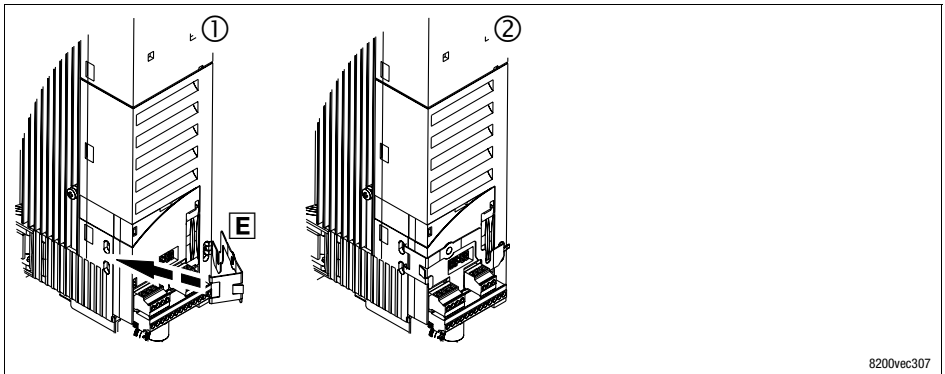
The pin strip which is used to connect the function module is part of the contact system of the controller. It has not been designed for repeated connection and disconnection of the function module.

Mounting of function modules



1. **Disconnect the controller from the mains and wait for at least 3 minutes!**
2. Remove the FIF protection cover **A** and keep it.
3. Remove the protection cover **B** of the function module.
4. Plug the function module **C** onto the FIF interface.
5. Plug the plug connector **D** into the contact bank of the function module until it is snapped into place.
6. For wiring see Mounting Instructions for the function module.

Mounting of function modules in "PT" version



8200vec307

In addition fix the safety clip, so that the module is prevented from being pulled out together with the terminal strips:

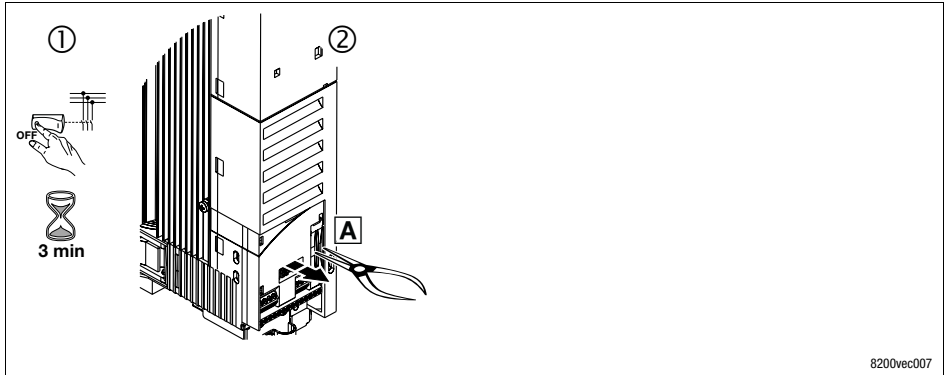
1. Turn the safety clip **E** in the openings.
2. Fold the safety clip over the function module until it snaps into place.

6

Function module (optional)

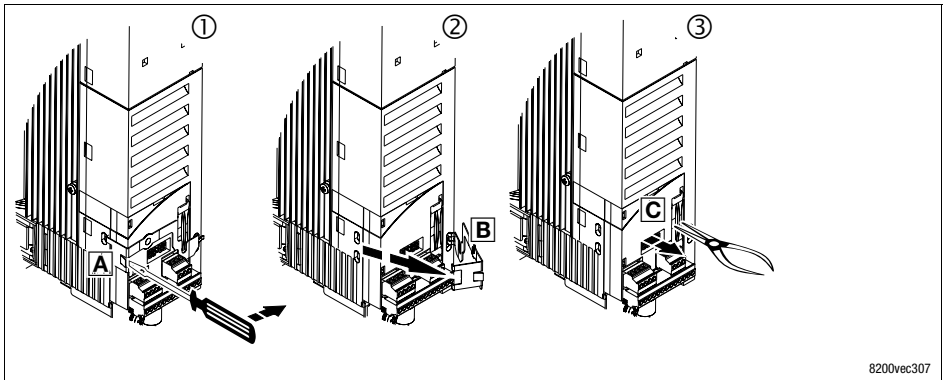
Dismounting

Dismounting of the function modules



1. **Disconnect the controller from the mains and wait for at least 3 minutes!**
2. Catch the bar of the plug connector with pliers and pull. **A** Plug connector and function module are dismounted together.

Dismounting of the function module version "PT"

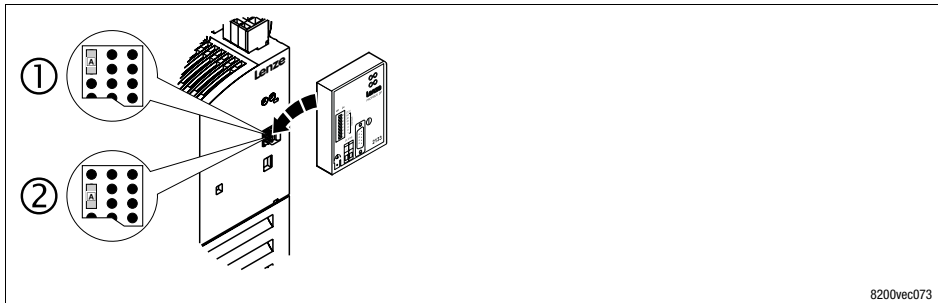


After the function module version "PT" has been switched off, first of all the safety clip must be removed.

1. Position the screw driver between safety clip and function module **A**. The safety clip is disengaged by pressing to the right.
2. Turn the safety clip **B** to the right.
3. Catch the bar of the plug connector with pliers and pull **C**. Plug connector and function module are dismounted together.

6 Communication module (Option)

Mounting/dismounting



8200vec073

Ⓐ Jumper for selecting the voltage supply

- ① External voltage supply (delivery state)
- ② Voltage supply via internal voltage source

Attach/detach the communication module to/from the AIF interface. This is also possible during operation.

Possible combinations	Communication module on AIF							
	Keypad E82ZBC ¹⁾ Keypad XT EMZ9371BC ¹⁾	LECOM -A/B 2102.V001 -LI 2102.V003 -A 2102.V004 ¹⁾	LECOM-B (RS485) 2102.V002	INTERBUS 2111/2113 INTERBUS- Loop 2112	PROFIBUS- DP 2131/2133	System bus (CAN) 2171/2172	CANopen / DeviceNet 2175	LON 2141
Standard I/O	E82ZAFSC	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
Application I/O	E82ZAFAC	✓✓	✓	✓	✓	✓	✓	✓
INTERBUS	E82ZAFIC	✓✓	(✓)	☒	☒	☒	☒	☒
PROFIBUS-DP	E82ZAFPC	✓✓	(✓)	☒	☒	☒	☒	☒
LECOM-B (RS485)	E82ZAFLC	✓✓	(✓)	☒	☒	☒	☒	☒
System bus (CAN)	E82ZAFCC	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
System bus I/O-RS	E82ZAFCC100							
System bus I/O	E82ZAFCC200							
CANopen / DeviceNet ²⁾	E82ZAFD	✓✓	✓✓	☒	☒	☒	☒	☒
AS-i	E82ZAFFC	✓✓	✓✓	☒	☒	☒	☒	☒

1) Independently of the jumper position always supplied internally.

2) In preparation

✓✓ Combination possible, internal or external supply of the communication module

✓ Combination possible, external voltage supply!

(✓) Combination possible, communication module can only be used for parameter setting.

☒ Combination not possible



Note!

- Do not change the switch-on sequence.
- In the event of an error during commissioning, please see the chapter "Fault detection and elimination".

To avoid injury to persons or damage to property, check...

... before the mains voltage is connected:

- The wiring for completeness, short circuit and earth fault
- "Emergency-off" function of the whole system
- Motor connection (star/delta) must be adapted to output voltage of controller.
- If you do not use a function module, ensure that the FIF cover is mounted properly (as delivered).
- If the internal voltage supply X3/20 of e.g. the standard I/O is used, the terminals X3/7 and X3/39 must be jumpered.

... the most important drive parameter settings before the controller is enabled:

- Are the drive parameters relevant for your application set correctly?
 - E.g. configuration of analog and digital inputs and outputs

7

Commissioning

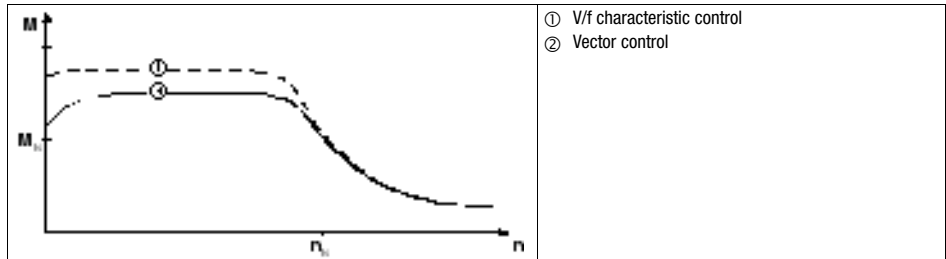
Selection of the correct control mode

The following table helps you to find the correct control mode for standard applications. You can choose between V/f characteristic control, vector control and sensorless torque control:

V/f characteristic control is the classic control mode for standard applications.

The vector control provides better control features than the V/f characteristic control because of:

- a higher torque over the whole speed range
- higher speed accuracy and smooth running features
- higher efficiency



Selection of the correct control mode

Application	Operating mode	
	Setting in C0014	
Stand-alone drives	recommended	alternatively
with extremely alternating loads	4	2
with heavy start conditions	4	2
with speed control (speed feedback)	2	4
with high dynamic response (e. g. positioning and infeed drives)	2	-
with torque setpoint	5	-
with torque limitation (power control)	2	4
Three-phase AC reluctance motors	2	-
Three-phase sliding rotor motors	2	-
Three-phase motors with fixed frequency-voltage characteristic	2	-
Pump and fan drives with square-law load characteristic	3	2 or 4
Group drives (several motors connected to controller)		
identical motors and identical loads	2	-
different motors and/or changing loads	2	-

C0014 = 2: linear V/f characteristic control

C0014 = 3: square-law V/F characteristic control

C0014 = 4: Vector control

C0014 = 5: sensorless torque control

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Commissioning

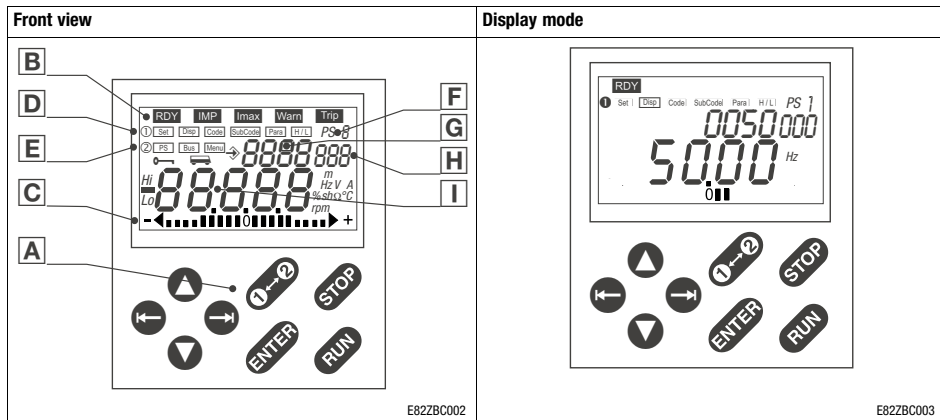
Using the keypad E82ZBC - Parameter setting

Description

The keypad is available as accessory. A full description of the keypad can be obtained from the Instructions included in the keypad delivery.

Plugging in the keypad



It is possible to plug in the keypad onto the AIF interface or remove it during operation. As soon as the keypad is supplied with voltage, it carries out a self-test. The keypad is ready for operation if it is in display mode.



Displays and operating elements

Function keys	Press key	Function	Explanation
RUN		Enable controller	For operation with function module, the terminal X3/28 must be set to HIGH level
STOP		Inhibit controller (CINH) or quick stop (QSP)	Configuration in C0469
1-2		Change to function bar 1 ↔ Function bar 2	
↔		To right/left in active function bar	The current function is framed
▲▼		Increase/decrease value Quick change: Keep key pressed.	Only blinking values can be changed
ENTER		Parameters can be stored if ↔ blinking Confirmation by STO-E in the display	

Using the keypad E82ZBC - Parameter setting

B Status display		
Display	Meaning	Explanation
RDY	Ready for operation	
IMP	Pulse inhibit active	Power outputs inhibited
Imax	Adjusted current limitation is exceeded in motor-mode or generator-mode	C0022 (motor mode) or C0023 (generator mode)
Warn	Warning active	
Trip	Fault active	
C Bargraph display		
	Value set under C0004 in % (Lenze setting: Controller load C0056)	Display range: - 180 % ... + 180 % (every bar = 20 %)
D Function bar 1		
Function	Meaning	Explanation
Set	Setpoint selection via 	Not possible when password protection is active (display = "LOc")
Disp	Display function: • User menu, memory location 1 (C0517/1), display • Display active parameter set	Active after every main connection
Code	Code selection	Display of active code in 4-digit display G
SubCode	Subcode selection	Display of active subcode number in 3-digit display H
Para	Change of parameter value of a (sub)code	Display of current value in 5-digit display I
H/L	Display of values longer than 5 digits	
	H: higher value locations L: lower value locations	Display "HI" Display "LO"
E Function bar 2		
Function	Meaning	Explanation
PS	Select parameter set 1 ... parameter set 4 for changing	<ul style="list-style-type: none"> • Display, e.g. PS 2 (F) • The parameter sets can only be activated via digital signals (configuration with C0410)
Bus	Selection of system bus (CAN) devices	The selected device can be parameterised by the current drive  = function active
Menu	Select menu	SEr List of codes in the user menu (C0517)
	The user menu is active after mains switching	ALL List of all codes
		FuncI Only specific codes for bus function modules, e.g. INTERBUS, PROFIBUS-DP and LECOM-B

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Commissioning

Using the keypad E82ZBC - Parameter setting

Change and save parameters



Note!

The menu *USER* is active after mains switching. Change to the menu *ALL* to address all codes.

Action	Keys	Result	Note
1. Plug in the keypad		[Disp] XX.XX Hz	Function [Disp] is activated. The first code in the user menu will be displayed (C0517/1, Lenze setting: C0050 = output frequency).
2. If necessary change to the menu "ALL"		2	Change to function bar 2
3.		[Menu]	
4.		<i>ALL</i>	Select menu "ALL" (list of all codes)
5.		1	Confirm selection and change to function bar 1
6. Inhibit controller		RDY IMP	Only necessary if you want to change C0002, C0148, C0174 and/or C0469
7. Set parameters		[Code]	
8.		XXXX	Select code
9.		[SubCode] 001	For codes without subcodes: Jump automatically to [Para]
10.		XXX	Select subcode
11.		[Para]	
12.		XXXXX	Set parameters
13.		<i>STO-E</i>	Confirm entry if is blinking
			Confirm entry if is not blinking; is not active
14.			Restart the "loop" at 7. to set other parameters.

Using the keypad E82ZBC - Parameter setting

Menu structure

All parameters for controller setting or monitoring are saved in codes. The codes are numbered and labelled in the documentation with a "C". Some codes store the parameters in numbered "subcodes", so that a clear parameter setting is ensured (e. g.: C0517 User menu).

The codes are described in detail in the system manual of the drive controller.

For easy operation the codes are divided in two groups:

- The menu *USER*
 - is active after every mains switching or keypad attachment during operation.
 - contains all codes for a standard application with linear V/f characteristic control (Lenze setting).
 - can be modified as required under C0517.
- The menu *ALL*
 - contains all codes.
 - shows a list of all codes in ascending order.

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Commissioning

Using the keypad E82ZBC - Parameter setting

The menu $\cup 5E_r$ - The 10 most important drive parameters

After mains switching or plugging in the keypad during operation, the 10 codes defined in code C0517 are immediately available.

In default setting the menu $\cup 5E_r$ contains all codes required for a standard application with linear V/f characteristic control.

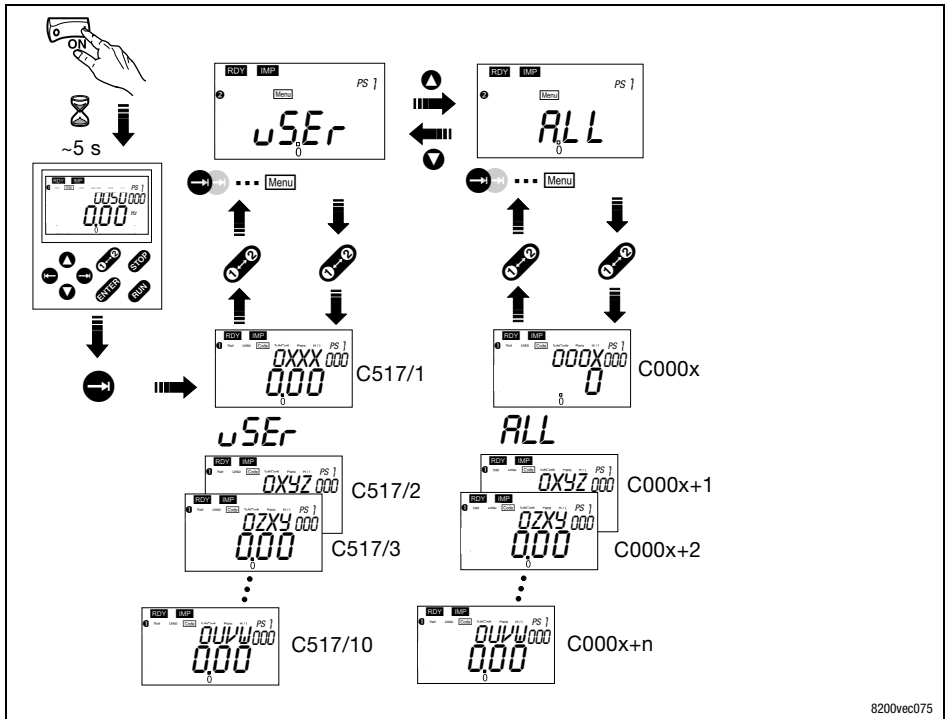
Code	Name	Lenze setting	
C0050	Output frequency		Display: Output frequency without slip compensation
C0034	Setpoint selection range	0	Standard I/O X3/8: 0 ... 5 V / 0 ... 10 V / 0 ... 20 mA
			Application I/O X3/1U: 0 ... 5 V / 0 ... 10 V X3/2U: 0 ... 5 V / 0 ... 10 V
C0007	Fixed configuration of digital inputs	0	E4
			E3
			E2
			E1
			CW/CCW
			DCB
			JOG2/3
			JOG1/3
			CW/CCW rotation
			DC injection brake
			Selection of fixed setpoints
C0010	Minimum output frequency	0.00 Hz	
C0011	Maximum output frequency	50.00 Hz	
C0012	Acceleration time main setpoint	5.00 sec	
C0013	Deceleration time main setpoint	5.00 sec	
C0015	V/f rated frequency	50.00 Hz	
C0016	V_{\min} boost	Depending on the controller	
C0002	Parameter set management		Restore default setting; Transfer parameter sets with keypad; save, load or copy own basic settings



Note!

Use C0002 "Parameter set transfer/restoration of default setting" to transfer configurations from one controller to the other with keypad or restore the default setting by loading the Lenze setting (e.g. if you lost track during parameter setting).

Using the keypad E82ZBC - Parameter setting



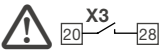
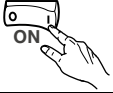







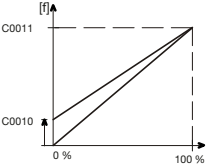
8200vec075

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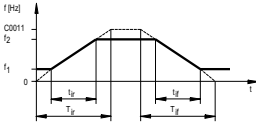
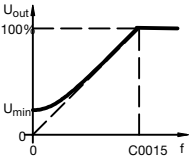
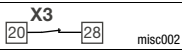

Commissioning

Using the keypad E82ZBC - Linear V/f characteristic control

The following instructions apply to controllers equipped with a standard-I/O function module and a three-phase AC motor which has been selected according to a power-based assignment.

Switch-on sequence		Note	
1.	Attach the keypad		
2.	Ensure that controller inhibit is active after mains connection.	 <p>misc001</p>	Terminal X3/28 = LOW
3.	Switch on the mains	 <p>misc002</p>	
4.	The keypad is in "Disp" mode after approx. 2 s and indicates the output frequency (C0050)		The menu <i>USER</i> is active
5.	Change to the Code mode to configure the basic settings for your drive	 	Blinking on the display: <i>0050</i>
6.	Adapt the voltage range/current range to the analog setpoint (C0034) Lenze setting: -0-, (0 ... 5 V/0 ... 10 V/0 ... 20 mA)	 	Set the DIP switch on the standard I/O to the same range (see Mounting Instructions for the standard I/O)
7.	Adapt the terminal configuration to the wiring (C0007) Lenze setting: -0-, i. e. E1: JOG1/3 fixed setpoint selection E2: JOG2/3 E3: DCB DC brake E4: CW/CCW operation	 	
8.	Set the minimum output frequency (C0010) Lenze setting: 0.00 Hz		
9.	Set the maximum output frequency (C0011) Lenze setting: 50.00 Hz		

Using the keypad E82ZBC - Linear V/f characteristic control

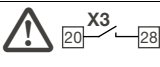
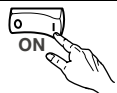





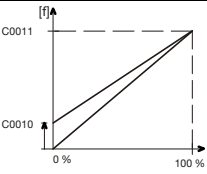
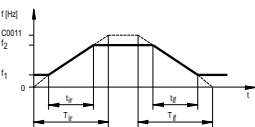
Switch-on sequence		Note	
10.	Set the acceleration time T_{ir} (C0012) Lenze setting: 5.00 s	 $T_{ir} = t_{ir} \cdot \frac{C0011}{f_2 - f_1}$ $t_{ir} = \text{acceleration time wanted}$	
11.	Set the deceleration time T_{if} (C0013) Lenze setting: 5.00 s		$T_{if} = t_{if} \cdot \frac{C0011}{f_2 - f_1}$ $t_{if} = \text{deceleration time wanted}$
12.	Set the V/f-rated frequency (C0015) Lenze setting: 50.00 Hz		The Lenze setting is suitable for all common applications
13.	Set the V_{min} boost (C0016) Lenze settings: Depending on the controller type		
14.	If you want to change the settings, please go to the menu <i>ALL</i> .	activate e. g. JOG frequencies (C0037, C0038, C0039) or motor temperature monitoring (C0119)	
When you are ready with parameter setting:			
15.	Setpoint selection	e. g. via potentiometer at the terminals 7, 8, 9	
16.	Enable the controller.		Terminal X3/28 = HIGH
17.	The drive should be running now at e.g. 30 Hz		If the drive does not start, press RUN in addition.

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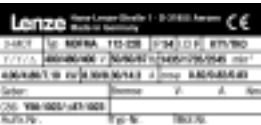

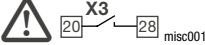
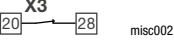
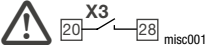
Commissioning

Using the keypad E82ZBC - Vector control

The following instructions apply to controllers equipped with a standard-I/O function module and a three-phase AC motor which has been selected according to a power-based assignment.

Switch-on sequence		Note	
1.	Attach the keypad		
2.	Ensure that controller inhibit is active after mains connection.	 misc001	Terminal X3/28 = LOW
3.	Switch on the mains	 misc002	
4.	The keypad is in "Disp" mode after approx. 2 s and indicates the output frequency (C0050)		The menu <i>USER</i> is active
5.	Change to the menu <i>ALL</i>		
6.	Change to the <i>Code</i> mode to configure the basic settings for your drive	 	Blinking on the display: <i>000!</i>
7.	Adapt the terminal configuration to the wiring (C0007) Lenze setting: 0, i. e. E1: JOG1/3 fixed setpoint selection E2: JOG2/3 E3: DCB DC brake E4: CW/CCW operation	 	
8.	Set the minimum output frequency (C0010) Lenze setting: 0.00 Hz		
9.	Set the maximum output frequency (C0011) Lenze setting: 50.00 Hz		
10.	Set the acceleration time T_{ir} (C0012) Lenze setting: 5.00 s		$T_{ir} = t_{ir} \cdot \frac{C0011}{f_2 - f_1}$ $t_{ir} = \text{acceleration time wanted}$
11.	Set the deceleration time T_{if} (C0013) Lenze setting: 5.00 s		$T_{if} = t_{if} \cdot \frac{C0011}{f_2 - f_1}$ $t_{if} = \text{deceleration time wanted}$

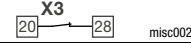

Using the keypad E82ZBC - Vector control

Switch-on sequence		Note
12.	Activate the control mode "vector control" (C0014 = 4) Lenze setting: Linear V/f characteristic control (C0014 = 2)	
13.	Adapt the voltage/current range to the analog setpoint (C0034) Lenze setting: 0, (0 ... 5 V/0 ... 10 V/0 ... 20 mA)	
14.	Enter the motor data	See motor nameplate
A	Rated motor speed (C0087) Lenze setting: 1390 rpm	
B	Rated motor current (C0088) Lenze setting: Depending on the controller	
C	Rated motor frequency (C0089) Lenze setting: 50 Hz	
D	Rated motor voltage (C0090) Lenze setting: Depending on the controller	
E	Motor-cosφ (C0091) Lenze setting: Depending on the controller	
15.	Start the motor parameter identification (C0148)	
A	Ensure that the controller is inhibited	
B	Set C0148 = 1	Press ENTER in addition
C	Enable the controller.	 <ul style="list-style-type: none"> Terminal X3/28 = HIGH The identification starts: <ul style="list-style-type: none"> The segment IMP Off The motor makes a high-pitched tone. The motor does not rotate!
D	If the segment becomes active after approx. 30 s, IMP inhibit the controller once again	 <ul style="list-style-type: none"> Terminal X3/28 = LOW Identification is completed. Calculated and stored: <ul style="list-style-type: none"> V/f rated frequency (C0015) Slip compensation (C0021) Motor stator inductance (C0092) Measured and stored: <ul style="list-style-type: none"> Motor stator resistance (C0084) = Total resistance of motor cable and motor

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Commissioning

Using the keypad E82ZBC - Vector control

Switch-on sequence		Note	
16.	If necessary, adjust more parameters	Activate e. g. JOG frequencies (JOG) (C0037, C0038, C0039 or motor parameter monitoring (C0119)	
After parameter setting:			
17.	Setpoint selection	E.g. via potentiometer at terminals 7, 8, 9	
18.	Enable the controller.		Terminal X3/28 = HIGH
19.	The drive should now be running at e.g. 30 Hz		If the drive does not start, press RUN in addition

Vector control optimisation

In general, the vector control is ready for operation after the motor parameters have been identified. Vector control must only be optimised for the following drive performance:

Drive performance	Remedy
Rough motor run and motor current (C0054) > 60 % rated motor current in idle running (stationary operation)	<ol style="list-style-type: none"> 1. Reduction of motor inductance (C0092) by 10 % 2. Check of motor current under C0054 3. If the motor current (C0054) > 50 % rated motor current: <ul style="list-style-type: none"> – C0092 must be reduced until the motor current amounts to 50 % of the rated motor current – Reduce C0092 by max. 20 %!
Torque too low for frequencies $f < 5$ Hz (starting torque)	Increase of motor resistance (C0084) or increase of motor inductance (C0092)
Poor constant speed at high loads (setpoint and motor speed are not proportional).	Increase of slip compensation (C0021) Overcompensation results in drive instability!
Error messages OC1, OC3, OC4 or OC5 during acceleration times (C0012) < 1 s (drive controller is no longer able to follow the dynamic processes)	Change readjustment time of the I_{max} controller (C0078): <ul style="list-style-type: none"> • Reduction of C0078 = I_{max} controller becomes quicker (more dynamic) • Increase of C0078 = I_{max} controller becomes slower ("smoother")

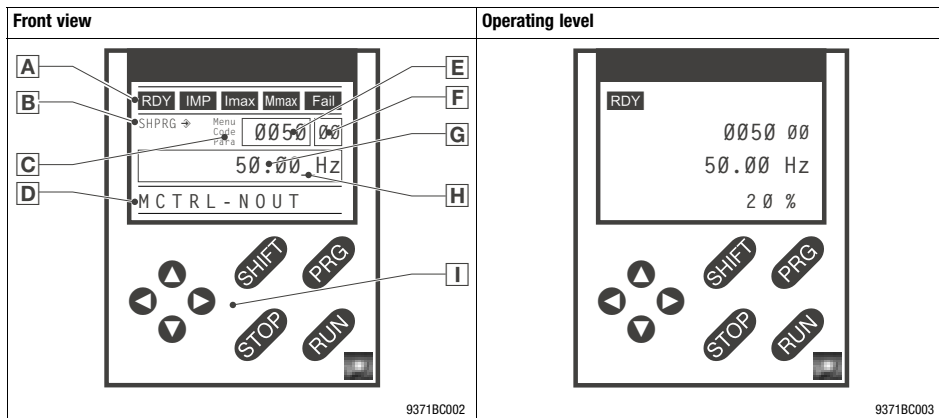
Using the keypad XT EMZ9371BC - Parameter setting

Description

The keypad is available as accessory. A full description of the keypad can be obtained from the Instructions included in the keypad delivery.

Plug in the keypad

It is possible to plug in the keypad onto the AIF interface or remove it during operation. As soon as the keypad is supplied with voltage, it carries out a self-test. The operation level indicates, when the keypad is ready for operation.



Display elements

Display	Meaning	Explanation
RDY	Ready for operation	
IMP	Pulse inhibit active	Power outputs inhibited
I_{max}	Adjusted current limitation is exceeded in motor-mode or generator-mode	
M_{max}	Speed controller 1 in limitation	Drive torque-controlled
Fail	Active fault	

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Using the keypad XT EMZ9371BC - Parameter setting

B	Adoption of parameters		
	Display	Meaning	Explanation
	→	Parameters are adopted immediately	Basic device operates immediately with the new parameter value
	SHPRG →	Parameter must be confirmed with SHIFT PRG	Basic device operates with the new parameter value, after it was confirmed
	SHPRG	In case of controller inhibit the parameter must be confirmed with SHIFT PRG	Basic device operates with the new parameter value, after the controller has been enabled
	none	Display parameter	Change not possible
C	Active level		
	Display	Meaning	Explanation
	Menu	Menu level active	Select main menu and submenus
	Code	Code level active	Select codes and subcodes
	Para	Parameter level active	Change parameters in the codes or subcodes
	none	Operation level active	Display operation parameters: <ul style="list-style-type: none"> ● User menu, memory location 1 (C0517/1) ● Status display C0004 in % ● Active fault
D	Short text		
	Display	Meaning	Explanation
	max. 13 characters	Contents of menus, meaning of codes and parameters In operation level display of C0004 in % and active fault	
E	Number		
	Active level	Meaning	Explanation
	Menu level	Menu number	Display only active when operating with the basic device series 8200 vector or 8200 motec
	Code level	four-digit code number	
F	Number		
	Active level	Meaning	Explanation
	Menu level	Submenu number	Display only active when operating with the basic device series 8200 vector or 8200 motec
	Code level	two-digit subcode number	
G	Parameter value		
		Parameter value with unit	
H	Cursor		
		In the parameter level the number above the cursor can be directly changed	
I	Function keys		
		For description see the following table	

Using the keypad XT EMZ9371BC - Parameter setting

Function keys

**Note!**

Press the key combinations with **SHIFT**:

SHIFT and keep them pressed, then additionally press the second key.

Press key	Function			
	Menu level	Code level	Parameter level	Operation level
PRG		Change to the parameter level	Change to the operation level	Change to the code level
SHIFT PRG	Load predefined configurations in the menu "Short setup" ¹⁾		Accept parameter, if SHPRG → or SHPRG is displayed	
▲ ▼	Change between menu points	Change code number	Change number above cursor	
SHIFT ▲ SHIFT ▼	Change quickly between menu points	Change code quickly	Change number above cursor quickly	
▶ ◀	Change between main menu, submenus and code level		Cursor to the right Cursor to the left	
RUN	Cancel function of key STOP the LED in the key disappears			
STOP	Inhibit the controller, LED in the key lights up			
	Reset fault (TRIP-Reset):			
	1. Remove cause of malfunction			
	2. STOP press			
	3. RUN press			

1) only active when operating with the basic device series 8200 vector or 8200 motec

Change and save parameters

All parameters for controller setting or monitoring are saved in codes. The codes are numbered and labelled in the documentation with a "C". Some codes store the parameters in numbered "subcodes", so that a clear parameter setting is ensured (e. g.: C0517 User menu).

The codes are described in detail in the system manual of the drive controller.



Note!

Your settings in the menus are always stored in the parameter set 1.

If you want to store settings in the parameter set 2, 3 or 4, two menus can be used:

- In menu 2 "Code list" it is possible to access to all available codes.
- In menu 7 "Param managm" it is possible to copy parameter set 1 into the other parameter sets.
 - **Please note, that with copying the "own basic setting" will be overwritten by the settings of parameter set 1!**

Step	Keys	Action	
1. Select menu	⬅ ➡ ⬆ ⬇	Select the desired menu with arrow keys	
2. Change to the code level	➡	Display of first code in the menu	
3. Select code or subcode	⬇ ⬆	Display of current parameter value	
4. Change to parameter level	PRG		
5. If SHPRG is displayed, inhibit controller	STOP	The drive is idling	
6. Change parameters	A ➡ ➡	Move cursor under the digit to be changed	
	B ⬇ ⬆	Change digit	
	SHIFT ⬇	Change digit quickly	
	SHIFT ⬆		
7. Accept changed parameter			
	Display of SHPRG or SHPRG ⇨	SHIFT PRG	Confirm change to accept parameter Display "OK"
	Display ⇨	-	The parameter was accepted immediately
8. If necessary, enable controller	RUN	The drive should be running again	
9. Change to the code level			
	A PRG	Display of operation level	
	B PRG	Display of the code with changed parameters	
10. Change further parameters		Restart "loop" at step 1. or step 3.	

Using the keypad XT EMZ9371BC - Parameter setting

Menu structure

Main menu		Submenus		Description
No.	Display	No.	Display	
1	USER menu			Defined codes in C0517
2	Code list			All available codes
		2.1	ALL	All available codes in ascending order (C0001 ... C7999)
		2.2	Para set 1	Codes in parameter set 1 (C0001 ... C1999)
		2.3	Para set 2	Codes in parameter set 2 (C2001 ... C3999)
		2.4	Para set 3	Codes in parameter set 3 (C4001 ... C5999)
		2.5	Para set 4	Codes in parameter set 4 (C6001 ... C7999)
3	Remote para	See description of the keypad		Remote parameter setting Only active with function module system bus (CAN)
4	Quick start			Quick commissioning of standard applications
		4.1	Keypad quick	Function check Linear V/f-characteristic control Frequency setpoint via keypad
		4.2	V/f quick	Linear V/f-characteristic control Frequency setpoint selectable analogically via potentiometer, fixed setpoints (JOG) selectable via terminal
		4.3	VectorCtrl qu	Vector control Frequency setpoint selectable analogically via potentiometer, fixed setpoints (JOG) selectable via terminal
5	Short setup	See description of the keypad		Quick configuration of predefined applications
6	Diagnostic			Diagnostics
		6.1	Fault history	Error analysis with history buffer
		6.2	Status words	Display of status words
		6.3	Monit drive	Display codes in order to monitor drive
		6.4	Monit FIF	Display codes in order to monitor a field bus function module
7	Param managm			Parameter set management
		7.1	Load/Store	Parameter set transfer, restore delivery status
		7.2	Copy PAR1 ->2	Copy parameter set 1 into parameter set 2
		7.3	Copy PAR1 ->3	Copy parameter set 1 into parameter set 3
		7.4	Copy PAR1 ->4	Copy parameter set 1 into parameter set 4

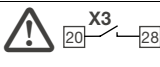
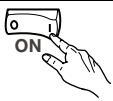
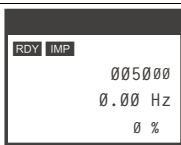
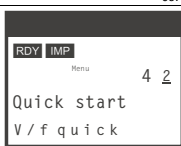




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Commissioning**Using the keypad XT EMZ9371BC - Parameter setting**

Main menu		Submenus		Description
No.	Display	No.	Display	
8	Main FB	See description of the keypad		Configuration of function blocks
9	Controller	See description of the keypad		Configuration of internal control parameters
10	Terminal I/O	See description of the keypad		Linkage of inputs and outputs with internal signals and display of the signal levels at the terminals
11	LECOM/AIF	See description of the keypad		Configuration of operation with communication modules
12	FIF system bus	See description of the keypad		Configuration of operation with function module system bus (CAN) and display of the contents of the CAN objects Only active with function module system bus (CAN)
13	FIF-field bus	See description of the keypad		Configuration of operation with field bus function modules Only active with fieldbus function module
14	Motor/Feedb.			Input of motor data, configuration of speed feedback
		14.1	Motor data	Motor data
		14.2	Feedback DFIN	Frequency input, encoder
15	Identify			Identification
		15.1	Drive	Software version controller
		15.2	Keypad	Software version keypad
		15.3	FIF module	Software version and function module type

Using the keypad XT EMZ9371BC - Linear V/f characteristic control

The following instructions apply to controllers equipped with a standard-I/O function module and a three-phase AC motor which has been selected according to a power-based assignment.

Switch-on sequence			Note
1.	Attach the keypad		
2.	Ensure that controller inhibit is active after mains connection.	 misc001	Terminal X3/28 = LOW
3.	Switch on the mains	 misc002	
4.	The keypad is in the operation level and indicates the output frequency (C0050) and device load (C0056)	 9371BC004	
5.	For quick commissioning select the menu "Quick start"	 9371BC007	The submenu "V/f quick" contains the codes you need for the commissioning of a standard application. The digital inputs are configured in the Lenze setting: X3/E1, X3/E2: Activation of JOG setpoints X3/E3: Activation of DC-injection brake (DCB) X3/E4: CW rotation/CCW rotation
A	Change to the menu level with 		
B	Change to the menu "Quick start" and there select the submenu "V/f quick" with 		
C	Change to the code level in order to parameterise you drive with 	 9371BC008	
6.	Adapt the voltage range/current range to the analog setpoint (C0034) Lenze setting: 0, (0 ... 5 V/0 ... 10 V/0 ... 20 mA)		Set the DIP switch on the standard I/O to the same range (see Mounting Instructions for the standard I/O)
7.	If necessary, adapt the JOG setpoints.		
A	JOG 1 (C0037) Lenze setting: 20 Hz		Activation: X3/E1 = HIGH, X3/E2 = LOW
B	JOG 2 (C0038) Lenze setting: 30 Hz		Activation: X3/E1 = LOW, X3/E2 = HIGH
C	JOG 3 (C0039) Lenze setting: 40 Hz		Activation: X3/E1 = HIGH, X3/E2 = HIGH

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Commissioning

Using the keypad XT EMZ9371BC - Linear V/f characteristic control

Switch-on sequence			Note
8.	Set the minimum output frequency (C0010) Lenze setting: 0.00 Hz		
9.	Set the maximum output frequency (C0011) Lenze setting: 50.00 Hz		
10.	Set the acceleration time T_{ir} (C0012) Lenze setting: 5.00 s		$T_{ir} = t_{ir} \cdot \frac{C0011}{f_2 - f_1}$ $t_{ir} = \text{acceleration time wanted}$
11.	Set the deceleration time T_{if} (C0013) Lenze setting: 5.00 s		$T_{if} = t_{if} \cdot \frac{C0011}{f_2 - f_1}$ $t_{if} = \text{deceleration time wanted}$
12.	Set the V/f-rated frequency (C0015) Lenze setting: 50.00 Hz		The Lenze setting is suitable for all common applications
13.	Set the V_{min} boost (C0016) Lenze setting: dependent on the controller type		
14.	Activate the motor temperature monitoring (C0119) if a PTC or thermal contact is connected to the terminal X2.2. Lenze setting: switched-off		Setting possibilities: (□) 145)
15.	Setpoint selection	e. g. via potentiometer at the terminals 7, 8, 9	
16.	Enable the controller.		Terminal X3/28 = HIGH
17.	The drive should be running now		CW rotation: X3/E4 = LOW CCW rotation: X3/E4 = HIGH If the drive does not start, press RUN

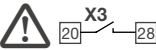
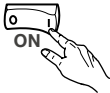
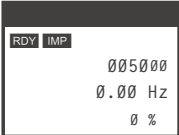








Note!

In the menu "Diagnostic" the most important drive parameters can be monitored

Using the keypad XT EMZ9371BC - Vector control

The following instructions apply to controllers equipped with a standard-I/O function module and a three-phase AC motor which has been selected according to a power-based assignment.

Switch-on sequence		Note
1.	Attach the keypad	
2.	Ensure that controller inhibit is active after mains connection.	 misc001
3.	Switch on the mains	 misc002
4.	The keypad is in the operation level after approx. 3 sec and indicates the output frequency (C0050) and device load (C0056)	 9371BC004
5.	For quick commissioning select the menu "Quick start"	The submenu "VectorCtrl qu" contains the codes you need for the commissioning of a standard application. The digital inputs are configured in the Lenze setting: X3/E1, X3/E2: Activation of JOG setpoints X3/E3: Activation of DC-injection brake (DCB) X3/E4: CW rotation/CCW rotation
A	Change to the menu level with 	
B	Change to the menu "Quick start" and there select the submenu "VectorCtrl qu" with 	
C	Change to the code level in order to parameterise you drive with 	 9371BC006   9371BC008
6.	Adapt the voltage range/current range to the analog setpoint (C0034) Lenze setting: 0, (0 ... 5 V/0 ... 10 V/0 ... 20 mA)	Set the DIP switch on the standard I/O to the same range (see Mounting Instructions for the standard I/O)
7.	If necessary, adapt the JOG setpoints.	
A	JOG 1 (C0037) Lenze setting: 20 Hz	Activation: X3/E1 = HIGH, X3/E2 = LOW
B	JOG 2 (C0038) Lenze setting: 30 Hz	Activation: X3/E1 = LOW, X3/E2 = HIGH
C	JOG 3 (C0039) Lenze setting: 40 Hz	Activation: X3/E1 = HIGH, X3/E2 = HIGH








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Commissioning

Using the keypad XT EMZ9371BC - Vector control

Switch-on sequence			Note
8.	Set the minimum output frequency (C0010) Lenze setting: 0.00 Hz		
9.	Set the maximum output frequency (C0011) Lenze setting: 50.00 Hz		
10.	Set the acceleration time T_{ir} (C0012) Lenze setting: 5.00 s		$T_{ir} = t_{ir} \cdot \frac{C0011}{f_2 - f_1}$ $t_{ir} = \text{acceleration time wanted}$
11.	Set the deceleration time T_{if} (C0013) Lenze setting: 5.00 s		$T_{if} = t_{if} \cdot \frac{C0011}{f_2 - f_1}$ $t_{if} = \text{deceleration time wanted}$
12.	Set the control mode "Vector control" (C0014 = 4) Lenze setting: Linear V/f characteristic control (C0014 = 2)		
13.	Enter the motor data		See motor nameplate
A	Rated motor speed (C0087) Lenze setting: 1390 rpm		
B	Rated motor current (C0088) Lenze setting: Depending on the controller		Enter the value for the motor connection type (star/delta) selected!
C	Rated motor frequency (C0089) Lenze setting: 50 Hz		
D	Rated motor voltage (C0090) Lenze setting: Depending on the controller		Enter the value for the motor connection type (star/delta) selected!
E	Motor-cosφ (C0091) Lenze setting: Depending on the controller		

Using the keypad XT EMZ9371BC - Vector control

Switch-on sequence		Note
14.	Start the motor parameter identification (C0148)	Only when the motor is cold!
A	Ensure that the controller is inhibited	  misc001
B	Set C0148 = 1	SHIFT PRC press
C	Enable the controller.	 misc002 <ul style="list-style-type: none"> Terminal X3/28 = HIGH The identification starts: <ul style="list-style-type: none"> The segment IMP Off The motor makes a high-pitched tone. The motor does not rotate!
D	If the segment becomes active after approx. 30 s, IMP inhibit the controller once again.	  misc001 <ul style="list-style-type: none"> Terminal X3/28 = LOW Identification is completed. Calculated and stored: <ul style="list-style-type: none"> V/f rated frequency (C0015) Slip compensation (C0021) Motor stator inductance (C0092) Measured and stored: <ul style="list-style-type: none"> Motor stator resistance (C0084) = Total resistance of motor cable and motor
15.	Activate the motor temperature monitoring (C0119), if a PTC or thermal contact is connected to the terminal X2.2 Lenze setting: switched-off	Setting possibilities:  145
16.	Setpoint selection	e. g. via potentiometer at the terminals 7, 8, 9
17.	Enable the controller.	 misc002 Terminal X3/28 = HIGH
18.	The drive should be running now	CW rotation: X3/E4 = LOW CCW rotation: X3/E4 = HIGH If the drive does not start, press RUN

**Note!**

In the menu "Diagnostic" the most important drive parameters can be monitored

Vector control optimisation

In general, the vector control is ready for operation after the motor parameters have been identified. Vector control must only be optimised for the following drive performance:

Drive performance	Remedy
Rough motor run and motor current (C0054) > 60 % rated motor current in idle running (stationary operation)	<ol style="list-style-type: none"> 1. Reduction of motor inductance (C0092) by 10 % 2. Check of motor current under C0054 3. If the motor current (C0054) > 50 % rated motor current: <ul style="list-style-type: none"> – C0092 must be reduced until the motor current amounts to 50 % of the rated motor current – Reduce C0092 by max. 20 %!
Torque too low for frequencies $f < 5$ Hz (starting torque)	Increase of motor resistance (C0084) or increase of motor inductance (C0092)
Poor constant speed at high loads (setpoint and motor speed are not proportional).	Increase of slip compensation (C0021) Overcompensation results in drive instability!
Error messages OC1, OC3, OC4 or OC5 during acceleration times (C0012) < 1 s (drive controller is no longer able to follow the dynamic processes)	Change readjustment time of the I_{\max} controller (C0078): <ul style="list-style-type: none"> • Reduction of C0078 = I_{\max} controller becomes quicker (more dynamic) • Increase of C0078 = I_{\max} controller becomes slower ("smoother")

The most important codes for commissioning

**Note!**


- The following table describes in detail the codes mentioned in the examples for commissioning!
- Do not change codes, the meaning of which is unknown to you! All codes are described in detail in the System Manual.

How to read the code table

Column	Abbreviation		Meaning	
Code	Cxxxx		Code Cxxxx	<ul style="list-style-type: none"> • The parameter value of a code can be different in every parameter set. • Parameter value accepted immediately (ONLINE)
		1	Subcode 1 of Cxxxx	
		2	Subcode 2 of Cxxxx	
		*		Parameter value of the code is the same in all parameter sets
		ENTER		Keypad E82ZBC Changed parameters will be accepted after pressing ENTER
				Keypad XT EMZ9371BC Changed parameters will be accepted after pressing SHIFT PRC
		STOP		Keypad E82ZBC Changed parameters will be accepted after pressing ENTER if the controller is inhibited
			Keypad XT EMZ9371BC Changed parameters will be accepted after pressing SHIFT PRC if the controller is inhibited	
	(A)		Code, subcode or selection are only available when using an Application-I/O	
	USER		With Lenze setting the code is available in the USER-menu	
Name			Name of the code	
Lenze			Lenze setting (value at delivery or after restoring the delivery state with C0002)	
	→		Further information can be obtained from "IMPORTANT"	
Selection	1	{%}	99	Min. value {unit} Max. value
IMPORTANT	-		Brief, important explanations	

Code		Possible settings		IMPORTANT		
No.	Name	Lenze	Selection			
C0002* STOP 5Er	Parameter set management	0	0 Ready	PAR1 ... PAR4: <ul style="list-style-type: none"> Parameter sets of the controller PAR1 ... PAR4 also contain parameters for Standard-I/O, Application-I/O, AS interface or system bus (CAN) FPAR1: <ul style="list-style-type: none"> Module-specific parameter set of the fieldbus function modules INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen FPAR1 is saved in the function module 		
		Restorage of default setting	1		Lenze setting ⇔ PAR1	Restorage of default setting in the selected parameter set
			2		Lenze setting ⇔ PAR2	
			3		Lenze setting ⇔ PAR3	
			4		Lenze setting ⇔ PAR4	
			31		Lenze setting ⇔ FPAR1	Restorage of default setting in the fieldbus function module
			61		Lenze setting ⇔ PAR1 + FPAR1	Restorage of default setting in the selected parameter set of the controller and the fieldbus function module
			62		Lenze setting ⇔ PAR2 + FPAR1	
			63		Lenze setting ⇔ PAR3 + FPAR1	
		64	Lenze setting ⇔ PAR4 + FPAR1			
C0002* STOP 5Er (cont.)	Parameter set transfer using the keypad			Use the keypad to transfer parameter sets to other controllers. During transfer the parameters cannot be accessed via other channels!		
		70	Keypad ⇔ Controller With function module Application-I/O, INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen		All available parameter sets (PAR1 ... PAR4, and FPAR1) are overwritten with the corresponding keypad data	
		10	With all other function modules			







The most important codes for commissioning

Code		Possible settings		IMPORTANT		
No.	Name	Lenze	Selection			
C0002*  5Er (cont.)	Parameter set transfer using the keypad		71	Keypad ⇔ PAR1 (+ FPAR1) With function module Application-I/O, INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen	Overwrite selected parameter set and, if necessary, FPAR1 with the corresponding keypad data	
			11	With all other function modules		
			72	Keypad ⇔ PAR2 (+ FPAR1) With function module Application-I/O, INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen		
			12	With all other function modules		
			73	Keypad ⇔ PAR3 (+ FPAR1) With function module Application-I/O, INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen		
			13	With all other function modules		
			74	Keypad ⇔ PAR4 (+ FPAR1) With function module Application-I/O, INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen		
			14	With all other function modules		
			80	Controller ⇔ Keypad With function module Application-I/O, INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen		All available parameter sets (PAR1 ... PAR4, and FPAR1) are copied to the keypad
			20	With all other function modules		
40	Keypad ⇔ Function module Only with function module INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen	Overwrite the module-specific parameter set FPAR1 only				
50	Function module ⇔ Keypad Only with function module INTERBUS, PROFIBUS-DP, LECOM-B, DeviceNet/CANopen	Copy the module-specific parameter set FPAR1 only				

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Commissioning

The most important codes for commissioning

Code		Possible settings		IMPORTANT
No.	Name	Lenze	Selection	
C0002*  5Er (cont.)	Saving of own settings		9 PAR1 ⇒ Own settings	<p>You can save your own basic settings for a controller (e.g. machine delivery status):</p> <ol style="list-style-type: none"> 1. Ensure that parameter set 1 is active 2. Controller inhibit 3. Set C0003 = 3, acknowledge with  4. Set C0002 = 9, acknowledge with  to save your own basic settings 5. Set C0003 = 1, acknowledge with  6. Enable the controller.
C0002*  5Er (cont.)	Loading/copying of your own basic settings			Using this function, PAR1 can be copied to parameter sets PAR2 ... PAR4
		5	Own settings ⇒ PAR1	Restorage of own basic setting in the selected parameter set
		6	Own settings ⇒ PAR2	
		7	Own settings ⇒ PAR3	
8	Own settings ⇒ PAR4			
C0003* 	Non-volatile parameter saving	1	0 Parameter not saved in EEPROM	Data loss after mains disconnection
			1 Parameter always saved in EEPROM	<ul style="list-style-type: none"> • Active after every mains connection • Cyclic parameter changes via bus module are not allowed.
			3 Own settings saved in EEPROM	Subsequently save parameter set 1 as own basic setting with C0002 = 9

The most important codes for commissioning

Code		Possible settings				IMPORTANT	
No.	Name	Lenze	Selection				
C0007 ENTER SEr	Fixed configuration of digital inputs					<p>Change under C0007 will be copied to the corresponding subcode of C0410. Free configuration under C0410 sets C0007 = 255!</p> <ul style="list-style-type: none"> • CW/CCW = CW rotation/CCW rotation • DCB = DC injection brake • QSP = Quick stop • PAR = Parameter set changeover (PAR1 ↔ PAR2) <ul style="list-style-type: none"> – PAR1 = LOW, PAR2 = HIGH – The terminal must be assigned to the function "PAR" in PAR1 and PAR2. – Configurations with "PAR" are only allowed if C0988 = 0 • TRIP set = external fault 	
		0	E4	E3	E2		E1
		0	CW/CCW	DCB	JOG2/3		JOG1/3
		1	CW/CCW	PAR	JOG2/3		JOG1/3
		2	CW/CCW	QSP	JOG2/3		JOG1/3
		3	CW/CCW	PAR	DCB		JOG1/3
		4	CW/CCW	QSP	PAR		JOG1/3
		5	CW/CCW	DCB	TRIP set		JOG1/3
		6	CW/CCW	PAR	TRIP set		JOG1/3
		7	CW/CCW	PAR	DCB		TRIP set
		8	CW/CCW	QSP	PAR		TRIP set
C0007 ENTER SEr (cont.)			E4	E3	E2	E1	<ul style="list-style-type: none"> • JOG1/3, JOG2/3 = Selection of fixed setpoints <ul style="list-style-type: none"> – Activate JOG1: JOG1/3 = HIGH; JOG2/3 = LOW – Activate JOG2: JOG1/3 = LOW; JOG2/3 = HIGH – Activate JOG3: JOG1/3 = HIGH; JOG2/3 = HIGH • UP/DOWN = motor potentiometer functions
		11	CW/CCW	DCB	UP	DOWN	
		12	CW/CCW	PAR	UP	DOWN	
		13	CW/CCW	QSP	UP	DOWN	
		14	CCW/QSP	CW/QSP	DCB	JOG1/3	
		15	CCW/QSP	CW/QSP	PAR	JOG1/3	
		16	CCW/QSP	CW/QSP	JOG2/3	JOG1/3	
		17	CCW/QSP	CW/QSP	PAR	DCB	
		18	CCW/QSP	CW/QSP	PAR	TRIP set	
		19	CCW/QSP	CW/QSP	DCB	TRIP set	

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Commissioning

The most important codes for commissioning

Code		Possible settings				IMPORTANT			
No.	Name	Lenze	Selection						
C0007 ENTER 5Er (cont.)				E4	E3	E2	E1	<ul style="list-style-type: none"> • H/Re = Hand/remote changeover • PCTRL1-I-OFF = Switch off process controller I component • DFIN1-ON = Digital frequency input 0 ... 10 kHz • PCTRL1-OFF = Switch off process controller 	
			20	CCW/QSP	CW/QSP	TRIP set	JOG1/3		
			21	CCW/QSP	CW/QSP	UP	DOWN		
			22	CCW/QSP	CW/QSP	UP	JOG1/3		
			23	H/Re	CW/CCW	UP	DOWN		
			24	H/Re	PAR	UP	DOWN		
			25	H/Re	DCB	UP	DOWN		
			26	H/Re	JOG1/3	UP	DOWN		
			27	H/Re	TRIP set	UP	DOWN		
			28	JOG2/3	JOG1/3	PCTRL1-I-OFF	DFIN1-ON		
			29	JOG2/3	DCB	PCTRL1-I-OFF	DFIN1-ON		
			30	JOG2/3	QSP	PCTRL1-I-OFF	DFIN1-ON		
C0007 ENTER 5Er (cont.)				E4	E3	E2	E1		
			31	DCB	QSP	PCTRL1-I-OFF	DFIN1-ON		
			32	TRIP set	QSP	PCTRL1-I-OFF	DFIN1-ON		
			33	QSP	PAR	PCTRL1-I-OFF	DFIN1-ON		
			34	CW/QSP	CCW/QSP	PCTRL1-I-OFF	DFIN1-ON		
			35	JOG2/3	JOG1/3	PAR	DFIN1-ON		
			36	DCB	QSP	PAR	DFIN1-ON		
			37	JOG1/3	QSP	PAR	DFIN1-ON		
			38	JOG1/3	PAR	TRIP set	DFIN1-ON		
			39	JOG2/3	JOG1/3	TRIP set	DFIN1-ON		
			40	JOG1/3	QSP	TRIP set	DFIN1-ON		

The most important codes for commissioning

Code		Possible settings				IMPORTANT		
No.	Name	Lenze	Selection					
C0007 ENTER ↷SEr (cont.)				E4	E3	E2	E1	
			41	JOG1/3	DCB	TRIP set	DFIN1-ON	
			42	QSP	DCB	TRIP set	DFIN1-ON	
			43	CW/CCW	QSP	TRIP set	DFIN1-ON	
			44	UP	DOWN	PAR	DFIN1-ON	
			45	CW/CCW	QSP	PAR	DFIN1-ON	
			46	H/Re	PAR	QSP	JOG1/3	
			47	CW/QSP	CCW/QSP	H/Re	JOG1/3	
			48	PCTRL1-OFF	DCB	PCTRL1-I-OFF	DFIN1-ON	
			49	PCTRL1-OFF	JOG1/3	QSP	DFIN1-ON	
			50	PCTRL1-OFF	JOG1/3	PCTRL1-I-OFF	DFIN1-ON	
			51	DCB	PAR	PCTRL1-I-OFF	DFIN1-ON	
	255	Free configuration under C0410				Only display Do not change C0007 since settings under C0410 can be lost		
C0010 ↷SEr	Minimum output frequency	0.00	0.00 → 14.5 Hz	{0.02 Hz}	650.00	<ul style="list-style-type: none"> • C0010 is not effective with bipolar setpoint selection (-10 V ... + 10 V) • C0010 only limits the analog input 1 		
C0011 ↷SEr	Maximum output frequency	50.00	7.50 → 87 Hz	{0.02 Hz}	650.00	→ Speed setting range 1 : 6 for Lenze geared motors: Setting absolutely required for operation with Lenze geared motors.		
C0012 ↷SEr	Acceleration time main setpoint	5.00	0.00	{0.02 s}	1300.00	Reference: frequency change 0 Hz ... C0011 <ul style="list-style-type: none"> • Additional setpoint ⇔ C0220 • Acceleration times can be activated via digital signals ⇔ C0101 		
C0013 ↷SEr	Deceleration time main setpoint	5.00	0.00	{0.02 s}	1300.00	Reference: frequency change C0011 ... 0 Hz <ul style="list-style-type: none"> • Additional setpoint ⇔ C0221 • Deceleration times can be activated via digital signals ⇔ C0103 		

Code		Possible settings			IMPORTANT	
No.	Name	Lenze	Selection			
C0014 <small>ENTER</small>	Operating mode	2	2	V/f characteristic control V ~ f (Linear characteristic with constant V_{\min} boost)	<ul style="list-style-type: none"> Commissioning without motor parameter identification possible Benefit of identification with C0148: <ul style="list-style-type: none"> – Improved smooth running at low speed – V/f rated frequency (C0015) and slip (C0021) are calculated and stored. They do not have to be entered 	
			3	V/f characteristic control V ~ f ² (Square-law characteristic with constant V_{\min} boost)		
			4	Vector control		
			5	Sensorless torque control with speed limitation <ul style="list-style-type: none"> Torque setpoint via C0412/6 Speed limitation via setpoint 1 (NSET1-N1), if C0412/1 is assigned, if not via max. frequency (C0011) 	For initial selection enter the motor data and identify the motor parameters with C0148 Otherwise commissioning is not possible	
C0015 <small>SEr</small>	V/f rated frequency	50.00	7.50	{0.02 Hz}	960.00	<ul style="list-style-type: none"> C0015 is calculated and stored under C0148 when the motor parameters are identified Settings applies to all possible mains voltages
C0016 <small>SEr</small>	U_{\min} boost	→	0.00	{0.01 %}	40.00	→ Depending on the controller Setting applies to all mains voltages permitted
C0034* <small>ENTER</small> <small>SEr</small>	Setpoint selection range Standard-I/O (X3/8)		0	0	Unipolar voltage 0 ... 5 V / 0 ... 10 V Current 0 ... 20 mA	
			1	1	Current 4 ... 20 mA	Changing the direction of rotation is only possible with a digital signal.
			2	2	Bipolar voltage -10 V ... +10 V	<ul style="list-style-type: none"> Minimum output frequency (C0010) not effective Individual adjustment of offset and gain
			3	3	Current 4 ... 20 mA open-circuit monitored	TRIP Sd5, if $I < 4$ mA Changing the direction of rotation is only possible with a digital signal.

The most important codes for commissioning

Code		Possible settings			IMPORTANT	
No.	Name	Lenze	Selection			
C0034* ENTER (A) 5Er	Setpoint selection range Application I/O				Observe the jumper setting of the function module!	
1	X3/1U, X3/1I	0	0	Unipolar voltage 0 ... 5 V / 0 ... 10 V		
2	X3/2U, X3/2I		1	Bipolar voltage -10 V ... +10 V	Minimum output frequency (C0010) not effective	
			2	Current 0 ... 20 mA		
			3	Current 4 ... 20 mA	Changing the direction of rotation is only possible with a digital signal.	
			4	Current 4 ... 20 mA open-circuit monitored	Changing the direction of rotation is only possible with a digital signal. TRIP Sd5 if I < 4 mA	
C0037	JOG1	20.00	-650.00	{0.02 Hz}	650.00	JOG = fixed setpoint
C0038	JOG2	30.00	-650.00	{0.02 Hz}	650.00	Additional fixed setpoints ⇔ C0440
C0039	JOG3	40.00	-650.00	{0.02 Hz}	650.00	
C0087	Rated motor speed	→	300	{1 rpm}	16000	→ Depending on the controller
C0088	Rated motor current	→	0.0	{0.1 A}	650.0	→ Depending on the controller 0.0 ... 2.0 x rated output current of the controller
C0089	Rated motor frequency	50	10	{1 Hz}	960	
C0090	Rated motor voltage	→	50	{1 V}	500	→ 230 V with 230 V controllers, 400 V with 400 V controllers
C0091	Motor cos φ	→	0.40	{0.1}	1.0	→ Depending on the controller
C0119 ENTER	Configuration of motor temperature monitoring (PTC input) / earth fault detection	0	0	PTC input not active	Earth fault detection active	<ul style="list-style-type: none"> Signal output configuration under C0415 If several parameter sets are used, the monitoring must be separately adjusted for each parameter set. Deactivate the earth fault detection, if it has been activated unintentionally. If the earth fault detection is active, the motor starts after controller enable with a delay of approx. 40 ms.
1			PTC input active, TRIP set			
2			PTC input active, Warning set	Earth fault detection inactive		
3			PTC input not active			
4			PTC input active, TRIP set			
5			PTC input active, Warning set			

Code		Possible settings			IMPORTANT	
No.	Name	Lenze	Selection			
C0140*	Additive frequency setpoint (NSET1-NADD)	0.00	-650.00	{0.02 Hz}	650.00	<ul style="list-style-type: none"> • Selection via function [Set] of the keypad or the parameter channel • Is added to main setpoint • Value is stored when switching the mains or removing the keypad
C0148* STOP	Motor parameter identification	0	0	Ready	<p>Only when the motor is cold!</p> <ol style="list-style-type: none"> 1. Inhibit controller, wait until drive is at standstill 2. Enter the correct motor data under C0087, C0088, C0089, C0090, C0091 (see motor nameplate). 3. Set C0148 = 1 by ENTER 4. Enable controller The identification <ul style="list-style-type: none"> – starts, IMP goes off – the motor makes a high-pitched tone, but does not rotate! – takes approx. 30 s – is completed when IMP is on again 5. Inhibit controller 	
			1	Start identification <ul style="list-style-type: none"> • V/f-rated frequency (C0015), slip compensation (C0021) and motor stator inductivity (C0092) are calculated and saved. • The motor stator resistance (C0084) = total resistance of motor cable and motor is measured and saved 		
C0517* ENTER	User menu				<ul style="list-style-type: none"> • After mains switching or when using the function [Disp] the code from C0517/1 will be displayed. • In Lenze setting, the user menu contains the most important codes for starting-up the control mode "V/f characteristic control with linear characteristic" • When the password protection is activated, only the codes entered under C0517 are freely accessible. • Enter the required code numbers in the subcodes. <p>Codes, which are only active when being used together with an Application-I/O, cannot be entered!</p>	
1	Memory 1	50	C0050	Output frequency (MCTRL1-NOUT)		
2	Memory 2	34	C0034	Analog setpoint selection range		
3	Memory 3	7	C0007	Fixed configuration - digital input signals		
4	Memory 4	10	C0010	Minimum output frequency		
5	Memory 5	11	C0011	Maximum output frequency		
6	Memory 6	12	C0012	Acceleration time main setpoint		
7	Memory 7	13	C0013	Deceleration time main setpoint		
8	Memory 8	15	C0015	V/f rated frequency		
9	Memory 9	16	C0016	U _{min} boost		
10	Memory 10	2	C0002	Parameter set transfer		

Fault	Cause	Remedy
Motor does not rotate	DC-bus voltage too low (Red LED is blinking every 0.4 s; keypad display <i>LL</i>)	Check mains voltage
	Controller inhibited (Green LED is blinking, keypad display: IMP)	Remove the controller inhibit, controller inhibit can be set through several sources
	Automatic start inhibited (C0142 = 0 or 2)	LOW-HIGH edge at X3/28 If necessary, correct start condition (C0142)
	DC injection brake (DCB) active	Deactivate DC injection brake
	Mechanical motor brake is not released	Manual or electrical release of mechanical motor brake
	Quick stop (QSP) active (keypad display: IMP)	Remove quick stop
	Setpoint = 0	Select setpoint
	JOG setpoint activated and JOG frequency = 0	Select JOG setpoint (C0037 ... C0039)
	Active fault	Eliminate fault
	Wrong parameter set active	Change to correct parameter set via terminal
	Operating mode C0014 = -4-, -5-, but no motor parameter identification executed	Motor parameter identification (C0148)
	Under C0410 several functions which exclude each other, are assigned to the same signal source.	Correct configuration in C0410
	Use of internal voltage source X3/20 for function modules Standard I/O, INTERBUS, PROFIBUS-DP or LECOM-B (RS485): Jumper between X3/7 and X3/39 is missing	Jumper terminals
Motor does not rotate smoothly	Defective motor cable	Check motor cable
	Maximum current set too low (C0022, C0023)	Adapt settings to the application
	Motor underexcited or overexcited	Check parameter setting (C0015, C0016, C0014)
	C0084, C0087, C0088, C0089, C0090, C0091 and/or C0092 are not adapted to the motor data	Manual adaptation or identification of motor parameters (C0148)
Current consumption of motor too high	Setting of C0016 too high	Correct setting
	Setting of C0015 too low	Correct setting
	C0084, C0087, C0088, C0089, C0090, C0091 and/or C0092 are not adapted to the motor data	Manual adaptation or identification of motor parameters (C0148)
Motor rotates, setpoints are "0"	With the function Set of the keypad a setpoint has been selected.	Set the setpoint to "0" via C0140 = 0

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Fault detection and elimination**Malfunction of the drive**

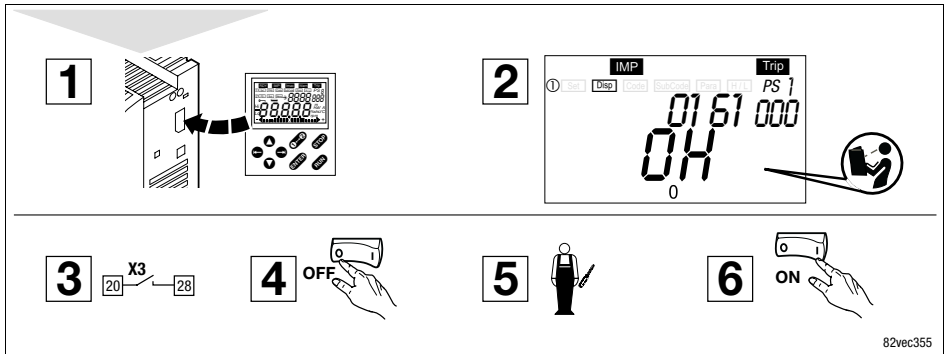
Fault	Cause	Remedy
Motor parameter identification stops with error LP1	Motor too small compared with rated device power	
	DC injection brake active via terminal	
Unacceptable drive response with vector control	various	Optimise vector control (▢ 124)
Torque dip in the field weakening range	various	Contact Lenze
Stalling of the motor when operating in the field weakening range		

LED's at the drive controller (status display)

LED		Operating status	
red ①	green ②		
off	on	Controller enabled	
on	on	Mains switched on and automatic start inhibited	
off	slowly blinking	Controller inhibited	
off	fast blinking	Motor parameter identification	
fast blinking	off	Undervoltage switch-off	
slowly blinking	off	Fault active, check under C0161	

8 Fault detection and elimination

Fault messages



Reset the drive controller in this way if a fault occurs (TRIP reset):

1. Plug the keypad onto the AIF interface during operation.
2. Read and take down fault message on the keypad display.
3. Inhibit controller.
4. Disconnect controller from the mains.
5. Carry out a fault analysis and eliminate the faults.
6. Restart the controller.

Keypad	PC ¹⁾	Error	Cause	Remedy
rDEr	0	No fault	-	-
ccr Trp	71	System fault	Strong interferences on control cables Ground or earth loops in the wiring	Shield control cables
cE0 Trp	61	Communication fault to AIF (configurable in C0126)	Faulty transmission of control commands via AIF	Insert the communication module into the hand terminal
cE1 Trp	62	Communication fault to CAN-IN1 with Sync control	CAN-IN1 object receives faulty data or communication is interrupted	<ul style="list-style-type: none"> ● Plug-in connection - bus module ↔ Check FIF ● Check transmitter ● Increase monitoring time under C0357/1 if necessary
cE2 Trp	63	Communication error to CAN-IN2	CAN-IN2 object receives faulty data or communication is interrupted	<ul style="list-style-type: none"> ● Plug-in connection - bus module ↔ Check FIF ● Check transmitter ● Increase monitoring time under C0357/2 if necessary
cE3 Trp	64	Communication error to CAN-IN1 with event or time control	CAN-IN1 object receives faulty data or communication is interrupted	<ul style="list-style-type: none"> ● Plug-in connection - bus module ↔ Check FIF ● Check transmitter ● Increase monitoring time under C0357/3 if necessary
cE4 Trp	65	BUS-OFF (many communication faults occurred)	Controller has received too many incorrect telegrams via the system bus and has been disconnected	<ul style="list-style-type: none"> ● Check whether bus terminator available ● Check screen contact of the cables ● Check PE connection ● Check bus load, if necessary, reduce the baud rate
cE5 Trp	66	CAN Time-Out (configurable in C0126)	For remote parameter setting via system bus (C0370): Slave does not answer. Communication monitoring time exceeded.	<ul style="list-style-type: none"> ● Check system bus wiring ● Check system bus configuration
			For operation with application I/O: Faulty parameter setting of parameter set changeover	In all parameter sets the signal "parameter set changeover" (C0410/13, C0410/14) must be combined with the same source
			For operation with module in FIF: Internal fault	Contact Lenze
cE6 Trp	67	Function module system bus (CAN) on FIF has set "Warning" or "BUS-OFF" (configurable in C0126)	CAN controller sets "Warning" or "BUS OFF"	<ul style="list-style-type: none"> ● Check whether bus terminator available ● Check screen contact of the cables ● Check PE connection ● Check bus load, if necessary, reduce the baud rate

Keypad	PC ¹⁾	Error	Cause	Remedy
cE7 Trip	68	Communication fault during remote parameter setting via system bus (C0370) (configurable in C0126)	Participant does respond or is not available	<ul style="list-style-type: none"> • Check whether bus terminator available • Check screen contact of the cables • Check PE connection • Check bus load, if necessary, reduce the baud rate
			For operation with application I/O: Faulty parameter setting of parameter set changeover	In all parameter sets the signal "parameter set changeover" (C0410/13, C0410/14) must be combined with the same source
EEr Trip	91	External fault (TRIP-SET)	A digital input assigned to the TRIP-Set function has been activated.	Check external encoder
E-PO ... E-PI9 Trip	-	Communication abort between keypad and basic device	Various	Contact Lenze
FRnI Trip	95	E82ZMV fan module (only 8200 motec 3 ... 7,5 kW)	Fan module is defect	Replace fan module
	-	TRIP or warning configurable under C0608	Fan module is not connected	Connect fan module Check wiring
H05 Trip	105	Internal fault		Contact Lenze
IdI Trip	140	Faulty parameter identification	Motor not connected	Connect motor
LPI Trip	32	Fault in motor phase (is displayed if C0597 = 1)	<ul style="list-style-type: none"> • Failure of one/several motor phase(s) • Motor current too low 	<ul style="list-style-type: none"> • Check motor cables • Check V_{\min} boost • Connect motor to corresponding power or adapt the motor under C0599.
LPI	182	Fault in motor phase (is displayed if C0597 = 2)		
LU IMP	-	DC-bus undervoltage	Mains voltage too low	Check mains voltage
			DC-bus voltage too low	Check supply module
			400 V controller connected to 240 V mains	Connect controller to the appropriate mains voltage
QC1 Trip	11	Short circuit	Short circuit	<ul style="list-style-type: none"> • Find reason for short circuit; check motor cable • Check braking resistor and cable for braking resistor
			Excessive capacitive charging current of the motor cable	Use shorter motor cables with lower charging current

Keypad	PC ¹⁾	Error	Cause	Remedy
OC2 Trip	12	Earth fault	Grounded motor phase	Check motor, check motor cable
			Excessive capacitive charging current of the motor cable	Use shorter motor cables with lower charging current Deactivate earth-fault detection for testing purposes
OC3 Trip	13	Overload inverter during acceleration or short circuit	Acceleration time too short (C0012)	<ul style="list-style-type: none"> ● Increase acceleration time ● Check drive selection
			Defective motor cable	Check wiring
			Interturn fault in the motor	Check motor
OC4 Trip	14	Overload controller during deceleration	Deceleration time set too short (C0013)	<ul style="list-style-type: none"> ● Increase deceleration time ● Check size of external brake resistor
OC5 Trip	15	Controller overload in stationary operation	Frequent and long overload	Check drive selection
OC6 Trip	16	Motor overload (I ² x t overload)	Motor is thermally overloaded, for instance, because of <ul style="list-style-type: none"> ● impermissible continuous current ● frequent or too long acceleration processes 	<ul style="list-style-type: none"> ● Check drive selection ● Check setting of C0120
OH Warn	50	Heatsink temperature > +85 °C	Ambient temperature too high	Allow controller to cool and ensure better ventilation
	-	Heatsink temperature > +80 °C	Heatsink very dirty	Clean heatsink
			Impermissibly high currents or too frequent and too long acceleration	<ul style="list-style-type: none"> ● Check drive selection ● Check load, if necessary, replace defective bearings
OH3 Trip	53	PTC monitoring (TRIP) (is displayed if C0119 = 1 or 4)	Motor too hot because of excessive currents or frequent and too long accelerations	Check drive selection
			PTC not connected	Connect PTC or switch off monitoring
OH4 Trip	54	Controller overtemperature	Controller too hot inside	<ul style="list-style-type: none"> ● Reduce controller load ● Improve cooling ● Check fan in the controller
DHS1	203	PTC monitoring (is displayed if C0119 = 2 or 5)	Motor too hot because of excessive currents or frequent and too long accelerations	Check drive selection
			PTC not connected	Connect PTC or switch off monitoring

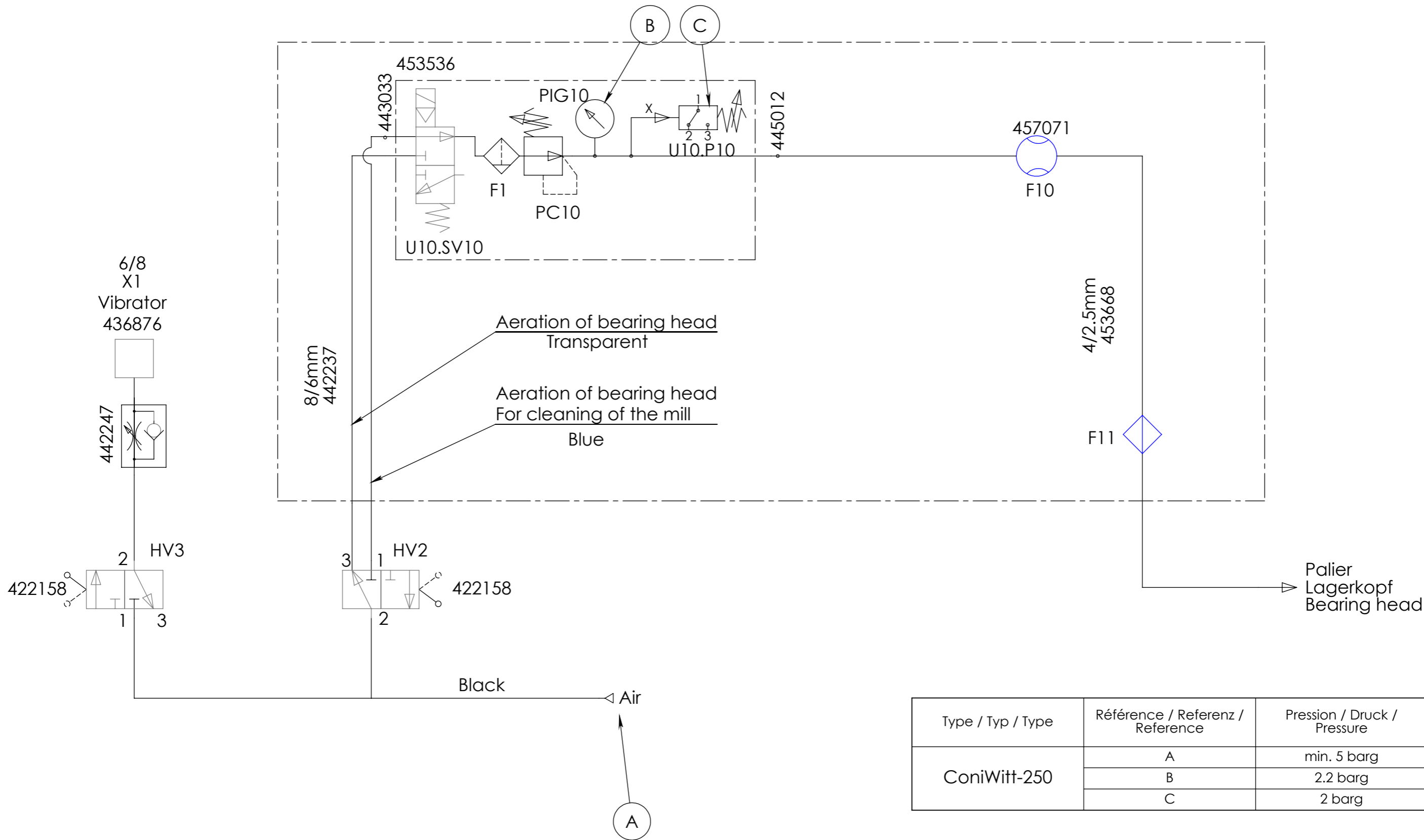
Keypad	PC ¹⁾	Error	Cause	Remedy
OU IMP	-	DC-bus overvoltage (Warning or TRIP configurable under C0310)	Mains voltage too high	Check voltage supply
QUE Trip	22		Braking operation	<ul style="list-style-type: none"> • Prolong deceleration times. • Operation with external brake resistor: <ul style="list-style-type: none"> – Check dimensioning, connection and cable of the brake resistor. – Increase the deceleration times
			Earth leakage on the motor side	Check motor cable and motor for earth fault (disconnect motor from inverter)
Pr Trip	75	Faulty parameter transfer when using the keypad	All parameter sets are defective	It is absolutely necessary to repeat the data transfer or load the Lenze setting before enabling the controller.
Pr-1 Trip	72	Wrong PAR1 transfer when using the keypad.	PAR1 is defective.	
Pr-2 Trip	73	Wrong PAR2 transfer when using the keypad.	PAR2 is defective.	
Pr-3 Trip	77	Wrong PAR3 transfer when using the keypad.	PAR3 is defective	
Pr-4 Trip	78	Wrong PAR4 transfer when using the keypad.	PAR4 is defective	
Pr-5 Trip	79	Internal fault	EEPROM is defective	
PE5 Trip	81	Time fault during parameter set transfer	Data flow from keypad or PC interrupted, e. g. keypad was disconnected during transfer	It is absolutely necessary to repeat the data transfer or load the Lenze setting before enabling the controller.
r5t Trip	76	Faulty auto-TRIP reset	More than 8 fault messages in 10 minutes	Depends on the error message
Sd5 Trip	85	Wire breakage analog input 1	Current at analog input < 4 mA at setpoint range 4 ... 20 mA	Close circuit at analog input
Sd7 Trip	87	Wire breakage analog input 2		

¹⁾ LECOM-fault number, display in parameter setting program Global Drive Control (GDC)

Voir documents suivants.

Siehe folgende Dokumente.

See following documents



Type / Typ / Type	Référence / Referenz / Reference	Pression / Druck / Pressure
ConiWitt-250	A	min. 5 barg
	B	2.2 barg
	C	2 barg

Dimensions without tolerance [mm]	above up to	6	30	120	400	1000	MATERIAL :				
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	Scale %	Similar 457598	Designed 04/05/2011 thle	
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00	Weight [kg]	Revised 19/07/2011 thle	Controlled 19/07/2011 thle	
Schéma pneumatique ATEX DelumpWitt Novartis								A3	Atex	Page 1/1	Ver. A
Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.				Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com				464782-SCH			

Pneumatics 464782_A

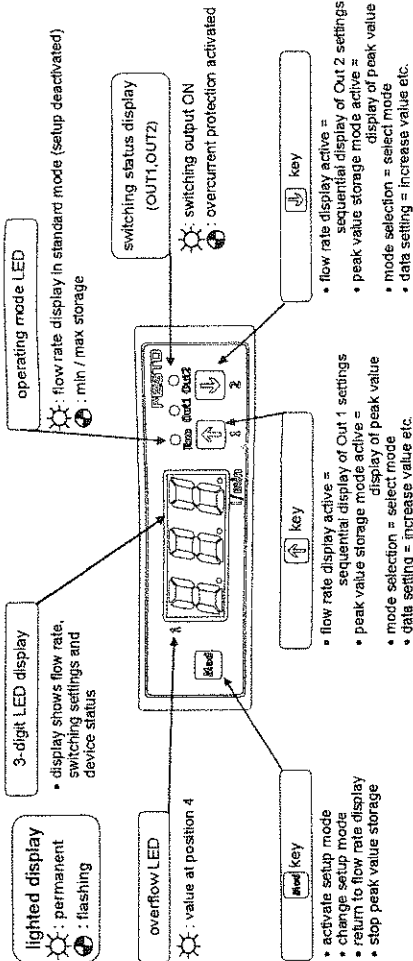
Article N° Artikel Nr. Article ID.	Description Beschreibung Description	Quantité Menge Quantity	Unité Einheit Unit	No Dessin Zeichnungs-Nr Drawing ID
. 422158	Manual control divider NF+NO	1.0000	Pce	464782
. 442075	Push-in L-fitting QSL-B-1/8-6-20, 130927	2.0000	Pce	464782
. 443033	Connection QSM-B-M5-6-20, 130896	1.0000	Pce	464782
. 445012	Push-in L-fitting QLS-B-1/4-4, 130929	1.0000	Pce	464782
. 457071	Sensor SFE3-F500-L-W18-2PB-K1	1.0000	Pce	464782
. 453536	Preparation unit ATEX 2GD	1.0000	Pce	464782
. 457102	Filter inox FDA 0.2 µm G1/4 1.4404 (Off.3169-10-01)	1.0000	Pce	464782

Voir documents suivants.

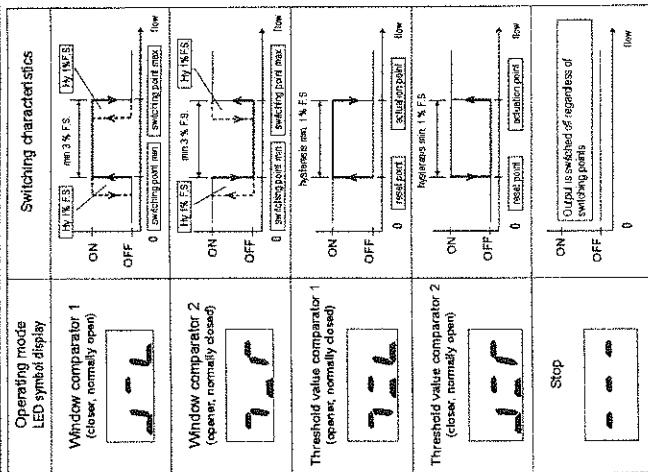
Siehe folgende Dokumente.

See following documents

Display and operation



Switching operation modes



Note 1: During continuous operation, there should be an interval of at least 3% of the measuring range's final value between two switching points. A hysteresis of 1% of the measuring range's final value (FS) is automatically added to the ON and OFF switching points.

Note 2: During threshold value operation, there should be an interval of at least 1% of the measuring range's final value (FS) between two switching points. If both switching points are identical, no switching operation is initiated or the operation is unstable.

Note 3: The left-hand side of the circuit symbol corresponds to a low flow rate, the right-hand side to a high flow rate.

Note 4: The sensor's switching characteristics may be unstable if, e.g., the pressure of the medium fluctuates. Stable switching characteristics must be ensured. This requires either the determination of a sufficient interval between the two switching points or employing the sensor in an area without pressure fluctuation.

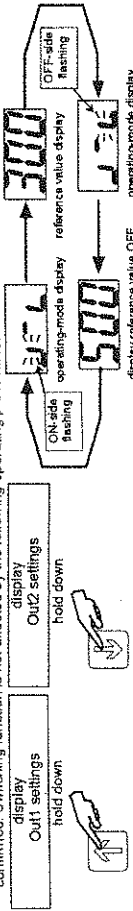
Note 5: The ratio between actuation and reset point is determined during the setting of the operation mode. A reversal of the ratio is impossible. Implementing the set switching characteristics has priority for this device. The ratio is automatically determined when the two switching points are entered. Both values are assigned and processed in a pre-determined manner as the actuation and reset point. In other words: even if the two switching points are entered in reverse order, the allocation is carried out correctly and the operating mode corresponds to specifications.

Example

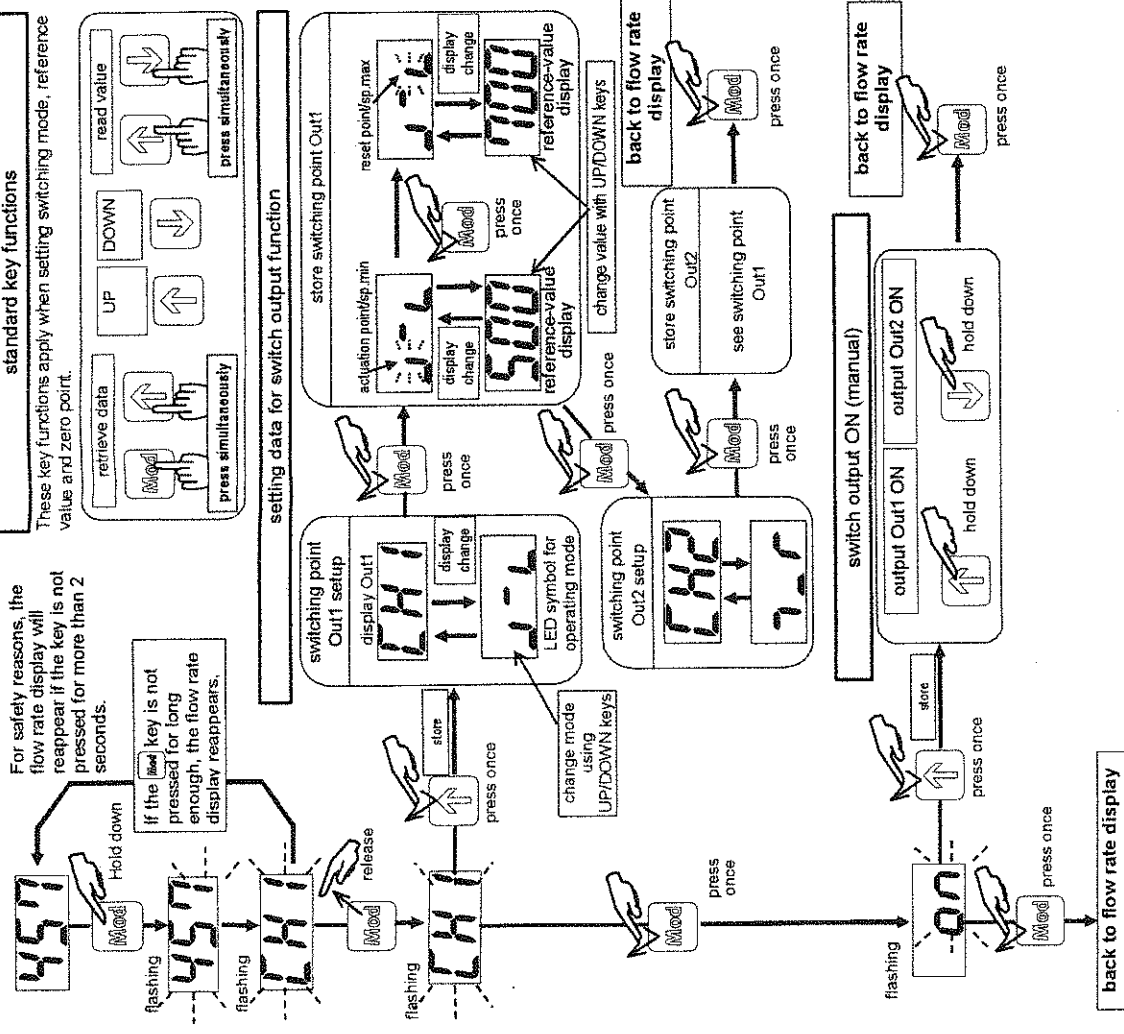
Out	LED symbol	actuation point	reset point
1		200	350
2		300	250

Checking the settings

If keys are pressed while the flow rate is being displayed, switch-on and switch-off points as well as the LED symbols can be displayed and confirmed. Switching function is not affected by the following operating procedures:

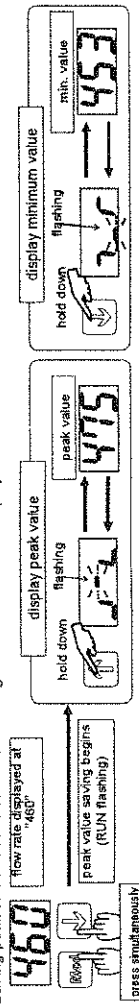


Operating procedure for switch output function and manual output operation



Saving peak value

Minimal and maximal flow rates for a certain time period are displayed. Saving peak values does not affect switching function or flow rate display.



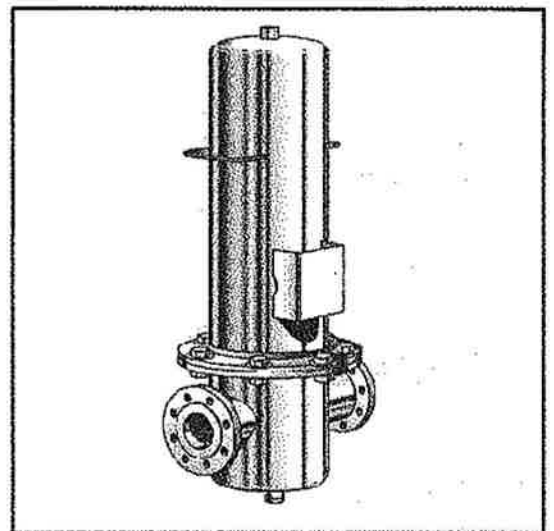
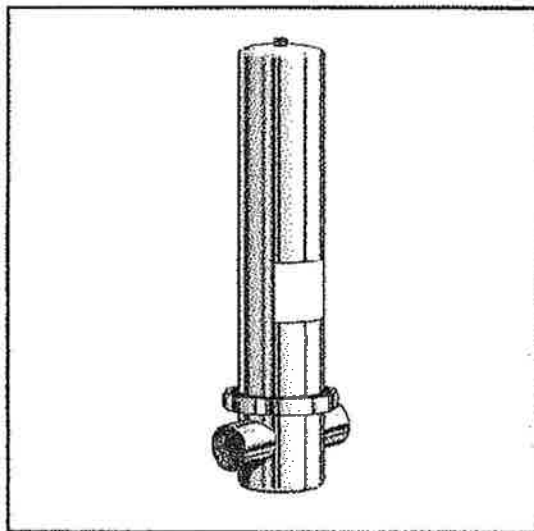


Donaldson
Ultrafilter

P-EG
(single / multiple)



- DE
- GB
- FR
- NL
- IT
- ES
- PT
- DK
- SE
- FI
- GR



Technical alterations reserved!

- Technische Änderungen vorbehalten • Sous réserve de modifications techniques
- Technische gereserveerde wijzigingen • Alterazioni tecniche riservate
 - Alteraciones técnicas reservadas • As alterações técnicas reservaram
 - Ret til tekniske ændringer forbeholdes • Reserverade tekniska förändringar
 - Oikeudet teknisiin muutoksiin pidätetään • Αλλαγές που διατηρούνται τεχνικές
 - Technické změny vyhrazeny • Jätame endale õiguse teha tehnilisi muudatusi
 - Műszaki módosítások joga fenntartva • Pasilikame teisę daryti techninio pobūdžio pakeitimus
 - Lespējamas tehniskas izmaiņas • Zmiany techniczne zastrzeżone • Tehnične spremembe pridržane
 - Technické zmeny vyhradené • Ne rezervăm dreptul de a efectua modificări tehnice
 - Запазваме си правото на технически промени • Teknik değişiklikler saklı tutulur
 - Det tas forbehold om tekniske ændringer • Право на технические изменения сохраняется



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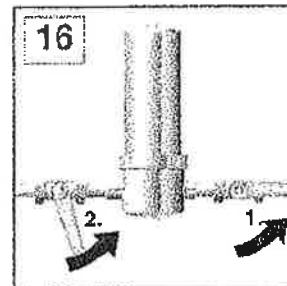
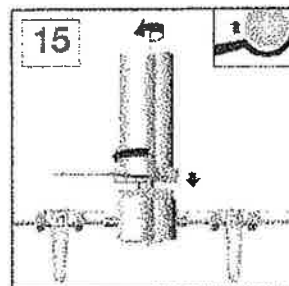
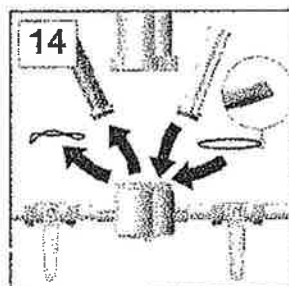
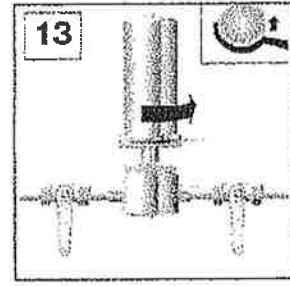
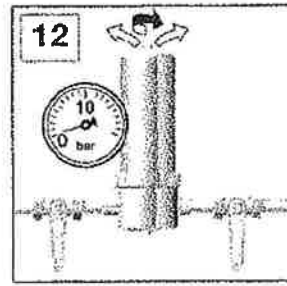
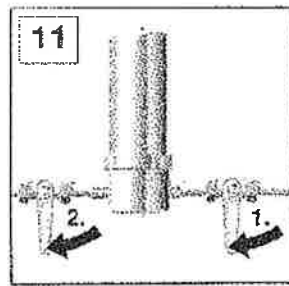
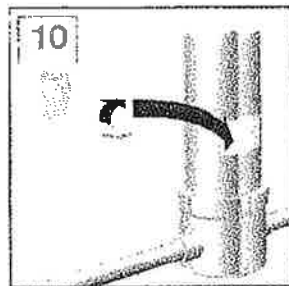
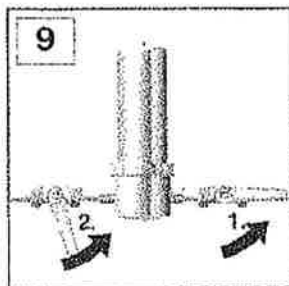
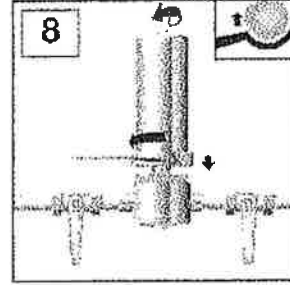
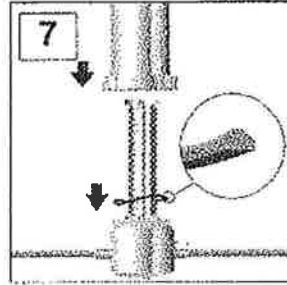
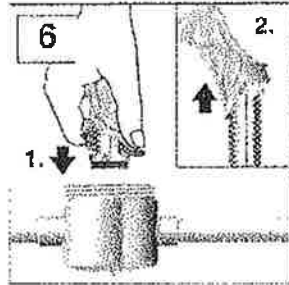
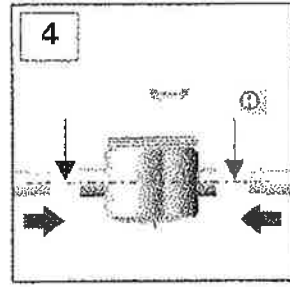
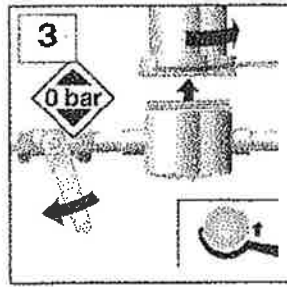
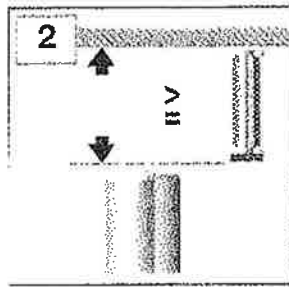
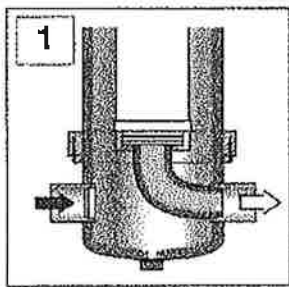
Filtration Solutions

Donaldson Filtration Deutschland GmbH
Industrial Filtration Solutions
Büssingstrasse 1
D-42781 Haan, Germany

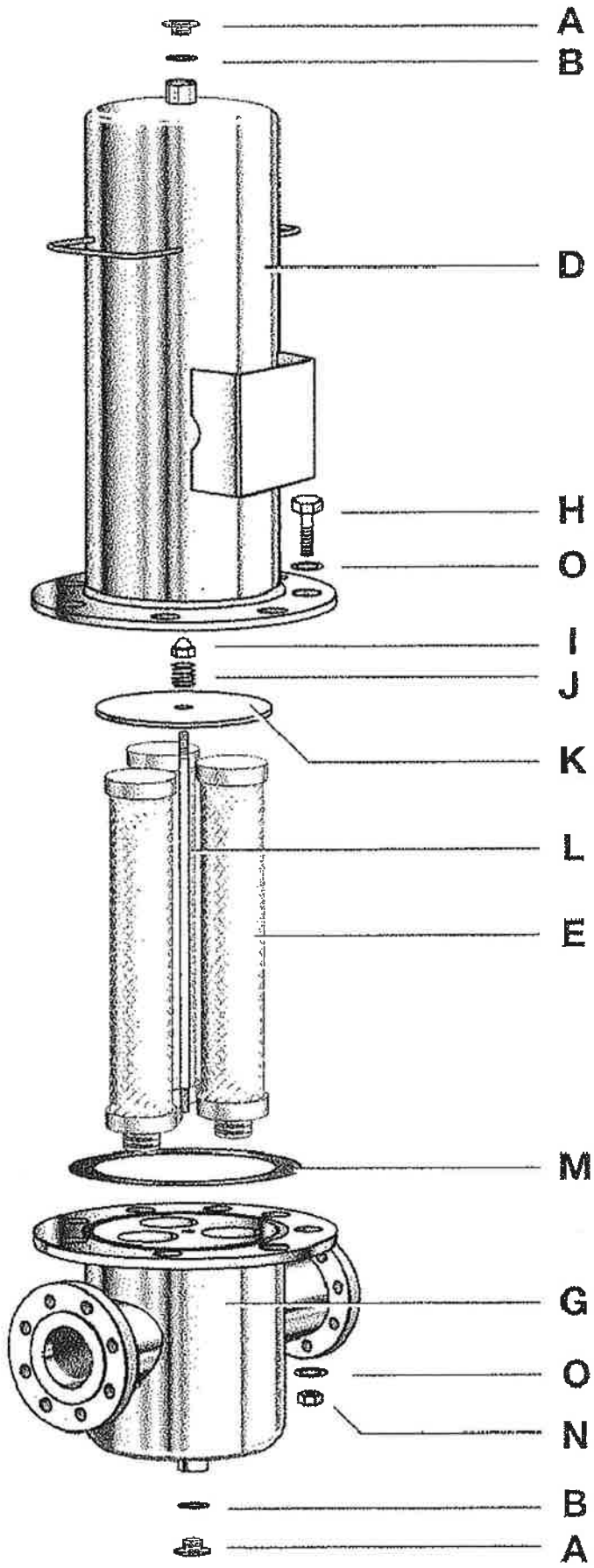
Tel: +49 (0) 2129-569-0
Fax: +49 (0) 2129-569-100
Email: IFS-de@donaldson.com
Internet: www.donaldson.com



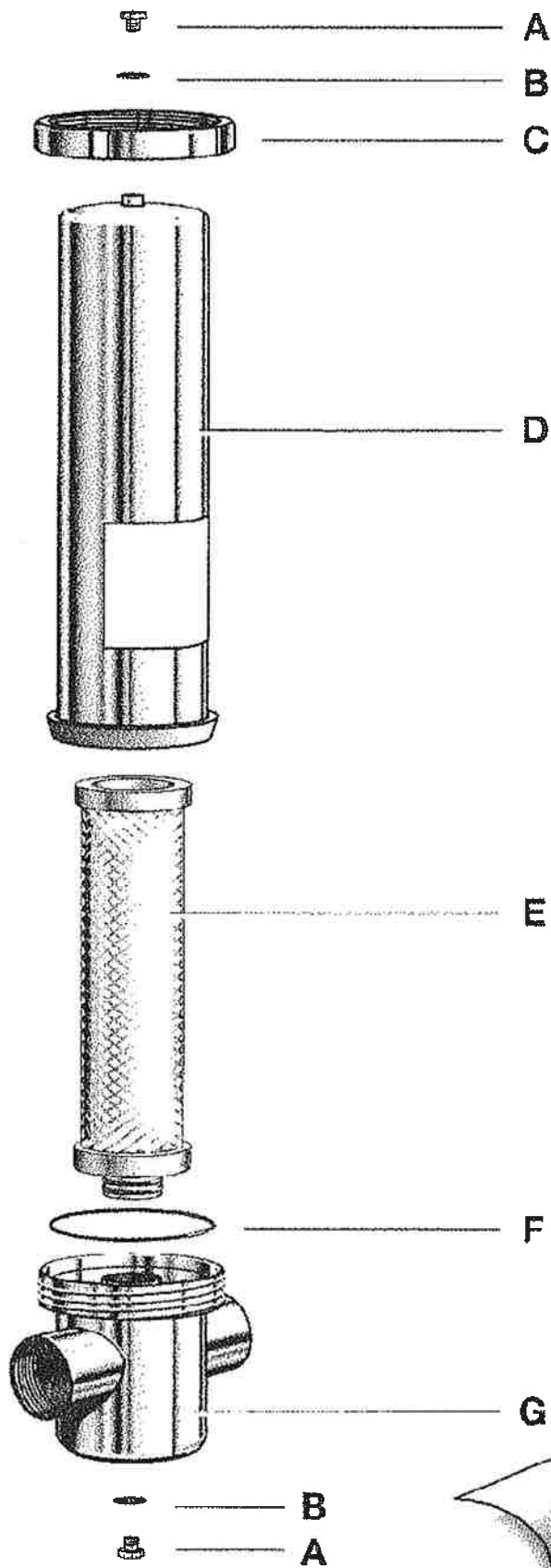
P-EG (single)



P-EG
(multiple)

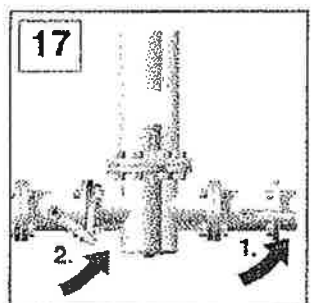
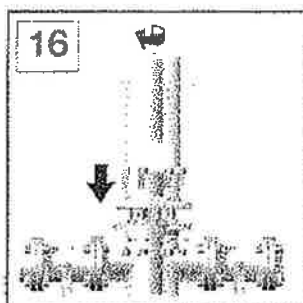
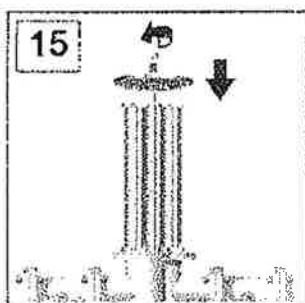
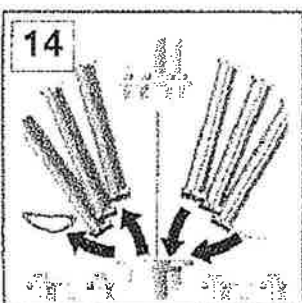
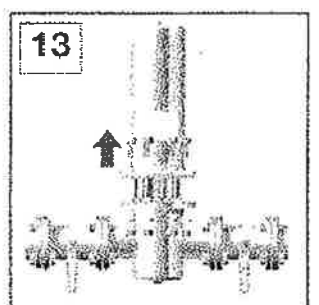
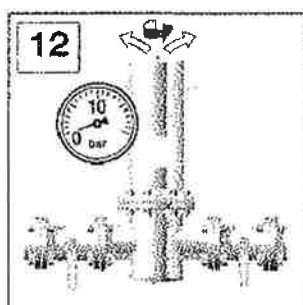
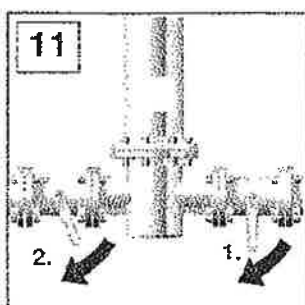
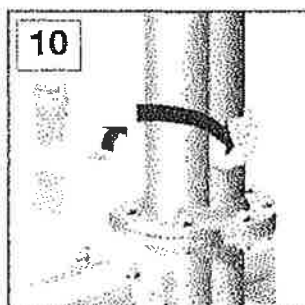
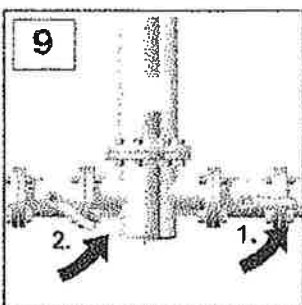
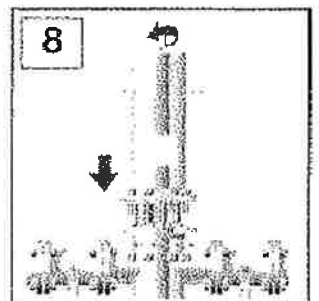
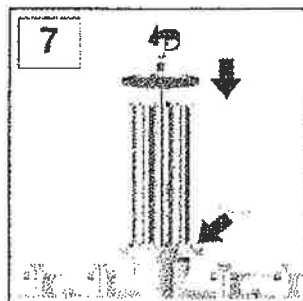
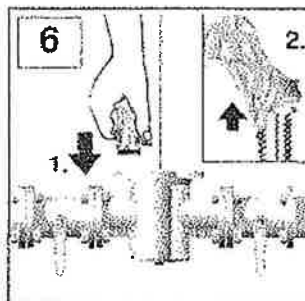
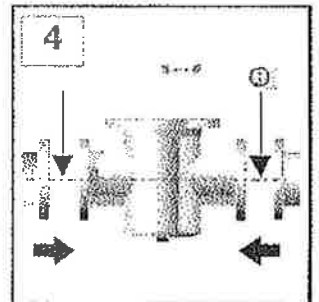
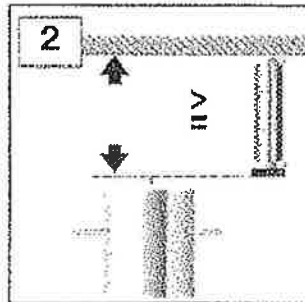
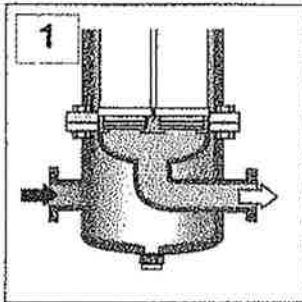


P-EG (single)





P-EG
(multiple)



Functional elements

P-EG

- A Plug
- B Gasket
- C Screw locking ring
- D Upper housing bowl
- E Filter element(s)
- F Sealing ring
- G Lower housing bowl
- H Hexagonal screw
- I Tension nut
- J Spring
- K Bracket plate
- L Tie rod
- M Gasket
- N Hexagonal nut
- O Washer

For your safety



The relevant safety at work and accident prevention regulations, plus the operating instructions, shall apply for operation of the pressure vessel. The pressure vessel has been constructed in accordance with the generally recognized rules of engineering. It complies with the requirements of directive 97/23/EC concerning pressure vessels.

The relevant applicable national regulations in force at the place of installation concerning the operation and routine testing of pressure vessels must be complied with.

You as operator / user of the unit should make yourself familiar with the function, installation and start-up of the unit through these operating instructions.

It is essential that you follow these safety notes and this information in order to ensure trouble-free operation of the unit.

All the safety information is always intended to ensure your personal safety!

- The max. working pressure and the max. permissible working temperature of the pressure vessel are detailed on the type plate.
The permissible working temperatures for filter elements are given under Technical data in these instructions.
- Ensure that the permitted operational temperatures are complied with, regardless of the ambient temperatures prevailing at the place of installation.
- It is necessary to ensure that the unit is equipped with the corresponding safety and test devices to prevent the permissible operating parameters from being exceeded.
- The pressure vessel must be at a safe distance of min. 5 m to prevent heating up in the event of a fire.
- The pressure vessel has been designed for a primarily static pressure loading with a maximum of 1000 cycles to and from the full load. Rapid changes of load with more than 10 % of the max. working pressure are not allowed.
- Ensure that the pressure vessel is not subjected to vibrations that could cause fatigue fractures.
- The pressure vessel is not to be subjected to stresses arising from traffic, wind and earthquakes.
- The medium used may not have any corrosive components that could attack the materials of the pressure vessel in a way that is not permitted.
- All installation and maintenance work on the pressure vessel may only be carried out by trained and experienced specialists.

- ❑ It is forbidden to carry out any kind of work on the pressure vessel and piping, this covering welding and constructional changes, etc. Breaking this rule means extreme danger for you and your colleagues.
- ❑ Attention! If the pressure vessel is operated at temperatures over 60°C, suitable protection to prevent contact must be provided.
- ❑ A pressure gauge that shows the operational pressure must be installed in the unit.
- ❑ Depressurize the system before carrying out any work on the pressure vessel.
- ❑ Clean the piping before carrying out the installation work.
- ❑ The unit must be installed vertically in the piping.
- ❑ Ensure that the pressure vessel is installed without any stresses.
- ❑ Disconnect the power supply when carrying out electrical work.

Appropriate use

The equipment may only be used for its intended purpose. The equipment has been built exclusively:

- ❑ For operating media of **group 2** as per Pressure Equipment Directive 97/23/EC.
- ❑ To separate out microbiological organisms so as to produce 100% sterile compressed air.
- ❑ For the filtration of saturated steam.

Any other form of use or one going beyond this shall be considered as inappropriate. We shall have no liability whatsoever for any damage incurred as a result!

Notes on starting up



PICTURES 1 - 10 (single)

PICTURES 1 - 10 (multiple)

Before initial commissioning

- ❑ The filter elements are not already installed in the state in which they are supplied!
- ❑ All the screwed connections of the pressure vessel must be done up to the required and max. permissible tightening torques for the screws and bolts.
- ❑ Make a visual check! There must be no external damage visible.
- ❑ Make a check for leaks!

Initial commissioning

- ❑ **Slowly** apply pressure to the system by first opening the downstream valve (9).

Information concerning maintenance



PICTURES 11 - 16 (single)

PICTURES 11 - 17 (multiple)

- ❑ Before starting any maintenance work, ensure that the pressure vessel has been depressurized and has cooled down, and cannot be put back into operation during the maintenance work.
- ❑ The filter elements must be changed at regular intervals. At the latest, once the permissible differential pressure has been reached!

The following recommendations apply:

P-GS

Depending on wear, after 6 months at the latest.

Regeneration with ultrasonic is possible.

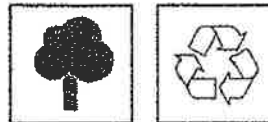
P-SRF / P-BE

The life of the filter elements depends on the one hand on the quality of the prefiltration, and on the overall conditions of the steam and sterile filtration on the other hand. The user must ensure through carrying out sterilisation tests at adequately short intervals that it is possible to detect a dropping off in the performance of the filter in good time.

- ❑ Damaged components are to be replaced by new ones. If a marked degree of damage is found, the entire vessel is to be replaced.
- ❑ The pressure vessel has been designed for a life of 10 years.

- ❑ The sealing ring of the housing or the gasket respectively must also be changed when changing a filter (14).
- ❑ Carry out a check for leaks once the maintenance work has been finished!

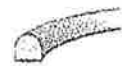
Protection of the environment



- ❑ The packing material and the unit itself and its accessories are produced from recyclable materials.
- ❑ Separating the remaining materials in an appropriate way helps in the recycling of materials.
- ❑ Used filter elements can be returned to the manufacturer.

Spare parts

Sealing ring (single)
DIN 11851



Gasket (multiple)
DIN 2690



Filter elements



Please always quote the type designation on your housing when making orders for spare parts.

Accessories

Manual drain (single)



Screw-in flange (single)
max. 10 bar



C-spanner (single)



Please always quote the type designation on your housing when making orders for accessory parts.

Technical data

P-EG (single)

Max. working pressure PS: 16 bar

Type 288: 12 bar

Design temperature of housing: -200°C/+200°C

Permissible working temperature of housing with EPDM seal (standard)*: - 25°C/+150°C

P-EG (multiple)

Max. working pressure PS: 10 bar

Design temperature of housing: -200°C/+200°C

Permissible working temperature of housing with standard gasket*: - 25°C/+150°C

* Other seal materials on request.

Filter elements

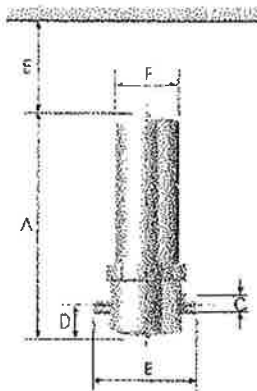
Permissible working temperature:

P-GS ¹⁾ max. 150° C

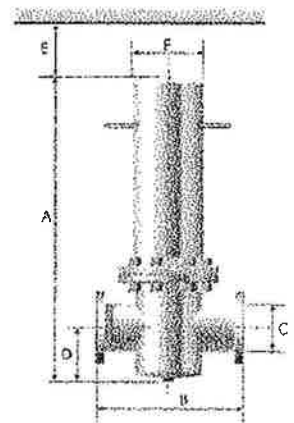
P-SRF max. 200° C

P-BE max. 200° C

¹⁾ > 150°C with welded end caps



Type	A mm	B mm	C [*]	D	E mm	F ø mm	Elements
0006	215	108	R 1/4"	55	90	70	03/10
0009	245	108	R 3/8"	55	90	70	04/10
0012	245	108	R 1/2"	55	120	70	04/20
0018	270	125	R 3/4"	55	150	70	05/20
0027	300	125	R 1"	75	150	85	05/25
0036	350	140	R 1 1/4"	75	200	85	07/25
0048	380	170	R 1 1/2"	80	200	104	07/30
0072	455	170	R 2"	80	280	104	10/30
0108	580	170	R 2"	80	450	104	15/30
0144	765	215	R 2 1/2"	110	580	129	20/30
0192	1015	215	R 3"	110	850	129	30/30
0288	1035	240	R 3"	125	850	154	30/50
0432	1090	410	DN 100	200	580	219,1	3 x 20/30
0576	1350	410	DN 100	200	850	219,1	3 x 30/30
0768	1410	480	DN 150	240	850	273	4 x 30/30
1152	1460	540	DN 150	250	850	323,9	6 x 30/30
1536	1600	680	DN 200	300	850	406,4	8 x 30/30
1920	1600	660	DN 200	300	850	406,4	10 x 30/30



* other connections can also be supplied

Worldwide Warranty Statement

Each Donaldson product is warranted to be free from defects in materials and workmanship under proper use, installation, application, and maintenance in accordance with the manufacturer's written recommendations and specifications for the specific time period outlined below. Before installing the Donaldson products, the customer must prove that the application/usage of the Donaldson product is in accordance with the manufacturer's recommendations and specifications.

The manufacturer's warranty is limited to any such defect and the sole remedy shall be the repair or replacement (at Donaldson's option) of the warranted and unaltered product, returned to the manufacturer and proven to have such defect and provided the defect occurred and is reported within the time guideline listed below.

Any warranted parts or dryers will extend to the remaining period of original warranty and not beyond.

ALL DONALDSON PRODUCTS excluding filter elements and spare parts:

24 months from date of purchase. Proof of purchase must be received from claimant to verify purchase date or commissioning by Donaldson service.

DONALDSON ORIGINAL SPARE PARTS AND FILTER ELEMENTS:

six (6) months 'parts only' warranty from date of purchase

MAINTENANCE AND ADJUSTMENT:

Do not fall inside the scope of this Warranty:

1. Adjustment to hot gas bypass valves, float drains, condenser cleaning, and other routine maintenance required to keep a dryer in good operating order. As said maintenance is the responsibility of the owner of the equipment, labour nor material will be reimbursed under warranty.
2. The usual maintenance and replacement type products. For further adjustment and maintenance requirements, please consult the appropriate Installation and Operation Manual.

No warranty service work can be commenced, without Donaldson's explicit written consent. Donaldson will not reimburse warranty work unless it has been pre-authorized.

Unauthorized service makes this warranty void and any resulting charge, costs, damages or subsequent claim will not be paid.

Worldwide Warranty Statement

What Is And What Is Not Covered Under This Warranty?

NOT COVERED:

- Defects due to non-original Donaldson parts being used.
- Products found to be damaged by exposure to acidic or otherwise corrosive environments.
- All freight damage claims are not the responsibility of the manufacturer and are not covered under warranty as all products are shipped F.O.B. shipper. Please direct freight claims to the shipper in questions.
- More than one service technician on a warranty job or extra helpers (on site personnel should assist as much as possible).
- Overtime hours, weekend labour rates.
- Airfreight of units or parts. If airfreight is required, the manufacturer will pay the cost for normal ground transporting and the customer will be liable for costs exceeding those charges.
- Removal or reinstallation of equipment, extra bypassing to accomplish repairs.
- Hot gas valve adjustments or other normal maintenance items.
- Damages due to misapplication, poor maintenance, corrosive environments, or other items outside the scope of manufacturer defects. See Operating and Instruction Books.

COVERED:

- Repairs due to defects in materials.
- Repairs due to defects in workmanship.
- A maximum of 200 Km round trip travel for one service technician at a maximum rate of 65 € / hour and 30 cent / per Km.
- Any accessories, parts and equipment supplied by Donaldson, but not manufactured by Donaldson shall carry the manufacturer's warranty provided it is possible for Donaldson to pass on such warranty to the customer.
- Total value of claim is limited to the maximum value of the warranted product including labour and materials.**

Worldwide Warranty Statement

Specifications, limitations and recommended applications and uses for and of products may be established or amended by Donaldson from time to time.

Samples, descriptions, representations, and other information concerning products in Donaldson catalogues, advertisements or other promotional materials or statements of representations made by Donaldson employees or sales representatives are for general information purpose only and are not binding upon Donaldson with respect to such warranty provisions.

No employee or sales representative of Donaldson shall have any authority whatsoever to establish, expand or otherwise modify Donaldson product specifications, limitations, or recommended applications without Donaldson giving its prior written consent to the Customer.

To claim under warranty, the goods must have been installed and continuously maintained in the manner specified in the Operators Handbook. Our Service Engineers are highly qualified and equipped to assist you in this respect. They are also available to make repairs that may become necessary, in which event they will require an official order before carrying out the work. If such work is to be the subject of a warranty claim, the order should be endorsed 'for consideration under warranty'. Warranty claims must be submitted and shall be processed in accordance with Donaldson's established warranty claim procedure.

This is the only authorized Donaldson warranty and is in lieu of all other expressed or implied warranties or representation including any implied warranties or other obligations on the part of the manufacturer. The forgoing is the exclusive remedy of any buyer of the manufacturer's product. The maximum damages liability of the manufacturer's is the original purchase price of the product or part. To the extent permitted by the applicable law, Donaldson will not be held liable for business interruptions, loss of profits, personal injury, costs of delay or any other special indirect, incidental, special or consequential loss, costs, or damages.

Herstellerbescheinigung

Richtlinie für Druckgeräte 97/23/EG

DE

Name und Anschrift des Herstellers:

Donaldson Filtration Deutschland GmbH
Büssingstraße 1
D-42781 Haan

Hiermit wird bescheinigt, dass die Fertigung und die Ergebnisse der Prüfungen an den unten genannten Druckgeräten die Anforderung der Richtlinie 97/23/EG gemäß Artikel 3, Absatz 3 erfüllen.

Beschreibung der Druckgeräte:

P-EG 0006 P-EG 0027
P-EG 0009 P-EG 0036
P-EG 0012 P-EG 0048
P-EG 0018

Haan, 14.01.2009

J. Debackere
Plant Manager

M. Pohlmann
Quality Representative

Konformitätserklärung

Richtlinie für Druckgeräte 97/23/EG

DE

Name und Anschrift des Herstellers:

Donaldson Filtration Deutschland GmbH
Büssingstraße 1
D-42781 Haan

Hiermit wird bescheinigt, dass die Fertigung und die Ergebnisse der Prüfungen an den unten genannten Druckgeräten die Anforderung der Richtlinie 97/23/EG erfüllen.

Kategorie: 1 Modul: A

Die Druckgeräte sind mit dem abgebildeten Zeichen gekennzeichnet: **CE**

Beschreibung der Druckgeräte:

P-EG 0072 P-EG 0192
P-EG 0108 P-EG 0288
P-EG 0144

Haan, 14.01.2009

J. Debackere
Plant Manager

M. Pohlmann
Quality Representative

Manufacturer Certificate

Pressure Equipment Directive 97/23/EC

GB

Name and address of the manufacturer:

Donaldson Filtration Deutschland GmbH
Büssingstraße 1
D-42781 Haan

It is hereby certified that the manufacturing and the results of the tests fulfill the requirements of directive 97/23/EC, article 3, paragraph 3 on the following pressure vessels.

Description of the pressure vessels:

P-EG 0006 P-EG 0027
P-EG 0009 P-EG 0036
P-EG 0012 P-EG 0048
P-EG 0018

Haan, 14.01.2009

J. Debackere
Plant Manager

M. Pohlmann
Quality Representative

Declaration of Conformity

Pressure Equipment Directive 97/23/EC

GB

Name and address of the manufacturer:

Donaldson Filtration Deutschland GmbH
Büssingstraße 1
D-42781 Haan

It is hereby certified that the manufacturing and the results of the tests fulfill the requirements of directive 97/23/EC, on the following pressure vessels

Kategorie: 1 Modul: A

The pressure vessels are marked with the sign shown: **CE**

Description of the pressure vessels:

P-EG 0072 P-EG 0192
P-EG 0108 P-EG 0288
P-EG 0144

Haan, 14.01.2009

J. Debackere
Plant Manager

M. Pohlmann
Quality Representative

Certificat du fabricant

Directive pour les appareils sous pression
97/23/CEE

FR

Nom et adresse du fabricant:

Donaldson Filtration Deutschland GmbH
Büssingstraße 1
D-42781 Haan

Par la présente, il est certifié que la fabrication et les résultats des contrôles faits sur les produits mentionnés ci-dessous, sont conformes aux exigences de la directive 97/23/CEE conformément à l'article 3, paragr. 3.

Description des appareils sous pression:

P-EG 0006 P-EG 0027
P-EG 0009 P-EG 0036
P-EG 0012 P-EG 0048
P-EG 0018

Haan, 14.01.2009

J. Debackere
Plant Manager

M. Pohlmann
Quality Representative

Déclaration de conformité

Directive pour les appareils sous pression
97/23/CEE

FR

Nom et adresse du fabricant:

Donaldson Filtration Deutschland GmbH
Büssingstraße 1
D-42781 Haan

Par la présente, il est certifié que la fabrication et les résultats des contrôles faits sur les produits mentionnés ci-dessous, sont conformes aux exigences de la directive 97/23/CEE

Catégorie: I Module: A

L'appareil sous pression est identifié par
le sigle ci-joint: **CE**

Description des appareils sous pression:

P-EG 0072 P-EG 0192
P-EG 0108 P-EG 0288
P-EG 0144

Haan, 14.01.2009

J. Debackere
Plant Manager

M. Pohlmann
Quality Representative

Bevestiging van de fabrikant

Richtlijn voor druktoestellen 97/23/EC

NL

Naam en adres van de fabrikant:

Donaldson Filtration Deutschland GmbH
Büssingstraße 1
D-42781 Haan

Hiermee wordt bevestigd dat de resultaten van de tests die aan de volgende druktoestellen zijn uitgevoerd voldoen aan de eisen conform richtlijn 97/23/EC, artikel 3, paragraaf 3.

Beschrijving van het druktoestel:

P-EG 0006 P-EG 0027
P-EG 0009 P-EG 0036
P-EG 0012 P-EG 0048
P-EG 0018

Haan, 14.01.2009

J. Debackere
Plant Manager

M. Pohlmann
Quality Representative

Verklaring van overeenstemming

Richtlijn voor druktoestellen 97/23/EC

NL

Naam en adres van de fabrikant:

Donaldson Filtration Deutschland GmbH
Büssingstraße 1
D-42781 Haan

Hiermee wordt bevestigd dat de uitvoering en de resultaten van de tests die aan de onderstaande druktoestellen zijn uitgevoerd voldoen aan de eisen conform richtlijn 97/23/EC.

Categorie: I Module: A

Met de afgebeelde tekening wordt het
druktoestel aangeduid: **CE**

Beschrijving van het druktoestel:

P-EG 0072 P-EG 0192
P-EG 0108 P-EG 0288
P-EG 0144

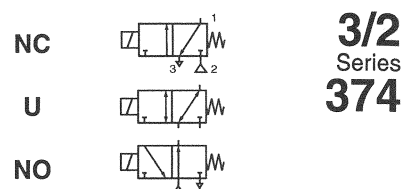
Haan, 14.01.2009

J. Debackere
Plant Manager

M. Pohlmann
Quality Representative

SOLENOID VALVES

direct operated
core disc
1/4



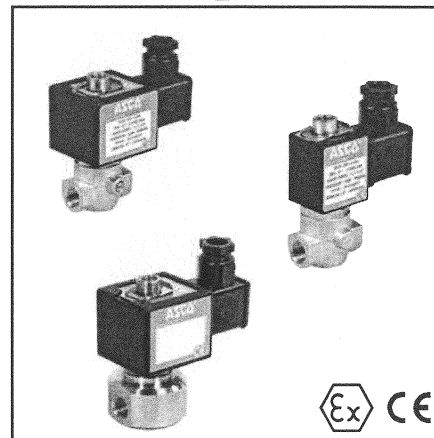
FEATURES

- Compact valve intended for single-acting actuator control
- Epoxy moulded coil for general service applications
- Coils interchangeable without dismantling the valve
- Valves do not require a minimum operating pressure
- The solenoid valves satisfy all relevant EC directives

GENERAL

Differential pressure See "SPECIFICATIONS" [1 bar =100 kPa]
Maximum viscosity 40 cSt (mm²/s)
Response time 8 - 20 ms

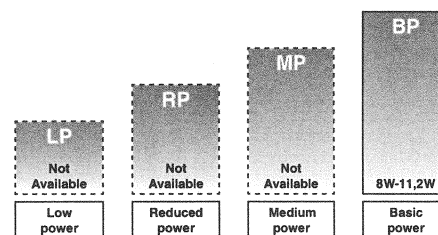
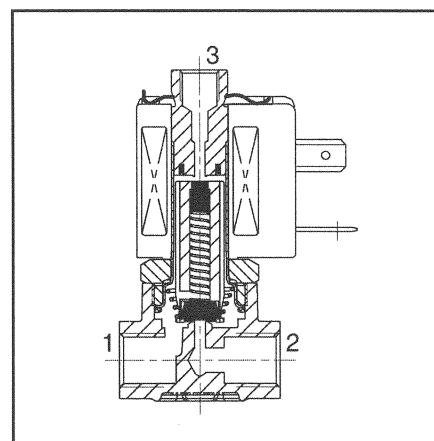
fluids (*)	temperature range (TS)	seal materials (*)
water, air, inert gas, oil	- 25°C to + 80°C	NBR (nitrile)



MATERIALS IN CONTACT WITH FLUID

(*) Ensure that the compatibility of the fluids in contact with the materials is verified

Body Brass or AISI 316L (1.4404)
Internal parts, springs Stainless steel
Seat Brass and stainless steel
Seals NBR
Core guide CA
Shading coil Copper



POWER LEVELS - cold electrical holding values (watt)

SPECIFICATIONS

pipe size	orifice size	flow coefficient Kv				operating pressure differential (bar)				prefix optional solenoids					basic catalogue number				
										ATEX/CENELEC (gas/dust)									
		2 → 1	1 → 3	min.	max. (PS)	power level BP	Ex d	Ex emb	Ex mb	EEx n	IP65	brass	stainless st.						
(*)	(mm)	(m ³ /h)	(l/min)	(m ³ /h)	(l/min)		air/water/oil (*)	~	=	~	=	NK	EM	PV	ZN	SC			
NC - Normally closed																			
1/4	2,0	0,11	1,8	0,15	2,5	0	16	-	8	-	-	-	-	-	-	●	❖374A001	❖374A031	
1/4	2,0	0,11	1,8	0,15	2,5	0	-	8	-	10,8	-	-	-	-	-	●	❖374A061	❖374A070	
1/4	2,0	0,11	1,8	0,15	2,5	0	16	16	10,5	11,2	●	●	●	●	●	●	❖374A016	❖374A046	
1/4	2,7	0,22	3,6	0,15	2,5	0	10	-	8	-	-	-	-	-	-	●	❖374A002	❖374A032	
1/4	2,7	0,22	3,6	0,15	2,5	0	-	5	-	10,8	-	-	-	-	-	●	❖374A062	❖374A071	
1/4	2,7	0,22	3,6	0,15	2,5	0	10	10	10,5	11,2	●	●	●	●	●	●	❖374A017	❖374A047	
1/4	3,8	0,32	5,3	0,15	2,5	0	5	-	8	-	-	-	-	-	-	●	❖374A003	❖374A033	
1/4	3,8	0,32	5,3	0,15	2,5	0	-	2	-	10,8	-	-	-	-	-	●	❖374A063	❖374A072	
1/4	3,8	0,32	5,3	0,15	2,5	0	5	5	10,5	11,2	●	●	●	●	●	●	❖374A018	❖374A048	

❖ Select B for NPT ANSI 1.20.3 or select E for ISO (228/1 and ISO 7/1) ● Available feature - Not available

SPECIFICATIONS

pipe size	orifice size	flow coefficient Kv				operating pressure differential (bar)				power level BP		prefix optional solenoids					basic catalogue number		
		2 → 1		1 → 3		min.	max. (PS)					ATEX/CENELEC (gas/dust)							
		(m³/h)	(l/min)	(m³/h)	(l/min)		air (*)	water/oil (*)		Ex d	Ex emb	Ex mb	EEx n	IP65	brass	stainless st.			
(*)	(mm)	(m³/h)	(l/min)	(m³/h)	(l/min)		~	=	~	=	~	=	NK	EM	PV	ZN	SC		
U - Universal																			
1/4	2,7	0,22	3,6	0,15	2,5	0	8	-	4	-	8	-	-	-	-	-	●	❖374A012	❖374A042
1/4	2,7	0,22	3,6	0,15	2,5	0	8	4	4	4	10,5	11,2	●	●	●	●	●	❖374A027	❖374A057
1/4	3,8	0,32	5,3	0,15	2,5	0	4	-	4	-	8	-	-	-	-	-	●	❖374A013	❖374A043
1/4	3,8	0,32	5,3	0,15	2,5	0	4	2	4	2	10,5	11,2	●	●	●	●	●	❖374A028	❖374A058
NO - Normally open																			
1/4	2,5	0,22	3,6	0,15	2,5	0	10	-	10	-	8	-	-	-	-	-	●	❖374A007	❖374A037
1/4	2,5	0,22	3,6	0,15	2,5	0	10	10	10	10	10,5	11,2	●	●	●	●	●	❖374A022	❖374A052

PREFIX TABLE

prefix							description	power level			
1	2	3	4	5	6	7		LP	RP	MP	BP
S	C				D	U	Dustproof ATEX (EN 50281-1-1) *	-	-	-	●
E	M						Encapsulated ATEX + IECEx (EN/IEC 60079 / 61241) *	-	-	-	● ⁽¹⁾
		E	T				Threaded conduit/hole (M20 x 1.5)	-	-	-	● ⁽¹⁾
N	K						Flameproof - Alum. ATEX (EN 60079 / 61241) *	-	-	-	● ⁽¹⁾
P	V						Encapsulated ATEX + IECEx (EN/IEC 60079 / 61241) *	-	-	-	● ⁽¹⁾
S	C						Solenoid with spade plug connector (EN 60730)	-	-	-	● ⁽¹⁾
W	P						Waterproof IP67 - Metal enclosure (EN 60730)	-	-	-	● ⁽¹⁾
W	S						Waterproof IP67 - 316 SS enclosure (EN 60730)	-	-	-	● ⁽¹⁾
W	S	E	M				316 SS "EM" encl. ATEX + IECEx (EN/IEC 60079/61241) *	-	-	-	● ⁽¹⁾
W	P				D	U	Dustproof ATEX (EN 50281-1-1) - Metal enclosure *	-	-	-	● ⁽¹⁾
W	S				D	U	Dustproof ATEX (EN 50281-1-1) - 316 SS enclosure *	-	-	-	● ⁽¹⁾
Z	N						Encapsulated Non Sparking ATEX (EN 50021) *	-	-	-	● ⁽¹⁾
			T				Threaded conduit (1/2" NPT)	-	-	-	● ⁽¹⁾
				H	T		Class H - High temperature	-	-	-	● ⁽¹⁾
						X	Other special constructions	-	-	-	● ⁽¹⁾

PRODUCT SELECTION GUIDE

STEP 1

Select basic catalogue number, including pipe thread identification letter. Refer to the specifications tables on pages 1 and 2.

Example: E374A016

STEP 2

Select prefix (combination). Refer to the specifications table on page 1 and the prefix table on page 2, respect the indicated power level.

Example: EM

STEP 3

Select suffix (combination) if required. Refer to the suffix table on page 2, respect the indicated power level.

Example: MS

STEP 4

Select voltage. Refer to standard voltages on page 3.

Example: 230V / 50Hz

STEP 5

Final catalogue / ordering number.

Example:

EME374A016MS 230 V / 50 Hz

SUFFIX TABLE

suffix					description	power level			
1	2	3	4	5		LP	RP	MP	BP
E					EPDM (ethylene-propylene)	-	-	-	●
V					FPM (fluoroelastomer)	-	-	-	●
N	V				FPM (fluoroelastomer) parts cleaned for oxygen service	-	-	-	●
		M	S		Screw type manual operator	-	-	-	●

OPTIONS & ACCESSOIRES

catalogue number	spare parts kit n°(2)		screw type manual operator
	~	=	
❖374A001/002/003	C140038	-	C140048
❖374A031/032/033	C140038	-	C140072
❖374A061/062/063	-	C140037	C140048
❖374A070/071/072	-	C140037	C140072
❖374A016/017/018	C140038	C140038	C140048
❖374A046/047/048	C140038	C140038	C140072
❖374A012/013	C140042	-	C140048
❖374A042/043	C140042	-	C140072
❖374A027/028	C140042	C140042	C140048
❖374A057/058	C140042	C140042	C140072
❖374A007	C140039	-	C140048
❖374A037	C140039	-	C140072
❖374A022	C140039	C140039	C140048
❖374A052	C140039	C140039	C140072

❖ Select B for NPT ANSI 1.20.3 or select E for ISO (228/1 and 7/1)

● Available feature

- Not available

* ATEX solenoids are also approved according to EN/IEC 61241 (Dust) and EN 13463-1 (non electrical valves)

(1) Power level 10,5/11,2: Available feature, see Specifications page 1

(2) Standard suffixes E and V are also applicable to kits

(3) Basic kit number applies to SC coil construction

ORDERING EXAMPLES VALVES:

SC	E	374 A	046 MS	230V / 50 Hz
SCDU	E	374 A	061 MS	230V / 50 Hz
SCHT	B	374 A	018	230V / 50 Hz
WS	E	374 A	048 MS	24V / DC
WP	B	374 A	022	24V / DC
EM	B	374 A	017 MS	230V / 50 Hz

prefix _____
 pipe thread _____
 basic number _____
 voltage _____
 suffix _____

ORDERING EXAMPLES KITS:

C140038	(3)
C140038	V
C140037	E

basic number _____
 suffix _____

EXPLANATION OF TEMPERATURE RANGES OF SOLENOID VALVES

Valve temperature range	The valve temperature range is determined by the selected seal material, the temperature range for proper operation of the valve and sometimes by the fluid (e.g. steam)
Operator ambient temperature range	The operator ambient temperature range is determined by the selected power level (LP, RP, MP or BP) and the ATEX safety code
Total temperature range	The temperature range of the complete solenoid valve is determined by the limitations of both temperature ranges above

ELECTRICAL CHARACTERISTICS

Coil insulation class	F
Electrical safety	IEC 335
Standard voltages	DC (=) 24V - 48V AC (-) 24V - 48V - 115V - 230V/50Hz; other voltages and 60Hz are available on request

prefix option	power ratings				operator ambient temperature range (TS) (C°)	safety code	electrical enclosure protection (EN 60529)	replacement coil / kit		type ⁽¹⁾
	inrush	holding		hot/cold				~	=	
	(VA)	(VA)	(W)	(W)				230 V / 50 Hz	24 V DC	
Basic power (BP)										
SC	23	14	8	8/10,8	-25 to +60	EN 60730	moulded IP65	43005096	43005099	01-02
SCDU	23	14	8	8/10,8	-25 à +40(-)/+60(=)	II 3 D IP65 T 135°C	moulded IP65	- ⁽²⁾	- ⁽²⁾	01-02
SC	55	23	10,5	9/11,2	-40 to +75	EN 60730	moulded IP65	400425-117	400425-142	03-04
SCDU	55	23	10,5	9/11,2	-40 à +75	II 3D IP65 T 200°C(-)/135°C(=)	moulded IP65	- ⁽²⁾	- ⁽²⁾	03-04
WP	55	23	10,5	9/11,2	-40 to +75	EN 60730	steel IP67	400405-117	400405-142	07-08
WPDU	55	23	10,5	9/11,2	-40 to +75	EN 60730	steel IP67	- ⁽²⁾	- ⁽²⁾	07-08
WS	55	23	10,5	9/11,2	-40 to +75	EN 60730	steel IP67	400405-117	400405-142	07-08
WSDU	55	23	10,5	9/11,2	-40 to +75	EN 60730	steel IP67	- ⁽²⁾	- ⁽²⁾	07-08
NK	55	23	10,5	9/11,2	-40 à +50/60	II 2G/D Ex d IIB+H ₂ T4/Ex tD	aluminium IP65	400405-117	400405-142	05-06
EMWSEM	55	23	10,5	9/11,2	-40 to +40	II 2G/D Ex emb II T3/Ex tD	steel/SS IP67	400-909-117	400-913-142	07-08
PV	55	23	10,5	9/11,2	-40 to +65	II 2G/D Ex mb II T3(-)/T4(=)/Ex mD	moulded IP65	- ⁽²⁾	- ⁽²⁾	09-10
ZN	55	23	10,5	9/11,2	-20 to +50	II 3 G/D EEx nA II T3	moulded IP65	- ⁽²⁾	- ⁽²⁾	03-04

- Not available

⁽¹⁾ Refer to the dimensional drawings on pages 4 to 6

⁽²⁾ Multiple coil kits available under ATEX, contact us

ELECTRICAL CONNECTIONS

prefix	connection
SC, SCDU, ZN	Spade plug connector with cable gland EN 175301-803A (ISO 4400) for cables with an outer diameter from 6 to 10 mm.
WP, WS, EM, WSEM, WPDU, WSDU	M22 cable gland for cables with an outer diameter from 7 to 12 mm. With an internal and external facility for an earthing or bonding conductor.
NK	3/4" NPT cable gland for unarmoured cables with an outer diameter from 8,5 to 16 mm or 12 to 20,5 mm or for armoured cables with an inner diameter of 8,5 to 16 mm and an outer diameter of 12 to 21 mm.
PV	Moulded-in cable, standard length 2 m

ADDITIONAL OPTIONS

<ul style="list-style-type: none"> • Other pipe threads are available on request • Ex mb (prefix "PV") execution can be supplied in various cable lengths • Compliance with "UL", "CSA" and other local approvals available on request • 1/2" NPT (prefix "T") and M20 x 1.5 (prefix "ET") conduits (aluminium or 316 SS) available for steel solenoid housing
--

INSTALLATION

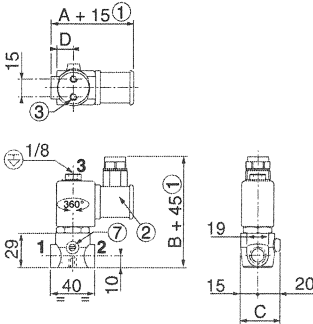
<ul style="list-style-type: none"> • Installation/maintenance instructions are included with each valve • The solenoid valves can be mounted in any position without affecting operation • Threaded pipe connection identifier is: B = NPT (ANSI 1.20.3); E = (ISO 228/1 and ISO 7/1) • Prefix "NK" enclosure is provided with a 3/4" NPT threaded entry hole (M20 x 1,5 (prefix "ET") optional) and is supplied without cable gland
--

DIMENSIONS (mm), WEIGHT (kg)



TYPE 01: Prefixes SC: IP65, SCDU: II 3 D IP65 T 85°C to T 135°C
 Basic power
 Epoxy moulded
 IEC 335 / ISO 4400

374A001 / 374A061 / 374A002 / 374A062 / 374A003 / 374A063
 374A012 / 374A013 / 374A007



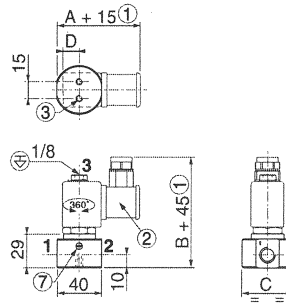
Pressure inlet:
 • Function U = any port
 • Function NC = Port 2
 • Function NO = Port 3

Ports 1 and 2 : 1/4
 Port 3 : G 1/8



TYPE 02: Prefixes SC: IP65, SCDU: II 3 D, IP65, T 85°C to T 135°C
 Basic power
 Epoxy moulded
 IEC 335 / ISO 4400

374A031 / 374A070 / 374A032 / 374A071 / 374A033 / 374A072
 374A042 / 374A043 / 374A037



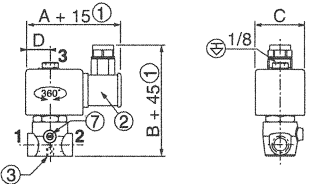
Pressure inlet:
 • Function U = any port
 • Function NC = Port 2
 • Function NO = Port 3

Ports 1 and 2 : 1/4
 Port 3 : G 1/8



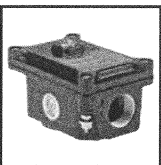
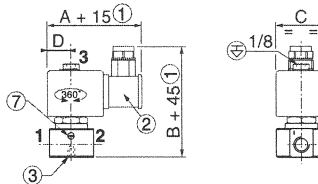
TYPE 03: Prefixes SC: IP65, SCDU: II 3 D, IP65, T 100°C to T 200°C, ZN: II 3G/D EEx nA II
 Basic power
 Epoxy moulded
 IEC 335 / ISO 4400 (SC/SCDU)
 EN 50021 (ZN)

374A016 / 374A017 / 374A018
 374A027 / 374A028 / 374A022



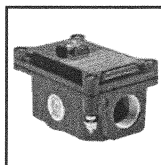
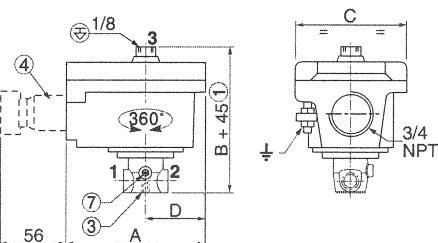
TYPE 04: Prefixes SC: IP65, SCDU: II 3 D, IP65, T 100°C to T 200°C, ZN: II 3G/D EEx nA II
 Basic power
 Epoxy moulded
 IEC 335 / ISO 4400 (SC/SCDU)
 EN 50021 (ZN)

374A046 / 374A047 / 374A048
 374A057 / 374A058 / 374A052



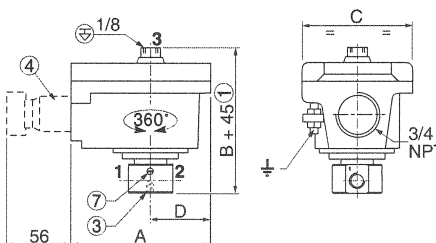
TYPE 05: Prefix NK: II 2 GD, IP65, Ex d IIB + H₂
 Basic power
 Aluminium, epoxy coated
 EN 60079-1 and EN 61241-1

374A016 / 374A017 / 374A018
 374A027 / 374A028 / 374A022

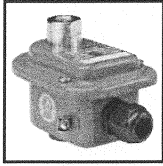


TYPE 06: Prefix NK: II 2 GD, IP65, Ex d IIB + H₂
 Basic power
 Aluminium, epoxy coated
 EN 60079-1 and EN 61241-1

374A046 / 374A047 / 374A048
 374A057 / 374A058 / 374A052

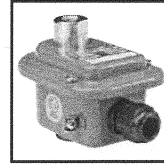
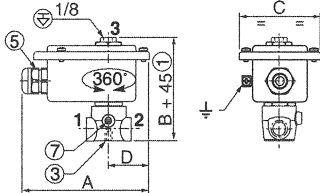


DIMENSIONS (mm), WEIGHT (kg)



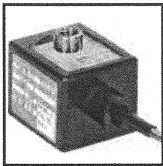
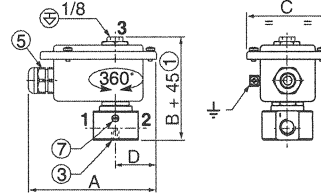
**TYPE 07: Prefixes WP/WS: IP67, EM/WSEM:
II 2 G/D, IP67, Ex emb II, WPDU/WSDU: II 3 D, IP67,
T85°C to 200°C**
Basic power
Steel, epoxy coated (EM, WP, WPDU)
AISI 316 SS (WS, WSDU and WSEM)
IEC 335 / EN 60079-7/18 and EN 61241-1

**374A016 / 374A017 / 374A018
374A027 / 374A028 / 374A022**



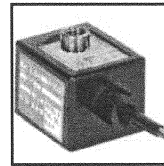
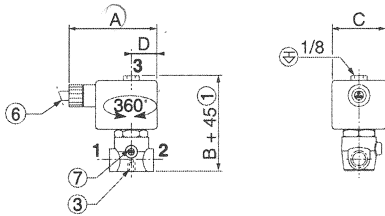
**TYPE 08: Prefixes WP/WS: IP67, EM/WSEM:
II 2 G/D, IP67, Ex emb II, WPDU/WSDU: II 3 D, IP67,
T85°C to 200°C**
Basic power
Steel, epoxy coated (EM, WP, WPDU)
AISI 316 SS (WS, WSDU and WSEM)
IEC 335 / EN 60079-7/18 and EN 61241-1

**374A046 / 374A047 / 374A048
374A057 / 374A058 / 374A052**



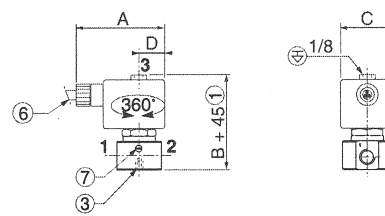
TYPE 09: Prefix PV: II 2 G/D, IP67, Ex mb II, Ex mD
Basic power
Epoxy encapsulated
EN/IEC 60079-18 and EN/IEC 61241-18

**374A016 / 374A017 / 374A018
374A027 / 374A028 / 374A022**



TYPE 10: Prefix PV: II 2 G/D, IP67, Ex mb II, Ex mD
Basic power
Epoxy encapsulated
EN/IEC 60079-18 and EN/IEC 61241-18

**374A046 / 374A047 / 374A048
374A057 / 374A058 / 374A052**



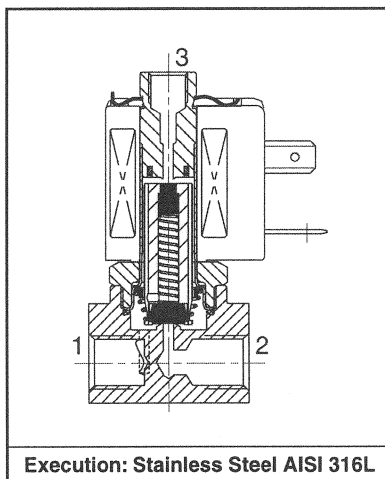
DIMENSIONS (mm), WEIGHT (kg)

type	prefix option	power level	A	B	C	D	weight ⁽¹⁾
01	SC / SCUDU	Basic Power	75	98	35	15	0,340
02	SC / SCUDU	Basic Power	75	98	45	15	0,410
03	SC / SCUDU / ZN	Basic Power	85,5	98	45	21	0,510
04	SC / SCUDU / ZN	Basic Power	85,5	98	45	21	0,560
05	NK	Basic Power	100	93	69	35,5	0,840
06	NK	Basic Power	100	93	69	35,5	0,890
07	WP/WPDU/WS/WSDU/EM/WSEM	Basic Power	120	95	77	38	0,760
08	WP/WPDU/WS/WSDU/EM/WSEM	Basic Power	120	95	77	38	0,810
09	PV	Basic Power	75	79,4	45	21,5	0,558
10	PV	Basic Power	75	79,4	45	21,5	0,608

- ① Extra length for disassembly, depending on model
- ② Connector rotatable by 90° increments (cable Ø 6 - 10 mm)
- ③ Mounting 2 ØM4, 7 mm depth
- ④ Ex d certified cable gland (on request)
- ⑤ Cable gland for unarmoured cable with 6 to 12 mm dia. sheath
- ⑥ Three-core cable, length 2 m
- ⑦ Screw type manual operator, suffix (MS)

⁽¹⁾ Incl.coil(s) and connector(s)

SECTIONAL DRAWING



MERKMALE

- Exgeschützter Magnetkopf für den Einsatz in explosionsfähigen Atmosphären nach ATEX-Richtlinie 94/9/EG.
EG-Baumusterprüfbescheinigung-Nr.: **BAS 98 ATEX 2168 X**
IECEX-Konformitätszertifikat-Nr.: **IECEX SIR 06.109X**
- Die Einhaltung der grundlegenden Gesundheits- und Sicherheitsanforderungen der ATEX-Richtlinie wird durch die Übereinstimmung mit den Europäischen Normen **EN 60079-0, EN 60079-18, EN 61241-0 und EN 61241-18** gewährleistet.
- Einfacher elektrischer Anschluss mit integriertem Kabel, 2 m lang.
- Schutzart IP65.
- Magnetkopf für eine Vielzahl von ASCO/JOUCOMATIC-Ventilen geeignet.

KONSTRUKTIONSMERKMALE

Magnetkopfgehäuse
Führungsrohr
Gegenanker
Kurzschlussring
Typenschild
Zündschutzart

Epoxydharzumspritzt
Edelstahl
Edelstahl
Kupfer oder Silber
Polyester
IECEX / II 2 G Ex mb II T6 .. T3
IECEX / II 2 D Ex mD 21 IP67 T85°C ..T200°C

ELEKTRISCHE DATEN

Spannungen
(Andere Spannungen und 60 Hz auf Anfrage)

DC (=) : 24V - 48V
AC (-) : 24V - 48V - 115V - 230V / 50 Hz

TEMPERATURKLASSIFIKATION

Pn (Watt)	Magnetgröße		Max. Umgebungstemp. °C ⁽¹⁾			
	EM5	EMXX	Oberflächentemperatur			
			T6	T5	T4	T3
			85°C	100°C	135°C	200°C
Isolationsklasse F (155°C) 100% E.D.						
2,5	•				60	65
4,0	•				60	65
4,05		•				65
6,3	•					65
10,5		•				65
Isolationsklasse F (155°C) 10% E.D.						
10,0	•					65

DC-Magnete (=)

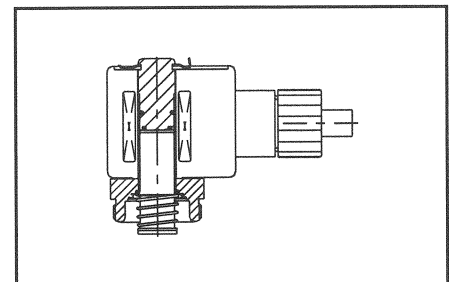
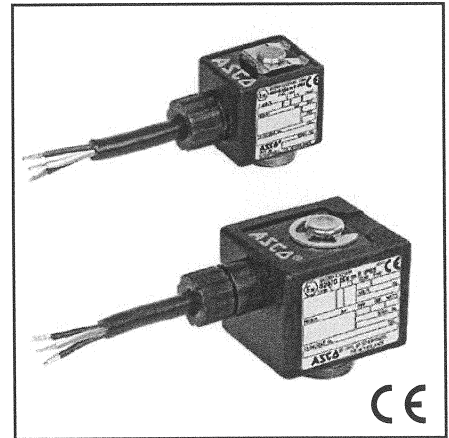
Pn (Watt)	Magnetgröße		Max. Umgebungstemp. °C ⁽¹⁾			
	PV-XM5	PV-MXX	Oberflächentemperatur			
			T6	T5	T4	T3
			85°C	100°C	135°C	200°C
Isolationsklasse F (155°C) 100% E.D.						
1,7		•			65	
3,0	•			40	60	60
6,9	•					40
8,6	•					40
11,0		•			65	
11,2		•			65	
19,7		•			40	70
Isolationsklasse F (155°C) 10% E.D.						
15,0	•					40
22,0	•					40

Die Leistung muss mit dem gewählten Produkt übereinstimmen.

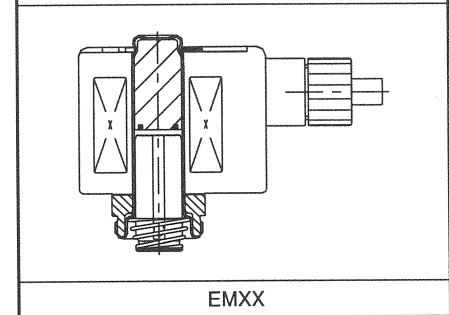
⁽¹⁾ **Mindestumgebungstemperatur: -40°C.** Der tatsächliche Temperaturbereich kann je nach den Betriebsbedingungen des Ventils begrenzt sein.

INSTALLATION

- Der Magnetkopf lässt sich zur Wahl der optimalen Lage der Kabeleinführung um 360° drehen.



EM5

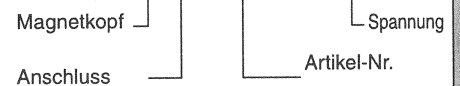


EMXX

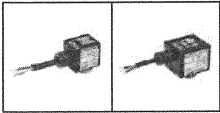
BESTELLHINWEIS

Die mit diesem Magnetkopf ausgestatteten Ventile werden mit dem Vorsatz **PV** identifiziert.

Beispiel: **PV E 210D095 230V/50 Hz**

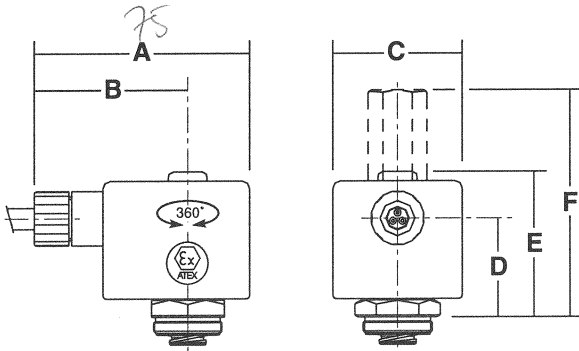


ABMESSUNGEN (mm), GEWICHTE (kg)



TYP PV

Magnetkopf mit Vorsatz "PV"
Epoxydharzummantelt
EN 60079-18 und EN 61241-18
II 2 G Ex mb II - II 2 D Ex mD 21 IP67



Größe	A	B	C	D	E	F	Gewicht ⁽¹⁾
EXM5	60	45	29	21	38,5	66	0,113
EMXX	75	53,5	44,5	33,6	49,4	77,3	0,348

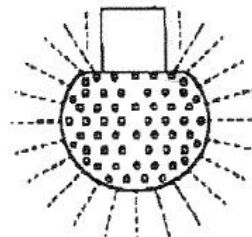
Frewitt Artikel Nr.	: 429665
Beschreibung	: Reinigungskugel
Typ	: CD17AX

REINIGUNGSKUGELN

PRODUKTMERKMALE :


REINIGUNGSKUGELN AUS AISI 316L ZUM REINIGEN UND LÖSEN VON INKRUSTIERUNGEN (MIT HEISSEN ODER KALTEN REINIGUNGSMITTELN). EINBAU IN BEHÄLTERN (HORIZONTALE ODER VERTIKALE LAGE), KONZENTRATOREN UND AUTOKLAVEN. ANWENDUNGEN IN DER LEBENSMITTELINDUSTRIE, MOLKEREI, CHEMISCHEN UND PHARMAZEUTISCHEN INDUSTRIE. BEI EINSÄTZEN IM AUTOMATISCHEN MODUS UND MIT VORGEGEBENEN ZEITEN KÖNNEN CHEMISCHEN MITTELN UND TEMPERATUREN GEFAHREN WERDEN DIE BEI EINER REINIGUNG VON HAND SCHWER ZU HANDHABEN SIND.

DAS FEHLEN JEGLICHER BEWEGLICHER TEILE MINIMIERT DEN VERSCHLEISS UND DEN BEDARF AN ERSATZTEILEN, AUCH NACH SEHR LANGER BETRIEBSDAUER.



TYP AX
 Vollsprühwinkel
 360°

REINIGUNGSKUGELN ABMESSUNGEN

MODELL	TYP	KUGEL ø mm	STÜTZEN	STÜTZEN ø mm	DRUCK	DURCHSATZ m ³ /h	SPRITZRADIUS m
CD 17 	A - AX	28 mm	1/4" GF	1,3 mm	1 bar	1,8	1,0
	B - BX					1,2	1,8
	C - CX					1,4	2,2
	D - DX					1,3	2,2



Sanitary, Low-Flow Cleaning

Toftejorg SaniMidget Rotary Spray Head

PD 66395 GB1 2003-08

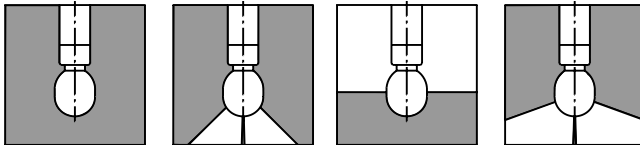
Application

The Toftejorg SaniMidget is an efficient replacement for traditional static spray balls as it uses low volumes of liquid at low pressure. The device, particularly well-suited to sanitary applications, can be used in tanks ranging from 0.1 to 10 m³ (27 to 2,700 US gallons). Application and optimal positioning assistance is available in CAD format.

Working Principle

The flow of the cleaning media causes the head of the Toftejorg SaniMidget to rotate, with fan jets laying out a swirling pattern throughout the vessel. This generates a vibrating impact and cascading flow that covers all internal surfaces of the tank or reactor. The device's self-cleaning feature is achieved by directing the cleaning media through the rotating bearing track and onto the neck of the elongated head.

Spray Pattern



360°

270° up

180° down

Low flow 220° up

Standard Design

As standard documentation, the Toftejorg SaniMidget can be supplied with a "Declaration of Conformity" for material specifications or 3.1.B certification for metallic parts. The device is available in hastelloy C22 (balls in hastelloy C276/PFTE) with 3.1.B certification for metallic parts.

Materials

Inlet connections: 1.4404 (316L)
Bearing race parts: SAF 2205 (UNS31803)
Balls: 1.4401 (316)/PTFE*
Head: 1.4404 (316L)
(*FDA approved 21 CFR § 177.1550)

Technical Data

Weight: Thread and clip-on: 0.30 kg (0.66 lbs)
On pipe: 0.55/0.90 kg (1.21/1.98 lbs)
Lubricant: Self-lubricating with the cleaning fluid
Working pressure: 1 - 3 bar (14.5 - 44 psi)



Recommended pressure: 2 bar (29 psi)
Max. working temperature: 95 °C (203 °F)
Max. ambient temperature: 140 °C (284 °F)
Wetting radius: Max. 3 m (10 ft)
Impact cleaning radius: Max. effective 1.4 m (4 ft)
Connections: 1/2" or 3/4" BSP or NPT thread
Clip-on or weld-on for pipe: ISO2037, ASTM A270, BS4825 part 1 or DIN 11.850

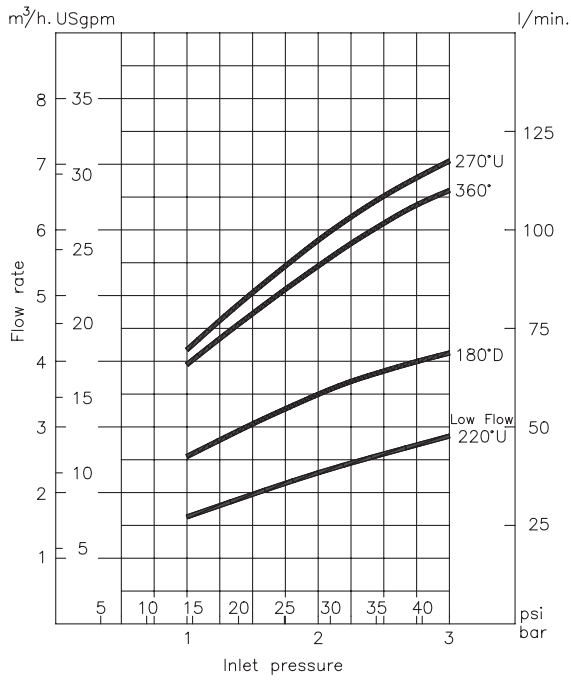
Ordering

Please specify desired spray pattern, required connections, material selection and type of certification required. Please also confirm the application suitability.

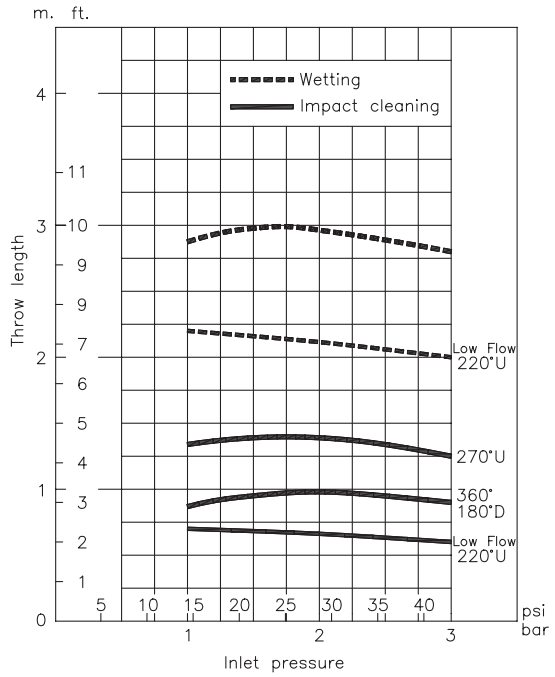
Options

- Downpipes with Tri-Clamp and flange connections
- Electropolishing

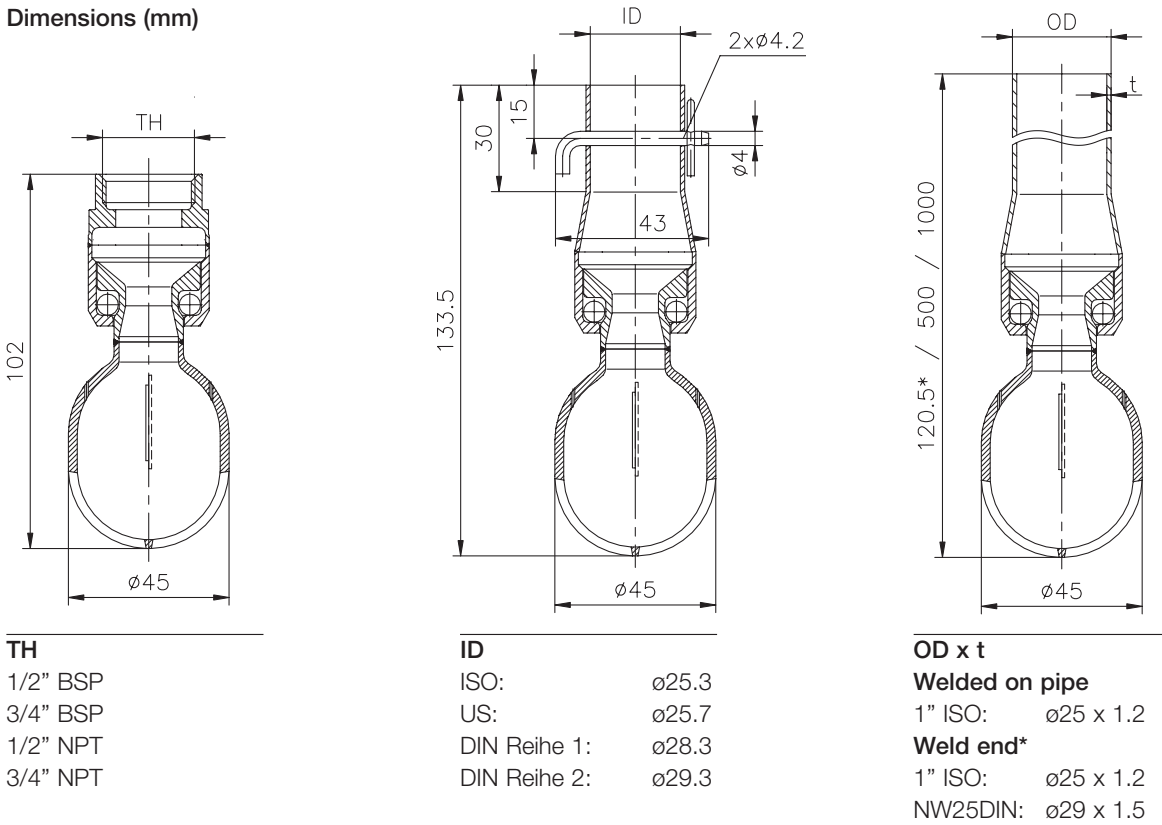
Flow Rate



Cleaning Radius



Dimensions (mm)



PD 66395 GB1 2003-08

The information contained herein is correct at the time of issue, but may be subject to change without prior notice.

How to contact Alfa Laval
 Contact details for all countries are continually updated on our website. Please visit www.alfalaval.com or www.toftejorg.com to access the information direct.



800.654.5635
www.csidesigns.com

CERTIFICATES

Description	Delumpwitt
Project Nr	PRO-11-0076
Serial Nr	11007635096

We certify herewith that the below listed are conform for usage in the following ATEX zones :

int.			II	1G IIB T4 1D IIB T157°C
ext.			II	3D IIB T125°C

All documents relevant to the below listed project are found on the following pages

Index

- ▶ EC declaration of incorporation ConiWitt-250 1100761950
- ▶ EC declaration of incorporation ProFi-Sword 11007643002
- ▶ EC declaration of incorporation Lifting unit Servolift

Project Manager

Yves Grossrieder
Route du Coteau 7
1763 Granges-Paccot

Granges-Paccot, 20. juillet 2011

We declare that the security and design of the equipment described below are conform to the requirements of following European directives:



Electromagnetic Compatibility CEM : 2004/108/CE
Machinery Directive : 2006/42/CE
ATEX : 94/9/CE

Additional safety indications:

Additional information for EEx-Machines Special conditions « X »

Manufacturer : Frewitt SA, route du Coteau 7, CH-1763 Granges-Paccot

Notified Body : Electrosuisse, Luppmenstrasse 1, CH-8320 Fehralt Dorf
 Notified Body's identification Nr : 1258
 Quality assurance of production Nr : SEV 09 ATEX 4137
 EC type examination Nr : SEV 06 ATEX 0124 X (mecanic)
 EC type examination Nr : SEV 06 ATEX 0133 (electric)

Description :	Conical sieve mill	Type :	ConiWitt-250
Year of manufacture :	2011	Serial Nr :	11007619050
ATEX certification :	int.	CE 1258 	II 1G ckb IIB T4 X 1D ckb T157°C IP65 X
	ext.	CE 1258 	II 3D c Ex tD T125°C IP65 X

The following technical standards have been applied in order to implement the basic health and safety requirements mentioned in the EC directives in an appropriate manne :

General principles of construction EN ISO 12100-1/2
Safety distance EN ISO 13857
Design and ordering system EN ISO 13849-1
Prevention / protection of the explosion EN 1127-1
Non-electrical equipment:
 general requirements EN 13463-1
 protection construction "c" EN 13463-5
 protected by control of ignition source "b" EN 13463-6
 protected by immersion "k" EN 13463-8

The partly completed machinery must not put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the Machinery Directive 2006/42/EC.

We commit ourselves to transmit the relevant technical documentation by courier concerning the partly completed machinery to the national authorities on request.

Instructions for incorporation, including the special safety provisions are furnished with the partly completed machinery until this will be integrated in the final machinery.

Any alteration or inappropriate uses of this equipment makes this declaration invalid.

Project Manager
 Thomas Lehmann
 Rte du Coteau 7
 1763 Granges-Paccot

Legal representative
 Antoine Viridis
 Rte du Coteau 7
 1763 Granges-Paccot

Granges-Paccot, 4. mai 2011



We declare that the security and design of the equipment described below are conform to the requirements of following European directives:

Electromagnetic Compatibility CEM : 2004/108/CE
Machinery Directive : 2006/42/CE
ATEX : 94/9/CE

Additional safety indications:

Additional information for EEx-Machines Special conditions « X »

Manufacturer : Frewitt SA, route du Coteau 7, CH-1763 Granges-Paccot





Notified Body : Electrosuisse, Luppmenstrasse 1, CH-8320 Fehraltdorf

Notified Body's identification Nr : 1258

Quality assurance of production Nr : SEV 09 ATEX 4137

EC type examination Nr : SEV 04 ATEX 0106 X (mecanic)

EC type examination Nr : SEV 06 ATEX 0133 (electric)

Description :	Powder delivered in free-flow	Type :	ProFi-Sword
Year of manufacture :	2011	Serial Nr :	11007643002
ATEX certification :	int.	 1258 	II 1G cb IIB T4 X 1D cb T157°C IP65 X
	ext.	 1258 	II 3D c T125°C IP65 X

The following technical standards have been applied in order to implement the basic health and safety requirements mentioned in the EC directives in an appropriate manne :

General principles of construction EN ISO 12100-1/2
Safety distance EN ISO 13857
Design and ordering system EN ISO 13849-1
Prevention / protection of the explosion EN 1127-1
Non-electrical equipment:
 general requirements EN 13463-1
 protection construction "c" EN 13463-5
 protected by control of ignition source "b" EN 13463-6

The partly completed machinery must not put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the Machinery Directive 2006/42/EC.

We commit ourselves to transmit the relevant technical documentation by courier concerning the partly completed machinery to the national authorities on request.

Instructions for incorporation, including the special safety provisions are furnished with the partly completed machinery until this will be integrated in the final machinery.

Any alteration or inappropriate uses of this equipment makes this declaration invalid.

Project Manager

Thomas Lehmann
 Rte du Coteau 7
 1763 Granges-Paccot

Granges-Paccot, 5. mai 2011

Legal representative

Antoine Virdis
 Rte du Coteau 7
 1763 Granges-Paccot



SERVOLIFT

Declaration of Conformity for Machinery (Directive 2006/42/EC)

This is to declare that the following listed machinery, on the basis of its design, structure and execution presented by us to trade, conforms to the relevant Essential Health and Safety Requirements of the EC guideline(s).

With by us non allowed modification of the machinery, this declaration becomes invalid.

This declaration is only valid for directed use of the machinery by instructed personal.

Type of machine: Lifter
Machine number: 12551
Year of construction: 2011

Used EC guidelines:

- EC guidelines of European Machinery Directive 2006/42/EC
- Low Voltage Directive 2006/95/EEC
- EMC correct installation 2004/108/EEC

in case of **explosion proofed** machines refer to and note enclosed

- Declaration of Conformity of EX-proofed guidelines

Used EN and ISO standards:

- DIN EN 12100-part 1 and 2; 2003; DIN EN 60204-1; 2006, DIN EN ISO 13849-1; 2007, DIN EN ISO 14121-1; 2007, DIN EN ISO 22915-2; 2008, DIN EN 1175-1; 1998

Restricted Placing on the market: We wish to point out, that given declaration is only valid for service performed by us. Service which has to be performed on site is defined by interfaces, to be inspected and confirmed before initial operation.

Interfaces: Errection and installation acc. to operation instruction,
Installation of emergency stop (customer site) acc. electric scheme page 8

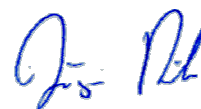
Attorney for technical documentation: Servolift GmbH

Servolift GmbH
Albert-Einstein-Str. 9
D- 77656 Offenburg

Telefon : +49 (0) 781/61 00-0
Fax : +49 (0) 781/61 00-99
E-Mail : sl@servolift.de
web : www.servolift.de

Offenburg 24. Aug. 2011
Place / Date

Jürgen Rieber, Geschäftsführer
Name



Signature

Datei: 12551_E_EG-Konform-IIA.doc
Erstellt: Macke
Datum: 07.12.2005

Version: 5
Geprüft: G. Macke
Datum: 04.11.2008

QM- Dokumente/Aufzeichnungen
Freigegeben: Hasenpusch
Datum: 08.12.2005

SERVOLIFT



Appendix to EC declaration of conformity (as defined by the EC Guidelines for Machinery Directive 2006/42/EC, Appendix IIA)

or

Appendix to EC- manufacturer's declaration (as defined by the EC Guidelines for Machinery Directive 2006/42/EC, Appendix IIB)

EC-Declaration of Conformity for Explosion protection guidelines

Herewith we confirm, that the following product:

Type of machine:	Lifter
Machine number:	12551
Year of construction:	2011
Category:	II3D (Zone 22)
Marking according to ATEX:	 II3D IP 54 T130°C
Marking of non-electrical equipment:	 c b T1 (max. 450°C)

correspond to the following EC-guidelines:

- Explosion protection guideline 94/9/EC
The documentation has been given to TÜV Product-Service, München (registration No. 0123) for archiving under registration No. 70039620. Place of archiving: TÜV Product-Service, Gottlieb Daimler Straße 7, D-70794 Filderstadt
- EC Low voltage guideline for electrical equipment installed within non potential explosive area.

The following standards are fully or partly used (where applicable):

- EN 1127-1:2007, EN 60079-14:2008, EN 13463-1:2009, EN 13463-5:2003,
- EN 60204-1:2006

Commissioning is not allowed until machine is proved to correspond to the guideline Directive 2006/42/EC.

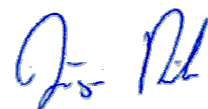
We hereby confirm, that the installation of the electrical equipment is carried out according to the instructions of the manufacturer and of the standard EN 60079-14:2008

SERVOLIFT GmbH
Albert-Einstein-Str. 9
D- 77656 Offenburg

Phone : +49 (0) 781/61 00-0
Fax : +49 (0) 781/61 00-99
E-mail : sl@servolift.de
web : www.servolift.de

Offenburg, den 24. Aug. 2011
Place / Date

Jürgen Rieber, Geschäftsführer
Name



Signature

Datei: 12551_E_EX-Anhang-zu-
IIA&IIB.doc
Erstellt: G. Macke
Datum: 10.03.2003

Version: 3
Geprüft: J. Rieber
Datum: 16.10.2009

QM- Überwachung und Messung
Freigegeben: J. Rieber
Datum: 16.10.2009

Relevé de contrôle EN 10204-2.2 pour les matériaux des pièces utilisées. Werkzeugnis EN 10204-2.2 für die Werkstoffe der produktberührenden Teile. Test report EN 10204-2.2 for material of product contact parts

Client:

Kunde:

Customer:

NOVARTIS SINGAPORE PHARMACEUTICAL
SG-Singapore

N° de série

Serien-Nr.
11007635096

Serial Nr.

Nous certifions que les parties en contact avec le produit des pièces utilisés sont, soit en:

Hiermit bestätigen wir, dass die produktberührten Teile der obengenannten Zerkleinerungsmaschine aus folgenden Werkstoffen hergestellt sind:

We certify herewith that the used parts of above-mentioned device are made of:

Acier inoxydable:

Rostfreier Stahl:

Stainless steels:

AISI	Nr.
316L	1.4404
316L	1.4435

Joints (conforme FDA) :

Dichtungen (FDA-konform) :

Seals (FDA conform) :

Ecoflon 5
EPDM
FEP-O-SEAL
FKM 75.5
Gylon
Novaflon
Rulon
Silicone
PET, Staple Fibre

Ecoflon 5
EPDM
FEP-O-SEAL
FKM 75.5
Gylon
Novaflon
Rulon
Silikon
PET, Staple Fibre

Ecoflon 5
EPDM
FEP-O-SEAL
FKM 75.5
Gylon
Novaflon
Rulon
Silicone
PET, Staple Fibre

En outre, nous certifions qu'aucun élément d'amiante n'a été utilisé dans nos machines.

Desweiteren bestätigen wir, dass in unserer Anlage keine asbesthaltigen Teile enthalten sind.

Furthermore, we certify that no asbestos material has been used for manufacturing the machine.

Frewitt Fabrique de Machines SA



R. Rybarikova
 Rédactrice technique
 Technischer Redaktor
 Technical writer

Voir documents suivants.

Siehe folgende Dokumente.

See following documents



Nonfood Compounds
Program Listed

October 2, 2008

Dr. Luciana Husfeld
KLUBER LUBRICATION MUNCHEN KG.
GEISENHAUSENER STR. 7
81379 MÜNCHEN
GERMANY

RE: Klüberoil® 4 UH1- 32 N
Category Code: H1
NSF Registration No. 121152

Dear Dr. Luciana Husfeld:

NSF has processed the application for Registration of **Klüberoil® 4 UH1- 32 N** to the NSF International Registration Guidelines for Proprietary Substances and Nonfood Compounds (2008), which are available at www.nsfwhitebook.org. The NSF Nonfood Compounds Registration Program is a continuation of the USDA product approval and listing program, which is based on meeting regulatory requirements including FDA 21 CFR for appropriate use, ingredient and labeling review.

This product is acceptable as a lubricant with incidental food contact (H1) for use in and around food processing areas. Such compounds may be used on food processing equipment as a protective anti-rust film, as a release agent on gaskets or seals of tank closures, and as a lubricant for machine parts and equipment in locations in which there is a potential exposure of the lubricated part to food. The amount used should be the minimum required to accomplish the desired technical effect on the equipment. If used as an anti-rust film, the compound must be removed from the equipment surface by washing or wiping, as required to leave the surface effectively free of any substance which could be transferred to food being processed.

NSF Registration of this product is current when the NSF Registration Number, Category Code, and Registration Mark appear on the NSF-approved product label, and the Registered product name is included in the current NSF White Book Listing of Nonfood Compounds at the NSF website (www.nsfwhitebook.org). The NSF Registration Mark can be downloaded by clicking the "Download Registration Mark" link on the NSF website (www.nsfwhitebook.org).

NSF Listing of all Registered Nonfood compounds by NSF International is not an endorsement of those compounds, or of any performance or efficacy claims made by the manufacturer.

Registration status may be verified at any time via the NSF website, at www.nsfwhitebook.org. Changes in formulation or label, without the prior written consent of NSF, will void Registration, and will supersede the on-line listing.

Sincerely,

Jennifer De France
NSF Nonfood Compounds Registration Program

Company No: N04391



March 16, 2001

Kluber Lubrication AG
Attn: Dr. Luciana Husfeld
Geisenhausenerstraße 7
81379 MUNCHEN
GERMANY

RE: KLUBEROIL 4 UH1-68 N
Category Code: H1
NSF Registration No. 121174

Dear Dr. Husfeld,

NSF has processed the application for Registration of **Kluberoil 4 UH1-68 N** to the *NSF Registration Guidelines for Proprietary Substances and Nonfood Compounds (2000)*, which are available at www.nsf.org/usda. The NSF Nonfood Compounds Registration Program is a continuation of the USDA product approval and listing program, which is based on meeting regulatory requirements for appropriate use, ingredient review and labeling verification.

This product is acceptable as a **lubricant with incidental food contact (H1)** for use in and around food processing areas. Such compounds may be used on food processing equipment as a protective anti-rust film, as a release agent on gaskets or seals of tank closures, and as a lubricant for machine parts and equipment in locations in which there is a potential exposure of the lubricated part to food. The amount used should be the minimum required to accomplish the desired technical effect on the equipment. If used as an anti-rust film, the compound must be removed from the equipment surface by washing or wiping, as required to leave the surface effectively free of any substance, which could be transferred, to food being processed.

This product is NSF Registered when the NSF Registration Number, Category Code, and Registration Mark appear on the NSF approved product label. The NSF Registration Mark can be downloaded from the NSF website, at http://www.nsf.org/mark/download_marks.html.

Registration of compounds by NSF International is in no way to be construed as an endorsement of the compounds, appropriate selection for use, or of any performance or efficacy claims made by the manufacturer.

Registration status may be verified at any time via the NSF website, at <http://www.nsf.org/usda>. Changes in the formulation or label, without prior written consent of NSF, will void registration, and will supersede the on-line listing.

Sincerely,

A handwritten signature in black ink that reads "Kenji Yano". The signature is written in a cursive, flowing style.

Kenji Yano, Ph.D.
NSF Nonfood Compounds Registration and Listing Program



August 26, 2005

Dr. Luciana Husfeld
KLUBER LUBRICATION MUNCHEN KG.
GEISENHAUSENER STR. 7
81379 MÜNCHEN
GERMANY

RE: Kluberpaste® UH1 84-201
Category Code: H1
NSF Registration No. 136305

Dear Dr. Luciana Husfeld:

NSF has processed the application for Registration of **Kluberpaste® UH1 84-201** to the NSF Registration Guidelines for Proprietary Substances and Nonfood Compounds (2004), which are available at <http://www.nsf.org>. The NSF Nonfood Compounds Registration Program is a continuation of the USDA product approval and listing program, which is based on meeting regulatory requirements including FDA 21 CFR for appropriate use, ingredient and labeling.

This product is acceptable as a lubricant with incidental food contact (H1) for use in and around food processing areas. Such compounds may be used on food processing equipment as a protective anti-rust film, as a release agent on gaskets or seals of tank closures, and as a lubricant for machine parts and equipment in locations in which there is a potential exposure of the lubricated part to food. The amount used should be the minimum required to accomplish the desired technical effect on the equipment. If used as an anti-rust film, the compound must be removed from the equipment surface by washing or wiping, as required to leave the surface effectively free of any substance which could be transferred to food being processed.

NSF Registration of this product is current when the NSF Registration Number, Category Code, and Registration Mark appear on the NSF-approved product label, and the registered product name is included in the current NSF White Book Listing of Nonfood Compounds at the NSF website (<http://www.nsf.org>). The NSF Registration Mark can be downloaded from the NSF website, at http://www.nsf.org/business/about_NSF/nsf_marks_download.asp.

NSF Listing of all registered Nonfood compounds by NSF International is not an endorsement of those compounds, or of any performance or efficacy claims made by the manufacturer.

Registration status may be verified at any time via the NSF web site, at <http://www.nsf.org>. Changes in formulation or label, without the prior written consent of NSF, will void registration, and will supersede the on-line listing.

Sincerely,

A handwritten signature in black ink, appearing to read 'Carmen Grindatti'.

Carmen Grindatti
NSF Nonfood Compounds Registration Program

Company No: N04391



Nonfood Compounds
Program Listed

October 3, 2008

Dr. Luciana Husfeld
KLUBER LUBRICATION MUNCHEN KG.
GEISENHAUSENER STR. 7
81379 MÜNCHEN
GERMANY

RE: Klüberoil® 4 UH1- 220 N
Category Code: H1
NSF Registration No. 121171

Dear Dr. Luciana Husfeld:

NSF has processed the application for Registration of **Klüberoil® 4 UH1- 220 N** to the NSF International Registration Guidelines for Proprietary Substances and Nonfood Compounds (2008), which are available at www.nsfwhitebook.org. The NSF Nonfood Compounds Registration Program is a continuation of the USDA product approval and listing program, which is based on meeting regulatory requirements including FDA 21 CFR for appropriate use, ingredient and labeling review.

This product is acceptable as a lubricant with incidental food contact (H1) for use in and around food processing areas. Such compounds may be used on food processing equipment as a protective anti-rust film, as a release agent on gaskets or seals of tank closures, and as a lubricant for machine parts and equipment in locations in which there is a potential exposure of the lubricated part to food. The amount used should be the minimum required to accomplish the desired technical effect on the equipment. If used as an anti-rust film, the compound must be removed from the equipment surface by washing or wiping, as required to leave the surface effectively free of any substance which could be transferred to food being processed.

NSF Registration of this product is current when the NSF Registration Number, Category Code, and Registration Mark appear on the NSF-approved product label, and the Registered product name is included in the current NSF White Book Listing of Nonfood Compounds at the NSF website (www.nsfwhitebook.org). The NSF Registration Mark can be downloaded by clicking the "Download Registration Mark" link on the NSF website (www.nsfwhitebook.org).

NSF Listing of all Registered Nonfood compounds by NSF International is not an endorsement of those compounds, or of any performance or efficacy claims made by the manufacturer.

Registration status may be verified at any time via the NSF website, at www.nsfwhitebook.org. Changes in formulation or label, without the prior written consent of NSF, will void Registration, and will supersede the on-line listing.

Sincerely,

Jennifer De France
NSF Nonfood Compounds Registration Program

Company No: N04391

Safety Data Sheet
according to 1907/2006/EC, Article 31

Printing date 17.03.2009

Revision: 17.03.2009

1 Identification of the substance/preparation and of the company/undertaking

- **Product details**
- **Trade name:** Klüberoil 4 UH1- 32N
- **Article number:** 029037
- **Application of the substance / the preparation** Lubricating oil
- **Manufacturer/Supplier:**
KLÜBER LUBRICATION MÜNCHEN KG
Geisenhausenerstrasse 7
D-81379 München
Tel.: 0049 (0) 897876-0
Fax: 0049 (0) 897876-333
- **Further information obtainable from:**
Material Compliance Management
E-Mail: mcm@klueber.com
- **Information in case of emergency:** 0049 (0) 89 7876 700 (24 hrs)

2 Hazards identification

- **Hazard description:** Not applicable.
- **Information concerning particular hazards for human and environment:**
The product does not have to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
- **Classification system:**
The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

3 Composition/information on ingredients

- **Chemical characterization**
- **Description:**
Synthetic hydrocarbon oil
ester oil
- **Dangerous components:** Void
- **Additional information:** For the wording of the listed risk phrases refer to section 16.

4 First-aid measures

- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:** Wash off with soap and plenty of water.
- **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:** If symptoms persist consult doctor.

5 Fire-fighting measures

- **Suitable extinguishing agents:**
Water haze

(Contd. on page 2)

Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 17.03.2009

Revision: 17.03.2009

Trade name: Klüberoil 4 UH1- 32N

(Contd. of page 1)

Foam

Fire-extinguishing powder

Carbon dioxide

- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Special hazards caused by the substance, its products of combustion or resulting gases:**

In case of fire, the following can be released:

Carbon monoxide (CO)

Hydrocarbons

- **Protective equipment:**

Do not inhale explosion gases or combustion gases.

Standard procedure for chemical fires.

- **Additional information**

Cool endangered receptacles with water spray.

Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

6 Accidental release measures

- **Person-related safety precautions:** Particular danger of slipping on leaked/spilled product.
- **Measures for environmental protection:** Do not allow to enter sewers/ surface or ground water.
- **Measures for cleaning/collecting:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose of the material collected according to regulations.

7 Handling and storage

- **Handling:**
- **Information for safe handling:** Prevent formation of aerosols.
- **Information about fire - and explosion protection:** No special measures required.
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**
Store in cool, dry conditions in well sealed receptacles.
- **Information about storage in one common storage facility:**
Store away from foodstuffs.
Store away from oxidizing agents.
- **Further information about storage conditions:** None.

8 Exposure controls/personal protection

- **Additional information about design of technical facilities:** No further data; see item 7.
- **Ingredients with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Additional information:** The lists valid during the making were used as basis.
- **Personal protective equipment:**
- **General protective and hygienic measures:**
Do not inhale gases / fumes / aerosols.
Immediately remove all soiled and contaminated clothing
Avoid contact with the skin.
Be sure to clean skin thoroughly after work and before breaks.
- **Protection of hands:** Preventive skin protection by use of skin-protecting agents is recommended.
- **Eye protection:** Goggles recommended during refilling

GB

(Contd. on page 3)

Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 17.03.2009

Revision: 17.03.2009

Trade name: Klüberoil 4 UH1- 32N

(Contd. of page 2)

9 Physical and chemical properties

· General Information

Form: Fluid
Colour: Colourless
Odour: Product specific

· Change in condition

Pour point ~ -35°C (DIN ISO 3016)

Flash point: > 200°C (DIN ISO 2592)

Danger of explosion: Product does not present an explosion hazard.

Density at 20°C: ~ 0.84 g/cm³ (DIN 51757)

Solubility in / Miscibility with water: Insoluble.

· Viscosity:

Kinematic at 40°C: ~ 32 mm²/s (DIN 51562)

10 Stability and reactivity

· Thermal decomposition / conditions to be avoided:

No decomposition if used and stored according to specifications.

Materials to be avoided: oxidizing agents

Dangerous reactions No dangerous reactions known.

Dangerous decomposition products: none under normal use

11 Toxicological information

· Additional toxicological information:

Prolonged skin contact may cause skin irritation and/or dermatitis.

12 Ecological information

· Ecotoxicological effects:

Behaviour in sewage processing plants: The product can be mechanically separated.

General notes: Do not allow product to reach ground water, water course or sewage system.

13 Disposal considerations

· Product:

· Recommendation

Disposal must be made according to official regulations.

Can be reused after reprocessing.

· Waste disposal key:

For this product no waste disposal key according the European Waste Catalogue (EWC) can be determined, as only the purpose of application defined by the user enables an allocation. The waste code number has to be determined in accordance with the local waste disposer.

(Contd. on page 4)

Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 17.03.2009

Revision: 17.03.2009

Trade name: Klüberoil 4 UH1- 32N

(Contd. of page 3)

- **Uncleaned packaging:**
- **Recommendation:**
Empty contaminated packagings thoroughly. They may be recycled after thorough and proper cleaning.

14 Transport information

- **Land transport ADR/RID (cross-border)**
- **ADR/RID class:** -
- **Maritime transport IMDG:**
- **IMDG Class:** -
- **Air transport ICAO-TI and IATA-DGR:**
- **ICAO/IATA Class:** -
- **Transport/Additional information:**
Not classified as dangerous according to the above specifications.

15 Regulatory information

- **Labelling according to EU guidelines:**
The product is not subject to classification according to the calculation methods of the "General Classification Guideline for Preparations of the EU" as issued in the latest valid version.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing MSDS:** Material Compliance Management
- **Contact:** +49(0)897876-1564
- * **Data compared to the previous version altered.**

GB

Fiche de données de sécurité
selon 91/155/CEE

Date d'impression : 30.05.2005

revue le : 28.05.2005

1 Identification de la substance/préparation et de la société/entreprise

- Identification de la substance ou de la préparation
- Nom du produit: Klüberoil 4 UH1- 68N
- Code du produit: 029039
- Emploi de la substance / de la préparation Huile de graissage
- Producteur/fournisseur: KLÜBER LUBRICATION MÜNCHEN KG
Geisenhausenerstrasse 7
D-81379 München
Tel.: 0049 (0) 897876-0
Fax: 0049 (0) 897876-333
- fournisseur en Suisse: Klüber Lubrication AG (Schweiz)
Thurgauerstrasse 39
CH-8050 Zürich
tél. 0041 (0)44 308 69 69 / téléfax 0041 (0)44 308 69 44
appels de secours: 0041 (0)44 251 51 51 ou 145
- Service chargé des renseignements: Material Compliance Management
- Renseignements en cas d'urgence: 0049 (0) 897876-700

2 Composition/informations sur les composants

- Caractérisation chimique
- Description:
huile synthétique hydrocarbonée
huile ester
- Composants dangereux: néant
- Indications complémentaires:
Pour le libellé des phrases de risque citées, se référer au chapitre 16.

3 Identification des dangers

- Principaux dangers: Néant.
- Indications particulières concernant les dangers pour l'homme et l'environnement:
Le produit n'est pas à étiqueter, conformément au procédé de calcul de la "Directive générale de classification pour les préparations de la CE", dans la dernière version valable.
- Système de classification:
La classification correspond aux listes CEE actuelles et est complétée par des indications tirées de publications spécialisées et des indications fournies par l'entreprise.

4 Premiers secours

- Après inhalation: Donner de l'air frais, consulter un médecin en cas de troubles.
- Après contact avec la peau: Laver au savon avec une grande quantité d'eau.
- Après contact avec les yeux:
Rincer les yeux, pendant plusieurs minutes, sous l'eau courante en écartant bien les paupières. Si les troubles persistent, consulter un médecin.
- Après ingestion: Si les troubles persistent, consulter un médecin.

5 Mesures de lutte contre l'incendie

- Moyens d'extinction:
Brouillard d'eau

(suite page 2)

Fiche de données de sécurité

selon 91/155/CEE

Date d'impression : 30.05.2005

revue le : 28.05.2005

Nom du produit: Klüberoil 4 UH1- 68N

(suite de la page 1)

Mousse

Poudre d'extinction

Dioxyde de carbone

· **Produits extincteurs déconseillés pour des raisons de sécurité:** Jet d'eau à grand débit

· **Dangers particuliers dus à la substance, à ses produits de combustion ou aux gaz dégagés:**

Peut être dégagé en cas d'incendie:

Monoxyde de carbone (CO)

Hydrocarbures

· **Equipement spécial de sécurité:**

Ne pas inhaler les gaz d'explosion et les gaz d'incendie.

Procédure standard pour feux d'origine chimique.

· **Autres indications**

Refroidir les récipients en danger en pulvérisant de l'eau.

Les résidus de l'incendie et l'eau contaminée ayant servi à l'éteindre doivent impérativement être éliminés conformément aux directives administratives.

6 Mesures à prendre en cas de dispersion accidentelle

· **Les précautions individuelles:**

Sol particulièrement glissant du fait de la présence de produits répandus ou renversés.

· **Mesures pour la protection de l'environnement:**

Ne pas rejeter dans les canalisations, dans les eaux de surface et dans les nappes d'eau souterraines.

· **Méthodes de nettoyage/récupération:**

Recueillir les liquides à l'aide d'un produit absorbant (sable, kieselguhr, neutralisant d'acide, liant universel, sciure).

Éliminer la matière collectée conformément au règlement.

7 Manipulation et stockage

· **Manipulation:**

· **Précautions à prendre pour la manipulation:** Éviter la formation d'aérosols.

· **Préventions des incendies et des explosions:** Aucune mesure particulière n'est requise.

· **Stockage:**

· **Exigences concernant les lieux et conteneurs de stockage:**

Stocker au frais et au sec dans des fûts bien fermés.

· **Indications concernant le stockage commun:**

Ne pas stocker avec les aliments.

Ne pas conserver avec les agents d'oxydation.

· **Autres indications sur les conditions de stockage:** Néant.

8 Contrôle de l'exposition/protection individuelle

· **Indications complémentaires pour l'agencement des installations techniques:**

Sans autre indication, voir point 7.

· **Composants présentant des valeurs-seuil à surveiller par poste de travail:**

Le produit ne contient pas en quantité significative des substances présentant des valeurs-seuil à surveiller par poste de travail.

· **Remarques supplémentaires:**

Le présent document s'appuie sur les listes en vigueur au moment de son élaboration.

· **Equipement de protection individuel:**

· **Mesures générales de protection et d'hygiène:**

Ne pas inhaler les gaz, les vapeurs et les aérosols.

Retirer immédiatement les vêtements souillés ou humectés.

Éviter tout contact avec la peau.

Veiller à un nettoyage à fond de la peau après le travail et avant les pauses.

(suite page 3)

Fiche de données de sécurité

selon 91/155/CEE

Date d'impression : 30.05.2005

revue le : 28.05.2005

Nom du produit: Klüberoil 4 UH1- 68N

(suite de la page 2)

- **Protection des mains:**
Une protection préventive de la peau en utilisant des produits protecteurs de la peau est recommandée.
- **Protection des yeux:** Lunettes de protection recommandées pour le transvasement.

9 Propriétés physiques et chimiques

· Indications générales.

Forme:	Liquide
Couleur:	Incolore
Odeur:	Spécifique au produit

- **Changement d'état**
Point d'écoulement < -35°C (DIN ISO 3016)
- **Point d'inflammation:** > 200°C (DIN ISO 2592)
- **Danger d'explosion:** Le produit n'est pas explosif.
- **Densité à 20°C:** ~ 0,84 g/cm³ (DIN 51757)
- **Solubilité dans/miscibilité avec l'eau:** Insoluble
- **Viscosité:**
Cinématique à 40°C: ~ 68 mm²/s (DIN 51562)

10 Stabilité et réactivité

- **Décomposition thermique/conditions à éviter:**
Pas de décomposition en cas de stockage et de manipulation conformes.
- **Substances à éviter:** des oxydants
- **Réactions dangereuses:** Aucune réaction dangereuse connue.
- **Produits de décomposition dangereux:** aucun sous utilisation appropriée

11 Informations toxicologiques

- **Indications toxicologiques complémentaires:**
Le contact prolongé avec la peau peut provoquer de l'irritation et/ou dermatite.

12 Informations écologiques

- **Effets écotoxiques:**
- **Comportement dans les stations d'épuration:**
Le produit peut faire l'objet d'une séparation mécanique.
- **Indications générales:**
Ne pas laisser pénétrer dans la nappe phréatique, les eaux ou les canalisations.

13 Considérations relatives à l'élimination

- **Produit:**
- **Recommandation:** Peut être réutilisé après traitement.
- **Code déchet:**
Il n'est pas possible, pour ce produit, de déterminer un code déchet conforme au catalogue européen des déchets (CED) car c'est l'emploi prévu par le consommateur qui permet un classement. Le code déchet est à définir en accord avec le traiteur de déchets régional.

(suite page 4)

Fiche de données de sécurité

selon 91/155/CEE

Date d'impression : 30.05.2005

revue le : 28.05.2005

Nom du produit: Klüberoil 4 UH1- 68N

(suite de la page 3)

- **Emballages non nettoyés:**
- **Recommandation:**
Les emballages contaminés doivent être vidés au maximum et peuvent alors, après nettoyage adéquat, faire l'objet d'une récupération.

14 Informations relatives au transport

- **Transport par terre ADR/RID (ordonnance sur le transport de produits dangereux - route et train) (transfrontalier):**
- **Classe ADR/RID (ordonnance sur le transport de produits dangereux - route et train):** -
- **Transport maritime IMDG (ordonnance sur le transport de produits dangereux):**
- **Classe IMDG:** -
- **Transport aérien ICAO-TI et IATA-DGR:**
- **Classe ICAO/IATA:** -
- **Indications complémentaires de transport:**
Pas de produit dangereux d'après les dispositions ci-dessus.

15 Informations réglementaires

- **Marquage selon les directives CEE:**
La substance n'est pas soumise à l'obligation de marquage selon la dernière version en vigueur de la "Directive générale CEE de classification des préparations".
- **Identification particulière de certaines préparations:**
Contient: benzotriazole N-alkylé. Peut déclencher une réaction allergique.

16 Autres informations

- Ces indications sont fondées sur l'état actuel de nos connaissances, mais ne constituent pas une garantie quant aux propriétés du produit et ne donnent pas lieu à un rapport juridique contractuel.
- **Service établissant la fiche technique:** Material Compliance Management
 - **Contact:** Tel.: +49 (0) 897876-1564
 - * **Données modifiées par rapport à la version précédente**

F

Material Safety Data Sheet

According to 91/155 EEC

Printing date 27.04.2006

Reviewed on 25.04.2006

1 Identification of the substance/preparation and of the company/undertaking

- **Product details**
- **Trade name:** Klüberpaste UH1 84-201
- **Article number:** 005113
- **Application of the substance / the preparation** Lubricant
- **Manufacturer/Supplier:**
KLÜBER LUBRICATION MÜNCHEN KG
Geisenhausenerstrasse 7
D-81379 München
Tel.: 0049 (0) 897876-0
Fax: 0049 (0) 897876-333
- **Further information obtainable from:** Material Compliance Management
- **Information in case of emergency:** 0011 49 89 7876 700 (24 hrs)

2 Composition/information on ingredients

- **Chemical characterization**
- **Description:**
Synthetic hydrocarbon oil
solid lubricant
PTFE

- **Dangerous components:**

	amine neutralized phosphoric acid ester of alkylated alcohols ☒ Xi, ☒ N; R 36/38-51/53	0.25-1%
CAS: 95-38-5 EINECS: 204-414-9	2-(2-heptadec-8-enyl-2-imidazolin-1-yl)ethanol ☒ C, ☒ N; R 22-34-50/53	0.25-1%
	Amine carboxylic acid compound ☒ Xi, ☒ N; R 38-41-50	0.25-1%

- **Additional information:** For the wording of the listed risk phrases refer to section 16.

3 Hazards identification

- **Hazard description:** Not applicable.
- **Information concerning particular hazards for human and environment:**
The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- **Classification system:**
The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

4 First-aid measures

- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:** Wash off with soap and plenty of water.

(Contd. on page 2)

Material Safety Data Sheet

According to 91/155 EEC

Printing date 27.04.2006

Reviewed on 25.04.2006

Trade name: Klüberpaste UH1 84-201

(Contd. of page 1)

- **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:** If symptoms persist consult doctor.

5 Fire-fighting measures

- **Suitable extinguishing agents:**
Water haze
Foam
Fire-extinguishing powder
Carbon dioxide
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Special hazards caused by the substance, its products of combustion or resulting gases:**
In case of fire, the following can be released:
Carbon monoxide (CO)
Hydrocarbons
traces of fluorinated products
- **Protective equipment:**
Do not inhale explosion gases or combustion gases.
Standard procedure for chemical fires.
- **Additional information**
Cool endangered receptacles with water spray.
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

6 Accidental release measures

- **Person-related safety precautions:** Not required.
- **Measures for environmental protection:** Do not allow to enter sewers/ surface or ground water.
- **Measures for cleaning/collecting:**
Pick up mechanically.
Dispose of the material collected according to regulations.

7 Handling and storage

- **Handling:**
- **Information for safe handling:** No special measures required.
- **Information about fire - and explosion protection:** No special measures required.
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**
Store in cool, dry conditions in well sealed receptacles.
- **Information about storage in one common storage facility:**
Store away from foodstuffs.
Store away from oxidizing agents.
- **Further information about storage conditions:** None.

8 Exposure controls/personal protection

- **Additional information about design of technical facilities:** No further data; see item 7.
- **Ingredients with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Additional information:** The lists valid during the making were used as basis.

(Contd. on page 3)

Material Safety Data Sheet

According to 91/155 EEC

Printing date 27.04.2006

Reviewed on 25.04.2006

Trade name: Klüberpaste UH1 84-201

(Contd. of page 2)

- **Personal protective equipment:**
- **General protective and hygienic measures:**
Immediately remove all soiled and contaminated clothing
Avoid close or long term contact with the skin.
Be sure to clean skin thoroughly after work and before breaks.
Keep away from tobacco products.
- **Respiratory protection:** Not required.
- **Protection of hands:** Preventive skin protection by use of skin-protecting agents is recommended.
- **Eye protection:** Not required.

9 Physical and chemical properties

· General Information

Form: Pasty
Colour: White
Odour: Product specific

· Change in condition

Drip point: > 240°C (DIN ISO 2176)

· **Flash point:** not applicable

· **Danger of explosion:** Product does not present an explosion hazard.

· **Density at 20°C:** 1.13 g/cm³

· **Solubility in / Miscibility with water:** Insoluble.

10 Stability and reactivity

· Thermal decomposition / conditions to be avoided:

No decomposition if used and stored according to specifications.

· **Materials to be avoided:** oxidizing agents

· **Dangerous reactions** No dangerous reactions known.

· **Dangerous decomposition products:** > 280°C danger of forming toxic pyrolysis products.

11 Toxicological information

· Additional toxicological information:

Prolonged skin contact may cause skin irritation and/or dermatitis.

12 Ecological information

· Ecotoxicological effects:

· **Behaviour in sewage processing plants:** The product can be mechanically separated.

· General notes:

Harmful to aquatic organisms

Do not allow product to reach ground water, water course or sewage system.

13 Disposal considerations

· Product:

· **Recommendation** Can be incinerated in accordance with local and national regulations.

(Contd. on page 4)

Material Safety Data Sheet

According to 91/155 EEC

Printing date 27.04.2006

Reviewed on 25.04.2006

Trade name: Klüberpaste UH1 84-201

(Contd. of page 3)

- **Waste disposal key:**

For this product no waste disposal key according the European Waste Catalogue (EWC) can be determined, as only the purpose of application defined by the user enables an allocation. The waste code number has to be determined in accordance with the local waste disposer.

- **Uncleaned packaging:**

- **Recommendation:**

Empty contaminated packagings thoroughly. They may be recycled after thorough and proper cleaning.

14 Transport information

- **Land transport ADR/RID (cross-border)**

- **ADR/RID class:** -

- **Maritime transport IMDG:**

- **IMDG Class:** -

- **Air transport ICAO-TI and IATA-DGR:**

- **ICAO/IATA Class:** -

- **Transport/Additional information:**

Not classified as dangerous according to the above specifications.

15 Regulatory information

- **Labelling according to EU guidelines:**

The product has been classified and marked in accordance with EU Directives / Ordinance on Hazardous Materials.

- **Risk phrases:**

52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

- **Safety phrases:**

61 Avoid release to the environment. Refer to special instructions/safety data sheets.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Relevant R-phrases**

22 Harmful if swallowed.

34 Causes burns.

36/38 Irritating to eyes and skin.

38 Irritating to skin.

41 Risk of serious damage to eyes.

50 Very toxic to aquatic organisms.

50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

- **Department issuing MSDS:** Material Compliance Management

- **Contact:** +49(0)897876-1564

- *** Data compared to the previous version altered.**

Doc No: 104117-1

Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 17.03.2009

Revision: 17.03.2009

1 Identification of the substance/preparation and of the company/undertaking

- **Product details**
- **Trade name:** Klüberoil 4 UH1- 220N
- **Article number:** 029042
- **Application of the substance / the preparation** Lubricating oil
- **Manufacturer/Supplier:**
KLÜBER LUBRICATION MÜNCHEN KG
Geisenhausenerstrasse 7
D-81379 München
Tel.: 0049 (0) 897876-0
Fax: 0049 (0) 897876-333
- **Further information obtainable from:**
Material Compliance Management
E-Mail: mcm@klueber.com
- **Information in case of emergency:** 0049 (0) 89 7876 700 (24 hrs)

2 Hazards identification

- **Hazard description:** Not applicable.
- **Information concerning particular hazards for human and environment:**
The product does not have to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
- **Classification system:**
The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

3 Composition/information on ingredients

- **Chemical characterization**
- **Description:**
Synthetic hydrocarbon oil
ester oil
- **Dangerous components:** Void
- **Additional information:** For the wording of the listed risk phrases refer to section 16.

4 First-aid measures

- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:** Wash off with soap and plenty of water.
- **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:** If symptoms persist consult doctor.

5 Fire-fighting measures

- **Suitable extinguishing agents:**
Water haze

(Contd. on page 2)

Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 17.03.2009

Revision: 17.03.2009

Trade name: Klüberoil 4 UH1- 220N

(Contd. of page 1)

Foam

Fire-extinguishing powder

Carbon dioxide

- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Special hazards caused by the substance, its products of combustion or resulting gases:**

In case of fire, the following can be released:

Carbon monoxide (CO)

Hydrocarbons

- **Protective equipment:**

Do not inhale explosion gases or combustion gases.

Standard procedure for chemical fires.

- **Additional information**

Cool endangered receptacles with water spray.

Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

6 Accidental release measures

- **Person-related safety precautions:** Particular danger of slipping on leaked/spilled product.
- **Measures for environmental protection:** Do not allow to enter sewers/ surface or ground water.
- **Measures for cleaning/collecting:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose of the material collected according to regulations.

7 Handling and storage

- **Handling:**
- **Information for safe handling:** Prevent formation of aerosols.
- **Information about fire - and explosion protection:** No special measures required.
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**
Store in cool, dry conditions in well sealed receptacles.
- **Information about storage in one common storage facility:**
Store away from foodstuffs.
Store away from oxidizing agents.
- **Further information about storage conditions:** None.

8 Exposure controls/personal protection

- **Additional information about design of technical facilities:** No further data; see item 7.
- **Ingredients with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Additional information:** The lists valid during the making were used as basis.
- **Personal protective equipment:**
- **General protective and hygienic measures:**
Do not inhale gases / fumes / aerosols.
Immediately remove all soiled and contaminated clothing
Avoid contact with the skin.
Be sure to clean skin thoroughly after work and before breaks.
- **Protection of hands:** Preventive skin protection by use of skin-protecting agents is recommended.
- **Eye protection:** Goggles recommended during refilling

GB

(Contd. on page 3)

Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 17.03.2009

Revision: 17.03.2009

Trade name: Klüberoil 4 UH1- 220N

(Contd. of page 2)

9 Physical and chemical properties

· General Information

Form: Fluid
Colour: Colourless
Odour: Product specific

· Change in condition

Pour point ~ -30°C (DIN ISO 3016)

Flash point: > 200°C (DIN ISO 2592)

Danger of explosion: Product does not present an explosion hazard.

Density at 20°C: ~ 0.85 g/cm³ (DIN 51757)

Solubility in / Miscibility with water: Insoluble.

· Viscosity:

Kinematic at 40°C: ~ 220 mm²/s (DIN 51562)

10 Stability and reactivity

· Thermal decomposition / conditions to be avoided:

No decomposition if used and stored according to specifications.

Materials to be avoided: oxidizing agents

Dangerous reactions No dangerous reactions known.

Dangerous decomposition products: none under normal use

11 Toxicological information

· Additional toxicological information:

Prolonged skin contact may cause skin irritation and/or dermatitis.

12 Ecological information

· Ecotoxicological effects:

Behaviour in sewage processing plants: The product can be mechanically separated.

General notes: Do not allow product to reach ground water, water course or sewage system.

13 Disposal considerations

· Product:

Recommendation Can be reused after reprocessing.

· Waste disposal key:

For this product no waste disposal key according the European Waste Catalogue (EWC) can be determined, as only the purpose of application defined by the user enables an allocation. The waste code number has to be determined in accordance with the local waste disposer.

· Uncleaned packaging:

· Recommendation:

Empty contaminated packagings thoroughly. They may be recycled after thorough and proper cleaning.

GB

(Contd. on page 4)

Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 17.03.2009

Revision: 17.03.2009

Trade name: Klüberoil 4 UH1- 220N

(Contd. of page 3)

14 Transport information

- Land transport ADR/RID (cross-border)
- ADR/RID class: -
- Maritime transport IMDG:
- IMDG Class: -
- Air transport ICAO-TI and IATA-DGR:
- ICAO/IATA Class: -
- Transport/Additional information:
Not classified as dangerous according to the above specifications.

15 Regulatory information

- Labelling according to EU guidelines:
The product is not subject to classification according to the calculation methods of the "General Classification Guideline for Preparations of the EU" as issued in the latest valid version.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Department issuing MSDS: Material Compliance Management
- Contact: +49(0)897876-1564
- * Data compared to the previous version altered.

GB



February 25, 2004

Luciana Husfeld
KLUBER LUBRICATION MUNCHEN KG.
GEISENHAUSENER STR. 7
81379 MÜNCHEN
GERMANY

RE: Klubersynth® UH1 14-151
Category Code: H1
NSF Registration No. 056354

Dear Luciana Husfeld:

NSF has processed the application for Registration of **Klubersynth® UH1 14-151** to the *NSF Registration Guidelines for Proprietary Substances and Nonfood Compounds* (2004), which are available at www.nsf.org/usda. The NSF Nonfood Compounds Registration Program is a continuation of the USDA product approval and listing program, which is based on meeting regulatory requirements including FDA 21 CFR for appropriate use, ingredient and labeling.

This product is acceptable as a lubricant with incidental food contact (H1) for use in and around food processing areas. Such compounds may be used on food processing equipment as a protective anti-rust film, as a release agent on gaskets or seals of tank closures, and as a lubricant for machine parts and equipment in locations in which there is a potential exposure of the lubricated part to food. The amount used should be the minimum required to accomplish the desired technical effect on the equipment. If used as an anti-rust film, the compound must be removed from the equipment surface by washing or wiping, as required to leave the surface effectively free of any substance which could be transferred to food being processed.

NSF Registration of this product is current when the NSF Registration Number, Category Code, and Registration Mark appear on the NSF-approved product label, and the registered product name is included in the current NSF White Book Listing of Nonfood Compounds at the NSF website (<http://www.nsf.org/usda>). The NSF Registration Mark can be downloaded from the NSF website, at http://www.nsf.org/mark/download_marks.html.

NSF Listing of all registered Nonfood compounds by NSF International is not an endorsement of those compounds, or of any performance or efficacy claims made by the manufacturer.

Registration status may be verified at any time via the NSF web site, at <http://www.nsf.org/usda>. Changes in formulation or label, without the prior written consent of NSF, will void registration, and will supersede the on-line listing.

Sincerely,

A handwritten signature in black ink, appearing to read 'Carmen Grindatti', written in a cursive style.

Carmen Grindatti
NSF Nonfood Compounds Registration Program

Company No: N04391

Klübersynth® UH1 14-151

Lubricating grease for the food-processing industry



Description

Klübersynth UH1 14-151 was especially developed for the food processing and pharmaceutical industry.

This lubricant fulfills the requirements of the German law governing food products and associated ancillaries and complies with the "guidelines of sec. 21 CFR 178.3570 of FDA regulations". It has been authorized by the USDA for use in federally inspected meat and poultry plants (USDA H1).

Klübersynth UH1 14-151 shows good anti-wear properties, water resistance and corrosion protection as well as a high ageing and oxidation stability.

Application

Used for machines and equipment in the food-processing and pharmaceutical industry, particularly for lubrication points that may have incidental and technically unavoidable contact with the food product. However, we recommend using Klübersynth UH1 14-151 at all lubrication points, in order to avoid problems due to lubricant contamination.

This special grease lubricates rolling and sliding bearings, lifting cylinders, joints, guide bars, cams, etc.

Application notes

Klübersynth UH1 14-151 is applied by brush, spatula, grease gun and grease cartridge or by means of centralized lubrication systems.

Before substituting other greases with Klübersynth UH1 14-151 the bearings have to be cleaned and greased. If the greases are miscible, the grease can be exchanged by means of relubrication.

Minimum shelf life

The minimum shelf life is approx. 24 months if the product is stored in its unopened original container in a dry place.

Klübersynth UH1 14-151

- Synthetic
- Good wear resistance
- Can be used in centralized lubrication systems
- Good water resistance
- High ageing and oxidation stability
- Good corrosion protection
- USDA H1 registration

Pack size

400 g grease cartridge
1 kg tin
25 kg bucket

Product data

Colour	beige
Texture	homogeneous
Density, DIN 51 757, at 20 °C, g/cm ³ , approx.	0.92
Drop point, DIN ISO 2176, °C	> 220
Worked penetration at 25 °C, DIN ISO 2137; 0.1 mm, approx.	310 to 340
Spped factor, (n x d _m), approx.	3 x 10 ⁵
Consistency, NLGI grade, DIN 51 818	1
Service temperature range*, °C	- 45 to 120
Flow pressure, DIN 51 805, at - 45 °C, mbar	< 1400

* Service temperatures are guide values which depend on the lubricant's composition, the intended use and the application method. Lubricants change their consistency, apparent dynamic viscosity or viscosity depending on the mechano-dynamical loads, time, pressure and temperature. These changes in product characteristics may affect the function of a component.

The data in this product information is based on our general experience and knowledge at the time of printing and is intended to give information of possible applications to a reader with technical experience. It constitutes neither an assurance of product properties nor does it release the user from the obligation of performing preliminary tests with the selected product. We recommend contacting our Technical Consulting Staff to discuss your specific application. If required and possible we will be pleased to provide a sample for testing. Klüber products are continually improved. Therefore, Klüber Lubrication reserves the right to change all the technical data in this product information at any time without notice.



Klüber Lubrication, a member of the Freudenberg group

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Klüber Lubrication München KG
Geisenhausenerstraße 7, 81379 München, Deutschland
☎ +49 89 7876-0, Telefax +49 89 7876-333, www.klueber.com

Certificate

FOOD-GRADE LUBRICANT

Klüber Lubrication München KG herewith confirms that our product

KLÜBEROIL 4 UH1-32 N
Art.No. 029037

fulfills the USA requirements „Guidelines of section 21 CFR 178.3570 of FDA regulations“ as well as the former USDA H1 registration criteria.
Our product complies with LMBG and the European standard EN 1672, part 2.

Note:

CFR = Code of Federal Regulations.

FDA = Food and Drug Administration.

USDA = United States Department of Agriculture.

H1 = Lubricants suitable for an incidental and technically unavoidable contact with the food product.

LMBG = German law governing food products and associated ancillaries.

EN 1672 part 2 = Hygiene requirement of food-processing machines.

Munich, date 01.10.2001

Hans-Jürgen Blanke
General Management



Dr. Günther Bodesheim
Head Quality/Environmental
Protection and Occupational Safety



United States
Department of
Agriculture

Food Safety
and Inspection
Service

Regulatory Programs
Building 306, BARC-East
Beltsville, MD 20705

December 21, 1994

Dr. D. Sohn
Kluber Lubrication
Geisenhausener Str. 7
D-81379 Munchen
Germany

Dear Dr. Sohn:

This is in reply to your request for compound authorization received on November 15, 1994 for your product Kluberpaste UH1 84-201.

This product is acceptable as a lubricant with incidental food contact for use in official establishments operating under the Federal meat and poultry products inspection program. Such compounds may be used on food processing equipment as a protective anti-rust film, as a release agent on gaskets or seals of tank closures, and as a lubricant for machine parts and equipment in locations in which there is potential exposure of the lubricated part to food. The amount used should be the minimum required to accomplish the desired technical effect on the equipment. If used as an anti-rust film, the compound must be removed from the equipment surface by washing or wiping, as required to leave the surface effectively free of any substance which could be transferred to food being processed.

The final granting of authorization for the proposed use of such compounds is the responsibility of the inspector in charge of the official plant. Technical assistance will be provided by the Compounds and Packaging Branch upon request.

Acceptance of compounds by this Department is in no way to be construed as an endorsement of the compounds or of any claims made for them.

If any change is made in the labeling information or formulation, the authorization for use in official plants becomes void immediately.

Sincerely,

John M. Damaré, Chief
Compounds and Packaging Branch
Product Assessment Division

REPLACES FSIS FORM 11,300-6 (5/87), WHICH IS OBSOLETE.



United States
Department of
Agriculture

Food Safety
and Inspection
Service

Regulatory Programs
Building 306, BARC-East
Beltsville, MD 20705

August 13, 1991

Dr. D. Sohn
Kluber Lubrication
Geisenhausenerstrasse. 7
D-8000 Munchen 70, Germany

Dear Dr. Sohn:

This is in reply to your request for compound authorization received on July 02, 1991 for your product Kluberol 4 UH1 220.


This product is acceptable as a lubricant with incidental food contact for use in official establishments operating under the Federal meat and poultry products inspection program. Such compounds may be used as lubricants or anti-rust films on equipment and machine parts in locations in which there is exposure of the lubricated parts to edible products. They may also be used as a release agent on gaskets or seals of tank closures. The amount used should be the minimum required to accomplish the desired technical effect on the equipment. If used as anti-rust films, the compounds must be removed from the equipment surface by washing or wiping as required to leave the surface effectively free of any substance which could be transferred to food being processed.

The final granting of authorization for the proposed use of such compounds is the responsibility of the inspector in charge of the official plant. Technical assistance will be provided by the Product Safety Branch upon request.

Acceptance of compounds by this Department is in no way to be construed as an endorsement of the compounds or of any claims made for them.

If any change is made in the labeling information or formulation, the authorization for use in official plants becomes void immediately.

Sincerely,


John M. Damaré, Chief
Product Safety Branch
Food Ingredient Assessment Division

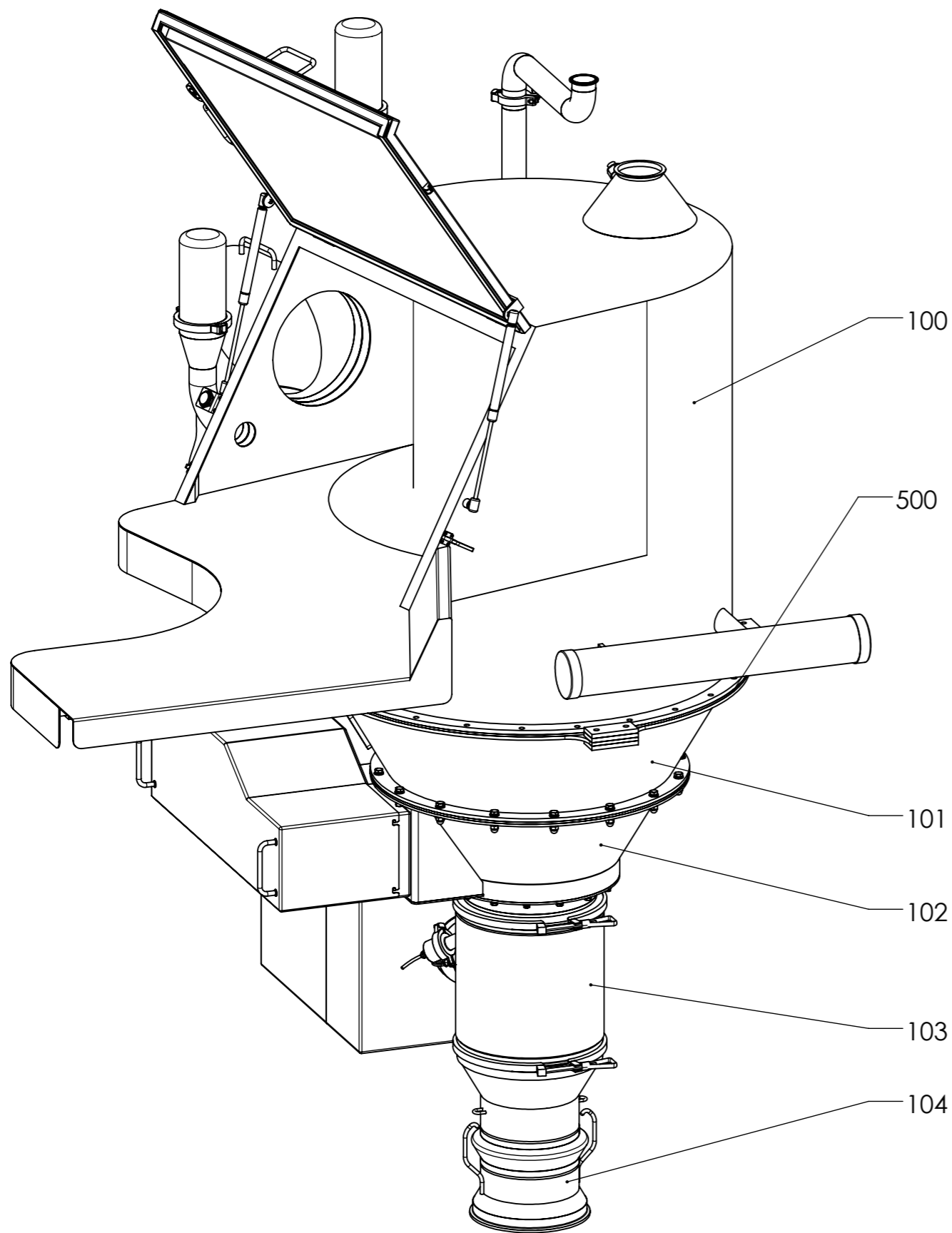
RECEIVED

KLUBER LUBRICATION

Voir documents suivants.

Siehe folgende Dokumente.

See following documents



Position	N° article Artikel Nr Item number	Certificat Matière Materialzertifikate Materials certificates EN-10204-3.1B / FDA	Certificats d'états de surface Zertifikate für Oberflächenqualität Surface quality certificates
100	464821-CMA	X	X
101	456221-CMA	X	X
102	464797-CMA	X	X
103	464777-CMA	X	X
104	464851-CMA	X	X
500	457663	X	0

X = livré / geliefert / delivered
0 = non livré / ungeliefert / undelivered

Dimensions without tolerance [mm]	above up to	6	6	30	120	400	1000	MATERIAL : N/A					
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	Scale	Similar	Designed	13/05/2011	thle	
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00	%	459317	Controlled	10/06/2011	thle	
PRO-11-0076 / DelumpWitt								Weight [kg]	Revised	10/06/2011	thle		
								A3	N/A	Atex			
Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.										Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com		Page	Ver.
								464769-CMA		1/1	A		

Client: Kunde: Customer:
 NOVARTIS SINGAPORE PHARMACEUTICAL
 SG-Singapore

N° Série: Serien-Nr. Serial Nr.
 11007635096

Values are automatically taken from the measuring instrument and can not be changed

Appareil de mesure / Messapparat / Measurin unit : Niton XLt 898 W Y Alloy Analyzer
 N° série / Serien-Nr. / Serial Nr. : 8251
 N° Certificat / Zertifikat-Nr. / Certificate Nr. : 35EN-04292005-IARM-P

Drawing 464769-CMA

Pos.100 Dessin / Zeichnung / Drawing: 464821-CMA

Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																			
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V

see next document Material certificate EN 10204-3.1 - Hopper Assembly DN900 464821

Pos.101 Dessin / Zeichnung / Drawing: 456221-CMA

Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.09	0.02	0.00	0.12	0.00	2.16	0.01	0.00	0.00	0.00	0.00	0.05	0.00	0.38	9.68	0.32	69.67	0.94	16.48	0.06	0.00
2	1.4404 / SS316L	0.00	0.05	0.00	0.12	0.00	2.06	0.02	0.00	0.00	0.00	0.00	0.03	0.01	0.39	10.22	0.00	69.45	0.63	16.96	0.06	0.00
3	1.4404 / SS316L	0.11	0.08	0.00	0.10	0.00	2.15	0.01	0.00	0.00	0.00	0.00	0.06	0.02	0.43	10.11	0.00	68.40	1.54	16.94	0.02	0.01
4	1.4404 / SS316L	0.00	0.01	0.00	0.12	0.00	2.14	0.01	0.00	0.01	0.00	0.00	0.08	0.00	0.42	10.31	0.32	67.92	1.58	17.02	0.05	0.00
5	1.4404 / SS316L	0.00	0.08	0.00	0.11	0.00	2.06	0.00	0.00	0.00	0.02	0.00	0.04	0.02	0.23	10.73	0.03	70.13	0.78	16.65	0.10	0.00

Pos.102 Dessin / Zeichnung / Drawing: 464797-CMA

Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																			
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V

see next document Material certificate EN 10204-3.1 ProFi-Sword

Pos.103 Dessin / Zeichnung / Drawing: 464777-CMA

Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																			
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V

see next document Material certificate EN 10204-3.1 ConiWitt-250

Pos.104 Dessin / Zeichnung / Drawing: 464851-CMA

Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																			
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V

see next document Material certificate EN 10204-3.1 Outlet Funnel Assembly 464851

Pos.500

500	NOVAFLON	Document N° / Dokument Nr. / Document No :	118884-1	Art.457663		
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Protocole établi par (visa)		le	
Protokoll erstellt von (Visa)	H.REY	am	27.07.11
Report established by (Visa)		on	

Voir documents suivants.

Siehe folgende Dokumente.

See following documents

Voir documents suivants.

Siehe folgende Dokumente.

See following documents

Client: Kunde: Customer:
NOVARTIS SINGAPORE PHARMACEUTICAL
SG-Singapore

N° Série: Serien-Nr. Serial Nr.
11007643002

Values are automatically taken from the measuring instrument and can not be changed

Appareil de mesure / Messapparat / Measurin unit : Niton XLt 898 W Y Alloy Analyzer
N° série / Serien-Nr. / Serial Nr. : 8251
N° Certificat / Zertifikat-Nr. / Certificate Nr. : 35EN-04292005-IARM-P

Drawing 464821-CMA

Pos.100 Dessin / Zeichnung / Drawing: 464820-CMA

Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.00	0.00	0.00	0.12	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.38	10.05	0.29	68.79	1.14	16.89	0.07	0.00
2	1.4404 / SS316L	0.00	0.04	0.00	0.14	0.00	2.20	0.01	0.00	0.00	0.00	0.00	0.01	0.06	0.35	10.38	0.21	68.69	1.31	16.53	0.06	0.00
3	1.4404 / SS316L	0.00	0.07	0.00	0.11	0.00	2.13	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.33	10.13	0.11	68.46	1.48	17.06	0.06	0.00
4	1.4404 / SS316L	0.00	0.00	0.00	0.12	0.00	2.15	0.00	0.00	0.00	0.01	0.00	0.03	0.08	0.28	9.68	0.09	69.37	1.35	16.65	0.19	0.00
5	1.4404 / SS316L	0.03	0.04	0.00	0.12	0.00	2.17	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.40	9.70	0.52	68.77	1.34	16.76	0.08	0.00
6	1.4404 / SS316L	0.07	0.00	0.00	0.12	0.00	2.15	0.01	0.00	0.00	0.01	0.00	0.04	0.06	0.35	10.22	0.19	68.37	1.48	16.86	0.07	0.00
7	1.4404 / SS316L	0.00	0.01	0.00	0.12	0.00	2.21	0.00	0.00	0.00	0.00	0.00	0.02	0.08	0.10	12.18	0.31	66.51	1.12	17.27	0.05	0.00
8	1.4404 / SS316L	0.09	0.07	0.00	0.12	0.00	2.48	0.01	0.00	0.00	0.00	0.00	0.02	0.07	0.27	12.97	0.18	63.80	1.82	17.31	0.07	0.00
9	1.4404 / SS316L	0.04	0.02	0.00	0.12	0.00	2.15	0.02	0.00	0.00	0.00	0.01	0.06	0.07	0.52	9.66	0.31	69.02	0.96	16.99	0.05	0.00
10	1.4404 / SS316L	0.09	0.00	0.02	0.13	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.05	10.68	0.41	69.42	1.34	16.53	0.05	0.00
11	1.4404 / SS316L	0.06	0.05	0.00	0.14	0.00	2.05	0.00	0.00	0.00	0.00	0.00	0.08	0.06	0.28	10.01	0.39	69.20	0.95	16.64	0.06	0.02
12	1.4404 / SS316L	0.06	0.01	0.00	0.16	0.00	2.20	0.01	0.00	0.00	0.02	0.00	0.00	0.10	0.37	9.65	0.33	69.23	1.22	16.59	0.05	0.00
13	1.4404 / SS316L	0.08	0.09	0.01	0.13	0.00	2.12	0.00	0.00	0.00	0.00	0.00	0.10	0.09	0.27	9.64	0.44	69.31	0.99	16.64	0.08	0.00
14	1.4404 / SS316L	0.06	0.01	0.01	0.14	0.00	1.96	0.00	0.00	0.00	0.00	0.00	0.01	0.11	0.61	11.19	0.18	66.87	1.70	17.10	0.04	0.01
15	1.4404 / SS316L	0.11	0.06	0.00	0.15	0.00	2.09	0.02	0.00	0.00	0.00	0.00	0.03	0.06	0.38	10.02	0.38	67.50	1.81	17.34	0.06	0.00
16	1.4404 / SS316L	0.07	0.01	0.01	0.11	0.00	2.14	0.02	0.00	0.00	0.00	0.00	0.05	0.07	0.46	9.94	0.06	67.96	1.75	17.30	0.07	0.00
17	1.4404 / SS316L	0.00	0.00	0.00	0.09	0.00	2.09	0.01	0.00	0.00	0.03	0.00	0.04	0.08	0.39	11.68	0.55	68.10	0.99	16.85	0.11	0.00
18	1.4404 / SS316L	0.09	0.05	0.00	0.09	0.00	2.06	0.01	0.00	0.00	0.00	0.00	0.05	0.10	0.63	11.07	0.27	68.76	1.17	16.53	0.09	0.00

Pos.101 Dessin / Zeichnung / Drawing: 464904-CMA

Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.02	0.00	0.00	0.07	0.00	2.10	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.12	10.45	0.08	69.51	1.37	16.66	0.10	0.01
2	1.4404 / SS316L	0.03	0.01	0.00	0.09	0.00	2.09	0.00	0.00	0.00	0.00	0.00	0.05	0.08	0.37	9.94	0.28	69.03	1.06	16.91	0.04	0.00
3	1.4404 / SS316L	0.00	0.00	0.00	0.11	0.00	2.42	0.05	0.00	0.00	0.00	0.00	0.12	0.04	0.49	10.33	0.40	67.33	1.42	17.03	0.05	0.00
4	1.4404 / SS316L	0.00	0.00	0.00	0.12	0.00	2.31	0.07	0.00	0.00	0.00	0.00	0.00	0.10	0.28	12.43	0.41	65.14	1.95	16.79	0.07	0.00

Pos.102 Dessin / Zeichnung / Drawing: 464904-CMA

Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.01	0.02	0.00	0.08	0.00	1.92	0.00	0.00	0.00	0.00	0.01	0.00	0.12	0.01	11.31	0.07	68.65	1.00	16.68	0.10	0.00
2	1.4404 / SS316L	0.05	0.00	0.00	0.11	0.00	2.12	0.05	0.00	0.02	0.00	0.00	0.09	0.05	0.38	10.26	0.39	66.96	1.93	17.52	0.07	0.00
3	1.4404 / SS316L	0.02	0.00	0.00	0.12	0.00	2.42	0.04	0.00	0.00	0.00	0.00	0.03	0.05	0.37	10.36	0.49	67.50	1.34	16.93	0.05	0.00
4	1.4404 / SS316L	0.00	0.00	0.01	0.11	0.00	2.44	0.06	0.00	0.00	0.00	0.00	0.01	0.14	0.23	13.11	0.16	65.32	1.63	16.46	0.13	0.00

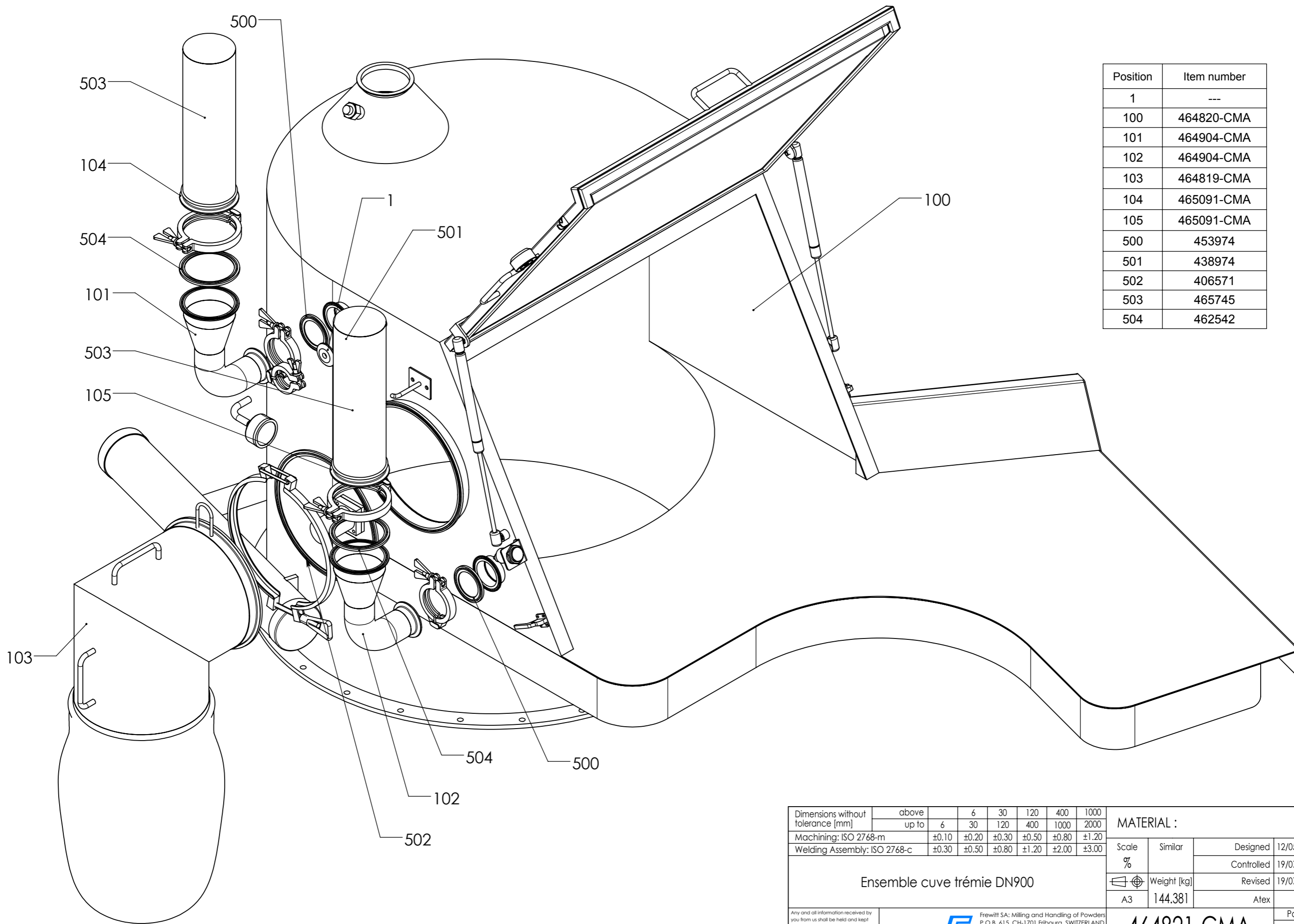
Pos.103		Dessin / Zeichnung / Drawing: 464819-CMA																				
Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.06	0.05	0.00	0.14	0.00	2.05	0.00	0.00	0.00	0.00	0.00	0.08	0.06	0.28	10.01	0.39	69.20	0.95	16.64	0.06	0.02
2	1.4404 / SS316L	0.01	0.03	0.00	0.13	0.00	2.39	0.04	0.00	0.00	0.02	0.00	0.06	0.17	0.65	11.02	0.00	66.03	1.30	18.04	0.10	0.00
3	1.4404 / SS316L	0.00	0.01	0.01	0.10	0.00	2.19	0.03	0.00	0.00	0.00	0.00	0.06	0.05	0.39	9.74	0.43	67.73	1.71	17.51	0.05	0.00
4	1.4404 / SS316L	0.02	0.04	0.00	0.12	0.00	2.16	0.03	0.00	0.00	0.00	0.00	0.07	0.05	0.34	10.06	0.00	68.24	1.81	17.04	0.02	0.00
5	1.4404 / SS316L	0.00	0.00	0.00	0.09	0.00	2.15	0.01	0.01	0.00	0.00	0.01	0.01	0.20	0.39	10.64	0.38	67.18	1.90	16.44	0.08	0.00
6	1.4404 / SS316L	0.11	0.05	0.00	0.15	0.00	2.13	0.03	0.00	0.00	0.00	0.00	0.00	0.11	0.44	10.16	0.22	67.93	1.66	16.98	0.03	0.01
7	1.4404 / SS316L	0.07	0.03	0.01	0.12	0.00	2.17	0.03	0.00	0.00	0.02	0.00	0.04	0.07	0.56	10.17	0.42	67.89	1.98	16.36	0.05	0.00

Pos.104		Dessin / Zeichnung / Drawing: 465091-CMA																				
Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.08	0.03	0.00	0.12	0.00	2.65	0.07	0.00	0.00	0.00	0.00	0.03	0.04	0.22	12.43	0.34	64.47	1.82	17.61	0.09	0.00
2	1.4404 / SS316L	0.09	0.06	0.01	0.13	0.00	2.15	0.00	0.00	0.00	0.00	0.00	0.07	0.02	0.43	10.43	0.47	67.32	1.73	17.04	0.03	0.01

Pos.105		Dessin / Zeichnung / Drawing: 465091-CMA																				
Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.00	0.00	0.00	0.13	0.00	2.67	0.06	0.00	0.00	0.00	0.00	0.04	0.06	0.22	12.61	0.11	65.32	1.78	16.94	0.07	0.00
2	1.4404 / SS316L	0.00	0.00	0.00	0.10	0.00	2.18	0.01	0.00	0.00	0.01	0.00	0.01	0.05	0.50	9.82	0.45	68.30	1.74	16.76	0.05	0.00

Pos.500	SILICONE	Document N° / Dokument Nr. / Document No :	15097-3	Art.453974		
Pos.501	SILICONE	Document N° / Dokument Nr. / Document No :	15097-3	Art.453974		
Pos.502	SILICONE	Document N° / Dokument Nr. / Document No :	17348-11	Art.406571		
Pos.503	PET-Staple Fibre	Document N° / Dokument Nr. / Document No :	135413-1	Art.465745		
Pos.504	SILICONE	Document N° / Dokument Nr. / Document No :	135764-1	Art.462542		

Protocole établi par (visa)		le
Protokoll erstellt von (Visa)	<u>U.Schaller</u>	am
Report established by (Visa)		on
		<u>26.08.11</u>



Position	Item number
1	---
100	464820-CMA
101	464904-CMA
102	464904-CMA
103	464819-CMA
104	465091-CMA
105	465091-CMA
500	453974
501	438974
502	406571
503	465745
504	462542

Dimensions without tolerance [mm]	above	6	6	30	120	400	1000
	up to	6	30	120	400	1000	2000
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00

MATERIAL :					
Scale %	Similar	Designed	12/05/2011	thle	
		Controlled	19/07/2011	thle	
Weight [kg]		Revised	19/07/2011	thle	
	A3	Atex			

Ensemble cuve trémie DN900

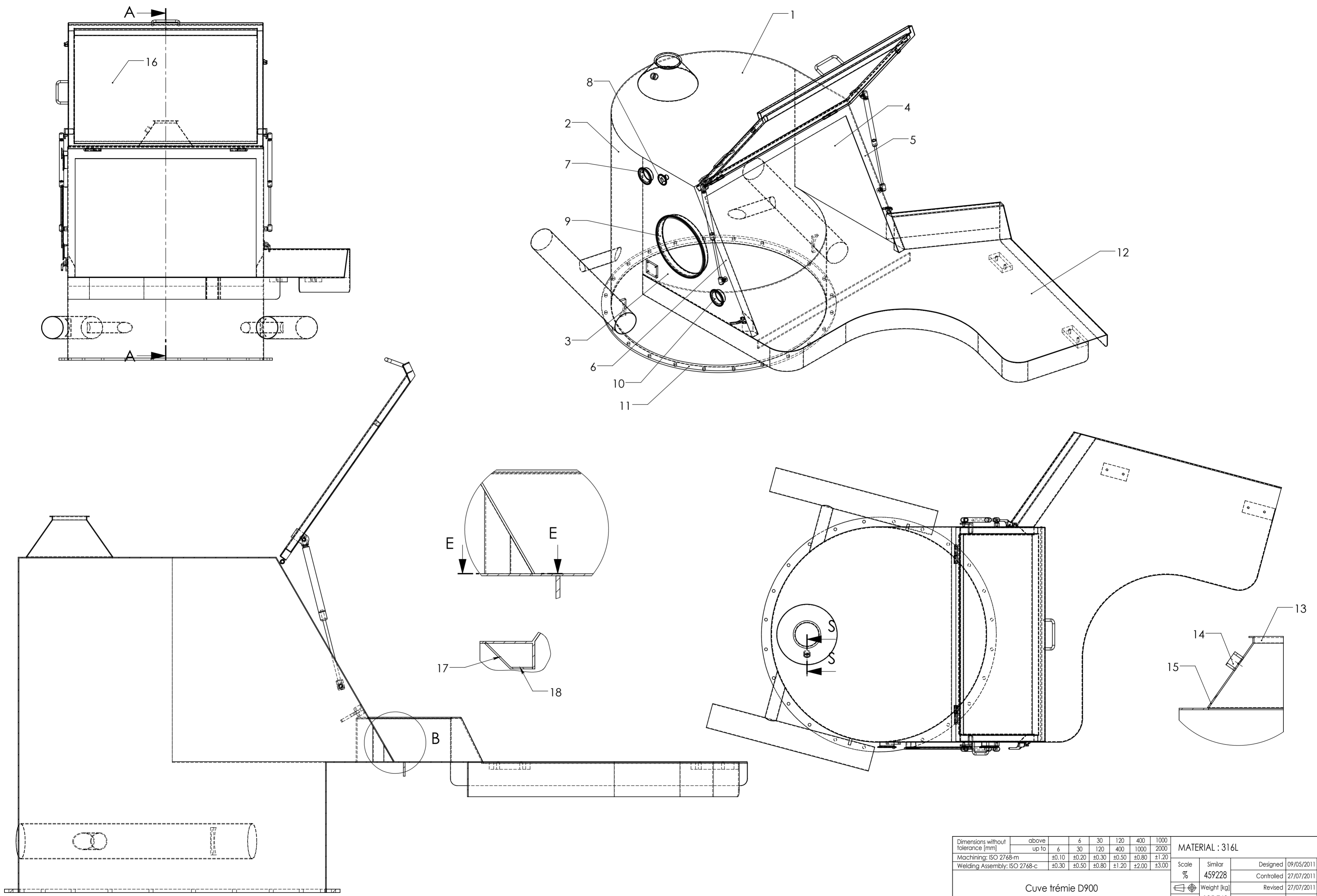
Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.



Frewitt SA: Milling and Handling of Powders
P.O.B. 615, CH-1701 Fribourg, SWITZERLAND
tel: +41 26 460 74 00 / fax: +41 26 460 74 01
info@frewitt.com / www.frewitt.com

464821-CMA

Page	Ver.
1/1	A



Dimensions without tolerance [mm]	above up to	6	30	120	400	1000	2000
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00

MATERIAL : 316L			
Scale	Similar	Designed	09/05/2011
%	459228	Controlled	27/07/2011
Weight [kg]		Revised	27/07/2011
A2	125.769	Atex	

Cuve trémie D900

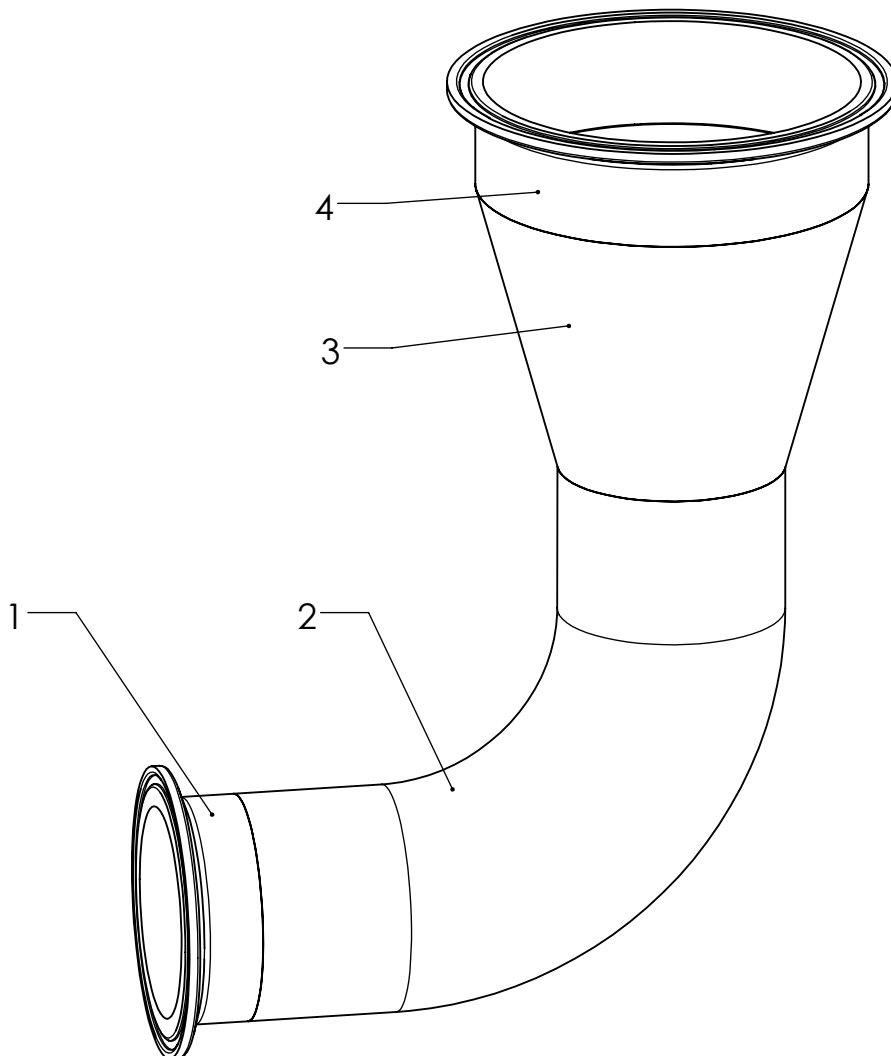
Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.



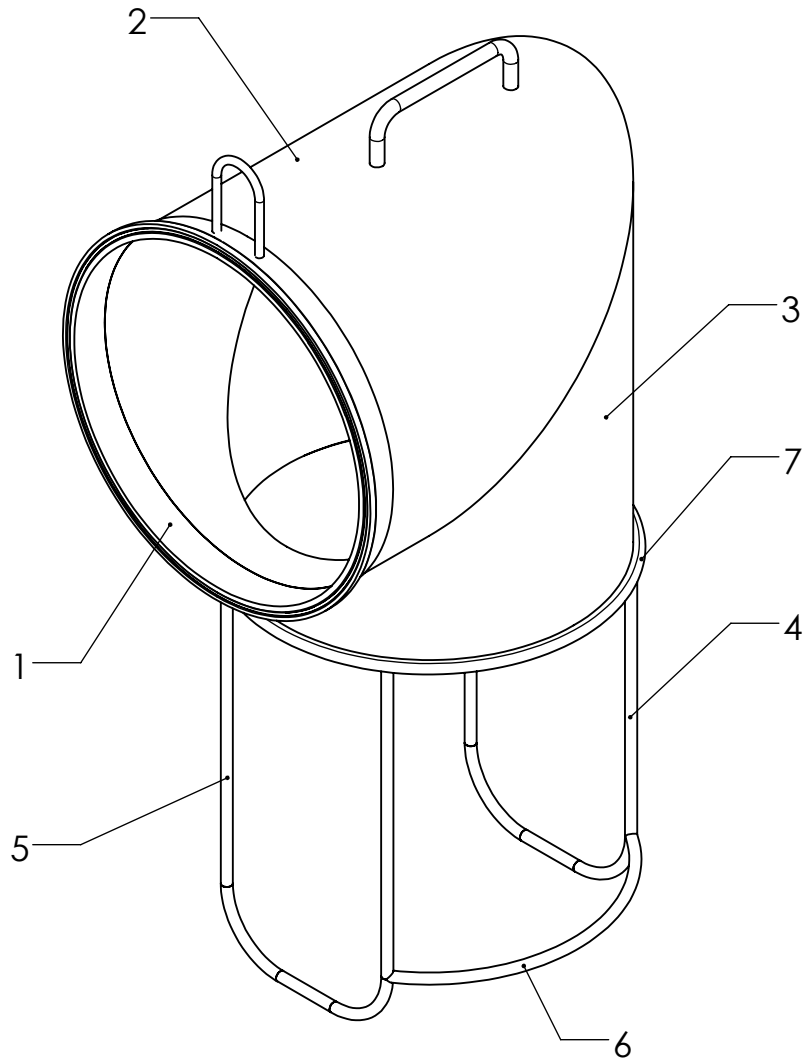
Frewitt SA: Milling and Handling of Powders
P.O.B. 615, CH-1701 Fribourg, SWITZERLAND
Tel: +41 26 460 74 00 / Fax: +41 26 460 74 01
info@frewitt.com / www.frewitt.com


464820-CMA

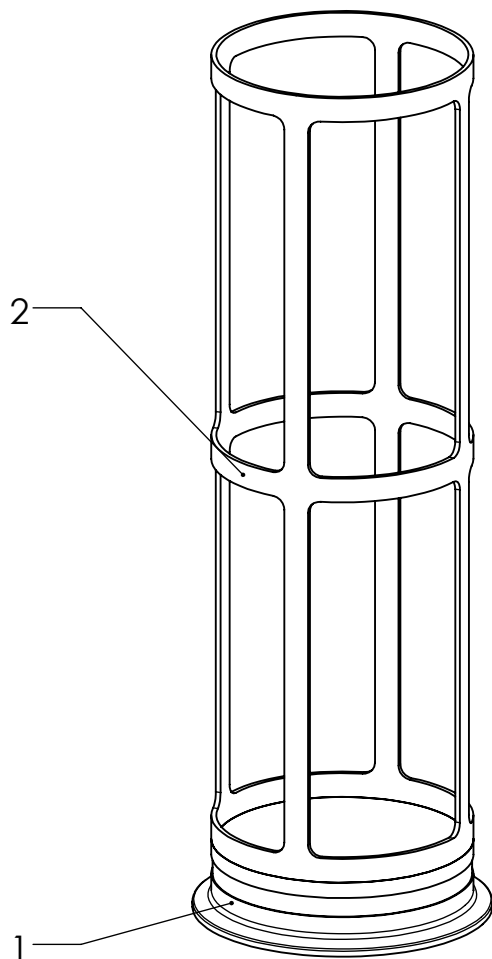
Page 1/1
Ver. A




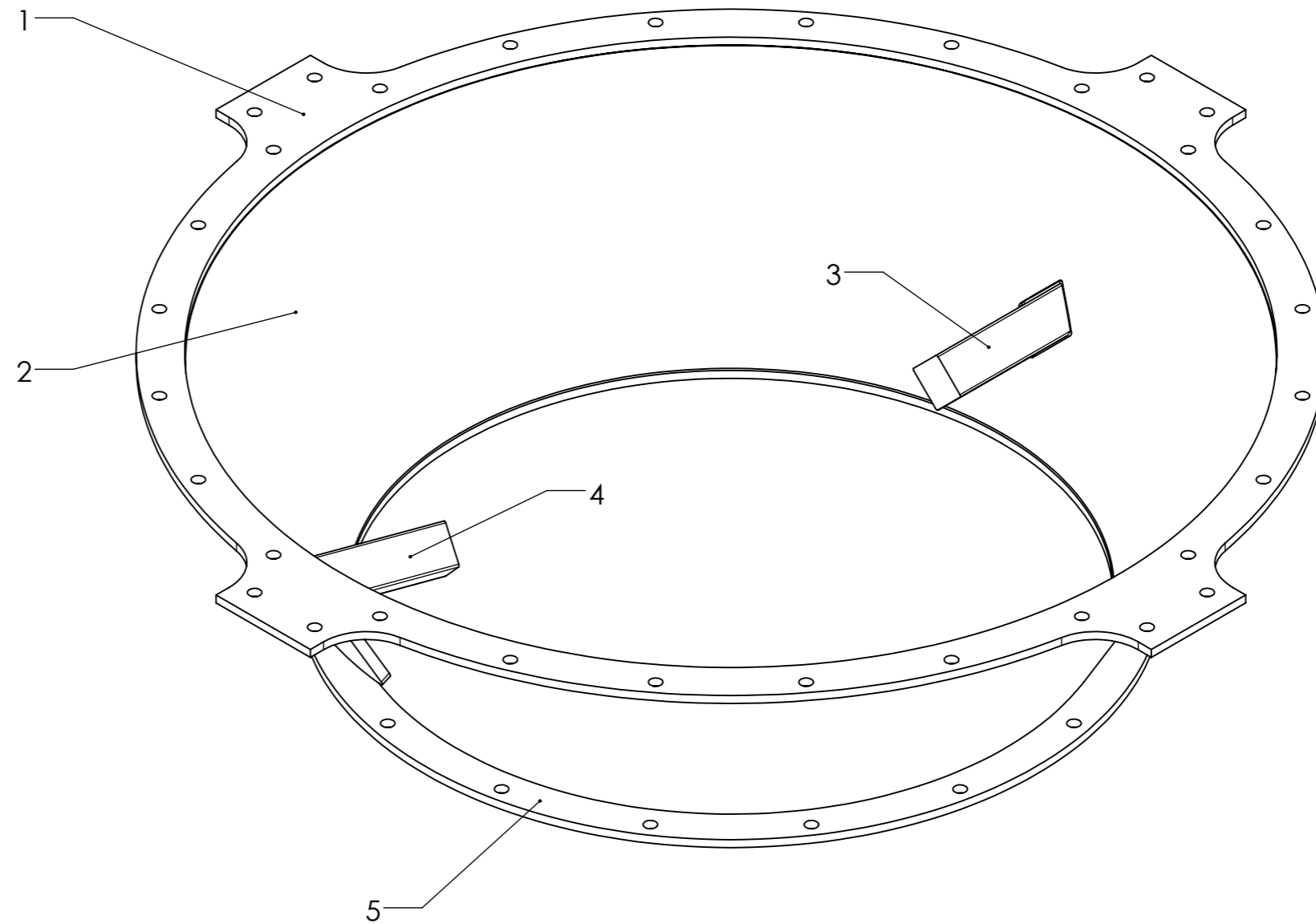
Dimensions without tolerance [mm]	above up to	6	30	120	400	1000	MATERIAL : N/A								
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	Scale %	Similar	Designed	16/05/2011	thle			
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00		Weight [kg]	Controlled	16/05/2011	thle			
Coude 90°									A4	N/A	Revised	16/05/2011	thle		
Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.										Frewitt SA; Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND Tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com		464904-CMA		Page	Ver.
														1/1	



Dimensions without tolerance [mm]	above		6	30	120	400	1000	MATERIAL : 316/316L				
	up to	6	30	120	400	1000	2000		Scale	Similar	Designed	12/05/2011
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	%	456257	Controlled	12/05/2011	thle
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00	Weight [kg]		Revised	12/05/2011	thle
Tube pour sache								⊕		Atex		
								A4	7.04			
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Dimensions without tolerance [mm]	above		6	30	120	400	1000	MATERIAL : 316/316L				
	up to	6	30	120	400	1000	2000					
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	Scale	Similar	Designed	19/07/2011	thle
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00	%		Controlled	19/07/2011	thle
Cartouche pour filtre								⊕	Weight [kg]	Revised	19/07/2011	thle
								A4	N/A	Atex		
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										1/1	A	



Dimensions without tolerance [mm]	above	6	30	120	400	1000	MATERIAL : -	Scale	Similar	Designed	19/11/2009	ygr			
	up to	6	30	120	400	1000				2000	Controlled	29/06/2011	tgr		
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	Weight [kg]	Revised	29/06/2011	tgr				
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00			Atex					
Trémie de concassage								A3	36.240						
										Page	Ver.				
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Voir documents suivants.

Siehe folgende Dokumente.

See following documents

Client: **Kunde:** **Customer:**
NOVARTIS SINGAPORE PHARMACEUTICAL
SG-Singapore

N° Série: **Serien-Nr.** **Serial Nr.**
11007643002

Values are automatically taken from the measuring instrument and can not be changed

Appareil de mesure / Messapparat / Measuring unit : Niton XLt 898 W Y Alloy Analyzer
N° série / Serien-Nr. / Serial Nr. : 8251
N° Certificat / Zertifikat-Nr. / Certificate Nr. : 35EN-04292005-IARM-P

Drawing [464797-CMA](#)

Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.00	0.02	0.00	0.11	0.00	2.14	0.01	0.00	0.00	0.00	0.00	0.13	0.00	0.44	10.11	0.37	67.49	1.27	17.82	0.07	0.00
2	1.4404 / SS316L	0.00	0.00	0.00	0.13	0.00	2.12	0.03	0.00	0.00	0.01	0.00	0.11	0.02	0.30	10.32	0.55	66.40	1.26	18.66	0.09	0.00
3	1.4404 / SS316L	0.00	0.05	0.00	0.08	0.00	2.13	0.01	0.00	0.00	0.03	0.00	0.09	0.01	0.44	10.14	0.25	66.53	1.99	18.13	0.11	0.00

Pos.100 Sealing Dessin / Zeichnung / Drawing: [454424-CMA](#)

Sealing		Document N° / Dokument Nr. / Document No :		
500	FKM 75.5	111900-1		Art.454357
501	FEP-O-SEAL	17668-1		Art.431768

pos.100 Dessin / Zeichnung / Drawing: [459448-CMA](#)

Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																					
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti	
1	1.4404 / SS316L	0.00	0.00	0.00	0.00	0.00	2.11	0.02	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.39	9.48	0.28	68.58	1.78	17.23	0.06	0.01
pos.500	Gylon	127378-1		Art.459448																			

Pos.101 Dessin / Zeichnung / Drawing: [454299-CMA](#)

Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.00	0.08	0.00	0.10	0.00	2.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	10.26	0.20	68.55	1.17	17.03	0.09	0.00
2	1.4404 / SS316L	0.02	0.03	0.01	0.11	0.00	2.16	0.01	0.00	0.00	0.00	0.00	0.04	0.00	0.19	10.50	0.22	69.35	0.76	16.53	0.07	0.00
3	1.4404 / SS316L	0.00	0.00	0.00	0.11	0.00	2.05	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.40	10.21	0.39	68.85	1.08	16.77	0.09	0.00
4	1.4404 / SS316L	0.03	0.04	0.00	0.11	0.00	2.01	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.45	10.37	0.05	68.63	1.00	18.15	0.08	0.00
5	1.4404 / SS316L	0.03	0.05	0.01	0.14	0.00	2.09	0.00	0.00	0.00	0.00	0.00	0.05	0.02	0.46	10.73	0.10	67.75	1.77	16.74	0.06	0.00


Pos.102 Dessin / Zeichnung / Drawing: [456200-CMA](#)

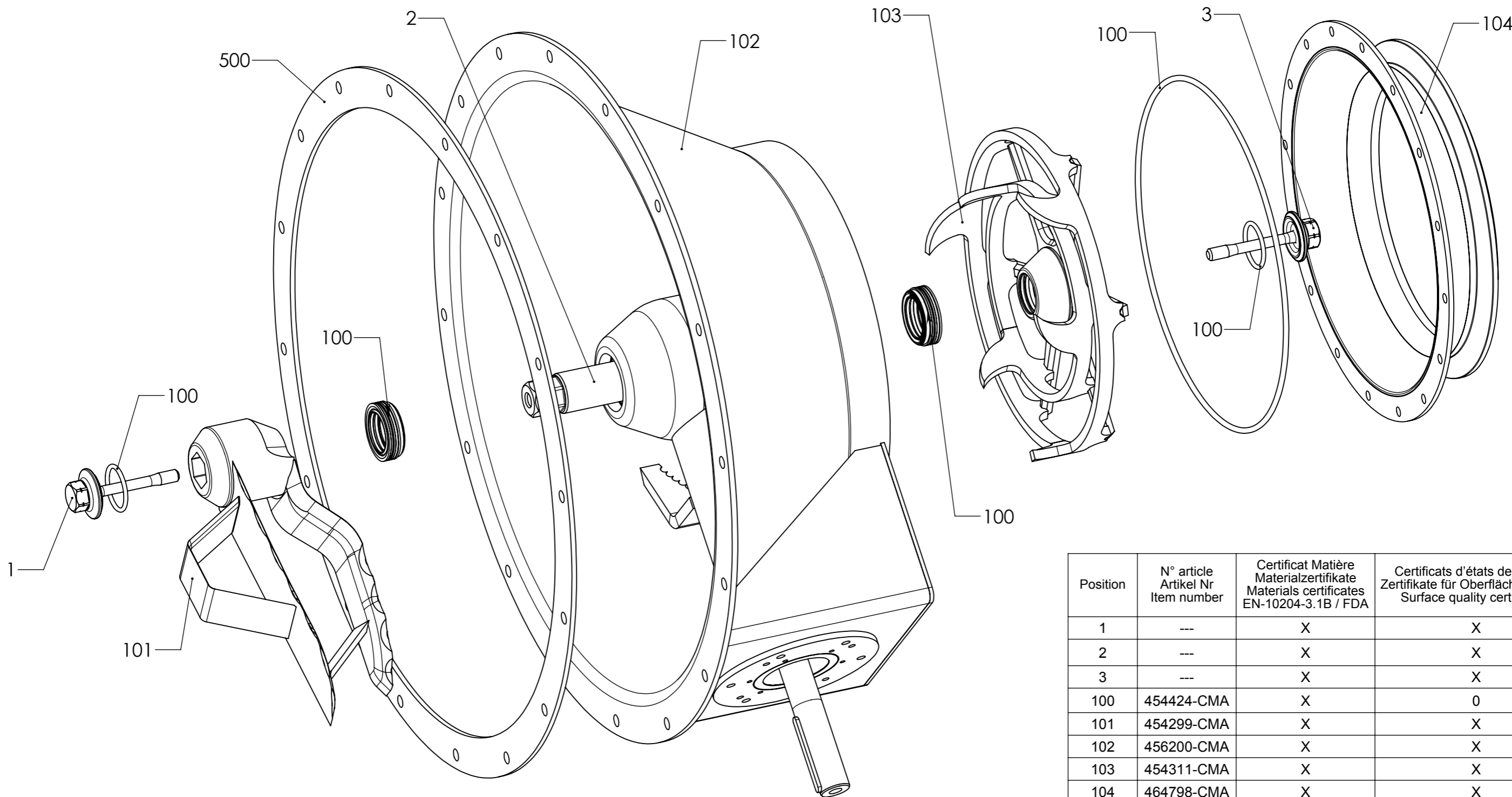
Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.00	0.04	0.00	0.13	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.39	11.64	0.00	67.55	1.82	16.64	0.06	0.00
2	1.4404 / SS316L	0.07	0.04	0.00	0.11	0.00	2.14	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.30	11.10	0.00	67.94	1.38	16.89	0.02	0.00
3	1.4404 / SS316L	0.00	0.00	0.00	0.10	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.08	0.01	0.28	10.65	0.22	67.25	1.97	17.26	0.04	0.00
4	1.4404 / SS316L	0.10	0.04	0.01	0.13	0.00	2.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	11.07	0.00	67.49	1.56	17.29	0.02	0.03
5	1.4404 / SS316L	0.09	0.00	0.00	0.17	0.00	2.13	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.24	10.34	0.52	67.69	1.48	17.26	0.03	0.00
6	1.4404 / SS316L	0.07	0.10	0.00	0.10	0.00	2.18	0.00	0.01	0.00	0.01	0.01	0.01	0.05	0.23	10.16	0.01	67.79	1.61	17.59	0.06	0.00
7	1.4404 / SS316L	0.00	0.00	0.00	0.17	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.29	10.29	0.00	67.81	1.58	17.64	0.00	0.00
8	1.4404 / SS316L	0.03	0.00	0.00	0.09	0.00	2.60	0.00	0.00	0.01	0.00	0.00	0.02	0.04	0.32	13.09	0.16	64.62	1.85	17.06	0.08	0.00

Pos.103		Dessin / Zeichnung / Drawing: 454311-CMA																				
Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.02	0.04	0.00	0.11	0.00	2.12	0.01	0.00	0.00	0.00	0.00	0.05	0.00	0.39	10.10	0.32	69.30	0.84	16.60	0.09	0.00
2	1.4404 / SS316L	0.12	0.03	0.01	0.09	0.00	2.13	0.01	0.00	0.00	0.00	0.00	0.05	0.01	0.34	10.19	0.48	69.09	0.89	16.49	0.07	0.00
3	1.4404 / SS316L	0.00	0.01	0.00	0.11	0.00	2.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	10.03	0.40	68.77	1.01	17.23	0.07	0.00
4	1.4404 / SS316L	0.01	0.07	0.00	0.10	0.00	2.09	0.01	0.01	0.01	0.00	0.00	0.02	0.01	0.47	10.96	0.00	67.23	1.67	17.16	0.10	0.00

Pos.104		Dessin / Zeichnung / Drawing: 464798-CMA																				
Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.00	0.03	0.00	0.09	0.00	2.08	0.02	0.00	0.00	0.00	0.00	0.06	0.02	0.32	9.79	0.26	69.09	1.24	16.93	0.05	0.01
2	1.4404 / SS316L	0.00	0.00	0.00	0.15	0.00	2.13	0.02	0.00	0.00	0.00	0.00	0.01	0.02	0.42	10.09	0.00	67.97	1.77	17.38	0.03	0.01
3	1.4404 / SS316L	0.00	0.00	0.00	0.11	0.00	2.26	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.09	10.15	0.24	69.58	1.20	16.28	0.04	0.01

Pos.500																					
500	NOVAFLON	Dessin / Zeichnung / Drawing: 456200										42422-1					Art.453220				

Protocole établi par (visa)			
Protokoll erstellt von (Visa)	H.Rey / U.Schaller		le
Report established by (Visa)			am
			on
			29.08.11



Position	N° article Artikel Nr Item number	Certificat Matière Materialzertifikate Materials certificates EN-10204-3.1B / FDA	Certificats d'états de surface Zertifikate für Oberflächenqualität Surface quality certificates
1	---	X	X
2	---	X	X
3	---	X	X
100	454424-CMA	X	0
101	454299-CMA	X	X
102	456200-CMA	X	X
103	454311-CMA	X	X
104	464798-CMA	X	X
500	453220	X	0

X = livré / geliefert / delivered
0 = non livré / ungeliefert / undelivered

Dimensions without tolerance [mm]	above	6	6	30	120	400	1000
	up to	6	30	120	400	1000	2000
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00

MATERIAL :

Scale %	Similar	Designed	05/05/2011	thle
		Controlled	10/06/2011	thle
Weight [kg]	A3	Revised	10/06/2011	thle
		Atex		

PRO-11-0076 / ProFi-Sword

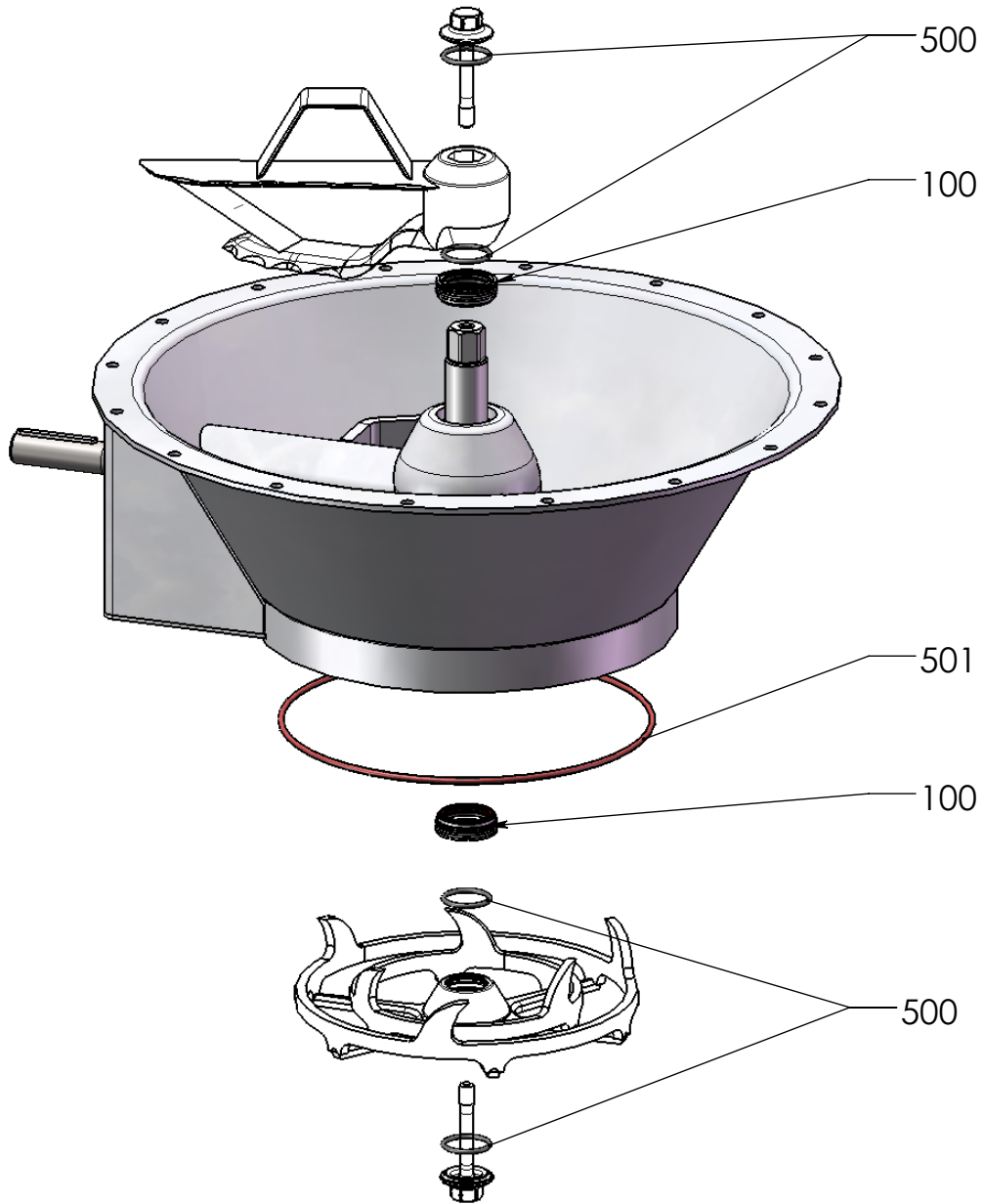
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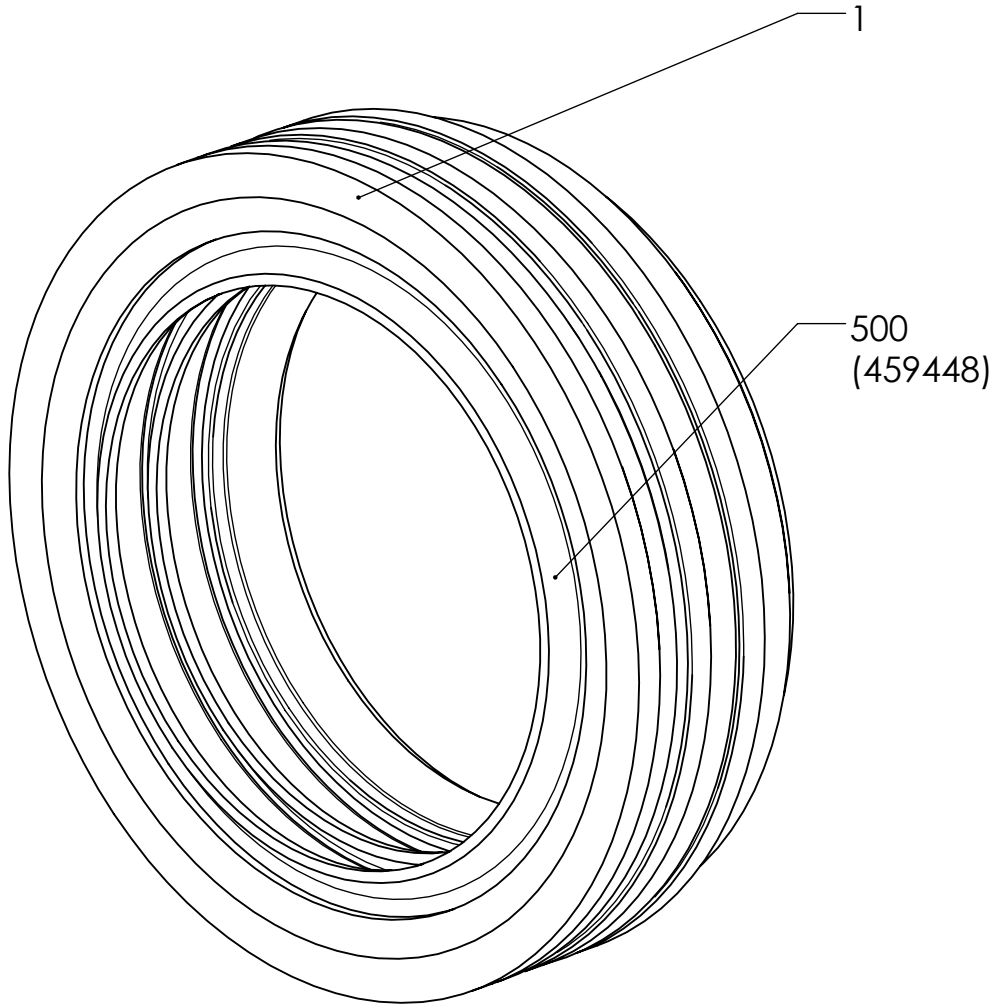
464797-CMA

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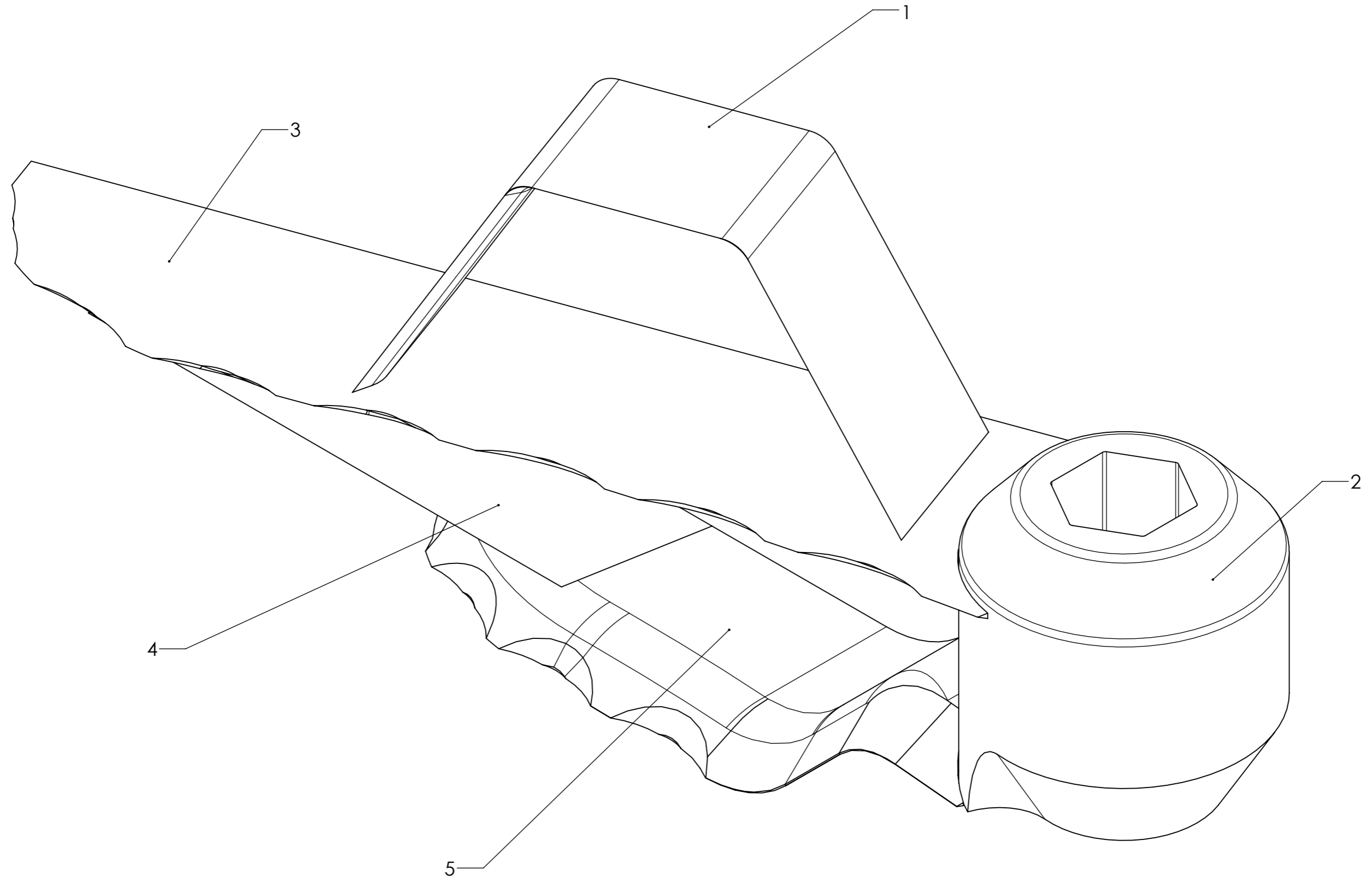


Position	N° article Artikel Nr Item number
100	459448-CMA
500	454357
501	431768

Dimensions without tolerance [mm]	above up to	6	30	120	400	1000	MATERIAL : Matériau <non spécifié>					
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	Scale	Similar	Designed	06/05/2010	jbe
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00	%		Controlled	06/06/2011	wwi
Etanchéité									Weight [kg]	Revised	06/06/2011	wwi
										A4	59.99	Atex
Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.				Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND Tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com				454424-CMA		Page	Ver.	
										1/1	B	



Dimensions without tolerance [mm]	above		6	30	120	400	1000	MATERIAL :	Scale	Similar	Designed	25/08/2010	jbe
	up to	6	30	120	400	1000	2000				Controlled	10/05/2011	jbe
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	Weight [kg]	Revised	10/05/2011	jbe		
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00		A4	0.000000	Atex		
Joint à 2 lèvres PS											Page	Ver.	
											1/1	A	
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Dimensions without tolerance [mm]	above	6	30	120	400	1000
	up to	6	30	120	400	1000
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00

MATERIAL :				
Scale	Similar	Designed	11/12/2009	ygr
%		Controlled	11/12/2009	ygr
Weight [kg]		Revised	11/12/2009	ygr
	A3	Atex		

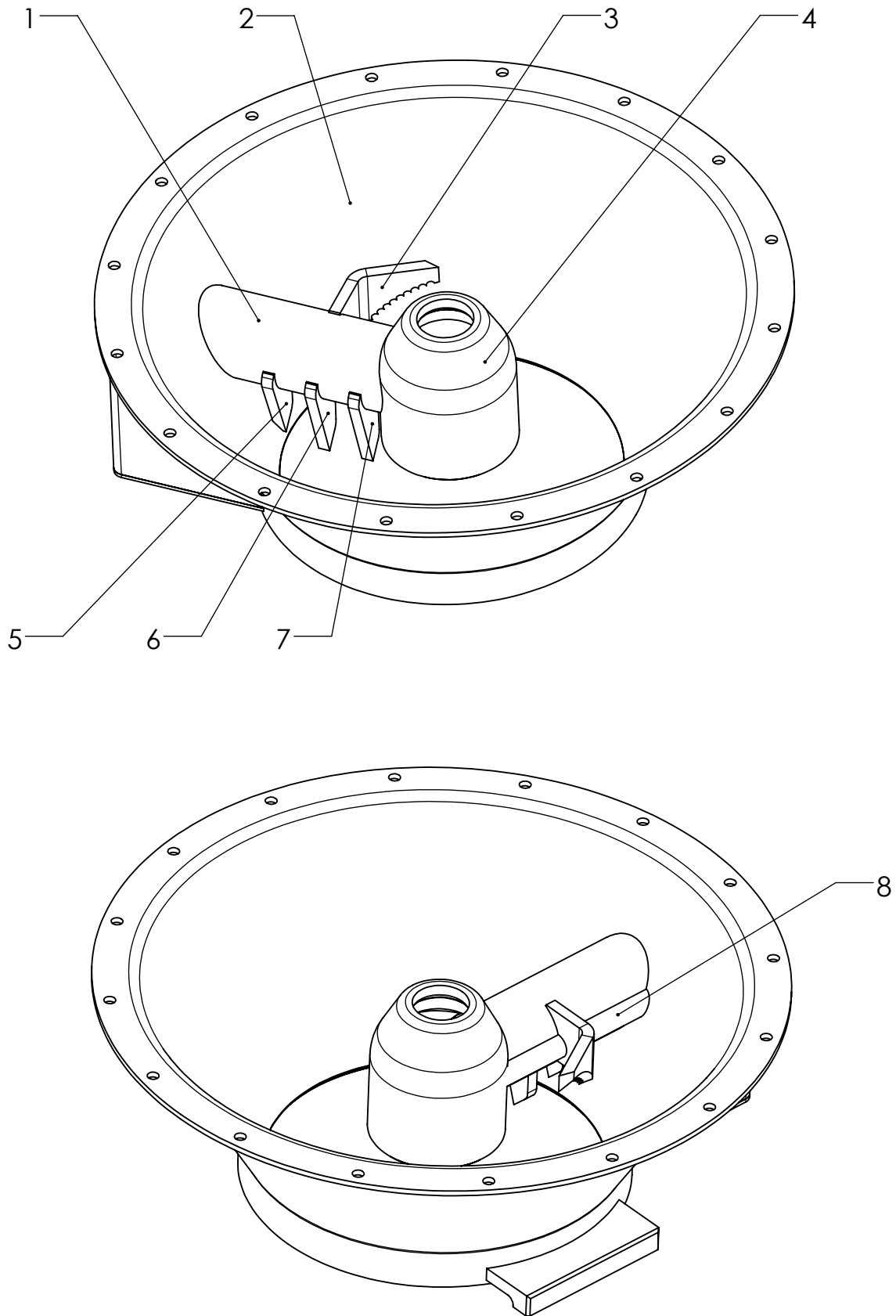
Couteau supérieur


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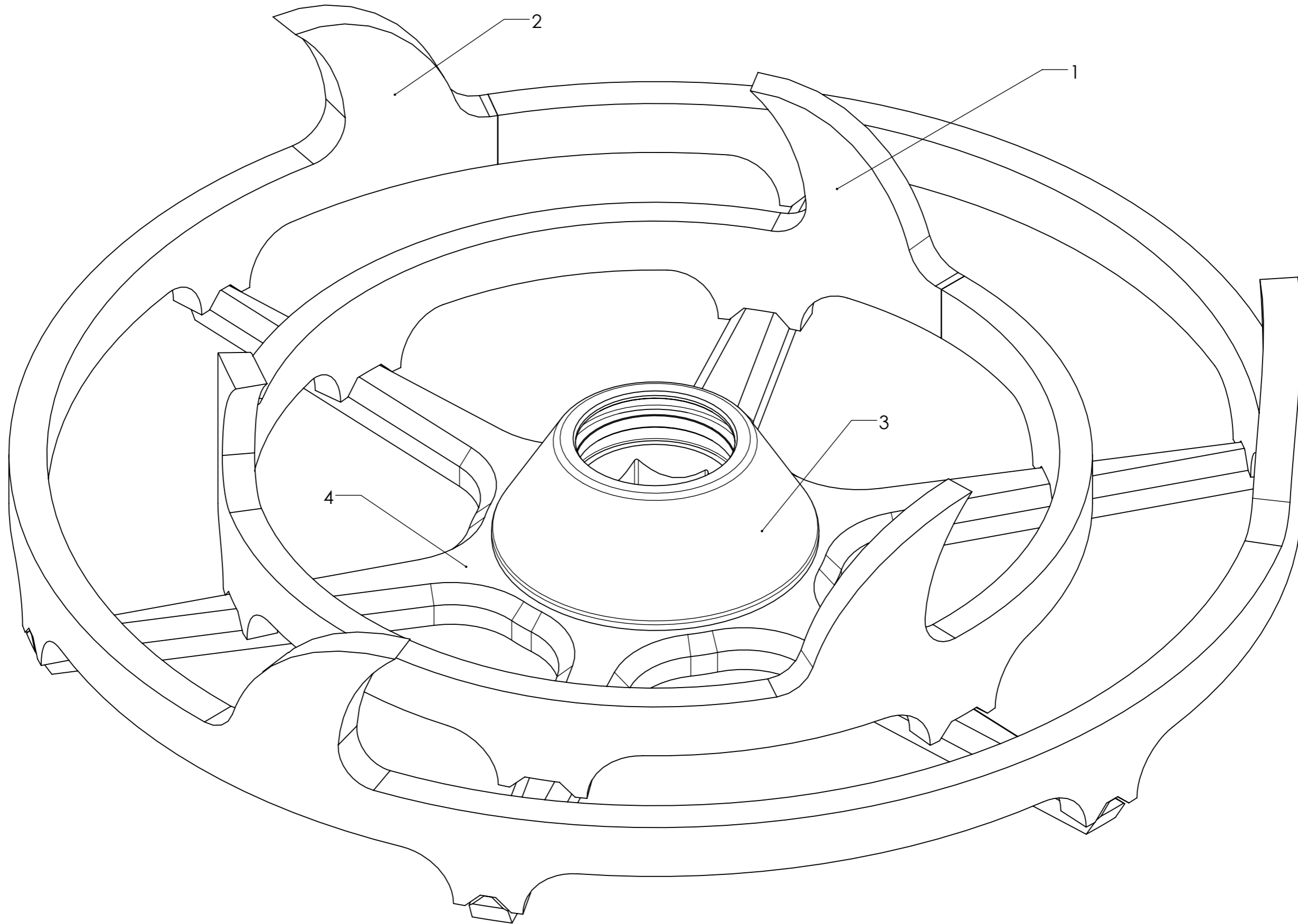
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454299-CMA

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Dimensions without tolerance [mm]	above		6	30	120	400	1000	MATERIAL : Matériau <non spécifié>	Scale	Similar	Designed	06/05/2010	jbe
	up to	6	30	120	400	1000	2000						
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20		%		Controlled	06/05/2010	jbe
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00		⊕	Weight [kg]	Revised	06/05/2010	jbe
Bâti usiné								A4	34.908	Atex			
								Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.		 Frewitt SA; Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND Tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com		456200-CMA	
												1/1	A



Dimensions without tolerance [mm]	above	6	30	120	400	1000	
	up to	6	30	120	400	1000	
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00

MATERIAL :					
Scale	Similar	Designed	11/12/2009	ygr	
%		Controlled	11/12/2009	ygr	
Weight [kg]	A3	Revised	11/12/2009	ygr	
		Atex			

Couteau intermédiaire

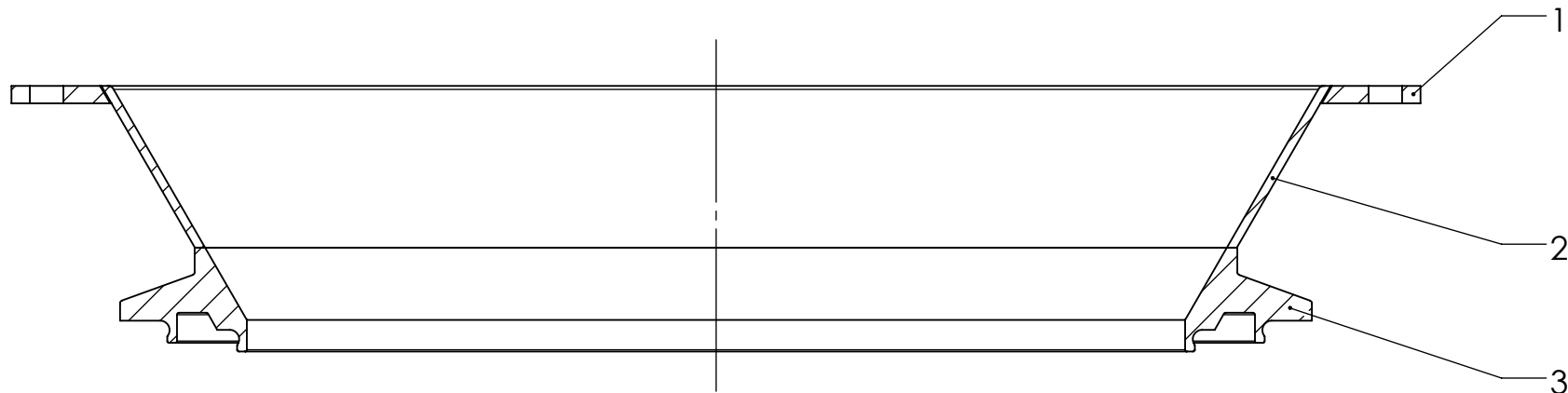
Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.



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 P.O.B. 615, CH-1701 Fribourg, SWITZERLAND
 tel: +41 26 460 74 00 / fax: +41 26 460 74 01
 info@frewitt.com / www.frewitt.com

454311-CMA

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Dimensions without tolerance [mm]	above		6	30	120	400	1000
	up to	6	30	120	400	1000	2000
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00

MATERIAL : 316L

Bride de liaison Ra 0.4

Scale %	Similar	Designed	05/05/2011	thle
		Controlled	05/05/2011	thle
A4	Weight [kg]	Revised	05/05/2011	thle
	N/A	Atex		

Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.



Frewitt SA: Milling and Handling of Powders
P.O.B. 615, CH-1701 Fribourg, SWITZERLAND
tel: +41 26 460 74 00 / fax: +41 26 460 74 01
info@frewitt.com / www.frewitt.com

464798-CMA

Page	Ver.
1/1	A

Voir documents suivants.

Siehe folgende Dokumente.

See following documents

Client: Kunde: Customer:
NOVARTIS SINGAPORE PHARMACEUTICAL
SG-Singapore

N° Série: Serien-Nr. Serial Nr.
 11007619050

Values are automatically taken from the measuring instrument and can not be changed

Appareil de mesure / Messapparat / Measurin unit :	Niton XLt 898 W Y Alloy Analyzer
N° série / Serien-Nr. / Serial Nr. :	8251
N° Certificat / Zertifikat-Nr. / Certificate Nr. :	35EN-04292005-IARM-P

Drawing 464777-CMA

Pos.1 ROTOR, art.436255 - without drawing

Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.00	0.03	0.00	0.08	0.00	2.34	0.01	0.00	0.00	0.01	0.00	0.01	0.03	0.25	9.64	0.18	67.56	0.63	18.40	0.03	0.00

Pos.100 Sealing Dessin / Zeichnung / Drawing: 436059-CMA

Sealing	Material	Document N° / Dokument Nr. / Document No :	Art.																			
500	EPDM	18132-6	404664																			
501	EPDM	27770-6	435702																			
502	SILICONE	20723-5	406205																			

Pos.101 Dessin / Zeichnung / Drawing: 29961

Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.02	0.00	0.00	0.13	0.00	2.12	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.29	10.47	0.16	68.92	0.95	16.87	0.05	0.00
2	1.4404 / SS316L	0.00	0.03	0.01	0.11	0.00	2.33	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.47	11.66	0.00	68.33	1.57	16.53	0.03	0.00

Pos.102 Dessin / Zeichnung / Drawing: 435843-CMA

Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.04	0.03	0.01	0.15	0.00	2.38	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.49	11.33	0.32	66.82	1.36	17.00	0.06	0.00

Certificats FDA / FDA Zertificate / FDA certificates

500	FEP-O-SEAL	Document N° / Dokument Nr. / Document No :	27370-3	Art.	419771																
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Pos.103 Dessin / Zeichnung / Drawing: 432459-CMA

Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.00	0.00	0.00	0.10	0.00	2.12	0.00	0.00	0.00	0.00	0.00	0.05	0.01	0.41	10.08	0.17	67.91	1.44	18.69	0.01	0.00
2	1.4404 / SS316L	0.10	0.04	0.01	0.12	0.00	2.11	0.01	0.00	0.00	0.00	0.00	0.00	0.13	0.59	10.43	0.00	67.91	1.63	16.85	0.05	0.00
3	1.4404 / SS316L	0.01	0.03	0.00	0.11	0.00	2.45	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.30	9.75	0.00	67.54	0.30	18.37	0.05	0.00
4	1.4404 / SS316L	0.00	0.09	0.00	0.14	0.00	2.45	0.00	0.00	0.00	0.00	0.00	0.03	0.06	0.34	9.62	0.00	67.53	0.42	18.27	0.04	0.00

Certificats FDA / FDA Zertificate / FDA certificates

500	ECOFLON 5	Document N° / Dokument Nr. / Document No :	28248-0	Art.	432412																
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Pos.100 Dessin / Zeichnung / Drawing: 435025-CMA

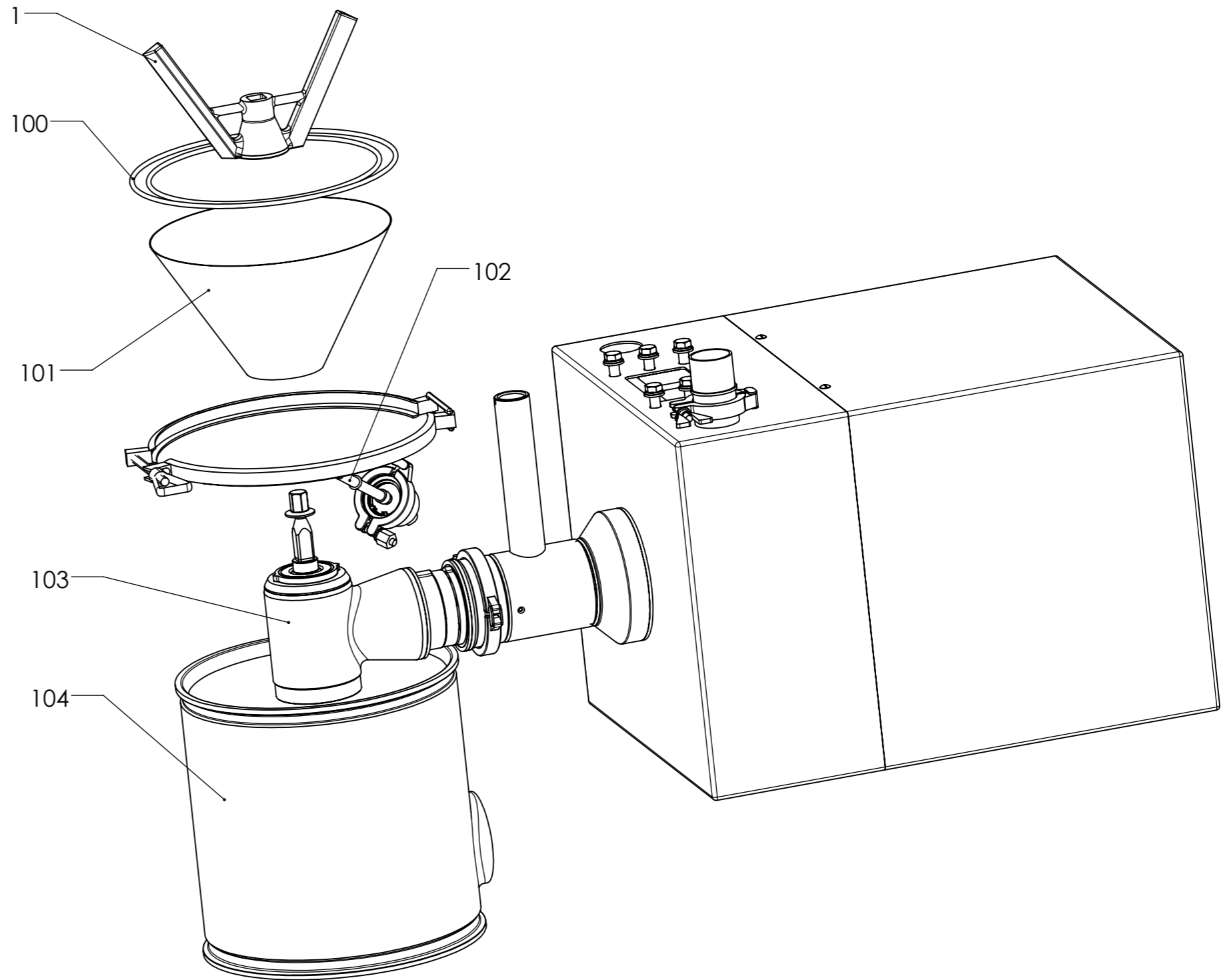
Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.09	0.05	0.00	0.13	0.00	2.41	0.01	0.00	0.00	0.00	0.00	0.07	0.10	0.28	12.30	0.29	64.73	1.85	17.33	0.05	0.00

Certificats FDA / FDA Zertificate / FDA certificates

pos.500	RULON 641	Document N° / Dokument Nr. / Document No :	37356-7	Art.	432410																
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Pos.104		Dessin / Zeichnung / Drawing: 436011-CMA																				
Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.01	0.04	0.00	0.11	0.00	2.43	0.01	0.00	0.00	0.00	0.00	0.04	0.05	0.22	10.12	0.16	67.85	0.23	18.28	0.05	0.00
2	1.4404 / SS316L	0.00	0.03	0.00	0.09	0.00	2.28	0.01	0.00	0.00	0.00	0.00	0.02	0.12	0.51	10.61	0.33	68.42	1.99	16.52	0.06	0.00

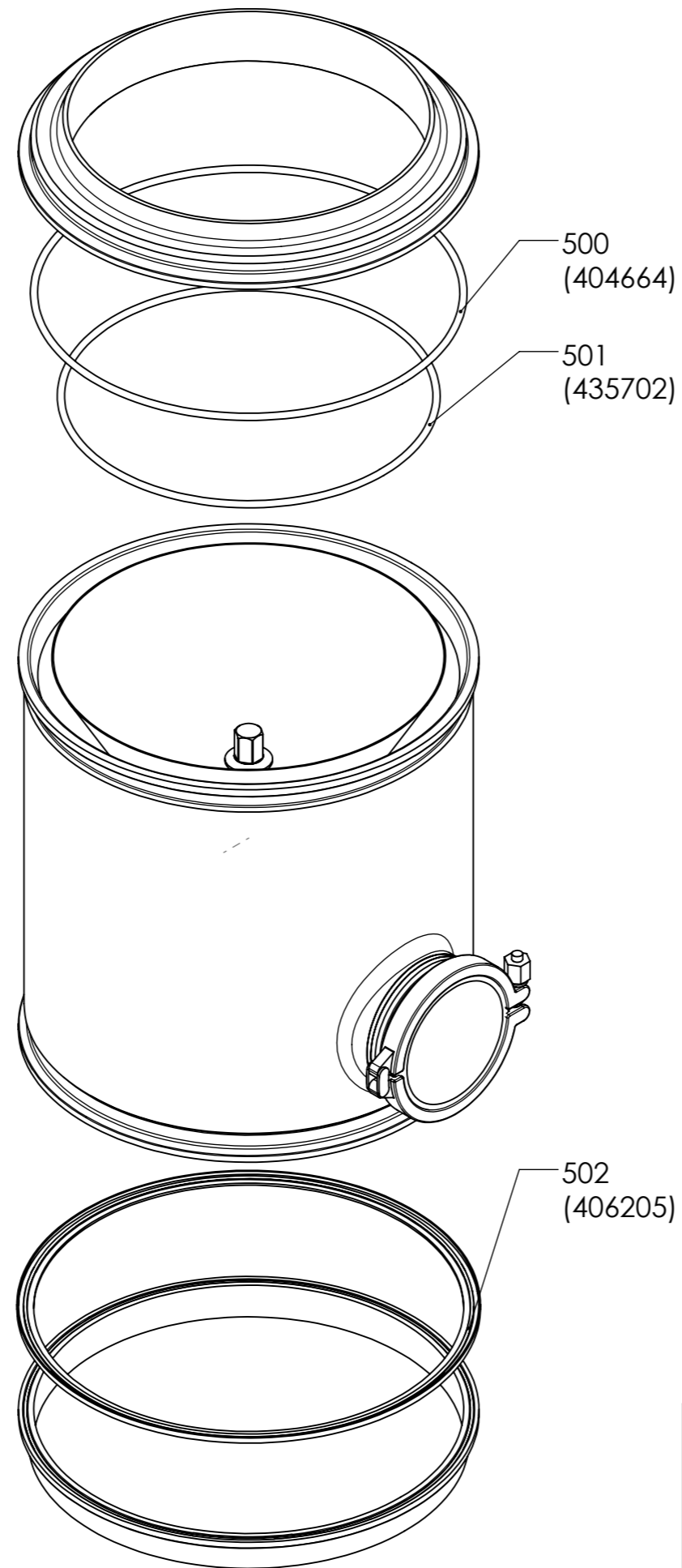
Protocole établi par (visa) Protokoll erstellt von (Visa) Report established by (Visa)	H.Rey	le am on	19.08.11
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Position	N° article Artikel Nr Item number	Certificat Matière Materialzertifikate Materials certificates EN-10204-3.1B / FDA	Certificats d'états de surface Zertifikate für Oberflächenqualität Surface quality certificates
1	---	X	X
100	436059-CMA	X	0
101	29961	X	0
102	435843-CMA	X	X
103	432459-CMA	X	X
104	436011-CMA	X	X

X = livré / geliefert / delivered
0 = non livré / ungeliefert / undelivered

ATEX category	II 1GD / II3D			Machined dim.	ISO 2768-m	
Voltage [V]	400	Power [kW]	5.5	Welded dim.	ISO 2768-c	
Frequency [Hz]	50	Speed [min-1]	100-700	Designed	04/05/2011	thle
PRO-11-0076 / ConiWitt-250				Controlled	25/07/2011	thle
				Revised	25/07/2011	thle
<small>Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.</small>				<small>Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com</small>		Page
				464777-CMA		Ver. 1/1 A



500
(404664)

501
(435702)

502
(406205)

Dimensions without tolerance [mm]	above		6	30	120	400	1000
	up to	6	30	120	400	1000	2000
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00

MATERIAL : Matériau <non spécifié>

Etanchéité EPDM-silicone

Scale	Similar	Designed	17/02/2010	wwi
%		Controlled	11/05/2011	wwi
Weight [kg]	A3	Revised	11/05/2011	wwi
		Atex		

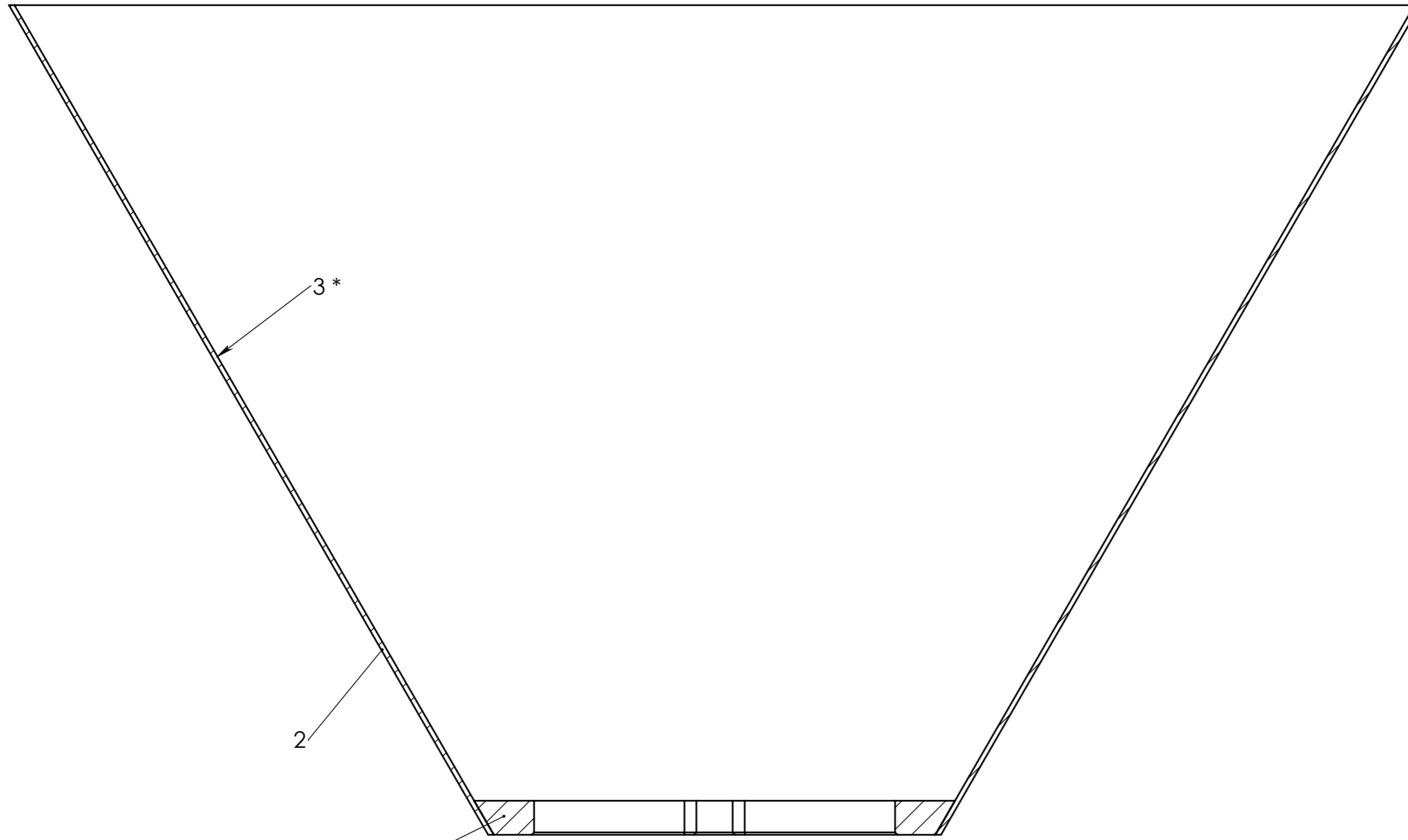
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436059-CMA

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1/1	A




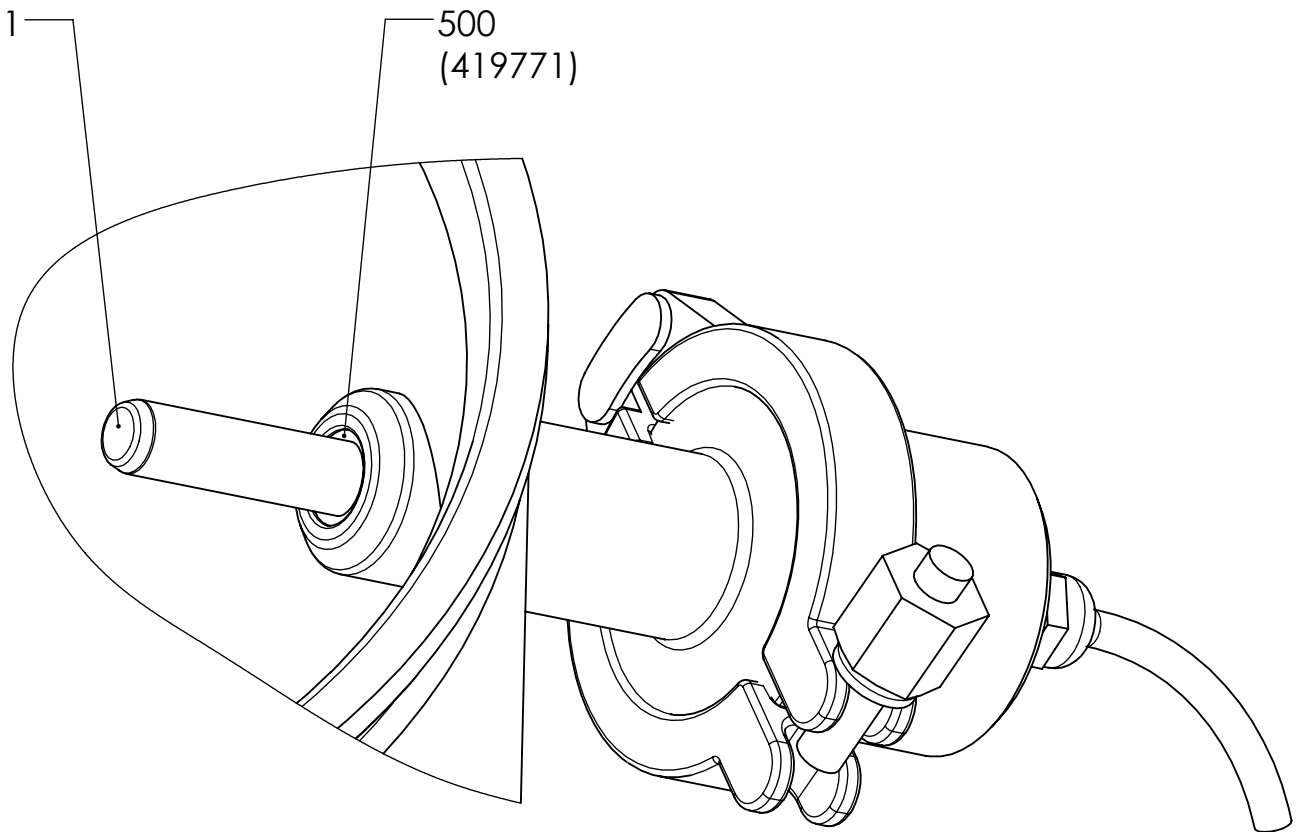
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2

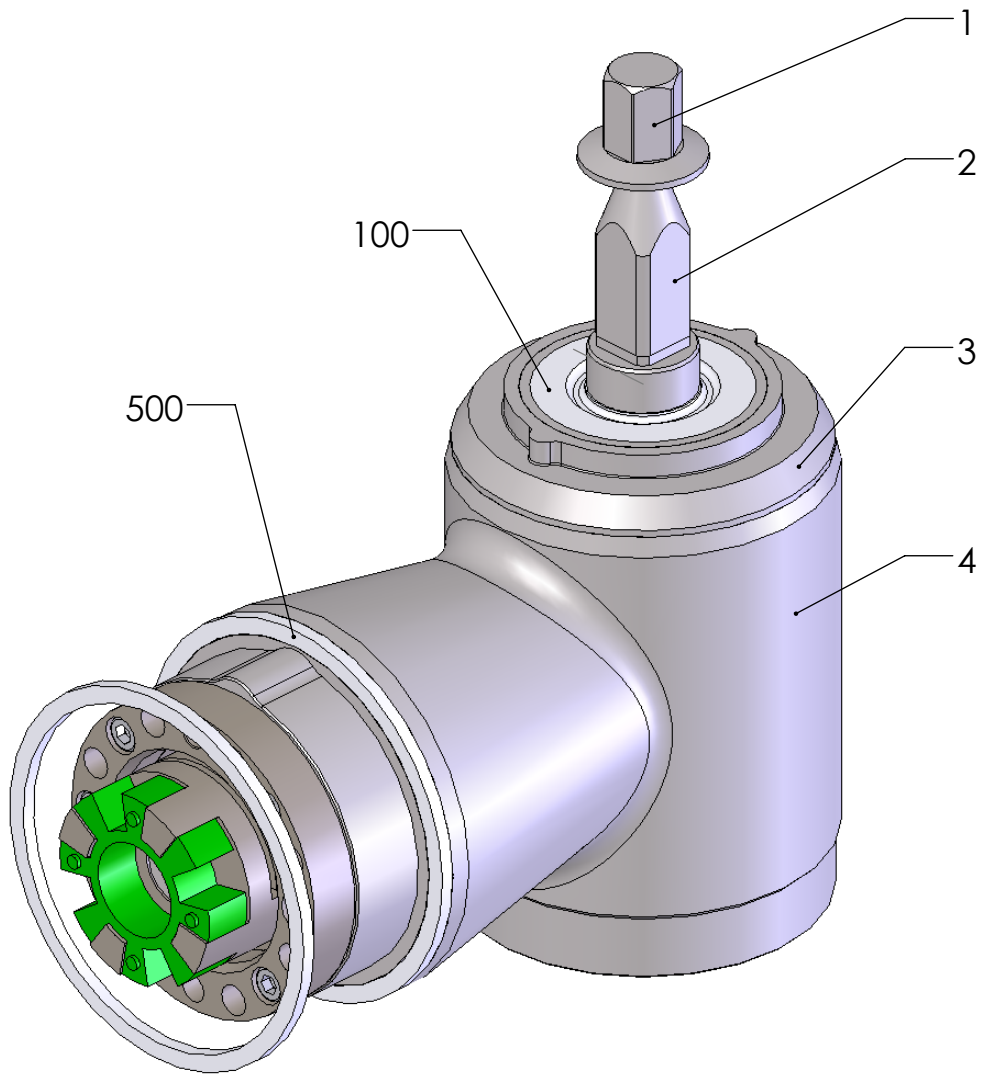
1

* seulement si treillis soudé à l'intérieur
 * only if wire mesh is welded inside

Pour dimensions sans tolérance	au-dessus de		6	30	120	400	1000	MATIERE :				
	jusqu'à	6	30	120	400	1000	2000					
Tolérance générale usinage [mm]		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	Echelle	Similaire	Dessiné	04.01.07	dma
Tolérance générale brut [mm]		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00	%		Contrôlé	04.01.07	dma
Tamis / Râpe Ligne ConiWitt								☒	Masse [kg]	Atex		-
								A3	1.088	Révisé	18.08.08	jbe
<small>This document may neither be reproduced nor be communicated to a third party without our written permission.</small>  Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com								29961		Page	Rev.	
										1/1	1	



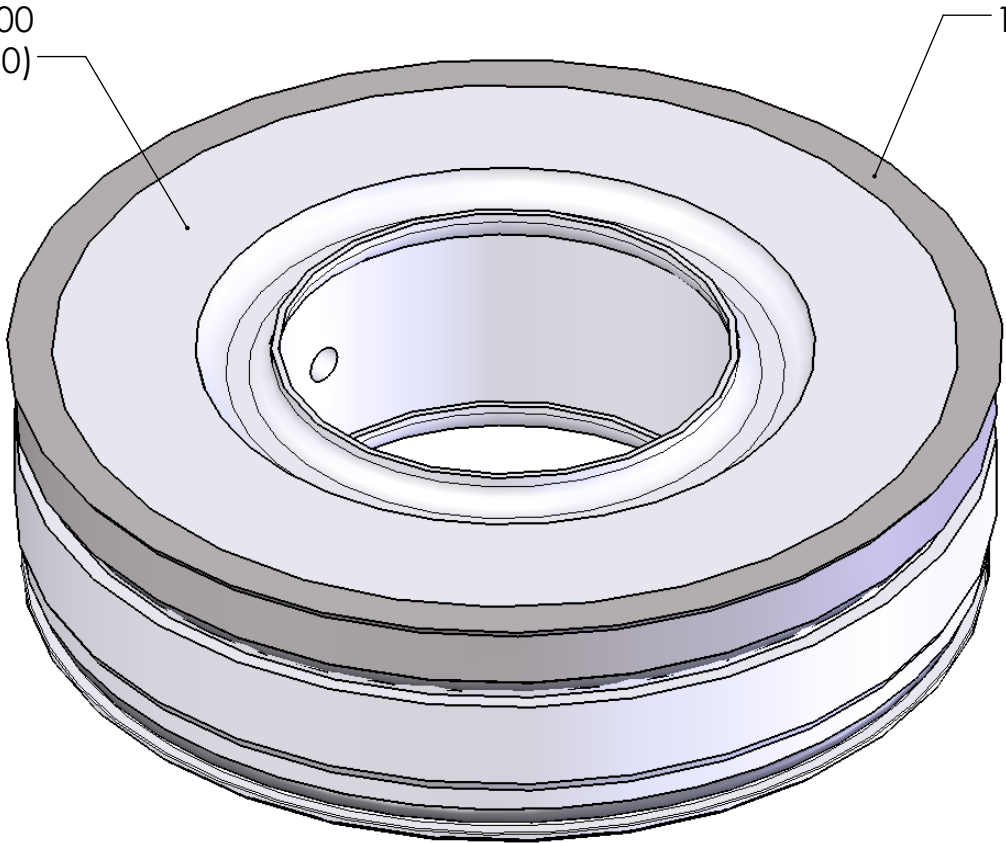
Dimensions without tolerance [mm]	above up to	6	30	120	400	1000	MATERIAL : Matériau <non spécifié>								
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	Scale %	Similar	Designed	02/09/2010	wwi			
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00		Weight [kg]	Controlled	11/05/2011	wwi			
ENSEMBLE SONDE PTC TAMIS										A4	0.948	Revised	11/05/2011	wwi	
Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.										Frewitt SA; Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND Tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com		435843-CMA		Page	Ver.
														1/1	A




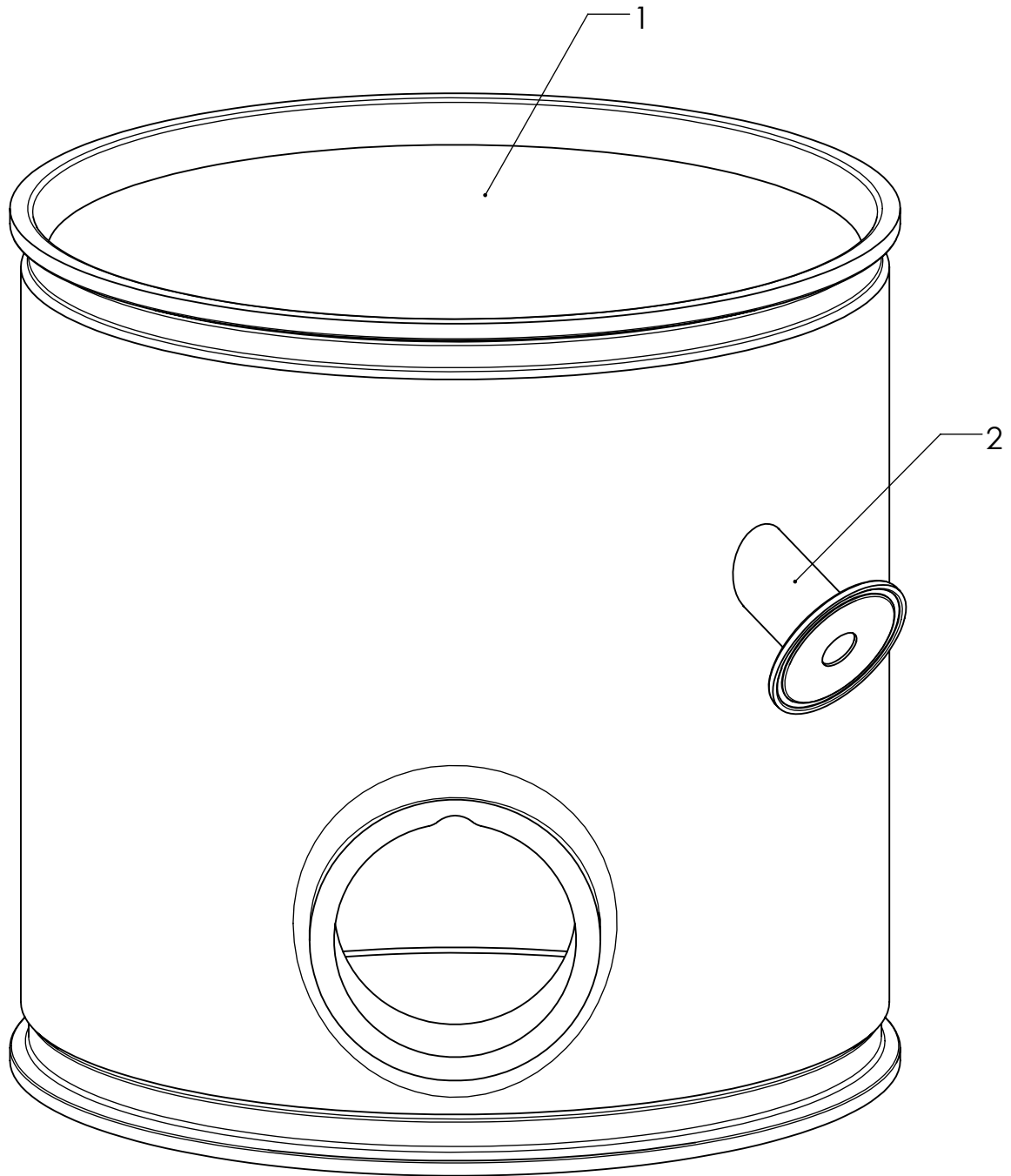
Position	N° article Artikel Nr Item number
1	---
2	---
3	---
4	---
100	435025-CMA
500	432412

Dimensions without tolerance [mm]	above	6	30	120	400	1000	MATERIAL : Matériau <non spécifié>								
	up to	6	30	120	400	1000					2000				
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	Scale	Similar	Designed	17/02/2010	wwi			
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00	%		Controlled	01/06/2011	wwi			
Palier									Weight [kg]	Revised	01/06/2011	wwi			
										A4	11.977	Atex			
Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.										Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND Tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com		432459-CMA		Page	Ver.
										1/1		A			

500
(432410)



Dimensions without tolerance [mm]	above		6	30	120	400	1000	MATERIAL :	Scale	Similar	Designed	03/09/2010	wwi
	up to	6	30	120	400	1000	2000						
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20		%		Controlled	10/05/2011	jbe
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00		⊕	Weight [kg]	Revised	10/05/2011	jbe
Joint à 2 lèvres complet								A4	0.110520	Atex			
								Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.				Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND Tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com	
											1/1	A	



Dimensions without tolerance [mm]	above		6	30	120	400	1000	MATERIAL :	Scale	Similar	Designed	02/09/2010	wwi		
	up to	6	30	120	400	1000	2000								
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20				Controlled	02/09/2010	wwi		
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00				Revised	02/09/2010	wwi		
Bâti pour sonde								Weight [kg]	A4	27.179352	Atex				
Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.								Frewitt SA; Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND Tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com				436011-CMA		Page	Ver.
														1/1	A

Voir documents suivants.

Siehe folgende Dokumente.

See following documents

Client: **NOVARTIS SINGAPORE PHARMACEUTICAL** Kunde: **NOVARTIS SINGAPORE PHARMACEUTICAL** Customer: **NOVARTIS SINGAPORE PHARMACEUTICAL**
 SG-Singapore

N° Série: **11007635096** Serien-Nr. **11007635096** Serial Nr. **11007635096**

Values are automatically taken from the measuring instrument and can not be changed

Appareil de mesure / Messapparat / Measurin unit : Niton XLt 898 W Y Alloy Analyzer
 N° série / Serien-Nr. / Serial Nr. : 8251
 N° Certificat / Zertifikat-Nr. / Certificate Nr. : 35EN-04292005-IARM-P

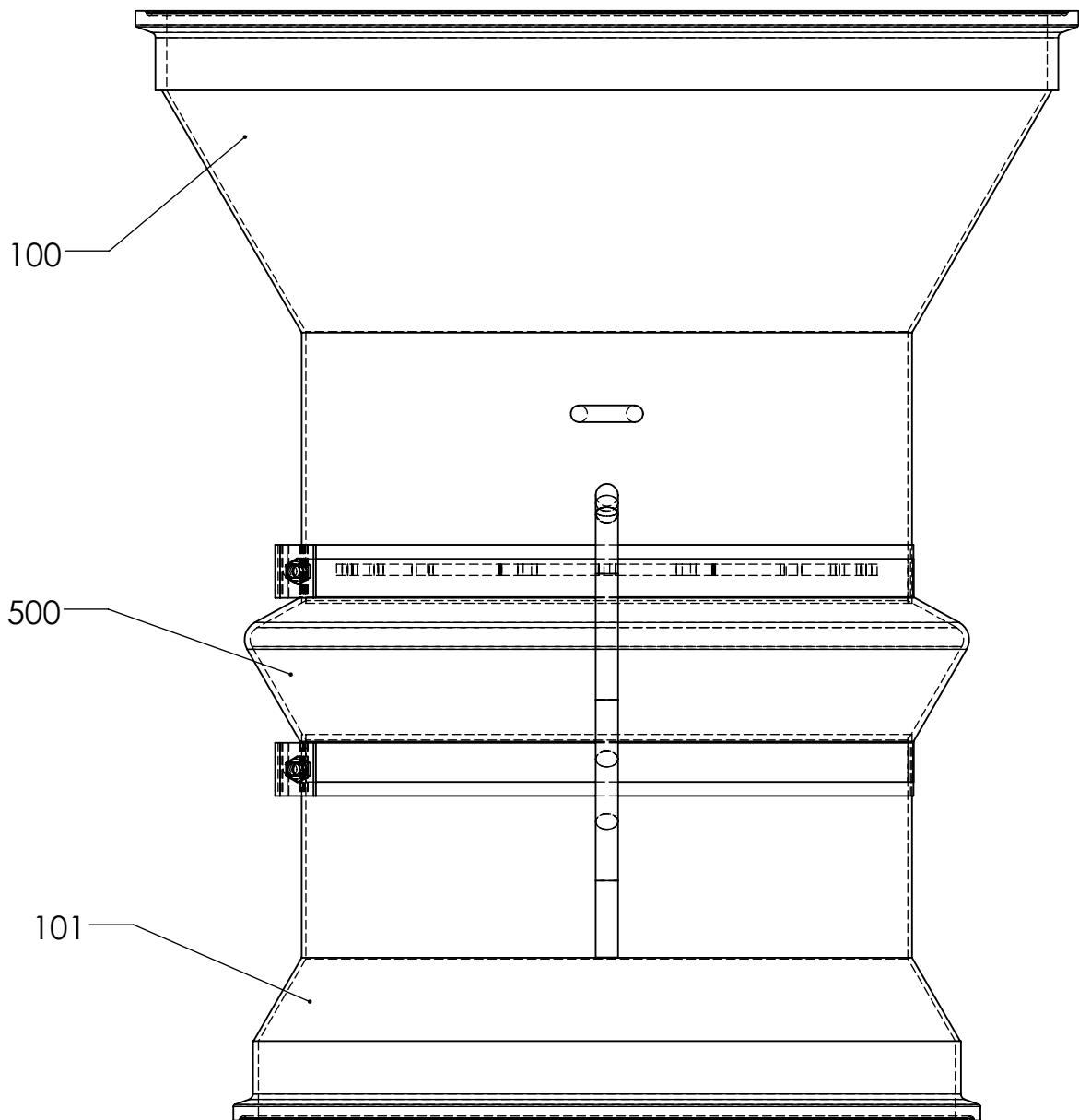
Drawing 464851-CMA

Pos.100		Dessin / Zeichnung / Drawing: 464846-CMA																				
Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.01	0.00	0.00	0.10	0.00	2.21	0.01	0.01	0.00	0.00	0.00	0.04	0.07	0.32	10.33	0.08	66.02	1.65	18.37	0.07	0.00
2	1.4404 / SS316L	0.08	0.06	0.00	0.10	0.00	2.13	0.04	0.00	0.00	0.00	0.00	0.00	0.10	0.37	9.86	0.00	68.31	1.75	17.13	0.06	0.00
3	1.4404 / SS316L	0.04	0.04	0.00	0.14	0.00	2.14	0.03	0.00	0.00	0.00	0.00	0.06	0.06	0.34	10.11	0.47	67.49	1.80	17.24	0.05	0.00
4	1.4404 / SS316L	0.05	0.05	0.00	0.18	0.00	2.10	0.01	0.01	0.01	0.00	0.01	0.00	0.18	0.40	10.29	0.13	67.41	1.56	17.55	0.02	0.03


Pos.101		Dessin / Zeichnung / Drawing: 464847-CMA																				
Mesure N° Mass Nr. Measure Nr.	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.4404 / SS316L	0.08	0.04	0.00	0.14	0.00	2.19	0.04	0.00	0.00	0.00	0.00	0.12	0.05	0.40	10.32	0.58	67.18	1.82	16.96	0.06	0.00
2	1.4404 / SS316L	0.04	0.10	0.00	0.11	0.00	2.18	0.01	0.00	0.00	0.00	0.00	0.17	0.07	0.34	10.09	0.38	67.99	1.29	17.18	0.03	0.01
3	1.4404 / SS316L	0.04	0.00	0.00	0.07	0.00	2.06	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.42	10.16	0.55	68.94	0.60	17.04	0.04	0.00

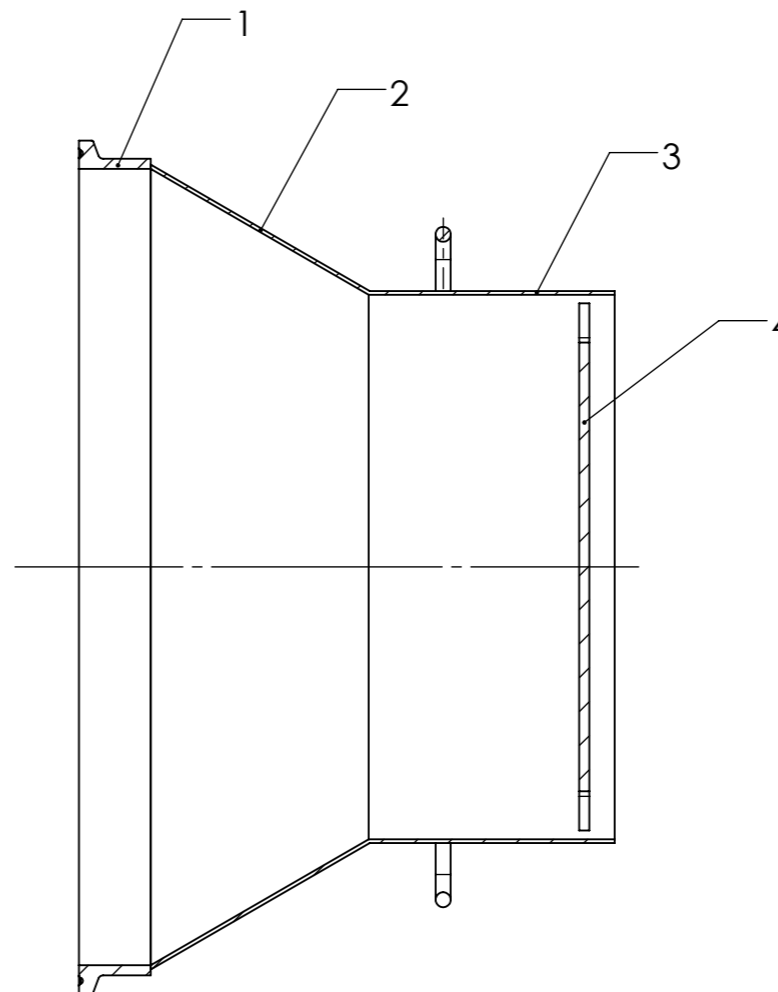
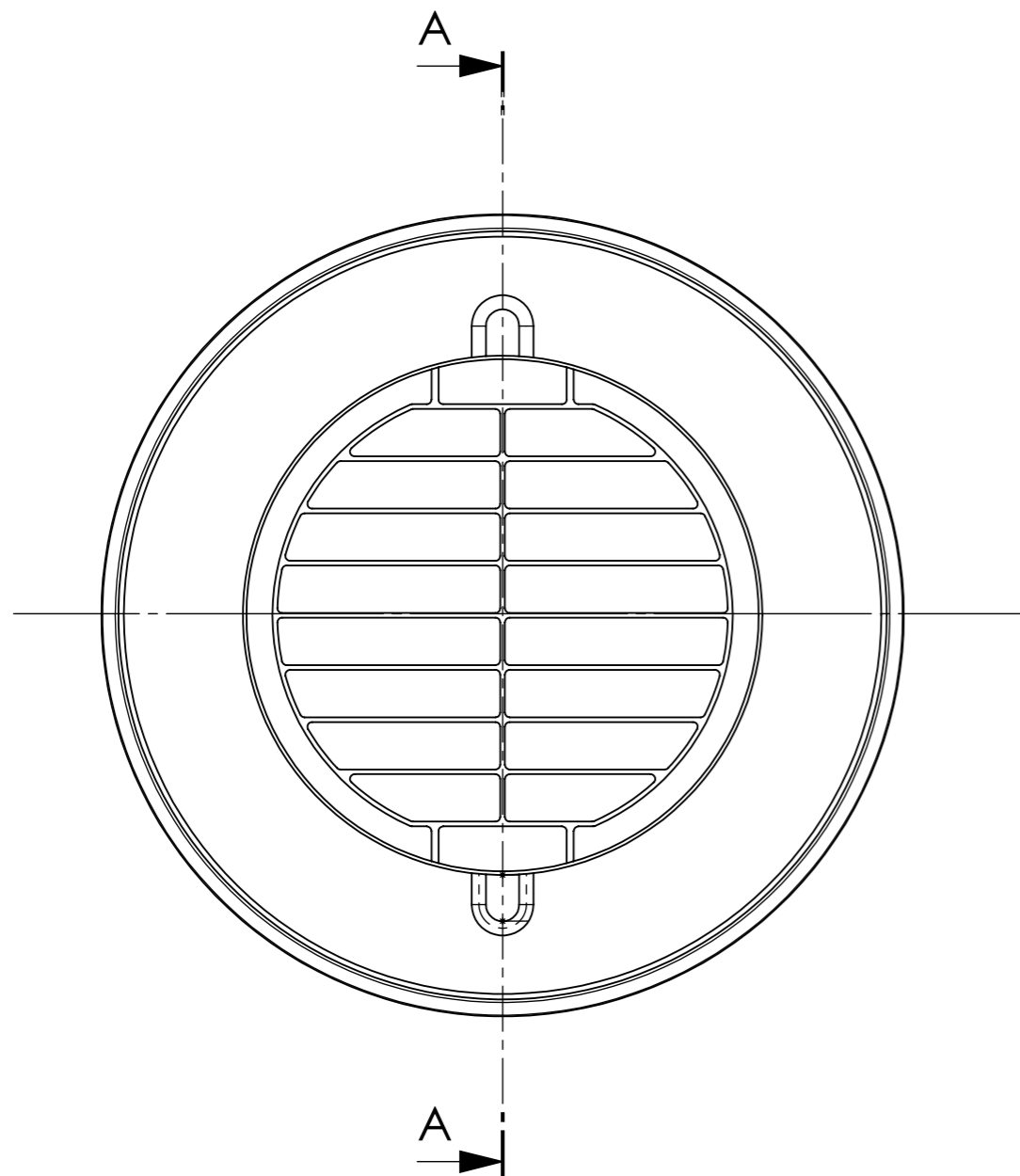
Pos.500		Document N° / Dokument Nr. / Document No :		Art.437890	
500	EPDM antistat	33447-6			

Protocole établi par (visa)	H.Rey	le	27.07.11
Protokoll erstellt von (Visa)		am	
Report established by (Visa)		on	



Position	Item number
100	464846-CMA
101	464847-CMA
500	437890

Dimensions without tolerance [mm]	above	6	30	120	400	1000	MATERIAL : N/A						
	up to	6	30	120	400	1000		2000	Scale	Similar	Designed	12/05/2011	thle
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	%		Controlled	21/06/2011	thle	
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00	Weight [kg]		Revised	21/06/2011	thle	
Ensemble entonnoir sortie								A4	N/A	Atex			
								Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.		 Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND Tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com		464851-CMA	
												1/1	A



Dimensions without tolerance [mm]	above	6	30	120	400	1000	
	up to	6	30	120	400	1000	
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00

MATERIAL : 316L

Entonnoir sortie

Scale	Similar	Designed	11/05/2011	thle
%	459283	Controlled	11/05/2011	thle
Weight [kg]		Revised	11/05/2011	thle
A3	3.27	Atex		

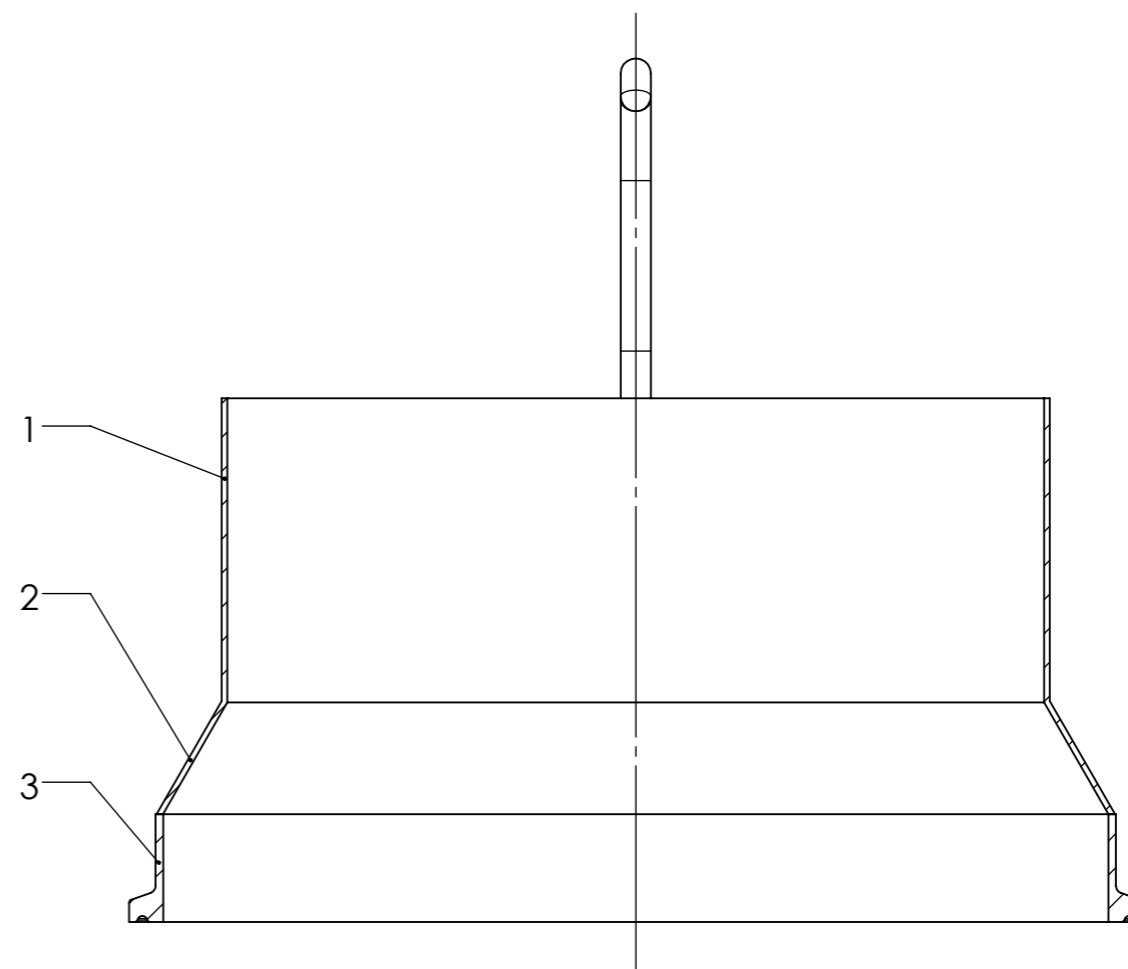
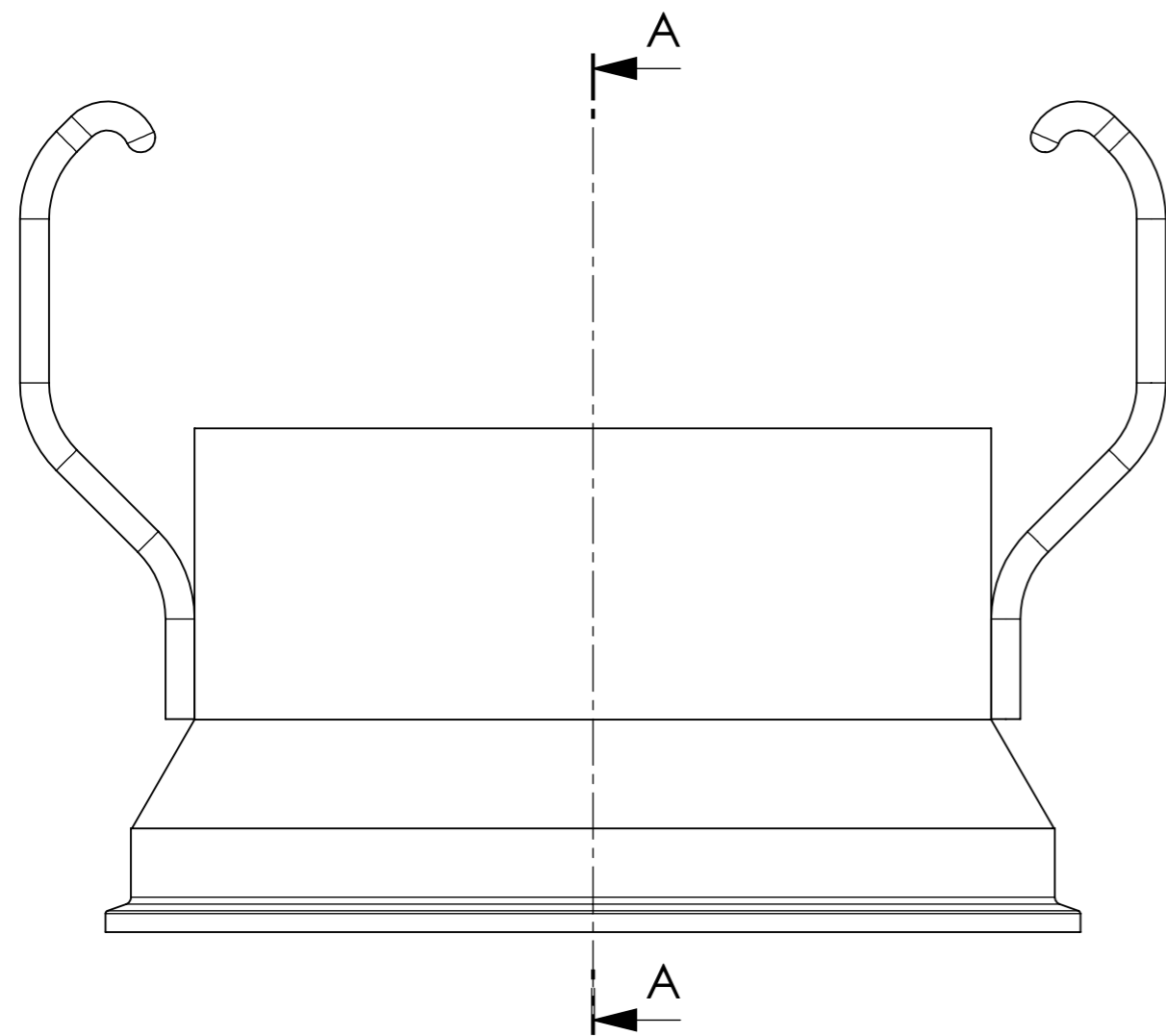
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464846-CMA

Page	Ver.
1/1	A



A-A

Dimensions without tolerance [mm]	above	6	30	120	400	1000	MATERIAL : 316L						
	up to	6	30	120	400	1000							
Machining: ISO 2768-m		±0.10	±0.20	±0.30	±0.50	±0.80	±1.20	Scale	Similar	Designed	11/05/2011	thle	
Welding Assembly: ISO 2768-c		±0.30	±0.50	±0.80	±1.20	±2.00	±3.00	%	456214	Controlled	11/05/2011	thle	
Tube de liaison container								A3	Weight [kg]	Revised	11/05/2011	thle	
										Atex			
<small>Any and all information received by you from us shall be held and kept confidential and shall not be disclosed by you to any third party except with prior written consent of FREWITT SA.</small>								 <small>Frewitt SA: Milling and Handling of Powders P.O.B. 615, CH-1701 Fribourg, SWITZERLAND tel: +41 26 460 74 00 / fax: +41 26 460 74 01 info@frewitt.com / www.frewitt.com</small>		464847-CMA		Page	Ver.
												1/1	A

Voir documents suivants

(Certificats FDA sont dans l'ordre croissant)

Siehe folgende Dokumente

(FDA-Zertifikate werden in aufsteigender Reihenfolge)

See following documents

(FDA certificates are in ascending order)



Konformitätserklärung – Certificate of Conformity

Connectors Dok.-Ref.: CVAG_K003_0001.4.doc

Wir bestätigen hiermit, dass die Elastomere Buna-N, EPDM, MVQ (Silikon) und FPM/FKM (z. B. VITON®) aus denen unsere Teile hergestellt werden, durch die National Sanitation Foundation geprüft und zertifiziert wurden, dass sie in Übereinstimmung sind mit dem derzeit gültigen F.D.A. Code of Federal Regulations für Gummi und gummiähnliche Materialien unter Titel 21, §177.2600 und dass sie auch den Kriterien der Class-I Werkstoffklassifizierung der 3-A Gesundheitsnormen, U.S.D.A. und „Standard 51“, N.S.F. erfüllen.

Wir bestätigen hiermit, dass die Fluorkunststoffe PTFE und FEP (z.B. TEFLON®), aus denen unsere Teile produziert werden, Labor geprüft sind und als in Übereinstimmung befunden wurde mit dem derzeit gültigen F.D.A. Code of Federal Regulations für TEFLON®- und Fluorkunststoffe unter Titel 21, §177.1550 für den Einsatz in Kontakt mit Lebensmitteln und dass sie auch die Kriterien der Class-I Werkstoffklassifizierung der 3-A Gesundheitsnorm erfüllen.

Wir bestätigen hiermit, dass alle Elastomere und Fluorkunststoffe Labor geprüft sind und als in Übereinstimmung befunden wurde mit der derzeit gültigen U.S. Pharmacopeia Klasse VI, Sektion <88> biologische Reaktivität, in vivo.

We hereby certify that the elastomer compounds, Buna-N, EPDM, MVQ (Silicone) and FPM/FKM (e.g. VITON®) from which our parts are manufactured have been tested and certified by the National Sanitation Foundation to be in compliance with the current F.D.A. Code of Federal Regulations for rubber and rubber-like materials under Title 21, §177.2600 and also meet the criteria of the current Class-I material classification of the 3-A Sanitary Standards, U.S.D.A., and „Standard 51“ of the N.S.F.

We hereby certify that the fluoropolymers PTFE and FEP (e.g. TEFLON®) from which our parts are produced have been tested in the laboratory and are found to be in compliance with the current F.D.A. Code of Federal Regulations for Teflon® and fluorocarbon resins under Title 21, §177.1550 for use in contact with food, and also meet the current criteria of the Class-I material classification of the 3-A Sanitary Standard.

We hereby certify that all elastomer compounds and Teflon® resins have been tested and certified by the Toxicon laboratory to be in compliance with the current criteria of the U.S. pharmacopeia Class VI, section <88> biological reactivity, in vivo.

Tagelswangen, 01.09.2008

CONNECTORS Verbindungstechnik AG

Christian Wyniger
Quality Manager

STAHLCON GMBH

VERTRIEB VON EINBAUELEMENTEN FÜR TECHNISCHE ANLAGEN

STAHLCON GMBH . KRINGSTRASSE 13 : D-71144 STEINENBRONN

Frewitt SA
Monsieur Lucas Perrin
Route du Coteau 7
CH-1763 Granges-Paccot
Schweiz

FDA-Zertifikat

Nummer 61729
Datum 16.08.2010
Kunden-Nr. 40603
Lieferanten-Nr. 362400
Lieferdatum 16.08.2010
Erfasst dm

Seite 1

Pos	Artikel	Beschreibung	Menge
		RECHNUNG 42650 / 16.08.2010	
1	508850	Joint clamp silicone Dimension: 10" shed. 5 Matières: Silicone <i>Frewitt Référence: 406571</i>	12
2	515600	Joint clamp ISO 1127 Dimension: NW 150 Matières: Silicone <i>Frewitt Référence: 410118</i>	20

Zertifizierung von Dichtungen nach FDA

Die oben aufgeführten Dichtungen stammen aus der EU und werden vom Hersteller wie folgt zertifiziert:

CERTIFICATION OF COMPLIANCE

We hereby certify that the elastomer compounds: Viton, EPDM, Silicone and Nitrile, used in the manufacture of our hygienic sealing gaskets are in compliance with the Food and Drug Association (FDA) Code of Federal Regulations for rubber and rubber-like materials. This under Title 21, paragraph 177.2600 and also meets the criteria of the Class I materials classification of the 3-A Sanitary Standards, U.S.D.A. and standard 51 of the N.S.F.

We hereby confirm that no Phthalate Esters are contained in any plasticisation agent used during the manufacturing process.

We hereby certify that the Teflon resins from which our solid and envelopped gaskets are produced have been tested in our suppliers laboratory and found to be in compliance with FDA code of Federal Regulations for Teflon and Fluorocarbons resins. This under Title 21 Paragraph 177.1550 for use in contact with foodstuffs. The material also meets the criteria of the Class I materials classification of the 3-A Sanitary standard 51 of the N.S.F.



(i.V. Dietmar Mettke)



Linking science to progress

Product Certification Services

RCC Ltd
Zelglweg 1
CH-4452 Itingen
Switzerland

Phone +41 61 975 11 11
Fax +41 61 975 11 23

The detailed composition of below mentioned formulation has been disclosed to RCC Product Certification Services by Angst + Pfister AG, Zürich / Switzerland with letter of July 15, 2004.

Based on this information we herewith can confirm that

FEP-O-SEAL® with MVQ- or FPM-Core

is in compliance with the appropriate food packaging material regulations (21 CFR 177.1550 – Perfluorocarbon) and therefore may be used in contact with food in the

UNITED STATES OF AMERICA

Please note: This certificate is limited to the formulation disclosed to RCC as mentioned above. Any change of the formulation will void the certificate automatically. Any changes in this formulation must be addressed to RCC immediately.

It is the responsibility of the manufacturer of the final article, that it complies with the specifications and limitations (end tests) in all applicable regulations.

Doc No: 17668-1

Dr. A. Tschech



Dr. K. Hötzer

Itingen, September 24, 2004
Expiration date: September 24, 2007
RCC Project 856153 / HKA

Item No. : 431768
Order No. : 84801
Checked : 29.5.06
Rykh

	<p>RCC PRODUCT CERTIFICATION SERVICES - accredited by the Competent Authorities according to EN 45011 as CERTIFICATION BODY operating product certification - an individual department of RCC Ltd. Accredited services are defined in the official directory of accredited Certification Bodies SCES 019</p>	
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FDA Konformitätserklärung

Item No. : 404664
Order No. : 10-3605
Checked : 15.1.2011
Ry

Auftraggeber

Frewitt SA
1701 Fribourg

I/Bestell-Nr.

CDF-10-3605, 21.12.2010

Artikel

O-Ringe 304,17 x 5.33 mm
I/Artikel Nr. 404664

Qualität

EPDM 70 Shore A, weiss

U/Bestell-Nr.

37050

Herstelldatum

04/2010

Die Qualität entspricht den Richtlinien

EPDM weiss konform CFR21 §177.2600

Zürich, 11.01.2011/Flu





Gummi Kunststoffe Dichtungstechnik
Zimmerlistrasse 6 8040 Zürich
Telefon 044/ 401 09 00
Telefax 044/ 401 11 51



Item No. : 445164 - 406205
Order No. : 08-2437
Checked : 5 dec. 07
Pg 6

Konformitätserklärung – Certificate of Conformity

Connectors Dok.-Ref.: CVAG_K003_0001.4.doc

Wir bestätigen hiermit, dass die Elastomere Buna-N, EPDM, MVQ (Silikon) und FPM/FKM (z. B. VITON®) aus denen unsere Teile hergestellt werden, durch die National Sanitation Foundation geprüft und zertifiziert wurden, dass sie in Übereinstimmung sind mit dem derzeit gültigen F.D.A. Code of Federal Regulations für Gummi und gummiähnliche Materialien unter Titel 21, §177.2600 und dass sie auch den Kriterien der Class-I Werkstoffklassifizierung der 3-A Gesundheitsnormen, U.S.D.A. und „Standard 51“, N.S.F. erfüllen.

Wir bestätigen hiermit, dass die Fluorkunststoffe PTFE und FEP (z.B. TEFLON®), aus denen unsere Teile produziert werden, Labor geprüft sind und als in Übereinstimmung befunden wurde mit dem derzeit gültigen F.D.A. Code of Federal Regulations für TEFLON®- und Fluorkunststoffe unter Titel 21, §177.1550 für den Einsatz in Kontakt mit Lebensmitteln und dass sie auch die Kriterien der Class-I Werkstoffklassifizierung der 3-A Gesundheitsnorm erfüllen.

Wir bestätigen hiermit, dass alle Elastomere und Fluorkunststoffe Labor geprüft sind und als in Übereinstimmung befunden wurde mit der derzeit gültigen U.S. Pharmacopeia Klasse VI, Sektion <88> biologische Reaktivität, in vivo.

We hereby certify that the elastomer compounds, Buna-N, EPDM, MVQ (Silicone) and FPM/FKM (e.g. VITON®) from which our parts are manufactured have been tested and certified by the National Sanitation Foundation to be in compliance with the current F.D.A. Code of Federal Regulations for rubber and rubber-like materials under Title 21, §177.2600 and also meet the criteria of the current Class-I material classification of the 3-A Sanitary Standards, U.S.D.A., and „Standard 51“ of the N.S.F.

We hereby certify that the fluoropolymers PTFE and FEP (e.g. TEFLON®) from which our parts are produced have been tested in the laboratory and are found to be in compliance with the current F.D.A. Code of Federal Regulations for Teflon® and fluorocarbon resins under Title 21, §177.1550 for use in contact with food, and also meet the current criteria of the Class-I material classification of the 3-A Sanitary Standard.

We hereby certify that all elastomer compounds and Teflon® resins have been tested and certified by the Toxicon laboratory to be in compliance with the current criteria of the U.S. pharmacopeia Class VI, section <88> biological reactivity, in vivo.

Tagelswangen, 01.09.2008

CONNECTORS Verbindungstechnik AG

Christian Wyniger
Quality Manager



Linking science to progress

Product Certification Services

RCC
Product Certification Services
Zeigliweg 1
CH-4452 Itingen
Switzerland
Phone +41 61 975 11 11
Fax +41 61 975 11 23

The detailed composition of below mentioned formulation has been disclosed to RCC Product Certification Services by Angst + Pfister AG, Zürich / Switzerland with letter of July 15, 2004.

Based on this information we herewith can confirm that

FEP-O-SEAL® with MVQ- or FPM-Core

is in compliance with the appropriate food packaging material regulations of US-FDA (21 CFR 177.1550 – Perfluorocarbon) and therefore may be used in contact with food in the

UNITED STATES OF AMERICA

Please note: This certificate is limited to the formulation disclosed to RCC as mentioned above. Any change of the formulation will void the certificate automatically. Any changes in this formulation must be addressed to RCC immediately.

It is the responsibility of the manufacturer of the final article, that it complies with the specifications and limitations (end tests) in all applicable regulations.


.....
Dr. A. Tschach




.....
Dr. K. Hötzer

Itingen, September 24, 2004
Expiration date: September 24, 2007
RCC Project 856153 / HKA



RCC PRODUCT CERTIFICATION SERVICES – accredited by the Competent Authorities according to EN 45011 as CERTIFICATION BODY operating product certification – an individual department of RCC Ltd.
Accredited services are defined in the official directory of accredited Certification Bodies SCES 019



Item No. : 413771
Order No. : 93526
Checked : 8.8.07



FDA Konformitätserklärung

Doc No: 27770-6

Item No. : 435702
Order No. : 11-0700
Checked : 8 April 2011
Ry

Auftraggeber

Frewitt SA
1701 Fribourg

I/Bestell-Nr.

CDF-11-0700, 07.03.2011

Artikel

O-Ringe 266,07 x 5.33 mm
I/Artikel Nr. 435702

Qualität

EPDM 70 Shore A, weiss

U/Bestell-Nr.

38042

Herstelldatum

11/2010

Die Qualität entspricht den Richtlinien

EPDM weiss konform CFR21 §177.2600

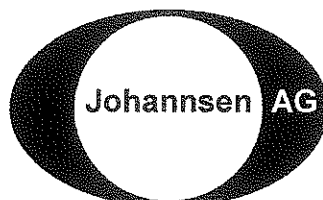
JOHANNSEN AG

Zürich, 11.03.2011/Flu

Gummi
Dichtungstechnik

8040 Zürich, Zimmerlistr. 6

Kerleins



Gummi Kunststoffe Dichtungstechnik
Zimmerlistrasse 6 8040 Zürich
Telefon 044/ 401 09 00
Telefax 044/ 401 11 51

ECONOMOS®

AUSTRIA

CERTIFICATE

We herewith confirm the ECONOMOS material

Doc No: 28248-0

ECOFLON 5		Item No. :	432412 - 435690
Polymer:	PTFE modified, virgin	Order No. :	435691
Colour:	white	Checked :	87433
Hardness:	57 Shore D		16.05.06
Density:	2,17 g/cm³		Jh.

which is intended as a sealing material for the use in food processing machinery is in accordance with

the positive list of § 177.1550, CFR 21, "Rubber Articles Intended for Repeated Use" of the Food and Drug Administration, USA

and the EC regulations, 90/128/EEC.

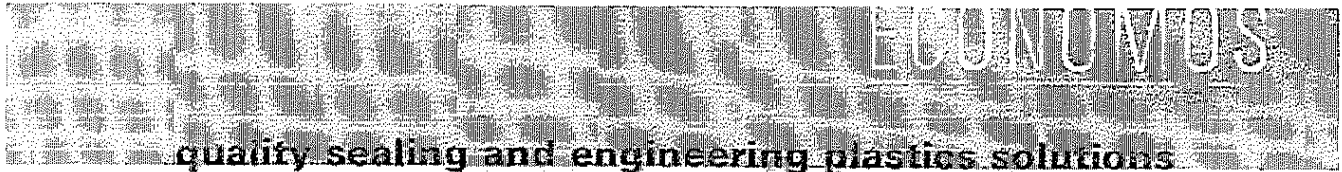
Judenburg, 01. Juli 2004

*TO: MME PEPPIEWAN
DE: ANDREAS GASSER
DATUM: 16.5.06*

We believe this information is the best currently available on the subject to our internal amendment routine. Economos is unable to guarantee and/or take any responsibility, obligation or liability whatsoever in connection with this information.

Economos Schweiz GmbH
Hungerbühlstrasse 17
8500 Frauenfeld
Tel.: 052/7212021 Fax: 052/7215521
www.economos.ch info@economos.ch

2 PAGES



MATERIAL DATA SHEET

ECOFLON 5 (white)

Polytetrafluorethylene (PTFE modified, special material with superior extrusion resistance)

Property	Unit	Value	Standard
Density	g/cm ³	2,16	DIN EN ISO 1183-1
Durometer hardness	Shore D	59	DIN 53505
Tensile strength	N/mm ²	30	DIN 53455
Elongation at break	%	360	DIN 53455
Tensile modulus	N/mm ²	—	DIN 53457
Impact resistance, Charpy	kJ/m ²	no break	DIN 54453
Coefficient of thermal expansion (25°C)	K ⁻¹	12 · 10 ⁻⁵	DIN 52328
Coefficient of sliding	---	0,08	----
Coefficient of thermal conductivity	W/m.K	0,35	----
Minimum service temperature	°C	- 200	----
Maximum service temperature	°C	+ 260	----

The mentioned data are only valid for test pieces of the corresponding ISO, DIN and ASTM standards and cannot be directly related to gaskets and joints. These values are only tested on selected samples.

FDA Konformitätserklärung

Item No. : 437890
Order No. : M-0040
Checked : 10. Fev. 2011
R/L

Auftraggeber

Frewitt SA
1701 Fribourg

Lieferdatum

CDF-11-0040 / 07.01.2011

Artikel

Einfaltenbälge W2411
Dimension: 216 mm

U/Bestell-Nr.

38519

Qualität

EPDM J-8129, schwarz, antistatisch

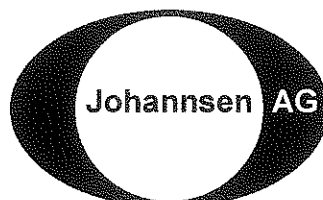
Herstelldatum

Februar 2011

Die Qualität entspricht den Richtlinien
der **BGA-XV** sowie **FDA**

Diese Qualität ist nach der Temperung bis zur Geruchs- und
Geschmacksfreiheit nach obigen Paragraphen für den Kontakt
mit Lebensmittel zugelassen

JOHANNSEN AG
Zürich, 03.02.2011/Flu
Gummi Kunststoffe
Dichtungstechnik
8040 Zürich, Zimmerlistr. 6



Gummi Kunststoffe Dichtungstechnik
Zimmerlistrasse 6 8040 Zürich
Telefon 044/ 401 09 00
Telefax 044/ 401 11 51

FDA Konformitätserklärung

Item No. : 432410
Order No. : 10-3202
Checked : 18.1.2011
Rg h

Auftraggeber

Frewitt SA
1701 Fribourg

Lieferdatum

13.01.2011 / CDF-10-3202

Artikel

Joint FC72964 / 432410

U/Bestell-Nr.

38269

Qualität

Rulon 641 / Fluoroloy 72

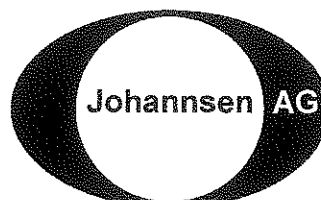
Herstelldatum

Januar 2011

Die Qualität entspricht den Richtlinien
der **BGA-XV** sowie **FDA**

Diese Qualität ist nach der Temperung bis zur Geruchs- und
Geschmacksfreiheit nach obigen Paragraphen für den Kontakt
mit Lebensmittel zugelassen

Zürich, 13.01.11/Flu



Gummi Kunststoffe Dichtungstechnik
Zimmerlistrasse 6 8040 Zürich
Telefon 044/ 401 09 00
Telefax 044/ 401 11 51

CERTIFICATE OF CONFORMANCE

in accordance to the US Food and Drug Administration (FDA)

The following Frenzelit gasketing materials based on modified and multi-directionally expanded PTFE are in fully compliance with the FDA 177.1550 Perfluorocarbon regulation:

novaflon 100

novaflon 200

novaflon 300

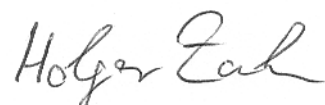
novaflon 500

Bad Berneck, March 2006

Frenzelit-Werke GmbH & Co. KG



Hans-Günther Koch
Head of Gasket Division



Holger Zahn
Quality Assurance



Linking science to progress

Product Certification Services

Doc No: 111900-1

CERTIFICATE

of compliance with the food packaging material regulation 21 CFR §177.2600 -
Rubber Articles Intended For Repeated Use

for

FKM 75.5/VA75F (FKM 75.16-04)

The detailed composition of above mentioned formulation has been disclosed to **RCC Product Certification Services, Itingen / Switzerland** by **Angst + Pfister AG, Zürich / Switzerland** on November 28th, 2007.

Based on this information we herewith can confirm that the formulation is in compliance with the appropriate food packaging material regulation 21 CFR §177.2600 (Rubber Articles Intended For Repeated Use) and therefore may be used in contact with food in the

UNITED STATES OF AMERICA

Please note: The material may not be used in contact with milk or edible oils. It is the responsibility of the manufacturer of the final article, that it complies with the specifications and limitations (end tests) in all applicable regulations.
This certificate is limited to the formulation disclosed to RCC as mentioned above. Any change of the formulation will void the certificate automatically. Also any changes in this formulation must be addressed to RCC immediately.

Dr. K. Hötzer



Dr. W. Nef

Itingen, November 29th, 2007
Expiration date: November 29th, 2010
RCC Project B66183 / NEW

**RCC Product
Certification Services**
Zelgliweg 1
4452 Itingen
Switzerland



RCC PRODUCT CERTIFICATION SERVICES – accredited by the Competent Authorities according to EN 45011 as CERTIFICATION BODY operating product certification – an individual department of RCC Ltd.
Accredited services are defined in the official directory of accredited Certification Bodies SCES 019



Donaldson Filtration Deutschland GmbH
Büssingstraße 1
D-42781 Haan
Germany



www.donaldson.com

Quality certificate

We confirm that the Donaldson Filtration Deutschland high efficiency filter element

Type:	(P)-SRF N
Filter media:	Borosilicate
Absolute retention rate:	99,99998% at 0,2µm, 99,9999998% at 0,02µm
Support material:	Stainless steel

is produced, packaged and shipped under the strictest control, and, at a minimum, conforms with exact quality and performance standards as specified in product data sheets. No changes in critical filter specifications will be made without notification in advance. All products have been inspected and released by Quality Assurance as having met the following requirements:

- The filter elements are completely assembled, tested and packaged in an accredited DIN EN ISO 9001 facility.
- All filter elements are 100% integrity tested according to EN 1822 and ASTM D 2986-91 (Aerosol Challenge Test). The retention rate complies with the product specification of 99,99998% at 0,2µm.
- All components comply to the FDA regulations for food contact use according to CFR (Code of Federal Regulations) Title 21.
- All filter elements are fabricated without the use of binders, adhesives, additives or surface-active agents.
- All filter elements are manufactured from high quality, non-toxic as well as biologically inert raw materials.
- This filter element was manufactured with a Borosilicate filter matrix which meets the criteria for a "non-fibre" releasing filter as defined in 21 CFR 210.3 (b)(6).
- The level of extractables of an 10" cartridge after 24 hours in a 70/30% IPA/Water mixture at 20°C was equal to or less than 35mg.
- The typical flow rate of a 10" filter element of this type is equal to or larger than 400 Nm³/h at a differential pressure of 50 mbar at 8 bar abs (20°C).
- All delivered filter elements (P)-SRF, (P)-SRF N and (P)-BE are not sterilized by plant.
- Do **NOT** use organic solvents to clean or disinfect the element prior to use!

Product Line Manager

Dr. P. Schwarz

Quality Representative

M. Pohlmann

Haan, September 2009

Donaldson Filtration Deutschland GmbH
 Büssingstraße 1
 D-42781 Haan
 Germany



www.donaldson.com

P-SRF N

Product description:

The P-SRF N is a pleated depth filter for sterile filtration of compressed air, process air, technical gases and vent applications. The retention rate is 99,99998% related to 0,2 µm. The P-SRF N combines great strength, long service life, high safety and high flow rates and can dramatically reduce costs by cartridge usage. All components meet the FDA requirements for the contact with food in accordance with the CFR requirements (Code of Federal Regulations), title 21. The filter is manufactured according to DIN EN ISO 9001.

Materials and CFR Title 21		
Filter Media	Borosilicate glass fibers	177.2260
Coating	PDMS	177.2260
Support	Stainless steel 1.4301	211.56
Cage / Core	Stainless steel 1.4301	211.56
End Caps	Stainless steel 1.4301	211.56
O-Rings	Silicone, EPDM, Buna N	177.2600
Sealing Compound	Silicone	177.2600

Application:

The P-SRF N sterile filters are designed for the following applications

- Food & Beverage Industry
- Pharmaceutical Industry
- Biotech Industry
- Health Care
- Aseptic Packaging
- Chemical Industry
- Breweries
- Dairies

Absolute Retention rate:

99,99998% related to 0,2 µm

Effective Filtration Area (nominal):

0,84 m² per 10" (254 mm) element
 For other sizes see correction factor CF

Bacterial / Viral Retention:

P-SRF N filter elements have been scientifically validated from an independent institute by:

- Brevundimonas (Pseudomonas) diminuta aerosol challenge, LRV >7 /cm²
- MS-2 Coliphages Aerosol Challenge, LRV >9 /cm²

Operating Conditions:

Maximum Differential Pressure:
 5 bar (75psid) (-20°C up to 150°C),
 independent of the system pressure or the flow direction

Typical Continuous Air Service Life: 12 months
 Typical Vent Service Life: 6 months

Temperature Range:

-20 °C (-4 °F) to 200°C (400°F)
 >150°C (300°F) only for dry compressed air

Dimensions:

Element size	A [mm]	B [mm]	Ø C * [inch]	Ø D [mm]	CF
03/10	76	11	¾"	52	0.12
04/10	104	11	¾"	52	0.17
04/20	104	14	1"	52	0.17
05/20	128	14	1"	52	0.21
05/25	128	14	1"	62	0.29
07/25	180	14	1"	62	0.42
07/30	180	16	2"	86	0.70
10/30	254	16	2"	86	1.00
15/30	381	16	2"	86	1.28
20/30	510	16	2"	86	2.00
30/30	764	16	2"	86	2.56

* Plug-type connection with double-o-ring
 CF: Correction Factor filter area

Manual for Installation and Sterilization

Applicable to: (P)-SRF, (P)-SRF N, (P)-BE

This document is just a recommendation and will help you to operate and sterilize your Donaldson filter element in an optimum way retaining integrity and extending service life. All methods mentioned below have been tested in day to day practise. Please be aware that all sterilization methods potentially have to be adapted to your system and conditions. Our recommendation will not absolve you from the responsibility to validate your filtration system. Please refer to the manufacturer or to your sales representative for a detailed sterilization guide or if you have any further questions about this manual or other aspects regarding your filtration system.

Installation (1. – 6.) & De-installation (7.) of P-SRF N filter elements:

Donaldson filters are available in a number of different adapter and O-ring configurations designed to fit modern filter housings. The filter should fit snugly in the housing. Improper installation can impair filtration efficiency.

1. Verify that the correct filter part number for the application has been chosen.
2. If autoclave sterilization is used, sterilize the filter in a suitable sterilization bag before installation.
3. Keep the filter in its plastic bag to avoid contaminating the filter element as long as possible. Cut open the bag at the O-ring end. While holding the bagged filter element, if necessary lubricate the O-rings by dipping the O-rings into clean water or other suitable liquid compatible with the process fluid.
4. Line up the open end of the filter element with the housing seat and install using a slight twisting motion while holding the bagged filter near the O-ring end. Verify that the O-rings are fully seated and not twisted. If the cartridge has locking tabs, rotate the tabs into place with a clockwise motion until engaged. **Attention: only rotate cartridges while firmly grasping the O-ring end of the cartridge to prevent excessive torque damage to the filter (Picture 1 – 2).**
5. Repeat with additional filters. Remove protective bags from the filter elements. If present, install filter retainer system (plate or spring). Reassemble housing.
6. If inline sterilization is used, sterilize the filter before the first use.
7. To uninstall the element (e.g. for autoclave sterilization), grasp the filter firmly at the O-ring end and rotate it anticlockwise to release locking tabs. Pull the element carefully out of the seat in vertical direction using a slight twisting motion. **Avoid to cant the cartridge to prevent damage to the filter (Picture 3 – 4).**

Sterilization:

The sterilization time for inline-sterilization of filter cartridges differs depending on the used sterilization temperature. The complete sterilization cycle time consists of a heating and a cooling phase plus the sterilization phase.

§ in °C	Sterilization phase	Heating & cooling phase	Entire sterilization cycle
121 - 125	30 min.	15 min. & 15 min.	60 min.
131 - 135	15 min.	15 min. & 15 min.	45 min.
141	10 min.	15 min. & 15 min.	40 min.

These sterilization times are valid for both steam in place and autoclave sterilization.

Inline-Sterilization (Steam in Place):

For **Steaming in Place (SIP)**, the steam should be free of rust and other particulates. The housing should be cleaned before the cartridge is installed. To assure sterilization, steam pressure in the assembly must not be allowed to fall below 15 psi (1 bar) or 250°F (121°C). Condensate should be drained from the system during sterilization.

- Always vent trapped air from the housing.
- Upstream and downstream gauges must be provided to verify that the differential pressure across the filter does not exceed 5 psi (0,3 bar) during any of the sterilization steps.
- Drain condensate from the housing and pipes during sterilization.
- Fill the housing with the process liquid with air that has the same pressure as the used steam.
- Allow the system to cool and keep the system under pressure until ready for use.

Always use the lowest possible sterilizing temperature to avoid surplus stress on the element.

Autoclave sterilization:

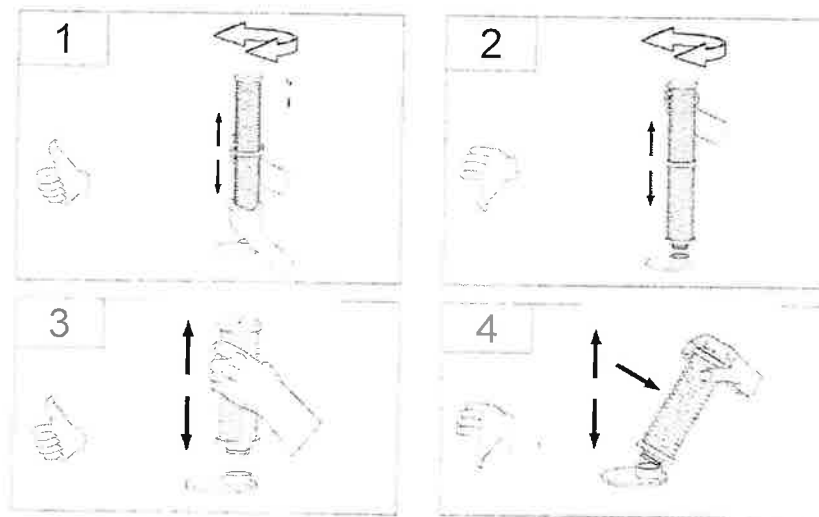
It is possible to sterilize the cartridge only or cartridge and housing together in an autoclave.

- To sterilize the filter element only, use a special sterilizing bag and insert it into the autoclave. The O-ring end should face down to allow condensate to flow out. Sterilize and dry the filter, then install it again using aseptic techniques.
- To sterilize both, filter element and housing, install the cartridge into the housing. Rinse the filter thoroughly with clean water and cover the inlet and outlet of the housing with autoclave wrap or aluminium foil. Vent and valve drains should be open. Sterilize the assembly, then allow the housing to cool and dry before aseptic installation.

After sterilization, integrity test the filter if desired.

Element drying:

To avoid damage of the filter after sterilization, start the fluid flow slowly. Allow the element to dry for several minutes, meanwhile keeping the flow so low as to maintain a differential pressure below 7 psi (0,5 bar).



Frewitt Fabrique Machines SA
Case postale 615
1701 Fribourg

**DECLARATION OF
CONFORMITY**
in accordance with
DIN EN ISO/IEC 17050

Customer No.: 109507

Date: 16.03.2010
Phone: 022 979 28 21
Issuer: Michaud Christian
Initials: MCH

Declaration subject:

Item description:

Joint plat rd 980/903 x 5 mm Novaflon 500, Art.no. 457663

Item no.:

DT-37 6157 0006

Job no.:

A10.153165

Quantity:

1 pce

Country of origin:

(D)

Your purchase order:

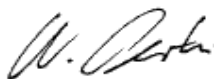
CDF-10-0696

**The product described above meets the requirements stipulated in the following
guidelines/standards:**

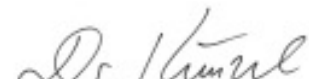
FDA 21 CFR §177.1550

Additional information:

Angst + Pfister Group Engineering



Walter Oertli
Senior Engineer



Heinz-Thomas Künzel
Senior Engineer

Zurich, 16.03.2010

(Place and date of issuance)

(Name and signature or equivalent authentication of authorized persons)

FDA Konformität

GYLON-Flachdichtungen

GYLON Standard (Style 3500, 3501E) und GYLON Weiß (Style 3510) erfüllen die FDA-Vorschriften 21 CFR 177.1550 . Diesen Ansprüchen genügen alle Bestandteile und Inhaltstoffe. Die Füllstoffe sind außerdem akzeptiert unter 21 CFR 177.2600 und die Farbpigmente (falls vorhanden) unter 21 CFR 182.5991, 21 CFR 182.8991 und 21 CFR 177.2600 .

Die Markierungsfarbe erfüllt die Vorschrift 21 CFR 175.300 .

GYLON Standard (Style 3500) hat außerdem die Freigabe des USDA für Anwendungen mit Direktkontakt bei Fleisch und Geflügel.

GYLON Blau (Style 3504) und GYLON Food (Style 3550) erfüllen die FDA-Vorschriften 21 CFR 177.1550 . Diesen Ansprüchen genügen die Hauptbestandteile bis auf die Füllstoffe. Die Füllstoffe sind in dem Food Chemicals Codex (FCC, 3rd Edition) aufgeführt und als grundsätzlich sicher anerkannt (GRAS – 21 CFR 170.30) für Anwendungen in Filtern und Lebensmittelprozessen.

Der zweite Füllstoff in GYLON Food erfüllt die FDA-Vorschrift 21 CFR 177.2600 .

Die Markierungsfarbe erfüllt die Vorschrift 21 CFR 175.300 .

GYLON Style 3545 erfüllt die FDA-Vorschriften 21 CFR 177.1550, 21 CFR 182.10, 21 CFR 182.1217 und 21 CFR 175.300 für seine Bestandteile. Die Menge der sich herauslösenden Materialien kann die Anforderungen nach 21 CFR 177.1550 überschreiten. Die sich herauslösenden Materialien erfüllen jedoch die FDA-Vorschriften 21 CFR 170.30 und sind als grundsätzlich sicher anerkannt (GRAS).

Die Markierungsfarbe erfüllt die Vorschrift 21 CFR 175.300 .

FDA	- Food and Drug Administration
USDA	- United States Department of Agriculture
CFR	- Code of Federal Regulations
FCC	- Food Chemicals Codex
GRAS	- Generally Recognized As Safe

DECLARATION

Customer : Frewitt SA, CH-1763 Granges-Paccot
Sefar order no. : SO4100287
Fabric made of : PET
Sales no. : 3072-1000-366-00 Round Bags
Product no.: Fabric: 3F07-0351-200-00 Sefar 07-351-600 NFIA
Article: 3072-1000-366-00 / D:105X350 HW 07-351-600 NFIA
Date : 26.08.2011

Based on the data according our Supplier, we certify that fabric stated above is made from materials which are in conformity with the

*„FDA Code of Federal Regulations (USA), Food and Drugs, title 21, part 177.1630
(indirect food additives: Polymers)“*

This statement is valid for the fabric, only when the spin finish (a mixture of lubricants as ester-oils and a system of anionic and non-ionic emulsifiers) is removed by washing before the final utilization.

Sefar AG



Peter Vickus
Quality Manager

Item No. : 465745
Order No. : M-2080
Checked : 26.08.11 GB



CONNECTORS VERBINDUNGSTECHNIK AG

Zürcherstrasse 53
CH-8317 Tagelswangen

Phone: +41 (0)52 354 68 68
Fax: +41 (0)52 354 68 60

Mail: info@connectors.ch
Web: www.connectors.ch

Doc No: 135764-1

Item No. : 462 542
Order No. : 11-1364
Checked : 15 Jan. Feb 2011
PZ

Tagelswangen 07.01.2010

Certificate

Connectors AG certifies that below compounds are in compliance with the FDA CFR21:177.2600 for use in contact with Food.

Connectors AG certifies that below compounds have been tested and certified by the Toxicon laboratory to be in compliance with the criteria of the US pharmacopeia Class VI, section 88 Biological.

E7050PF, E8008PF, N8019F, V8003, S7073F.

PO number	57766
Item	Tri Clamp Gasket Silicone, DIN DN100 TC119
Part No.	241.119.100.FDA
Quantity	500
Batch No.	018273
Cure Date	08.06.09

Connectors AG
Technical Manager

V. Di Leo

Attestation d'état de surfaces des éléments en contact avec le produit.	Bescheinigung der Oberflächenqualität für die produktberührten Elemente.	Certificate for surface quality of the parts in contact with the product.
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Selon la méthode de mesure décrite dans la norme EN ISO 4288, nous certifions que les parties en contact avec le produit ont un état de surface conforme à la commande, soit:	Basierend auf die in der Norm EN ISO 4288 beschriebenen Messmethode, bestätigen wir, dass die Oberflächenqualität der produktberührten Teile der Bestellung entspricht, d.h.:	According to the procedure for roughness inspection EN ISO 4288, we guarantee that all product contact parts have been manufactured with a surface quality according to the order, i.e.:
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Intérieur:

Innen:

Inside:

Ra ≤ 0.5 μm

Extérieur:

Aussen:

Outside:

Ra ≤ 1.4 μm

Frewitt Fabrique de Machines SA



R. Rybarikova
 Rédactrice technique
 Technischer Redaktor
 Technical writer


Client: Kunde: Customer:
NOVARTIS SINGAPORE PHARMACEUTICAL
SG-Singapore

N° Série: Serien-Nr. Serial Nr.
11007635096

Appareil de mesure / Messapparat / Measuring unit : Mitutoyo Sufitest SJ-301
 N° série / Serien-Nr. / Serial Nr. : 400197
 N° Etalon / Massstab-Nr. / Standard Nr. : 438330

Poition de mesure: Intérieur Extérieur
 Massnahmenposition: I = innen E = Aussen
 Measure position: Inside Outside

Ref	Positon mesure Massnahmenposition Measure position	Mesure N° Mass Nr. Measure Nr.	Norme Norm Stand	Profil Profil Profile	Filtre Filter Filter	Eva.-L Ausw.-L Eva.-L	λC	N	Vitesse Gesch. Speed	Drive Vorschub Drive	Ra
Pos. 100											
464820	E	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.78um
464820	E	2	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.47um
464820	I	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.27um
464820	I	2	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.23um
Pos. 101											
TA\101	E	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.19um
TA\101	E	2	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.13um
TA\101	I	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.11um
TA\101	I	2	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.11um
Pos. 102											
TA\102	E	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.33um
TA\102	E	2	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.36um
TA\102	I	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.10um
TA\102	I	2	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.12um
Pos. 103											
464819	E	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.59um
464819	E	2	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.33um
464819	I	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.31um
464819	I	2	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.40um
Pos. 104											
TA\104	E	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.18um
TA\104	I	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.27um
Pos. 105											
TA\105	E	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.18um
TA\105	I	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.27um


Protocole établi par (visa) Protokoll erstellt von (Visa) Report established by (Visa)	H.REY _____	 le am on	26.07.11
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Client: Kunde: Customer:
NOVARTIS SINGAPORE PHARMACEUTICAL
SG-Singapore

N° Série: Serien-Nr. Serial Nr.
11007619050

Appareil de mesure / Messapparat / Measurin unit :	Mitutoyo Suftest SJ-301	
N° série / Serien-Nr. / Serial Nr. :	400197	
N° Etalon / Massstab-Nr. / Standard Nr. :	438330	
Poition de mesure:	Intérieur	Extérieur
Massnahmenposition:	I = innen	E = Aussen
Measure position:	Inside	Outside

Ref	Positon mesure Massnahmenposition Measure position	Mesure N° Mass Nr. Measure Nr.	Norme Norm Stand	Profil Profil Profile	Filtre Filter Filter	Eva.-L Ausw.-L Eva.-L	λC	N	Vitesse Gesch. Speed	Drive Vorschub Drive	Ra
Pos.1											
436255	E	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.06um
Pos.102											
435843	E	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.33um
Pos.103											
432459	E	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.11um
432459	E	2	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.05um
Pos.104											
436011	E	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.36um
436011	E	2	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.27um
436011	I	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.07um
436011	I	2	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.10um

Protocole établi par (visa) Protokoll erstellt von (Visa) Report established by (Visa)	H.REY		le am on	22.07.11
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Client: **Kunde:** **Customer:**
NOVARTIS SINGAPORE PHARMACEUTICAL
SG-Singapore

N° Série: **Serien-Nr.** **Serial Nr.**
 11007635096

Appareil de mesure / Messapparat / Measuring unit : Mitutoyo Sufitest SJ-301
 N° série / Serien-Nr. / Serial Nr. : 400197
 N° Etalon / Massstab-Nr. / Standard Nr. : 438330

Poition de mesure: Intérieur Extérieur
 Massnahmenposition: I = innen E = Aussen
 Measure position: Inside Outside

Ref	Positon mesure Massnahmenposition Measure position	Mesure N° Mass Nr. Measure Nr.	Norme Norm Stand	Profil Profil Profile	Filtre Filter Filter	Eva.-L Ausw.-L Eva.-L	λC	N	Vitesse Gesch. Speed	Drive Vorschub Drive	Ra
Pos. 100											
464846	E	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.25um
464846	E	2	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.30um
464846	I	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.28um
464846	I	2	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.33um
Pos. 101											
464847	E	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.59um
464847	E	2	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.34um
464847	I	1	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.10um
464847	I	2	ISO1997	R	GAUSS	4.0mm	0.8mm	5.00	0.5mm/s	STAND	0.36um

Protocole établi par (visa) H.REY  le 27.07.11
 Protokoll erstellt von (Visa) H.REY  am 27.07.11
 Report established by (Visa) H.REY  on 27.07.11

Projet / Projekt / Project: PRO-11-0076

Type / Typ / Type : DelumpWitt.....

N° de série / Serien Nr. / Serial Nr.: 11007635096 (11007619050 / 11007643002)

Client / Kunde / Customer : Novartis Pharmaceutical Manufacturing ; SG-Singapore

Used seals (FDA-conform)

Gylon (PTFE), EPDM, FEP-O-SEAL, Silikon, Ecoflon5, Novaflon 500

Remarques / Bemerkungen / Remarks:

We confirm that the seals that are used by Novartis are resistant to the used cleaning agents.

.....

.....

.....

.....

.....


.....

Client: Kunde: Customer:
NOVARTIS SINGAPORE PHARMACEUTICAL
SG-Singapore

N° Série: Serien-Nr. Serial Nr.
11007619050

Description	Beschreibung	Description
Diamètre / carré des trous des Tôles perforées / Tamis conique / Treillis	Durchmesser / Viereck der Löcher der perforierten Bleche / Konischelochbleche / Siebe	Diameter / square of the holes of the Perforated sheets / Conical sieve / Sieve
Critère	Kriterium	Criterion
±10% du diamètre / carré des trous	±10% des Durchmessers / Viereck der Löcher	±10% of the diameter / square of holes

Tôle N° Blech-Nr Sheet Nr	Epaisseur [mm] Dicke [mm] Thickness [mm]	Ø / □ [mm]	Critère Kriterium Criterion	Remarques Bemerkung Remarks
436242	1.0	3.0	2.7 - 3.3	OK

Attestation établie par (visa) Zertifikat erstellt von (Visa) Certificate established by (Visa)	<u>U.Schaller</u>		le am on	<u>29.08.2011</u>
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Client:**Kunde:****Customer:****Novartis Pharma
SG-Singapore****N° Série:****Serien-Nr.
11007635096****Serial Nr.**

Appareil de mesure / Messapparat / Measuring unit :	TES 1350
N° série / Serien-Nr. / Serial Nr. :	971205674
Norme / Norm / Standard :	dBA (DIN45635)

Conditions de mesure

La mesure est faite:

- à 1m
- à hauteur de la chambre de broyage
- à vitesse max.
- avec l'outillage monté
- avec les accessoires montés
- à vide (sans produit)

Messbedingungen

Die Messung wird gemacht:

- bei einer Distanz von 1 m
- auf Mahlkammerhöhe
- mit maximaler
Geschwindigkeit
- mit montiertem Werkzeug
- mit montiertem Ein- und
Auslaufzubehör

Measuring conditions

Measurement is made:

- at a distance of 1 m
- at height of milling chamber
- with maximum speed
- with installed tools
- with installed inlet and outlet
accessories


Lp [dBA] : 68.50**Protocole établi par (visa)****Protokoll erstellt von (Visa)****Report established by (Visa)**Urs Schaller**le
am
on**27.08.11

Client :
Kunde :
Customer :
Novartis Singapore PRO-11-0076
N° série :
Serien Nr. :
Serial Nr. :

11007635096

Pos. Volant Handrad Handwheel 2)	Afficheur 1) Display 1) Display 1)		Mesures Messungen Measurements		Remarques Bemerkunge Remarks
	Vitesse Geschwindigkeit Speed 1/min	Fréquence Frequenz frequency 3) Hz	Vitesse Geschwindigkeit Speed 4) Osc./min. 1/min ±10% 2) ±5% 1)	Courant Strom Current 5) A	
Mill ConiWitt-250 11007619050					<u>Sollwert</u>
			99.8		100
			700.5		700
Crusher PR-Sword 11007643002					<u>Sollwert</u>
			10		10
			14		14

- 4) Valeurs mesurées avec tachymètre "Jaquet type DHO 907"
mit Tachymeter "Jaquet Typ DHO 907 gemessene Werte - values measured with tachmeter "Jaquet type DHO 907"
- 5) Valeurs mesurées avec multimètre "Fluke 87 True RMS"
mit Multimeter "Fluke 87 True RMS " gemessene Werte - values measured with multimeter "Fluke 87 True RMS"

Protocole établi par (visa)	Grossrieder Yves	26.08.2011
Protokoll erstellt von (Visa)		
Report established by (Visa)		

Client:

Kunde:

Customer:

Novartis Singapore PRO-11-0076

N° Série:

Serien-Nr.

Serial Nr.

11007635096

Type de sonde / Sonde Typ / Sensor type : _____
 N° série sonde / Sonde Serien-Nr- / Sensor serial Nr. : _____
 Appareil de mesure / Messapparat / Measurin unit : Testo type 925
 N° série / Serien-Nr. / Serial Nr. : 712-004-0131

Tolérance de mesure / Messtoleranz / Measurement tolerance : $\pm 2^{\circ}\text{C}$

	Gamme de mesure Messreihe Measuring scale [°C]	Température mesurée Gemessene Temperatur Measured temperature [°C]	Valeur affichée Angezeigter Wert Posted value [°C]
T CW-250 T13	26.5	26.6	26.9
	40.6	40.8	41.7
	58.1	58.3	59.7
T Crusher T23	26.3	27.0	26.4
	40.7	40.7	41.2
	58.0	58.3	58.8

Protocole établi par (visa)

Protokoll erstellt von (Visa)
 Report established by (Visa)

Grossrieder Yves



26.08.2011

Doc No: 127802-1



Product Service

ZERTIFIKAT

Nr. Z2 06 09 13277 076

Zertifikatsinhaber: Festo AG & Co. KG

 Rüter Str. 82
 73734 Esslingen
 DEUTSCHLAND

**Produktions-
stätte(n):**

49331

Prüfzeichen:

Produkt: Pneumatikschlauchleitungen
**Modell(e): PUN-H-Schläuche
PUN-H-DUO**
Kenndaten:

Größen mm:	3x0,5 / 4x0,75 / 6x1 / 8x1,25 10x1,5 / 12x2 / 16x2,5 DUO 4x0,75 / 6x1 / 8x1,25 / 10x1,5
Farben:	natur, blau, schwarz; DUO blau/schwarz
Material:	Polyurethan
Einsatztemperatur:	bis 60°C
Einsatzbereich:	nicht geeignet für Nahrungsmittel mit Alkoholanteil > 15 %

Geprüft nach:

 DIN EN 1672-2:2005
 2002/72/EG
 PPP 57006:2004
 Code of Federal Regulations
 Title 21 (FDA) § 177.2600, § 178.2010

Das Produkt wurde auf freiwilliger Basis auf die Einhaltung der grundlegenden Anforderungen geprüft und kann mit dem oben abgebildeten Prüfzeichen gekennzeichnet werden. Eine Veränderung der Darstellung des Prüfzeichens ist nicht erlaubt. Umseitige Hinweise sind zu beachten.

Prüfbericht Nr.: 71300186-001

Datum, 2006-10-13



Seite 1 von 1

Voir documents suivants.

Siehe folgende Dokumente.

See following documents



Certificat d'étalonnage No 258-11539

<i>Objet</i>	Compte-tours Jaquet, DHO 907 N° 0606.214692, METAS 411967
<i>Mandat</i>	Étalonnage d'un compte-tours
<i>Requérant</i>	Frewitt Fabrique de Machines SA Route du Coteau 7 1763 Granges-Paccot
<i>Traçabilité</i>	Les résultats de mesure indiqués sont rattachés aux étalons nationaux et ainsi à des réalisations reconnues au niveau international des unités SI.
<i>Date de l'étalonnage</i>	29.06.2009
<i>Marquage</i>	Marque d'étalonnage METAS 06/09

CH-3003 Bern-Wabern, le 29. juin 2009

Pour les mesurages


Ewald Brühlhart

Section trafic, acoustique et vibration


Walter Fasel, Chef de section



Certificat d'étalonnage No 258-11539

Portée de l'étalonnage

Le compte-tours a été étalonné dans l'étendue de mesure de 10 à 100'000 t/min.

Méthode de mesure

Le compte-tours a été contrôlé optiquement avec les impulsions lumineuses d'une source lumineuse de référence.

Conditions de mesure

Température ambiante: (22 ± 2) °C.

Résultats de mesure

Nombre tours	Déviation	Incertitude
t/min	t/min	t/min
12	-0.005	± 0.007
48	-0.005	± 0.007
96	0.000	± 0.008
120	-0.05	± 0.07
480	0.02	± 0.09
960	0.03	± 0.08
1200	-0.3	± 0.8
4800	0.2	± 0.8
9600	0.7	± 0.8
12000	1.3	± 0.8
48000	-2.0	± 1.7
96000	-4.0	± 3.7

Les valeurs indiquées représentent la moyenne de 6 mesures.
Un graphique détaillé se trouve dans l'appendice.

Le diamètre de la roue de mesure est: 48.46 ± 0.1 mm



Certificat d'étalonnage No 258-11539

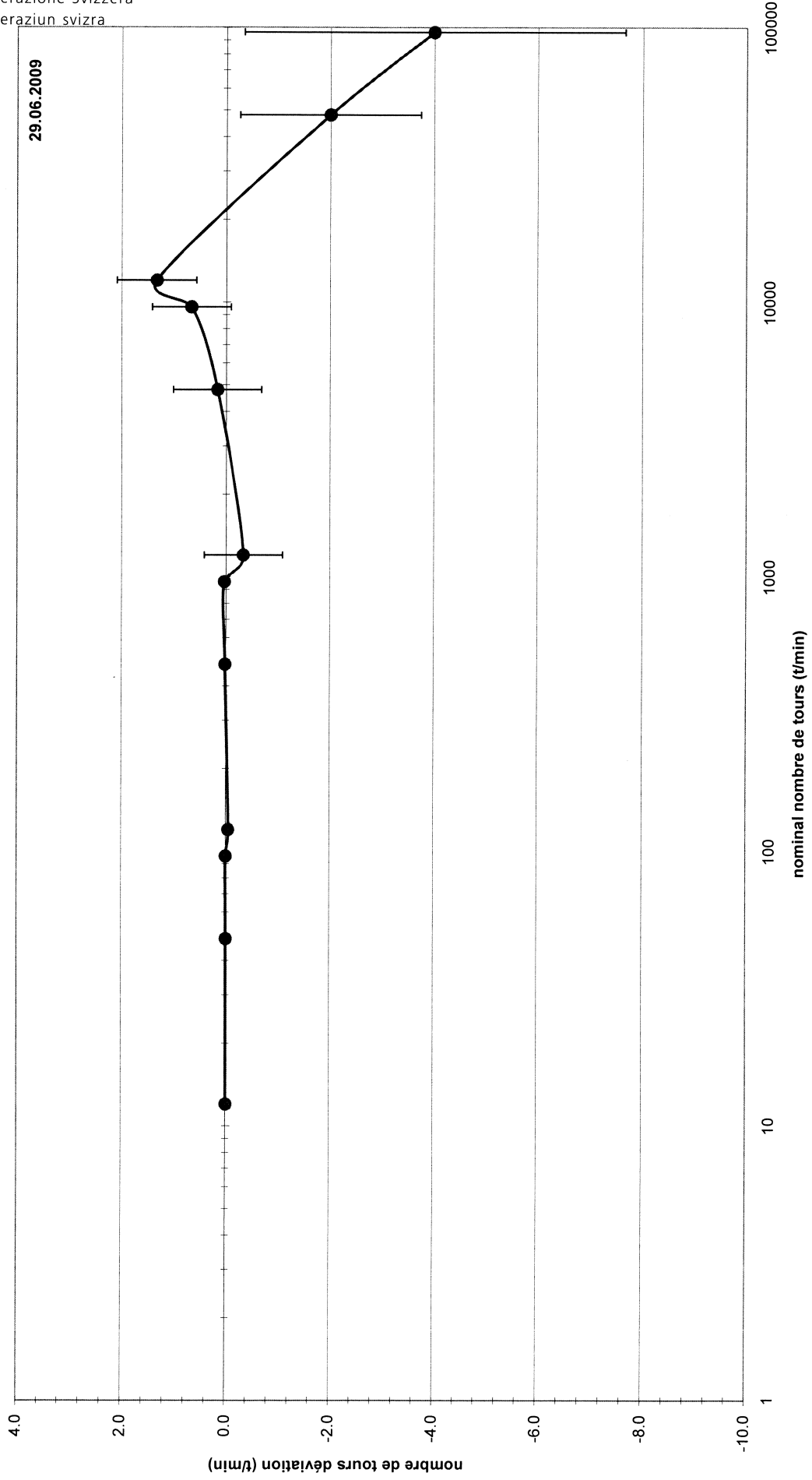
Incertitude de mesure

L'incertitude de mesure indiquée est obtenue en multipliant l'incertitude-type composée par un facteur d'élargissement $k = 2$. La valeur mesurée (y) et son incertitude élargie (U) définissent le domaine ($y \pm U$) dans lequel la valeur de la grandeur mesurée se trouve avec une probabilité d'environ 95%. L'estimation de l'incertitude est conforme aux directives de l'ISO (GUM:1995).

L'incertitude estimée contient les contributions de l'étalon utilisé, de la procédure d'étalonnage, des conditions d'environnement et de l'objet étalonné. Il n'a pas été tenu compte du comportement à long terme de l'objet étalonné.



Modèle: **Jaquet** Typ: **DHO 907** N° Metas: **411967** N° Serie: **606.214692**





Formulaire : **Equipements de test et de mesure**

MANUEL DE MANAGEMENT

Document: 23806-3-fr.doc

P4 /Contrôle

du: 22.04.09

Page : 1 de 2

N° appareil N°: 305	Catégorie : Force
N° article Frewitt : 426113	Service utilisateur : Contrôle
Désignation : Tachymètre	Constructeur : Jaquet
Type : DHO 907 Combi	Vendeur : Jaquet AG - 4009 Bâle
N° de série : 214692	Année d'achat : 2006
Plage(s) : 10 - 10000 T/min	Prix d'achat : 370 CHF
Tolérance (s) : + - 1 %	

Etalonnage interne	Etalonnage externe
<u>Périodicité :</u> mois	<u>Périodicité :</u> 36 mois
<u>Procédure de contrôle :</u>	<u>Effectué chez :</u> Office fédéral de la métrologie - 3003 Berne-Wabern.
	<u>Procédure de contrôle :</u> Etalonnage entre 10 et 96000 T/min standard. Au laboratoire trafic, à l'att. de Mr. Fasel Walter.

Type de contrôle: Ctrl externe	(si ext.) Certificat reçu : OUI	Equipement conforme : OUI				
Mesure de référence	Mesure effective	Mesure après correction	Conforme ?	Date du ctrl	Contrôleur N°	Vi sa
mm	mm	mm	?	29/06/09	41	Hre
mm	mm	mm	?	Remarque :		
mm	mm	mm	?			

Type de contrôle: ?	(si ext.) Certificat reçu : ?	Equipement conforme : ?				
Mesure de référence	Mesure effective	Mesure après correction	Conforme ?	Date du ctrl	Contrôleur N°	Visa
mm	mm	mm	?			
mm	mm	mm	?	Remarque :		
mm	mm	mm	?			

Type de contrôle: ?	(si ext.) Certificat reçu : ?	Equipement conforme : ?				
Mesure de référence	Mesure effective	Mesure après correction	Conforme ?	Date du ctrl	Contrôleur N°	Vi sa
mm	mm	mm	?			
mm	mm	mm	?	Remarque :		
mm	mm	mm	?			

Type de contrôle: ?		(si ext.) Certificat reçu : ?		Equipement conforme : ?		
Mesure de référence	Mesure effective	Mesure après correction	Conforme ?	Date du ctrl	Contrôleur N°	Vi sa
mm	mm	mm	?			
mm	mm	mm	?	Remarque :		
mm	mm	mm	?			

Type de contrôle: ?		(si ext.) Certificat reçu : ?		Equipement conforme : ?		
Mesure de référence	Mesure effective	Mesure après correction	Conforme ?	Date du ctrl	Contrôleur N°	Visa
mm	mm	mm	?			
mm	mm	mm	?	Remarque :		
mm	mm	mm	?			

Type de contrôle: ?		(si ext.) Certificat reçu : ?		Equipement conforme : ?		
Mesure de référence	Mesure effective	Mesure après correction	Conforme ?	Date du ctrl	Contrôleur N°	Vi sa
mm	mm	mm	?			
mm	mm	mm	?	Remarque :		
mm	mm	mm	?			

Type de contrôle: ?		(si ext.) Certificat reçu : ?		Equipement conforme : ?		
Mesure de référence	Mesure effective	Mesure après correction	Conforme ?	Date du ctrl	Contrôleur N°	Visa
mm	mm	mm	?			
mm	mm	mm	?	Remarque :		
mm	mm	mm	?			

Type de contrôle: ?		(si ext.) Certificat reçu : ?		Equipement conforme : ?		
Mesure de référence	Mesure effective	Mesure après correction	Conforme ?	Date du ctrl	Contrôleur N°	Vi sa
mm	mm	mm	?			
mm	mm	mm	?	Remarque :		
mm	mm	mm	?			

Certificate of Calibration

Doc No: 17395-4
ID No: 111



N° de Certificat : S - 110802-1R

Nous attestons que l'instrument ci-dessous atteint ou dépasse les spécifications électriques publiées par le fabricant, sur tous les points mesurés. Toutes les mesures sont traçables par des standards nationaux ou internationaux, ou ont été dérivées par une technique approuvée.

We certify that the below instrument meets or exceeds the manufacturers published electrical specifications at the points tested. All measurement are traceable to national or international standards or have been derived by approved ratio technique.

Page 1 de / of 1

CALIBRATION INFORMATION

Type / Model: FLUKE 87

N° de série / Serial Number: 60321248

N° d'inventaire / Asset Number: 111

Client / Customer : FREWITT SA

N° de Commande / Work Order : 11-160

Date de l'étalonnage: 2 août 2011

STANDARDS USED FOR CALIBRATION

<u>Asset Number</u>	<u>Description</u>	<u>Cal. Date</u>	<u>Due Date</u>
s2001	Fluke 5520A Multi product calibrator	28 mars 2011	28 mars 2012

Renato Ricci

Signed: 

Report of Calibration

Servilec SA

UNIT UNDER TEST: **FLUKE 87**
SERIAL NUMBER : **60321248**
ASSET NUMBER : **111**
CERTIFICATE N° : **S-110802-1R**
CUSTOMER : **FREWITT SA**
TEMPERATURE : **(23 +/- 3) °C**
HUMIDITY : **less than 70%**
TEST RESULT : **PASS**
PERFORMED ON : **02.08.2011**
CALIBRATED BY : **Renato Ricci**



REMARKS:

Page 1 de 4

Standards Used

Asset	Description	Cal Date	Due Date
s2001	Fluke 5520A Multi product calibrator	28.mars 2011	28.mars 2012

Test Data

Test	Parameter	----- Unit Under Test -----			ERROR in (% of TOL)	User
		Reading	Tolerance	UUT Error		
DISPLAY TEST						
Result of Operator Evaluation						Pass
AC VOLTAGE TESTS						
400mV Range						
2	350.0 mV @ 60 Hz	349.0mV	2.90mV	-0.286%	35%	Pass
3	350.0 mV @ 1 kHz	349.2mV	3.90mV	-0.229%	21%	Pass
4	350.0 mV @ 5 kHz	346.8mV	7.40mV	-0.914%	43%	Pass
5	350.0 mV @ 20 kHz	349.4mV	9.00mV	-0.171%	7%	Pass
4V Range						
6	3.500 V @ 60 Hz	3.492V	27.00mV	-0.229%	30%	Pass
7	3.500 V @ 1 kHz	3.490V	39.00mV	-0.286%	26%	Pass
8	3.500 V @ 5 kHz	3.465V	74.00mV	-1.00%	47%	Pass
9	3.500 V @ 20 kHz	3.468V	90.00mV	-0.914%	36%	Pass
40V Range						
10	35.00 V @ 60 Hz	34.92V	270.00mV	-0.229%	30%	Pass
11	35.00 V @ 1 kHz	34.98V	390.00mV	-571ppm	5%	Pass
12	35.00 V @ 5 kHz	34.94V	740.00mV	-0.171%	8%	Pass

Test	Parameter	Reading	Tolerance	UUT Error	ERROR in (% of TOL)	User
13	35.00 V @ 20 kHz	34.90V	900.00mV	-0.286%	11%	Pass
400V Range						
14	350.0 V @ 60 Hz	349.2V	2.70V	-0.229%	30%	Pass
15	350.0 V @ 1 kHz	349.9V	3.90V	-286ppm	3%	Pass
16	350.0 V @ 5 kHz	349.4V	7.40V	-0.171%	8%	Pass
17	100.0 V @ 20 kHz	99.5V	4.00V	-0.500%	13%	Pass
18	200.0 V @ 20 kHz	199.8V	6.00V	-0.100%	3%	Pass
19	300.0 V @ 20 kHz	299.7V	8.00V	-0.100%	4%	Pass
20	350.0 V @ 10 kHz	348.5V	9.00V	-0.429%	17%	Pass
1000V Range						
21	900 V @ 60 Hz	903V	8.00V	0.333%	38%	Pass
22	900 V @ 1 kHz	904V	13.00V	0.444%	31%	Pass
23	900 V @ 5 kHz	903V	22.00V	0.333%	14%	Pass
FREQUENCY TESTS						
19.999kHz Range						
24	19.000 kHz @ 150 mV	18.999kHz	2.00Hz	-52.6ppm	50%	Pass
199.99kHz Range						
25	190.00 kHz @ 150 mV	189.99kHz	20.00Hz	-52.6ppm	50%	Pass
DC VOLTAGE TESTS						
4V Range						
26	3.500 V	3.501V	5.00mV	286ppm	20%	Pass
40V Range						
27	35.00 V	35.01V	50.00mV	286ppm	20%	Pass
28	-35.00 V	-35.00V	50.00mV	0.00ppm	0%	Pass
400V Range						
29	350.0 V	350.1V	500.00mV	286ppm	20%	Pass
1000V Range						
30	1000 V	1001V	2.00V	0.100%	50%	Pass
DC MILLIVOLT TEST						
400mV Range						
31	350.0 mV	350.1mV	500.00uV	286ppm	20%	Pass
RESISTANCE TESTS						
400 Ohm Range						
32	190.0 Ohm	190.10hm	500.00mOhm	526ppm	20%	Pass
40 kOhm Range						
33	19.00 kOhm	19.00kOhm	50.00Ohm	0.00ppm	0%	Pass
4 MOhm Range						
34	1.900 MOhm	1.903MOhm	5.00kOhm	0.158%	60%	Pass
40 MOhm Range						
35	19.00 MOhm	19.03MOhm	220.00kOhm	0.158%	14%	Pass
CONDUCTANCE TEST						
40nS Range						
36	10.00 nS	9.96nS	200.00pS	-0.400%	20%	Pass

Test	Parameter	----- Unit Under Test -----			ERROR in		User
		Reading	Tolerance	UUT Error	(% of TOL)		
CAPACITANCE TESTS							
5.00uF Range							
37	1.00 μ F	0.98 μ F	30.00nF	-2.00%	67%	Pass	
0.500uF Range							
38	0.470 μ F	0.468 μ F	7.00nF	-0.426%	29%	Pass	3.22
0.0500uF Range							
39	0.0470 μ F	0.0471 μ F	700.00pF	0.213%	14%	Pass	3.22
DIODE TEST							
40	3.000 V	2.990V	61.00mV	-0.333%	16%	Pass	
DC MILLIAMP TESTS							
DC MILLIAMP TESTS							
40mA Range							
40mA Range							
41	35.00 mA	35.02mA	90.00uA	571ppm	22%	Pass	
400mA Range							
42	350.0 mA	350.0mA	900.00uA	0.00ppm	0%	Pass	
AC MILLIAMP TESTS							
40mA Range							
43	35.00 mA @ 60 Hz	34.95mA	370.00uA	-0.143%	14%	Pass	
44	35.00 mA @ 1 kHz	35.00mA	370.00uA	0.00ppm	0%	Pass	
400mA Range							
45	350.0 mA @ 60 Hz	349.8mA	3.70mA	-571ppm	5%	Pass	
46	350.0 mA @ 1 kHz	350.2mA	3.70mA	571ppm	5%	Pass	
DC MICROAMP TESTS							
400uA Range							
47	350.0 μ A	350.1 μ A	1.00uA	286ppm	10%	Pass	
4000uA Range							
48	3500 μ A	3499 μ A	9.00uA	-286ppm	11%	Pass	
AC MICROAMP TESTS							
400uA Range							
49	350.0 μ A @ 60 Hz	349.4 μ A	3.70uA	-0.171%	16%	Pass	
50	350.0 μ A @ 1 kHz	349.9 μ A	3.70uA	-286ppm	3%	Pass	
4000uA Range							
51	3500 μ A @ 60 Hz	3495 μ A	37.00uA	-0.143%	14%	Pass	
52	3500 μ A @ 1 kHz	3499 μ A	37.00uA	-286ppm	3%	Pass	
DC AMP TESTS							
4000mA Range							
53	3500 mA	3500mA	9.00mA	0.00ppm	0%	Pass	4.00
10A Range							
54	10.00 A	10.00A	40.00mA	0.00ppm	0%	Pass	
AC AMP TESTS							
4000mA Range							
55	3500 mA @ 60 Hz	3496mA	37.00mA	-0.114%	11%	Pass	

Test	Parameter	----- Unit Under Test -----			ERROR in (% of TOL)	User
		Reading	Tolerance	UUT Error		
56	3500 mA @ 1 kHz	3500mA	37.00mA	0.00ppm	0%	Pass
10A Range						
57	10.00 A @ 60 Hz	10.05A	120.00mA	0.500%	42%	Pass
58	10.00 A @ 1 kHz	10.05A	120.00mA	0.500%	42%	Pass

End of Test Data



S Schweizerischer Kalibrierdienst

C Service suisse d'étalonnage

S Swiss Calibration Service

EN ISO/IEC 17025

Vom Bundesamt für Metrologie und Akkreditierung akkreditierte Kalibrierstelle
Calibration Laboratory accredited by the Swiss Federal Office of Metrologie and Accreditation

Akk. Nr. **042**

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Auftragsnummer: **6578**
Order number:

Zertifikat Nr.:
Certificate nr.:

3073

Kalibrier-Zertifikat Certificate of Calibration

page 1 of 4 pages

Gegenstand: Sicherheitstester
Object:

Hersteller: GMC
Manufacturer:

Typ: Profitest 204
Model:

Ident. Nummer: 5522 8968
Ident. number:

Auftraggeber: GMC-Instruments Schweiz AG 8052 Zürich
Customer:

Bemerkungen: Kalibration gemäss Messprotokoll. Sämtliche Messwerte liegen innerhalb der
Remarks: spezifizierten Toleranzen.

Doc No: 17400-1
ID No: 307

Datum der
Kalibrierung: 04.09.07
Date of calibration:

ELS-Elektronik GmbH
CH-8165 Schöfflisdorf
Datum / Date:

Leiter der Kalibrierstelle:
Head of Calibration Laboratory:

4. September 2007

K. Haus

Dieses Kalibrierzertifikat darf ohne die schriftliche Zustimmung des Laboratoriums nicht auszugsweise vervielfältigt werden. Messresultate, Messunsicherheiten mit Vertrauensbereich und Messverfahren sind auf den folgenden Seiten aufgeführt und sind Teil dieses Zertifikates. Dieses Kalibrierzertifikat dokumentiert die Rückführbarkeit auf nationale Normale zur Darstellung der physikalischen Einheiten (SI).

This calibration certificate shall not be reproduced except in full, without written approval of the laboratory. The measurements, the uncertainties with confidence probability and calibrations methods are given on the following pages and are part of the certificate. This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).

Auftragsnummer: **6578**
Order number:Zertifikat Nr.:
Certificate nr.:**3073****Kalibrierresultate / Calibration Results:**

Die angegebene erweiterte Messunsicherheit ist die Standardunsicherheit der Messung multipliziert mit einem Erweiterungsfaktor $k = 2$, was für eine Normalverteilung einem Vertrauensniveau von etwa 95 % entspricht.

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2$, which for a normal distribution corresponds to a coverage probability of approximately 95 %.

Test Conditions: Lab temperature $23^{\circ}\text{C} \pm 1^{\circ}\text{C}$, relative humidity $45 \pm 5 \%$

Object: Sicherheitstester
Manufacturer: GMC
Model: Profitest 204
Ident. number: 5522 8968**Measurement Instruments used:**

Manufacturer / Model	Ident. number	last calibration
Multimeter Metraport 32 S (HV DC)	KK7398	30.08.07
HV - Adapter 15 kVDC, Ri 20 GOhm	ELS 990108	30.08.07
Ref. Resistor 15 k - 100 MOhm	ELS 040312	01.06.07
Ref. Resistor 3 x 0,1 Ohm	ELS 951111	25.01.07
Ref. Resistor 20 - 100 MOhm	ELS 950828	24.10.06
Multimeter Fluke 187	90730130	05.04.07
Calibrator Fluke 5500 A	6425024	13.08.07

Auftragsnummer: **6578**
 Order number:

Zertifikat Nr.:
 Certificate nr.:

3073

Angelegter Wert	Anzeige Prüfling	Dim.	Freq.	Bereich	Abweichung	Messunsicherheit	Test
-----------------	------------------	------	-------	---------	------------	------------------	------

Schutzleitertest

I gemessen an 0.096 Ohm: 12.9 Aac						1.2E-02	OK
0.2848	0.286	Ohm	50 Hz		0.42%	4.1E-03	OK
gut /schlecht Anzeige							OK

Isolationsprüfung, U = 100 V DC, U gemessen an 10 MOhm : 126 Vdc						1.6E-02	OK
1.001	1.00	MOhm	DC	100 V	-0.10%	1.2E-02	OK
10.09	10.1				0.15%	1.1E-02	OK
90.34	92.4				2.28%	2.0E-03	OK

Isolationsprüfung, U = 250 V DC, U gemessen an 10 MOhm : 292 Vdc						6.9E-03	OK
1.001	1.00	MOhm	DC	250 V	-0.10%	1.2E-02	OK
10.07	10.0				-0.72%	1.2E-02	OK
90.34	91.5				1.28%	1.5E-03	OK

Isolationsprüfung, U = 500 V DC, U gemessen an 10 MOhm : 571 Vdc						3.7E-03	OK
1.001	1.00	MOhm	DC	500 V	-0.10%	1.2E-02	OK
10.07	10.1				0.27%	1.1E-02	OK
90.34	90.1				-0.27%	1.5E-03	OK

Isolationsprüfung, U = 1000 V DC, U gemessen an 20 GOhm : 1204 Vdc						1.9E-03	OK
1.001	1.00	MOhm	DC	1000 V	-0.10%	1.2E-02	OK
10.07	10.0				-0.72%	1.2E-02	OK
90.33	90.3				-0.03%	2.0E-03	OK

gut /schlecht Anzeige OK

Ableitstromprüfung

1.00	1.01	mA	50 Hz		1.00%	1.3E-02	OK
1.50	1.51				0.67%	8.4E-03	OK
2.00	2.02				1.00%	6.3E-03	OK
2.50	2.52				0.80%	5.1E-03	OK
5.00	5.02				0.40%	2.6E-03	OK

gut /schlecht Anzeige OK

Auftragsnummer: **6578**
Order number:Zertifikat Nr.:
Certificate nr.:**3073**

Angelegter Wert	Anzeige Prüfling	Dim.	Freq.	Bereich	Abweichung	Messunsicherheit	Test
Spannungsmessung							
115.0	115	V	DC		0.00%	1.0E-02	OK
230.0	229				-0.43%	5.0E-03	OK
400.0	398				-0.50%	2.9E-03	OK
1000.0	995				-0.50%	1.2E-03	OK
115.0	115	V	50 Hz		0.00%	1.0E-02	OK
230.0	230				0.00%	5.1E-03	OK
400.0	400				0.00%	3.0E-03	OK
1000.0	999				-0.10%	1.3E-03	OK
Frequenzmessung							
50.0	50.0	Hz			0.00%	2.3E-03	OK
60.0	60.0				0.00%	1.9E-03	OK
400.0	400				0.00%	2.9E-03	OK

Doc No: 21326-2
ID No: 410

Fournisseur Frewitt

Notre cde:

V/référence: 410

Article No.

Description: Etalonnage du spectromètre

Appareil de mesure / Messapparat / Measuring unit : Niton XLt 898 W Y Alloy Analyzer
 N° série / Serien-Nr. / Serial Nr. : 8251
 N° Certificat / Zertifikat-Nr. / Certificate Nr. : 35EN-04292005-IARM-P

No art. / Art Nr. / Art. ID: 2011 Dessin / Zeichnung / Drawing:

No art. / Art Nr. / Art. ID: 1	Matière Material Material	%																				
		Sb	Sn	Pd	Ag	Al	Mo	Nb	Zr	Bi	Pb	Se	W	Zn	Cu	Ni	Co	Fe	Mn	Cr	V	Ti
1	1.7357/1 1/4Cr	0.00	0.00	0.00	0.10	0.00	0.64	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.07	0.32	0.00	96.88	0.54	1.37	0.01	0.05
2	1.4301/05/11	0.01	0.00	0.00	0.11	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	8.13	0.31	71.58	1.19	18.19	0.10	0.01
3	1.4404 / SS316L	0.06	0.05	0.01	0.14	0.00	2.15	0.02	0.00	0.00	0.00	0.00	0.04	0.00	0.36	10.20	0.32	68.18	1.24	17.18	0.04	0.00

Protocole établi par (visa) H.Rey le 04.01.11
 Protokoll erstellt von (Visa) H.Rey am 04.01.11
 Report established by (Visa) H.Rey on 04.01.11

Apparail 409

Mitutoyo

Mitutoyo Corporation

20-1, Sakado 1-chome, Takatsu-ku,
Kawasaki, Kanagawa, 213-8533 Japan
Phone (044) 813-8230

ONE YEAR WARRANTY

Product Name Mitutoyo Sufitest SJ-301 Code No. _____

Serial No. 400197 Date Purchased _____

Mitutoyo Corporation conducts quality assurance under ISO 9000 certified quality system. This product conforms to the MITUTOYO inspection standard, and the standard (s) used for the calibration is /are traceable to the national/international standard (s).

In the event that this product should fail within one (1) year from the original date of purchase through normal use conforming to the User's Manual provided with the product and Warning Label(s) on the product, we will repair or replace at our option, free of charge, upon its prepaid return to Mitutoyo with this WARRANTY card.

* Purchaser is requested to fill the blank above and retain the warranty card at hand. Return card only when requesting Warranty Service.

Y. Yamamoto
Quality Assurance Office
Y. Yamamoto, Manager

This warranty shall not apply if the product and consumables have been subject to fair wear and tear, abuse through misuse or improper use/handling/storage/maintenance/service/repair or through adaptation/modification by the original purchase or any third party without prior written consent of Mitutoyo or as a result of damage by an actual disaster or circumstances beyond the control of Mitutoyo.

To obtain service under this warranty the product must be returned to the store/dealer you purchased from along with the warranty card. Any postage, insurance, or shipping charges incurred in returning the product for service are the responsibility of the purchaser.

* This warranty is not transferable and is only valid within the country of the original purchase.

* You may have additional rights under the laws of country of original purchase that do not allow the exclusion of implied warranties of the exclusion or limitation of certain damages if these laws apply. Mitutoyo's limitations and exclusions may not apply to you.

Quality Assurance under the ISO 9000 Registered Quality System

The latest status of the ISO9000 registration is posted on our website.
<http://www.mitutoyo.co.jp>

Doc No: 21327-2
ID No: 409

Mitutoyo Sufitest SJ-301

DATE 03-11-2010
HEURE 12:12:57

NORME ISO 1997
PROFIL R
FILTRE GAUSS
EVA-L 4.0mm
N 5
λc 0.8mm
λs 2.5μm
C. INCL IN. TOUS
VITESSE-M 0.5mm/s
PLAGE AUTO
ESC

PRE/POST ON
DRIVE STAND

R-PROFIL
EVA-L 4.0mm
λc 0.8mm X5
Ra 2.96μm

Mitutoyo

WA140 ⑫

保証書

商品名 _____ コード番号 _____

製造番号 _____ お買い上げ日 _____

(お願い) お買い上げの際、上記各欄の必要な項目についてご記入ください。

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 - ◆ 異常電圧、指定外の使用電源(電圧、周波数)による故障または損傷
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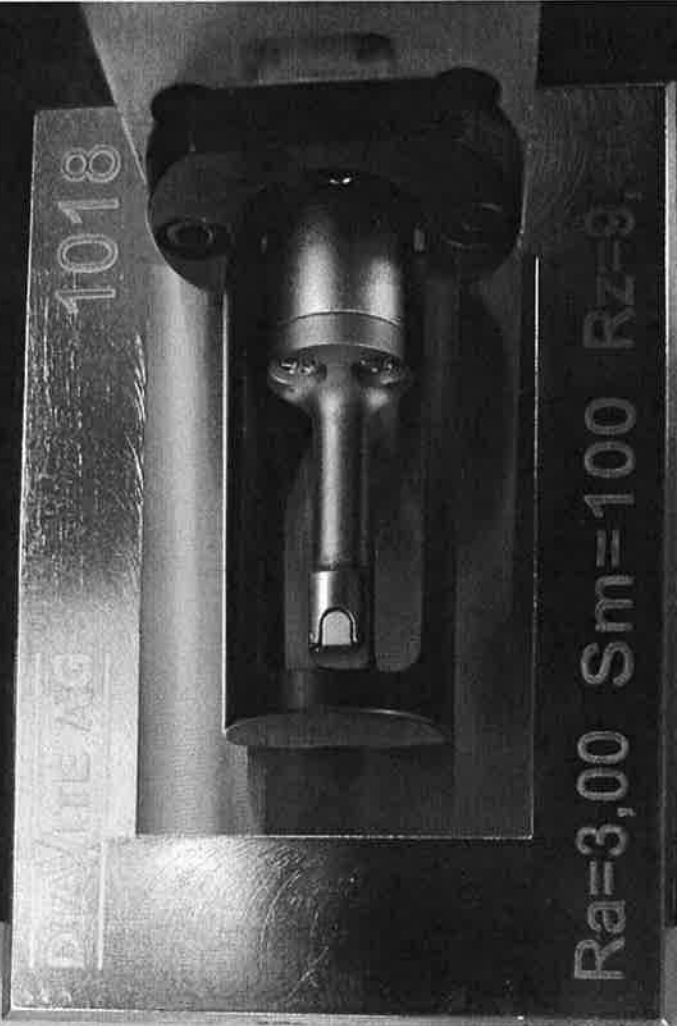
Surftest SJ-301

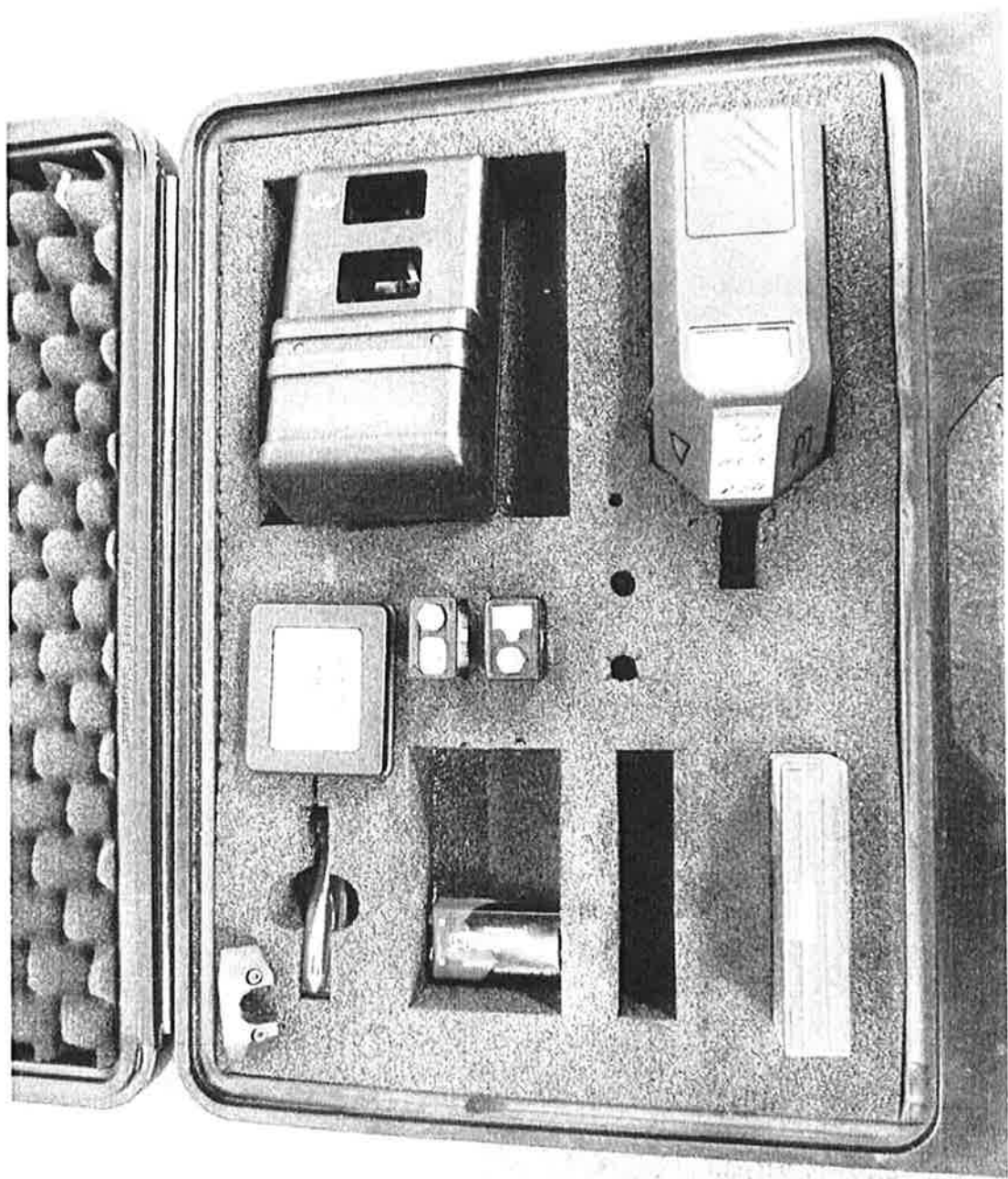
DATE 09-05-2011
HEURE 14:58:11

NORME ISO1997
PROFIL R
FILTRE GAUSS
EVAL 4.0mm
N 5
 λ_c 0.8mm
 λ_s 2.5 μ m
C. INCLIN. TOUS
VITESSE-M 0.5mm/s
PLAGE AUTO
PRE/POST ESC
DRIVE ON
STAND

R-PROFIL

EVAL 4.0mm
 λ_c 0.8mmX5
Ra 2.93 μ m





ATEX

Voir classeur annexé.

Siehe beiliegender Ordner.

See additional binder.

Informations complémentaires pour machines Eex Conditions spéciales « X »	Zusatz - Sicherheitshinweise EEx- Maschinen Besondere Bedingungen « X »	Additional information for EEx-Machines Special conditions « X »
Machines à fragmenter Ligne ConiWitt / TurboWitt	Zerkleinerungs- Siebmaschinen ConiWitt / TurboWitt Reihe	Sizing & sieving mills ConiWitt / TurboWitt - Line

Indications de sécurité :

L'installation ne peut être qu'utilisée dans les conditions admises, décrites dans le manuel d'utilisation standard.

Une utilisation non conforme de l'installation ou une mise en service de l'installation sans respecter le mode d'emploi peut entraîner une annulation de garantie du fabricant.

Les modifications et corrections de l'installation qui influencent la protection antidéflagrante ne sont pas permises.

- La protection de l'installation contre une surpression, coups de bélier (à cause d'une explosion) et une augmentation de température non admise et une mauvaise direction de rotation est à prévoir du côté de l'utilisateur. Sauf information contraire dans le mode d'emploi, l'installation n'est pas conçue pour retenir une explosion.
- La détérioration de l'installation par l'utilisateur doit être prise en considération et être exclue d'une manière efficace.

Sicherheitshinweise :

Verwenden Sie das Betriebsmittel nur für den zugelassenen Einsatzzweck, wie beschrieben in der Standardbetriebsanleitung.

Fehlerhafter oder unzulässiger Einsatz sowie das Nichtbeachten der Hinweise dieser Sicherheitshinweise schliesst eine Gewährleistung seitens FREWITT SA aus.

Umbauten sowie Veränderungen am Betriebsmittel, die den Explosionsschutz beeinträchtigen, sind nicht gestattet.

- Die Absicherung der Maschine gegen Überdruck, Druckstoss (durch eine Explosion), unzulässige Temperaturerhöhung und falsche Drehrichtung ist betreiberseitig zu gewährleisten. Wenn nicht Gegenteiliges in der Gebrauchsanweisung beschrieben ist, ist die Maschine nicht druckstossfest ausgeführt.
- Der absichtliche Missbrauch der Maschine durch den Betreiber muss in Betracht gezogen und auf eine wirksame Weise ausgeschlossen werden.

Safety Indications :

Do only use the machine in the allowed conditions and purposes, as described in the standard operating instructions of the machine.

In case of a non-conform use of the machine, as well as a start-up of the machine without consulting the instruction manual excludes further guarantee of the machine by FREWITT SA.

Modifications and adaptations on the machine that modified the explosion protection are not allowed.

- Protection against a not allowed Pressure level, pressure wave (due to an explosion), temperature and a wrong rotation direction has to be implemented by the user. Except contrary information in the instruction manual, the machine is NOT pressure shock resistant.
- Furthermore, avoiding the abuse of the machine is also duty of the user.

Conditions spéciales «X»:

Basées sur les justifications thermiques, les conditions suivantes ont été fixées :

- La température ambiante pendant le fonctionnement de l'installation est limitée de Temp $\geq -20^{\circ}\text{C}$ à $\leq +28^{\circ}\text{C}$ sans filtre et de $\geq -20^{\circ}\text{C}$ à $\leq +30^{\circ}\text{C}$ avec filtre.

L'installation est conçue sans tenir compte des dangers induits par la matière à fragmenter.

L'utilisateur doit par sa propre responsabilité écarter tout risque d'explosion pour garantir l'utilisation correcte de l'installation

L'installation est, selon son équipement, utilisable dans les zones à dangers d'explosion pour les **zones 0 ou 20**. (voir plaquette signalétique).

Toutes les pièces mécaniques, directement en contact avec le produit, sont approuvées pour les **zones 0 et 20** (voir plaquette signalétique).

Besondere Bedingungen «X»:

Aufgrund des internen Prüfberichtes wurden die folgenden Bedingungen definiert.

- Die Umgebungstemperatur im Betrieb ist begrenzt von $\geq -20^{\circ}\text{C}$ bis $\leq +28^{\circ}\text{C}$ ohne Filter und von $\geq -20^{\circ}\text{C}$ bis $\leq +30^{\circ}\text{C}$ mit Filter.

Das Betriebsmittel ist ohne Berücksichtigung allfälliger Gefährdungen der zu verarbeiteten Feststoffe konzipiert worden.

Der Betreiber muss in eigener Verantwortung dafür Sorge tragen, dass Explosionsrisiken ausgeschlossen werden, die ein ordnungsgemäßes Betreiben der Anlage verhindern.

Das Betriebsmittel ist je nach Ausführung für den Einsatz in explosionsgefährdeten Zonen der **Zonen 0 oder 20** zugelassen (siehe Typenschild).

Alle mechanischen Teilen, die direkt mit den zu verarbeiteten Stoffen in Kontakt kommen, sind für die **Zonen 0 und 20** geeignet (siehe Typenschild).

Special conditions « X »:

In accordance to the internal thermal tests, the next conditions are allowed:

- The ambient temperature Tamb is limited from Tamb $\geq -20^{\circ}\text{C}$ to $\leq +28^{\circ}\text{C}$ without filters and from $\geq -20^{\circ}\text{C}$ to $\leq +30^{\circ}\text{C}$ with filters.

The machine is been developed without consideration of all kinds of danger due to the used solids in the machine.

The user of the machine has to take care avoid any explosion risk to guarantee the proper functioning of the machine.

The machine is depending on the execution allowed to be used in a hazardous environment in the **zone 0 or 20** (see name plate).

All the mechanical parts, direct in contact with the treated material, are all allowed for the **zone 0 and 20** (see name plate).

Indications et recommandations techniques pour l'utilisation conforme à l'installation

Les caractéristiques des produits utilisés sur l'installation doivent correspondre aux exigences selon la « Table 1 : Caractéristiques spécifiques des produits »

Caractéristiques thermique	Valeur « Pous-sière »	Valeur « Gaz »
Température d'allumage minimale pour les gaz		T4
Température d'allumage minimale d'une couche de poussière	> 232°C	
Température d'allumage minimale d'un nuage de poussière	> 235°C	
Energie d'allumage minimale	>1 mJ	>1 mJ

Table 1 : caractéristiques spécifiques des produits

Angaben und sicherheitstechnische Limitierungen zur bestimmungsgemässen Verwendung :

Die Eigenschaften der verwendeten Feststoffe müssen Kennzahlen gemäss « Table 1: Produktspezifischen Daten » erfüllen.

Brenneigenschaften	Kennzahl « Staub »	Kennzahl « Gas »
Minimale Zündtemperatur für Gase		T4
Mindestzündtemperatur einer Staubschicht	> 232°C	
Mindestzündtemperatur einer Staubwolke	> 235°C	
Mindest Zündenergie	>1 mJ	>1 mJ

Table 1 :Produktspezifischen Daten

Dedicated use: Indications and safety limitations

The properties of the solids used on the machine have to correspond with « Table 1: Product specific Information ».

Fire characteristics	Value « Dust »	Value « Gas »
Minimum ignition temperature for gas		T4
Minimum striking temperature of a dust film	> 232°C	
Minimum ignition temperature of a dust cloud	> 235°C	
Minimum ignition energy	>1 mJ	>1 mJ

Table 1: product specific Information

- Uniquement les solvants ou les produits contenant des solvants du groupe de gaz IIA, IIB peuvent être utilisés sur l'installation. **Pour les machines en exécution IIC - les solvants du groupe IIC (seulement à l'extérieur de la machine) peuvent être utilisés.**
- L'obstruction du treillis par le produit peut engendrer une augmentation de la température du produit et provoquer une explosion. L'obstruction du treillis par le produit est une situation qui n'est pas permise. Le passage du produit doit être continuellement garanti par l'utilisateur.
- Les produits utilisés dans l'installation ne doivent pas être sensibles aux chocs mécaniques. Les particules étrangères dans le produit ne sont pas admises.

- Es dürfen nur organische Lösungsmittel oder lösungsmittelhaltige Feststoffe verwendet werden, die der Gasgruppe IIA oder IIB entsprechen. **Für die Maschinen in IIC-Ausführung dürfen entsprechende Lösungsmittel nur ausserhalb der Maschine verwendet werden.**
- Verstopfungen im oder am Sieb können zu Temperaturerhöhungen führen und eine Explosion auslösen. Das Verstopfen im oder am Sieb ist unter allen Umständen zu vermeiden. Vom Betreiber ist der kontinuierliche Durchsatz sicher zu stellen.
- Es dürfen ausschliesslich schlagunempfindliche und fremdkörperfreie Feststoffen verarbeitet werden.

- It is only allowed to use solvents or solvent-contained solids that correspond to the gas-group IIA or IIB. **For machines in IIC execution - only solvents group IIC (only outside the machine) can be used.**
- Obstruction of the screen by the solids may increase the temperature and cause an explosion. The obstruction of the screen is not allowed. The conditions to avoid obstruction have to be assured by the user.
- The used solids may not be shock-sensitive. Foreigner particles in the product are not allowed.

- Si dans le cas où l'évaluation des risques d'explosion finale, rédigée par l'utilisateur, ne couvre pas entièrement l'analyse de risques de l'installation, un cahier des charges de la part de l'utilisateur doit être transmis pour permettre une nouvelle appréciation des risques.
- Führt die Bewertung der Betreiber zu dem Ergebnis, dass das Risiko oberhalb des tolerierbaren Risikos liegt, so muss ein detailliertes Pflichtenheft abgegeben werden, woraus anschließend mittels einer erneuten Risikobeurteilung weitere Schutzmassnahmen berücksichtigt werden.
- Adequate precautions has to be taken if the risk assessment results in the fact that the risk is higher than the tolerable risk. In this case, a user specifications has to be transmitted to Frewitt.. Afterwards a new risk assessment has to be realised.

Faire attention aux points suivants pendant le montage, la mise en service et le fonctionnement de l'installation :

- Indications de sécurité de ce mode d'emploi.
- les indices et conditions de fonctionnement de la plaque signalétique.
- Les indications supplémentaires sur l'installation.
- Les certificats Atex , les certificats de conformité et les certificats des pièces détachées et leur contenu concernant les conditions spéciales de fonctionnement.
- Les différents modes d'emploi, instructions de montage et d'utilisation et prescriptions de sécurité des éléments installés sur l'installation.
- Les endommagements, les corrections et les modifications sans permission excluent une garantie de la part du fabricant.
- On ne peut dans aucun cas, dû a une source de chaleur extérieure, constater une augmentation de la température de la surface de l'installation pendant le fonctionnement de l'installation.
- Les normes de sécurité, de montage et de mise en service nationale, ainsi que les règles de la technique sont également à appliquer.

Bei Errichtung und Betrieb ist Folgendes unbedingt zu beachten:

- Die Sicherheitshinweise in der Betriebsanleitung
- Die Kennwerte und Betriebsbedingungen gemäss der Typen- und Datenschilder
- Die zusätzlichen Hinweisschilder auf dem Betriebsmittel
- Die EG Baumusterprüfbescheinigung (nach ATEX 94/9/EG), der Konformitätsnachweis bzw. die Konformitäts- oder Teilbescheinigungen (nach bisheriger Zulassung) und die darin enthaltenen besonderen Bedingungen (falls vorhanden)
- Sämtliche Bedienungsanleitungen, Montage-, Anwendungs- und Sicherheitsvorschriften der im Betriebsmittel „Zerkleinerungsmaschine ConiWitt / TurboWitt“ eingebauten Geräte.
- Bei der Installation ist speziell zu beachten, dass das Betriebsmittel „Zerkleinerungsmaschine ConiWitt / TurboWitt“ nicht zusätzlich aufgewärmt wird. Die zulässigen Oberflächentemperaturen dürfen auf keinen Fall überschritten werden
- Die nationalen Sicherheits-, Montage- und Errichtungsvorschriften sowie die allgemein anerkannten und gültigen Regeln der Technik

Pay attention to the next points during the assembly, start-up and during running of the machine:

- Safety indications in the instruction manual
- The conditions of installation and connections according to the label
- additional indications on the machine
- The-Atex-certificates , conformity-certificates and the individual certificates of the parts and there explanations concerning special conditions
- Different instruction manuals, assembly and user instructions of the elements installed on the ConiWitt / TurboWitt sieving machine.
- Damage, adaptations and modifications without permission excludes further guarantee of the machine by Frewitt.
- It is not allowed to increase the temperature of the surface of the machine due to external sources during the functioning of the ConiWitt / TurboWitt sieving machine.
- National Safety norms, national assembly and start-up formalities, as well as technical rules are also applicable.

En cas de non-respect des instructions, ou en cas d'endommagement, de modifications non-conformes de l'installation, la certification selon ATEX 94/9/CE n'est plus valide.

Werden die genannten Hinweise nicht beachtet oder weist das Betriebsmittel Beschädigungen auf oder wurden zusätzliche nicht bewilligte Einbauten angebracht, wird der Zertifizierung nach ATEX 94/9/EG automatisch ungültig.

In case of non respect of the indications, damage occurred to the installation, or non conform modifications have been realised, the ATEX 94/9/EC certification is not valid anymore.

Informations complémentaires pour machines Eex
Conditions spéciales « X »

Zusatz - Sicherheitshinweise EEx- Maschinen
Besondere Bedingungen « X »

Additional information for EEx-Machines
Special conditions « X »

Extracteur ProFi-Sword

Austragshilfe ProFi-Sword

Discharge help ProFi-Sword

Indications de sécurité :

L'installation ne peut être qu'utilisée dans les conditions admises, décrites dans le manuel d'utilisation standard.

Une utilisation non conforme de l'installation ou une mise en service de l'installation sans respecter le mode d'emploi peut entraîner une annulation de garantie du fabricant.

Les modifications et corrections de l'installation qui influencent la protection antidéflagrante ne sont pas permises.

- La protection de l'installation contre une surpression, coups de bélier (à cause d'une explosion) et une augmentation de température non admise est à prévoir du côté de l'utilisateur. L'installation n'est pas conçue pour retenir une explosion.
- La détérioration de l'installation par l'utilisateur doit être prise en considération et être exclue d'une manière efficace.

Sicherheitshinweise :

Verwenden Sie das Betriebsmittel nur für den zugelassenen Einsatzzweck, wie beschrieben in der Standard Betriebsanleitung.

Fehlerhafter oder unzulässiger Einsatz sowie das Nichtbeachten der Hinweise dieser Sicherheitshinweise schließt eine Gewährleistung des Herstellers.

Umbauten sowie Veränderungen am Betriebsmittel, die den Explosionsschutz beeinträchtigen, sind nicht gestattet.

- Die Absicherung der Maschine gegen unzulässigen Druck, Druckstoss, Temperatur und falsche Drehrichtung ist Anlagenseitig zu gewährleisten. Die Maschine ist nicht Druckstossfest gebaut.
- Weiterhin muss ein absichtlicher Missbrauch vom Betreiber in Betracht gezogen werden.

Safety Indications :

Do only use the machine in the allowed conditions and purposes, as described in the standard operating instructions of the machine.

In case of a non-conform use of the machine, as well as a start-up of the machine without consulting the instruction manual excludes further guarantee of the manufacturer

Modifications and adaptations on the machine that modified the explosion protection are not allowed.

- Protection against a not allowed Pressure level, pressure wave (due to an explosion), temperature and a wrong rotation direction has to be implemented by the user. The machine does NOT resist to an explosion.
- Furthermore, avoiding the abuse of the machine is also duty of the user.

Conditions spéciales «X» :

Basées sur les justifications thermiques, les conditions suivantes ont été fixées :

- La température ambiante pendant le fonctionnement de l'installation est limitée de Temp $\geq -20^{\circ}\text{C}$ à $\leq +40^{\circ}\text{C}$

L'installation est conçue sans tenir compte des dangers induits par la matière à fragmenter.

L'utilisateur doit par sa propre responsabilité écarter tout risque d'explosion pour garantir l'utilisation correcte de l'installation

L'installation est, selon son équipement, utilisable dans les zones à dangers d'explosion pour les **zones 1 ou 21**. (voir plaquette signalétique)

Toutes les pièces mécaniques, directement en contact avec le produit, sont approuvées pour les **zones 1 et 21**.

Besondere Bedingungen «X»:

Aufgrund des internen Prüfberichtes wurden die folgenden besonderen Bedingungen definiert.

- Die Umgebungstemperatur im Betrieb ist begrenzt von -20°C bis $+40^{\circ}\text{C}$

Das Betriebsmittel ist konzipiert ohne Berücksichtigung allfälliger Gefährdungen der zu verarbeiteten Feststoffe

Der Betreiber muss in eigener Verantwortung dafür sorgen, dass allfällige Gefährdungen der Feststoffe im Explosionsschutzdokument berücksichtigt werden.

Das Betriebsmittel ist je nach Ausführung für den Einsatz in den **Zonen 1 oder 21** zugelassen (siehe Typenschild)

Alle mechanischen Teilen, die direkt mit den zu verarbeiteten Stoffen in Kontakt kommen, sind für die **Zonen 1 und 21** geeignet.

Special conditions « X » :

In accordance to the internal thermal tests, the next conditions are allowed :

- The environment temperature Tamb is limited : - Tamb $\geq -20^{\circ}\text{C}$ till $\leq +40^{\circ}\text{C}$.

The machine is been developed without consideration of all kinds of danger due to the used solids in the machine.

The user of the machine has to take care of the explosion risk assessment to guarantee the proper functioning of the machine.

The machine is depending on the execution allowed to be used in a hazardous environment in the **zone 1 or 21** (see label on machine)

All the mechanical parts, direct in contact with the treated material, are all allowed for the **zone 1 and 21**.

Indications et recommandations techniques pour l'utilisation conforme à l'installation

Les caractéristiques des produits utilisés sur l'installation doivent correspondre aux exigences selon la « Table 1 : Caractéristiques spécifiques des produits »

Angaben und Sicherheits-technische Limitierungen zur bestimmungsgemässer Verwendung :

Die Eigenschaften der verwendeten Feststoffe müssen Kennzahlen gemäss « Table 1: Produktspezifischen Daten » erfüllen.

Dedicated use: Indications and safety limitations

The properties of the solids used on the machine has to correspond with« Table 1: product specific Information ».

Caractéristiques thermiques	Valeur « Pous-sière »	Valeur « Gaz »
Température d'allumage minimale pour les gaz		T4
Température d'allumage minimale d'une couche de poussière	> 200°C	
Température d'allumage minimale d'un nuage de poussière	> 187°C	
Energie d'allumage minimale	>1 mJ	>1 mJ

Table 1 : caractéristiques spécifiques des produits

Brenneigenschaften	Kennzahl « Staub »	Kennzahl « Gas »
Minimale Zündtemperatur für Gase		T4
Mindestzündtemperatur einer Staubschicht	> 200°C	
Mindestzündtemperatur einer Staubwolke	> 187°C	
Mindestzündenergie	>1 mJ	>1 mJ

Table 1 :Produktspezifischen Daten

Fire characteristics	Value « Dust »	Value « Gas »
Minimum ignition temperature for gas		T4
Minimum striking temperature of a dust film	> 200°C	
Minimum ignition temperature of a dust cloud	> 187°C	
Minimum ignition energy	>1 mJ	>1 mJ

Table 1: product specific Information

- Uniquement les solvants ou les produits contenant des solvants du groupe de gaz IIA et IIB peuvent être utilisés sur l'installation.

- Es dürfen nur Organische Lösungsmittel oder Lösungsmittelhaltenden Feststoffen verwendet werden, die die Gasgruppe IIA oder IIB entsprechen.

- It is only allowed to use solvents or solvent-contained solids that correspond to the gas-group IIA or IIB.

Faire attention aux points suivants pendant le montage, la mise en service et le fonctionnement de l'installation :

- Indications de sécurité de ce mode d'emploi.
- les indices et conditions de fonctionnement de la plaque signalétique.
- Les indications supplémentaires sur l'installation.
- Les certificats Atex , les certificats de conformité et les certificats des pièces détachées et leur contenu concernant les conditions spéciales de fonctionnement.
- Les différents modes d'emploi, instructions de montage et d'utilisation et prescriptions de sécurité des éléments installés sur l'installation.
- Les endommagements, les corrections et les modifications sans permission excluent une garantie de la part du fabricant. Durant le fonctionnement de l'installation, il faut exclure toute augmentation de la température de la surface due à une source de chaleur externe.
- Les normes de sécurité, de montage et de mise en service nationale, ainsi que les règles de la technique sont également à appliquer.

Bei Errichtung und Betrieb ist Folgendes unbedingt zu beachten :

- Die Sicherheitshinweise in der Betriebsanleitung
- Die Kennwerte und Betriebsbedingungen gemäß der Typen- und Datenschilder
- Die zusätzlichen Hinweisschilder auf dem Betriebsmittel
- Die EG - Baumusterprüfbescheinigung (nach ATEX 94/9/EG), der Konformitätsnachweis bzw. die Konformitäts- oder Teilbescheinigungen (nach bisheriger Zulassung) und die darin enthaltenen besonderen Bedingungen (falls vorhanden)
- Sämtliche Bedienungsanleitungen, Montage-, Anwendungs- und Sicherheitsvorschriften der im Betriebsmittel eingebauten Geräte. Bei der Installation ist speziell zu beachten, dass das Betriebsmittel nicht zusätzlich aufgewärmt wird. Die zulässigen Oberflächentemperaturen dürfen auf keinen Fall überschritten werden
- Die nationalen Sicherheits-, Montage- und Errichtungsvorschriften sowie die allgemein anerkannten und gültigen Regeln der Technik.

Pay attention to the next points during the assembly, start-up and during running of the machine :

- Safety indications in the instruction manual
- The conditions of installation and connections according to the label
- additional indications on the machine
- The-Atex-certificates , conformity-certificates and the individual certificates of the parts and there explanations concerning special conditions
- Different instruction manuals, assembly and user instructions , safety instructions of the elements installed on the machine.
- Damage, adaptations and modifications without permission excludes further guarantee of the machine by Frewitt. It is not allowed to increase the temperature of the surface of the machine due to external sources during the functioning of the machine.
- National Safety norms, national assembly and start-up formalities, as well as technical rules are also applicable.

Calibration avant la première mise en service :

Le ProFi-Sword ne peut en aucun cas être branché directement au réseau électrique. L'utilisation d'un appareil de limitation de courant au démarrage est nécessaire comme par exemple un démarreur progressif.
 La puissance de démarrage doit être limitée à 0,75kW

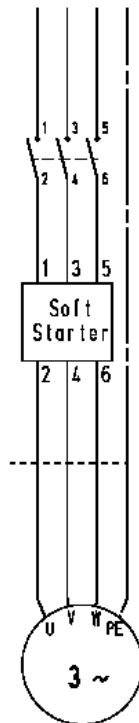
Kalibrieren vor der ersten Inbetriebnahme:

Der ProFi-Sword darf keinesfalls direkt an das elektrische Stromnetz angeschlossen werden. Es ist notwendig, ein Anlauf-Stromreduktionsgerät, wie z.B. einen Progressiv-Starter zu benutzen.

Die Startleistung muss auf 0,75kW begrenzt werden.

Calibration before the first application:

Never connect the ProFi-Sword directly to the electric network. It is necessary to use a starting current reduction e.g. a progressive starter. Starting power has to be limited at 0,75kW.



En cas de non-respect des instructions, ou en cas de dommages, de modifications non-conformes de l'installation, la certification selon ATEX 94/9/CE n'est plus valide.

Werden die genannten Hinweise nicht beachtet oder weist das Betriebsmittel Beschädigungen auf oder wurden zusätzliche nicht bewilligte Einbauten angebracht, wird der Explosionsschutz nach ATEX 94/9/EG automatisch aufgehoben.

In case of non respect of the indications, damage occurred to the installation, or non conform modifications have been realised, the ATEX 94/9/EC certification is not valid anymore.

Mesures de protection particulières pour la chambre de broyage en zone ATEX

Selon les Informations complémentaires pour machines EEx Conditions spéciales « X », l'obstruction du treillis par le produit est une situation qui n'est pas permise. Le passage du produit doit être continuellement garanti par l'utilisateur. L'obstruction du treillis par le produit peut engendrer une augmentation de la température du produit et provoquer de cette manière une explosion.

Des mesures particulières doivent être prises par l'utilisateur, en fonction de la catégorie de la chambre de broyage (voir plaquette signalétique de l'appareil) :

Besondere Schutzmassnahmen für die Zermahlkammer in ATEX Zone

Gemäss den Zusatz - und Sicherheits-hinweise für EEx- Maschinen, besondere Bedingungen « X », ist das Verstopfen des Siebes durch das Produkt unter allen Umständen zu vermeiden. Der kontinuierliche Durchsatz ist vom Benutzer sicher zu stellen. Verstopfungen des Siebes können zu Temperaturerhöhungen des Produktes führen und eine Explosion auslösen.

Besondere Massnahmen müssen vom Benutzer gemäss der Kategorie der Zermahlkammer ergriffen werden (siehe Typenschild der Maschine):

Particular protection measures for milling chamber in ATEX zone

According to the additional information for EEx-Machines Special conditions « X », the obstruction of the screen is not allowed. The conditions to avoid obstruction have to be assured by the user. Obstruction of the screen by the product may increase the temperature and cause an explosion.

Particular measures must be taken by the user, according to the category of the milling chamber (see name plate on the machine):

		Validation du processus Validation des Prozesses Validation of the process	Surveillance / suppression de la source d'allumage Zündquellen-Überwachung / Abschaffung Monitoring / Suppression of the source of ignition	Surveillance constante de l'écoulement Stetige Durchflussüberwachung Continuously throughput monitoring	Observation périodique de l'écoulement Periodische Durchfluss-Beobachtung Periodic observation of the throughput	Surveillance du temps de vidange Überwachung der Entleerungszeit Monitoring of the emptying time
Catégorie 1 Kategorie 1 Category 1 (Zone 0 / 20)	Mesures / Maßnahmen / Measures ou / oder / or		X	X		
	Mesures / Maßnahmen / Measures ou / oder / or		X		X	
	Mesures / Maßnahmen / Measures		X			X
Catégorie 2 Kategorie 2 Category 2 (Zone 1 / 21)	Mesure / Maßnahme / Measure ou / oder / or		X			
	Mesure / Maßnahme / Measure ou / oder / or			X		
	Mesure / Maßnahme / Measure ou / oder / or				X	
	Mesure / Maßnahme / Measure					X
Catégorie 3 Kategorie 3 Category 3 (Zone 2 / 22)	Mesure / Maßnahme / Measure	X				

Exemple de mise en place de ces mesures :

Beispiel der Einführung dieser Massnahmen :

Example of the introduction of these measures:

Measures	Massnahmen	Measures	Critères	Kriterien	Criteria	Application	Anwendung	Application
Validation du processus	<ul style="list-style-type: none"> Le passage du produit peut être garanti par un test de validation du processus 	<ul style="list-style-type: none"> Le passage du produit peut être garanti par un test de validation du processus 	<ul style="list-style-type: none"> En fonctionnement normal, le produit passe correctement à travers le tamis et aucune obstruction n'est constatée 	<ul style="list-style-type: none"> En fonctionnement normal, le produit passe correctement à travers le tamis et aucune obstruction n'est constatée 	<ul style="list-style-type: none"> En fonctionnement normal, le produit passe correctement à travers le tamis et aucune obstruction n'est constatée 	<ul style="list-style-type: none"> Catégorie 3 	<ul style="list-style-type: none"> Catégorie 3 	<ul style="list-style-type: none"> Catégorie 3
Surveillance de la source d'allumage au moyen de sondes de températures	<ul style="list-style-type: none"> Intégration d'une sonde de température en contact avec le tamis pour surveiller la température du produit dans la chambre de broyage 	<ul style="list-style-type: none"> Intégration d'une sonde de température en contact avec le tamis pour surveiller la température du produit dans la chambre de broyage 	<ul style="list-style-type: none"> La machine est déclenchée si la température dépasse la valeur limite. Cette option doit être installée par Frewitt 	<ul style="list-style-type: none"> La machine est déclenchée si la température dépasse la valeur limite. Cette option doit être installée par Frewitt 	<ul style="list-style-type: none"> La machine est déclenchée si la température dépasse la valeur limite. Cette option doit être installée par Frewitt 	<ul style="list-style-type: none"> Catégorie 1 Catégorie 2 	<ul style="list-style-type: none"> Catégorie 1 Catégorie 2 	<ul style="list-style-type: none"> Catégorie 1 Catégorie 2
Surveillance constante de l'écoulement	<ul style="list-style-type: none"> Pour machine intégrée dans une installation de dosage, surveillance de l'évolution du poids 	<ul style="list-style-type: none"> Pour machine intégrée dans une installation de dosage, surveillance de l'évolution du poids 	<ul style="list-style-type: none"> La machine est déclenchée automatiquement si aucun produit ne s'écoule de la machine 	<ul style="list-style-type: none"> La machine est déclenchée automatiquement si aucun produit ne s'écoule de la machine 	<ul style="list-style-type: none"> La machine est déclenchée automatiquement si aucun produit ne s'écoule de la machine 	<ul style="list-style-type: none"> Catégorie 1 Catégorie 2 	<ul style="list-style-type: none"> Catégorie 1 Catégorie 2 	<ul style="list-style-type: none"> Catégorie 1 Catégorie 2
Observation périodique de l'écoulement	<ul style="list-style-type: none"> Observation visuelle de l'écoulement du produit (verre de regard, système ouvert, etc...) Prise d'échantillon de produit à intervalle périodique à la sortie de la machine. 	<ul style="list-style-type: none"> Observation visuelle de l'écoulement du produit (verre de regard, système ouvert, etc...) Prise d'échantillon de produit à intervalle périodique à la sortie de la machine. 	<ul style="list-style-type: none"> La machine est déclenchée manuellement si aucun produit ne s'écoule de la machine 	<ul style="list-style-type: none"> La machine est déclenchée manuellement si aucun produit ne s'écoule de la machine 	<ul style="list-style-type: none"> La machine est déclenchée manuellement si aucun produit ne s'écoule de la machine 	<ul style="list-style-type: none"> Catégorie 1 Catégorie 2 	<ul style="list-style-type: none"> Catégorie 1 Catégorie 2 	<ul style="list-style-type: none"> Catégorie 1 Catégorie 2
Surveillance du temps de vidange (uniquement pour petit batch)	<ul style="list-style-type: none"> En fonctionnement normal, le temps de vidange d'un batch est validé par un test 	<ul style="list-style-type: none"> En fonctionnement normal, le temps de vidange d'un batch est validé par un test 	<ul style="list-style-type: none"> La machine est automatiquement déclenchée après 120% du temps de vidange en fonctionnement normal 	<ul style="list-style-type: none"> La machine est automatiquement déclenchée après 120% du temps de vidange en fonctionnement normal 	<ul style="list-style-type: none"> La machine est automatiquement déclenchée après 120% du temps de vidange en fonctionnement normal 	<ul style="list-style-type: none"> Uniquement pour un temps de vidange en fonctionnement normal ne dépassant pas 20 minutes Catégorie 1 Catégorie 2 	<ul style="list-style-type: none"> Uniquement pour un temps de vidange en fonctionnement normal ne dépassant pas 20 minutes Catégorie 1 Catégorie 2 	<ul style="list-style-type: none"> Uniquement pour un temps de vidange en fonctionnement normal ne dépassant pas 20 minutes Catégorie 1 Catégorie 2
Validation des Processus	<ul style="list-style-type: none"> Der Durchfluss des Produktes kann durch einen Test der Bewertung des Vorgangs garantiert werden 	<ul style="list-style-type: none"> Der Durchfluss des Produktes kann durch einen Test der Bewertung des Vorgangs garantiert werden 	<ul style="list-style-type: none"> Bei Normalfunktion fliesst das Produkt korrekt durch das Sieb, und keine Obstruktion wird festgestellt 	<ul style="list-style-type: none"> Bei Normalfunktion fliesst das Produkt korrekt durch das Sieb, und keine Obstruktion wird festgestellt 	<ul style="list-style-type: none"> Bei Normalfunktion fliesst das Produkt korrekt durch das Sieb, und keine Obstruktion wird festgestellt 	<ul style="list-style-type: none"> Kategorie 3 	<ul style="list-style-type: none"> Kategorie 3 	<ul style="list-style-type: none"> Kategorie 3
Zündquellenüberwachung	<ul style="list-style-type: none"> Integration einer Temperatursonde in Kontakt mit dem Sieb, um die Temperatur des Produktes in der Zermahlkammer zu überwachen 	<ul style="list-style-type: none"> Integration einer Temperatursonde in Kontakt mit dem Sieb, um die Temperatur des Produktes in der Zermahlkammer zu überwachen 	<ul style="list-style-type: none"> Die Maschine wird angehalten, sobald die Temperatur den Grenzwert überschreitet. Diese Option muss durch Frewitt installiert werden 	<ul style="list-style-type: none"> Die Maschine wird angehalten, sobald die Temperatur den Grenzwert überschreitet. Diese Option muss durch Frewitt installiert werden 	<ul style="list-style-type: none"> Die Maschine wird angehalten, sobald die Temperatur den Grenzwert überschreitet. Diese Option muss durch Frewitt installiert werden 	<ul style="list-style-type: none"> Kategorie 1 Kategorie 2 	<ul style="list-style-type: none"> Kategorie 1 Kategorie 2 	<ul style="list-style-type: none"> Kategorie 1 Kategorie 2
Stetige Durchflussüberwachung	<ul style="list-style-type: none"> Für eine Maschine, die in einer Dosiervorrichtung integriert ist, Überwachung der Entwicklung des Gewichtes 	<ul style="list-style-type: none"> Für eine Maschine, die in einer Dosiervorrichtung integriert ist, Überwachung der Entwicklung des Gewichtes 	<ul style="list-style-type: none"> Die Maschine wird automatisch angehalten, wenn kein Produkt von der Maschine ausläuft 	<ul style="list-style-type: none"> Die Maschine wird automatisch angehalten, wenn kein Produkt von der Maschine ausläuft 	<ul style="list-style-type: none"> Die Maschine wird automatisch angehalten, wenn kein Produkt von der Maschine ausläuft 	<ul style="list-style-type: none"> Kategorie 1 Kategorie 2 	<ul style="list-style-type: none"> Kategorie 1 Kategorie 2 	<ul style="list-style-type: none"> Kategorie 1 Kategorie 2
Periodische Durchfluss-Beobachtung	<ul style="list-style-type: none"> Visuelle Beobachtung des Durchflusses des Produktes (Schauglas, offenes System usw...) Regelmässige Probenentnahme des Produktes am Maschinenausgang 	<ul style="list-style-type: none"> Visuelle Beobachtung des Durchflusses des Produktes (Schauglas, offenes System usw...) Regelmässige Probenentnahme des Produktes am Maschinenausgang 	<ul style="list-style-type: none"> Die Maschine wird manuell angehalten, wenn kein Produkt von der Maschine ausläuft 	<ul style="list-style-type: none"> Die Maschine wird manuell angehalten, wenn kein Produkt von der Maschine ausläuft 	<ul style="list-style-type: none"> Die Maschine wird manuell angehalten, wenn kein Produkt von der Maschine ausläuft 	<ul style="list-style-type: none"> Kategorie 1 Kategorie 2 	<ul style="list-style-type: none"> Kategorie 1 Kategorie 2 	<ul style="list-style-type: none"> Kategorie 1 Kategorie 2
Überwachung der Entleerungszeit (nur für kleinen Batch)	<ul style="list-style-type: none"> Bei Normalfunktion wird die Entleerungszeit eines Batches durch einen Test festgelegt 	<ul style="list-style-type: none"> Bei Normalfunktion wird die Entleerungszeit eines Batches durch einen Test festgelegt 	<ul style="list-style-type: none"> Die Maschine wird automatisch nach 120% der Entleerungszeit bei Normalfunktion angehalten 	<ul style="list-style-type: none"> Die Maschine wird automatisch nach 120% der Entleerungszeit bei Normalfunktion angehalten 	<ul style="list-style-type: none"> Die Maschine wird automatisch nach 120% der Entleerungszeit bei Normalfunktion angehalten 	<ul style="list-style-type: none"> Nur für eine Entleerungszeit bei Normalfunktion, die nicht 20 Minuten überschreitet Kategorie 1 Kategorie 2 	<ul style="list-style-type: none"> Nur für eine Entleerungszeit bei Normalfunktion, die nicht 20 Minuten überschreitet Kategorie 1 Kategorie 2 	<ul style="list-style-type: none"> Nur für eine Entleerungszeit bei Normalfunktion, die nicht 20 Minuten überschreitet Kategorie 1 Kategorie 2
Validation of the process	<ul style="list-style-type: none"> The passage of the product can be guaranteed by a validation test of the process 	<ul style="list-style-type: none"> The passage of the product can be guaranteed by a validation test of the process 	<ul style="list-style-type: none"> Under normal operation, the product passes correctly through the sieve and no obstruction is noted 	<ul style="list-style-type: none"> Under normal operation, the product passes correctly through the sieve and no obstruction is noted 	<ul style="list-style-type: none"> Under normal operation, the product passes correctly through the sieve and no obstruction is noted 	<ul style="list-style-type: none"> Category 3 	<ul style="list-style-type: none"> Category 3 	<ul style="list-style-type: none"> Category 3
Monitoring of the source of ignition	<ul style="list-style-type: none"> Integration of a temperature sensor in contact with the sieve to supervise the temperature of the product in the milling chamber 	<ul style="list-style-type: none"> Integration of a temperature sensor in contact with the sieve to supervise the temperature of the product in the milling chamber 	<ul style="list-style-type: none"> The machine is stopped if the temperature exceeds the limiting value. This option must be installed by Frewitt 	<ul style="list-style-type: none"> The machine is stopped if the temperature exceeds the limiting value. This option must be installed by Frewitt 	<ul style="list-style-type: none"> The machine is stopped if the temperature exceeds the limiting value. This option must be installed by Frewitt 	<ul style="list-style-type: none"> Category 1 Category 2 	<ul style="list-style-type: none"> Category 1 Category 2 	<ul style="list-style-type: none"> Category 1 Category 2
Continuously throughput monitoring	<ul style="list-style-type: none"> For machine integrated in an dosing installation, monitoring of the evolution of the weight 	<ul style="list-style-type: none"> For machine integrated in an dosing installation, monitoring of the evolution of the weight 	<ul style="list-style-type: none"> The machine is stopped automatically if no product runs out of the machine 	<ul style="list-style-type: none"> The machine is stopped automatically if no product runs out of the machine 	<ul style="list-style-type: none"> The machine is stopped automatically if no product runs out of the machine 	<ul style="list-style-type: none"> Category 1 Category 2 	<ul style="list-style-type: none"> Category 1 Category 2 	<ul style="list-style-type: none"> Category 1 Category 2
Periodic observation of the throughput	<ul style="list-style-type: none"> Visual observation of the product flow (Sight glass, opened system, etc...) Sampling of product at periodic interval on the outlet side of the machine. 	<ul style="list-style-type: none"> Visual observation of the product flow (Sight glass, opened system, etc...) Sampling of product at periodic interval on the outlet side of the machine. 	<ul style="list-style-type: none"> The machine is stopped manually if no product runs out of the machine 	<ul style="list-style-type: none"> The machine is stopped manually if no product runs out of the machine 	<ul style="list-style-type: none"> The machine is stopped manually if no product runs out of the machine 	<ul style="list-style-type: none"> Category 1 Category 2 	<ul style="list-style-type: none"> Category 1 Category 2 	<ul style="list-style-type: none"> Category 1 Category 2
Monitoring of the emptying time (only for small batches)	<ul style="list-style-type: none"> Under normal operation, the emptying time of a batch is validated by a test 	<ul style="list-style-type: none"> Under normal operation, the emptying time of a batch is validated by a test 	<ul style="list-style-type: none"> The machine is automatically stopped after 120% of the emptying time under normal operation 	<ul style="list-style-type: none"> The machine is automatically stopped after 120% of the emptying time under normal operation 	<ul style="list-style-type: none"> The machine is automatically stopped after 120% of the emptying time under normal operation 	<ul style="list-style-type: none"> Only for an emptying time under normal operation not exceeding 20 minutes Category 1 Category 2 	<ul style="list-style-type: none"> Only for an emptying time under normal operation not exceeding 20 minutes Category 1 Category 2 	<ul style="list-style-type: none"> Only for an emptying time under normal operation not exceeding 20 minutes Category 1 Category 2



(1) **Notification of recognition
of the quality assurance production**

Annex IV

(2) Equipment or protective system intended for use in potentially explosive atmospheres - **Directive 94/9/EC**

(3) Conformity certificate number

SEV 09 ATEX 4137

(4) Equipment: Machines in the type of protection Liquid Immersion "k", Control of Ignition Source "b", Constructional Safety "c", Increased Safety "e", Flameproof Enclosures "d" and Resistent Equipment

A list of the EC-Type Examination Certificates covered by this notification is held by the notified body.

(5) Applicant: Frewitt Fabrique de machines SA
Route du Coteau 7, CH-1763 Granges-Paccot

(6) Manufacturer: Frewitt Fabrique de machines SA
Route du Coteau 7, CH-1763 Granges-Paccot

(7) Electrosuisse, notified body number 1258 for Annex IV in accordance with article 9 of the council Directive 94/9/EC notifies to the manufacturer that he has a production quality system which complies with Annex IV of the Directive.

(8) This notification is based on audit report no. 09-IK-0183.01 dated 2009-12-03.

(9) The results of a regular repeat evaluation of the quality assurance system form part of this notice.

(10) This notification is valid until 2012-12-20 and can be withdrawn if the manufacturer no longer satisfies the requirements of Annex IV.

(11) The notified body assessing the examination phase must, according to article 10 (1) of the Directive 94/9/EC, be indicated by showing the notified body number 1258 of SEV beside the CE mark.

Electrosuisse SEV
Certification Body ATEX

Fehraltorf, 2009-12-21

Martin Plüss
Product Certification



(1) **EC-Type Examination Certificate**

(2) Equipment or protective system intended for use in potentially explosive atmospheres - **Directive 94/9/EC**

(3) Examination Certificate Number

SEV 06 ATEX 0124 X

(4) Equipment: type ConiWitt-*** comminuting and screening machine resp.
type HammerWitt-LAB hammer mill resp.
type TurboWitt-*** screen mill

(5) Manufacturer: FREWITT Fabrique de machines SA

(6) Address: Route du Coteau 7, CH-1763 Granges-Paccot

(7) The equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) Electrosuisse SEV as notified body No. 1258 in accordance with article 9 of the Council Directive of the European Communities of 23 March 1994 (94/9/EC), certifies that this equipment has been found to comply with the essential health and safety requirements relating to the design and construction of equipment or protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The results of the examination are recorded in confidential report No. 06-IK-0150.01 incl. extension no. 01.

(9) Compliance with the essential health and safety requirements has been assured by compliance with:

EN 1127-1:1997

EN13463-1:2001

EN 13463-5:2003

EN 13463-6:2005

EN 13463-8:2003

EN 14460:2006

(10) If the sign «X» is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This examination certificate relates only to design and construction of the specified equipment in accordance to the directive 94/9/EC. Further requirements of this directive apply to the manufacturing process and the placing on the market of the equipment.

(12) The marking of the equipment shall include the following:

 **see Appendix page 3: (19) Marking**

Electrosuisse SEV
Certification Body ATEX

Fehraltorf, 2009-11-03
Replaces certificate dated
2009-09-02
(Corrections)

Martin Plüss
Product Certification

Page 1/3

Appendix

(13)

(14)

EC-Type Examination Certificate SEV 06 ATEX 0124 X

(15) Description of the equipment

The FREWITT type ConiWitt-*** comminuting and screening machine resp. type HammerWitt-LAB hammer mill resp. type TurboWitt-*** screen mill serves for the industrial processing of substances for the pharmaceutical, chemical and foodstuffs industry. The high-speed rotor resp. screen is driven by means of a variable-speed, separately certified, drive. The control and monitoring functions are combined in a mounted control cabinet.

The machine is a group consisting of electrical and non-electrical subunits. As all electrical units are separately certified and non-electrical units of other manufacturers have been subject to the necessary conformity assessment procedures, a re-test according to the standards for electrical equipment as well as the non-electrical types of protection used only for the devices of other manufacturers could be dispensed with.

Ratings

Nominal power	ConiWitt-150	$P_N = 4.0 \text{ kW}$	HammerWitt-LAB	$P_N = 4.0 \text{ kW}$
	ConiWitt-200	$P_N = 4.0 \text{ kW}$	TurboWitt-C20	$P_N = 4.0 \text{ kW}$
	ConiWitt-250	$P_N = 5.5 \text{ kW}$	TurboWitt-C25	$P_N = 5.5 \text{ kW}$

(16) Test Report

06-IK-0150.01 incl. extension no. 01

(17) Special conditions for safe use

The manual supplementary "additional safety instructions EEx machine special conditions << X >>" of the manufacturer have to be considered!

(18) Fundamental essential health and safety requirements

Fulfilled by the standards applied

Appendix

EC-Type Examination Certificate SEV 06 ATEX 0124 X

(19) Marking

The marking of the equipment shall include the following:

For type ConiWitt-*** resp. type TurboWitt-***:

	II 1/2G II 2G II 1/2D	Ex ckb * IIB resp. IIB/IIC T157°C Ex ckb * IIB resp. IIB/IIC T4 Ex ckb * IP 6* T157°C	or and/or
	resp. 	II 2G resp. 2/3G resp. 3G II 2D resp. 2/3D resp. 3D	Ex ck * IIB resp. IIB/IIC T4 Ex ck * IP 6* T125°C

For type HammerWitt-LAB:

	II 1/2G resp. 2G resp. 2/3G resp. 3G II 1/2D resp. 2D resp. 2/3D resp. 3D	Ex cb * IIB resp. IIB/IIC T4 Ex cb * IP 6* T125°C	and/or
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(* = supplement depending on the integrated appliances with separate conformity assessment procedure)

Electrosuisse SEV
Certification Body ATEX

Martin Plüss
Product Certification



Fehraltorf, 2009-11-03
Replaces certificate dated
2009-09-02
(Corrections)



(1) **EC-Type Examination Certificate**

(2) Equipment or protective system intended for use in potentially explosive atmospheres - **Directive 94/9/EC**

(3) Examination Certificate Number

SEV 04 ATEX 0106 X

(4) Equipment: Filling machines type ProFi-Sword, ProFi-Dos 150/200, ProFi-Lun 300, ProFi-Liner 350/450/600, ProFi-Vent, ProFi-Bant 200/300, ProFi-Charge

(5) Manufacturer: FREWITT Fabrique de machines SA

(6) Address: Route du Coteau 7, CH-1763 Granges-Paccot

(7) The equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) SEV as notified body No. 1258 in accordance with article 9 of the Council Directive of the European Communities of 23 March 1994 (94/9/EC), certifies that this equipment has been found to comply with the essential health and safety requirements relating to the design and construction of equipment or protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The results of the examination are recorded in confidential report No. 03-IK-0416.02 incl. Extension n° 1 and 2.

(9) Compliance with the essential health and safety requirements has been assured by compliance with:

EN 1127-1:2007

EN 13463-1:2009

EN 13463-5:2003

EN 13463-6:2005

(10) If the sign «X» is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This examination certificate relates only to design and construction of the specified equipment in accordance to the directive 94/9/EC. Further requirements of this directive apply to the manufacturing process and the placing on the market of the equipment.

(12) The marking of the equipment shall include the following:

see Appendix page 2: (19) Marking

Electrosuisse

Certification Body ATEX

Martin Plüss
Product Certification

Fehrltorf, 2009-05-07
replaces examination dated
2006-01-11.

Extension 1: new issued standards.

Appendix

(13)

(14)

EC-Type Examination Certificate SEV 04 ATEX 0106 X

(15) Description of the equipment

The ProFilling type ProFi-Sword, ProFi-Dos 150/200, ProFi-Lun 300, ProFi-Liner 350/450/600, ProFi-Vent, ProFi-Bant 200/300, ProFi-Charge filling machines are used for the industrial handling of powdered substances for the pharmaceutical, chemical, and food industries. The control and monitoring functions are concentrated in a separate switch cabinet.

(16) Test Report

03-IK-0416.02 incl. Extension n° 1 and 2

(17) Special requirements

The manual supplementary "additional safety instructions EEx machine special conditions << X >>" of the manufacturer have to be considered!

(18) Fundamental essential health and safety requirements


Fulfilled by the standards applied

(19) Marking


The marking of the equipment shall include the following:

	II 2G	* c * IIB T#	and / or
	II 2D	* c * T#°C	respectively
	II 1/2D	* c * T#°C	

only for ProFi-Sword:

	II 1/2G	* cb * T#	and / or
	II 1/2D	* cb * T#°C	

only for ProFi-Dos, ProFi-Vent:

	II 1/2G	* c * T#	and / or
	II 1/2D	* c * T#°C	

(* = supplement depending on the integrated appliances with separate conformity assessment procedure)

(# = the applicable temperature (class) is determined by the temperature of the medium (see manual!))

Electrosuisse

Certification Body ATEX

Fehrltorf, 2009-05-07

replaces examination dated

2006-01-11.

Extension 1: new issued standards.

Martin Plüss
Product Certification





(1) **EG-Baumusterprüfbescheinigung**

(2) Geräte und Schutzsysteme zur bestimmungsgemässen Verwendung in explosionsgefährdeten Bereichen - **Richtlinie 94/9/EG**

(3) Prüfbescheinigungsnummer

SEV 06 ATEX 0133

(4) Gerät: Steuerung Typ DM bzw. PF

(5) Hersteller: FREWITT Fabrique de machines SA

(6) Anschrift: Route du Coteau 7, CH-1763 Granges-Paccot

(7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Prüfbescheinigung festgelegt.

(8) Die Electrosuisse SEV bescheinigt als benannte Stelle Nr. 1258 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemässen Verwendung in explosionsgefährdeten Bereichen gemäss Anhang II der Richtlinien.

Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht 06-IK-0149.01 inkl. Erweiterung Nr. 1 festgelegt.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit

EN 1127-1:2007
EN 61241-0:2006

EN 60079-0:2006
EN 61241-1:2004

EN 60079-1:2007

(10) Falls das Zeichen «X» hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.

(11) Diese Baumusterprüfbescheinigung bezieht sich nur auf Konzeption und Bau des festgelegten Gerätes gemäss Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen des Gerätes.

(12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:

siehe Anlage Seite 2: (19) Kennzeichnung

Electrosuisse SEV
Konformitätsbewertungsstelle ATEX

Fehraltorf, 27.05.2009
ersetzt Bescheinigung vom
11.05.2009, Korrekturen

Erich Obrist
Zertifizierung Produkte

Anlage

(13)

(14)

EG-Baumusterprüfbescheinigung SEV 06 ATEX 0133

(15)

Beschreibung des Gerätes

Die Steuerung FREWITT Typ DM bzw. PF wird in den durch die Seriennummer bestimmten Ausführungsvarianten für gas- und/oder staubexplosionsgefährdete Bereiche in den Zündschutzarten „Druckfeste Kapselung“ und/oder „Schutz durch Gehäuse“ entsprechend den Anforderungen der Kategorien 2 bzw. 3 gefertigt.

Die geprüften Geräte sind Baugruppen, bestehend aus Komponenten, die ein Konformitätsbewertungsverfahren gemäss Artikel 8 der Richtlinie 94/9/EG durchlaufen haben sowie aus Teilen ohne Anforderungen an den Explosionsschutz.

Für jede Ausführungsvariante der Baugruppe wird ein thermischer Nachweis erstellt.

(16)

Prüfbericht

06-IK-0149.01 inkl. Erweiterung Nr. 1

(17)

Besondere Bedingungen

Keine

(18)

Grundlegende Sicherheits- und Gesundheitsanforderungen

Durch die angewandten Normen erfüllt.

(19)

Kennzeichnung

Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:



II 2G

Ex d* IIB T6

und / oder

II 2D

Ex tD A21 IP65 T85°C

bzw.



II 3G

Ex d* IIB T6

und / oder

II 3D

Ex tD A22 IP65 T85°C

(* = Ergänzung je nach eingebauten Geräten mit gesonderten Konformitätsbewertungsverfahren)

Electrosuisse SEV

Konformitätsbewertungsstelle ATEX

Fehraltorf, 27.05.2009

ersetzt Bescheinigung vom

11.05.2009, Korrekturen

Erich Obrist

Zertifizierung Produkte

Client: Kunde: Customer:
NOVARTIS SINGAPORE PHARMACEUTICAL
SG-Singapore

N° Série: Serien-Nr. Serial Nr.
11007635096
11007643002 - PF-Sword / 11007619050 - CW-250

464770 / 464769

465083 / Electrical Part

Article N° Artikel Nr. Article ID.	Description Beschreibung Description	Position Position Position	No Document Dokument-Nr Document ID
... 439572	Gear box Lenze GKR05-2NHAK-7C		23424-0
... 461218	Motor 4P LSPX80L 0.70kW Ex II2D Ex tD A21 IP65 T125°C B14 230VD/400VY 50Hz		16241-2
... 456574	Flow Sensor Exi G1/2, Exi, 1G/D, P11206, STS 212 S		37921-0
... 436876	Pneumatic Piston Vibrator NTP25B+C SE Inox, Netter, zone 2G/2D, IP65, T4		32262-0
.... 453536	Preparation unit ATEX 2GD		38838-2
..... 420954	Cable gland Exi M12x1.5 PA 3-6		16291-0
... 461226	Motor 6P LSPX132M 5.0kW Ex II2D Ex tD A21 IP65 T125°C B5 230VD/400VY 50Hz		16241-2
. 464774	Lifting Tower Servolift		136903-1
. 456539	Terminal - grey 2.5mm2 UK 3 N	-X4	112598-1
. 456539	Terminal - grey 2.5mm2 UK 3 N	-X5	112598-1
. 456539	Terminal - grey 2.5mm2 UK 3 N	-X6	112598-1
. 456539	Terminal - grey 2.5mm2 UK 3 N	-X7	112598-1
. 456539	Terminal - grey 2.5mm2 UK 3 N	-X9	112598-1
. 456539	Terminal - grey 2.5mm2 UK 3 N	-X8	112598-1
. 456539	Terminal - grey 2.5mm2 UK 3 N	-X1	112598-1
. 456540	Terminal - grey 6mm2 UK 6 N	-X0	112598-1
. 456541	PE Terminal 2.5mm2 USLKG 3	-X5	112600-1
. 456541	PE Terminal 2.5mm2 USLKG 3	-X6	112600-1
. 456541	PE Terminal 2.5mm2 USLKG 3	-X7	112600-1
. 456541	PE Terminal 2.5mm2 USLKG 3	-X8	112600-1
. 456541	PE Terminal 2.5mm2 USLKG 3	-X9	112600-1
. 456541	PE Terminal 2.5mm2 USLKG 3	-X11	112600-1
. 456541	PE Terminal 2.5mm2 USLKG 3	-X12	112600-1
. 456541	PE Terminal 2.5mm2 USLKG 3	-X13	112600-1
. 456541	PE Terminal 2.5mm2 USLKG 3	-X14	112600-1
. 456541	PE Terminal 2.5mm2 USLKG 3	-X1	112600-1
. 456541	PE Terminal 2.5mm2 USLKG 3	-X4	112600-1
. 456542	PE Terminal 6mm2 USLKG 6 N	-X0	112601-1
. 456548	Terminal - blue 2.5mm2 UK 3 N BU	-X12	112598-1
. 456548	Terminal - blue 2.5mm2 UK 3 N BU	-X1	112598-1
. 456548	Terminal - blue 2.5mm2 UK 3 N BU	-X13	112598-1
. 456548	Terminal - blue 2.5mm2 UK 3 N BU	-X11	112598-1
. 456548	Terminal - blue 2.5mm2 UK 3 N BU	-X14	112598-1
. 457042	Terminal - blue 6mm2 UK 6 N BU	-X0	112598-1
. 459106	Multi panel MP277 10" Multi panel MP277 10" tactile ATEX 3D 6AV6643-0CD01-1AX1	-A3	112584-1
. 460244	Sensor - ultra sonic ATEX 3GD, RUC130-M30-LIAP8X-H1151/3GD	-G30	135427-1
. 404568	Magnet switch M30x1.5x52, Elobau 671/271-MU0-5	-G10	27255-1
. 404642	Terminal box	-XJB2	16410-2
. 404642	Terminal box	-XJB1	16410-2
. 405190	Push Button Red	-S1	16353-1
. 406886	Detector Namur Ex 1.5 M8	-S10	16317-2
. 408500	Terminal box 227/170/91 Exe	-XJB9	40520-1
. 408500	Terminal box 227/170/91 Exe	-XJB4	40520-1
. 408786	Terminal Box 115/115/64 Exi	-XJB7	16410-2
. 408786	Terminal Box 115/115/64 Exi	-XJB8	16410-2
. 409319	Junction Box 115/115/64 Exe	-XJB5	16410-2
. 409713	Terminal box 340/170/91 Exe	-XJB3	40520-1
. 411946	Amplifier 2x 0 relay 24 VDC	-U7	16319-0
. 417735	Converter I/I 230V AC/DC	-U8	16419-1

. 425177	Zener Barrier Ex for PTC Sensor	-U5	15683-1
. 425177	Zener Barrier Ex for PTC Sensor	-U6	15683-1
. 425177	Zener Barrier Ex for PTC Sensor	-U4	15683-1
. 425177	Zener Barrier Ex for PTC Sensor	-U3	15683-1
. 428806	Magnet switch M30x1.5x52, 10m	-G11	15675-0
. 436007	Terminal box. 227/170/91 Exi	-XJB6	40520-1
. 438080	Push button O+F 24/230V AC/DC 8018/3113-al-6 / EExmdIICT6 II2G/D	-S3	16362-1
. 438902	Flow amplifier 24V 82413, SZA400 24VDC P10708, EEx-i,(1)G/D	-U9	43763-1
. 443422	Amplifier for PT-100 Exi 4-20mA	-U11	46108-2
. 443422	Amplifier for PT-100 Exi 4-20mA	-U12	46108-2
. 445287	Pushbutton Exd BK 0 O+O 8003/123-001-L6+8602914840/EEExdellCT6	-S2	16353-1
. 454256	Relay PTC ATEX, 24VDC, 2OF 3RN10 11-1BB00	-K12	106060-1
. 454256	Relay PTC ATEX, 24VDC, 2OF 3RN10 11-1BB00	-K11	106060-1
. 454256	Relay PTC ATEX, 24VDC, 2OF 3RN10 11-1BB00	-K10	106060-1
. 454256	Relay PTC ATEX, 24VDC, 2OF 3RN10 11-1BB00	-K9	106060-1
. 454256	Relay PTC ATEX, 24VDC, 2OF 3RN10 11-1BB00	-K8	106060-1
. 454256	Relay PTC ATEX, 24VDC, 2OF 3RN10 11-1BB00	-K6	106060-1



Doc No: 15675-0



(1) **EG-Baumusterprüfbescheinigung**

(2) **- Richtlinie 94/9/EG -**

**Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung
in explosionsgefährdeten Bereichen**

(3) **BVS 03 ATEX E 126 X**

(4) **Gerät: Endschalter Typ 6** *** **_****

(5) **Hersteller: elobau Elektrobauelemente GmbH & Co. KG**

(6) **Anschrift: D-88306 Isny/Allgäu**

(7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.

(8) Die Zertifizierungsstelle der Deutsche Montan Technologie GmbH, benannte Stelle Nr. 0158 gemäß Artikel 9 der Richtlinie 94/9/EG des Europäischen Parlaments und des Rates vom 23. März 1994, bescheinigt, dass das Gerät die grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie erfüllt.
Die Ergebnisse der Prüfung sind in dem Prüfprotokoll BVS PP 03.2287 EG niedergelegt.


(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit

EN 50014:1997 + A1 – A2 Allgemeine Bestimmungen
EN 50028:1987 Vergusskapselung 'm'
EN 50020:2002 Eigensicherheit 'i'
EN 50284:1999 Gerätegruppe II Kategorie 1G
EN 50281-1-1:1998 +A1 Staubexplosionsschutz

(10) Falls das Zeichen „X“ hinter der Bescheinigungsnummer steht, wird in der Anlage zu dieser Bescheinigung auf besondere Bedingungen für die sichere Anwendung des Gerätes hingewiesen.

(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf die Konzeption und die Baumusterprüfung des beschriebenen Gerätes in Übereinstimmung mit der Richtlinie 94/9/EG.
Für Herstellung und in Verkehr bringen des Gerätes sind weitere Anforderungen der Richtlinie zu erfüllen, die nicht durch diese Bescheinigung abgedeckt sind.

(12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:

II 1G EEx ia IIB / IIC T5 / T6 bzw. **II 1/2G EEx ia IIC T5 / T6**
 **II 2G EEx ia IIC T5 / T6** bzw. **II 2G EEx m II T5 / T6**
II 2D IP67 / IP 68 T105°C Zuordnung siehe Tabellen in 15.1.2

Deutsche Montan Technologie GmbH

Bochum, den 16. Dezember 2003


DMT Zertifizierungsstelle


Fachbereich

(13) Anlage zur

(14) **EG-Baumusterprüfbescheinigung**

BVS 03 ATEX E 126 X

(15) 15.1 Gegenstand und Typ

Endschalter Typ 6** *** ** *_**

15.1.1 Typenschlüssel 6** *** ** *_**
6ab c de f g h ij - kl

- ab Gehäusebauform
10 = Flachscharter Zink-Druckguss (GD-ZnAl4Cu1)
20 = Rohrscharter Kunststoff PA66
50 = Rohrscharter VA1.4571, (alternativ 1.4305 oder 1.4401, PG13,5 (M20))
71 = MSS VA 1.4571 (alternativ 1.4305 oder 1.4401), M30
80 = Hallsensor VA 1.4571 (alternativ 1.4401), G3/8.
- c Ausführungsvariante
0 = Standard
1 = (Kennziffer nicht verwendet)
2 = MSS
3 = Schutzschlauchverschraubung
V = MSS verknüpfbar
- de 10 = Schließer "A"
20 = Öffner "B"
30 = Wechsler "C"
40 = "A/B" bistabil
45 = "C" bistabil
50 = npn-Transistor-Ausgang
55 = pnp-Transistor-Ausgang
61 = MSS 3 x Schließer
62 = MSS 2 x Schließer
71 = MSS ein Öffner, ein Schließer
- f M = Vergussgekapselt; ohne äußere Potentialausgleichsleiter-Anschlussklemme
N = Vergussgekapselt; mit äußerer Potentialausgleichsleiter-Anschlussklemme
O = Vergussgekapselt; ohne äußere Potentialausgleichsleiter-Anschlussklemme, geschweißt
P = Vergussgekapselt; mit äußerer Potentialausgleichsleiter-Anschlussklemme, geschweißt
I = Eigensicher; ohne äußere Potentialausgleichsleiter-Anschlussklemme
K = Eigensicher; mit äußerer Potentialausgleichsleiter-Anschlussklemme
G = Eigensicher; ohne äußere Potentialausgleichsleiter-Anschlussklemme, geschweißt
H = Eigensicher; mit äußerer Potentialausgleichsleiter-Anschlussklemme, geschweißt

- g Kabeltyp *)
- 1 = Leitung Boflex W (PVC grau) 2 x 0,75 / 3 x 0,75 / 4 x 0,75
 - 2 = Leitung SIHSI (Silikon rot) 2 x 0,75 / 3 x 0,75
 - 3 = Leitung BOY11Y (PUR schwarz) 2 x 0,75 / 3 x 0,75
 - 4 = Leitung LIYCYW (PVC abgeschirmt) 2 x 0,75 / 3 x 0,75 / 4 x 0,5
 - 5 = Leitung SXCS (Silicon abgeschirmt) 2 x 0,75 / 3 x 0,75
 - 6 = Leitung LIFYY11Y (PUR schwarz) 3 x 0,25
 - 7 = Leitung LIYYW (PVC grau) 3 x 0,25
 - U = Leitung Y-UL 2517 (PVC grau) 3 x 0,75 / 4 x 0,75
- *) für eigensichere Ausführungen optional mit blauem Kabelmantel
oder mit grauem Schrumpfschlauch markiert
(betrifft nur 1/2G und 2G Anwendungen)
- h Schutzschlauch
- 0 = kein Schutzschlauch
 - 1 = Schutzschlauch Typ 455 MP 9,8X13,2
 - 2 = Schutzschlauch Typ Anaconda D.L.1/2"
- ij nicht Ex-relevante Angaben
- kl Kabelüberlänge; Standard = 1 Meter



15.1.2 Die Zuordnung der unterschiedlichen Ausführungen des Endschalters zu Zündschutzarten, Temperaturklassen, Umgebungstemperaturbereich und Gerätekategorien ist den folgenden Tabellen zu entnehmen:

Endschalter Typ	Kategorie des Endschalters	zusätzliche Kennzeichnung		Besonderheiten bzw. Einschränkungen	Umgebungstemperaturbereich
		nicht eigensicher	eigensicher		
610 010 M*0 **_** 610 010 N*0 **_** 610 020 M*0 **_** 610 020 N*0 **_** 610 030 M*0 **_** 610 030 N*0 **_** 610 040 M*0 **_** 610 040 N*0 **_** 610 045 M*0 **_** 610 045 N*0 **_**	2G	EEx m II T5/T6		IP67; siehe 17.4	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)
620 010 M*0 **_** 620 020 M*0 **_** 620 030 M*0 **_**	2G	EEx m II T5/T6		IP67; siehe 17.4	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)
650 *10 M** **_** 650 *10 N** **_** 650 *30 M** **_** 650 *30 N** **_**	2G	EEx m II T5/T6		IP67; siehe 17.4	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)
671 26* M*0 **_** 671 26* N*0 **_** 671 26* O*0 **_** 671 26* P*0 **_** 671 V62 M*0 **_** 671 V62 N*0 **_** 671 V62 O*0 **_** 671 V62 P*0 **_** 671 271 M*0 **_** 671 271 N*0 **_** 671 271 O*0 **_** 671 271 P*0 **_**	2G	EEx m II T5/T6		IP68 (10 bar); I ≤ 60 mA; siehe 17.4	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)
671 26* M*0 **_** 671 26* N*0 **_** 671 26* O*0 **_** 671 26* P*0 **_** 671 V62 M*0 **_** 671 V62 N*0 **_** 671 V62 O*0 **_** 671 V62 P*0 **_** 671 271 M*0 **_** 671 271 N*0 **_** 671 271 O*0 **_** 671 271 P*0 **_**	2G	EEx m II T5/T6		IP68 (10 bar); 60 mA ≤ I ≤ 150 mA; siehe 17.4	- 25° C ≤ T _a ≤ 50° C (T6) 70° C (T5)
680 0** M*0 **_** 680 0** N*0 **_**	2G	EEx m II T5/T6		IP68 (10 bar); siehe 17.4	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)

Endschalter Typ	Kategorie des Endschalters	zusätzliche Kennzeichnung		Besonderheiten bzw. Einschränkungen	Umgebungs-temperaturbereich
		nicht eigensicher	eigensicher		
610 010 I*0 **_** 610 010 K*0 **_** 610 020 I*0 **_** 610 020 K*0 **_** 610 030 I*0 **_** 610 030 K*0 **_** 610 040 I*0 **_** 610 040 K*0 **_** 610 045 I*0 **_** 610 045 K*0 **_**	2G		EEx ia IIC T5/T6	IP67	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)
620 010 I*0 **_** 620 020 I*0 **_** 620 030 I*0 **_**	2G		EEx ia IIC T5/T6	IP67; siehe 17.1.2	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)
650 *10 I** **_** 650 *10 K** **_** 650 *30 I** **_** 650 *30 K** **_**	2G		EEx ia IIC T5/T6	IP67	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)
671 26* I*0 **_** 671 26* K*0 **_** 671 26* G*0 **_** 671 26* H*0 **_** 671 V62 I*0 **_** 671 V62 K*0 **_** 671 V62 G*0 **_** 671 V62 H*0 **_** 671 271 I*0 **_** 671 271 K*0 **_** 671 271 G*0 **_** 671 271 H*0 **_**	2G		EEx ia IIC T5/T6	IP68 (10 bar); I _i ≤ 60 mA	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)
671 26* I*0 **_** 671 26* K*0 **_** 671 26* G*0 **_** 671 26* H*0 **_** 671 V62 I*0 **_** 671 V62 K*0 **_** 671 V62 G*0 **_** 671 V62 H*0 **_** 671 271 I*0 **_** 671 271 K*0 **_** 671 271 G*0 **_** 671 271 H*0 **_**	2G		EEx ia IIC T5/T6	IP68 (10 bar); 60 mA ≤ I _i ≤ 150 mA; siehe 17.1.1	- 25° C ≤ T _a ≤ 50° C (T6) 70° C (T5)
680 0** I*0 **_** 680 0** K*0 **_**	2G		EEx ia IIC T5/T6	IP68 (10 bar);	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)



Endschalter Typ	Kategorie des Endschalters	zusätzliche Kennzeichnung		Besonderheiten bzw. Einschränkungen	Umgebungs-temperaturbereich
		nicht eigensicher	eigensicher		
620 010 I*0 **_** 620 020 I*0 **_** 620 030 I*0 **_**	1/2G		EEx ia IIC T5/T6	IP67; $P_i \leq 0,5 \text{ W}$ siehe 17.2.2	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
650 *10 K** **_** 650 *10 I** **_** 650 *30 K** **_** 650 *30 I** **_**	1/2G		EEx ia IIC T5/T6	IP67; $P_i \leq 0,5 \text{ W}$; siehe 17.2.1	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
671 26* I*0 **_** 671 26* K*0 **_** 671 26* G*0 **_** 671 26* H*0 **_** 671 V62 I*0 **_** 671 V62 K*0 **_** 671 V62 G*0 **_** 671 V62 H*0 **_** 671 271 I*0 **_** 671 271 K*0 **_** 671 271 G*0 **_** 671 271 H*0 **_**	1/2G		EEx ia IIC T5/T6	IP68 (10 bar); $I_i \leq 60 \text{ mA}$; siehe 17.2.1	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
671 26* I*0 **_** 671 26* K*0 **_** 671 26* G*0 **_** 671 26* H*0 **_** 671 V62 I*0 **_** 671 V62 K*0 **_** 671 V62 G*0 **_** 671 V62 H*0 **_** 671 271 I*0 **_** 671 271 K*0 **_** 671 271 G*0 **_** 671 271 H*0 **_**	1/2G		EEx ia IIC T5/T6	IP68 (10 bar); 60 mA $\leq I_i \leq$ 150 mA; siehe 17.2.1 und 17.2.3	- 25° C $\leq T_a \leq$ 50° C (T6) 70° C (T5)
680 0** I*0 **_** 680 0** K*0 **_**	1/2G		EEx ia IIC T5/T6	IP68 (10 bar); siehe 17.2.1	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)

Endschalter Typ	Kategorie des Endschalters	zusätzliche Kennzeichnung		Besonderheiten bzw. Einschränkungen	Umgebungstemperaturbereich
		nicht eigensicher	eigensicher		
610 0*0 M30 **_** 610 0*0 M20 **_** 610 0*0 MU0 **_** 610 0*0 M60 **_** 610 0*0 M70 **_** 610 0*0 M10 **_** 610 0*0 N30 **_** 610 0*0 N20 **_** 610 0*0 NU0 **_** 610 0*0 N60 **_** 610 0*0 N70 **_** 610 0*0 N10 **_**	2D	IP67 T105°C		siehe 17.5	- 25° C ≤ T _a ≤ 85° C
620 0*0 M30 **_** 620 0*0 M20 **_** 620 0*0 MU0 **_** 620 0*0 M60 **_** 620 0*0 M70 **_** 620 0*0 M10 **_**	2D	IP67 T105°C		siehe 17.5	- 25° C ≤ T _a ≤ 85° C
650 0*0 M30 **_** 650 0*0 M20 **_** 650 0*0 MU0 **_** 650 0*0 M60 **_** 650 0*0 M70 **_** 650 0*0 M10 **_** 650 0*0 N30 **_** 650 0*0 N20 **_** 650 0*0 NU0 **_** 650 0*0 N60 **_** 650 0*0 N70 **_** 650 0*0 N10 **_** 650 0*0 M*1 **_** 650 0*0 N*1 **_**	2D	IP67 T105°C		siehe 17.5	- 25° C ≤ T _a ≤ 85° C
671 *** *30 **_** 671 *** *20 **_** 671 *** *U0 **_** 671 *** *60 **_** 671 *** *70 **_** 671 *** *10 **_**	2D	IP68 T105°C		IP68 (10 bar); I ≤ 60 mA; siehe 17.5	- 25° C ≤ T _a ≤ 85° C
671 *** *30 **_** 671 *** *20 **_** 671 *** *U0 **_** 671 *** *60 **_** 671 *** *70 **_** 671 *** *10 **_**	2D	IP68 T105°C		IP68 (10 bar); 60 mA ≤ I ≤ 150 mA; siehe 17.5	- 25° C ≤ T _a ≤ 70° C
680 0** M60 **_** 680 0** M70 **_** 680 0** N60 **_** 680 0** N70 **_**	2D	IP68 T105°C		IP68 (10 bar); siehe 17.5	- 25° C ≤ T _a ≤ 85° C



Endschalter Typ	Kategorie des Endschalters	zusätzliche Kennzeichnung		Besonderheiten bzw. Einschränkungen	Umgebungstemperaturbereich
		nicht eigensicher	eigensicher		
610 0*0 I60 **_** 610 0*0 I70 **_** 610 0*0 K60 **_** 610 0*0 K70 **_**	1G		EEx ia IIB T5/T6	IP67; $P_i \leq 0,5 \text{ W}$ siehe 17.3	-25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
620 0*0 I60 **_** 620 0*0 I70 **_**	1G		EEx ia IIB T5/T6	IP67; $P_i \leq 0,5 \text{ W}$ siehe 17.3	-25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
650 0*0 I60 **_** 650 0*0 I70 **_** 650 0*0 K60 **_** 650 0*0 K70 **_** 650 0*0 I*2 **_** 650 0*0 K*2 **_**	1G		EEx ia IIB T5/T6	IP67; $P_i \leq 0,5 \text{ W}$ siehe 17.3	-25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
650 0*0 I*1 **_** 650 0*0 K*1 **_**	1G		EEx ia IIC T5/T6	IP67; $P_i \leq 0,5 \text{ W}$ siehe 17.3	-25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
671 *** *60 **_** 671 *** *70 **_**	1G		EEx ia IIB T5/T6	IP68 (10 bar); $I \leq 60 \text{ mA}$; siehe 17.3	-25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
671 *** *60 **_** 671 *** *70 **_**	1G		EEx ia IIB T5/T6	IP68 (10 bar); 60 mA $\leq I \leq$ 150 mA; siehe 17.5	-25° C $\leq T_a \leq$ 50° C (T6) 70° C (T5)
680 0** I60 **_** 680 0** I70 **_** 680 0** K60 **_** 680 0** K70 **_**	1G		EEx ia IIB T5/T6	IP68 (10 bar); siehe 17.3	-25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)



15.2 Beschreibung

Der Endschalter Typ 610 0** **0 **.-** besteht aus einem metallischen Gussgehäuse (GD - Zn Al 4 Cu 1), das einen in Vergussmasse eingebetteten Reedkontakt (Ein/Aus- oder Umschaltkontakt) enthält. Eine Anschlussleitung mit freien Leitungsenden ist mittels einer geeigneten Leitungseinführung in das Gehäuse geführt und mit den Anschlüssen des Kontaktes fest verbunden.

Der Endschalter Typ 620 0** **0 **.-** besteht aus einem zylindrischen Kunststoffgehäuse (PA66), das einen in Vergussmasse eingebetteten Reedkontakt (Ein/Aus- oder Umschaltkontakt) enthält. Eine Anschlussleitung mit freien Leitungsenden ist mittels einer geeigneten Leitungseinführung in das Gehäuse geführt und mit den Anschlüssen des Kontaktes fest verbunden.

Der Endschalter Typ 650 0*0 **0 **.-** besteht aus einem Kunststoffrohr, das einen in Vergussmasse eingebetteten Reedkontakt (Ein/Aus- oder Umschaltkontakt) enthält. Das Kunststoffrohr ist von einem metallischen zylindrischen Gehäuse (Werkstoff 1.4571, 1.4305 oder 1.4401) umschlossen. Eine Anschlussleitung mit freien Leitungsenden ist mittels einer geeigneten Leitungseinführung in das Gehäuse geführt und mit den Anschlüssen des Kontaktes fest verbunden.

Der Endschalter Typ 650 3*0 **0 **.-** besteht aus einem Kunststoffrohr, das einen in Vergussmasse eingebetteten Reedkontakt (Ein/Aus- oder Umschaltkontakt) enthält. Das Kunststoffrohr ist von einem metallischen zylindrischen Gehäuse (Werkstoff 1.4571, 1.4305 oder 1.4401) umschlossen. Eine Anschlussleitung mit freien Leitungsenden ist mittels einer geeigneten Leitungseinführung in das Gehäuse geführt und mit den Anschlüssen des Kontaktes fest verbunden. Am Gehäuse ist eine Schlauchverschraubung angebracht, an der ein vom Kunden ausgewählter Schutzschlauch montiert werden kann.

Der Endschalter Typ 650 3*0 **1 **.-** und Typ 650 3*0 **2 **.-** besteht aus einem Kunststoffrohr, das einen in Vergussmasse eingebetteten Reedkontakt (Ein/Aus- oder Umschaltkontakt) enthält. Das Kunststoffrohr ist von einem metallischen zylindrischen Gehäuse (Werkstoff 1.4571, 1.4305 oder 1.4401) umschlossen. Eine Anschlussleitung mit freien Leitungsenden ist mittels einer geeigneten Leitungseinführung in das Gehäuse geführt und mit den Anschlüssen des Kontaktes fest verbunden. Am Gehäuse ist eine Schlauchverschraubung mit Schutzschlauch montiert. Ausführung des Schlauches siehe unter 15.1.1 Typenschlüssel „h“

Der Endschalter Typ 671 *** **0 **.-** besteht aus einem zylindrischen metallischen Gehäuse (Werkstoff Nr. 1.4571, 1.4305 oder 1.4401), das - je nach Ausführung - zwei oder drei Widerstände und zwei (drei) Reedkontakte (3 Schließer, 2 Schließer, Schließer/Öffner) enthält. Die Bauteile sind in Vergussmasse eingebettet. Eine Anschlussleitung mit freien Leitungsenden ist mittels einer geeigneten Leitungseinführung in das Gehäuse geführt und mit den Anschlüssen der Kontakte fest verbunden.

Der Endschalter Typ 680 *** **0 **.-** besteht aus einem Kunststoffrohr, das eine in Vergussmasse eingebettete Hybrid-Schaltung mit elektronischen Bauteilen und einem Magnetfeldempfindlichen Bauteil ((NPN oder PNP Ausgang) enthält. Das Kunststoffrohr ist von einem metallischen zylindrischen Gehäuse (Werkstoff 1.4571, 1.4305 oder 1.4401) umschlossen. Eine Anschlussleitung mit freien Leitungsenden ist mittels einer geeigneten Leitungseinführung in das Gehäuse geführt und mit den Anschlüssen des Kontaktes fest verbunden.

Die Endschalter mit Kennbuchstaben „M“, „N“, „O“ oder „P“ in Spalte „f“ des Typenschlüssels sind zum Anschluss an nichteigensichere Stromkreise bestimmt. Kennbuchstaben „O“ und „P“ nur für MSS geschweißt.

Die Endschalter mit Kennbuchstaben „I“, „K“, „G“ oder „H“ in Spalte „f“ des Typenschlüssels sind zum Anschluss an eigensichere Stromkreise bestimmt. Kennbuchstaben „G“ und „H“ nur für MSS geschweißt.

15.3 Kenngrößen

15.3.1 nichteigensicher betriebene Endschalter

15.3.1.1 Endschalter Typenreihe 610 0** M/N*0 **_**

Typ	610 010 **0**_** 610 020 **0**_**	610 030 **0**_**	610 040 **0**_**	610 045 **0**_**
Bemessungsspannung	AC/DC 250 V	AC/DC 230 V	AC/DC 250 V	AC/DC 230 V
Bemessungsstromstärke	3 A	1 A	1 A	0,6 A
Bemessungsleistung	100 VA / 100 W	60 VA / 60 W	60 VA / 60 W	45 VA / 45 W
Temperaturklasse	T6 / T5	T6 / T5	T6 / T5	T6 / T5
max. Umgebungstemperatur	70°C / 85°C	70°C / 85°C	70°C / 85°C	70°C / 85°C

15.3.1.2 Endschalter Typenreihe 620 0** M/N*0 **_**

Typ	620 010 **0**_** 620 020 **0**_**	620 030 **0**_**
Bemessungsspannung	AC/DC 230 V	AC/DC 48 V
Bemessungsstromstärke	2 A	1 A
Bemessungsleistung	60 VA / 60 W	20 VA / 20 W
Temperaturklasse	T6 / T5	T6 / T5
max. Umgebungstemperatur	70°C / 85°C	70°C / 85°C

15.3.1.3 Endschalter Typenreihe 650 *** M/N*** **_**

Typ	650 *10 *** **_**	650 *30 *** **_**
Bemessungsspannung	AC/DC 250 V	AC/DC 230 V
Bemessungsstromstärke	3 A	1 A
Bemessungsleistung	100 VA / 100 W	60 VA / 60 W
Temperaturklasse	T6 / T5	T6 / T5
max. Umgebungstemperatur	70°C / 85°C	70°C / 85°C

15.3.1.4 Endschalter Typenreihe 671 *** M/N/O/P*** **_**

Typ	671 *** **_**	671 *** **_**
Bemessungsspannung	AC/DC 24 V	AC/DC 24 V
Bemessungsstromstärke (statisch)	60 mA	150 mA
Bemessungsstromstärke (dynamisch)	500 mA für zwei Sekunden	500 mA für zwei Sekunden
Bemessungsschaltleistung	5 VA / 5 W	5 VA / 5 W
Temperaturklasse	T6 / T5	T6 / T5
max. Umgebungstemperatur	70°C / 85°C	50°C / 70°C

15.3.1.5 Endschalter Typenreihe 680 0** M/N*0 **_**

Typ	680 0** **0 **_**
Bemessungsspannung	DC 10 bis 30 V
Bemessungsstromstärke	200 mA
Nennleistung	0,5 W
Temperaturklasse	T6 / T5
max. Umgebungstemperatur	70°C / 85°C

15.3.2 eigensicher betriebene Endschalter

15.3.2.1 Endschalter Typenreihe 610 0** I/K*0 **_**

Typ	610 010 **0**_** 610 020 **0**_**	610 030 **0**_**	610 040 **0**_**	610 045 **0**_**
Spannung U_i	AC/DC 60 V	AC/DC 60 V	AC/DC 60 V	AC/DC 60 V
Stromstärke I_i	3 A	1 A	1 A	0,6 A
Leistung P_i	500 mW *)	500 mW *)	500 mW *)	500 mW *)
innere wirksame Kapazität C_i	siehe 15.3.2.6	siehe 15.3.2.6	siehe 15.3.2.6	siehe 15.3.2.6
innere wirksame Induktivität L_i	siehe 15.3.2.6	siehe 15.3.2.6	siehe 15.3.2.6	siehe 15.3.2.6
Temperaturklasse	T6 / T5	T6 / T5	T6 / T5	T6 / T5
max. Umgebungstemperatur	70°C / 85°C	70°C / 85°C	70°C / 85°C	70°C / 85°C

*) gilt nur für 1G und 1/2G Anwendung; für 2G Anwendung nicht relevant

15.3.2.2 Endschalter Typenreihe 620 0** I/K*0 **_**

Typ	620 010 **0**_** 620 020 **0**_**	620 030 **0**_**
Spannung U_i	AC/DC 60 V	AC/DC 48 V
Stromstärke I_i	2 A	1 A
Leistung P_i	500 mW *)	500 mW *)
innere wirksame Kapazität C_i	siehe 15.3.2.6	siehe 15.3.2.6
innere wirksame Induktivität L_i	siehe 15.3.2.6	siehe 15.3.2.6
Temperaturklasse	T6 / T5	T6 / T5
max. Umgebungstemperatur	70°C / 85°C	70°C / 85°C

*) gilt nur für 1G und 1/2G Anwendung; für 2G Anwendung nicht relevant

15.3.2.3 Endschalter Typenreihe 650 *** I/K** *_**

Typ	650 *10 *** *_**	650 *30 *** *_**
Spannung U_i	AC/DC 60 V	AC/DC 60 V
Stromstärke I_i	3 A	1 A
Leistung P_i	500 mW ')	500 mW *)
innere wirksame Kapazität C_i	siehe 15.3.2.6	siehe 15.3.2.6
innere wirksame Induktivität L_i	siehe 15.3.2.6	siehe 15.3.2.6
Temperaturklasse	T6 / T5	T6 / T5
max. Umgebungstemperatur	70°C / 85°C	70°C / 85°C

*) gilt nur für 1G und 1/2G Anwendung; für 2G Anwendung nicht relevant

15.3.2.4 Endschalter Typenreihe 671 *** I/K/G/H** *_**

Typ	671 *** *_**	671 *** *_**
Spannung U_i	AC/DC 24 V	AC/DC 24 V
Stromstärke I_i (statisch)	60 mA	150 mA
Stromstärke I_i (dynamisch)	500 mA für zwei Sekunden	500 mA für zwei Sekunden
innere wirksame Kapazität C_i	siehe 15.3.2.6	siehe 15.3.2.6
innere wirksame Induktivität L_i	siehe 15.3.2.6	siehe 15.3.2.6
Leistung P_i	500 mW	500 mW
Temperaturklasse	T6 / T5	T6 / T5
max. Umgebungstemperatur	70°C / 85°C	50°C / 70°C

15.3.2.5 Endschalter Typenreihe 680 0** I/K*0 *_**

Typ	680 0** *_**
Spannung U_i	DC 16 V
Stromstärke I_i	200 mA
Leistung P_i	500. mW
innere wirksame Kapazität C_i	150 nF + xx nF "xx" siehe 15.3.2.6
innere wirksame Induktivität L_i	siehe 15.3.2.6
Temperaturklasse	T6 / T5
max. Umgebungstemperatur	70°C / 85°C

15.3.2.6 wirksame innere Kapazität und Induktivität

Leitungslänge	≤ 10 m	≤ 50 m	≤ 100 m	≤ 200 m
C_i	2 nF	7 nF	12 nF	24 nF
L_i	10 μH	50 μH	100 μH	200 μH

- 15.3.3 Umgebungstemperaturbereich: - 25° C ≤ T_a ≤ 70° C (Temperaturklasse T6)
 - 25° C ≤ T_a ≤ 85° C (Temperaturklasse T5)
 - 25° C ≤ T_a ≤ 50° C / 70° C (Temperaturklasse T6 / T5) *)

*) gilt für Endschalter Typenreihe 671 *** ** *_** bei 60 mA ≤ I_i ≤ 150 mA

(16) Prüfprotokoll

BVS PP 03.2287 EG, Stand 16.12.2003

(17) Besondere Bedingungen für die sichere Anwendung

- 17.1 Eigensicher betriebene Endschalter mit Kennzeichnung 2G EEx ia IIC T*
- 17.1.1 Endschalter Typ 671 *** ** *_**
 Für die Endschalter gilt bei 60 mA ≤ I_i ≤ 150 mA Temperaturklasse T6 / T5 bei einer maximalen Umgebungstemperatur von +50° C / + 70° C.
- 17.1.2 Endschalter Typ 620 0** **0 **_*
 Die metallische Leitungseinführung am Endschalter muss in den Potentialausgleich mit eingezogen sein.
- 17.2 Eigensicher betriebene Endschalter mit Kennzeichnung 1/2G EEx ia IIC T*
- 17.2.1 Endschalter Typ 650 *** ** *_**, Typ 671 *** ** *_**, Typ 680 *** ** *_**
- 17.2.1.1 Der Einbau des Endschalters in die Wand von Bereichen, die Kategorie 1G Betriebsmittel erfordern, hat so zu erfolgen, dass die Schutzart IP 67 gemäß EN 60529 gewährleistet ist.
- 17.2.1.2 Der Einbau des Endschalters in die Wand von Bereichen, die Kategorie 1G Betriebsmittel erfordern, hat so zu erfolgen, dass das Gehäuse des Endschalters in den Potentialausgleich mit einbezogen ist.
- 17.2.1.3 Die technischen Informationen des Herstellers zur Verwendung des Endschalters in Verbindung mit aggressiven / korrosiven Medien und zur Vermeidung von mechanischen Gefährdungen sind zu beachten.
- 17.2.2 Endschalter Typ 620 *** ** *_**
- 17.2.2.1 Der Einbau des Endschalters in die Trennwand hat so zu erfolgen, dass die wirksame freie Kunststoffoberfläche in Bereichen, die Kategorie 1G Betriebsmittel erfordern kleiner/gleich 4 cm² ist. Diese Auflage/Bedingung gilt für Gruppe IIC Anwendungen.
- 17.2.2.2 Der Einbau des Endschalters in die Trennwand zu Bereichen, die Kategorie 1G Betriebsmittel erfordern, hat so zu erfolgen, dass die metallischen Befestigungsmuttern des Endschalters in den Potentialausgleich mit einbezogen sind.
- 17.2.2.3 Bei Einbau des Endschalters in die Trennwand zu Bereichen, die Kategorie 1G Betriebsmittel erfordern, dürfen Befestigungsmuttern aus Kunststoff nicht verwendet werden.

- 17.2.2.4 Die technischen Informationen des Herstellers zur Verwendung des Endschalters in Verbindung mit aggressiven Medien und zur Vermeidung von mechanischen Gefährdungen sind zu beachten.
- 17.2.2.5 Die metallische Leitungseinführung am Endschalter muss in den Potentialausgleich mit einbezogen sein.
- 17.2.3 Endschalter Typ 671 *** ** *_**
Für die Endschalter gilt bei $60 \text{ mA} \leq I_i \leq 150 \text{ mA}$ Temperaturklasse T6 / T5 bei einer maximalen Umgebungstemperatur von $+50^\circ \text{ C} / +70^\circ \text{ C}$.
- 17.3 Eigensicher betriebene Endschalter mit Kennzeichnung 1G EEx ia IIB / IIC T*
- 17.3.1 Allgemeines
Die Verschraubung / Befestigung des Anschlusskabels in der Wand von Bereichen, die Kategorie 1G Betriebsmittel erfordern, hat so zu erfolgen, dass mindestens die Schutzart IP 67 gemäß EN 60529 gewährleistet ist.
- 17.3.2 Endschalter Typ 610 *** ** *_** Typ 650 *** ** *_**, Typ 671 *** ** *_**, Typ 680 *** ** *_**
- 17.3.2.1 Der Einbau des Endschalters hat so zu erfolgen, dass das Gehäuse des Endschalters in den Potentialausgleich mit einbezogen ist.
- 17.3.2.2 Die technischen Informationen des Herstellers zur Verwendung des Endschalters in Verbindung mit aggressiven / korrosiven Medien und zur Vermeidung von mechanischen Gefährdungen sind zu beachten.
- 17.3.3 Endschalter Typ 610 *** ** *_**
Die freie Vergussoberfläche muss im eingebauten Zustand von einer leitfähigen Montagefläche abgedeckt sein. Diese Auflage/Bedingung gilt für Ausführungen mit Vergussmasse Micafil Typ Mikares X1087NC weiß; Härter P 978.
- 17.3.4 Endschalter Typ 620 *** ** *_**
- 17.3.4.1 Der Einbau des Endschalters hat so zu erfolgen, dass die metallische Leitungseinführung am Endschalter in den Potentialausgleich mit einbezogen ist.
- 17.3.4.2 Der Einbau des Endschalters hat so zu erfolgen, dass die metallischen Befestigungsmuttern des Endschalters in den Potentialausgleich mit einbezogen sind.
- 17.3.4.3 Der Endschalter ist nur für Gruppe IIB bzw. IIA geeignet.
- 17.3.4.4 Die technischen Informationen des Herstellers zur Verwendung des Endschalters in Verbindung mit aggressiven Medien und zur Vermeidung von mechanischen Gefährdungen sind zu beachten.
- 17.3.5 Endschalter Typ 671 *** ** *_**
Für die Endschalter gilt bei $60 \text{ mA} \leq I_i \leq 150 \text{ mA}$ Temperaturklasse T6 / T5 bei einer maximalen Umgebungstemperatur von $+50^\circ \text{ C} / +70^\circ \text{ C}$.
- 17.4 Nicht-eigensicher betriebene Endschalter mit Kennzeichnung 2G EEx m II T*
- 17.4.1 Allgemeines
- 17.4.1.1 Die nichtabgeschlossenen freien Leitungsenden des Endschalters Typ 6** *** ** *_** müssen entsprechend den jeweils gültigen Errichtungsbestimmungen angeschlossen sein.

- 17.4.1.2 In dem Stromkreis des Endschalters Typ 6** *** ***_** muss eine an die Nenndaten des Schaltkontaktes / der Schalt-Elektronik angepasste Sicherung vorhanden sein mit einem Abschaltvermögen, das mindestens dem prospektiven Kurzschlussstrom des versorgenden Netzes am Einsatzort entspricht.
- 17.4.2 Endschalter Typ 610 *** *** ***_**
Die freie Vergussoberfläche muss im eingebauten Zustand von der Montagefläche gegen Lichteinwirkung abgedeckt sein. Diese Auflage/Bedingung gilt für Ausführungen mit Vergussmasse Micafil Typ Mikares X1087NC weiß; Härter P 978.
- 17.4.3 Endschalter Typ 620 0** **0 ***_**
- 17.4.3.1 Der Endschalter muss gegen mechanische Beanspruchung geschützt installiert werden.
- 17.4.3.2 Die metallische Leitungseinführung am Endschalter muss in den Potentialausgleich mit einbezogen sein.
- 17.4.4 Endschalter Typ 671 *** *** ***_**
Für den Endschalter gilt bei $60 \text{ mA} \leq I \leq 150 \text{ mA}$ Temperaturklasse T5/T6 bei einer maximalen Umgebungstemperatur von $+ 50^{\circ}\text{C} / +70^{\circ}\text{C}$.
- 17.5 Nicht-eigensicher betriebene Endschalter mit Kennzeichnung 2D
- 17.5.1 Allgemeines
- 17.5.1.1 Die nichtabgeschlossenen freien Leitungsenden des Endschalters Typ 6** *** ***_** müssen entsprechend den jeweils gültigen Errichtungsbestimmungen angeschlossen sein.
- 17.5.1.2 Das metallische Gehäuse des Endschalters muss in den Potentialausgleich mit einbezogen sein.
- 17.5.1.3 In dem Stromkreis des Endschalters Typ 6** *** ***_** muss eine an die Nenndaten des Schaltkontaktes / der Schalt-Elektronik angepasste Sicherung vorhanden sein mit einem Abschaltvermögen, das mindestens dem prospektiven Kurzschlussstrom des versorgenden Netzes am Einsatzort entspricht.
- 17.5.2 Endschalter Typ 610 *** *** ***_**
- 17.5.2.1 Die freie Vergussoberfläche muss im eingebauten Zustand von der Montagefläche gegen Lichteinwirkung abgedeckt sein. Diese Auflage/Bedingung gilt für Ausführungen mit Vergussmasse Micafil Typ Mikares X1087NC weiß; Härter P 978.
- 17.5.3 Endschalter Typ 620 0** **0 ***_**
- 17.5.3.1 Der Endschalter muss gegen mechanische Beanspruchung geschützt installiert werden.
- 17.5.3.2 Die metallischen Befestigungsmuttern des Endschalters müssen in den Potentialausgleich mit einbezogen sein

EG-Konformitätserklärung

im Sinne der EG-Richtlinien 94/9/EG (ATEX) und
98/37/EG (Maschinenrichtlinie)

Hiermit erklären wir,

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dass die nachfolgend bezeichneten Maschinensicherheits-Bauteile aufgrund ihrer Konzipierung und Bauart den einschlägigen grundlegenden Sicherheits- und Gesundheitsanforderungen der EG-Richtlinie entsprechen. Bei einer nicht mit uns abgestimmten Änderung des/der Maschinensicherheits-Bauteiles/e sowie eines zweckentfremdeten, nicht nach unseren Betriebshinweisen gültigen Einsatzes, verliert diese Erklärung ihre Gültigkeit.
Die Ex-Betriebsanleitung "Maschinensicherheitssensoren Serie 671..." ist zu beachten!

**Bezeichnung des Maschinen-
Sicherheits-Bauteiles:**

.....*Maschinenschutzschalter (MSS)*.....

Artikel-Nrn.:

.....*671 261..., 671 262..., 671 V62..., 671 271*.....

**Einschlägige
EG-Richtlinien:**

RL 94/9EG (ATEX)
EG-Baumusterprüfbescheinigung: BVS 03 ATEX E 126 X
QS-Audit: TÜV Produkt Service GmbH, Kenn-Nr. 0123
EG-Niederspannungsrichtlinie (73/23/EWG)
EG-Richtlinie Elektromagnetische Verträglichkeit
(89/336/EWG i.d.F 92/31/EWG)
EG-Maschinenrichtlinie (98/37/EG)

**Angewandte
harmonisierte Normen
insbesondere:**

EN 954-1, EN 60204 Teil 1
EN 50081 Teil 2, EN 50082 Teil 2
EN 50014 Allgemeine Bestimmungen
EN 50028 Vergusskapselung (m)
EN 50281-1-1 Staubexplosionsschutz
EN 50020 Eigensicherheit (ia)
EN 50284 Gerätegruppe II, Kategorie 1G

**Angewandte
nationale Normen und
technische Spezifikationen
insbesondere:**

VDE 0843, VDE 0660 T100, VDE 0660 T200

Datum/Hersteller-Unterschrift:

.....*19.01.2004*.....

Angaben zum Unterzeichner:

.....*Geschäftsleitung / Herr Hetzer*.....

Archivierung

.....
Maschinen - Sicherheits - Bauteil-Nr. -IId.-Nr.

Item No. : *428806*

Doc No: 15675-0

Order No. : *84515*

Checked : *22.06.05 fme*

EC-Conformity Declaration

according to the EC-directives 94/9/EG (ATEX) and
98/37/EG (Machine Directive)

Hereby we,

Fa. elobau Elektrobauelemente GmbH & Co. KG

88306 Isny / Allgäu

P.O. Box 12 65

Tel. 07562 / 9700-0

Fax. 07562 / 9700-10

confirm that the below mentioned machine safety components fulfil the particular basic safety and health requirements of the EC-directive according to their design and construction. If the machine safety components are modified without our agreement or if they are not used according to our instructions this declaration is no longer valid.

Please note our operating instructions "Machine Safety Sensors 671....!"

Description of the

Machine Safety Component:

.....*Machine Safety Switches*.....

Part No:

.....*671 261...; 671 262...; 671 V62...; 671 271*.....

Particular

EC Directives:

Standard 94/9 EG (ATEX)

Certificate: BVS 03 ATEX E 126 X

Quality Audit: TÜV Product Service GmbH; Ident N°. 0123

EC-Directive (98/37/EG)

EC-Low-Voltage-Directive (73/23/EEC)

EC-Directive Electromagnetic Compatibility

(89/336/EEC i.d.F 92/31/EEC)

Applied

Harmonized Norms

Especially:

EN 954-1, EN 60204 part 1

EN 50081 part 2, EN 50082 part 2

EN 50014

General conditions

EN 50028

Encapsulation (m)

EN 50281-1-1

Dust explosion proof

EN 50020

Intrinsically safe (ia)

EN 50284

Equipment group II, category 1G

Applied

National Norms and

Technical Specifications

Especially:

VDE 0843, VDE 0660 T100, VDE 0660 T209

Date/Signature of Producer:

.....*19.01.2004*.....

Details of the Signatory:

.....*Management / Mr. Hetzer*.....

Registration

.....
machine safety component no. current no.

STAHL-Fribos AG
Industriestrasse 26
5070 Frick

Doc No: 15683-1

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

(1) EC Type Examination Certificate

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) EC-Type Examination Certificate Number

PTB 01 ATEX 2053

(4) Apparatus: Safety Barrier Type 9002/.....1

(5) Manufacturer: R. STAHL SCHALTGERÄTE GMBH

(6) Address: 74638 Waldenburg, DEUTSCHLAND

(7) The construction of this apparatus and any acceptable variation thereto is specified in the schedule to this type examination certificate.

(8) The Physikalisch Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this apparatus has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The results of the test are recorded in the confidential report No. PTB Ex 01-29099.

(9) The Essential Health and Safety Requirements are met by compliance with

EN 50014:1997+ A1 + A2

EN 50020:1994

(10) If the sign "X" is placed after the certificate number, it indicates special conditions for safe use of the apparatus specified in the schedule to this certificate.

(11) This EC Type Examination Certificate relates only to the design and construction of the specified apparatus in accordance with Directive 94/9/EC. Further requirements of this directive apply to the manufacture and supply of this equipment.

(12) The marking of the apparatus shall include the following:

 II (1/2) G [EEx ia/ib] IIB/IIC

Zertifizierungsstelle Explosionsschutz
by order
PTB
(signature)
Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Braunschweig, 30 May 2001

Item No. : 425177
Order No. : 30783
Checked : 30.1.07

Reh

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Braunschweig und Berlin

S h e d u l e

(13)

(14)

EC Type Examination Certificate PTB 01 ATEX 2053(15) Description of the equipment

The safety barriers Type 9002/.....-1 are associated apparatus for the safe separation of intrinsically safe from non-intrinsically safe circuits. They include limitation equipment for two circuits with current limitation and voltage limitation by reference to the equipotential bonding conductor.

As determined, the connections for the equipotential bonding conductor are fail-safely connected with the local system of the equipotential bonding conductor.

The maximum permissible ambient temperature range is $-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$ (+50°C).

Electrical data

non-intrinsically safe circuits

safety maximum voltage $U_m = 250 \text{ V}$

intrinsically safe circuits

with type of protection Intrinsic safety EEx ia/ib IIB/IIC, linear characteristic, according to the following table:

(C_o u. L_o : characteristics to EN 50020, table A.2, or illustration A.4 at $U_o \leq 24 \text{ V}$ or PTB table at $U_o > 24 \text{ V}$)

Type/channel	U_o [V]	I_o [mA]	P_o [W]		IIC	IIB
9002/00-260-138-001 and 9002/11-260-138-001	26	87	0,57	Lo / mH	2,7	15,5
Co / μ F				0,099	0,77	
II	20	51	0,26	Lo / mH	14	54
				Co / μ F	0,22	1,41
I + II	26	138	0,85	Lo / mH	0,81	5,1
				Co / μ F	0,087	0,67
9002/00-120-024-001 and 9002/11-120-024-001	12	12	0,04	Lo / mH	240	850
				Co / μ F	1,41	9
II	12	12	0,04	Lo / mH	240	850
				Co / μ F	1,41	9
I + II	12	24	0,07	Lo / mH	63	230
				Co / μ F	1,1	7,1
9002/10-187-020-001	9,33	20	0,05	Lo / mH	90	330
				Co / μ F	3,9	29
II	9,33	20	0,05	Lo / mH	90	330
				Co / μ F	3,9	29
I + II	18,7	20	0,09	Lo / mH	90	330
				Co / μ F	0,27	1,64

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9002/10-187-270-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	9,33	270	0,63	Lo / mH	0,23	2,2
				Co / µF	3,9	29
II	9,33	270	0,63	Lo / mH	0,23	2,2
				Co / µF	3,9	29
I + II	18,7	270	1,26	Lo / mH	0,23	2,2
				Co / µF	0,27	1,64
9002/10-210-030-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	10,5	30	0,08	Lo / mH	40	150
				Co / µF	2,41	16,8
II	10,5	30	0,08	Lo / mH	40	150
				Co / µF	2,41	16,8
I + II	21	30	0,16	Lo / mH	40	150
				Co / µF	0,188	1,27
9002/00-280-186-001 and 9002/11-280-186-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	28	93	0,65	Lo / mH	2	13
				Co / µF	0,083	0,65
II	28	93	0,65	Lo / mH	2	13
				Co / µF	0,083	0,65
I + II	28	186	1,3	Lo / mH	-	2,8
				Co / µF	-	0,551
9002/11-130-360-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	13	321	1,04	Lo / mH	0,19	1,6
				Co / µF	1	6,2
II	1,6	39	0,016	Lo / mH	24	91
				Co / µF	100	1000
I + II	13	360	1,17	Lo / mH	0,17	1,3
				Co / µF	0,79	5
9002/11-137-029-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	13,7	14,5	0,05	Lo / mH	160	560
				Co / µF	0,79	5
II	13,7	14,5	0,05	Lo / mH	160	560
				Co / µF	0,79	5
I + II	13,7	29	0,1	Lo / mH	43	160
				Co / µF	0,67	4,18
9002/11-280-112-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	28	109	0,76	Lo / mH	1,3	9
				Co / µF	0,083	0,65
II	28	3	0,02	Lo / mH	50	150
				Co / µF	0,083	0,65
I + II	28	112	0,78	Lo / mH	0,76	8,4
				Co / µF	0,065	0,551
9002/11-280-244-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	28	184	1,29	Lo / mH	-	2,9
				Co / µF	-	0,65
II	28	60	0,42	Lo / mH	-	25
				Co / µF	-	0,65
I + II	28	244	1,71	Lo / mH	-	1,1
				Co / µF	-	0,62

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9002/11-280-293-001 and 9002/11-280-293-021	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	28	89	0,63	Lo / mH	2,2	14
				Co / µF	0,083	0,65
II	9,56	180	0,43	Lo / mH	0,6	5
				Co / µF	3,6	28
I + II	28	269	1,05	Lo / mH	-	0,56
				Co / µF	-	0,62
9002/11-199-030-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	19,9	15	0,075	Lo / mH	160	560
				Co / µF	0,223	1,42
II	19,9	15	0,075	Lo / mH	160	560
				Co / µF	0,223	1,42
I + II	19,9	30	0,15	Lo / mH	40	150
				Co / µF	0,223	1,42
9002/13-199-225-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	19,9	222	1,1	Lo / mH	0,39	3,18
				Co / µF	0,223	1,42
II	19,9	3	0,015	Lo / mH	1000	1000
				Co / µF	0,223	1,42
I + II	19,9	225	1,12	Lo / mH	0,37	3,15
				Co / µF	0,213	1,38
9002/13-252-121-041	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	25,2	118	0,74	Lo / mH	1,3	7,4
				Co / µF	0,107	0,82
II	25,2	0	0,02	Lo / mH	50	150
				Co / µF	0,107	0,82
I + II	25,2	121	0,76	Lo / mH	1,25	7,35
				Co / µF	0,104	0,8
9002/13-280-093-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	28	90	0,63	Lo / mH	2,2	14
				Co / µF	0,083	0,65
II	28	3	0,021	Lo / mH	50	150
				Co / µF	0,083	0,65
I + II	28	93	0,651	Lo / mH	2	13
				Co / µF	0,08	0,636
9002/13-280-100-041	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	28	97	0,679	Lo / mH	1,8	12
				Co / µF	0,083	0,65
II	28	0	0,021	Lo / mH	50	150
				Co / µF	0,083	0,65
I + II	28	100	0,7	Lo / mH	1,55	11
				Co / µF	0,08	0,635
9002/13-280-110-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	28	107	0,749	Lo / mH	1,35	9,6
				Co / µF	0,083	0,65
II	28	3	0,021	Lo / mH	50	150
				Co / µF	0,083	0,65
I + II	28	110	0,77	Lo / mH	1,25	9
				Co / µF	0,08	0,635

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9002/13-280-188-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	28	185	1,295	Lo / mH	-	2,85
				Co / µF	-	0,65
II	28	3	0,021	Lo / mH	-	150
				Co / µF	-	0,65
I + II	28	188	1,316	Lo / mH	-	2,7
				Co / µF	-	0,635
9002/22-016-383-111	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	0,8	191,5	0,038	Lo / mH	0,54	4,4
				Co / µF	100	1000
II	0,8	191,5	0,038	Lo / mH	0,54	4,4
				Co / µF	100	1000
I + II	1,6	383	0,077	Lo / mH	0,16	0,96
				Co / µF	100	1000
9002/22-032-300-111	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	1,6	150	0,06	Lo / mH	1,3	7
				Co / µF	100	1000
II	1,6	150	0,06	Lo / mH	1,3	7
				Co / µF	100	1000
I + II	3,2	300	0,12	Lo / mH	0,2	1,8
				Co / µF	100	1000
9002/22-048-442-111	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	2,4	221	0,133	Lo / mH	0,4	3,19
				Co / µF	100	1000
II	2,4	221	0,133	Lo / mH	0,4	3,19
				Co / µF	100	1000
I + II	4,8	442	0,266	Lo / mH	0,12	0,54
				Co / µF	100	1000
9002/22-158-200-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	7,9	100	0,198	Lo / mH	4,0	15
				Co / µF	8,8	115
II	7,9	100	0,198	Lo / mH	4	15
				Co / µF	8,8	115
I + II	15,8	200	0,396	Lo / mH	0,5	4
				Co / µF	0,478	2,88
9002/22-240-024-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	12	12	0,04	Lo / mH	240	850
				Co / µF	1,41	9
II	12	12	0,04	Lo / mH	240	850
				Co / µF	1,41	9
I + II	24	24	0,08	Lo / mH	41	145
				Co / µF	0,125	0,93
9002/22-240-160-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	12	80	0,24	Lo / mH	6	22
				Co / µF	1,41	9
II	12	80	0,24	Lo / mH	6	22
				Co / µF	1,41	9
I + II	24	160	0,48	Lo / mH	0,7	4
				Co / µF	0,125	0,93

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9002/33-280-000-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	28	"0"		Lo / mH	1000	1000
				Co / µF	0,083	0,65
II	28	"0"		Lo / mH	1000	1000
				Co / µF	0,083	0,65
I + II	28	"0"		Lo / mH	1000	1000
				Co / µF	0,083	0,65
9002/34-280-000-01	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	20	"0"		Lo / mH	1000	1000
				Co / µF	0,22	1,41
II	8	"0"		Lo / mH	1000	1000
				Co / µF	8,4	100
I + II	28	"0"		Lo / mH	1000	1000
				Co / µF	0,083	0,65
9002/77-093-040-001 (as well as 9002/22 ...)	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	9,3	20	0,05	Lo / mH	90	330
				Co / µF	4,1	31
II	9,3	20	0,05	Lo / mH	90	330
				Co / µF	4,1	31
I + II	9,3	40	0,09	Lo / mH	23	87
				Co / µF	4,1	31
9002/77-093-300-001 (as well as 9002/22 ...)	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	9,3	150	0,35	Lo / mH	1,3	7
				Co / µF	4,1	31
II	9,3	150	0,35	Lo / mH	1,3	7
				Co / µF	4,1	31
I + II	9,3	300	0,7	Lo / mH	0,2	1,8
				Co / µF	4,1	31
9002/77-100-400-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	10	200	0,5	Lo / mH	0,5	4
				Co / µF	3	20,2
II	10	200	0,5	Lo / mH	0,5	4
				Co / µF	3	20,2
I + II	10	400	1	Lo / mH	0,15	0,8
				Co / µF	3	20,2
9002/77-150-300-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	15	150	0,56	Lo / mH	1,3	7
				Co / µF	0,58	3,55
II	15	150	0,56	Lo / mH	1,3	7
				Co / µF	0,58	3,55
I + II	15	300	1,13	Lo / mH	0,2	1,8
				Co / µF	0,58	3,55
9002/77-220-146-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	22	73	0,4	Lo / mH	7	26
				Co / µF	0,165	1,14
II	22	73	0,4	Lo / mH	7	26
				Co / µF	0,165	1,14
I + II	22	146	0,8	Lo / mH	1,4	7,4
				Co / µF	0,165	1,14

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9002/77-220-296-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	22	148	0,81	Lo / mH	1,35	7,2
				Co / µF	0,165	1,14
II	22	148	0,81	Lo / mH	1,35	7,2
				Co / µF	0,165	1,14
I + II	22	296	1,63	Lo / mH	0,24	1,84
				Co / µF	0,165	1,14
9002/77-280-094-001	U ₀ [V]	I ₀ [mA]	P ₀ [W]		IIC	IIB
I	28	47	0,33	Lo / mH	10,1	30
				Co / µF	0,083	0,65
II	28	47	0,33	Lo / mH	10,1	30
				Co / µF	0,083	0,65
I + II	28	94	0,66	Lo / mH	1,96	12,5
				Co / µF	0,083	0,65

All intrinsically safe and non-intrinsically safe circuits are galvanically connected with each other and with the connections for the equipotential bonding conductor via their reference conductors.

(16) Test report PTB Ex 01-29099

(17) Special conditions

see operating instructions

(18) Essential health and safety requirements

covered by compliance with the above standards

Zertifizierungsstelle Explosionsschutz
by order
PTB
signed: Johannsmeyer L.S.

Braunschweig, 30. May 2001

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Physikalisch-Technische Bundesanstalt


Braunschweig und Berlin

1st A M E N D M E N T

according to Directive 94/9/EC Appendix III Subparagraph 6

to EC-Type Examination Certificate PTB 01 ATEX 2053

Equipment: Safety Barrier Type 9002/00-260-138-001 and 9002/11-260-138-001

Marking:  II (1/2) G [EEx ia/ib] IIB/IIC

Manufacturer: R. STAHL Schaltgeräte GmbH

Address: Am Bahnhof 30
74638 Waldenburg, GERMANYDescription of the additions and modifications

The electrical data regarding power P_o mentioned in the following can also be assigned to the safety barriers Type 9002/00-260-138-001 and 9002/11-260-138-001 - they result without technical amendments from the drop of the rounding in no-load operation and short circuit current.

All other data remain unchanged.

Electrical data:(C_o and L_o: reference data to EN 50 020, Tab. A.2, or picture A.4 with U_o ≤ 24 V or PTB table with U_o > 24 V)

Type / Channel	U _o [V]	I _o [mA]	P _o [W]		IIC	IIB
9002/00-260-138-001 and 9002/11-260-138-001						
I	26	87	0,54	Lo / mH	2,7	15,5
				Co / μF	0,099	0,77
II	20	51	0,245	Lo / mH	14	54
				Co / μF	0,22	1,41
I + II	26	138	0,785	Lo / mH	0,81	5,1
				Co / μF	0,087	0,67

Test report: PTB Ex 01-21402Zertifizierungsstelle Explosionsschutz
On behalf of

Braunschweig, 26. October 2001

(signature)
Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Uncertified Translation


Physikalisch-Technische Bundesanstalt

Braunschweig and Berlin

2 nd A M E N D M E N T

according to Directive 94/9/EG Annex III.6

to EC Type Examination Certificate PTB 01 ATEX 2053

Equipment: Safety Barrier Type 9002/.....1
Marking:  II (1/2) G D [EEx ia/ib] IIB/IIC
Manufacturer: R. STAHL Schaltgeräte GmbH
Address: Am Bahnhof 30, 74638 Waldenburg, GERMANY

Description of supplements and modifications

The Safety Barriers Type 9002/.....1 may be also used as associated apparatus for hazardous locations endangered by dusts.

All other data remain unchanged.

Remark: For hazardous areas endangered by dust the maximum inductance and capacitance values as given for gas group IIB apply.

Test Report: PTB Ex 04-24070

Zertifizierungsstelle Explosionsschutz
by order

Braunschweig, 26. April 2004

(signature)
Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Page 1/1

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig

EG-Konformitätserklärung
EC-Declaration of Conformity
CE-Déclaration de Conformité



Wir (we; nous)

R. STAHL Schaltgeräte GmbH, Am Bahnhof 30, D-74638 Waldenburg

9002/.....1

erklären in alleiniger Verantwortung, dass das Produkt
hereby declare in our sole responsibility, that the product
déclarons de notre seule responsabilité, que le produit

Sicherheitsbarriere
Safety Barrier
Barrière de Sécurité

mit der EG-Baumusterprüfbescheinigung:
(under; EC-Type Examination Certificate:
avec) Attestation d'examen CE de type:

PTB 01 ATEX 2053

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen Dokumenten übereinstimmt

which is the subject of this declaration, is in conformity with the following standard(s) or normative documents
auquel cette déclaration se rapporte, est conforme aux normes ou aux documents normatifs suivants

Bestimmungen der Richtlinie
terms of the directive
prescription de la directive

Titel und/oder Nr. sowie Ausgabedatum der Norm
title and/or No. and date of issue of the standard
titre et/ou No. ainsi que date d'émission des normes

94/9/EG: Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen
94/9/EC: Equipment and protective systems intended for use in potentially explosive atmospheres
94/9/CE: Appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles

EN 50014: 1997 (+ A1:1999 + A2:1999)
 EN 50020: 1994
 EN 60079-0: 2004
 EN 60079-15: 2005

89/336/EWG: Elektromagnetische Verträglichkeit
89/336/EEC: Electromagnetic compatibility
89/336/CEE: Compatibilité électromagnétique

EN 61326: 1997
 (+ A1:1998 + A2:2001 + A3:2003)

Das Gerät erfüllt die Anforderungen zur Kennzeichnung:
The apparatus fulfils the requirements for the marking:
L'appareil répond aux exigences pour le marquage:

II 3 G Ex nA II T4
T₃ = -20°C ... +60°C (+50°C)

Konformitätsaussage:
und der technischen Dokumentation hinterlegt unter:
Certificate of Conformity:
And the technical documentation filed under:
Certificat de conformité:
et documentation technique sous:

PTB 01 ATEX 2054
U-Bericht Nr. 4997/06

Qualitätssicherung Produktion:
Production Quality Assessment:
Assurance Qualité Production:

PTB 96 ATEX Q006-4

Kenn-Nr. der benannten Stelle / Notified Body number / N° de l'organisme de certification: 0102

Waldenburg, 15.11.2006

Ort und Datum
Place and date
lieu et date

J.-P. Rückgauer
Leiter Entwicklung und Technik
Director Design and Technology
Directeur Développement et Technique

Dr. S. Jung
Leiter Qualitätsmanagement
Director Quality Management Dept.
Directeur Dept. Assurance de Qualité



CONFORMITY STATEMENT

(Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) Test Certificate Number:

PTB 01 ATEX 2054



(4) Equipment: Safety Barrier Type 9002/...-...-...-1

(5) Manufacturer: R. STAHL Schaltgeräte GmbH

(6) Address: 74638 Waldenburg, GERMANY

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 01-29099.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50 021:1999

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This Conformity Statement relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

(12) The marking of the equipment shall include the following:

 **II 3 G EEx nA II T4**

Zertifizierungsstelle Explosionsschutz

Braunschweig, 30. May 2001

By order:

(signature)

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

(13)

SCHEDULE

(14)

Conformity Statement PTB 01 ATEX 2054

(15) Description of equipment

The safety barriers of Type 9002/...-...-...1 are non-sparking apparatus corresponding to the "Instruments and apparatus with low energy" protection method and are intended for the purpose of safe decoupling of non-sparking intrinsically safe circuits. They include limitation equipment for two circuits with current limitation and voltage limitation by reference to the equipotential bonding conductor.

As determined, the connections for the equipotential bonding conductor are fail-safely connected with the local system of the equipotential bonding conductor.

The maximum permissible ambient temperature range is $-20^{\circ}\text{C} \leq \delta_a \leq +60^{\circ}\text{C}$ (+50°C).

Elektrical Data

Non-sparking circuits

Rated values as given in following table:

Type 9002	Channel 1		Channel 2	
	U _n [V]	I _{max} [mA]	U _n [V]	I _{max} [mA]
9002/00-120-024-001	-9,5	9	-9,5	9
9002/00-260-138-001	-22,5	66	-17,5	40
9002/00-280-186-001	-25	73	-25	73
9002/10-187-020-001	+6	12	-6	12
9002/10-187-270-001	+6	130	-6	130
9002/10-210-030-001	+8	21	-8	21
9002/11-120-024-001	+9,5	9	+9,5	9
9002/11-130-360-001	10	100	1	100
9002/11-137-029-001	+10	11	+10	11
9002/11-199-030-001	+16	11	+16	11
9002/11-260-138-001	+22,5	66	+17,5	40
9002/11-280-112-001	24	94	24	40
9002/11-280-186-001	+25	73	+25	73
9002/11-280-244-001	+24	70	+24	48
9002/11-280-293-001	+25	73	+6	94
9002/11-280-293-021	+25	73	+6	94
9002/13-199-225-001	+16	125	+16	80
9002/13-252-121-041	+20...35 V	100	22	100
9002/13-280-093-001	+24	70	+24	100
9002/13-280-100-041	+20...35 V	35	26	35
9002/13-280-110-001	+24	85	+24	100
9002/13-280-188-001	24	70	24	70
9002/22-032-300-111	±0,7	35	±0,7	35
9002/22-048-442-111	±1,4	78	±1,4	78

Sheet 2/3

Conformity Statements without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

SCHEDULE TO CONFORMITY STATEMENT PTB 01 ATEX 2054

9002/22-158-200-001	±5,5	64	±5,5	64
9002/22-240-024-001	±9	9	±9	9
9002/22-240-160-001	±9	54	±9	54
9002/33-280-000-001	+25,5	100	+25,5	100
9002/34-280-000-001	+16	100	-5	100
9002/77-093-040-001	±6	12	±6	12
9002/77-093-300-001	±6	79	±6	79
9002/77-100-400-001	±6	92	±6	92
9002/77-150-300-001	±12	101	±12	101
9002/77-220-146-001	±18	53	±18	53
9002/77-220-296-001	±18	109	±18	109
9002/77-280-094-001	±24	35	±24	35

Intrinsically safe circuits see EC Type Examination Certificate
PTB 01 ATEX 2053

All non-sparking and intrinsically safe circuits are galvanically connected with each other and with the connections for the equipotential bonding conductor via their reference conductors.

(16) Test report PTB Ex 01-29099

(17) Special conditions for safe use

see operating instructions

(18) Essential health and safety requirements

covered by compliance with the above standards

Zertifizierungsstelle Explosionsschutz
by order

Braunschweig, 30. May 2001

(signature)

Dr.-Ing. U. Johannsmeyer
Regierungsrat



- (2) **Appareil ou système de protection destiné à être utilisé en atmosphères explosibles**
Directive 94/9/CE

(1) **ATTESTATION D'EXAMEN CE DE TYPE**

- (3) Numéro de l'attestation d'examen CE de type : **INERIS 00ATEX0003 X**

- (4) Appareil ou système de protection :

MOTEUR ASYNCHRONE TRIPHASE TYPE LSPX...

(LSPX peut être complété par un symbole d'option et le type est complété par l'indication du symbole de l'entraxe des trous de fixation du moteur et du nombre de pôles)

- (5) Constructeur : **LEROY SOMER**
 (6) Adresse : **F- 16015 ANGOULEME**

- (7) Cet appareil ou système de protection et toute autre variante acceptable de celui-ci sont décrits dans l'annexe de la présente attestation et dans les documents descriptifs cités dans cette annexe.

- (8) L'INERIS, organisme notifié et identifié sous le numéro 0080, conformément à l'article 9 de la Directive du Conseil 94/9/CE du 23 Mars 1994, certifie que cet appareil ou système de protection répond aux Exigences Essentielles de Sécurité et de Santé en ce qui concerne la conception et la construction des appareils et des systèmes de protection destinés à être utilisés en atmosphères explosibles, décrites en annexe II de la Directive.

Les examens et les essais sont consignés dans le procès-verbal n° 15323/00.

- (9) Le respect des Exigences Essentielles de Sécurité et de Santé est assuré par :

- la conformité à :

EN 50 281-1-1 de Septembre 1998

- les solutions spécifiques adoptées par le constructeur pour satisfaire aux Exigences Essentielles de Sécurité et de Santé décrites dans les documents descriptifs.

- (10) Le signe X, lorsqu'il est placé à la suite du numéro de l'attestation d'examen CE de type, indique que cet appareil ou système de protection est soumis aux conditions spéciales pour une utilisation sûre, mentionnées dans l'annexe de la présente attestation.

- (11) Cette attestation d'examen CE de type se rapporte uniquement à la conception et à la construction de l'appareil ou système de protection spécifié. Si nécessaire, d'autres exigences de cette Directive seront imposées à la fabrication et à la fourniture de cet appareil ou système de protection.
- (12) Le marquage de l'appareillage ou du système de protection devra contenir :

 II 2 D

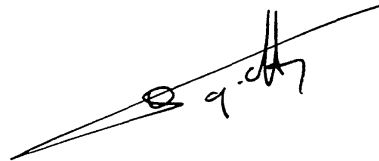
T 125°C ou T 135°C ou T 145°C

Verneuil-en-Halatte, le 25 05 2000



X. LEFEBVRE

Ingénieur au Laboratoire de Certification des
Matériels ATEX



Le Directeur de l'Organisme Certificateur,
Par délégation
B. PIQUETTE
Directeur Adjoint de la Certification



(13)

ANNEXE

(14) ATTESTATION D'EXAMEN CE DE TYPE N° INERIS 00ATEX0003 X

(15) DESCRIPTION DE L'APPAREIL OU SYSTEME DE PROTECTION

Moteur électrique asynchrone triphasé avec carcasse en alliage d'aluminium et flasques en alliage d'aluminium ou en fonte.

Les hauteurs d'axe de base sont:
63,71,80,90,100,112,132,160,180,200,225.

Une boîte de raccordement principale, en alliage d'aluminium ou en acier, est montée sur la carcasse. Une à quatre boîtes de raccordement auxiliaires, sont montées sur la boîte de raccordement principale. Ces boîtes communiquent avec le moteur.

Le moteur peut être conçu à une ou deux vitesses.

Le bobinage statorique et les paliers peuvent comporter des sondes de température.

Le moteur peut être alimenté par un variateur de fréquence. Dans ce cas, il est équipé de sondes de température placées dans le bobinage statorique et éventuellement dans le palier avant. Ces sondes doivent être reliées à un dispositif provoquant la mise hors tension du moteur afin que la température maximale de surface indiquée ne soit jamais atteinte.

Des résistances de réchauffage sont éventuellement placées dans le bobinage.

Le moteur et les boîtes de raccordement peuvent être réalisés par le constructeur pour une utilisation dans une gamme de températures ambiantes de -25°C à 40°C ou de -25°C à 50°C ou de -25°C à 60°C ou de -40°C à 60°C.

Le degré de protection des enveloppes du moteur et des boîtes de raccordement est IP65, selon EN 60 034-Partie 5 et EN 60 529 et EN 50281-1-1.

Le degré de protection mécanique des enveloppes (moteur et boîte(s) de raccordement est IK08 en version standard sauf pour la hauteur d'axe 63 IK07.

Le degré de protection mécanique de la ou les boîte(s) de raccordement est IK10 en variante, sans boîte de raccordement auxiliaire et avec robustesse renforcée, selon EN 50 102.

L'introduction des câbles électriques dans le matériel est réalisée par l'intermédiaire d'entrées de câbles à visser, d'un type certifié EEx d et/ou EEx e, selon les normes du CENELEC.

PARAMETRES RELATIFS A LA SECURITE

Moteur :

- Tension d'alimentation max : 1000 V
- Fréquence : 50 Hz ou 60 Hz
autres valeurs fixes :
entre 1 et 200 Hz jusqu'à la hauteur d'axe 132
entre 1 et 100 Hz au-delà de la hauteur d'axe 132
Variateur de fréquence : même plage que ci-dessus.
- Puissance : - en version standard, service S1
de 0.09 kW à 45 kW sous 50 Hz
- en version spéciale les différents paramètres peuvent être adaptés.

Seuils de fonctionnement des sondes de température :


- Température maximale de surface = 125°C :
 - . sonde de bobinage 150°C ± 5°C
 - . sonde de palier 120°C ± 5°C
- Température maximale de surface = 135°C :
 - . sonde de bobinage 160°C ± 5°C
 - . sonde de palier 130°C ± 5°C
- Température maximale de surface = 145°C :
 - . sonde de bobinage 170°C ± 6°C
 - . sonde de palier 140°C ± 5°C

Seuils de fonctionnement de l'appareillage associé qui doit provoquer l'arrêt du moteur dans le cas d'utilisation de sondes à variation de résistance ou de thermocouples :


- pour une température maximale de surface = 125°C :
150°C pour le stator et 120°C pour les paliers
- pour une température maximale de surface = 135°C :
160°C pour le stator et 130°C pour les paliers
- pour une température maximale de surface = 145°C :
170°C pour le stator et 140°C pour les paliers

MARQUAGE


Le marquage doit être lisible et indélébile ; il doit comporter les indications suivantes :

- LEROY SOMER
F- 16015 ANGOULEME
- LSPX... (*)
- INERIS 00ATEX0003 X
(numéro de série, s'il existe)
- (Année de construction)
-  II 2 D
- IP65 T 125°C
- T amb: -25°C à 40°C


ou

- LEROY SOMER
F- 16015 ANGOULEME
- LSPX... (*)
- INERIS 00ATEX0003 X
(numéro de série, s'il existe)
- (Année de construction)
-  II 2 D
- IP65 T 135°C
- T amb: -25°C à 50°C

ou

- LEROY SOMER
F- 16015 ANGOULEME
- LSPX... (*)
- INERIS 00ATEX0003 X
(numéro de série, s'il existe)
- (Année de construction)
-  II 2 D
- IP65 T 145°C
- T amb: -25°C à 60°C

ou

- LEROY SOMER
F-16015 ANGOULEME
- LSPX... (*)
- INERIS 00ATEX0003 X
- (numéro de série, s'il existe)
- (Année de construction)
-  II 2 D
- IP65 T 145°C
- T amb: -40°C à 60°C

(*)LSPX peut être complété par un symbole d'option et le type est complété par l'indication du symbole de l'entraxe des trous de fixation du moteur et du nombre de pôles

et dans chacun des cas ci-dessus, sur chaque couvercle de boîte de raccordement, les mentions:

NE PAS OUVRIR SOUS TENSION
NE PAS OUVRIR SI UNE ATMOSPHERE POUSSIEREUSE EXPLOSIVE EST PRESENTE

L'ensemble du marquage peut être réalisé dans la langue du pays d'utilisation.

L'appareil ou le système de protection doit aussi porter le marquage normalement prévu par les normes de construction qui le concernent.

EXAMENS ET ESSAIS INDIVIDUELS

Néant.

(16) DOCUMENTS DESCRIPTIFS

Le rapport technique est composé des documents cités ci-après, constituant le dossier descriptif de l'appareil, objet de la présente attestation.

- Procès-verbal n°15323/00 (28 pages) du 25.05.2000
- Notice descriptive réf.LS :BEGP - LSPX - 04-00 (9 pages)
signée le 21.04.2000
- Notice descriptive réf.LS :BEGP - IP/IK - 04-00 (5 pages)
signée le 21.04.2000
- Notice d'instruction réf.3255F-2.33/b-4.00 (32 pages)
signée le 21.04.2000
- Annexes 3,4,5 signées le 21.04.2000
- Montage joint VLS signé le 21.04.2000
- Plan n°E6468 rev B du 21.04.2000 signé le 25.04.2000
- Plan n°GM013800 du 27.08.1999 signé le 16.02.2000
- Plan n°E6475 du 13.07.1999 signé le 20.09.1999
- Plan n°E6476 du 15.07.1999 signé le 20.09.1999
- Plan n°DM 2309 du 03.09.1999 signé le 20.09.1999

(17) CONDITIONS SPECIALES POUR UNE UTILISATION SURE

Lorsque le moteur est alimenté par un variateur de fréquence, il doit être équipé de sondes thermiques dans le bobinage, sur le palier avant et éventuellement sur le palier arrière.

Lorsque le moteur est utilisé en position autre que horizontale ou verticale avec le bout d'arbre opposé au ventilateur vers le bas, le palier avant doit être équipé d'une sonde thermique.

Afin de respecter la température maximale de surface, les sondes thermiques équipant le moteur doivent être reliées à un dispositif provoquant la mise hors tension du moteur lorsque les seuils de fonctionnement définis en (15) sont atteints.

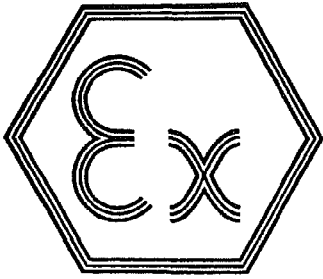
Lorsque le moteur est équipé avec une ou plusieurs boîtes de raccordement auxiliaire, il ne peut supporter qu'un risque de danger mécanique faible et l'utilisateur devra assurer une protection complémentaire en cas de risque élevé.

Ces conditions spéciales sont définies dans la notice d'instruction du moteur.

(18) EXIGENCES ESSENTIELLES DE SECURITE ET DE SANTE

Le respect des Exigences Essentielles de Sécurité et de Santé est assuré par :

- la conformité à la norme européenne EN 50281-1-1.
- l'ensemble des dispositions adoptées par le constructeur et décrites dans les documents descriptifs.



INERIS

INSTITUT NATIONAL DE L'ENVIRONNEMENT
INDUSTRIEL ET DES RISQUES

Parc Technologique ALATA
B.P. N° 2 - 60550 Verneuil-en-Halatte - France
Tél : (33) 03 44 55 66 77 - Fax : (33) 03 44 55 67 04
E-mail : ineris@ineris.fr

(2) **Equipment and protection systems intended for use in potentially explosive atmospheres**
Directive 94/9/CE

(1) **EC-TYPE EXAMINATION CERTIFICATE**

(3) Number of the EC type examination certificate: **INERIS 00ATEX0003X**

(4) Protection apparatus or system:

THREE-PHASED INDUCTION MOTOR TYPE LSPX...

(LSPX may be completed by an optional symbol and the type is completed by the indication of
the symbol of the distance between the axes of fixation holes of the motor and of the number of poles)

(5) Manufacturer: **LEROY SOMER**

(6) Address: **F- 16015 ANGOULEME**

(7) This protection system or equipment and any other acceptable alternative of this one are described in the annex of this certificate and the descriptive documents quoted in this annex.

(8) The INERIS, notified body and identified under number 0080, in accordance with article 9 of Council Directive 94/9/CE 23 the March 1994, certifies that this protection system or equipment fulfills the Essential of Health and Safety Requirements relating to the design and construction of equipments and protection systems intended for use in potentially explosive atmospheres, described in appendix II of the Directive.

The examinations and the tests are consigned in official report N 15323/00.

(9) The respect of the Essential Health and Safety Requirements is ensured by:

- conformity with:

EN 50 281-1-1 of September 1998

- specific solutions adopted by the manufacturer to meet the Essential Health and Safety Requirements described in the descriptive documents.

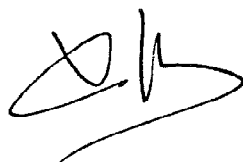
(10) Sign X, when it is placed following the Number of the EC type examination certificate, indicates that this equipment and protection system is subjected to the special conditions for safe use, mentioned in the annex of this certificate.

- (11) This EC-Type examination certificate refers only to the design and the construction of the apparatus or protection system specified. If necessary, other requirements of this Directive will be imposed on the manufacture and the supply of this apparatus or protection system.
- (12) The marking of the equipment or the protection system will have to contain:

Ⓔ II 2 D

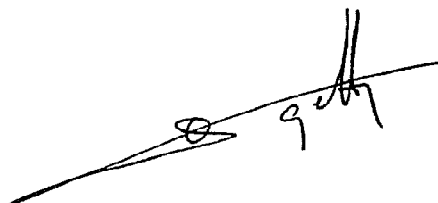
T 125°C or T 135°C or T 145°

Verneuil-en-Halatte, 25 05 2000

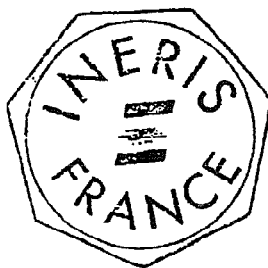


X. LEFEBVRE

Engineer at the Laboratory of Certification of
Materials ATEX



The Director of the Organization Certifier,
By delegation
B. PIQUETTE
Deputy manager of Certification



(13)

ANNEX

(14)

EC TYPE EXAMINATION CERTIFICATE N INERIS 00ATEX0003X

(15)

DESCRIPTION OF THE EQUIPMENT OR THE PROTECTION SYSTEM

Three-phased induction motor with frame in aluminium alloy and flanges in aluminium alloy or cast iron.

The basis axle dimensions are :

63, 71, 80, 90, 100, 112, 132, 160, 180, 200, 225.

A main connecting box, in aluminium alloy or in steel, is mounted on the frame. One to four auxiliary connecting boxes are mounted on the main connecting box. These boxes are communicating with the motor.

The motor may be conceived with one or two speeds.

The statoric winding and the bearings may include thermal probes.

The motor may be supplied by a frequency controller. In that case, it will be equipped with thermal probes put in the statoric winding and eventually in the front bearing. These probes must be linked to a device that cut-off the supply of the motor so that the maximal indicated surface temperature will never be reached.

Heating resistances are eventually put in the winding.

The motor and the connecting boxes can be realised by the manufacturer for use in an ambient temperature range of -25°C to 40°C or of -25°C to 60°C or of -40°C to 60°C .

The indice of protection of the motor and connecting boxes envelopes is IP65, following EN 60 034-Part 5 and EN 60 529 and EN 50281-1-1.

The mechanical indice of protection of the envelopes (motor and connecting box(es)) is IK08 in the standard version except for the axle dimension 63, where it is IK07.

The mechanical indice of protection of the connecting box(es) is IK10 in the variant without auxiliary connecting box and with high robustness, following EN 50 102.

The introduction of electric cables in the apparatus is realised with screwed cable entries, which are certified EEx d and/or EEx e, following CENELEC standards.

Parameters relating to the safety

Motor:

- Max. supply voltage: 1000 Volts.
- Frequency: 50 or 60 Hz.
Other fixed values :
Between 1 and 200 Hz until axle dimension 132
Between 1 and 100 Hz above axle dimension 132

Frequency converter: same range as above

- Power: - standard version, S1 service
from 0.09 kW to 45 kW within 50 Hz
- for specific version different parameters may be adapted

Thresholds of release of the thermal probes :

- Maximal surface temperature = 125 °C :
 - Winding probe 150°C ± 5°C
 - Bearing probe 120°C ± 5°C
- Maximal surface temperature = 135 °C :
 - Winding probe 160°C ± 5°C
 - Bearing probe 130°C ± 5°C
- Maximal surface temperature = 145 °C :
 - Winding probe 170°C ± 6°C
 - Bearing probe 140°C ± 5°C


Threshold of release of the associated apparatus that must cut-off the motor in case of use of resistance variation probe or thermocouples:

- For maximal surface temperature = 125 °C :
150°C for the stator and 120°C for the bearings
- For maximal surface temperature = 135 °C :
160°C for the stator and 130°C for the bearings
- For maximal surface temperature = 145 °C :
170°C for the stator and 140°C for the bearings

MARKING


Marking must be readable and indelible; it must comprise the following indications:

- LEROY SOMER
F- 16015 ANGOULEME

- LSPX... (*)
- INERIS 00ATEX0003 X
- (serial number, if any)
- (Year of construction)
-  II 2 D
- IP65 T125°C
- Tamb : -25°C to 40°C


or

- LEROY SOMER
F- 16015 ANGOULEME

- LSPX... (*)
- INERIS 00ATEX0003 X
- (serial number, if any)
- (Year of construction)
-  II 2 D
- IP65 T135°C
- Tamb : -25°C to 50°C

or

- LEROY SOMER
F- 16015 ANGOULEME

- LSPX... (*)
- INERIS 00ATEX0003 X
- (serial number, if any)
- (Year of construction)
-  II 2 D
- IP65 T145°C
- Tamb : -25°C to 60°C

or

- LEROY SOMER
F- 16015 ANGOULEME
- LSPX... (*)
- INERIS 00ATEX0003 X
- (serial number, if any)
- (Year of construction)
- Ex II 2 D
- IP65 T145°C
- Tamb : -40°C to 60°C

(*) LSPX may be completed by an optional symbol and the type is completed by the indication of the symbol of the distance between the axles of fixation holes of the motor and of the number of poles.

And in each case above, on each cover of connecting box, the mentions:

- DO NOT OPEN WHEN ENERGIZED
- DO NOT OPEN WHEN AN EXPLOSIVE DUST ATMOSPHERE MAY BE PRESENT

The whole of marking can be carried out in the language of the country of use.

The protection apparatus or system must also carry the marking normally envisaged by the standards of construction which relate to it.

ROUTINE EXAMINATIONS AND TESTS

None.

(16) DESCRIPTIVE DOCUMENTS

The technical report is composed of the documents quoted hereafter, constituting the descriptive file of the apparatus, object of this certificate.

- Official report N°15323/00 (28 pages) of the 25.05.2000
- Descriptive notice ref. LS :BEGP-LSPX-04-00 (9 pages)
signed on 21.04.2000
- Descriptive notice ref. LS :BEGP-IP/IK-04-00 (5 pages)
signed on 21.04.2000
- Instructions ref. 3255F-2.33/b-4.00 (32 pages)
signed on 21.04.1999
- Annexes 3, 4, 5 signed on 21.04.00
- Mounting joint VLS signed on 21.04.00
- Drawing N° E6468 rev B of the 21.04.2000 signed on 25.04.2000
- Drawing N°GM013800 of the 27.08.1999 signed on 16.02.2000
- Drawing N°E6475 of the 13.07.1999 signed on 20.09.1999
- Drawing N°E6476 of the 15.07.1999 signed on 20.09.1999
- Drawing N°DM 2309 of the 03.09.1999 signed on 20.09.1999

(17) SPECIAL CONDITIONS FOR SAFE USE

When the motor is supplied by a frequency converter, it must be equipped with thermal probes in the winding, in the front bearing and eventually in the back one.

When the motor is used in another position than horizontal or vertical with the axle end in the opposite side from the fan to the bottom, the front bearing must be equipped with a thermal probe.

In order to respect the maximal surface temperature, the thermal contacts equipping the engine must be connected to a device cutting of the voltage supply of the engine when the probes reach their threshold of operation, defined in section (15).

When the motor is equipped with one or many auxiliary connecting boxes, it can only support a low risk of mechanical danger and the user would have to ensure a complementary protection in case of high risk.

These special conditions are defined in the instructions of the motor.

(18) ESSENTIAL REQUIREMENTS OF SAFETY AND HEALTH

The respect of the Essential Health and Safety Requirements is ensured by:

- conformity to the European standard EN 50281-1-1.
- the whole of the provisions adopted by the manufacturer and described in the descriptive documents.

COMPLEMENT

INERIS 00ATEX0003 X/01

MOTEUR ASYNCHRONE TRIPHASE TYPE LSPX...

Construit par LEROY SOMER

(15) - OBJET DU COMPLEMENT

Variante de construction : utilisation d'un ventilateur extérieur en matériau composite.

Sites de production du moteur :

- F- 16015 ANGOULEME Usine de Gond Pontouvre
- F- 16015 ANGOULEME Usine de Mansle
- F- 69360 LE PONTET SAINT SYMPHORIEN D'OZON.

PARAMETRES RELATIFS A LA SECURITE

Les paramètres relatifs à la sécurité sont inchangés.

MARQUAGE

Le type prévu dans le marquage de l'attestation de base est inchangé.

EXAMENS ET ESSAIS INDIVIDUELS

Les examens et essais individuels prévus par l'attestation de base sont inchangés.

(16) - DOCUMENTS DESCRIPTIFS

Les documents, cités ci-après, constituent le dossier descriptif des modifications apportées au matériel et faisant l'objet du présent complément.

- Procès-verbal n°15827/00 (2 pages) du 06.10.2000
- Notice descriptive de complément n°1 daté et signé le 02.10.2000

(17) - CONDITIONS SPECIALES POUR UNE UTILISATION SURE

Les conditions imposées par l'attestation de base sont inchangées.

Verneuil-en-Halatte, 2000 10 09

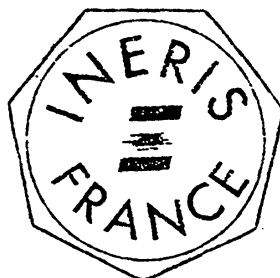


X. LEFEBVRE

Ingénieur au Laboratoire de Certification
des Matériels ATEX



Le Directeur de l'Organisme Certificateur,
Par délégation
B. PIQUETTE
Directeur Adjoint de la Certification



COMPLEMENT

INERIS 00ATEX0003 X/02

MOTEUR ASYNCHRONE TRIPHASE TYPE LSPX

Construit par LEROY SOMER

(15) - OBJET DU COMPLEMENT

Site supplémentaire de production du moteur

F- 16015 ANGOULEME Usine de Rabion

PARAMETRES RELATIFS A LA SECURITE

Les paramètres relatifs à la sécurité sont inchangés

MARQUAGE

Le type prévu dans le marquage de l'attestation de base est inchangé

EXAMENS ET ESSAIS INDIVIDUELS

Les examens et essais individuels prévus par l'attestation de base sont inchangés

(16) - DOCUMENTS DESCRIPTIFS

Néant

(17) - CONDITIONS SPECIALES POUR UNE UTILISATION SURE

Les conditions imposées par l'attestation de base sont inchangées

Verneuil-en-Halatte, 2001 04 06

X LEFEBVRE

Ingénieur au Laboratoire de Certification
des Matériels ATEX

Le Directeur de l'Organisme Certificateur
Par délégation
B PIQUETTE
Directeur Adjoint de la Certification

COMPLEMENT

INERIS 00ATEX0003 X/03

MOTEUR ASYNCHRONE TRIPHASE TYPE LSPX...

Construit par LEROY SOMER

(15) - OBJET DU COMPLEMENT

Modification de la gamme de moteurs :

Ajout d'hauteurs d'axes :

Les hauteurs d'axe de base sont:

63, 71, 80, 90, 100, 112, 132, 160, 180, 200, 225, 250, 280.

PARAMETRES RELATIFS A LA SECURITE

Les paramètres relatifs à la sécurité sont inchangés.

MARQUAGE

Le marquage de l'attestation de base est modifié comme suit :

- T câble : 100°C
- T amb: -25°C à 60°C

EXAMENS ET ESSAIS INDIVIDUELS

Les examens et essais individuels prévus par l'attestation de base sont inchangés.

(16) - DOCUMENTS DESCRIPTIFS

Les documents, cités ci-après, constituent le dossier descriptif des modifications apportées au matériel et faisant l'objet du présent complément.

- Notice descriptive réf.LS :BEGP - LSPX - 05-02 (9 pages)
signée le 19.06.2002
- Plan 659-1000-025 du 17.12.2001 signé le 19.06.2002

(17) - CONDITIONS SPECIALES POUR UNE UTILISATION SURE

Les conditions imposées par l'attestation de base sont inchangées.

Verneuil-en-Halatte, 2002 11 26



X. LEFEBVRE

Ingénieur au Laboratoire de Certification
des Matériels ATEX



Le Directeur de l'Organisme Certificateur,
Par délégation
B. PIQUETTE
Directeur Adjoint de la Certification



COMPLEMENT

INERIS 00ATEX0003 X/04

MOTEUR ASYNCHRONE TRIPHASE TYPE LSPX...

Construit par LEROY SOMER

(15) - OBJET DU COMPLEMENT

Variantes d'exécution :

- Utilisation du variateur VMA20 en association avec le moteur ; le moteur est alors dénommé moto variateur VARMECA
Les hauteurs d'axe de base concernées sont: 63,71,80,90,100,112,132.
- Modification de la boîte à bornes :
Les hauteurs d'axe de base concernées sont: 160,180,200,225,250,280.

PARAMETRES RELATIFS A LA SECURITE

Les paramètres relatifs à la sécurité sont complétés comme suit :

Plage de variation de fréquence du moto variateur VARMECA:

de 12 à 80 Hz à couple constant
de 12 à 80 Hz à usage général
de 6 à 220 Hz ou 100 Hz (selon paramétrage)
Protection thermique intégrée au VMA: 125°C

MARQUAGE

Pour l'utilisation du moto variateur VARMECA :

Le marquage prévu par l'attestation de base et de ses compléments 01 à 03 est modifié comme suit:

- LEROY SOMER
F- 16015 ANGOULEME
- LSPX... (*)
- INERIS 00ATEX0003X
(numéro de série)
- (Année de construction)
- II 2 D
- IP65 T 125°C T amb: -20°C à 40°C
- ou IP65 T 135°C T amb: -20°C à 50°C

Pour l'utilisation d'une nouvelle boîte à bornes :

Le marquage prévu par l'attestation de base et de ses compléments 01 à 03 est inchangé.

L'ensemble du marquage peut être réalisé dans la langue du pays d'utilisation.

L'appareil ou le système de protection doit aussi porter le marquage normalement prévu par les normes de construction qui le concernent.

EXAMENS ET ESSAIS INDIVIDUELS

Inchangés.

(16) - DOCUMENTS DESCRIPTIFS

Les documents, cités ci-après, constituent le dossier descriptif des modifications apportées au matériel et faisant l'objet du présent complément.

- Dossier de Certification VMA20 Extension n°4
- Notice d'instructions réf.LS :3385-c .2003 /b du 15.04.2004
- Notice d'instructions réf.LS :3255-e .2004 du 15.04.2004
- Plan DM 2479 du 07.10.2002 signé le 12.05.2004
- Plan DM 2568 du 11.12.2003 signé le 12.05.2004
- Plan NA61P120 rev B du 20.01.2004 signé le 23.02.2004
- Plan NA63P120 rev A du 05.12.2003 signé le 23.02.2004
- Plan NA57P140 du 12.09.2002 signé le 23.02.2004
- Plan NA57P120 du 12.09.2002 signé le 23.02.2004

(17) - CONDITIONS SPECIALES POUR UNE UTILISATION SURE

Les conditions imposées par l'attestation de base sont complétées comme suit :

Lorsque le moteur est alimenté par un variateur de fréquence séparé, ou utilisé dans un flux d'air suffisant ou éventuellement adapté pour ne plus être auto ventilé ou équipé d'un anti dévireur, il doit être équipé de sondes thermiques dans le bobinage (toutes hauteurs d'axe), sur le palier avant (à partir de la hauteur d'axe 160) et éventuellement sur le palier arrière.

Lorsque le moteur est équipé d'une ventilation auxiliaire ou forcée, un dispositif doit s'opposer au fonctionnement du moteur principal en l'absence de ventilation.

Les paramètres du variateur VMA sont à respecter strictement comme indiqué dans la notice d'instructions.

Le variateur VMA intègre une protection thermique et ne nécessite pas de protection thermique supplémentaire intégrée au moteur.

La plage de fréquences spécifiée par la plaque moteur doit être rigoureusement respecté.

(18) - EXIGENCES ESSENTIELLES DE SECURITE ET DE SANTE

Le respect des Exigences Essentielles de Sécurité et de Santé est assuré par :

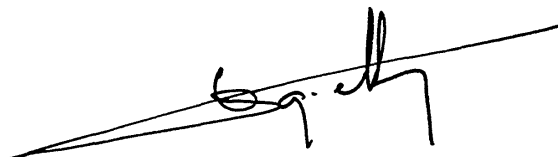
- la conformité aux normes européennes EN 50 014 et EN 50 281-1-1,
- l'ensemble des dispositions adoptées par le constructeur et décrites dans les documents descriptifs.

Verneuil-en-Halatte, 2004 06 29



X. LEFEBVRE

Ingénieur au Laboratoire de Certification
des Matériels ATEX



Le Directeur de l'Organisme Certificateur,
Par délégation
B. PIQUETTE
Directeur Adjoint de la Certification



COMPLEMENT

(3) INERIS 00ATEX0003X/05

(4) MOTEUR ASYNCHRONE TRIPHASE Type LSPX...

(5) Construit par LEROY SOMER

(15) OBJET DU COMPLEMENT

Variantes d'exécution :

- Utilisation du variateur VMA 3x en association avec le moteur ; le moteur est alors dénommé moto variateur VARMECA 30. Les hauteurs d'axe de base concernées sont : 63, 71, 80, 90, 100, 112, 132.
- Pour la plage de température Tamb: -25°C à 40°C, possibilité de marquer une température maximale de surface de T100°C à T125°C.

PARAMETRES RELATIFS A LA SECURITE

Les paramètres relatifs à la sécurité sont complétés comme suit :

Plages de variation de fréquence du moto variateur VARMECA 30 :

- de 12 à 80 Hz à couple constant
- de 12 à 80 Hz à usage général
- de 6 à 220 Hz ou 100 Hz (selon paramétrage)
- Protection thermique intégrée au VMA 3x : 125°C

Seuils de fonctionnement des sondes de température :

- Température maximale de surface = 100°C
 - . sonde de bobinage 125°C ± 5°C
 - . sonde de palier 95°C ± 5°C
- Température maximale de surface = 105°C
 - . sonde de bobinage 130°C ± 5°C
 - . sonde de palier 100°C ± 5°C
- Température maximale de surface = 110°C
 - . sonde de bobinage 135°C ± 5°C
 - . sonde de palier 105°C ± 5°C

- Température maximale de surface = 115°C
 - . sonde de bobinage 140°C ± 5°C
 - . sonde de palier 110°C ± 5°C

- Température maximale de surface = 120°C
 - . sonde de bobinage 145°C ± 5°C
 - . sonde de palier 115°C ± 5°C

- Température maximale de surface = 125°C
 - . sonde de bobinage 150°C ± 5°C
 - . sonde de palier 120°C ± 5°C

Seuils de fonctionnement de l'appareillage associé qui doit provoquer l'arrêt du moteur dans le cas d'utilisation de sondes à variation de résistance ou de thermocouples :

- Pour une température maximale de surface = 100°C
 - . 125°C pour le stator et 95°C pour les paliers

- Pour une température maximale de surface = 105°C
 - . 130°C pour le stator et 100°C pour les paliers

- Pour une température maximale de surface = 110°C
 - . 135°C pour le stator et 105°C pour les paliers

- Pour une température maximale de surface = 115°C
 - . 140°C pour le stator et 110°C pour les paliers

- Pour une température maximale de surface = 120°C
 - . 145°C pour le stator et 115°C pour les paliers

- Pour une température maximale de surface = 125°C
 - . 150°C pour le stator et 120°C pour les paliers

MARQUAGE

Le marquage est modifié comme suit :

Pour l'utilisation du variateur VMA 3x :

LEROY SOMER


F - 16015 ANGOULEME

LSPX... (*)

INERIS 00ATEX0003X

(Numéro de série)

(Année de construction)

 II 2 D

IP65 T125°C Tamb : -20°C à +40°C

ou

IP65 T135°C Tamb : -20°C à +50°C

Pour la plage de température Tamb -25°C à +40°C :

LEROY SOMER
F - 16015 ANGOULEME
LSPX... (*)
INERIS 00ATEX0003X
(Numéro de série)
(Année de construction)



IP65 T100°C ou T105°C ou T110°C ou T115°C ou T120°C ou T125°C
T amb: -25°C à 40°C

(*) LSPX peut être complété par un symbole d'option et le type est complété par l'indication du symbole de l'entraxe des trous de fixation du moteur et du nombre de pôles

Dans chacun des cas ci-dessus, sur chaque couvercle de boîte de raccordement, les mentions :

NE PAS OUVRIR SOUS TENSION
NE PAS OUVRIR SI UNE ATMOSPHERE POUSSIÈREUSE EXPLOSIVE EST PRÉSENTE

L'ensemble du marquage peut être réalisé dans la langue du pays d'utilisation.

L'appareil ou le système de protection doit aussi porter le marquage normalement prévu par les normes de construction qui le concernent.

EXAMEN ET ESSAIS INDIVIDUELS

Les examens et essais individuels sont inchangés.

(16) DOCUMENTS DESCRIPTIFS

Les documents descriptifs cités ci-après, constituent la documentation technique des modifications apportées au matériel et faisant l'objet du présent complément :

- Dossier de certification VARMECA 30 et LS PX signé du 2008.03.06
- Notice d'instruction réf. 3776 - 10.2006 / g signée du 2008.03.06

(17) CONDITIONS SPECIALES POUR UNE UTILISATION SURE

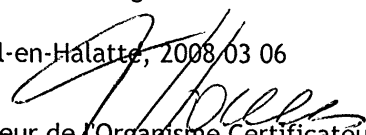
Les conditions spéciales sont inchangées.

(18) EXIGENCES ESSENTIELLES DE SECURITE ET DE SANTE

Le respect des Exigences Essentielles de Sécurité et de Santé est inchangé.



Verneuil-en-Halatte, 2008.03.06


Le Directeur de l'Organisme Certicateur,
Par délégation
T. HOUEIX
Délégué Certification
Direction de la Certification



DÉCLARATION CE DE CONFORMITÉ ET D'INCORPORATION Moteur (F)LSPX

Nous, **MOTEURS LEROY SOMER**,

déclarons, sous notre seule responsabilité, que les produits :

Moteurs Asynchrones des séries (F)LSPX, (F)LSPX FAP, (F)LSPX FCR
Ou des mêmes séries, équipés de variateur de vitesse VARMECA VMA20, VMA 3X
destinés à être utilisés en présence de **poussières combustibles**

portant sur leur plaque signalétique les marquages suivants :

CE 0080 II 2D IP65 Tm surf. 100°C, 125°C, 135°C ou 145°C (EN 50281-1-1) pour zone 21

sont conformes :

- Aux normes européennes et internationales :

EN 50281-1-1
IEC-EN 61241-0 & IEC-EN 61241-1
IEC-EN 60034 / IEC-EN 60072 / EN 60529

- A la Directive Basse Tension :

2006/95/CE & 93/68/CE

- A la Directive européenne ATEX :

94/9 /CE (décret 96-1010 du 19-10-1996)
--

- Aux types ayant fait l'objet des attestations d'examen CE de type délivrée par l'organisme notifié :

INERIS (0080) – BP 2 – Parc technologique ALATA	pour la série LSPX	: INERIS 00ATEX0003 X
60550 – VERNEUIL EN HALATTE	pour la série FLSPX	: INERIS 00ATEX0004 X
	pour la série LSPX FAP	: INERIS 00ATEX0013 X
	pour la série FLSPX FAP	: INERIS 00ATEX0063 X
	pour la série (F)LSPX FCR	: INERIS 03ATEX0012 X

Les exigences de conception et de fabrication sont couvertes
Par la notification ASSURANCE QUALITE DES PRODUITS :

Sous la responsabilité de l'organisme notifié :
INERIS

Ces produits ne sont pas concernés par des modifications substantielles apportées par les normes de la série IEC-EN 61241. Ils sont donc considérés comme remplissant toujours les Exigences Essentielles de Sécurité et de Santé de la directive 94/9/CE. L'attestation d'examen CE de type et le marquage ne sont pas modifiés.

Ces produits peuvent toujours être commercialisés et installés, et ce jusqu'à la parution des normes remplaçant les normes IEC-EN 61241-0:2006 et IEC-EN 61241-1:2004.

Cette conformité permet l'utilisation de ces gammes de produits dans une machine soumise à l'application de la Directive Machines 98/37/CE + 2006/42/CE, sous réserve que leur intégration ou leur incorporation ou/et leur assemblage soit effectué(e) conformément entre autres aux règles de la norme EN 60204 « Equipement Electrique des Machines » et à la Directive Compatibilité Electromagnétique 89/336/CEE modifiée par les directives 92/31/CEE et 93/68/CEE + 2004/108/CE.

Les produits définis ci-dessus ne pourront être mis en service avant que la machine dans laquelle ils sont incorporés n'ait été déclarée conforme aux Directives qui lui sont applicables.

L'installation de ces matériels doit respecter les règlements, les décrets, les arrêtés, les lois, les directives, les circulaires d'applications, les normes, les règles de l'art et tout autre document concernant leur lieu d'installation. Le non-respect de ceux-ci ne saurait engager la responsabilité de LEROY-SOMER.

Nota : Lorsque les moteurs sont alimentés par des convertisseurs électroniques séparés, adaptés et/ou asservis à des dispositifs électroniques de commande ou de contrôle, ils doivent être installés par un professionnel qui se rendra responsable du respect des règles de la compatibilité électromagnétique du pays où le produit est installé.

Visa de la direction qualité :

P. THERY



Visa de la direction technique:

F. PELTIER



1 ATTESTATION D'EXAMEN CE DE TYPE

2 Appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles
Directive 94/9/CE

3 Numéro de l'attestation CE de type
LCIE 97 ATEX 6007 X

4 Appareil ou système de protection
Entrée de câble
Type ECDEP

5 Demandeur : CAPRI-CODEC SA

6 Adresse : 36, rue des Fontenils
41600 NOUAN-LE-FUSELIER

7 Cet appareil ou système de protection et ses variantes éventuelles acceptées est décrit dans l'annexe de la présente attestation et dans les documents descriptifs cités en annexe.

8 Le LCIE, organisme notifié sous la référence 0081 conformément à l'article 9 de la directive 94/9/CE du Parlement européen et du Conseil du 23 mars 1994, certifie que cet appareil ou système de protection est conforme aux exigences essentielles en ce qui concerne la sécurité et la santé pour la conception et la construction d'appareils et de systèmes de protection destinés à être utilisés en atmosphères explosibles, données dans l'annexe II de la directive. Les vérifications et épreuves figurent dans notre rapport confidentiel N°433 644


9 Le respect des exigences essentielles en ce qui concerne la sécurité et la santé est assuré par la conformité aux documents suivants :

- EN 50014 (1992), NF EN 50014 (1993)
- EN 50020 (1994), NF EN 50020 (1995)
- EN 50019 (1994), NF EN 50019 (1996)
- Pr EN 50281-1-1 (1997)

10 Le signe X lorsqu'il est placé à la suite du numéro de l'attestation, indique que ce matériel ou système de protection est soumis aux conditions spéciales pour une utilisation sûre, mentionnées dans l'annexe de la présente attestation.

11 Cette attestation d'examen CE de type concerne uniquement la conception et la construction de l'appareil ou du système de protection spécifié, conformément à la directive 94/9/CE. Des exigences supplémentaires de cette directive sont applicables pour la fabrication et la fourniture de l'appareil ou du système de protection.

12 Le marquage de l'appareil ou du système de protection devra comporter, entre autres indications utiles, les mentions suivantes :

 II 2 G et D

EEx ou EEx e II

1 EC TYPE EXAMINATION CERTIFICATE

2 Equipment or Protective System Intended for use in Potentially explosive atmospheres
Directive 94/9/CE

3 EC type Examination Certificate number
LCIE 97 ATEX 6007 X

4 Equipment or Protective system
Cable entry
Type ECDEP

5 Applicant : CAPRI-CODEC SA

6 Address : 36, rue des Fontenils
41600 NOUAN-LE-FUSELIER

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 LCIE, notified body number 0081 in accordance with article 9 of the directive 94/9/CE of the European Parliament and Council of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective system intended for use in potentially explosive atmospheres, given in Annex II to the directive.
The examination and test results are recorded in confidential report No 433 644


9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with :

- EN 50014 (1992), NF EN 50014 (1993)
- EN 50020 (1994), NF EN 50020 (1995)
- EN 50019 (1994), NF EN 50019 (1996)
- Pr EN 50281-1-1 (1997)

10 If the sign X is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC Type examination certificate relates only to the design and construction of this specified equipment or protective system in accordance with the Directive 94/9/EC. Further requirements of Directive applies to the manufacture and supply of this equipment or protective system.

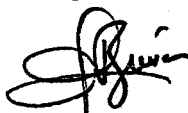
12 The marking of the equipment or protective system shall include the following :

 II 2 G and D

EEx or EEx e II

Fontenay-aux-Roses, le 14 septembre 1998

Le Directeur de l'organisme certificateur
Manager of the certification body



Timbre sec/dry seal

Par délégation
Michel BRÉNON
Chef du Département
Environnements et risques


(A1) ANNEXE**(A2) ATTESTATION D'EXAMEN CE DE TYPE
LCIE 97 ATEX 6007 X**

Entrée de câble
Type ECDEP

(A3) Description de l'équipement ou du système de protection

Entrée de câble IP 54 minimum, utilisable avec du matériel de sécurité augmentée "e", de sécurité intrinsèque "i" ou de suppression interne "p".

Le marquage est le suivant :

CAPRI
Type ECDEP - année de construction ...
 II 2 G et D
EEx ou EEx e II
LCIE 97 ATEX 6007 X (facultatif)

Le marquage CE est accompagné du numéro d'identification de l'organisme notifié responsable de la surveillance du système approuvé de qualité.

(A4) Documents descriptifs

Dossier technique N° 3960767 rév. 0 du 5 mars 1998
Ce document comprend 9 rubriques (11 pages).

(A5) Conditions spéciales pour une utilisation sûre

L'entrée de câble doit être utilisée conformément aux indications données par le constructeur dans sa documentation.

(A6) Exigences essentielles en ce qui concerne la sécurité et la santé

Conformité à la seconde édition des normes européennes EN 50014, EN 50019, EN 50020 et Pr EN 50281-1-1.


(A1) SCHEDULE**(A2) EC TYPE EXAMINATION CERTIFICATE
LCIE 97 ATEX 6 007 X**

Cable entry
Type ECDEP

(A3) Description of Equipment or protective system

Cable entry IP 54 minimum, usable with increased safety equipment "e", intrinsic safety "i" or pressurized apparatus "p".

The marking is the following :

CAPRI
Type ECDEP - year of construction ...
 II 2 G and D
EEx or EEx e II
LCIE 97 ATEX 6007 X (optional)

The CE marking shall be accompanied by the identification number of the notified body responsible for surveillance of the approved quality system.

(A4) Descriptive documents :

Technical file n° 3960767 rev. 0 dated March 5, 1998
This file includes 9 items (11 pages).

(A5) Special conditions for safe use

The cable entry shall be used in compliance with indications given by the manufacturer with his documentation.

(A6) Essential Health and Safety Requirements

Conformity to the second edition of european standards EN 50014, EN 50019, EN 50020 and Pr EN 50281-1-1.

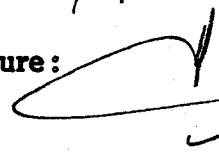
DOSSIER D'ATTESTATION CE DE TYPE

VÉRIFICATION
PAR LE LCIE

Date: 15/3/98

Nom: *Livenuault*

Signature:



LABORATOIRE CENTRAL DES INDUSTRIES ÉLECTRIQUES DOCUMENT CONNEXE N° <i>1</i> à l'attestation d'examen CE de type (équipement) numéro <i>9.7.ATEX 6007X</i> . M page \$
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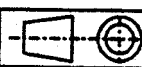

Vérifié et certifié conforme à l'exécution, le : 05/03/98



Nom : Marc PHILIPPE

Fonction : Responsable Recherche et Développement

Signature :





Emission du document						
EVOLUTION/MODIFICATION						
		DATE	VISA B.E.	VISA S.T.	VISA A.Q.	IND.
TOL. GENE.:				ASPECT:		
MATIERE:		Pds B:	TRAITEMENT:		Pds F:	
CLASSEMENT: 100			ECHELLE: SANS		 CAPRI MAINTIENT L'ENERGIE ELECTRIQUE 38, rue des Fontenils - BP 6 - 41600 NOUAN-LE-FUZELIER Tél.: 02 54 95 24 00 Télécopie 02 54 95 24 01	
ENTREE DE CABLE DE TYPE ECDEP		DATE: 05/03/98				
		VISA B.E.				
		VISA S.T. <i>JP</i>				
		VISA A.Q. <i>Q</i>				
		PLAN N° 3960767 Rev0 F 1/2				
		CODE N° /				

Rubrique N°	N° du Document	Date	Nb de Folios	Désignation du Document
1	3960767	05/03/98	2	Dossier d'Attestation  
2	SRD / ECD2-CE0	05/03/98	2	Notice Descriptive
3	3960768	05/03/98	1	Type : ECDEP - Version : ECDEP
4	3960769	05/03/98	1	Tous Types - Accessoires Métalliques d'Entrées de Câbles
5	5039801	05/03/98	1	Fiche technique n°1
6	5039802	05/03/98	1	Fiche technique n°2
7	5039803	05/03/98	1	Fiche technique n°3
8	5039804	05/03/98	1	Fiche technique n°4
9	5039805	05/03/98	1	Fiche technique n°5

Cette liste comprend 9 rubriques (11 pages)

EVOLUTION/MODIFICATION					DATE	VISA B.E.	VISA S.T.	VISA A.Q.	IND.
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TOL. GENE.:	ASPECT:			
MATIERE:	Pds B:	TRAITEMENT:		Pds F:

CLASSEMENT: 100		ECHELLE: SANS	 CAPRI MAINTIENT L'ENERGIE ELECTRIQUE 38, rue des Fontenils - BP 6 - 41600 NOUAN-LE-FUZELIER Tél.: 02 54 95 24 00 Télécopie 02 54 95 24 01
ENTREE DE CABLE DE TYPE ECDEP		DATE: 05/03/98	
		VISA B.E.	
		VISA S.T. <i>JP</i>	
		VISA A.Q. <i>G</i>	
		PLAN N° 3960767 Rev0 F 2/2	
		CODE N° /	

NOTICE DESCRIPTIVE DES ENTREES DE CABLES DE TYPE ECDEP

I. - SPECIFICATION :

Les entrées de câble sont construites en conformité avec les exigences essentielles de sécurité de la directive 94/9/CE et selon les normes européennes énoncées ci après :

- . EN 50014 : Règles générales 2° édition 1992,
- . EN 50016 : Surpression interne "p" 2° édition 1995,
- . EN 50019 : Sécurité augmentée "e" 2° édition 1994,
- . EN 50020 : Sécurité intrinsèque "i" 2° édition 1994.
- . Pr EN 50281-1-1 : poussières combustibles (construction) 1997,
- . Pr EN 50281-1-2 : poussières combustibles (installation) 1997.

Les entrées de câble sont utilisables dans les atmosphères explosibles de groupe II et dans une gamme de températures ambiantes de - 20°C à + 40°C avec des bagues en Santoprène,

Le code marquage est EEx e II.

Les entrées de câbles prévues pour entrée de câble armé ou non armé peuvent être installées sur des enveloppes protégées par sécurité augmentée, par surpression interne ou par sécurité intrinsèque sans limitation de volume.

II. - CARACTERISTIQUES TECHNIQUES :

- . Matière pour les entrées de câbles : Polyamide suivant fiches techniques particulières N ° 1,2,3,4 et 5.
- . Matière pour les accessoires : laiton ou tout autre métal plus résistant avec ou sans traitement de
- . Matière pour les bagues d'étanchéité : santoprène de dureté supérieure à 50 Shores ou autre plus résistante.
- . Protection : IP 66 suivant norme CEI 529 (montage sans garniture d'étanchéité).
- . Protection : IP 68 10bars suivant norme CEI 529 (montage avec garniture d'étanchéité).
- . Filetage PG conforme à la norme DIN 40430 et aux caractéristiques de la norme NFC 68311.
- . Filetage ISO conforme aux normes ISO965/1 et ISO 965/2 (qualité moyenne).
- . Filetage NPT conforme à la norme NFE 03601.
- . Filetage "gaz" conforme à la norme NFE 03005.
- . Filetage "gaz conique" conforme aux normes NFE 03004 et UNI 6125.
- . Les cotes sur plats des plans tableaux sont indicatives, elles peuvent être différentes selon les matières et / ou les filetages.
- . Les entrées de câbles, les amplificateurs, les réducteurs, les adaptateurs et les bouchons, peuvent être utilisés sans écrou s'ils sont montés sur une paroi taraudée.
- . L' étanchéité entre l'entrée de câble et son support, en montage direct ou par l'intermédiaire d'un accessoire (amplificateur, réducteur, etc...) peut être assurée selon l'IP, par une garniture ou un produit adéquat (ruban, pâte, etc...).

IIIa - Entrées de câbles ECDEP (plan N° 3960768) :


- . L'étanchéité et l'ancrage au passage de câbles non armés au travers de parois d'enveloppes EEx e II C et EEx i II C.
- . L'étanchéité sans reprise de l'armure au passage de câble armés au travers de parois d'enveloppes EEx e II C et EEx i II C.


IIIb - Les accessoires (plan N° 3960769) :

- . Les adaptateurs, les amplificateurs et les réducteurs permettent le montage d'une entrée de câble dans un trou lisse ou taraudé de taille ou de type différent.
- . Les bouchons permettent l'obturation d'un percage lisse ou taraudé d'une enveloppe " e " non utilisée.
- . Les manchons et unions permettent la jonction de deux parties filetées de tailles et de types différents.
- . Les écrous permettent la fixation d'une entrée de câble ou d'un accessoire sur une enveloppe.

IV. - MARQUAGE DU MATERIEL :

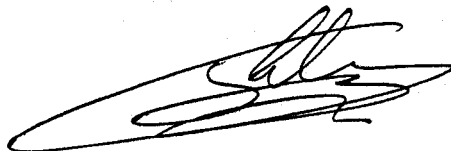
Marquage complet sur les entrées de câbles :

- . Nom du constructeur : CAPRI
- . Symbole : CE
- . Numéro de l'organisme notifié : 0081
- . Désignation du type et capacités (présente ou non suivant taille) : ECDEP N°.. .. à ..
- . Deux derniers chiffres de l'année de fabrication : - ..
- . Symbole : 
- . Groupe : II
- . Catégorie : 2
- . Présence de gaz et poussière : G et D
- . Symbole EEx, mode de protection et groupe : EExeII (facultatif)

Exemple : CAPRI CE 0081 ECDEP N°8 ø5 à ø10 - ..  II 2 G - D EExeII.

Les accessoires décrits dans le présent document font partie intégrante de l'entrée de câble et ne sont pas obligatoirement marqués.

Certifié conforme à l'exécution, Nouan le Fuzelier, le 05/03/98
Le Responsable Recherche et Développement





1 ATTESTATION D'EXAMEN CE DE TYPE

2 Appareils et systèmes de protection destinés à être utilisés
en atmosphères explosibles
Directive 94/9/CE

3 Numéro de l'attestation CE de type
LCIE 98 ATEX 0001 U

4 Composant
Composants en relation avec des entrées de câbles
Type A, AD, B, R, E, U, M, BM, OB

5 Demandeur : CAPRI-CODEC SA

6 Adresse : 36, rue des Fontenils
41600 NOUAN-LE-FUSELIER

7 Cet appareil ou système de protection et ses variantes
éventuelles acceptées est décrit dans l'annexe de la
présente attestation et dans les documents descriptifs cités
en annexe.

8 Le LCIE, organisme notifié sous la référence 0081
conformément à l'article 9 de la directive 94/9/CE du
Parlement européen et du Conseil du 23 mars 1994, certifie
que cet appareil ou système de protection est conforme aux
exigences essentielles en ce qui concerne la sécurité et la
santé pour la conception et la construction d'appareils et de
systèmes de protection destinés à être utilisés en
atmosphères explosibles, données dans l'annexe II de la
directive. Les vérifications et épreuves figurent dans notre
rapport confidentiel 442 238


9 Le respect des exigences essentielles en ce qui concerne la
sécurité et la santé est assuré par la conformité aux
documents suivants :

- EN 50014 (1992), NF EN 50014 (1993)
- EN 50016 (1995)
- EN 50018 (1994), NF EN 50018 (1996)
- EN 50019 (1994), NF EN 50019 (1996)
- EN 50020 (1994), NF EN 50020 (1995)
- Pr EN 50281-1-1 (1997)

10 Le signe X lorsqu'il est placé à la suite du numéro de
l'attestation, indique que ce matériel ou système de
protection est soumis aux conditions spéciales pour une
utilisation sûre, mentionnées dans l'annexe de la présente
attestation.

11 Cette attestation d'examen CE de type concerne
uniquement la conception et la construction de l'appareil ou
du système de protection spécifié, conformément à la
directive 94/9/CE. Des exigences supplémentaires de cette
directive sont applicables pour la fabrication et la fourniture
de l'appareil ou du système de protection.

12 Le marquage de l'appareil ou du système de protection
devra comporter, entre autres indications utiles, les
mentions suivantes :

 II 2 G et D
EEx ou EEx e II / EEx d IIC

1 EC TYPE EXAMINATION CERTIFICATE

2 Equipment or Protective System Intended for use in
Potentially explosive atmospheres
Directive 94/9/CE

3 EC type Examination Certificate number
LCIE 98 ATEX 0001 U

4 Component
Components in relation with cables entries
Type A, AD, B, R, E, U, M, BM, OB

5 Applicant : CAPRI-CODEC SA

6 Address : 36, rue des Fontenils
41600 NOUAN-LE-FUSELIER

7 This equipment or protective system and any acceptable
variation thereto is specified in the schedule to this
certificate and the documents therein referred to.

8 LCIE, notified body number 0081 in accordance with article
9 of the directive 94/9/CE of the European Parliament and
Council of 23 March 1994, certifies that this equipment or
protective system has been found to comply with the
Essential Health and Safety Requirements relating to the
design and construction of equipment and protective system
intended for use in potentially explosive atmospheres, given
in Annex II to the directive.
The examination and test results are recorded in
confidential report No 442 238


9 Compliance with the Essential Health and Safety
Requirements has been assured by compliance with :

- EN 50014 (1992), NF EN 50014 (1993)
- EN 50016 (1995)
- EN 50018 (1994), NF EN 50018 (1996)
- EN 50019 (1994), NF EN 50019 (1996)
- EN 50020 (1994), NF EN 50020 (1995)
- Pr EN 50281-1-1 (1997)

10 If the sign X is placed after the certificate number, it
indicates that the equipment or protective system is subject
to special conditions for safe use specified in the schedule
to this certificate.

11 This EC Type examination certificate relates only to the
design and construction of this specified equipment or
protective system in accordance with the Directive 94/9/EC.
Further requirements of Directive applies to the manufacture
and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall
include the following :

 II 2 G and D
EEx or EEx e II / EEx d IIC

Fontenay-aux-Roses, le 14 septembre 1998

Le Directeur de l'organisme certificateur
Manager of the certification body

Timbre sec/dry seal

Par délégation
Michel BRÉNON
Chef du Département
Environnements et risques

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The LCIE's liability applies only on the French text. This document may only be reproduced in full and without any change.



(A1) ANNEXE


(A2) ATTESTATION D'EXAMEN CE DE TYPE
LCIE 98 ATEX 0001 U

Composants en relation avec des entrées de câble
Type A, AD, B, R, E, U, M, BM, OB

(A3) Description de l'équipement ou du système de protection

Composants (amplificateur, adaptateur, bouchon, réducteur, écrou, union, manchon, bague de mise à la masse, obturateur) IP 54 minimum, utilisable avec du matériel antidéflagrant "d", de sécurité intrinsèque "i", de sécurité augmentée "e", ou de surpression interne "p", suivant le type

Le marquage est le suivant :

CAPRI
Type A, AD, B, R, E, U, M, BM, OB - année de construction ...
 II 2 G et D
EEx ou EEx e II / EEx d IIC
LCIE 98 ATEX 001 U (facultatif)

Le marquage est accompagné du numéro d'identification de l'organisme notifié responsable de la surveillance du système approuvé de qualité.

(A4) Documents descriptifs

Dossier technique N° 3960701 rév. 0 du 5 mars 1998
Ce document comprend 12 rubriques (16 pages).

(A5) Conditions spéciales pour une utilisation sûre

Les composants doivent être utilisés conformément aux indications données par le constructeur dans sa documentation.

(A6) Exigences essentielles en ce qui concerne la sécurité et la santé

Conformité à la seconde édition des normes européennes EN 50014, EN 50016, EN 50018, EN 50019, EN 50020 et Pr EN 50281-1-1.

(A1) SCHEDULE


(A2) EC TYPE EXAMINATION CERTIFICATE
LCIE 98 ATEX 0001 U

Components in relation with cables entries
Type A, AD, B, R, E, U, M, BM, OB

(A3) Description of Equipment or protective system

Components (amplifier, adapter, plug, reducer, nut, union, sleeve tube grounding ring, obstructor) IP 54 minimum, usable with flameproof enclosure "d", intrinsic safety "i", increased safety "e" equipment or pressurized apparatus "p", according to the type

The marking is the following :

CAPRI
Type A, AD, B, R, E, U, M, BM, OB - year of construction ...
 II 2 G and D
EEx or EEx e II / EEx d IIC
LCIE 98 ATEX 001 U (optional)

The marking shall be accompanied by the identification number of the notified body responsible for surveillance of the approved quality system.

(A4) Descriptive documents :

Technical file n° 3960701 rev. 0 dated March 5, 1998
This file includes 12 items (16 pages).

(A5) Special conditions for safe use

The components shall be used in compliance with the indications given by the manufacturer with his documentation.

(A6) Essential Health and Safety Requirements

Conformity to the second edition of european standards EN 50014, EN 50016, EN 50018, EN 50019, EN 50020 and Pr EN 50281-1-1.

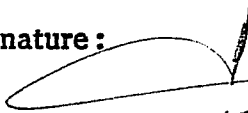
DOSSIER D'ATTESTATION CE

**VÉRIFICATION
PAR LE LCIE**

Date: 15/9/98

Nom: Livemault

Signature:



LABORATOIRE CENTRAL DES INDUSTRIES ÉLECTRIQUES DOCUMENT CONNEXE N° 1 à l'attestation d'examen CE de type (composant) numéro S.B. ATEX 000 1 U..... 16 page\$

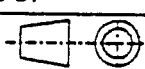

Vérifié et certifié conforme à l' exécution , le : 05/03/98


Nom : Marc PHILIPPE

Fonction : Responsable Recherche et Développement

Signature :





Emission du document									
EVOLUTION/MODIFICATION					DATE	VISA B.E.	VISA S.T.	VISA A.Q.	IND.
TOL. GENE.:							ASPECT:		
MATIERE:			Pds B:	TRAITEMENT:			Pds F:		
CLASSEMENT: 100					ECHELLE: SANS		 CAPRI MAINTIENT L'ENERGIE ELECTRIQUE 36. rue des Fontenils - BP 6 - 41500 NOUAN-LE-FUZELIER Tél.: 02 54 95 24 00 Télécopie 02 54 95 24 01		
COMPOSANTS POUR ATMOSPHERES EXPLOSIVES					DATE: 05/03/98				
					VISA B.E.				
					VISA S.T. <i>CP</i>				
					VISA A.Q. <i>C</i>		PLAN N° 3960701 Rev0 F 1/2		
					VISA A.Q. <i>C</i>		CODE N° /		

Rubrique N°	N° du Document	Date	Nb de Folios	Désignation du Document
1	3960701	05/03/98	2	Dossier d'Attestation CE 
2	SRD / CAE1- CE0	05/03/98	4	Notice Descriptive
3	3960773	05/03/98	1	Plan Composants N°1
4	4970046	05/03/98	1	Plan Composants N°2
5	3960774	05/03/98	1	Tous Types - Accessoires N° 3
6	3960770	05/03/98	1	Bague de mise à la masse
7	3960771	05/03/98	1	Composant Polyamide N° 4
8	5039821	05/03/98	1	Obturateurs
9	5039822	05/03/98	1	Composants Polyamide N° 5
10	5039823	05/03/98	1	Bouchons
11	5039824	05/03/98	1	Fiche technique N°1
12	5039825	05/03/98	1	Fiche technique N°2

Cette liste comprend 12 rubriques (16 pages)

EVOLUTION/MODIFICATION					DATE	VISA B.E.	VISA S.T.	VISA A.O.	IND.
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Matière:		Pds S:	TRAITEMENT:		ASPECT:		Pds F:
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<p>CLASSEMENT: 100</p> <p>COMPOSANTS POUR ATMOSPHERES EXPLOSIVES</p>		<p>ECHELLE: SANS</p>	 <p>CAPRI</p> <p>MAINTIENT L'ENERGIE ELECTRIQUE</p> <p>36, rue des Fontenils - BP 6 - 41600 NOUAN-LE-FUZELIER Tél.: 02 54 95 24 00 Télécopie 02 54 95 24 01</p>
	<p>DATE: 05/03/98</p>	<p>VISA B.E.</p>	
	<p>VISA S.T. <i>BP</i></p>	<p>PLAN N° 3960701 Rev0 F 2/2</p>	
	<p>VISA A.O. <i>G</i></p>	<p>CODE N° /</p>	

Notice descriptive des Composants pour Atmosphères Explosibles de type :
A :amplificateur, AD: adaptateur, B: bouchon, R: réducteur, E: écrou,
U: union, M: manchon, BM: bague de mise à la masse et OB : obturateurs.

I. - SPECIFICATIONS :

Ia - Les composants métalliques

Les composants métalliques sont construits en conformité avec les exigences essentielles de sécurité de la directive 94/9/CE et selon les normes européennes énoncées ci - après :

- . EN 50014 : Règles générales 2° édition 1992,
- . EN 50016 : Surpression interne "p" 2° édition 1995,
- . EN 50018 : Enveloppe antidéflagrante "d" 2° édition 1994,
- . EN 50019 : Sécurité augmentée "e" 2° édition 1994,
- Pr EN 50281-1-1 : poussières combustibles (construction) 1997,
- Pr EN 50281-1-2 : poussières combustibles (installation) 1997,

Les composants métalliques sont utilisables dans les atmosphères explosives du groupe II et dans une gamme de températures ambiantes de - 40°C à +100°C avec des garnitures d'étanchéité en NEOPRENE ou de - 70°C à +220°C avec ou sans garnitures d'étanchéité en SILICONE.

Le code marquage est EEx d IIC et/ou EEx e II.

Ces composants peuvent être installés sur des enveloppes :

- protégées par enveloppe antidéflagrante sans limitation de volume,
- protégées par sécurité augmentée ou par surpression interne sans limitation de volume.

Ib - Les composants polyamide

Les composants polyamide sont construits en conformité avec les exigences essentielles de sécurité de la directive 94/9/CE et selon les normes européennes énoncées ci - après :

- . EN 50014 : Règles générales 2° édition 1992,
- . EN 50019 : Sécurité augmentée "e" 2° édition 1994,
- . EN 50020 : Sécurité intrinsèque "i" 2° édition 1994,
- Pr EN 50281-1-1 : poussières combustibles (construction) 1997,
- Pr EN 50281-1-2 : poussières combustibles (installation) 1997,

Les composants polyamide sont utilisables dans les atmosphères explosives du groupe II et dans une gamme de températures ambiantes de - 20°C à +40°C avec des garnitures d'étanchéité en NEOPRENE ou de - 20°C à +40°C des garnitures d'étanchéité en SILICONE.

Le code marquage est EEx e II.

Ces composants polyamide sont destinés à être installés sur des enveloppes :

- protégées par sécurité augmentée sans limitation de volume,
- protégées par sécurité intrinsèque sans limitation de volume.

II. - CARACTERISTIQUES TECHNIQUES :

IIa - Les composants métalliques

- . Tous les composants métalliques sont réalisés en laiton, en aluminium, en acier inoxydable \geq Z2 CND 17.12, en acier \geq S 300 Pb, ou en bronze \geq Cu Al 9, ces différents matériaux peuvent comporter un traitement de surface.
- . Protection minimum (sans joint) : IP 54 suivant norme CEI 529.
- . Protection avec garniture d'étanchéité ou produit adéquat (ruban, pâte, etc...) : IP 68 suivant norme EN 60 529.
- . Les garnitures d'étanchéité sont réalisés en élastomère de dureté $>$ 50 Shores et thermiquement stable :
 - . de -40°C à $+100^{\circ}\text{C}$ pour les garnitures d'étanchéité en NEOPRENE
 - . de -70°C à $+220^{\circ}\text{C}$ pour les garnitures d'étanchéité en SILICONE.
- . Les garnitures d'étanchéité peuvent être réalisées dans d'autres matières.
- . Filetage PG conforme à la norme DIN 40430 et aux caractéristiques de la norme NFC 68312.
- . Filetage ISO conforme aux normes ISO 965 I et III (qualité moyenne).
- . Filetage NPT conforme à la norme NFE 03601.
- . Filetage "gaz" conforme à la norme NFE 03005.
- . Filetage "gaz conique" conforme aux normes NFE 03004 et UNI 6125.
- . Les cotes sur plats données dans les tableaux des plans sont indicatives, elles peuvent être différentes selon les matières et / ou les filetages.
- . Les angles sont tournés ou non tournés selon les matières.
- . Une variante à corps cylindrique peut être réalisée. Dans ce cas, le diamètre extérieur est au moins égal à la cote sur plats indiquée dans les tableaux des plans.

IIb - Les composants polyamide

- . Les composants polyamide sont réalisés dans les matériaux mentionnés dans les fiches techniques N° 1 à N° 5 .
- . Protection minimum (sans joint) : IP 66 suivant norme CEI 529.
- . Protection avec garniture d'étanchéité ou produit adéquat (ruban, pâte, etc...) : IP 68 suivant norme CEI 529.
- . Les garnitures d'étanchéité sont réalisés en élastomère de dureté $>$ 50 Shores et thermiquement stable :
 - . de -40°C à $+100^{\circ}\text{C}$ pour les garnitures d'étanchéité en NEOPRENE
 - . de -70°C à $+220^{\circ}\text{C}$ pour les garnitures d'étanchéité en SILICONE.
- . Les garnitures d'étanchéité peuvent être réalisés dans d'autres matières.
- . Filetage PG conforme à la norme DIN 40430 et aux caractéristiques de la norme NFC 68312.
- . Filetage ISO conforme aux normes ISO 965 I et III (qualité moyenne).
- . Filetage NPT conforme à la norme NFE 03601.
- . Filetage "gaz" conforme à la norme NFE 03005.
- . Filetage "gaz conique" conforme aux normes NFE 03004 et UNI 6125.
- . Les cotes sur plats données dans les tableaux des plans sont indicatives, elles peuvent être différentes selon les matières et / ou les filetages.

III. - UTILISATION : (plan N° 3960773 , N°3960774 et N° 4970046)**IIIa - Les composants métalliques**

.Les composants métalliques de type AD; A; et R permettent le montage d'une entrée de câble dans un perçage lisse d'une enveloppe "e" et "d" ou taraudé d'une enveloppe "e " "p" et "d" de type et de taille identique ou différent.

.Les bouchons permettent l' obturation d' un perçage lisse d'une enveloppe "e" et "p" ou taraudé d'une enveloppe "e", "p" et "d" non utilisé.

.Les manchons et unions permettent la jonction de deux composants ou entrées de câbles . Les parties filetées ou taraudées de liaison peuvent être identiques ou différentes.

.Les écrous permettent la fixation sur un perçage non taraudé d'une enveloppe.

. En variante les écrous peuvent être réalisés avec six arêtes de contact sur une face qui s'opposent au dévissage et permettent le raccordement des masses électriques.

.La bague de mise à la masse permet d'assurer la liaison électrique entre l'entrée de câble et la masse à raccorder; elle se monte entre la paroi et l'écrou ou entre la paroi et le six pans du corps de l'entrée de câble ou du composant .

. En variante, tous les composants peuvent être équipés d'un tronçon de câble de couleur vert /jaune d'au moins 300 mm de longueur et de section supérieure à $2,5\text{mm}^2$ solidarisé au composant par soudure ou liaison mécanique.

IIIb - Les composants polyamide (plan N° 3960770 et N° 3960771)


.Les obturateurs permettent la mise en attente ou l'obturation d'une entrée de câble non utilisée montée sur une enveloppe de Sécurité augmentée "e" ou de sécurité intrinsèque "i".







.La mise en place se fait après désoperculation de la bague d'étanchéité. La tenue se fait par serrage du chapeau de l'entrée de câble qui doit être effectué aux couples prescrits.

.Les bouchons permettent l' obturation d' un perçage lisse ou taraudé d'une enveloppe "e" ou "i" non utilisé.

.Les écrous permettent la fixation d' un composant de type B sur un perçage non taraudé d'une enveloppe "e" ou "i".

IV. - MARQUAGE DU MATERIEL :**IVa - Les composants métalliques**


- . Marquage complet sur les composants :
- . Nom du constructeur : CAPRI
- . Numéro d'identification de l'organisme notifié : 0081
- . Désignation du type suivi d'un tiret : AD- adaptateur, A- amplificateur, R- réducteur, M- manchon, U- union. B- bouchon, BM- bague de mise à la masse.
- . Filetages de raccordement précédés de sa dénomination :/....
- . Deux derniers chiffres de l'année de fabrication : - ..
- . Symbole : 
- . Groupe : II
- . Catégorie : 2
- . Présence de gaz et poussière : G et D
- . Symbole EEx, mode de protection et groupe : EExeII/EExdIIC (facultatif)




Exemples : CAPRI 0081 AD PG11/PG13 - ..  II 2 G et D EExeII/EExdIIC
 CAPRI 0081 A NPT3/8/NPT1/2 - ..  II 2 G et D EExeII/EExdIIC
 CAPRI 0081 R PG11/PG7 - ..  II 2 G et D EExeII/EExdIIC
 CAPRI 0081 M ISO20/PG7 - ..  II 2 G et D EExeII/EExdIIC
 CAPRI 0081 U PG7/PG7 - ..  II 2 G et D EExeII/EExdIIC
 CAPRI 0081 B ISO20 - ..  II 2 G et D EExeII/EExdIIC

Dans le cas où la surface de marquage est réduite, un marquage EExdIIC seul permet une utilisation en " d " et/ou " e " et en " p ".

Les écrous et les bagues de mise à la mise ne comportent pas de marquage propre.

IVb - Les composants polyamide

- . Marquage complet sur les composants :
- . Nom du constructeur : CAPRI
- . Numéro d'identification de l'organisme notifié : 0081
- . Désignation du type suivi d'un tiret : B- bouchon suivi du filetage de raccordement ou OB N°.. - obturateur..
- . Filetages de raccordement précédés de sa dénomination :/....
- . Deux derniers chiffres de l'année de fabrication : - ..
- . Symbole : 
- . Groupe : II
- . Catégorie : 2
- . Présence de gaz et poussière : G et D
- . Symbole EEx, mode de protection et groupe : EExeII (facultatif)

Exemples : CAPRI 0081 B PG 13 - ..  II 2 G et D EExeII
 CAPRI 0081 B ISO 20 - ..  II 2 G et D EExeII
 CAPRI 0081 OB N° 4 - ..  II 2 G et D EExeII

Les écrous ne comportent pas de marquage propre.

Certifié conforme à l'exécution. Nouan le Fuzelier. Le 05/03/98
 Le Responsable Recherche et Développement





EG-Baumusterprüfbescheinigung



- (1)
- (2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - **Richtlinie 94/9/EG**
- (3) EG-Baumusterprüfbescheinigungsnummer

PTB 00 ATEX 2048 X

- (4) Gerät: Zylinderförmige induktive Sensoren Typen NC... und NJ...
- (5) Hersteller: Pepperl + Fuchs GmbH
- (6) Anschrift: D-68307 Mannheim
- (7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.
- (8) Die Physikalisch-Technische Bundesanstalt bescheinigt als benannte Stelle Nr. 0102 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.
Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht PTB Ex 00-29206 festgelegt.
- (9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit

EN 50014:1997

EN 50020:1994

- (10) Falls das Zeichen „X“ hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.
- (11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konzeption und Bau des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes.
- (12) Die Kennzeichnung des Gerätes muß die folgenden Angaben enthalten:

 **II 2 G EEx ia IIC T6**

Zertifizierungsstelle Explosionsschutz
Im Auftrag

Braunschweig, 26. September 2000


Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



Anlage

(13)

(14) **EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X**

(15) Beschreibung des Gerätes

Die zylinderförmigen induktiven Sensoren Typen NC... und NJ... dienen zur Umformung von Wegänderungen in elektrische Signale.

Die zylinderförmigen induktiven Sensoren dürfen mit eigensicheren Stromkreisen, die für die Kategorien und Explosionsgruppen [EEx ia] IIC oder IIB bzw. [EEx ib] IIC oder IIB bescheinigt sind, betrieben werden. Die Kategorie sowie die Explosionsgruppe der eigensicheren zylinderförmigen induktiven Sensoren richtet sich nach dem angeschlossenen speisenden eigensicheren Stromkreis.

Elektrische Daten

Auswerte- und

Versorgungsstromkreis.....in Zündschutzart Eigensicherheit EEx ia IIC/IIB
bzw. EEx ib IIC/IIB

nur zum Anschluß an bescheinigte eigensichere Stromkreise
Höchstwerte:

Typ 1	Typ 2	Typ 3	Typ 4
$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$
$I_i = 25 \text{ mA}$	$I_i = 25 \text{ mA}$	$I_i = 52 \text{ mA}$	$I_i = 76 \text{ mA}$
$P_i = 34 \text{ mW}$	$P_i = 64 \text{ mW}$	$P_i = 169 \text{ mW}$	$P_i = 242 \text{ mW}$

Der Zusammenhang zwischen dem Typ des angeschlossenen Stromkreises, der höchstzulässigen Umgebungstemperatur und der Temperaturklasse sowie den wirksamen inneren Reaktanzen für die einzelnen Typen der zylinderförmigen induktiven Sensoren ist der Tabelle zu entnehmen:

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

Anlage zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X

Typen	C _i [nF]	L _i [µH]	Typ 1			Typ 2			Typ 3			Typ 4		
			Höchstzulässige Umgebungstemperatur in °C bei Einsatz in Temperaturklasse											
			T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1
NCB1,5...M...N0...	90	100	74	89	100	69	84	100	51	66	85	39	54	67
NCB2-12GK...-N0...	90	100	73	88	100	69	84	100	51	66	80	39	54	61
NCB2-12GM...-N0...	90	100	76	91	100	73	88	100	62	77	81	54	63	63
NCN4-12GK...-N0...	95	100	73	88	100	69	84	100	51	66	80	39	54	61
NCN4-12GM...-N0...	95	100	76	91	100	73	88	100	62	77	81	54	63	63
NCB5-18GK...-N0...	95	100	73	88	100	69	84	100	51	66	80	39	54	61
NCB5-18GM...-N0...	95	100	76	91	100	73	88	100	62	77	81	54	63	63
NCN8-18GK...-N0...	95	100	73	88	100	69	84	100	51	66	80	39	54	61
NCN8-18GM...-N0...	95	100	76	91	100	73	88	100	62	77	81	54	63	63
NCB10-30GK...-N0...	105	100	73	88	100	69	84	100	51	66	80	39	54	61
NCB10-30GM...-N0...	105	100	76	91	100	73	88	100	62	77	81	54	63	63
NCN15-30GK...-N0...	110	100	73	88	100	69	84	100	51	66	80	39	54	61
NCN15-30GM...-N0...	110	100	76	91	100	73	88	100	62	77	81	54	63	63
NJ 0,2-10GM-N...	20	50	73	88	100	68	83	100	49	64	67	36	42	42
NJ 0,8-4,5-N...	30	50	73	88	100	68	83	100	49	64	67	36	42	42
NJ 0,8-5GM-N...	30	50	73	88	100	68	83	100	49	64	67	36	42	42
NJ 1,5-6,5...-N...	30	50	73	88	100	68	83	100	49	64	67	36	42	42
NJ 1,5-10GM-N-Y...	20	50	73	88	100	68	83	100	49	64	67	36	42	42
NJ 1,5-8GM-N...	30	50	73	88	100	68	83	100	49	64	67	36	42	42
NJ 1,5-8-N...	20	50	73	88	100	68	83	100	49	64	67	36	42	42
NJ 1,5-18GM-N-D...	50	60	76	91	100	73	88	100	62	77	81	54	63	63
NJ 2-11-N...	45	50	73	88	100	66	81	100	45	60	89	30	45	74
NJ 2-11-N-G...	30	50	76	91	100	73	88	100	62	77	81	54	63	63
NJ 2-12GK-N...	45	50	73	88	100	69	84	100	51	66	80	39	54	61
NJ 2-12GM-N...	30	50	76	91	100	73	88	100	62	77	81	54	63	63
NJ 2-14GM-N...	30	50	76	91	100	73	88	100	62	77	81	54	63	63
NJ 2,5-14GM-N...	30	50	76	91	100	73	88	100	62	77	81	54	63	63
NJ 4-12GK-N...	45	50	73	88	100	69	84	100	51	66	80	39	54	61
NJ 4-14GK-N...	45	50	73	88	100	69	84	100	51	66	80	39	54	61
NJ 4-12GM-N...	45	50	73	88	100	68	83	100	49	64	67	36	42	42
NJ 4-30GM-N-200...	70	100	73	88	100	66	81	100	45	60	89	30	45	74
NJ 5-10-11-N...	70	100	73	88	100	66	81	100	45	60	78	30	45	57
NJ 5-11-N...	45	50	72	87	100	65	80	100	42	57	82	26	41	63
NJ 5-18GK-N...	70	50	73	88	100	69	84	100	51	66	80	39	54	61
NJ 5-18GM-N...	70	50	76	91	100	73	88	100	62	77	81	54	63	63
NJ 6-22-N...	130	100	73	88	100	69	84	100	51	66	80	39	54	61
NJ 8-18GK-N...	70	50	73	88	100	69	84	100	51	66	80	39	54	61

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

Anlage zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X

Typen	C _i [nF]	L _i [µH]	Typ 1			Typ 2			Typ 3			Typ 4		
			Höchstzulässige Umgebungstemperatur in °C bei Einsatz in Temperaturklasse											
			T6	T5	T4- T1	T6	T5	T4- T1	T6	T5	T4- T1	T6	T5	T4- T1
NJ 8-18GM-N...	70	50	76	91	100	73	88	100	62	77	81	54	63	63
NJ 10-22-N...	130	100	73	88	100	69	84	100	51	66	80	39	54	61
NJ 10-30GK...-N...	140	100	73	88	100	69	84	100	51	66	80	39	54	61
NJ 10-30GM-N...	140	100	76	91	100	73	88	100	62	77	81	54	63	63
NJ 15-30GK...-N...	140	100	73	88	100	69	84	100	51	66	80	39	54	61
NJ 15-30GM-N...	140	100	76	91	100	73	88	100	62	77	81	54	63	63
NJ 25-50-N...	150	140	73	88	100	69	84	100	51	66	80	39	54	61
NJ 20-40-N...	140	140	73	88	100	69	84	100	51	66	80	39	54	61

(16) Prüfbericht PTB Ex 00-29206

(17) Besondere Bedingungen

1. Beim Einsatz der zylinderförmigen induktiven Sensoren Typen NC... und NJ... im Temperaturbereich von -60°C bis -20 °C sind diese durch Einbau in ein zusätzliches Gehäuse vor Schlageinwirkung zu schützen.
2. Die Anschlußteile der zylinderförmigen induktiven Sensoren Typen NC... und NJ... sind so zu errichten, daß mindestens die Schutzart IP20 gemäß IEC-Publikation 60529:1989 erreicht wird.
3. Der Zusammenhang zwischen dem Typ des angeschlossenen Stromkreises, der höchstzulässigen Umgebungstemperatur und der Temperaturklasse sowie den wirksamen inneren Reaktanzen für die einzelnen Typen der zylinderförmigen induktiven Sensoren ist der Tabelle unter Punkt (15) dieser EG-Baumusterprüfbescheinigung zu entnehmen.
4. Bei den folgenden Typen der zylinderförmigen induktiven Sensoren ist die unzulässige elektrostatische Aufladung der Metallgehäuseteile zu vermeiden. Gefährliche elektrostatische Aufladungen der Metallgehäuseteile können durch Erdung dieser Metallgehäuseteile vermieden werden, wobei sehr kleine Metallgehäuseteile (z.B. Schrauben) nicht geerdet werden müssen:

NCB1,5...M...N0...
NCB2-12GM...-N0...
NCN4-12GM...-N0...
NCB5-18GM...-N0...
NCN8-18GM...-N0...
NCB10-30GM...-N0...

NJ 1,5-6,5...-N...
NJ 1,5-10GM-N-Y...
NJ 1,5-8GM-N...
NJ 1,5-8-N...
NJ 1,5-18GM-N-D...
NJ 2-11-N-G...

NJ 4-30GM-N-200...
NJ 5-11-N-545...
NJ 5-11-N-G...
NJ 5-18GM-N...
NJ 6-22-N-G...
NJ 8-18GM-N...

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Anlage zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X

NCN15-30GM...-N0...

NJ 2-12GM-N...

NJ 10-22-N-G...

NJ 0,2-10GM-N...

NJ 2-14GM-N...

NJ 10-30GM-N...

NJ 0,8-4,5-N...

NJ 2,5-14GM-N...

NJ 0,8-5GM-N...

NJ 4-12GM-N...

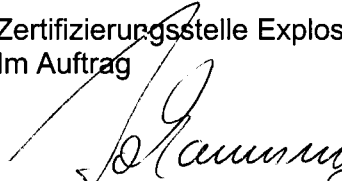
(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

Durch vorgenannte Normen abgedeckt.

Zertifizierungsstelle Explosionsschutz

Im Auftrag

Braunschweig, 26. September 2000


Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



1. ERGÄNZUNG

gemäß Richtlinie 94/9/EG Anhang III Ziffer 6

zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X

Gerät: Zylinderförmige induktive Sensoren Typen NC... und NJ...

Kennzeichnung:  II 2 G EEx ia IIC T6

Hersteller: Pepperl + Fuchs GmbH

Anschrift: Königsberger Allee 87
68307 Mannheim; Deutschland

Beschreibung der Ergänzungen und Änderungen

Die nachfolgend aufgeführten zylinderförmigen induktiven Sensoren der Typenreihe NC... und NJ... dürfen zukünftig auch in explosionsgefährdeten Bereichen eingesetzt werden, die den Einsatz von Kategorie 1-Geräten erfordern.

Die Änderungen betreffen ausschließlich die "Elektrischen Daten" (geänderte höchstzulässige Umgebungstemperaturen für den Einsatz als Kategorie 1-Gerät, Reduzierung des eigensicheren Auswerte- und Versorgungsstromkreises auf die Kategorie ia) sowie die Kennzeichnung der nachfolgend aufgeführten Typen der zylinderförmigen induktiven Sensoren.

NCB1,5...M...N0...	NCN15-30GM...-N0...	NJ 2-12GM-N...
NCB2-12GM...-N0...	NJ 0,8-5GM-N...	NJ 4-12GM-N...
NCN4-12GM...-N0...	NJ 1,5-6,5...-N...	NJ 5-18GM-N...
NCB5-18GM...-N0...	NJ 1,5-8GM-N...	NJ 8-18GM-N...
NCN8-18GM...-N0...	NJ 2-11-N...	NJ 10-30GM-N...
NCB10-30GM...-N0...	NJ 2-11-N-G...	NJ 15-30GM-N...

Die Kennzeichnung der oben aufgeführten Sensoren lautet für den Einsatz als Kategorie 1-Gerät zukünftig:

 II 1 G EEx ia IIC T6

Die "Besonderen Bedingungen" gelten unverändert auch für den Einsatz als Kategorie 1-Gerät.

1. Ergänzung zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X

Elektrische Daten

Auswerte- und Versorgungsstromkreisin Zündschutzart Eigensicherheit EEx ia IIC/IIB
 nur zum Anschluß an bescheinigte eigensichere Stromkreise
 Höchstwerte:

Typ 1	Typ 2	Typ 3	Typ 4
$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$
$I_i = 25 \text{ mA}$	$I_i = 25 \text{ mA}$	$I_i = 52 \text{ mA}$	$I_i = 76 \text{ mA}$
$P_i = 34 \text{ mW}$	$P_i = 64 \text{ mW}$	$P_i = 169 \text{ mW}$	$P_i = 242 \text{ mW}$

Der Zusammenhang zwischen dem Typ des angeschlossenen Stromkreises, der höchstzulässigen Umgebungstemperatur für den Einsatz als Kategorie 1-Gerät und der Temperaturklasse sowie den wirksamen inneren Reaktanzen für die einzelnen Typen der zylinderförmigen induktiven Sensoren ist der nachfolgenden Tabelle zu entnehmen:

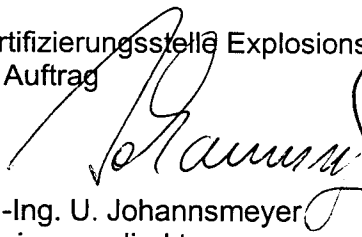
Typen	C_i [nF]	L_i [µH]	Typ 1			Typ 2			Typ 3			Typ 4		
			Höchstzulässige Umgebungstemperatur in °C bei Einsatz in Temperaturklasse											
			T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1
NCB1,5...M...N0...	90	100	57	69	97	52	64	92	34	46	74	22	34	62
NCB2-12GM...-N0...	90	100	59	71	99	56	68	96	45	57	81	37	49	63
NCN4-12GM...-N0...	95	100	59	71	99	56	68	96	45	57	81	37	49	63
NCB5-18GM...-N0...	95	100	59	71	99	56	68	96	45	57	81	37	49	63
NCN8-18GM...-N0...	95	100	59	71	99	56	68	96	45	57	81	37	49	63
NCB10-30GM...-N0...	105	100	59	71	99	56	68	96	45	57	81	37	49	63
NCN15-30GM...-N0...	110	100	59	71	99	56	68	96	45	57	81	37	49	63
NJ 0,8-5GM-N...	30	50	56	68	96	51	63	91	32	44	67	19	31	41
NJ 1,5-6,5...-N...	30	50	56	68	96	51	63	91	32	44	67	19	31	41
NJ 1,5-10GM-N-Y...	30	50	56	68	96	51	63	91	32	44	67	19	31	41
NJ 2-11-N...	45	50	55	67	95	49	61	89	28	40	68	13	25	53
NJ 2-11-N-G...	30	50	59	71	99	56	68	96	45	57	81	37	49	63
NJ 2-12GM-N...	30	50	59	71	99	56	68	96	45	57	81	37	49	63
NJ 4-12GM-N...	45	50	56	68	96	51	63	91	32	44	67	19	31	41
NJ 5-18GM-N...	70	50	59	71	99	56	68	96	45	57	81	37	49	63
NJ 8-18GM-N...	70	50	59	71	99	56	68	96	45	57	81	37	49	63
NJ 10-30GM-N...	140	100	59	71	99	56	68	96	45	57	81	37	49	63
NJ 15-30GM-N...	140	100	59	71	99	56	68	96	45	57	81	37	49	63

1. Ergänzung zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X

Prüfbericht: PTB Ex 02-22170

Zertifizierungsstelle Explosionsschutz
Im Auftrag

Braunschweig, 29. August 2002


Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



2. ERGÄNZUNG

gemäß Richtlinie 94/9/EG Anhang III Ziffer 6

zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X

Gerät: Zylinderförmige induktive Sensoren Typen NC... und NJ...

Kennzeichnung:  II 1 G EEx ia IIC T6

Hersteller: Pepperl + Fuchs GmbH

Anschrift: Königsberger Allee 87
68307 Mannheim; Deutschland

Beschreibung der Ergänzungen und Änderungen

Die zylinderförmigen induktiven Sensoren der Typenreihe NC... und NJ... dürfen zukünftig auch wie in den Prüfungsunterlagen zum Prüfbericht PTB Ex 04-23445 beschrieben gefertigt und betrieben werden.

Die Änderungen betreffen die Erweiterung der Typenreihe NJ (neue Typen und weitere Typen im Einsatz als Kategorie 1-Geräte), die Darstellung des Grundaufbaus des zylinderförmigen induktiven Sensors Typ NJ 4-30GM-N-200... mit getrennten Gehäusen für Oszillator- und Verstärkerteil, den inneren Aufbau (weitere Schaltplanbeispiele, neue LED-Typen), die Erweiterung von Punkt 4 der „Besonderen Bedingungen“ um den Typ NJ 15-30GM-N... sowie weitere Alternativen für die Aufbringung der Kennzeichnung.

Die EG-Baumusterprüfbescheinigung wird um folgende Typen der zylinderförmigen induktiven Sensoren erweitert:

NJ 5-18GK-N-150...
NJ 8-18GK-N-150...
NJ 15-30GK-N-150...

Für folgende Typen der zylinderförmigen induktiven Sensoren werden die Einsatzbedingungen als Kategorie 1-Gerät mit dieser 2. Ergänzung neu festgelegt.

NJ 1,5-10GM-N-Y...	NJ 5-18GK-N-150...
NJ 1,5-8GM-N...	NJ 8-18GK-N...
NJ 1,5-18GM-N-D...	NJ 8-18GK-N-150...
NJ 4-30GM-N-200...	NJ 15-30GK-N...
NJ 5-18GK-N...	NJ 15-30GK-N-150...

2. Ergänzung zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X

Zur besseren Verständlichkeit werden die „Elektrischen Daten“ sowie die Tabellen, welche die Zusammenhänge zwischen den höchstzulässigen Umgebungstemperaturen, den Temperaturklassen, den „Elektrischen Daten“ sowie den Gerätekategorien herstellen, für alle Typen der zylindrischen induktiven Sensoren nachfolgend dargestellt.

Desweiteren werden die geänderten „Besonderen Bedingungen“ dargestellt.

Elektrische Daten

Auswerte- und

Versorgungsstromkreis in Zündschutzart Eigensicherheit EEx ia IIC/IIB
bzw. EEx ib IIC/IIB

nur zum Anschluss an bescheinigte eigensichere Stromkreise
Höchstwerte:

Typ 1	Typ 2	Typ 3	Typ 4
$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$
$I_i = 25 \text{ mA}$	$I_i = 25 \text{ mA}$	$I_i = 52 \text{ mA}$	$I_i = 76 \text{ mA}$
$P_i = 34 \text{ mW}$	$P_i = 64 \text{ mW}$	$P_i = 169 \text{ mW}$	$P_i = 242 \text{ mW}$

Beim Einsatz als Kategorie 1-Gerät ist zu beachten, dass der Auswerte- und Versorgungsstromkreis der Zündschutzart Eigensicherheit EEx ia IIC/IIB entsprechen muss.

Die Zusammenhänge zwischen dem Typ des angeschlossenen Stromkreises, der höchstzulässigen Umgebungstemperatur für den Einsatz als Kategorie 1- bzw. Kategorie 2-Gerät und der Temperaturklasse sowie den wirksamen inneren Reaktanzen für die einzelnen Typen der zylinderförmigen induktiven Sensoren sind den nachfolgenden Tabellen zu entnehmen.

2. Ergänzung zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X

Tabelle 1: Einsatz als Kategorie 1-Gerät

Typ	Typ 1						Typ 2						Typ 3						Typ 4										
	Ci/ nF	Li/ µH	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1		
			90	100	57	69	97	97	92	52	64	92	92	92	34	46	74	74	74	22	34	46	74	22	34	46	74	22	34
NCB1,5-...M...NO...																													
NCB2-12GM...-NO...																													
NCN4-12GM...-NO...																													
NCB5-18GM...-NO...																													
NCN8-18GM...-NO...																													
NCB10-30GM...-NO...																													
NCN15-30GM...-NO...																													
NJ 0,8-5GM-N...																													
NJ 1,5-6,5...-N...																													
NJ 1,5-8GM-N...																													
NJ 1,5-10GM-N-Y...																													
NJ 1,5-18GM-N-D...																													
NJ 2-11-N...																													
NJ 2-11-N-G...																													
NJ 2-12GM-N...																													
NJ 4-30GM-N-200... (Oszillatorteil)																													
NJ 4-30GM-N-200... (Verstärkerteil)																													
NJ 4-12GM-N...																													
NJ 5-18GM-N...																													
NJ 5-18GK-N...																													
NJ 5-18GK-N-150...																													
NJ 8-18GK-N...																													
NJ 8-18GK-N-150...																													
NJ 8-18GM-N...																													
NJ 10-30GM-N...																													
NJ 15-30GK-N...																													
NJ 15-30GK-N-150...																													
NJ 15-30GM-N...																													

2. Ergänzung zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X

Tabelle 2: Einsatz als Kategorie 2-Gerät

Typ	Typ 1						Typ 2						Typ 3						Typ 4								
	Ci/ nF	Li/ µH	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1
			90	100	74	89	100	100	100	69	84	100	100	100	51	66	85	85	85	39	54	67	67	67	39	54	67
NCB1,5-M...NO...	90	100	74	89	100	100	100	69	84	100	100	100	51	66	85	85	85	39	54	67	67	67	39	54	67	67	67
NCB2-12GK...NO...	90	100	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	39	54	61	61	61
NCB2-12GM...NO...	90	100	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	54	63	63	63	63
NCN4-12GK...NO...	95	100	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	39	54	61	61	61
NCN4-12GM...NO...	95	100	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	54	63	63	63	63
NCB5-18GK...NO...	95	100	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	39	54	61	61	61
NCB5-18GM...NO...	95	100	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	54	63	63	63	63
NCN8-18GK...NO...	95	100	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	39	54	61	61	61
NCN8-18GM...NO...	95	100	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	54	63	63	63	63
NCB10-30GK...NO...	105	100	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	39	54	61	61	61
NCB10-30GM...NO...	105	100	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	54	63	63	63	63
NCN15-30GK...NO...	110	100	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	39	54	61	61	61
NCN15-30GM...NO...	110	100	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	54	63	63	63	63
NJ 0,2-10GM-N...	20	50	73	88	100	100	100	68	83	100	100	100	49	64	67	67	67	36	42	42	42	42	36	42	42	42	42
NJ 0,8-4,5-N...	30	50	73	88	100	100	100	68	83	100	100	100	49	64	67	67	67	36	42	42	42	42	36	42	42	42	42
NJ 0,8-5GM-N...	30	50	73	88	100	100	100	68	83	100	100	100	49	64	67	67	67	36	42	42	42	42	36	42	42	42	42
NJ 1,5-6,5-N...	30	50	73	88	100	100	100	68	83	100	100	100	49	64	67	67	67	36	42	42	42	42	36	42	42	42	42
NJ 1,5-10GM-N-Y...	20	50	73	88	100	100	100	68	83	100	100	100	49	64	67	67	67	36	42	42	42	42	36	42	42	42	42
NJ 1,5-8GM-N...	30	50	73	88	100	100	100	68	83	100	100	100	49	64	67	67	67	36	42	42	42	42	36	42	42	42	42
NJ 1,5-8-N...	20	50	73	88	100	100	100	68	83	100	100	100	49	64	67	67	67	36	42	42	42	42	36	42	42	42	42
NJ 1,5-18GM-N-D...	50	60	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	54	63	63	63	63
NJ 2-11-N...	45	50	73	88	100	100	100	66	81	100	100	100	45	60	89	89	89	30	45	74	74	74	30	45	74	74	74
NJ 2-11-N-G...	30	50	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	54	63	63	63	63
NJ 2-12GK-N...	45	50	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	39	54	61	61	61
NJ 2-12GM-N...	30	50	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	54	63	63	63	63
NJ 2-12GM-N...	30	50	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	54	63	63	63	63
NJ 2-14GM-N...	30	50	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	54	63	63	63	63
NJ 2,5-14GM-N...	30	50	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	54	63	63	63	63
NJ 4-12GK-N...	45	50	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	39	54	61	61	61
NJ 4-14GK-N...	45	50	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	39	54	61	61	61
NJ 4-12GM-N...	45	50	73	88	100	100	100	68	83	100	100	100	49	64	67	67	67	36	42	42	42	42	36	42	42	42	42

2. Ergänzung zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X

Fortsetzung Tabelle 2: Einsatz als Kategorie 2-Gerät

Typ	Typ 1						Typ 2						Typ 3						Typ 4								
	Ci/	Li/	T6	T5	T4	T3	T2-T1	T6	T5	T4	T3	T2-T1	T6	T5	T4	T3	T2-T1	T6	T5	T4	T3	T2-T1	T6	T5	T4	T3	T2-T1
NJ 4-30GM-N-200... (Oszillatorteil)			73	88	123	188	192	66	81	116	181	186	45	60	95	160	164	30	45	80	145	149					
NJ 4-30GM-N-200... (Verstärkerenteil)	70	100	73	88	100	100	100	66	81	100	100	100	45	60	89	89	89	30	45	74	74	74					
NJ 5-10-11-N...	70	100	73	88	100	100	100	66	81	100	100	100	45	60	78	78	78	30	45	57	57	57					
NJ 5-11-N...	45	50	72	87	100	100	100	65	80	100	100	100	42	57	82	82	82	26	41	63	63	63					
NJ 5-18GK-N...	70	50	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61					
NJ 5-18GK-N-150...	70	50	73	88	124	150	150	69	84	119	150	150	51	66	101	150	150	39	54	89	136	136					
NJ 5-18GM-N...	70	50	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63					
NJ 6-22-N...	130	100	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61					
NJ 8-18GK-N...	70	50	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61					
NJ 8-18GK-N-150...	70	50	73	88	124	150	150	69	84	119	150	150	51	66	101	150	150	39	54	89	136	136					
NJ 8-18GM-N...	70	50	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63					
NJ 10-22-N...	130	100	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61					
NJ 10-30GK...-N...	140	100	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61					
NJ 10-30GM-N...	140	100	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63					
NJ 15-30GK...-N...	140	100	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61					
NJ 15-30GK-N-150...	140	100	73	88	124	150	150	69	84	119	150	150	51	66	101	150	150	39	54	89	136	136					
NJ 15-30GM-N...	140	100	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63					
NJ 25-50-N...	150	140	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61					
NJ 20-40-N...	140	140	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61					

2. Ergänzung zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X

Besondere Bedingungen

1. Beim Einsatz der zylinderförmigen induktiven Sensoren Typen NC... und NJ... im Temperaturbereich von -60°C bis -20 °C sind diese durch Einbau in ein zusätzliches Gehäuse vor Schlägeinwirkung zu schützen.
2. Die Anschlussteile der zylinderförmigen induktiven Sensoren Typen NC... und NJ... sind so zu errichten, dass mindestens die Schutzart IP20 gemäß IEC-Publikation 60529:1989 erreicht wird.
3. Der Zusammenhang zwischen dem Typ des angeschlossenen Stromkreises, der höchstzulässigen Umgebungstemperatur und der Temperaturklasse sowie den wirksamen inneren Reaktanzen für die einzelnen Typen der zylinderförmigen induktiven Sensoren ist den Tabellen 1 und 2 dieser 2. Ergänzung der EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X zu entnehmen.
4. Bei den folgenden Typen der zylinderförmigen induktiven Sensoren ist die unzulässige elektrostatische Aufladung der Metallgehäuseteile zu vermeiden. Gefährliche elektrostatische Aufladungen können durch Erdung der Metallgehäuseteile vermieden werden, wobei sehr kleine Metallgehäuseteile (z.B. Schrauben) nicht geerdet werden müssen:

NCB1,5...M...N0...	NJ 1,5-6,5...-N...	NJ 4-30GM-N-200...
NCB2-12GM...-N0...	NJ 1,5-10GM-N-Y...	NJ 5-11-N-545...
NCN4-12GM...-N0...	NJ 1,5-8GM-N...	NJ 5-11-N-G...
NCB5-18GM...-N0...	NJ 1,5-8-N...	NJ 5-18GM-N...
NCN8-18GM...-N0...	NJ 1,5-18GM-N-D...	NJ 6-22-N-G...
NCB10-30GM...-N0...	NJ 2-11-N-G...	NJ 8-18GM-N...
NCN15-30GM...-N0...	NJ 2-12GM-N...	NJ 10-22-N-G...
NJ 0,2-10GM-N...	NJ 2-14GM-N...	NJ 10-30GM-N...
NJ 0,8-4,5-N...	NJ 2,5-14GM-N...	NJ 15-30GM-N...
NJ 0,8-5GM-N...	NJ 4-12GM-N...	

Prüfbericht: PTB Ex 04-23445

Zertifizierungsstelle Explosionsschutz
Im Auftrag

Braunschweig, 12. Juli 2004


Dr.-Ing. U. Gerlach
Regierungsrat



3. E R G Ä N Z U N G

gemäß Richtlinie 94/9/EG Anhang III Ziffer 6

zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X

Gerät: Zylinderförmige induktive Sensoren Typen NC... und NJ...

Kennzeichnung:  II 1 G EEx ia IIC T6

Hersteller: Pepperl + Fuchs GmbH

Anschrift: Königsberger Allee 87, 68307 Mannheim, Deutschland

Beschreibung der Ergänzungen und Änderungen

Die zylinderförmigen induktiven Sensoren der Typenreihe NC... und NJ... dürfen zukünftig auch wie in den Prüfungsunterlagen zum Prüfbericht PTB Ex 05-25204 beschrieben gefertigt und betrieben werden.

Die Änderungen betreffen die Erweiterung der Typenreihe NC... (neue Typen für den Einsatz als Kategorie 1-Gerät bzw. Kategorie 2-Gerät), den inneren Aufbau (weitere Schaltplanbeispiele, neue LED-Typen, neue Gießharztypen) sowie die Erweiterung von Punkt 4 der „Besonderen Bedingungen“ um die neuen Typen der Typenreihe NC... .

Um folgende Typen der zylinderförmigen induktiven Sensoren wird die EG-Baumusterprüfbescheinigung erweitert:

NCB4-12GM...-N0...

NCB8-18GM...-N0...

NCB15-30GM...-N0...

Für diese Typen gelten die unten aufgeführten „Elektrischen Daten“.

Alle anderen Angaben gelten unverändert auch für diese dritte Ergänzung.

3. Ergänzung zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X

Elektrische Daten

Auswerte- und Versorgungstromkreis in Zündschutzart Eigensicherheit EEx ia IIC/IIB
bzw. EEx ib IIC/IIB
nur zum Anschluss an bescheinigte eigensichere Stromkreise
Höchstwerte:

Typ 1	Typ 2	Typ 3	Typ 4
$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$
$I_i = 25 \text{ mA}$	$I_i = 25 \text{ mA}$	$I_i = 52 \text{ mA}$	$I_i = 76 \text{ mA}$
$P_i = 34 \text{ mW}$	$P_i = 64 \text{ mW}$	$P_i = 169 \text{ mW}$	$P_i = 242 \text{ mW}$

Beim Einsatz als Kategorie 1-Gerät ist zu beachten, dass der Auswerte- und Versorgungstromkreis der Zündschutzart Eigensicherheit EEx ia IIC/IIB entsprechen muss.

Die Zusammenhänge zwischen dem Typ des angeschlossenen Stromkreises, der höchstzulässigen Umgebungstemperatur für den Einsatz als Kategorie 1- bzw. Kategorie 2-Gerät und der Temperaturklasse sowie den wirksamen inneren Reaktanzen für die einzelnen Typen der zylinderförmigen induktiven Sensoren sind den nachfolgenden Tabellen zu entnehmen:

3. Ergänzung zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X

Tabelle 1: Einsatz als Kategorie 1-Gerät

Typ	Typ 1						Typ 2						Typ 3						Typ 4								
	Ci/ nF	Li/ µH	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1
			120	50	57	69	97	97	97	52	64	92	92	92	34	46	74	74	74	22	34	46	74	74	22	34	46
120	50	57	69	97	97	97	52	64	92	92	92	34	46	74	74	74	22	34	46	74	74	22	34	46	74	74	52
120	150	57	69	97	97	97	52	64	92	92	92	34	46	74	74	74	22	34	46	74	74	22	34	46	74	74	52

Tabelle 2: Einsatz als Kategorie 2-Gerät

Typ	Typ 1						Typ 2						Typ 3						Typ 4								
	Ci/ nF	Li/ µH	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1
			120	50	74	89	100	100	100	69	84	100	100	100	51	66	74	74	74	39	51	66	74	74	39	51	66
120	50	74	89	100	100	100	69	84	100	100	100	51	66	74	74	74	39	51	66	74	74	39	51	66	74	74	52
120	150	74	89	100	100	100	69	84	100	100	100	51	66	74	74	74	39	51	66	74	74	39	51	66	74	74	52

3. Ergänzung zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X

Besondere Bedingungen

1. Beim Einsatz der zylinderförmigen induktiven Sensoren Typen NC... und NJ... im Temperaturbereich von -60 °C bis -20 °C sind diese durch Einbau in ein zusätzliches Gehäuse vor Schlägeinwirkung zu schützen.
2. Die Anschlussteile der zylinderförmigen induktiven Sensoren Typen NC... und NJ... sind so zu errichten, dass mindestens die Schutzart IP20 gemäß IEC-Publikation 60529:1989 erreicht wird.
3. Der Zusammenhang zwischen dem Typ des angeschlossenen Stromkreises, der höchstzulässigen Umgebungstemperatur und der Temperaturklasse sowie den wirksamen inneren Reaktanzen für die einzelnen Typen der zylinderförmigen induktiven Sensoren ist den Tabellen 1 und 2 der zweiten Ergänzung und für die neuen Typen den Tabellen 1 und 2 dieser dritten Ergänzung der EG-Baumusterprüfbescheinigung PTB 00 ATEX 2048 X zu entnehmen.
4. Bei den folgenden Typen der zylinderförmigen induktiven Sensoren ist die unzulässige elektrostatische Aufladung der Metallgehäuseteile zu vermeiden. Gefährliche elektrostatische Aufladungen der Metallgehäuseteile können durch Erdung dieser Metallgehäuseteile vermieden werden, wobei sehr kleine Metallgehäuseteile (z.B. Schrauben) nicht geerdet werden müssen:

NCB1,5...M...N0...	NJ 0,8-4,5-N...	NJ 4-12GM-N...
NCB2-12GM...-N0...	NJ 0,8-5GM-N...	NJ 4-30GM-N-200...
NCB4-12GM...-N0...	NJ 1,5-6,5...-N...	NJ 5-11-N-545...
NCB5-18GM...-N0...	NJ 1,5-10GM-N-Y...	NJ 5-11-N-G...
NCB8-18GM...-N0...	NJ 1,5-8GM-N...	NJ 5-18GM-N...
NCB10-30GM...-N0...	NJ 1,5-8-N...	NJ 6-22-N-G...
NCB15-30GM...-N0...	NJ 1,5-18GM-N-D...	NJ 8-18GM-N...
NCN4-12GM...-N0...	NJ 2-11-N-G...	NJ 10-22-N-G...
NCN8-18GM...-N0...	NJ 2-12GM-N...	NJ 10-30GM-N...
NCN15-30GM...-N0...	NJ 2-14GM-N...	NJ 15-30GM-N...
NJ 0,2-10GM-N...	NJ 2,5-14GM-N...	

Prüfbericht: PTB Ex 05-25204

Zertifizierungsstelle Explosionsschutz
Im Auftrag


Dr.-Ing. U. Johannsmeyer
Direktor und Professor



Braunschweig, 7. Oktober 2005



(1) **EC-TYPE-EXAMINATION CERTIFICATE**
(Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**



(3) EC-type-examination Certificate Number:

PTB 00 ATEX 2048 X

(4) Equipment: Cylindrical inductive sensors, types NC... and NJ...

(5) Manufacturer: Pepperl + Fuchs GmbH

(6) Address: D-68307 Mannheim

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 00-29206.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014:1997

EN 50020:1994

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type-examination Certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

(12) The marking of the equipment shall include the following:



II 2 G EEx ia IIC T6

Zertifizierungsstelle Explosionsschutz

By order:


Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



Braunschweig, September 26, 2000

(13) **SCHEDULE**

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2048 X**

(15) Description of equipment

The cylindrical inductive sensors, types NC... and NJ...are used to convert displacements into electrical signals.

The cylindrical inductive sensors may be operated with intrinsically safe circuits certified for categories and explosion groups [EEx ia] IIC or IIB resp. [EEx ib] IIC or IIB. The category as well as the explosion group of the intrinsically safe cylindrical inductive sensors depends on the connected supplying intrinsically safe circuit.

Electrical data

Evaluation and supply circuit..... type of protection Intrinsic Safety EEx ia IIC/IIB
resp. EEx ib IIC/IIB

only for connection to certified intrinsically safe circuits
maximum values:

type 1	type 2	type 3	type 4
$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$
$I_i = 25 \text{ mA}$	$I_i = 25 \text{ mA}$	$I_i = 52 \text{ mA}$	$I_i = 76 \text{ mA}$
$P_i = 34 \text{ mW}$	$P_i = 64 \text{ mW}$	$P_i = 169 \text{ mW}$	$P_i = 242 \text{ mW}$

The assignment of the type of the connected circuit to the maximum permissible ambient temperature and the temperature class as well as the effective internal reactances for the individual types of cylindrical inductive sensors is shown in the following table:

types	C _i [nF]	L _i [µH]	type 1			type 2			type 3			type 4		
			maximum permissible ambient temperature in °C for application in temperature class											
			T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1
NCB1,5...M...N0...	90	100	74	89	100	69	84	100	51	66	85	39	54	67
NCB2-12GK...-N0...	90	100	73	88	100	69	84	100	51	66	80	39	54	61
NCB2-12GM...-N0...	90	100	76	91	100	73	88	100	62	77	81	54	63	63
NCN4-12GK...-N0...	95	100	73	88	100	69	84	100	51	66	80	39	54	61
NCN4-12GM...-N0...	95	100	76	91	100	73	88	100	62	77	81	54	63	63
NCB5-18GK...-N0...	95	100	73	88	100	69	84	100	51	66	80	39	54	61
NCB5-18GM...-N0...	95	100	76	91	100	73	88	100	62	77	81	54	63	63
NCN8-18GK...-N0...	95	100	73	88	100	69	84	100	51	66	80	39	54	61
NCN8-18GM...-N0...	95	100	76	91	100	73	88	100	62	77	81	54	63	63
NCB10-30GK...-N0...	105	100	73	88	100	69	84	100	51	66	80	39	54	61
NCB10-30GM...-N0...	105	100	76	91	100	73	88	100	62	77	81	54	63	63
NCN15-30GK...-N0...	110	100	73	88	100	69	84	100	51	66	80	39	54	61
NCN15-30GM...-N0...	110	100	76	91	100	73	88	100	62	77	81	54	63	63
NJ 0,2-10GM-N...	20	50	73	88	100	68	83	100	49	64	67	36	42	42
NJ 0,8-4,5-N...	30	50	73	88	100	68	83	100	49	64	67	36	42	42
NJ 0,8-5GM-N...	30	50	73	88	100	68	83	100	49	64	67	36	42	42
NJ 1,5-6,5...-N...	30	50	73	88	100	68	83	100	49	64	67	36	42	42
NJ 1,5-10GM-N-Y...	20	50	73	88	100	68	83	100	49	64	67	36	42	42
NJ 1,5-8GM-N...	30	50	73	88	100	68	83	100	49	64	67	36	42	42
NJ 1,5-8-N...	20	50	73	88	100	68	83	100	49	64	67	36	42	42
NJ 1,5-18GM-N-D...	50	60	76	91	100	73	88	100	62	77	81	54	63	63
NJ 2-11-N...	45	50	73	88	100	66	81	100	45	60	89	30	45	74
NJ 2-11-N-G...	30	50	76	91	100	73	88	100	62	77	81	54	63	63
NJ 2-12GK-N...	45	50	73	88	100	69	84	100	51	66	80	39	54	61
NJ 2-12GM-N...	30	50	76	91	100	73	88	100	62	77	81	54	63	63
NJ 2-14GM-N...	30	50	76	91	100	73	88	100	62	77	81	54	63	63
NJ 2,5-14GM-N...	30	50	76	91	100	73	88	100	62	77	81	54	63	63
NJ 4-12GK-N...	45	50	73	88	100	69	84	100	51	66	80	39	54	61
NJ 4-14GK-N...	45	50	73	88	100	69	84	100	51	66	80	39	54	61
NJ 4-12GM-N...	45	50	73	88	100	68	83	100	49	64	67	36	42	42
NJ 4-30GM-N-200...	70	100	73	88	100	66	81	100	45	60	89	30	45	74
NJ 5-10-11-N...	70	100	73	88	100	66	81	100	45	60	78	30	45	57
NJ 5-11-N...	45	50	72	87	100	65	80	100	42	57	82	26	41	63
NJ 5-18GK-N...	70	50	73	88	100	69	84	100	51	66	80	39	54	61
NJ 5-18GM-N...	70	50	76	91	100	73	88	100	62	77	81	54	63	63
NJ 6-22-N...	130	100	73	88	100	69	84	100	51	66	80	39	54	61
NJ 8-18GK-N...	70	50	73	88	100	69	84	100	51	66	80	39	54	61

types	C _i [nF]	L _i [µH]	type 1			type 2			type 3			type 4		
			maximum permissible ambient temperature in °C for application in temperature class											
			T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1
NJ 8-18GM-N...	70	50	76	91	100	73	88	100	62	77	81	54	63	63
NJ 10-22-N...	130	100	73	88	100	69	84	100	51	66	80	39	54	61
NJ 10-30GK...-N...	140	100	73	88	100	69	84	100	51	66	80	39	54	61
NJ 10-30GM-N...	140	100	76	91	100	73	88	100	62	77	81	54	63	63
NJ 15-30GK...-N...	140	100	73	88	100	69	84	100	51	66	80	39	54	61
NJ 15-30GM-N...	140	100	76	91	100	73	88	100	62	77	81	54	63	63
NJ 25-50-N...	150	140	73	88	100	69	84	100	51	66	80	39	54	61
NJ 20-40-N...	140	140	73	88	100	69	84	100	51	66	80	39	54	61

(16) Test report PTB Ex 00-29206

(17) Special conditions for safe use

- For the application within a temperature range of -60 °C to -20 °C the cylindrical inductive sensors, types NC... and NJ... must be protected against damage due to impact by mounting into an additional housing.
- The connection facilities of the cylindrical inductive sensors, types NC... and NJ... shall be installed as such that at least a degree of protection of IP20 according to IEC-publication 60529:1989 is met.
- The assignment of the type of the connected circuit to the maximum permissible ambient temperature and the temperature class as well as the effective internal reactances for the individual types of cylindrical inductive sensors is shown in the table given under item (15) of this EC-type-examination certificate.
- Inadmissible electrostatic charge of parts of the metal housing has to be avoided for the following types of cylindrical inductive sensors. Dangerous electrostatic charges of parts of the metal housing can be avoided by grounding of these parts whereas very small parts of the metal housing (e.g. screws) don't need to be grounded:

NCB1,5...M...N0...
 NCB2-12GM...-N0...
 NCN4-12GM...-N0...
 NCB5-18GM...-N0...
 NCN8-18GM...-N0...

NJ 1,5-6,5...-N...
 NJ 1,5-10GM-N-Y...
 NJ 1,5-8GM-N...
 NJ 1,5-8-N...
 NJ 1,5-18GM-N-D...

NJ 4-30GM-N-200...
 NJ 5-11-N-545...
 NJ 5-11-N-G...
 NJ 5-18GM-N...
 NJ 6-22-N-G...

NCB10-30GM..-N0...
NCN15-30GM...-N0...
NJ 0,2-10GM-N...
NJ 0,8-4,5-N...
NJ 0,8-5GM-N...

NJ 2-11-N-G...
NJ 2-12GM-N...
NJ 2-14GM-N...
NJ 2,5-14GM-N...
NJ 4-12GM-N...

NJ 8-18GM-N...
NJ 10-22-N-G...
NJ 10-30GM-N...

(18) Essential health and safety requirements

Met by the standards mentioned above

Zertifizierungsstelle Explosionschutz
By order:

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



Braunschweig, September 26, 2000

1. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2048 X (Translation)

Equipment: Cylindrical inductive sensors, types NC... and NJ...

Marking:  II 2 G EEx ia IIC T6

Manufacturer: Pepperl + Fuchs GmbH

Address: Königsberger Allee 87
68307 Mannheim; Germany

Description of supplements and modifications

The cylindrical inductive sensors of type series NC... and NJ... , listed as follows, may in future also be used in hazardous areas requiring apparatus of category 1.

The modifications exclusively concern the "Electrical data" (modified maximum permissible ambient temperatures for use as category-1-apparatus, reduction of the intrinsically safe evaluation and supply circuit to category ia) as well as the marking of the following types of cylindrical inductive sensors.

NCB1,5...M...N0...	NCN15-30GM...-N0...	NJ 2-12GM-N...
NCB2-12GM...-N0...	NJ 0,8-5GM-N...	NJ 4-12GM-N...
NCN4-12GM...-N0...	NJ 1,5-6,5...-N...	NJ 5-18GM-N...
NCB5-18GM...-N0...	NJ 1,5-8GM-N...	NJ 8-18GM-N...
NCN8-18GM...-N0...	NJ 2-11-N...	NJ 10-30GM-N...
NCB10-30GM...-N0...	NJ 2-11-N-G...	NJ 15-30GM-N...

In future the marking of the above-listed sensors for application as category-1-apparatus will be:

 II 1 G EEx ia IIC T6

The "Special conditions" are also valid for use as category-1-apparatus without changes.

1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2048 X

Electrical data

Evaluation and supply circuit type of protection Intrinsic Safety EEx ia IIC/IIB
for connection to certified intrinsically safe circuits only
Maximum values:

type 1	type 2	type 3	type 4
$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$
$I_i = 25 \text{ mA}$	$I_i = 25 \text{ mA}$	$I_i = 52 \text{ mA}$	$I_i = 76 \text{ mA}$
$P_i = 34 \text{ mW}$	$P_i = 64 \text{ mW}$	$P_i = 169 \text{ mW}$	$P_i = 242 \text{ mW}$

The assignment of the type of the connected circuit to the maximum permissible ambient temperature for use as category-1-apparatus and the temperature class as well as the effective internal reactances for the individual types of cylindrical inductive sensors is shown in the following table:

types	C_i [nF]	L_i [µH]	type 1		type 2			type 3			type 4			
			maximum permissible ambient temperature in °C for use in temperature class											
			T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1
NCB1,5...M...N0...	90	100	57	69	97	52	64	92	34	46	74	22	34	62
NCB2-12GM...-N0...	90	100	59	71	99	56	68	96	45	57	81	37	49	63
NCN4-12GM...-N0...	95	100	59	71	99	56	68	96	45	57	81	37	49	63
NCB5-18GM...-N0...	95	100	59	71	99	56	68	96	45	57	81	37	49	63
NCN8-18GM...-N0...	95	100	59	71	99	56	68	96	45	57	81	37	49	63
NCB10-30GM...-N0...	105	100	59	71	99	56	68	96	45	57	81	37	49	63
NCN15-30GM...-N0...	110	100	59	71	99	56	68	96	45	57	81	37	49	63
NJ 0,8-5GM-N...	30	50	56	68	96	51	63	91	32	44	67	19	31	41
NJ 1,5-6,5...-N...	30	50	56	68	96	51	63	91	32	44	67	19	31	41
NJ 1,5-10GM-N-Y...	30	50	56	68	96	51	63	91	32	44	67	19	31	41
NJ 2-11-N...	45	50	55	67	95	49	61	89	28	40	68	13	25	53
NJ 2-11-N-G...	30	50	59	71	99	56	68	96	45	57	81	37	49	63
NJ 2-12GM-N...	30	50	59	71	99	56	68	96	45	57	81	37	49	63
NJ 4-12GM-N...	45	50	56	68	96	51	63	91	32	44	67	19	31	41
NJ 5-18GM-N...	70	50	59	71	99	56	68	96	45	57	81	37	49	63
NJ 8-18GM-N...	70	50	59	71	99	56	68	96	45	57	81	37	49	63
NJ 10-30GM-N...	140	100	59	71	99	56	68	96	45	57	81	37	49	63
NJ 15-30GM-N...	140	100	59	71	99	56	68	96	45	57	81	37	49	63


Braunschweig und Berlin

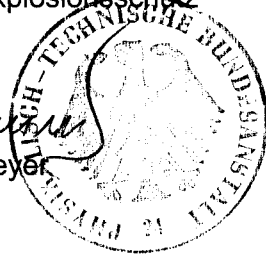
1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2048 X

Test report: PTB Ex 02-22170

Zertifizierungsstelle Explosioneschutz
By order:

Braunschweig, August 08, 2002


Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



2. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2048 X

(Translation)

Equipment: Cylindrical inductive sensors, types NC... and NJ...

Marking:  II 1 G EEx ia IIC T6

Manufacturer: Pepperl + Fuchs GmbH

Address: Königsberger Allee 87
68307 Mannheim; Germany

Description of supplements and modifications

The cylindrical inductive sensors of type series NC... and NJ... may in future also be manufactured and operated according to the test documents listed in the test report PTB Ex 04-23445.

The modifications concern the extension of the type series NJ (new types and further types for application as category-1-apparatus), the depiction of the basic construction of the cylindrical inductive sensor, type NJ 4-30GM-N-200... with separate enclosures for oscillator and amplifier, the internal construction (further examples of circuit diagrams, new types of LED's), the extension of point 4 of the "Special conditions" for type NJ 15-30GM-N... as well as further alternatives for fixing the marking.

The EC-type examination certificate is extended for the following types of cylindrical inductive sensors:

NJ 5-18GK-N-150...
NJ 8-18GK-N-150...
NJ 15-30GK-N-150...

The application conditions as category-1-apparatus are newly determined by this 2nd supplement for the following types of cylindrical inductive sensors:

NJ 1,5-10GM-N-Y...	NJ 5-18GK-N-150...
NJ 1,5-8GM-N...	NJ 8-18GK-N...
NJ 1,5-18GM-N-D...	NJ 8-18GK-N-150...
NJ 4-30GM-N-200...	NJ 15-30GK-N...
NJ 5-18GK-N...	NJ 15-30GK-N-150...

Sheet 1/6

2. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2048 X

For a better comprehensibility the "Electrical data" as well the tables showing the relationship between maximum permissible ambient temperatures, temperature classes, electrical data as well as equipment categories for all types of cylindrical inductive sensors are tabulated below:

Furthermore the altered "Special conditions" are listed.

Electrical data

Evaluation and supply circuit..... type of protection Intrinsic Safety EEx ia IIC/IIB
resp. EEx ib IIC/IIB
for connection to certified intrinsically safe circuits only
Maximum values:

type 1	type 2	type 3	type 4
$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$
$I_i = 25 \text{ mA}$	$I_i = 25 \text{ mA}$	$I_i = 52 \text{ mA}$	$I_i = 76 \text{ mA}$
$P_i = 34 \text{ mW}$	$P_i = 64 \text{ mW}$	$P_i = 169 \text{ mW}$	$P_i = 242 \text{ mW}$

With the application as category-1-apparatus it is to be considered that the evaluation and supply circuit has to comply with type of protection Intrinsic Safety EEx ia IIC/IIB.

For relationship between type of connected circuit, maximum permissible ambient temperature for use as category-1-apparatus resp. as category-2-apparatus and temperature class as well as the effective internal reactances for the individual types of cylindrical inductive sensors reference is made to the following tables:

2. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2048 X

Table 1: Application as category-1-apparatus

type	type 1						type 2						type 3						type 4													
	Ci/ nF	Li/ µH	T6	T5	T4	T3	T2-T1	T6	T5	T4	T3	T2-T1	T6	T5	T4	T3	T2-T1	T6	T5	T4	T3	T2-T1	T6	T5	T4	T3	T2-T1	T6	T5	T4	T3	
			T6	T5	T4	T3	T2-T1	T6	T5	T4	T3	T2-T1	T6	T5	T4	T3	T2-T1	T6	T5	T4	T3	T2-T1	T6	T5	T4	T3	T2-T1	T6	T5	T4	T3	
NCB1.5...M...NO...	90	100	57	69	97	97	97	52	64	92	92	92	34	46	74	74	74	22	34	62	62	62	34	46	74	74	22	34	62	62	62	62
NCB2-12GM...-NO...	90	100	59	71	99	99	99	56	68	96	96	96	45	57	81	81	81	37	49	63	63	63	37	49	63	63	37	49	63	63	63	63
NCN4-12GM...-NO...	95	100	59	71	99	99	99	56	68	96	96	96	45	57	81	81	81	37	49	63	63	63	37	49	63	63	37	49	63	63	63	63
NCB5-18GM...-NO...	95	100	59	71	99	99	99	56	68	96	96	96	45	57	81	81	81	37	49	63	63	63	37	49	63	63	37	49	63	63	63	63
NCN8-18GM...-NO...	95	100	59	71	99	99	99	56	68	96	96	96	45	57	81	81	81	37	49	63	63	63	37	49	63	63	37	49	63	63	63	63
NCB10-30GM...-NO...	105	100	59	71	99	99	99	56	68	96	96	96	45	57	81	81	81	37	49	63	63	63	37	49	63	63	37	49	63	63	63	63
NCN15-30GM...-NO...	110	100	59	71	99	99	99	56	68	96	96	96	45	57	81	81	81	37	49	63	63	63	37	49	63	63	37	49	63	63	63	63
NJ 0.8-5GM-N...	30	50	56	68	96	96	96	51	63	91	91	91	32	44	67	67	67	19	31	41	41	41	19	31	41	41	19	31	41	41	41	41
NJ 1.5-6.5...-N...	30	50	56	68	96	96	96	51	63	91	91	91	32	44	67	67	67	19	31	41	41	41	19	31	41	41	19	31	41	41	41	41
NJ 1.5-8GM-N...	30	50	56	68	96	96	96	51	63	91	91	91	32	44	67	67	67	19	31	41	41	41	19	31	41	41	19	31	41	41	41	41
NJ 1.5-10GM-N-Y...	20	50	56	68	96	96	96	51	63	91	91	91	32	44	67	67	67	19	31	41	41	41	19	31	41	41	19	31	41	41	41	41
NJ 1.5-18GM-N-D...	50	60	59	71	99	99	99	56	68	96	96	96	45	57	81	81	81	37	49	63	63	63	37	49	63	63	37	49	63	63	63	63
NJ 2-11-N...	45	50	55	67	95	95	95	49	61	89	89	89	28	40	68	68	68	13	25	53	53	53	13	25	53	53	13	25	53	53	53	53
NJ 2-11-N-G...	30	50	59	71	99	99	99	56	68	96	96	96	45	57	81	81	81	37	49	63	63	63	37	49	63	63	37	49	63	63	63	63
NJ 2-12GM-N...	30	50	59	71	99	99	99	56	68	96	96	96	45	57	81	81	81	37	49	63	63	63	37	49	63	63	37	49	63	63	63	63
NJ 4-30GM-N-200... (oscillator)	70	100	56	68	96	148	192	49	61	89	141	186	28	40	68	120	164	13	25	53	105	149	13	25	53	105	149	13	25	53	105	149
NJ 4-30GM-N-200... (amplifier)	70	100	56	68	96	96	96	49	61	89	89	89	28	40	68	68	68	13	25	53	53	53	13	25	53	53	13	25	53	53	53	53
NJ 4-12GM-N...	45	50	56	68	96	96	96	51	63	91	91	91	32	44	67	67	67	19	31	41	41	41	19	31	41	41	19	31	41	41	41	41
NJ 5-18GM-N...	70	50	59	71	99	99	99	56	68	96	96	96	45	57	81	81	81	37	49	63	63	63	37	49	63	63	37	49	63	63	63	63
NJ 5-18GK-N...	70	50	57	69	97	97	97	52	64	92	92	92	34	46	74	74	74	22	34	61	61	61	22	34	61	61	22	34	61	61	61	61
NJ 5-18GK-N-150...	70	50	57	69	97	149	150	52	64	92	144	150	34	46	74	126	150	22	34	61	114	136	22	34	61	114	136	22	34	61	114	136
NJ 8-18GK-N...	70	50	57	69	97	97	97	52	64	92	92	92	34	46	74	74	74	22	34	61	61	61	22	34	61	61	22	34	61	61	61	61
NJ 8-18GK-N-150...	70	50	57	69	97	149	150	52	64	92	144	150	34	46	74	126	150	22	34	61	114	136	22	34	61	114	136	22	34	61	114	136
NJ 8-18GM-N...	70	50	59	71	99	99	99	56	68	96	96	96	45	57	81	81	81	37	49	63	63	63	37	49	63	63	37	49	63	63	63	63
NJ 10-30GM-N...	140	100	59	71	99	99	99	56	68	96	96	96	45	57	81	81	81	37	49	63	63	63	37	49	63	63	37	49	63	63	63	63
NJ 15-30GK-N...	140	100	57	69	97	97	97	52	64	92	92	92	34	46	74	74	74	22	34	61	61	61	22	34	61	61	22	34	61	61	61	61
NJ 15-30GK-N-150...	140	100	57	69	97	149	150	52	64	92	144	150	34	46	74	126	150	22	34	61	114	136	22	34	61	114	136	22	34	61	114	136
NJ 15-30GM-N...	140	100	59	71	99	99	99	56	68	96	96	96	45	57	81	81	81	37	49	63	63	63	37	49	63	63	37	49	63	63	63	63

2. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2048 X

Table 2: Application as category-2-apparatus

type	type 1						type 2						type 3						type 4								
	Ci/ nF	Li/ µH	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1
NCB1.5...M...NO...	90	100	74	89	100	100	100	69	84	100	100	100	51	66	85	85	85	39	54	67	67	67	67	67	67	67	67
NCB2-12GK...-NO...	90	100	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	61	61	61	61	61
NCB2-12GM...-NO...	90	100	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	63	63	63	63	63
NCN4-12GK...-NO...	95	100	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	61	61	61	61	61
NCN4-12GM...-NO...	95	100	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	63	63	63	63	63
NCB5-18GK...-NO...	95	100	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	61	61	61	61	61
NCB5-18GM...-NO...	95	100	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	63	63	63	63	63
NCN8-18GK...-NO...	95	100	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	61	61	61	61	61
NCN8-18GM...-NO...	95	100	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	63	63	63	63	63
NCB10-30GK...-NO...	105	100	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	61	61	61	61	61
NCB10-30GM...-NO...	105	100	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	63	63	63	63	63
NCN15-30GK...-NO...	110	100	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	61	61	61	61	61
NCN15-30GM...-NO...	110	100	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	63	63	63	63	63
NJ 0,2-10GM-N...	20	50	73	88	100	100	100	68	83	100	100	100	49	64	67	67	67	36	42	42	42	42	42	42	42	42	42
NJ 0,8-4,5-N...	30	50	73	88	100	100	100	68	83	100	100	100	49	64	67	67	67	36	42	42	42	42	42	42	42	42	42
NJ 0,8-5GM-N...	30	50	73	88	100	100	100	68	83	100	100	100	49	64	67	67	67	36	42	42	42	42	42	42	42	42	42
NJ 1,5-6,5...-N...	30	50	73	88	100	100	100	68	83	100	100	100	49	64	67	67	67	36	42	42	42	42	42	42	42	42	42
NJ 1,5-10GM-N-Y...	20	50	73	88	100	100	100	68	83	100	100	100	49	64	67	67	67	36	42	42	42	42	42	42	42	42	42
NJ 1,5-8GM-N...	30	50	73	88	100	100	100	68	83	100	100	100	49	64	67	67	67	36	42	42	42	42	42	42	42	42	42
NJ 1,5-8-N...	20	50	73	88	100	100	100	68	83	100	100	100	49	64	67	67	67	36	42	42	42	42	42	42	42	42	42
NJ 1,5-18GM-N-D...	50	60	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	63	63	63	63	63
NJ 2-11-N...	45	50	73	88	100	100	100	66	81	100	100	100	45	60	89	89	89	30	45	74	74	74	74	74	74	74	74
NJ 2-11-N-G...	30	50	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	63	63	63	63	63
NJ 2-12GK-N...	45	50	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	61	61	61	61	61
NJ 2-12GM-N...	30	50	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	63	63	63	63	63
NJ 2-14GM-N...	30	50	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	63	63	63	63	63
NJ 2,5-14GM-N...	30	50	76	91	100	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	63	63	63	63	63
NJ 4-12GK-N...	45	50	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	61	61	61	61	61
NJ 4-14GK-N...	45	50	73	88	100	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	61	61	61	61	61
NJ 4-12GM-N...	45	50	73	88	100	100	100	68	83	100	100	100	49	64	67	67	67	36	42	42	42	42	42	42	42	42	42

2. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2048 X

Continuation Table 2: Application as category-2-apparatus

type	Ci/ Li/	type 1						type 2						type 3						type 4					
		T6	T5	T4	T3	T2-T1	T6	T5	T4	T3	T2-T1	T6	T5	T4	T3	T2-T1	T6	T5	T4	T3	T2-T1	T6	T5	T4	T3
NJ 4-30GM-N-200... (oscillator)	70	73	88	123	188	192	66	81	116	181	186	45	60	95	160	164	30	45	80	145	149	74			
NJ 4-30GM-N-200... (amplifier)	70	73	88	100	100	100	66	81	100	100	100	45	60	89	89	89	30	45	74	74	74	74			
NJ 5-10-11-N...	70	73	88	100	100	100	66	81	100	100	100	45	60	78	78	78	30	45	57	57	57	57			
NJ 5-11-N...	45	50	72	87	100	100	65	80	100	100	100	42	57	82	82	82	26	41	63	63	63	63			
NJ 5-18GK-N...	70	50	73	88	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	61			
NJ 5-18GK-N-150...	70	50	73	88	124	150	69	84	119	150	150	51	66	101	150	150	39	54	89	136	136	136			
NJ 5-18GM-N...	70	50	76	91	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	63			
NJ 6-22-N...	130	100	73	88	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	61			
NJ 8-18GK-N...	70	50	73	88	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	61			
NJ 8-18GK-N-150...	70	50	73	88	124	150	69	84	119	150	150	51	66	101	150	150	39	54	89	136	136	136			
NJ 8-18GM-N...	70	50	76	91	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	63			
NJ 10-22-N...	130	100	73	88	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	61			
NJ 10-30GK-N...	140	100	73	88	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	61			
NJ 10-30GM-N...	140	100	76	91	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	63			
NJ 15-30GK-N...	140	100	73	88	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	61			
NJ 15-30GK-N-150...	140	100	73	88	124	150	69	84	119	150	150	51	66	101	150	150	39	54	89	136	136	136			
NJ 15-30GM-N...	140	100	76	91	100	100	73	88	100	100	100	62	77	81	81	81	54	63	63	63	63	63			
NJ 25-50-N...	150	140	73	88	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	61			
NJ 20-40-N...	140	140	73	88	100	100	69	84	100	100	100	51	66	80	80	80	39	54	61	61	61	61			

2. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2048 X

Special conditions

1. When the cylindrical inductive sensors , types NC... and NJ... are used in a temperature range between -60°C and -20°C , they shall be protected against impact stress by installation into an additional housing.
2. The connection facilities of the cylindrical inductive sensors , types NC... and NJ... shall be installed as such that the degree of protection IP 20 according to IEC-Publikation 60529:1989 is met as a minimum.
3. For relationship between type of connected circuit, maximum permissible ambient temperature and temperature class as well as the effective internal reactances for the individual types of cylindrical inductive sensors reference is made to tables 1 & 2 of this 2nd supplement to EC-type certificate PTB 00 ATEX 2048 X.
4. Inadmissible electrostatic charge of parts of the metal housing shall be avoided with the following types of cylindrical inductive sensors. Dangerous electrostatic charge of parts of the metal housing can be avoided by grounding these parts. Very small parts of the metal housing (e.g. screws) do not need to be grounded.

NCB1,5...M...N0...

NCB2-12GM...-N0...

NCN4-12GM...-N0...

NCB5-18GM...-N0...

NCN8-18GM...-N0...

NCB10-30GM...-N0...

NCN15-30GM...-N0...

NJ 0,2-10GM-N...

NJ 0,8-4,5-N...

NJ 0,8-5GM-N...

NJ 1,5-6,5...-N...

NJ 1,5-10GM-N-Y...

NJ 1,5-8GM-N...

NJ 1,5-8-N...

NJ 1,5-18GM-N-D...

NJ 2-11-N-G...

NJ 2-12GM-N...

NJ 2-14GM-N...

NJ 2,5-14GM-N...

NJ 4-12GM-N...

NJ 4-30GM-N-200...

NJ 5-11-N-545...

NJ 5-11-N-G...

NJ 5-18GM-N...

NJ 6-22-N-G...

NJ 8-18GM-N...

NJ 10-22-N-G...

NJ 10-30GM-N...


NJ 15-30GM-N...

Test report: PTB Ex 04-23445

Zertifizierungsstelle Explosionsschutz

By order:

Braunschweig, July 12, 2004


Dr.-Ing. U. Gerlach
Regierungsrat



Sheet 6/6

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

3. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2048 X

(Translation)

Equipment: Cylindrical inductive sensors, types NC... and NJ...

Marking:  II 1 G EEx ia IIC T6

Manufacturer: Pepperl + Fuchs GmbH

Address: Königsberger Allee 87, 68307 Mannheim, Germany

Description of supplements and modifications

In the future the cylindrical inductive sensors of type series NC... and NJ... may also be manufactured and operated according to the test documents listed in the test report PTB Ex 05-25204.

The modifications concern the extension of the type series NC... (new types for application as category-1-apparatus or as category-2-apparatus respectively), the internal construction (further examples of circuit diagrams, new types of LED's and cast resin) as well as the extension of clause 4 of the "Special Conditions" for the new types of type series NC... .

The EC-type examination certificate is extended for the following types of cylindrical inductive sensors:

NCB4-12GM...-N0...

NCB8-18GM...-N0...

NCB15-30GM...-N0...

The "Electrical Data" listed below apply for these types.

All other specifications apply also for this 3rd supplement without changes.

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2048 X

Electrical data

Evaluation and supply circuit..... type of protection Intrinsic Safety EEx ia IIC/IIB
or EEx ib IIC/IIB
only for connection to certified intrinsically safe circuits
Maximum values:

type 1	type 2	type 3	type 4
$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$
$I_i = 25 \text{ mA}$	$I_i = 25 \text{ mA}$	$I_i = 52 \text{ mA}$	$I_i = 76 \text{ mA}$
$P_i = 34 \text{ mW}$	$P_i = 64 \text{ mW}$	$P_i = 169 \text{ mW}$	$P_i = 242 \text{ mW}$

With the application as category-1-apparatus it is to be considered that the evaluation and supply circuit has to comply with type of protection Intrinsic Safety EEx ia IIC/IIB.

For relationship between type of connected circuit, maximum permissible ambient temperature for use as category-1-apparatus resp. as category-2-apparatus and temperature class as well as the effective internal reactances for the individual types of cylindrical inductive sensors, reference is made to the following tables:

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2048 X

Table 1: Application as category 1-equipment

type	type 1						type 2						type 3						type 4								
	Ci/ nF	Li/ µH	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1
			NCB4-12GM...-N0...	120	50	57	69	97	97	97	52	64	92	92	92	34	46	74	74	74	22	34	46	52	34	46	52
NCB8-18GM...-N0...	120	50	57	69	97	97	97	52	64	92	92	92	34	46	74	74	74	22	34	46	52	34	46	52	34	46	52
NCB15-30GM...-N0...	120	150	57	69	97	97	97	52	64	92	92	92	34	46	74	74	74	22	34	46	52	34	46	52	34	46	52

Table 2: Application as category 2-equipment

type	type 1						type 2						type 3						type 4								
	Ci/ nF	Li/ µH	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1	T6	T5	T4	T3	T2- T1
			NCB4-12GM...-N0...	120	50	74	89	100	100	100	69	84	100	100	100	51	66	74	74	74	39	52	66	74	39	52	66
NCB8-18GM...-N0...	120	50	74	89	100	100	100	69	84	100	100	100	51	66	74	74	74	39	52	66	74	39	52	66	74	39	52
NCB15-30GM...-N0...	120	150	74	89	100	100	100	69	84	100	100	100	51	66	74	74	74	39	52	66	74	39	52	66	74	39	52

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2048 X

Special conditions

1. When the cylindrical inductive sensors , types NC... and NJ... are used in a temperature range between -60 °C and -20 °C, they shall be protected against impact stress by installation into an additional housing.
2. The connection facilities of the cylindrical inductive sensors , types NC... and NJ... shall be installed as such that the degree of protection IP 20 according to IEC-Publikation 60529:1989 is met as a minimum.
3. For relationship between type of connected circuit, maximum permissible ambient temperature and temperature class as well as the effective internal reactances for the individual types of cylindrical inductive sensors reference is made to tables 1 & 2 of the 2nd supplement and – for the new types – to tables 1 & 2 of this 3rd supplement to EC-type certificate PTB 00 ATEX 2048 X.
4. Inadmissible electrostatic charge of parts of the metal housing shall be avoided for the following types of cylindrical inductive sensors. Dangerous electrostatic charge of parts of the metal housing can be avoided by grounding these parts. Very small parts of the metal housing (e.g. screws) do not need to be grounded.

NCB1,5...M...N0...	NJ 0,8-4,5-N...	NJ 4-12GM-N...
NCB2-12GM...-N0...	NJ 0,8-5GM-N...	NJ 4-30GM-N-200...
NCB4-12GM...-N0...	NJ 1,5-6,5...-N...	NJ 5-11-N-545...
NCB5-18GM...-N0...	NJ 1,5-10GM-N-Y...	NJ 5-11-N-G...
NCB8-18GM...-N0...	NJ 1,5-8GM-N...	NJ 5-18GM-N...
NCB10-30GM...-N0...	NJ 1,5-8-N...	NJ 6-22-N-G...
NCB15-30GM...-N0...	NJ 1,5-18GM-N-D...	NJ 8-18GM-N...
NCN4-12GM...-N0...	NJ 2-11-N-G...	NJ 10-22-N-G...
NCN8-18GM...-N0...	NJ 2-12GM-N...	NJ 10-30GM-N...
NCN15-30GM...-N0...	NJ 2-14GM-N...	NJ 15-30GM-N...
NJ 0,2-10GM-N...	NJ 2,5-14GM-N...	

Test report: PTB Ex 05-25204

Zertifizierungsstelle Explosionsschutz
By order:

Dr.-Ing. U. Johannsmeyer
Direktor und Professor



Braunschweig, October 7, 2005



(1) **EG-Baumusterprüfbescheinigung**

- (2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen – **Richtlinie 94/9/EG**
- (3) EG-Baumusterprüfbescheinigungsnummer

ZELM 03 ATEX 0128 X

- (4) Gerät: Näherungssensoren Typen CB..., CC..., CJ..., NC..., NJ..., SC..., SJ...
- (5) Hersteller: Pepperl + Fuchs GmbH
- (6) Anschrift: D-68307 Mannheim
- (7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.

- (8) Die Prüf- und Zertifizierungsstelle ZELM Ex bescheinigt als benannte Stelle Nr. 0820 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.

Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht Nr. ZELM Ex 0840217167 festgelegt.

- (9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit

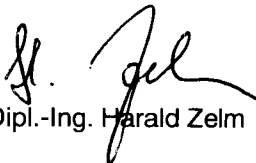
prEN 61241-0: 2002

31H/143/CD (IEC 61241-11): 2002

- (10) Falls das Zeichen "X" hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.
- (11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konstruktion, Überprüfung und Tests des spezifizierten Gerätes oder Schutzsystems in Übereinstimmung mit Richtlinie 94/9/EG. Weitere Anforderungen der Richtlinie können für das Herstellungsverfahren und die Lieferung dieses Gerätes oder Schutzsystems gelten. Diese sind von vorliegender Bescheinigung nicht abgedeckt.
- (12) Die Kennzeichnung des Gerätes muß die folgenden Angaben enthalten:

 **II 1 D Ex IaD 20 T... °C**

Zertifizierungsstelle **ZELM Ex**


Dipl.-Ing. Harald Zelm



Braunschweig, 28.03.2003

Seite 1/5



(13)

Anlage

(14)

EG-Baumusterprüfbescheinigung ZELM 03 ATEX 0128 X

(15)

Beschreibung des Gerätes

Die induktiven und kapazitiven Sensoren der Typen CB..., CC..., CJ..., NC..., NJ..., SC..., SJ... dienen zur Umformung von Wegänderungen in elektrische Signale im explosionsgefährdeten Bereich der Kategorie 1 D, 2 D. bzw. 3 D.

Die induktiven und kapazitiven Sensoren können auch in der Trennwand zwischen den Zonen 20 und 21 oder 21 und 22 montiert werden.

Sie dürfen mit bescheinigten eigensicheren Stromkreisen betrieben werden. Die Kategorie der Sensoren richtet sich nach dem angeschlossenen speisenden Stromkreis.

Die induktiven und kapazitiven Sensoren bestehen aus einem Kunststoff- oder Metallgehäuse und sind mit Gießharz ausgegossen. Der Anschluss der Versorgungsspannung erfolgt über Kabel, Litze, Klemm- oder Steckanschluss.

Die Punkte in der Typenbezeichnung werden zur Unterscheidung nicht sicherheitsrelevanter Ausführungsunterschiede durch Ziffern und/oder Buchstaben ersetzt.

Elektrische Daten

Auswerte- und Versorgungstromkreis:

in Zündschutzart Eigensicherheit Ex iaD bzw. Ex ibD oder EEx ia IIB bzw. EEx ib IIB
nur zum Anschluss an bescheinigte eigensichere Stromkreise,

Höchstwerte:

	Typ 1	Typ 2	Typ 3
U_i	16 V	16 V	16 V
I_i	25 mA	25 mA	52 mA
P_i	34 mW	64 mW	169 mW

untere Grenze der Umgebungstemperatur: gem. Tabelle 2

Der Zusammenhang zwischen dem Typ des angeschlossenen Stromkreises, der höchstzulässigen Umgebungstemperatur und der Oberflächentemperatur ist der folgenden Tabelle 1 zu entnehmen:

Tabelle 1

Typ	Typ 1 U _i = 16 V I _i = 25 mA P _i = 34 mW			Typ 2 U _i = 16 V I _i = 25 mA P _i = 64 mW			Typ 3 U _i = 16 V I _i = 52 mA P _i = 169 mW		
	Tu=40°C	Tu=70°C	Tu=100°C	Tu=40°C	Tu=70°C	Tu=100°C	Tu=40°C	Tu=70°C	Tu=100°C
	T	T	T	T	T	T	T	T	T
CB..., CC..., CJ...	44	73	-----	48	76	-----	60	85	-----
NJ10-22-N-E93-Y106925	44	73	-----	48	76	-----	60	85	-----
NJ10-22-N-E93-Y30629	44	73	-----	48	76	-----	60	85	-----
NJ10-22-N-E93-Y52737	44	73	-----	48	76	-----	60	85	-----
NC..., NJ..., SC..., SJ...	44	73	102	48	76	103	60	85	108

Tu: obere Grenze der Umgebungstemperatur



Anlage zur EG-Baumusterprüfbescheinigung ZELM 03 ATEX 0128 X

Die wirksamen inneren Kapazitäten und Induktivitäten für die einzelnen Sensortypen sind der folgenden Tabelle 2 zu entnehmen:

Tabelle 2

Typ	Ci/ nF	Li/ µH	T _{Umin} / °C	Typ	Ci/ nF	Li/ µH	T _{Umin} / °C
CBN2-F46-N...	45	0	- 25	NJ 2-V3-N...	40	50	- 25
CCN2-F46A-N...	45	0	- 25	NJ 15+U.+N...	140	130	- 25
CBN5-F46-N...	45	0	- 25	NJ 20+U.+N...	150	130	- 25
CCN5-F46A-N...	45	0	- 25	NJ 30+U.+N...	160	130	- 25
CBN10-F46-N...	45	0	- 25	NJ 40+...+N...	180	130	- 25
CCN10-F46A-N...	45	0	- 25	NJ 50-FP-N...	320	360	- 25
CCB10-30GM...-N...	155	0	- 25	SC2-N0...	150	150	- 25
CJ 1-12GK-N...	60	0	- 25	SC3,5-N0-Y...	150	150	- 25
CJ 2-18GK-N...	60	0	- 25	SC3,5...-N0...	150	150	- 25
CJ 4-12GK-N...	60	0	- 25	SJ 1,8-N-Y...	30	100	- 25
CJ 6-18GK-N...	60	0	- 25	SJ 2,2-N...	30	100	- 25
CJ 15-40-N...	140	0	- 25	SJ 2-N...	30	100	- 25
CJ 40-FP-N-...	145	0	- 25	SJ 3,5-...-N...	50	250	- 25
NCB1,5...M...N0...	90	100	- 25	SJ 5-...-N...	50	250	- 25
NCB2-12GM...-N0...	90	100	- 25	SJ 5-K...	50	550	- 25
NCN4-12GM...-N0...	95	100	- 25	SJ 10-N...	50	1000	- 25
NCB5-18GM...-N0...	95	100	- 25	SJ 15-N...	150	1200	- 25
NCN8-18GM...-N0...	95	100	- 25	SJ 30-N...	150	1250	- 25
NCB10-30GM...-N0...	105	100	- 25	NJ 2-11-SN...	50	150	- 40
NCN15-30GM...-N0...	110	100	- 25	NJ 2-11-SN-G...	50	150	- 40
NJ 1,5-6,5...-N	30	50	- 25	NJ 2-12GK-SN...	50	150	- 40
NJ 1,5-8-N...	20	50	- 25	NJ 3-18GK-S1N...	70	200	- 25
NJ 2-11-N...	45	50	- 25	NJ 4-12GK-SN...	70	150	- 40
NJ 2-11-N-G...	30	50	- 25	NJ 5-18GK-SN...	120	200	- 40
NJ 5-11-N...	45	50	- 25	NJ 5-30GK-S1N...	100	200	- 25
NJ10-22-N...	130	100	- 25	NJ 6-22-SN...	110	150	- 40
NJ10-22-N-E93-Y106925	130	100	- 40	NJ 6-22-SN-G...	110	150	- 40
NJ10-22-N-E93-Y30629	130	100	- 25	NJ 6S1+U.+N...	180	150	- 40
NJ10-22-N-E93-Y52737	130	100	- 25	NJ 8-18GK-SN...	120	200	- 40
NCB2-F1-N0...	90	100	- 25	NJ 10-30GK-SN...	120	150	- 40
NCB2-V3-N0...	100	100	- 25	NJ 15-30GK-SN...	120	180	- 40
NCN4-V3-N0...	100	100	- 25	NJ 15S+U.+N...	180	150	- 40
NCB15+U...+N0...	110	160	- 25	NJ 20S+U.+N...	200	150	- 40
NCB40-FP-N0..	220	360	- 25	NJ 40-FP-SN...	370	300	- 40
NCN15-M...-N0..	100	100	- 25	SJ 2-SN...	30	100	- 40
NCN20+U...+N0...	110	160	- 25	SJ 2-S1N...	30	100	- 25
NCN30+U...+N0...	110	160	- 25	SJ 3,5-S1N...	30	100	- 25
NCN40+U...+N0...	120	130	- 25	SJ 3,5-SN...	30	100	- 40
NCN50-FP-N0...	220	360	- 25				

Die angegebenen Werte für die inneren Kapazitäten und Induktivitäten berücksichtigen bereits ein Anschlusskabel von 10 m Länge.



Anlage zur EG-Baumusterprüfbescheinigung ZELM 03 ATEX 0128 X

Hinweise :

Die Betriebsanleitung ist zu beachten, insbesondere die Hinweise zu Einbaubedingungen, Versorgungsstromkreis und Einsatztemperaturen.

(16) Prüfbericht Nr.

ZELM Ex 0840217167

(17) Besondere Bedingungen

1. Der Zusammenhang zwischen dem Typ des angeschlossenen Stromkreises, der zulässigen Umgebungstemperatur und der Oberflächentemperatur sowie den wirksamen inneren Reaktanzen für die einzelnen Typen ist den Tabellen unter Punkt (15) zu entnehmen.
2. Die Versorgung der Sensoren hat über separat bescheinigte eigensichere Stromkreise zu erfolgen. Wegen möglicher Zündgefahren, die aufgrund von Fehlern und/oder transienten Strömen im Potenzialausgleichsystem entstehen können, ist eine galvanische Trennung im Versorgungs- und Signalstromkreis zu bevorzugen. Zugehörige Betriebsmittel ohne galvanische Trennung dürfen nur eingesetzt werden, wenn die entsprechenden Anforderungen nach IEC 60079-14 eingehalten werden.
3. Betriebsbedingte elektrostatische Aufladung durch strömende Medien oder maschinelle Reibung muss ausgeschlossen werden, wenn die dieser Aufladung ausgesetzte Kunststoff-Gehäusefläche größer als 100 cm² ist (Gefahr von Büschelentladungen).
4. Für die Sensortypen

CJ 40-FP-N...	NCN40+U...+N0...	NJ 40+U+...+N...	SJ 30-N...
NCB40-FP-N0...	NCN50-FP-N0...	NJ 50-FP-N...	NJ 40-FP-SN...

ist bei Einsatzfällen mit zu erwartender hoher Aufladung (z.B. el.stat. Lackierung, Folienherstellung, Staubförderung, maschinelle Reibvorgänge) die dieser Aufladung ausgesetzte Kunststoff-Gehäuseoberfläche durch Einbaumaßnahmen auf etwa 15 cm² zu begrenzen (Gefahr von Gleitstielbüschelentladungen).

5. Gefährliche elektrostatische Aufladungen von Metall-Gehäuseteilen sind zu vermeiden. Dies kann durch Einbeziehung in den örtlichen Potentialausgleich erfolgen, wobei sehr kleine Metallteile (z.B. Schrauben) nicht geerdet werden müssen.
6. Die Dichtheit im Sinne von zonentrennenden Maßnahmen beim Einbau in die Trennwand zwischen verschiedenen Zonen ist nicht Gegenstand dieser Bescheinigung und ist bei der Errichtung durch geeignete Maßnahmen sicher zu stellen.



Prüf- und Zertifizierungsstelle

ZELM Ex



Anlage zur EG-Baumusterprüfbescheinigung ZELM 03 ATEX 0128 X

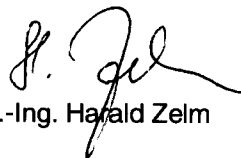
(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

Gemäß Richtlinie 94/9/EG durch vorgenannte Normenentwürfe erfüllt. Die Sensoren entsprechen den Normen EN 50014 und EN 50020. Gleichzeitig bestehen für den Staubbereich noch keine harmonisierten europäischen Normen.

Zertifizierungsstelle ZELM Ex



Braunschweig, 28.03.2003


Dipl.-Ing. Harald Zelm



1. Ergänzung

(Ergänzung gemäß EG-Richtlinie 94/9 Anhang III Ziffer 6)
zur EG-Baumusterprüfbescheinigung

ZELM 03 ATEX 0128 X

- (4) Gerät: **Näherungssensoren Typen CB..., CC..., CJ..., NC..., NJ..., SC..., SJ...**
- (5) Hersteller: **Pepperl + Fuchs GmbH**
- (6) Anschrift: **D-68307 Mannheim**

Beschreibung der Ergänzung

Die induktiven und kapazitiven Sensoren der Typen CB..., CC..., CJ..., NC..., NJ..., SC..., SJ... werden um einige alternative Ausführungen ergänzt. Die Typenbezeichnungen dieser Ausführungen lauten:

- NJ 0,8-5GM-N...
- NJ 2-12GK-N...
- NJ 2-12GM-N...
- NJ 4-12GK-N...
- NJ 4-12GM-N...
- NJ 5-18GK-N...
- NJ 5-18GM-N...
- NJ 8-18GK-N...
- NJ 8-18GM-N...
- NJ 10-30GK-N...
- NJ 10-30GM-N...
- NJ 15-30GK-N...
- NJ 15-30GM-N...
- NJ 4-12GK-SN-Y...

Kennzeichnung

II 1 D Ex IaD 20 T... °C

Die maximale Oberflächentemperatur des Gehäuses „...“ ist der Tabelle 1 zu entnehmen.

untere Grenze der Umgebungstemperatur: gem. Tabelle 2

Elektrische Daten :

Der Zusammenhang zwischen dem Typ des angeschlossenen Stromkreises, der höchstzulässigen Umgebungstemperatur und der Oberflächentemperatur ist der folgenden Tabelle 1 zu entnehmen:

Tabelle 1 (als Ergänzung zur Tabelle 1 der EG-Baumusterprüfbescheinigung ZELM 03 ATEX 0128 X)

Typ	Typ 1				Typ 2				Typ 3			
	U _i = 16 V				U _i = 16 V				U _i = 16 V			
	I _i = 25 mA				I _i = 25 mA				I _i = 52 mA			
P _i = 34 mW				P _i = 64 mW				P _i = 169 mW				
	T _u = 40°C	T _u = 60°C	T _u = 70°C	T _u = 100°C	T _u = 40°C	T _u = 60°C	T _u = 70°C	T _u = 100°C	T _u = 40°C	T _u = 60°C	T _u = 70°C	T _u = 100°C
	T	T	T	T	T	T	T	T	T	T	T	
NJ 4-12GK-SN-Y...	44	64	73	-----	48	67	76	-----	60	77	85	-----
NC..., NJ..., SC..., SJ...	44	64	73	102	48	67	76	103	60	77	85	108

T_u: obere Grenze der Umgebungstemperatur;



1. Ergänzung zur EG-Baumusterprüfbescheinigung ZELM 03 ATEX 0128 X

Tabelle 2 (als Ergänzung zur Tabelle 2 der EG-Baumusterprüfbescheinigung ZELM 03 ATEX 0128 X)

Typ	Ci / nF	Li / µH	T _{Umin} / °C	Typ	Ci / nF	Li / µH	T _{Umin} / °C
NJ 0,8-5GM-N...	30	50	- 25	NJ 8-18GK-N...	70	50	- 25
NJ 2-12GK-N...	45	50	- 25	NJ 8-18GM-N...	70	50	- 25
NJ 2-12GM-N...	30	50	- 25	NJ 10-30GK-N...	140	100	- 25
NJ 4-12GK-N...	45	50	- 25	NJ 10-30GM-N...	140	100	- 25
NJ 4-12GM-N...	45	50	- 25	NJ 15-30GK-N...	140	100	- 25
NJ 5-18GK-N...	70	50	- 25	NJ 15-30GM-N...	140	100	- 25
NJ 5-18GM-N...	70	50	- 25	NJ 4-12GK-SN-Y...	70	150	- 45

Die angegebenen Werte für die inneren Kapazitäten und Induktivitäten berücksichtigen bereits ein Anschlusskabel von 10 m Länge.

Prüfbericht Nr.

ZELM Ex 0110419268

Besondere Bedingungen

Es gelten weiterhin die Besonderen Bedingungen der EG-Baumusterprüfbescheinigung ZELM 03 ATEX 0128 X. Zusätzlich gilt:

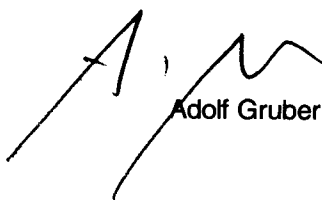
1. Bei Betrieb in einem Stromkreis des Schutzniveaus ib IIB bzw. ibD ist ein Einsatz im Bereich bzw. zwischen Bereichen, welche die Kategorie 1 erfordern nicht zulässig.

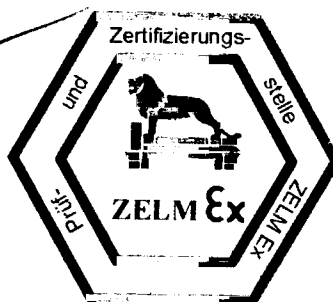
Grundlegende Sicherheits- und Gesundheitsanforderungen

Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden weiterhin erfüllt durch Übereinstimmung mit den in der EG-Baumusterprüfbescheinigung aufgeführten Normen.

Zertifizierungsstelle ZELM Ex

Braunschweig, 01.04.2004


Adolf Gruber





2. Ergänzung

(Ergänzung gemäß EG-Richtlinie 94/9 Anhang III Ziffer 6)

zur EG-Baumusterprüfbescheinigung

ZELM 03 ATEX 0128 X

Gerät: **Näherungssensoren Typen CB..., CC..., CJ..., NC..., NJ..., SC..., SJ...**
 Hersteller: **Pepperl + Fuchs GmbH**
 Anschrift: **D-68307 Mannheim**

Beschreibung der Ergänzung

Die induktiven und kapazitiven Sensoren der Typen CB..., CC..., CJ..., NC..., NJ..., SC..., SJ... werden um einige alternative Ausführungen ergänzt. Die Typenbezeichnungen dieser Ausführungen lauten:

NCN2-F56-N1...	NCB10-30GK...-N0...
NCB2-12GK...-N0...	NCN15-30GK...-N0...
NCN4-12GK...-N0...	NJ 1,5-F-N...
NCB5-18GK...-N0...	NJ 1,5-18GM-N-D...
NCN8-18GK...-N0...	

Des weiteren wird die untere Grenze der Umgebungstemperatur bei folgenden Sensoren, die bereits in dieser EG-Baumusterprüfbescheinigung (einschl. der 1. Ergänzung) enthalten sind, herabgesetzt:

NJ 4-12GK-SN...	NJ 10-30GK-SN...
NJ 4-12GK-SN-Y...	SJ 3,5-SN...

Die Punkte in der Typenbezeichnung werden zur Unterscheidung nicht sicherheitsrelevanter Ausführungsunterschiede durch Ziffern und/oder Buchstaben ersetzt.

Elektrische Daten:

Der Zusammenhang zwischen dem Typ des angeschlossenen Stromkreises, der höchstzulässigen Umgebungstemperatur und der Oberflächentemperatur ist der folgenden Tabelle 1 zu entnehmen:

Tabelle 1 (als Ergänzung zur Tabelle 1 der EG-Baumusterprüfbescheinigung ZELM 03 ATEX 0128 X sowie der 1. Ergänzung)

Typ	Typ 1					Typ 2					Typ 3				
	Ui = 16 V					Ui = 16 V					Ui = 16 V				
	Ii = 25 mA					Ii = 25 mA					Ii = 52 mA				
	Pi = 34 mW					Pi = 64 mW					Pi = 169 mW				
	Tu= 40°C	Tu= 60°C	Tu= 70°C	Tu= 85°C	Tu= 100°C	Tu= 40°C	Tu= 60°C	Tu= 70°C	Tu= 85°C	Tu= 100°C	Tu= 40°C	Tu= 60°C	Tu= 70°C	Tu= 85°C	Tu= 100°C
	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
NCN2-F56-N1...	44	64	73	88	-----	48	67	76	90	-----	60	77	85	97	-----
NC..., NJ..., SC..., SJ...	44	64	73	88	102	48	67	76	90	103	60	77	85	97	108

Tu: obere Grenze der Umgebungstemperatur;

Die wirksamen inneren Kapazitäten und Induktivitäten für die einzelnen Sensortypen sind der folgenden Tabelle 2 zu entnehmen:



2. Ergänzung zur EG-Baumusterprüfbescheinigung ZELM 03 ATEX 0128 X

Tabelle 2 (als Ergänzung zur Tabelle 2 der EG-Baumusterprüfbescheinigung ZELM 03 ATEX 0128 X sowie der 1. Ergänzung)

Typ	Ci / nF	Li / µH	T _{Umin} / °C	Typ	Ci / nF	Li / µH	T _{Umin} / °C
NCN2-F56-N1...	100	100	-25	NCB10-30GK...-N0...	105	100	-25
NCB2-12GK...-N0...	90	100	-25	NCN15-30GK...-N0...	110	100	-25
NCN4-12GK...-N0...	95	100	-25	NJ 1,5-F-N...	30	50	-25
NCB5-18GK...-N0...	95	100	-25	NJ 1,5-18GM-N-D	50	60	-25
NCN8-18GK...-N0...	95	100	-25				

Die angegebenen Werte für die inneren Kapazitäten und Induktivitäten berücksichtigen bereits ein Anschlusskabel von 10 m Länge.

Mit dieser 2. Ergänzung wird die untere Grenze der Umgebungstemperatur für einige bereits zertifizierte Sensortypen herabgesetzt. Die neuen unteren Grenzwerte sind der Tabelle 3 zu entnehmen:

Tabelle 3 (Ersetzt die Angaben für diese Sensoren die entsprechenden Angaben in Tabelle 2 der EG-Baumusterprüfbescheinigung ZELM 03 ATEX 0128 X bzw. der 1. Ergänzung)

Typ	Ci / nF	Li / µH	T _{Umin} / °C	Typ	Ci / nF	Li / µH	T _{Umin} / °C
NJ 4-12GK-SN...	70	150	-50	NJ 10-30GK-SN...	120	150	-50
NJ 4-12GK-SN-Y...	70	150	-50	SJ 3,5-SN...	30	100	-50

Die angegebenen Werte für die inneren Kapazitäten und Induktivitäten berücksichtigen bereits ein Anschlusskabel von 10 m Länge.

Prüfbericht Nr.

ZELM Ex 0210515369

Besondere Bedingungen

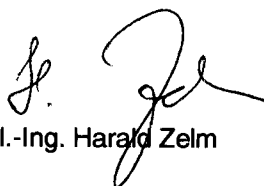
Die „Besonderen Bedingungen“ gemäß EG-Baumusterprüfbescheinigung ZELM 03 ATEX 0128 X sowie der 1. Ergänzung bleiben von den Änderungen unberührt und weiterhin erhalten.

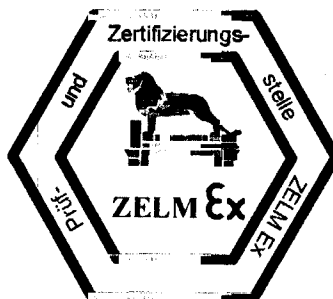
Grundlegende Sicherheits- und Gesundheitsanforderungen

Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden weiterhin erfüllt durch Übereinstimmung mit den in der EG-Baumusterprüfbescheinigung aufgeführten Normen.

Zertifizierungsstelle ZELM Ex

Braunschweig, 25.04.2005


Dipl.-Ing. Harald Zelm





Prüf- und Zertifizierungsstelle

ZELM Ex



(1) **EC-TYPE-EXAMINATION CERTIFICATE**

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) EC-TYPE-EXAMINATION CERTIFICATE Number:

ZELM 03 ATEX 0128 X

(4) Equipment: Proximity sensors types CB..., CC..., CJ..., NC..., NJ..., SC..., SJ...

(5) Manufacturer: Pepperl + Fuchs GmbH

(6) Address: D-68307 Mannheim

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Prüf- und Zertifizierungsstelle ZELM Ex, notified body No. 0820 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report ZELM Ex 0840217167

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

prEN 61241-0: 2002

31H/143/CD (IEC 61241-11): 2002

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this Certificate.

(12) The marking of the equipment shall include the following:



II 1 D Ex iaD 20 T... °C

Zertifizierungsstelle **ZELM Ex**

Braunschweig, March 28, 2003

Dipl.-Ing. Harald Zelm



Sheet 1/5

EC-type-examination Certificates without signature and stamp are not valid. The certificates may only be circulated without alteration. Extracts or alterations are subject to approval by the Prüf- und Zertifizierungsstelle ZELM Ex. This English version is based on the German text. In the case of dispute, the German text shall prevail.



SCHEDULE

(13)

(14) **EC-TYPE-EXAMINATION CERTIFICATE ZELM 03 ATEX 0128 X**

(15) Description of equipment

The types CB..., CC..., CJ..., NC..., NJ..., SC..., SJ... inductive and capacitive sensors are used for converting of position detection into electrical signals within the explosive atmosphere of category 1 D or 2 D or 3 D.

The inductive and capacitive sensors may be mounted across the boundary between zones 20 and 21 or 21 and 22 respectively.

They shall be used with intrinsically safe circuits. The sensors category depends on the connected intrinsically safe supply circuit.

The inductive and capacitive sensors consist of a resin-potted plastic or metallic housing. The supply connections are made by cable, litz wires, or by screw- or clamp-type terminals.

Instead of the points of the model code other letter- or numeral- combinations will be stated, which are describing several variations and versions of the equipment.

Electrical data

Supply and signal circuit

type of protection Intrinsic Safety Ex iaD or Ex ibD or EEx ia IIB or EEx ib IIB
for connection to certified intrinsically safe circuits only

maximum values:

	type 1	type 2	type 3
U_i	16 V	16 V	16 V
I_i	25 mA	25 mA	52 mA
P_i	34 mW	64 mW	169 mW

lower limit of ambient temperature: acc. table 2

The correlations between type of connected circuit, maximum ambient temperature and surface temperature are shown in the following table 1:

Table 1

type	type 1 U _i = 16 V I _i = 25 mA P _i = 34 mW			type 2 U _i = 16 V I _i = 25 mA P _i = 64 mW			type 3 U _i = 16 V I _i = 52 mA P _i = 169 mW		
	Tu=40°C	Tu=70°C	Tu=100°C	Tu=40°C	Tu=70°C	Tu=100°C	Tu=40°C	Tu=70°C	Tu=100°C
	T	T	T	T	T	T	T	T	T
CB..., CC..., CJ...	44	73	-----	48	76	-----	60	85	-----
NJ10-22-N-E93-Y106925	44	73	-----	48	76	-----	60	85	-----
NJ10-22-N-E93-Y30629	44	73	-----	48	76	-----	60	85	-----
NJ10-22-N-E93-Y52737	44	73	-----	48	76	-----	60	85	-----
NC..., NJ..., SC..., SJ...	44	73	102	48	76	103	60	85	108

Tu: upper limit of ambient temperature



Schedule to EC-TYPE-EXAMINATION CERTIFICATE ZELM 03 ATEX 0128 X

The maximum effective internal capacitances and inductances of the various sensor types are shown in the following table 2:

Table 2

type	CI/ nF	LI/ µH	T _{Umin} / °C	type	CI/ nF	LI/ µH	T _{Umin} / °C
CBN2-F46-N...	45	0	- 25	NJ 2-V3-N...	40	50	- 25
CCN2-F46A-N...	45	0	- 25	NJ 15+U.+N...	140	130	- 25
CBN5-F46-N...	45	0	- 25	NJ 20+U.+N...	150	130	- 25
CCN5-F46A-N...	45	0	- 25	NJ 30+U.+N...	160	130	- 25
CBN10-F46-N...	45	0	- 25	NJ 40+...+N...	180	130	- 25
CCN10-F46A-N...	45	0	- 25	NJ 50-FP-N...	320	360	- 25
CCB10-30GM...-N...	155	0	- 25	SC2-N0...	150	150	- 25
CJ 1-12GK-N...	60	0	- 25	SC3,5-N0-Y...	150	150	- 25
CJ 2-18GK-N...	60	0	- 25	SC3,5...-N0...	150	150	- 25
CJ 4-12GK-N...	60	0	- 25	SJ 1,8-N-Y...	30	100	- 25
CJ 6-18GK-N...	60	0	- 25	SJ 2,2-N...	30	100	- 25
CJ 15-40-N...	140	0	- 25	SJ 2-N...	30	100	- 25
CJ 40-FP-N...	145	0	- 25	SJ 3,5-...-N...	50	250	- 25
NCB1,5...M...N0...	90	100	- 25	SJ 5-...-N...	50	250	- 25
NCB2-12GM...-N0...	90	100	- 25	SJ 5-K...	50	550	- 25
NCN4-12GM...-N0...	95	100	- 25	SJ 10-N...	50	1000	- 25
NCB5-18GM...-N0...	95	100	- 25	SJ 15-N...	150	1200	- 25
NCN8-18GM...-N0...	95	100	- 25	SJ 30-N...	150	1250	- 25
NCB10-30GM...-N0...	105	100	- 25	NJ 2-11-SN...	50	150	- 40
NCN15-30GM...-N0...	110	100	- 25	NJ 2-11-SN-G...	50	150	- 40
NJ 1,5-6,5...-N	30	50	- 25	NJ 2-12GK-SN...	50	150	- 40
NJ 1,5-8-N...	20	50	- 25	NJ 3-18GK-S1N...	70	200	- 25
NJ 2-11-N...	45	50	- 25	NJ 4-12GK-SN...	70	150	- 40
NJ 2-11-N-G...	30	50	- 25	NJ 5-18GK-SN...	120	200	- 40
NJ 5-11-N...	45	50	- 25	NJ 5-30GK-S1N...	100	200	- 25
NJ10-22-N...	130	100	- 25	NJ 6-22-SN...	110	150	- 40
NJ10-22-N-E93-Y106925	130	100	- 40	NJ 6-22-SN-G...	110	150	- 40
NJ10-22-N-E93-Y30629	130	100	- 25	NJ 6S1+U.+N...	180	150	- 40
NJ10-22-N-E93-Y52737	130	100	- 25	NJ 8-18GK-SN...	120	200	- 40
NCB2-F1-N0...	90	100	- 25	NJ 10-30GK-SN...	120	150	- 40
NCB2-V3-N0...	100	100	- 25	NJ 15-30GK-SN...	120	180	- 40
NCN4-V3-N0...	100	100	- 25	NJ 15S+U.+N...	180	150	- 40
NCB15+U...+N0...	110	160	- 25	NJ 20S+U.+N...	200	150	- 40
NCB40-FP-N0...	220	360	- 25	NJ 40-FP-SN...	370	300	- 40
NCN15-M...-N0...	100	100	- 25	SJ 2-SN...	30	100	- 40
NCN20+U...+N0...	110	160	- 25	SJ 2-S1N...	30	100	- 25
NCN30+U...+N0...	110	160	- 25	SJ 3,5-S1N...	30	100	- 25
NCN40+U...+N0...	120	130	- 25	SJ 3,5-SN...	30	100	- 40
NCN50-FP-N0...	220	360	- 25				

The indicated values of internal capacitances and inductances do consider a supply cord of 10 m length.



Schedule to EC-TYPE-EXAMINATION CERTIFICATE ZELM 03 ATEX 0128 X

References:

The instruction manual has to be considered, in particular for the mounting conditions, supply circuit and operating temperatures.

(16) Report No.

ZELM Ex 0840217167

(17) Special conditions for safe use

1. The correlations between type of connected circuit, maximum ambient temperature and surface temperature and the effective internal capacitances and inductances of the various sensor types are shown in the tables of clause (15).
2. The sensor supply must be made by separately certified intrinsically safe circuits. Because of possible ignition hazards, which can arise from faults and/or transient circulating currents in the potential equalization system, galvanic isolation in the supply and signal circuits is preferred. Associated apparatus without galvanic isolation may only be used whether the appropriate requirements according to IEC 60079-14 are met.
3. Operational electrostatic charges due to medium flow or mechanical rubbing must be excluded, if the charge-exposed plastic surface area is greater than approx. 100 cm² to avoid brush discharges.
4. For sensor types

CJ 40-FP-N...	NCN40+U...+NO...	NJ 40+U+...+N...	SJ 30-N...
NCB40-FP-NO...	NCN50-FP-NO...	NJ 50-FP-N...	NJ 40-FP-SN...

and applications with high charges to be expected (e.g. spray gun for paints, film material production, dust conveyors, machine frictional processes) the charge-exposed plastic surface area must be reduced to approx. 15 cm² by installation measures to avoid propagating brush discharges.

5. Hazardous electrostatic charges of metallic parts must be prevented. This can be made by connection to the local equipotential bonding, but very small metallic parts (e.g. screws) must not be earthed.
6. The tightness for the purposes of zone seal measures for the mounting across the boundary between different zones is not covered by this Certificate and must be ensured by appropriate measures of installation.



Prüf- und Zertifizierungsstelle

ZELM Ex



Schedule to EC-TYPE-EXAMINATION CERTIFICATE ZELM 03 ATEX 0128 X

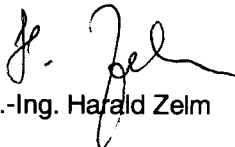
(18) Essential Health and Safety Requirements

Met by above mentioned draft standards in accordance with Directive 94/9/EC. The sensors adhere to the standards EN 50014 and EN 50020. For dust atmospheres no harmonised european standards are available at the moment.

Zertifizierungsstelle ZELM Ex



Braunschweig, March 28, 2003


Dipl.-Ing. Harald Zelm



1. Supplement

(Supplement according to EC-Directive 94/9 Annex III letter 6)

to EC-type-examination Certificate

ZELM 03 ATEX 0128 X

Equipment: Proximity sensors types CB..., CC..., CJ..., NC..., NJ..., SC..., SJ...

Manufacturer: Pepperl + Fuchs GmbH

Address: D-68307 Mannheim

Description of supplement

The types CB..., CC..., CJ..., NC..., NJ..., SC..., SJ... inductive and capacitive sensors are supplemented with some further versions. The types of these versions are named as follows:

- NJ 0,8-5GM-N...
- NJ 2-12GK-N...
- NJ 2-12GM-N...
- NJ 4-12GK-N...
- NJ 4-12GM-N...
- NJ 5-18GK-N...
- NJ 5-18GM-N...
- NJ 8-18GK-N...
- NJ 8-18GM-N...
- NJ 10-30GK-N...
- NJ 10-30GM-N...
- NJ 15-30GK-N...
- NJ 15-30GM-N...
- NJ 4-12GK-SN-Y...

Marking **II 1 D Ex iaD 20 T... °C**

The maximum surface temperature „...“ is shown in table 1

The lower limit of ambient temperature: acc. table 2

Electrical data

The correlations between type of connected circuit, maximum ambient temperature and surface temperature are shown in the following table 1:

Table 1 (as supplement to table 1 of the EC-type examination certificate ZELM 03 ATEX 0128 X)

Typ	Typ 1				Typ 2				Typ 3			
	U _i = 16 V				U _i = 16 V				U _i = 16 V			
	I _i = 25 mA				I _i = 25 mA				I _i = 52 mA			
	P _i = 34 mW				P _i = 64 mW				P _i = 169 mW			
	T _u = 40°C	T _u = 60°C	T _u = 70°C	T _u = 100°C	T _u = 40°C	T _u = 60°C	T _u = 70°C	T _u = 100°C	T _u = 40°C	T _u = 60°C	T _u = 70°C	T _u = 100°C
NJ 4-12GK-SN-Y...	T	T	T	T	T	T	T	T	T	T	T	T
NC..., NJ..., SC..., SJ...	44	64	73	102	48	67	76	103	60	77	85	108

T_u: upper limit of ambient temperature



Prüf- und Zertifizierungsstelle

ZELM Ex



The maximum effective internal capacitances and inductances of the various sensor types are shown in the following table 2:

Table 2 (as supplement to table 2 of the EC-type examination certificate ZELM 03 ATEX 0128 X)

Typ	Ci / nF	Li / μ H	T _{Umin} / °C	Typ	Ci / nF	Li / μ H	T _{Umin} / °C
NJ 0,8-5GM-N...	30	50	- 25	NJ 8-18GK-N...	70	50	- 25
NJ 2-12GK-N...	45	50	- 25	NJ 8-18GM-N...	70	50	- 25
NJ 2-12GM-N...	30	50	- 25	NJ 10-30GK-N...	140	100	- 25
NJ 4-12GK-N...	45	50	- 25	NJ 10-30GM-N...	140	100	- 25
NJ 4-12GM-N...	45	50	- 25	NJ 15-30GK-N...	140	100	- 25
NJ 5-18GK-N...	70	50	- 25	NJ 15-30GM-N...	140	100	- 25
NJ 5-18GM-N...	70	50	- 25	NJ 4-12GK-SN-Y...	70	150	- 45

The indicated values of internal capacitances and inductances do consider a supply cord of 10 m length.

Report No.

ZELM Ex 0110419268

Special conditions for safe use

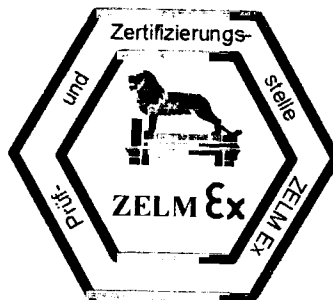
The special conditions of the EC-type-examination Certificate ZELM 03 ATEX 0128 X are valid further on. The following is additionally applied:

1. For the operation in current circuits which reach the level of protection ib IIB resp. ibD, the use in areas resp. between areas which require category 1 is not permitted.

Essential Health and Safety Requirements

met by adherence to the standards which are given in the EC-type-examination Certificate.

Zertifizierungsstelle ZELM Ex



Braunschweig, April 1st, 2004

Adolf Gruber



2. Supplement

(Supplement according to EC-Directive 94/9 Annex III letter 6)

to EC-type-examination Certificate

ZELM 03 ATEX 0128 X

Equipment: Proximity sensors types CB..., CC..., CJ..., NC..., NJ..., SC..., SJ...
 Manufacturer: Pepperl + Fuchs GmbH
 Address: D-68307 Mannheim

Description of supplement

The types CB..., CC..., CJ..., NC..., NJ..., SC..., SJ... inductive and capacitive sensors are supplemented with some further versions. The types of these versions are named as follows:

NCN2-F56-N1...	NCB10-30GK...-N0...
NCB2-12GK...-N0...	NCN15-30GK...-N0...
NCN4-12GK...-N0...	NJ 1,5-F-N...
NCB5-18GK...-N0...	NJ 1,5-18GM-N-D...
NCN8-18GK...-N0...	

In future the lower limit of ambient temperature will be reduced for the following sensor types, which are already covered by the EC-type-examination Certificate ZELM 03 ATEX 0128 X respective by the 1. Supplement.

NJ 4-12GK-SN...	NJ 10-30GK-SN...
NJ 4-12GK-SN-Y...	SJ 3,5-SN...

Instead of the points of the model code other letter- or numerical- combinations will be stated, which are describing not safety relevant variations of the equipment.

Electrical data:

The correlations between type of connected circuit, maximum ambient temperature and surface temperature are shown in the following table 1:

table 1 (as supplement to table 1 of the EC-type-examination Certificate ZELM 03 ATEX 0128 X and the 1. Supplement)

type	type 1					type 2					type 3				
	Ui = 16 V					Ui = 16 V					Ui = 16 V				
	Ii = 25 mA					Ii = 25 mA					Ii = 52 mA				
	Pi = 34 mW					Pi = 64 mW					Pi = 169 mW				
type	Tu= 40°C	Tu= 60°C	Tu= 70°C	Tu= 85°C	Tu= 100°C	Tu= 40°C	Tu= 60°C	Tu= 70°C	Tu= 85°C	Tu= 100°C	Tu= 40°C	Tu= 60°C	Tu= 70°C	Tu= 85°C	Tu= 100°C
NCN2-F56-N1...	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
NC..., NJ..., SC..., SJ...	44	64	73	88	102	48	67	76	90	103	60	77	85	97	108

Tu: upper limit of ambient temperature

The maximum effective internal capacitances and inductances of the various sensor types are shown in the following table 2:



Prüf- und Zertifizierungsstelle

ZELM Ex



2. SUPPLEMENT OF THE EC-TYPE-EXAMINATION CERTIFICATE ZELM 03 ATEX 0128

table 2 (as supplement to table 2 of the EC-type-examination Certificate ZELM 03 ATEX 0128 X and the 1. Supplement)

type	Ci / nF	Li / μ H	T _{Umin} / °C	type	Ci / nF	Li / μ H	T _{Umin} / °C
NCN2-F56-N1...	100	100	-25	NCB10-30GK...-NO...	105	100	-25
NCB2-12GK...-NO...	90	100	-25	NCN15-30GK...-NO...	110	100	-25
NCN4-12GK...-NO...	95	100	-25	NJ 1,5-F-N...	30	50	-25
NCB5-18GK...-NO...	95	100	-25	NJ 1,5-18GM-N-D	50	60	-25
NCN8-18GK...-NO...	95	100	-25				

The indicated values of internal capacitances and inductances consider a supply cord of 10 m length.

With this 2. Supplement the lower limit of ambient temperature for some certificated sensors will be reduced. The new lower limit of ambient temperature for this sensor types are shown in the following table 3:

table 3 (replace the relevant giving of the sensors into the table 2 of the EC-type-examination Certificate ZELM 03 ATEX 0128 X and the 1. Supplement)

type	Ci / nF	Li / μ H	T _{Umin} / °C	type	Ci / nF	Li / μ H	T _{Umin} / °C
NJ 4-12GK-SN...	70	150	-50	NJ 10-30GK-SN...	120	150	-50
NJ 4-12GK-SN-Y...	70	150	-50	SJ 3,5-SN...	30	100	-50

The indicated values of internal capacitances and inductances consider a supply cord of 10 m length.

Report No.

ZELM Ex 0210515369

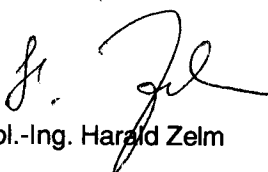
Special conditions for safe use

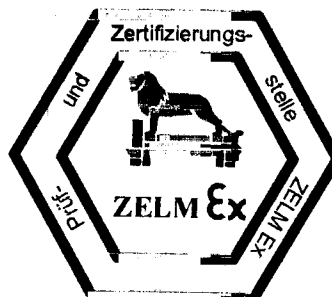
The special conditions of the EC-type-examination Certificate ZELM 03 ATEX 0128 X and of the 1. Supplement are valid further on.

Essential Health and Safety Requirements

The essential Health and Safety Requirements are further met by concordance with the standards scheduled in the EC-Type-examination Certificate.

Zertifizierungsstelle ZELM Ex


Dipl.-Ing. Harald Zelm



Braunschweig, April 25, 2005

Sheet 2 / 2

EC-type-examination Certificates without signature and stamp are not valid. The certificates may only be circulated without alteration. Extracts or alterations are subject to approval by the Prüf- und Zertifizierungsstelle ZELM Ex. This English version is based on the German text. In the case of dispute, the German text shall prevail.



(1) EG-Baumusterprüfbescheinigung

- (2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - **Richtlinie 94/9/EG**
- (3) EG-Baumusterprüfbescheinigungsnummer



PTB 00 ATEX 2080

- (4) Gerät: Trennschaltverstärker Typ K*D*-SR*-Ex*.W.*
- (5) Hersteller: Pepperl + Fuchs GmbH
- (6) Anschrift: Königsberger Allee 87, D-68307 Mannheim
- (7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.
- (8) Die Physikalisch-Technische Bundesanstalt bescheinigt als benannte Stelle Nr. 0102 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.
- Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht PTB Ex 00-20205 festgelegt.
- (9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit

EN 50014:1997

EN 50020:1994

- (10) Falls das Zeichen „X“ hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.
- (11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konzeption und Bau des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes.
- (12) Die Kennzeichnung des Gerätes muß die folgenden Angaben enthalten:

 **II (1) G D [EEEx ia] IIC**

Zertifizierungsstelle Explosionsschutz
Im Auftrag

Braunschweig, 20. Juli 2000

U. Johannsmeyer
Dr.-Ing. U. Johannsmeyer, z.Z. abwesend
Regierungsdirektor





(13)

Anlage

(14)

EG-Baumusterprüfbescheinigung PTB 00 ATEX 2080

(15) Beschreibung des Gerätes

Der Trennschaltverstärker Typ K*D*-SR*-Ex*.W.* dient zur Übertragung von Steuerbefehlen aus dem explosionsgefährdeten Bereich in den nichtexplosionsgefährdeten Bereich sowie zur sicheren galvanischen Trennung von eigensicheren und nichteigensicheren Stromkreisen.

Die höchstzulässige Umgebungstemperatur beträgt 60 °C.

Elektrische Daten

Versorgungsstromkreis Gleichspannung 20 ...30 V DC
 (Klemmen 14 und 15 bzw. Powerrailkontakte) Sicherheitstechnische Maximalspannung: $U_m = 253 \text{ V AC}$
 $U_m = 125 \text{ V DC}$

Ausgangsstromkreise Wechselstrom Gleichstrom
 (Klemmen 7, 8, 9 bzw. 10, 11, 12) $U \leq 253 \text{ V}$ $U \leq 40 \text{ V}$ $U \leq 130 \text{ V}$
 $I \leq 2 \text{ A}$ $I \leq 2 \text{ A}$ $I \leq 20 \text{ mA}$
 $S \leq 500 \text{ VA}$ $P \leq 80 \text{ W}$
 $\cos\phi \geq 0,7$

Sicherheitst. Maximalspannung: $U_m = 253 \text{ V AC}$

Eingangsstromkreise in Zündschutzart Eigensicherheit EEx ia IIA/IIB/IIC
 (Klemmen 1, 2, 3 bzw. 4, 5, 6) bzw. EEx ib IIA/IIB/IIC

Höchstwerte je Stromkreis:

$U_o = 10,5 \text{ V}$
 $I_o = 13 \text{ mA}$
 $P_o = 34 \text{ mW}$
 $R_i = 807,7 \Omega$
 Kennlinie linear
 $C_i \approx 0$
 $L_i \approx 0$

Zündschutzart	EEx ia bzw. ib		
	IIA	IIB	IIC
höchstzulässige äuß. Induktivität L_o	1 H	840 mH	210 mH
höchstzulässige äuß. Kapazität C_o	75 μF	16,8 μF	2,41 μF



Bei Vorhandensein konzentrierter Kapazitäten und/oder Induktivitäten im eigensicheren Eingangsstromkreis sind die höchstzulässigen äußeren Kapazitäten und Induktivitäten für Stromkreise der Kategorie „ia“ der nachfolgenden Tabelle zu entnehmen.

Zündschutzart	EEx ia	
	IIB	IIC
höchstzulässige äußere Induktivität L_o	7 mH	3 mH
höchstzulässige äußere Kapazität C_o	2,1 μ F	620 nF

Bei der Zusammenschaltung beider eigensicherer Eingangsstromkreise ergeben sich folgende Höchstwerte:

$$U_o = 10,5 \text{ V}$$

$$I_o = 26 \text{ mA}$$

$$P_o = 68 \text{ mW}$$

$$R_i = 403,9 \text{ } \Omega$$

Kennlinie linear

$$C_i \approx 0$$

$$L_i \approx 0$$

Zündschutzart	EEx ia bzw. ib		
	IIA	IIB	IIC
höchstzulässige äuß. Induktivität L_o	420 mH	210 mH	52 mH
höchstzulässige äuß. Kapazität C_o	75 μ F	16,8 μ F	2,41 μ F

Bei Vorhandensein konzentrierter Kapazitäten und/oder Induktivitäten in den zusammengesetzten eigensicheren Eingangsstromkreisen sind die höchstzulässigen äußeren Kapazitäten und Induktivitäten für Stromkreise der Kategorie „ia“ der nachfolgenden Tabelle zu entnehmen.

Zündschutzart	EEx ia	
	IIB	IIC
höchstzulässige äußere Induktivität L_o	7 mH	3 mH
höchstzulässige äußere Kapazität C_o	2,1 μ F	590 nF

Die eigensicheren Eingangsstromkreise sind von allen weiteren Stromkreisen bis zu einem Scheitelwert der Nennspannung von 375 V sicher galvanisch getrennt.

(16) Prüfbericht PTB Ex 00-20205

(17) Besondere Bedingungen

keine

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

Anlage zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2080

- (18) Grundlegende Sicherheits- und Gesundheitsanforderungen
durch Normen abgedeckt

Zertifizierungsstelle Explosionsschutz
Im Auftrag

Braunschweig, 20. Juli 2000

U. Johannsmeyer
Dr.-Ing. U. Johannsmeyer, z.Z. abwesend
Regierungsdirektor



Physikalisch-Technische Bundesanstalt


Braunschweig und Berlin

1. E R G Ä N Z U N G

gemäß Richtlinie 94/9/EG Anhang III Ziffer 6

zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2080

Gerät: Trennschaltverstärker Typ K*D*-SR*-Ex*.W.*

Kennzeichnung:  II (1) G D [EEx ia] IIC

Hersteller: Pepperl + Fuchs GmbH

Anschrift: Königsberger Allee 87
68307 Mannheim, Deutschland

Beschreibung der Ergänzungen und Änderungen

Der Trennschaltverstärker Typ K*D*-SR*-Ex*.W.* wurde technisch überarbeitet und darf zukünftig auch entsprechend den Prüfungsunterlagen des Prüfberichtes PTB Ex 01-21062 gefertigt und betrieben werden. Die Änderungen betreffen den inneren Aufbau, das Gehäuse sowie die „Elektrischen Daten“.

Die „Elektrischen Daten“ werden um einen Fehlermeldeausgang sowie um ein zusätzliches Wertepaar für die Ausgangsstromkreise bei Wechselstrombetrieb erweitert.

Die EG-Baumusterprüfbescheinigung wird um den Trennschaltverstärker Typ **K*D*-SR*-Ex2.W.IR** erweitert. Diese Typenvariante unterscheidet sich nur durch die Firmware von den bereits bescheinigten Varianten.

Alle anderen Angaben gelten unverändert auch für diese erste Ergänzung.

Elektrische Daten

FehlermeldeausgangSicherheitst. Maximalspannung: $U_m = 40 \text{ V DC}$
(Powerrailkontakt PR4)

AusgangsstromkreiseWechselstrom	Gleichstrom			
(Klemmen 7, 8, 9 bzw. 10, 11, 12)	$U \leq 253 \text{ V}$	$U \leq 126,5 \text{ V}$	$U \leq 40 \text{ V}$	$U \leq 130 \text{ V}$
	$I \leq 2 \text{ A}$	$I \leq 4 \text{ A}$	$I \leq 2 \text{ A}$	$I \leq 20 \text{ mA}$
	$S \leq 500 \text{ VA}$		$P \leq 80 \text{ W}$	
	$\cos\varphi \geq 0,7$			
	Sicherheitst. Maximalspannung: $U_m = 253 \text{ V AC}$			

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

1. Ergänzung zur EG-Baumusterprüfbescheinigung PTB 00 ATEX 2080

Prüfbericht: PTB Ex 01-21062

Zertifizierungsstelle Explosionsschutz
Im Auftrag

Braunschweig, 13. September 2001



Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



(1) **EC-TYPE-EXAMINATION CERTIFICATE**
(Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**



(3) EC-type-examination Certificate Number:

PTB 00 ATEX 2080

(4) Equipment: Isolation Switching Amplifier type K*D*-SR*-Ex*.W.*

(5) Manufacturer: Pepperl + Fuchs GmbH

(6) Address: Königsberger Allee 87, D-68307 Mannheim

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 00-20205.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014:1997 EN 50020:1994

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type-examination Certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

(12) The marking of the equipment shall include the following:

II (1) G D [EEx ia] IIC

Zertifizierungsstelle Explosionsschutz

Braunschweig, July 20, 2000

By order:

In the absence of Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

SCHEDULE

(13)

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2080**

(15) Description of equipment

The isolation switching amplifier type K*D*-SR*-Ex*.W.* is used for the transmission of control commands from the hazardous area into the non-hazardous area as well as for the safe electrical isolation of intrinsically safe and nonintrinsically safe circuits.

The maximum permissible ambient temperature is 60°C.

Electrical data

Supply circuitdirect voltage 20...30 V DC
 (terminals 14 and 15 resp. maximum voltage: $U_m = 253 \text{ V AC}$
 powerrail contacts) $U_m = 125 \text{ V DC}$

Output circuits.....	alternating current	direct current	
	(terminals 7, 8, 9 resp. 10, 11, 12)	$U \leq 253 \text{ V}$ $I \leq 2 \text{ A}$ $S \leq 500 \text{ VA}$ $\cos\phi \geq 0.7$	$U \leq 40 \text{ V}$ $I \leq 2 \text{ A}$ $P \leq 80 \text{ W}$

maximum voltage: $U_m = 253 \text{ V AC}$

Input circuitstype of protection Intrinsic Safety EEx ia IIA/IIB/IIC
 (terminals 1, 2, 3 resp. 4, 5, 6) resp. EEx ib IIA/IIB/IIC

maximum values per circuit:

$U_o = 10.5 \text{ V}$
 $I_o = 13 \text{ mA}$
 $P_o = 34 \text{ mW}$
 $R_i = 807.7 \text{ } \Omega$
 linear characteristic
 $C_i \approx 0$
 $L_i \approx 0$

type of protection	EEx ia resp. ib		
	IIA	IIB	IIC
maximum permissible external inductance L_o	1 H	840 mH	210 mH
maximum permissible external capacitance C_o	75 μF	16.8 μF	2.41 μF

sheet 2/4

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

In the presence of concentrated capacitances and/or inductances in the intrinsically safe input circuit, the maximum permissible external capacitances and inductances for circuits of category „ia“ are to be taken from the following table.

type of protection	EEx ia	
	IIB	IIC
maximum permissible external inductance L_o	7 mH	3 mH
maximum permissible external capacitance C_o	2.1 μ F	620 nF

When both intrinsically safe input circuits are interconnected, the following maximum values result:

$$U_o = 10.5 \text{ V}$$

$$I_o = 26 \text{ mA}$$

$$P_o = 68 \text{ mW}$$

$$R_i = 403.9 \text{ } \Omega$$

linear characteristic

$$C_i \approx 0$$

$$L_i \approx 0$$

type of protection	EEx ia resp. ib		
	IIA	IIB	IIC
maximum permissible external inductance L_o	420 mH	210 mH	52 mH
maximum permissible external capacitance C_o	75 μ F	16.8 μ F	2.41 μ F

In the presence of concentrated capacitances and/or inductances in the interconnected intrinsically safe input circuits, the maximum permissible external capacitances and inductances for circuits of category „ia“ are to be taken from the following table.

type of protection	EEx ia	
	IIB	IIC
maximum permissible external inductance L_o	7 mH	3 mH
maximum permissible external capacitance C_o	2.1 μ F	590 nF

The intrinsically safe input circuits are safely electrically isolated from all other circuits up to a peak value of the nominal voltage of 375 V.

(16) Test report PTB Ex 00-20205

(17) Special conditions for safe use

None

(18) Essential health and safety requirements

met by standards

Zertifizierungsstelle Explosionsschutz

By order:

In the absence of Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



Braunschweig, July 20, 2000

**Physikalisch-Technische Bundesanstalt
Braunschweig and Berlin**

(1) **EC-Type Examination Certificate**

(2) Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) EC-Type Examination Certificate Number

PTB 00 ATEX 2080

(4) Equipment: Transformer Isolated Switching Amplifier Type K*D*-SR*-Ex*.W.*

(5) Manufacturer: Pepperl + Fuchs GmbH

(6) Address: Königsberger Allee 87, D-68307 Mannheim

(7) The design of this electrical apparatus as well as the different permissible versions are specified in the annex to this type examination certificate.

(8) Physikalisch-Technische Bundesanstalt being notified body number 0102 in accordance with Article 9 of the Council Directive of the European Communities of 23 March 1994 (94/9/EC) confirms the compliance with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The results of the examination are recorded in the confidential test report PTB Ex 00-20205.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with

EN 50014:1997

EN 50020:1994

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type examination certificate relates only to the design and construction of the specified equipment in accordance with the Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

(12) The marking of the equipment shall include the following details:



II (1) G D

[EEx ia] IIC

Certification Body Explosion Protection
on behalf of

Braunschweig, 20 July 2000

(signature)

Dr-Ing U. Johannsmeyer, in absence
Senior Government Official

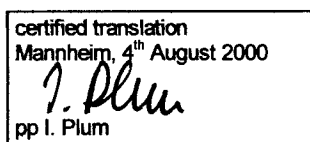
page 1/4

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Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig



**Physikalisch-Technische Bundesanstalt
Braunschweig and Berlin**

(13) **SCHEDULE**

(14) **EC-Type Examination Certificate PTB 00 ATEX 2080**

(15) Description of the Equipment

The Transformer Isolated Switching Amplifier Type K*D*-SR*-Ex*.W.* is designed for the transmission of control commands from the hazardous area to the non-hazardous area and for the galvanic isolation of intrinsically safe and non intrinsically safe circuits.

The max. permissible ambient temperature is 60°C.

Electrical parameters

Supply circuit.....DC 20 ...30 V DC
(terminals 14 and 15 alt. safety relevant maximum voltage: $V_m = 253V$ AC
power rail contacts) $V_m = 125V$ DC

Output circuits.....AC DC
(terminals 7, 8, 9 alt. $V \leq 253V$ $V \leq 40V$ $V \leq 130V$
10, 11, 12) $I \leq 2A$ $I \leq 2A$ $I \leq 20mA$
 $P_a \leq 500VA$ $P \leq 80W$
 $pf \geq 0.7$
safety relevant maximum voltage: $V_m = 253V$ AC

Input circuits.....for ignition protection intrinsic safety EEx ia IIA/IIB/IIC
(terminals 1, 2, 3 alt. 4, 5, 6) alt. EEx ib IIA/IIB/IIC
maximum values for each circuit:
 $V_o = 10.5 V$
 $I_o = 13 mA$
 $P_o = 34 mW$
 $R_i = 807.7 \Omega$
linear characteristic
 $C_i \approx 0$
 $L_i \approx 0$

type of protection	EEx ia alt. ib		
	IIA	IIB	IIC
max. permissible ext. inductance L_0	1 H	840 mH	210 mH
max. permissible ext. capacitance C_0	75 μF	16.8 μF	2.41 μF

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Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig

certified translation
Mannheim, 4th August 2000
J. Plum
pp I. Plum

**TUV PRODUCT
SERVICE GMBH**
Dudenstraße 28
68167 Mannheim

Schedule to EC-Type Examination Certificate PTB 00 ATEX 2080

In the presence of concentrated capacitance and/or inductance in the intrinsically safe input circuit the maximum permissible external capacitance and inductance for the circuits of category "ia" are to be taken from the following table.

type of protection	EEx ia	
	IIB	IIC
max. permissible ext. inductance L_0	7 mH	3 mH
max. permissible ext. capacitance C_0	2.1 μ F	620 nF

When interconnecting both intrinsically safe input circuits the following maximum values apply:

$V_o = 10.5$ V

$I_o = 26$ mA

$P_o = 68$ mW

$R_i = 403.9$ Ω

linear characteristic

$C_i \approx 0$

$L_i \approx 0$

type of protection	EEx ia alt ib		
	IIA	IIB	IIC
max. permissible ext. inductance L_0	420 mH	210 mH	52 mH
max. permissible ext. capacitance C_0	75 μ F	16.8 μ F	2.41 μ F

In the presence of concentrated capacitance and/or inductance in the interconnected intrinsically safe input circuits the maximum permissible external capacitance and inductance for the circuits of category "ia" are to be taken from the following table.

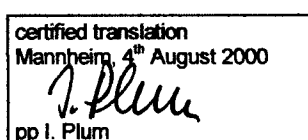
type of protection	EEx ia	
	IIB	IIC
max. permissible ext. inductance L_0	7 mH	3 mH
max. permissible ext. capacitance C_0	2.1 μ F	590 nF

The intrinsically safe input circuits are electrically safely isolated against all other electrical circuits up to the peak value of the nominal voltage of 375V.

(16) Test Report PTB Ex 00-20205

(17) Special Conditions

none



**Physikalisch-Technische Bundesanstalt
Braunschweig and Berlin**

Schedule to EC-Type Examination Certificate PTB 00 ATEX 2080

(18) Essential Health and Safety Requirements

covered by standards

Certification Body Explosion Protection
on behalf of

Braunschweig, 20 July 2000

(signature)

Dr-Ing U. Johannsmeyer, in absence
Senior Government Official

EC-Type Examination Certificates without a signature and without an official stamp are not valid.
This EC-Type Examination Certificate may only be reproduced unaltered.
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Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig

certified translation
Mannheim, 4th August 2000
J. Plum
pp I. Plum

**TÜV PRODUCT
SERVICE GMBH**
Dudenstraße 28
68167 Mannheim

1st SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2080

(Translation)

Equipment: Isolation and Switching Amplifier type K*D*-SR*-Ex*.W.*

Marking: II (1) G D [EEx ia] IIC

Manufacturer: Pepperl + Fuchs GmbH

Address: Königsberger Allee 87
D-68307 Mannheim, Germany

Description of supplements and modifications

The isolation and switching amplifier of type K*D*-SR*-Ex*.W.* has been technically modified and may in future also be manufactured and operated according to the test documents of test report PTB Ex 01-21062. The modifications concern the internal structure, the enclosure, and the "electrical data".

The "electrical data" are extended to additionally include a fault signal output as well as an additional pair of values for the output circuits when a.c. operated.

The EC type-examination certificate is extended to additionally include the isolation and switching amplifier type K*D*-SR*-Ex2.W.IR. This type differs from the previously certified versions only in the firmware.

All other details apply without any changes for this first supplement.

Electrical data

Fault signal output Safety voltage, max: $U_m = 40 \text{ V DC}$
(power rail contact PR4)

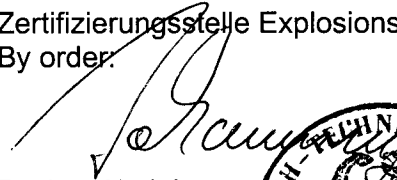
Output circuits.....	AC	DC
(terminals 7, 8, 9 and 10, 11, 12)	$U \leq 253 \text{ V}$ $I \leq 2 \text{ A}$ $S \leq 500 \text{ VA}$ $\cos\varphi \geq 0.7$	$U \leq 126.5 \text{ V}$ $I \leq 4 \text{ A}$ $U \leq 40 \text{ V}$ $I \leq 2 \text{ A}$ $I \leq 20 \text{ mA}$ $P \leq 80 \text{ W}$
	Safety voltage, max.:	$U_m = 253 \text{ V AC}$

Sheet 1/2

Test report: PTB Ex 01-21062

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, 13 September 2001


Dr.-Ing. U. Johannsmeier
Regierungsdirektor





Konformitätsaussage

- (1) **Konformitätsaussage**
- (2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - **Richtlinie 94/9/EG**
- (3) Prüfbescheinigungsnummer



TÜV 99 ATEX 1493 X

- (4) Gerät: Trennschaltverstärker Typ KFD2-SR2-Ex2.2S***
- (5) Hersteller: Pepperl + Fuchs GmbH
- (6) Anschrift: Postfach 68301
D-68307 Mannheim
- (7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Prüfbescheinigung festgelegt.
- (8) Der TÜV Hannover/Sachsen-Anhalt e.V., TÜV CERT-Zertifizierungsstelle, bescheinigt als benannte Stelle Nr. 0032 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.
- Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht Nr. 99/PX24390 festgelegt.
- (9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit
- EN 50 021: 1999**
- (10) Falls das Zeichen "X" hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.
- (11) Diese Konformitätsaussage bezieht sich nur auf die Konzeption und den Bau des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes.
- (12) Die Kennzeichnung des Gerätes muß die folgenden Angaben enthalten:

 II 3 G EEx n A C IIC T4

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Handwritten signature

Der Leiter



Hannover, 26.10.1999

(13)

ANLAGE

(14) **Konformitätsaussage Nr. TÜV 99 ATEX 1493 X**

(15) Beschreibung des Gerätes

Der Trennschaltverstärker Typ KFD2-SR2-Ex2.2S*** dient zur Übertragung von Signalen aus dem explosionsgefährdeten Bereich in den nicht explosionsgefährdeten Bereich. Der Trennschaltverstärker darf in explosionsgefährdeten Bereichen der Zone 2 errichtet werden.

Das Gerät ist ein- oder zweikanalig ausgeführt.

Die höchstzulässige Umgebungstemperatur beträgt 60°C.

Elektrische Daten

Speisespannung Nennwerte:
(Klemmen 14 und 15) 20 ... 30 V DC
Die Versorgung darf auch über den Einspeisebaustein
Typ KFD2-EB... (TÜV 98 ATEX 1273 X) erfolgen.

Kontaktstromkreise Nennwerte:
(Klemmen 7/8/9 Gleichspannung ≤ 40 V; ≤ 2 A
und 10/11/12) Wechspannung ≤ 50 V; ≤ 2 A
 Bemessungsspannung 60 V

Daten-
und Signalstromkreise elektrische Daten gemäß Angaben des Herstellers und
(Klemmen 1/2/3 gültiger Konformitätsbescheinigung bzw. EG-Baumuster-
und 4/5/6) prüfbescheinigung

(16) Prüfungsunterlagen bestehend aus 7 Seiten und 10 Zeichnungen sind im Prüfbericht aufgelistet.

(17) Besondere Bedingungen

1. Der Trennschaltverstärker Typ KFD2-SR2-Ex2.2S*** ist so zu errichten, daß eine Schutzart von mindestens IP 54 gemäß IEC 529 erreicht wird.
2. Die zulässigen Höchstwerte für die eigensicheren Stromkreise sind der gültigen Konformitätsbescheinigung bzw. EG-Baumusterprüfbescheinigung zu entnehmen.
3. An nichteigensichere Stromkreise in der Zone 2 dürfen nur betriebsmäßig nicht funkende Geräte angeschlossen werden, welche für den Betrieb in explosionsgefährdeten Bereichen der Zone 2 und die am Einsatzort vorliegenden Bedingungen geeignet sind.

4. Beim Anschluß von nicht eigensicheren Stromkreisen an die Kontaktstromkreise sind Maßnahmen zu treffen, daß die Bemessungsspannung durch vorübergehende Störungen um nicht mehr als 40% überschritten wird.
5. Das Betätigen der Schalter sowie das Verbinden und Trennen der Anschlüsse von nicht eigensicheren Stromkreisen unter Spannung ist nur ist nur bei der Installation oder für Reparaturzwecke zulässig.

(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

Keine zusätzlichen



Translation

STATEMENT OF CONFORMITY

- (1) **STATEMENT OF CONFORMITY**
- (2) Equipment or protective system intended for use in potentially explosive atmospheres - **Directive 94/9/EC**
- (3) Test certificate number

**TÜV 99 ATEX 1493 X**

- (4) Equipment or Protective System: Isolated Amplifier type KFD2-SR2-Ex2.2S***
- (5) Manufacturer: Pepperl + Fuchs GmbH
- (6) Address: Postfach 68301
D-68307 Mannheim
- (7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- (8) The TÜV Hannover/Sachsen-Anhalt e.V., TÜV Certification Body N° 0032 in accordance with Article 9 of the Council Directive 94/9/EC of March 23, 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.
- The examination and test results are recorded in confidential report N° 99/PX/24390.
- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
- EN 50 021: 1999**
- (10) If the sign "X" is placed after the certification number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) This EC-type examination certificate relates only to the design and construction of the specified equipment or protective system. Further requirements of this Directive apply to the manufacture and placing on the market of this equipment or protective system.
- (12) The marking of the equipment or protective system shall include the following:

 **II 3G EEx n A C IIC T4**

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Hannover, 1999-10-26


Head of the
Certification Body





(13)

SCHEDULE

(14) **STATEMENT OF CONFORMITY N° TÜV 99 ATEX 1493 X**

(15) Description of equipment or protective system

The Isolated Amplifier type KFD2-SR2-Ex2.2S*** is used for the transmission of signals from the explosion hazardous area into the non explosion hazardous area. The separating switch amplifier type may be installed in explosion hazardous areas of the zone 2.

The device is executed with one or two channels.

The maximum permissible ambient temperature is 60°C.

Electrical data

Supply voltage Nominal values:

(Terminals 14 and 15) 20 ... 30 V d. c.

The supply may also be effected by the power feed module type KFD2-EB... (TÜV 98 ATEX 1273 X).

Contact circuits Nominal values:

(Terminals 7/8/9

d. c. : $\leq 40 \text{ V}; \leq 2\text{A}$

and 10/11/12)

a. c. : $\leq 50 \text{ V}, \leq 2\text{A}$

Rated voltage 60 V

Data and signal circuits

(Terminals 1/2/3

and 4/5/6)

Electrical data according to manufacturers specifications and the valid certificate of conformity resp. EC type examination certificate

(16) Test documents consisting of 7 pages and 10 drawings are listed in the test report.

(17) Special conditions for safe use

1. The separating switch amplifier type KFD2-SR2-Ex2.2S*** has to be erected in such a way, that a degree of protection of at least IP 54 according to IEC 529 is reached.
2. The permissible maximum values have to be taken from the valid certificate of conformity resp. EC-type examination certificate.
3. Only devices non sparking in normal operation, which are suitable for the operation in explosion hazardous areas of the zone 2 and the conditions available at the place of operation, are allowed to be connected to non intrinsically safe circuits in the zone 2.

4. If non intrinsically safe circuits are connected to the contact circuits, it has to be ensured, that the rated voltage is exceeded not more than 40% by transient disturbances.
5. The operation of the switches and the connecting and disconnecting of the connectors of the non intrinsically safe circuits under voltage, as well is only permitted during installation or for repair purposes.

(18) Essential Health and Safety Requirements

no additional ones



1. ERGÄNZUNG
zur
Konformitätsaussage Nr. TÜV 99 ATEX 1493 X

der Firma: Pepperl + Fuchs GmbH
Königsberger Allee 87
D-68307 Mannheim

Die "Elektrischen Daten" und die "Besonderen Bedingungen" für den Trennschaltverstärker Typ KFD2-SR2-Ex2.2S*** werden geändert und lauten wie folgt:

Speisespannung Nennwerte:
(Klemmen 14 und 15) 20 ... 30 V DC
Die Versorgung darf auch über den Einspeisebaustein
Typ KFD2-EB... (TÜV 00 ATEX 1618 X) erfolgen.

Besondere Bedingungen

1. Der Trennschaltverstärker Typ KFD2-SR2-Ex2.2S*** ist so zu errichten, dass eine Schutzart von mindestens IP 54 gemäß EN 60529 erreicht wird.
2. Die zulässigen Höchstwerte für die eigensicheren Stromkreise sind der gültigen Konformitätsbescheinigung bzw. EG-Baumusterprüfbescheinigung zu entnehmen.
3. An nichteigensichere Stromkreise in der Zone 2 dürfen Geräte angeschlossen werden, welche für den Betrieb in explosionsgefährdeten Bereichen der Zone 2 und die am Einsatzort vorliegenden Bedingungen geeignet sind (Herstellereklärung oder Zertifikat einer Prüfstelle).
4. Beim Anschluss von nicht eigensicheren Stromkreisen an die Kontaktstromkreise sind Maßnahmen zu treffen, dass die Bemessungsspannung durch vorübergehende Störungen um nicht mehr als 40% überschritten wird.
5. Das Betätigen der Schalter sowie das Verbinden und Trennen der Anschlüsse von nicht eigensicheren Stromkreisen unter Spannung ist nur bei der Installation, der Wartung oder für Reparaturzwecke zulässig.
Anmerkung: Das zeitliche Zusammentreffen von explosionsfähiger Atmosphäre und Installation, Wartung bzw. Reparatur wird in der Zone 2 als unwahrscheinlich bewertet.

Alle übrigen Angaben gelten unverändert für diese 1. Ergänzung.

Die Prüfungsunterlagen sind im Prüfbericht Nr. 00PX19000 aufgeführt.

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Hannover, 14.09.2000

Der Leiter



Translation

1. SUPPLEMENT to

STATEMENT OF CONFORMITY No. TÜV 99 ATEX 1493 X

of the company : Pepperl + Fuchs GmbH
Königsberger Allee 87
D-68307 Mannheim

The "Electrical data" and the "Special conditions for safe use" for the Isolated Amplifier type KFD2-SR2-Ex2.2S*** are changed and read as follows:

Electrical data

Supply voltage Nominal values:
(Terminals 14 and 15) 20 ... 30 V d. c.
The supply may also be effected by the
power feed module type KFD2-EB... (TÜV 00 ATEX 1618 X).

Special conditions for safe use

1. The separating switch amplifier type KFD2-SR2-Ex2.2S*** has to be erected in such a way, that a degree of protection of at least IP 54 according to EN 60529 is reached.
2. The permissible maximum values have to be taken from the valid certificate of conformity resp. EC-type examination certificate.
3. Only devices, which are suitable for the operation in explosion hazardous areas of the zone 2 and the conditions available at the place of operation (Declaration of conformity or certificate of a testing department), are allowed to be connected to non intrinsically safe circuits in the zone 2.
4. If non intrinsically safe circuits are connected to the contact circuits, it has to be ensured, that the rated voltage is exceeded not more than 40% by transient disturbances.
5. The operation of the switches and the connecting and disconnecting of the connectors of the non intrinsically safe circuits under voltage, as well is only permitted during installation, for maintenance or for repair purposes.
Note: The temporal coincidence of explosion hazardous atmosphere and installation, maintenance resp. repair purposes is assessed as unlikely.

All other details remain unchanged for this 1. supplement.

The test documents are listed in the test report no. 00PX19000

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Hannover, 2000-09-14

Head of the
Certification Body



2. ERGÄNZUNG zur Konformitätsaussage Nr. TÜV 99 ATEX 1493 X

der Firma: Pepperl + Fuchs GmbH
Königsberger Allee 87
D-68307 Mannheim

Die Konformitätsaussage Nr. TÜV 99 ATEX 1493 X ist künftig auch für die Geräte gemäß der folgenden Tabelle gültig:

Gerät	Typ
Grenzwertschalter	KFD2-GU-Ex1
Trennschaltverstärker	KFD2-SR2-Ex1.W
Trennschaltverstärker	KFD2-SR2-Ex1.W.LB
Trennschaltverstärker	KFD2-SR2-Ex2.W
Trennschaltverstärker	KFD2-SH-Ex1
Trennschaltverstärker	KFD2-SH-Ex1.T.OP

Die höchstzulässige Umgebungstemperatur beträgt 60°C.

Elektrische Daten

Speisespannung Nennwerte:

Typen KFD2-SR2-Ex1.W,
KFD2-SR2-Ex1.W.LB und
KFD2-SR2-Ex2.W 20 ... 30 V DC
(Klemmen 14 und 15
bzw. Power Rail)

Typ KFD2-GU-Ex1 20 ... 35 V DC
(Klemmen 14 und 15
bzw. Power Rail)

Typ KFD2-SH-Ex1 20 ... 35 V DC
(Klemmen 22, 23 und 24
bzw. Power Rail)

Typ KFD2-SH-Ex1.T.OP 20 ... 30 V DC
(Power Rail)

Die Versorgung darf auch über den Einspeisebaustein
Typ KFD2-EB... (TÜV 00 ATEX 1618 X) erfolgen.



2. Ergänzung zur Konformitätsaussage TÜV 99 ATEX 1493 X

Kontaktstromkreise	DC	AC
Typen KFD2-SR2-Ex1.W, KFD2-SR2-Ex1.W.LB und KFD2-SR2-Ex2.W (Klemmen 7, 8, 9 bzw. 10, 11, 12)	$U_n \leq 40 \text{ V}, I \leq 2 \text{ A}$	$U_n \leq 50 \text{ V}, I \leq 4 \text{ A}$
Typ KFD2-GU-Ex1 (Klemmen 14 und 15 bzw. Power Rail)	$U_n \leq 40 \text{ V}, I \leq 2 \text{ A}$	$U_n \leq 50 \text{ V}, I \leq 2 \text{ A}$
Typ KFD2-SH-Ex1 (Klemmen 22, 23 und 24 bzw. Power Rail)	$U_n \leq 24 \text{ V}, I \leq 1 \text{ A}$	$U_n \leq 50 \text{ V}, I \leq 1 \text{ A}$
Typ KFD2-SH-Ex1.T.OP	$U_n \leq 50 \text{ V}, I \leq 0,25 \text{ A}$	
Sammel-Störmeldeausgang		
Typen KFD2-SR2-Ex1.W, KFD2-SR2-Ex1.W.LB und KFD2-SR2-Ex2.W (Power Rail)	max. zulässige Last: 25 mA Bei Verbindung mit dem Einspeisebaustein Typ KFD2-EB... (TÜV 00 ATEX 1618 X) ist diese Bedingung erfüllt.	
Übrige Daten- und Signalstromkreise	elektrische Daten gemäß Angaben des Herstellers und gültiger Konformitätsbescheinigung bzw. EG-Baumuster- prüfbescheinigung	



2. Ergänzung zur Konformitätsaussage TÜV 99 ATEX 1493 X

Die „Besondere Bedingungen“ werden wie folgt geändert:

1. Die Geräte der der K-Serie Typen KFD2-...-... sind so zu errichten, dass eine Schutzart von mindestens IP 54 gemäß IEC 529 erreicht wird.
5. Die Verwendung des Programmiersteckers und das Betätigen der Schalter sowie das Verbinden und Trennen der Anschlüsse von nicht eigensicheren Stromkreisen unter Spannung ist nur ist nur bei der Installation oder für Reparaturzwecke zulässig.
Anmerkung: Das zeitliche Zusammentreffen von explosionsfähiger Atmosphäre und Installation, Wartung bzw. Reparatur wird in der Zone 2 als unwahrscheinlich bewertet.

Alle übrigen Angaben gelten unverändert für diese 2. Ergänzung.

Die Prüfungsunterlagen sind im Prüfbericht Nr. 02YEX 159 689 aufgeführt.

TÜV NORD CERT GmbH & Co. KG
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover
Tel.: 0511 986-1470
Fax: 0511 986-2555

Hannover, 03.06.2002

Der Leiter



Translation

2. SUPPLEMENT to

STATEMENT OF CONFORMITY No. TÜV 99 ATEX 1493 X

of the company : Pepperl + Fuchs GmbH
Königsberger Allee 87
D-68307 Mannheim

In the future, the Statement of Conformity TÜV 99 ATEX 1493 X also applies to the devices according to the following table:

Table with 2 columns: Device, Type. Rows include Trip Amplifier (KFD2-GU-Ex1) and Transformer Isolated Barrier (KFD2-SR2-Ex1.W, KFD2-SR2-Ex1.W.LB, KFD2-SR2-Ex2.W, KFD2-SH-Ex1, KFD2-SH-Ex1.T.OP).

The maximum permissible ambient temperature is 60°C.

Electrical data

Supply voltage Nominal values:

Types KFD2-SR2-Ex1.W, KFD2-SR2-Ex1.W.LB and KFD2-SR2-Ex2.W 20 ... 30 V d. c. (Terminals 14 and 15 resp. Power Rail)

Type KFD2-GU-Ex1 20 ... 35 V d. c. (Terminals 14 and 15 resp. Power Rail)

Type KFD2-SH-Ex1 20 ... 35 V d. c. (Terminals 22, 23 and 24 resp. Power Rail)

Type KFD2-SH-Ex1.T.OP 20 ... 30 V DC (Power Rail) The supply may also be effected by the power feed module type KFD2-EB... (TÜV 00 ATEX 1618 X)



2. Supplement to Statement of Conformity TÜV 99 ATEX 1493 X

Contact circuits	DC	AC
Types KFD2-SR2-Ex1.W, KFD2-SR2-Ex1.W.LB and KFD2-SR2-Ex2.W (Terminals 7, 8, 9 resp. 10, 11, 12)	$U_n \leq 40 \text{ V}, I \leq 2 \text{ A}$	$U_n \leq 50 \text{ V}, I \leq 4 \text{ A}$
Type KFD2-GU-Ex1 (Terminals 14 and 15 resp. Power Rail)	$U_n \leq 40 \text{ V}, I \leq 2 \text{ A}$	$U_n \leq 50 \text{ V}, I \leq 2 \text{ A}$
Typ KFD2-SH-Ex1 (Terminals 22, 23 and 24 resp. Power Rail)	$U_n \leq 24 \text{ V}, I \leq 1 \text{ A}$	$U_n \leq 50 \text{ V}, I \leq 1 \text{ A}$
Typ KFD2-SH-Ex1.T.OP	$U_n \leq 50 \text{ V}, I \leq 0,25 \text{ A}$	
Collective error message output		
Types KFD2-SR2-Ex1.W, KFD2-SR2-Ex1.W.LB and KFD2-SR2-Ex2.W (Power Rail)	max. permissible load: 25 mA If connected with the power feed module type KFD2-EB... (TÜV 00 ATEX 1618 X), this requirement is fulfilled.	
Remainder data- and signal circuits	electrical data according the manufacturer's specifications resp. valid EC-Type Examination Certificate or Certificate of Conformity	



2. Supplement to Statement of Conformity TÜV 99 ATEX 1493 X

The „Special conditions for safe use“ are changed as follows:

1. The devices of the K-series types KFD2-...-... have to be erected in such a way, that a degree of protection of at least IP 54 according to IEC 529 is reached.
5. The operation of the programming jack and connecting and disconnecting of the connectors of the non intrinsically safe circuits under voltage is only permitted during installation or for repair purposes.
Note: The temporal coincidence of explosion hazardous atmosphere and installation, maintenance resp. repair purposes is assessed as unlikely.

All other details remain unchanged for this 2. supplement.

The test documents are listed in the test report no. 02YEX 159 689.

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Hanover, 2002-06-03

A handwritten signature in black ink, appearing to read 'G. Will'.

Head of the
Certification Body



EG-Baumusterprüfbescheinigung

- (1) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - **Richtlinie 94/9/EG**
- (2) EG-Baumusterprüfbescheinigungsnummer



PTB 02 ATEX 1057 X

- (3) Gerät: Taster für Schalttafeleinbau Typ 8003/1.1-....-.-. und 8003/1.3-....-.-.
- (4) Hersteller: R. STAHL Schaltgeräte GmbH
- (5) Anschrift: 74638 Waldenburg/Württ. Deutschland
- (6) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage und den darin aufgeführten Unterlagen zu dieser Baumusterprüfbescheinigung festgelegt.
- (7) Die Physikalisch-Technische Bundesanstalt bescheinigt als benannte Stelle Nr. 0102 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.

Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht PTB Ex 02-12177 festgehalten.

- (8) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit

EN 50014: 1997 + A1 + A2

EN 50018: 2000

EN 50019: 2000


- (9) Falls das Zeichen „X“ hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.
- (10) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konzeption und Prüfung des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes. Diese Anforderungen werden nicht durch diese Bescheinigung abgedeckt.
- (11) Die Kennzeichnung des Gerätes muß die folgenden Angaben enthalten:

 **II 2 G EEx de IIC T6**

Zertifizierungsstelle Explosionsschutz

Braunschweig, 25. November 2002

Im Auftrag

Dr.-Ing. U. Klausmeyer
Regierungsdirektor


(13)

A n l a g e

(14)

EG-Baumusterprüfbescheinigung PTB 02 ATEX 1057 X

(15)

Beschreibung des Gerätes

Der Taster für Schalttafeleinbau Typ 8003/1.1-....-.-. und 8003/1.3-....-.-. dient zum Schalten und Trennen von Last-, Steuer- und Signalstromkreisen.

Der Anschluß erfolgt über die integrierte Anschlußleitung (Kabelschwanz) oder den Anschlußraum in der Zündschutzart Erhöhte Sicherheit "e".

Technische Daten

Bemessungsisolationsspannung	bis	550 V			
Bemessungsbetriebsspannung	bis	60 V	110 V	500 V	500 V
Bemessungsstrom I_e	max.	6 A	1 A	6 A	6 A
Gebrauchskategorie		DC -13	DC-13	AC-15	AC-12

Andere als die vorstehend genannten Bemessungswerte sind bei Einhaltung des Einschalt- und Ausschaltvermögens entsprechend den einschlägigen Bestimmungen zulässig und sind vom Hersteller abhängig von Betriebsart, Gebrauchskategorie usw. festgelegt.

Kontaktbestückung	2 Öffner (Zwangsöffner) 2 Schließer 1 Öffner und 1 Schließer
Anschlußquerschnitt	0,75 bis 1.5 mm ²
Umgebungstemperatur	-55 °C bis 60 °C

(16)

Prüfbericht PTB Ex 02-12177

(17)

Besondere Bedingungen

Der rückwärtige Teil des Tasters für Schalttafeleinbau ist so zu errichten, dass er vor Stoßenergie gemäß EN 50014 Abschnitt 23.4.3.1 mechanisch geschützt ist.

Die Anschlußleitung (Kabelschwanz) des Tasters für Schalttafeleinbau ist fest zu verlegen und so zu errichten, dass sie vor mechanischer Beschädigung hinreichend geschützt ist.

(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

Die durchgeführten Prüfungen und deren positive Ergebnisse zeigen, dass der Taster für Schalttafeleinbau die Anforderungen der Richtlinie 94/9/EG und der auf dem Deckblatt angegebenen Normen erfüllt.

Zertifizierungsstelle Explosionsschutz

Im Auftrag

Braunschweig, 25. November 2002



Dr.-Ing. U. Klausmeyer
Regierungsdirektor



1. ERGÄNZUNG

gemäß Richtlinie 94/9/EG Anhang III Ziffer 6

zur EG-Baumusterprüfbescheinigung PTB 02 ATEX 1057 X

Gerät: Taster für Schalttafeleinbau Typ 8003/1.1-.....-.-. und Typ 8003/1.3-.....-.-.
Kennzeichnung:  II 2 G EEx de IIC T6
Hersteller: R. STAHL Schaltgeräte GmbH
Anschrift: Am Bahnhof 30
74638 Waldenburg (Württ), Deutschland

Beschreibung der Ergänzungen und Änderungen

Der Taster für Schalttafeleinbau Typ 8003/1.1-.....-.-. und Typ 8003/1.3-.....-.-. ist für den Einsatz im Gefahrenbereich Staub geeignet. Die Kennzeichnung wird entsprechend erweitert auf:

 II 2G/D EEx de II C T6 IP 65 T 80 °C

Die Kontaktbestückung wird modifiziert und der Typenschlüssel angepasst:

Kontaktbestückung Typ 8003/11.	Schließer/Öffner /NO-NC
Kontaktbestückung Typ 8003/12.	Öffner/Öffner /NC-NC
Kontaktbestückung Typ 8003/13.	Schließer/Schließer /NO-NC
Kontaktbestückung Typ 8003/14.	Öffner/Schließer /NC-NO

Prüfbericht: PTB Ex 04-14149

Zertifizierungsstelle Explosionschutz
im Auftrag

Braunschweig, 05. August 2004


Dr.-Ing. U. Klaus Meyer
Regierungsdirektor





(1) EC-TYPE-EXAMINATION CERTIFICATE (Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**



(3) EC-type-examination Certificate Number:

PTB 02 ATEX 1057 X

(4) Equipment: Panel-mounting push-button, types 8003/1.1-.....- and 8003/1.3-.....-

(5) Manufacturer: R. STAHL Schaltgeräte GmbH

(6) Address: 74638 Waldenburg/Württ., Germany

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 02-12177.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + A1 + A2

EN 50018: 2000

EN 50019: 2000

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

II 2 G EEx de IIC T6

Zertifizierungsstelle Explosionsschutz

Braunschweig, November 25, 2002

By order:

Dr.-Ing. U. Klaus
Regierungsdirektor



SCHEDULE

(13)

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 02 ATEX 1057 X**

(15) Description of equipment

The panel-mounting pushbutton of types 8003/1.1-.....-.. and 8003/1.3-.....-.. is used for connecting and disconnecting load, control and signal circuits.

Connection is by means of the integrated connecting cable (open-ended line) or the terminal compartment designed to type of protection Increased Safety "e".

Technical data

Rated insulation voltage	up to			550 V	
Rated operating voltage	up to	60 V	110 V	500 V	500 V
Rated current I_e	max.	6 A	1 A	6 A	6 A
Utilisation category		DC -13	DC-13	AC-15	AC-12

Provided the making and breaking capacities are met, rated values other than those specified above are acceptable and will be defined by the manufacturer on the basis of the operating mode, utilisation category, etc.

Contacts	2 NC-contacts (positive NC-contact) 2 NO-contact 1 NCC and 1 NOC
Conductor size	0.75 to 1.5 mm ²
Ambient temperature	-55 °C to 60 °C

(16) Test report PTB Ex 02-12177

(17) Special conditions for safe use

The rear end of the panel-mounting pushbutton shall be installed so as to provide for mechanical protection against impact energy in accordance with EN 50014, section 23.4.3.1.

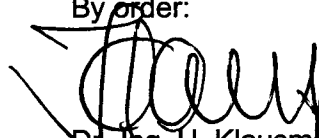
The connecting cable (open ended line) of the panel-mounting pushbutton shall be installed to provide for permanent wiring and adequate protection against mechanical damage.

(18) Essential health and safety requirements

The tests and the favourable results these have produced reveal that the panel-mounting pushbutton meets the requirements of directive 94/9/EC as well as those of the standards quoted on the cover sheet.

Zertifizierungsstelle Explosionsschutz

By order:



Dr.-Ing. U. Klausmeyer
Regierungsdirektor



Braunschweig, November 25, 2002

1st SUPPLEMENT
according to Directive 94/9/EC Annex III.6
to EC-TYPE-EXAMINATION CERTIFICATE PTB 02 ATEX 1057 X
(Translation)

Equipment: Panel-mounting switch, types 8003/1.1-.....-. and 8003/1.3-.....-.

Marking:  II 2 G EEx de IIC T6

Manufacturer: R. STAHL Schaltgeräte GmbH

Address: Am Bahnhof 30
74638 Waldenburg (Württ), Germany

Description of supplements and modifications

The panel-mounting switch, types 8003/1.1-.....-. and 8003/1.3-.....-., is suited for use in the hazardous area "dust". The marking is expanded accordingly and will read as follows:

 II 2G/D EEx de II C T6 IP 65 T 80 °C

The number of contacts provided is modified and the type code adjusted:

- Contacts, type 8003/11. NO-NC
- Contacts, type 8003/12. NC-NC
- Contacts, type 8003/13. NO-NC
- Contacts, type 8003/14. NC-NO

Test report: PTB Ex 04-14149

Zertifizierungsstelle Explosionschutz

By order:



Dr.-Ing. U. Klaus Meyer
Regierungsdirektor

Braunschweig, August 05, 2004

EG-Konformitätserklärung
EC-Declaration Of Conformity
CE-Déclaration De Conformité



Doc No: 16353-1

PTB 02 ATEX 1057 X

Wir (we; nous)

R. STAHL Schaltgeräte GmbH, Am Bahnhof 30, D-74638 Waldenburg (Württ.)

erklären in alleiniger Verantwortung, daß das Produkt

Taster für Schalttafeleinbau
Typ 8003/1.1-..., 8003/1.3-...

hereby declare in our sole responsibility, that the product

Push button for panel mounting
 Type 8003/1.1-..., 8003/1.3-...

déclarons de notre seule responsabilité, que le produit

Bouton poussoir pour encastrément
 Type 8003/1.1-..., 8003/1.3-...

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen Dokumenten übereinstimmt

which is the subject of this declaration, is in conformity with the following standard(s) or normative documents

auquel cette déclaration se rapporte, est conforme aux norme (s) ou aux documents normatifs suivants

Bestimmungen der Richtlinie

Titel und/oder Nr. sowie Ausgabedatum der Norm

terms of the directive

title and/or No. and date of issue of the standard

prescription de la directive

titre et/ou No. ainsi que date d'émission des normes

94/9/EG: Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen

EN 50014:1997 + A1 + A2

94/9/EC: Equipment and protective systems intended for use in potentially explosive atmospheres

EN 50018:2000

94/9/CE: Appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles

EN 50019:2000

89/336/EWG: Elektromagnetische Verträglichkeit

EN 60947-1:1999

89/336/EEC:

Electromagnetic compatibility

EN 60947-5-1:1991

89/336/CEE:

Compatibilité électromagnétique

Waldenburg, 19.09.2002

W. Limbacher

I.V. J. Pirio

Ort und Datum
 Place and date
 lieu et date

Leiter Entwicklung
 Head of Development Dept.
 Directeur Développement

Leiter Qualitätsmanagement
 Head of Quality Management Dept.
 Chef du Dept. Assurance de Qualité



(1) EC-TYPE-EXAMINATION CERTIFICATE (Translation)

- (2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**
- (3) EC-type-examination Certificate Number:



PTB 02 ATEX 2129 X

- (4) Equipment: Panel-mounted illuminated pushbutton, type 8018/3...-...-
- (5) Manufacturer: R. Stahl Schaltgeräte GmbH
- (6) Address: Am Bahnhof 30; 74638 Waldenburg; Germany
- (7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- (8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

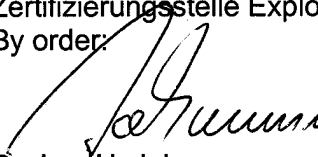
The examination and test results are recorded in the confidential report PTB Ex 02-22234.

- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 50014:1997 + A1 + A2 EN 50018:2000 EN 50020:1994 EN 50028:1987
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) This EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.
- (12) The marking of the equipment shall include the following:

 **II 2 G EEx md IIC T6 and EEx md ia IIC T6**

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, September 13, 2002


Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



SCHEDULE

(13)

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 02 ATEX 2129 X**

(15) Description of equipment

The panel-mounted illuminated pushbutton is intended for installation in the walls and lids of enclosures for electrical equipment or for control boards or control cabinets. The illuminated pushbutton of type Intrinsic Safety is operated as an intrinsically safe apparatus when connected to intrinsically safe circuits.

Electrical data

Rated insulation voltage 550 V

Luminous element

Rated voltage Type 8018/31.. 10.8 V - 270 V AC/DC
 Type 8018/32.. 10.8 V - 28 V AC/DC

suited for connection to intrinsically safe circuits (signalling circuits) with the following maximum values:

$U_i = 28 \text{ V}$
 $I_i = 150 \text{ mA}$
 $P_i = 1 \text{ W}$

L_i and C_i are negligibly low
 0 to 60 Hz

Frequency range

Pushbutton

Rated voltage	up to 500 V		
Rated current	up to 6 A		
Rated voltage	Rated current	Breaking capacity	Utilization category
max. 500 V	max. 6 A	max. 3000 VA	AC 12
max. 500 V	max. 6 A	max. 1250 VA	AC 15
max. 110 V	max. 1 A	max. 110 W	DC 13

Provided the making and breaking capacities are met, rated values other than those specified above are acceptable (depending on operating mode, utilization category).

Contacts NCC - NOC
 NCC - NCC
 NOC - NOC

Connection cross section 0.75 mm²
 Ambient temperature range -30 °C to +60 °C

(16) Test report PTB Ex 02-22234

(17) Special conditions for safe use

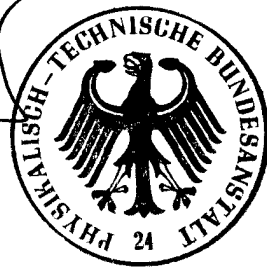
1. The panel-mounted illuminated pushbutton, type 8013/31..., shall be installed in such a way that its rear end is protected against mechanical damage.
2. The panel-mounted illuminated pushbutton, type 8013/32..., may be operated as an intrinsically safe apparatus when connected to intrinsically safe circuits of category "ia" or "ib".
3. The signalling circuit is electrically isolated from earth.
4. The maximum permissible ambient temperature range is -30 °C to +60 °C.
5. The maximum ambient temperature has to be adjusted as required for the bezel used for the illuminated pushbutton.
6. Routine testing for pressure resistance can be dispensed with for the luminous element (flameproof enclosure) of the panel-mounted illuminated pushbutton.

(18) Essential health and safety requirements

Covered by the standards specified above.

Zertifizierungsstelle Explosionsschutz
By order:


Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



Braunschweig, September 13, 2002



EG-Baumusterprüfbescheinigung

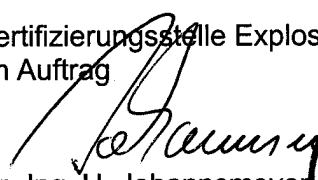


- (1) **EG-Baumusterprüfbescheinigung**
- (2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - **Richtlinie 94/9/EG**
- (3) EG-Baumusterprüfbescheinigungsnummer
PTB 02 ATEX 2129 X
- (4) Gerät: Leuchttaster für Schalttafeleinbau Typ 8018/3...-.-.
- (5) Hersteller: R.Stahl Schaltgeräte GmbH
- (6) Anschrift: Am Bahnhof 30; 74638 Waldenburg; Deutschland
- (7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage und den darin aufgeführten Unterlagen zu dieser Baumusterprüfbescheinigung festgelegt.
- (8) Die Physikalisch-Technische Bundesanstalt bescheinigt als benannte Stelle Nr. 0102 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.
Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht PTB Ex 02-22234 festgehalten.
- (9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit
EN 50014:1997 + A1 + A2 EN 50018:2000 EN 50020:1994 EN 50028:1987
- (10) Falls das Zeichen „X“ hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.
- (11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konzeption und Prüfung des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes. Diese Anforderungen werden nicht durch diese Bescheinigung abgedeckt.
- (12) Die Kennzeichnung des Gerätes muß die folgenden Angaben enthalten:

 **II 2 G EEx md IIC T6 und EEx md ia IIC T6**

Zertifizierungsstelle Explosionsschutz
Im Auftrag

Braunschweig, 13. September 2002


Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



(13)

Anlage

(14)

EG-Baumusterprüfbescheinigung PTB 02 ATEX 2129 X

(15) Beschreibung des Gerätes

Der Leuchttaster für Schalttafeleinbau ist zum Einbau in Gehäusewände und -deckel elektrischer Betriebsmittel bzw. von Schalttafeln oder Steuerschränken vorgesehen. Der Leuchttaster in der Ausführung "eigensicher" wird an eigensicheren Stromkreisen als eigensicheres Betriebsmittel betrieben.

Elektrische Daten

Bemessungsisolationsspannung 550 V

Leuchtelement

Bemessungsspannung Typ 8018/31..
10,8 V - 270 V AC/DC

Typ 8018/32..
10,8 V - 28 V AC/DC

geeignet zum Anschluss an eigensichere Stromkreise (Meldestromkreise) mit folgenden Höchstwerten:

$U_i = 28 \text{ V}$

$I_i = 150 \text{ mA}$

$P_i = 1 \text{ W}$

L_i und C_i sind

vernachlässigbar klein

0 bis 60 Hz

Frequenzbereich

Taster

Bemessungsspannung bis 500 V

Bemessungsstrom bis 6 A

Bemessungsspannung	Bemessungsstrom	Schaltvermögen	Gebrauchskategorie
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max. 500 V	max. 6 A	max. 3000 VA	AC 12
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max. 500 V	max. 6 A	max. 1250 VA	AC 15
------------	----------	--------------	-------

max. 110 V	max. 1 A	max. 110 W	DC 13
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Andere als die vorstehend genannten Bemessungswerte sind bei Einhaltung des Einschalt- und Ausschaltvermögens - abhängig von Betriebsart, Gebrauchskategorie - zulässig.

Kontaktbestückung Öffner-Schließer/NC-NO
Öffner-Öffner/NC-NC
Schließer-Schließer/NO-NO

Anschlussquerschnitt 0,75 mm²

Umgebungstemperaturbereich -30 °C bis +60 °C

Seite 2/3

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

Anlage zur EG-Baumusterprüfbescheinigung PTB 02 ATEX 2129 X

(16) Prüfbericht PTB Ex 02-22234

(17) Besondere Bedingungen

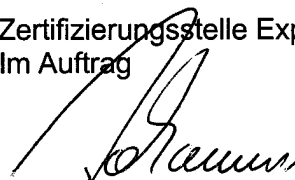
1. Der Leuchttaster für Schalttafeleinbau Typ 8018/31.. muss so eingebaut werden, dass die Rückseite gegen mechanische Beschädigung geschützt ist.
2. Der Leuchttaster für Schalttafeleinbau Typ 8018/32.. darf an eigensicheren Stromkreisen der Kategorie "ia" oder "ib" als eigensicheres Betriebsmittel betrieben werden.
3. Der Meldestromkreis ist von der Erde galvanisch getrennt.
4. Der maximal zulässige Umgebungstemperaturbereich beträgt -30 °C bis +60 °C.
5. Abhängig von dem verwendeten Vorsatz für den Leuchttaster, muss die maximale Umgebungstemperatur entsprechend angepasst werden.
6. Die Stückprüfung auf Druckfestigkeit kann für das Leuchtelement (d-Raum) des Leuchttasters für Schalttafeleinbau entfallen.

(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

durch vorstehende Normen abgedeckt.

Zertifizierungsstelle Explosionsschutz
Im Auftrag

Braunschweig, 13. September 2002



Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



1. E R G Ä N Z U N G

gemäß Richtlinie 94/9/EG Anhang III Ziffer 6

zur EG-Baumusterprüfbescheinigung PTB 02 ATEX 2129 X

Gerät: Leuchttaster für Schalttafeleinbau Typ 8018/3...-...-.
Kennzeichnung:  II 2G EEx md II C T6 bzw. EEx md ia II C T6

Hersteller: R. STAHL Schaltgeräte GmbH
Anschrift: Am Bahnhof 30
74638 Waldenburg (Württ), Deutschland

Beschreibung der Ergänzungen und Änderungen

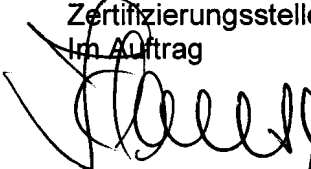
Der Leuchttaster für Schalttafeleinbau Typ 8018/3...-...- ist für den Einsatz im Gefahrenbereich Staub geeignet. Die Kennzeichnung wird entsprechend erweitert auf:

 II 2G/D EEx md IIC T6 bzw. EEx md ia IIC T6 IP 65 T 80 °C

Prüfbericht: PTB Ex 04-14195

Zertifizierungsstelle Explosionsschutz
Im Auftrag

Braunschweig, 05. August 2004


Dr.-Ing. U. Klausmeyer
Regierungsdirektor



EG-Konformitätserklärung
EC-Declaration Of Conformity
CE-Déclaration De Conformité

Doc No: 16362-1



PTB 02 ATEX 2129 X

Wir (we; nous)

R. STAHL Schaltgeräte GmbH, Am Bahnhof 30, D-74638 Waldenburg (Württ.)

erklären in alleiniger Verantwortung, daß das Produkt	Leuchtmelder für Schalttafeleinbau Typ 8018/3...
hereby declare in our sole responsibility, that the product	Illuminated push button for panel mounting Type 8018/3...
déclarons de notre seule responsabilité, que le produit	Bouton-poussoir lumineux pour encastrement Type 8018/3...

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen Dokumenten übereinstimmt
 which is the subject of this declaration, is in conformity with the following standard(s) or normative documents
 auquel cette déclaration se rapporte, est conforme aux norme (s) ou aux documents normatifs suivants

Bestimmungen der Richtlinie terms of the directive prescription de la directive	Titel und/oder Nr. sowie Ausgabedatum der Norm title and/or No. and date of issue of the standard titre et/ou No. ainsi que date d'émission des normes
94/9/EG: Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen 94/9/EC: Equipment and protective systems intended for use in potentially explosive atmospheres 94/9/CE: Appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles	EN 50014:1997 + A1 + A2 EN 50018:2000 EN 50019:2000 EN 50020:1994 EN 50028:1987
89/336/EWG: Elektromagnetische Verträglichkeit 89/336/EEC: Electromagnetic compatibility 89/336/CEE: Compatibilité électromagnétique	EN 60947-1:1999 EN 60947-5-1:1991 EN 60825-1:2001 EN 61000-6-2:2001 EN 50081-2:1994

Waldenburg, 19.09.2002	<i>U. Linnbach</i>	<i>J. P. ...</i>
Ort und Datum Place and date lieu et date	Leiter Entwicklung Head of Development Dept. Directeur Développement	Leiter Qualitätsmanagement Head of Quality Management Dept. Chef du Dept. Assurance de Qualité



EG-Baumusterprüfbescheinigung

- (1) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - **Richtlinie 94/9/EG**
- (2) EG-Baumusterprüfbescheinigungsnummer



PTB 99 ATEX 3103

- (4) Gerät: Abzweigdosen bzw. Klemmenkästen Typ 8118/...-...
- (5) Hersteller: R. Stahl Schaltgeräte GmbH
- (6) Anschrift: Bergstraße 2, D-74653 Künzelsau
- (7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.
- (8) Die Physikalisch-Technische Bundesanstalt bescheinigt als benannte Stelle Nr. 0102 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.


Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht PTB Ex 99-30041 festgelegt.

- (9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit
- | | | |
|----------------|----------------|----------------|
| EN 50 014:1997 | EN 50 019:1994 | EN 50 020:1994 |
|----------------|----------------|----------------|
- (10) Falls das Zeichen „X“ hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.
- (11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konzeption und Bau des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes.
- (12) Die Kennzeichnung des Gerätes muß die folgenden Angaben enthalten:

 **II 2 G EEx e II T6/T5 bzw. EEx ia/ib IIA/IIB/IIC T6/T5**

Zertifizierungsstelle Explosionsschutz
Im Auftrag

Braunschweig, 19. April 1999


Dr.-Ing. U. Engel
Regierungsdirektor



(13) **A n l a g e**

(14) **EG-Baumusterprüfbescheinigung PTB 99 ATEX 3103**

(15) Beschreibung des Gerätes

Abzweigdosen und Klemmenkästen aus Polyesterharz mit einem Oberflächenwiderstand $\geq 1\text{G}\Omega$, Typenreihe 8118/...-..., für ortsfeste Montage, mit eingebauten - gesondert bescheinigten - Reihen- oder Mantelklemmen für nichteigensichere oder - gesondert bescheinigte - eigensichere Stromkreise.

Kennzeichnung für die Zündschutzart

Bestückung mit Klemmen

- nur für nichteigensichere Stromkreise
- nur für eigensichere Stromkreise
- nur für eigensichere Stromkreise

EEx e II T6 bzw. T5 bei $T_{\text{amb}} \leq +55\text{ °C}$

EEx ia/ib IIC/IIB /IIA T6

EEx ia/ib IIC/IIB /IIA T5 bei $T_{\text{amb}} \leq +55\text{ °C}$

Technische Daten

Bemessungsspannung:

max. 1.100 V

(je nach Arbeitsspannungsbereich
der verwendeten Klemmen)

Bemessungsstrom, Leiterzahl und Leiterquerschnitt sind in den zugehörigen Beiblättern festgelegt.

Umgebungstemperaturbereich, max.:

$-50\text{ °C} \leq T_{\text{amb}} \leq +55\text{ °C}$

Berührungs-, Fremdkörper- und Wasserschutz:

mind. IP 54 nach EN 60 529: 1991

Hinweis

Die Schutzart - mindestens IP 54 - wird nur bei sachgerechter Verwendung der geprüften Dichtungen, Kabel- und Leitungseinführungen, sowie der Verschlussstopfen erreicht.

Hinweis des Herstellers "Nur mit feuchtem Tuch reinigen" ist zu beachten.

Die Eignung für geringe Umgebungstemperaturen ist durch eine gesonderte Kennzeichnung sichtbar. Es werden nur solche - gesondert bescheinigte - Dichtungen, Ein- und Anbauteile verwendet, die für diese Temperaturen geeignet sind. Weitere Hinweise des Herstellers sind zu beachten.

(16) Prüfbericht PTB Ex 99-30041 (bestehend aus 6 Seiten, Beschreibung und 2 Zeichnungen)

(17) Besondere Bedingungen nicht zutreffend

(18) Grundlegende Sicherheits- und Gesundheitsanforderungen durch Normen erfüllt

Zertifizierungsstelle Explosionsschutz

Braunschweig, 19. April 1999

Im Auftrag

Dr.-Ing. U. Engel
Regierungsdirektor




1. ERGÄNZUNG

gemäß Richtlinie 94/9/EG Anhang III Ziffer 6

zur EG-Baumusterprüfbescheinigung PTB 99 ATEX 3103

Gerät: Abzweigdosen bzw. Klemmenkästen Typ 8118/...-...

Kennzeichnung:  II 2 G EEx e II T6/T5 bzw. EEx ia/ib IIA/IIB/IIC T6/T5

Hersteller: R. STAHL Schaltgeräte GmbH

Anschrift: Am Bahnhof 30
74638 Waldenburg (Württ.)

Beschreibung der Ergänzungen und Änderungen

In die Abzweigdosen bzw. Klemmenkästen Typ 8118/...-... können - gesondert bescheinigte - Sicherungen in der Zündschutzart Vergußkapselung "m" eingebaut werden.

Das Gehäuse kann zusätzlich aus einem alternativen Polyesterharz gefertigt werden.

Die Kennzeichnung wird erweitert zu:

 II 2 G EEx em II T6/T5/T4 bzw. EEx ia/ib IIA/IIB/IIC T6/T5

Technische Daten

Bemessungsspannung:	bis	1100 V für Klemmenkasten ohne Sicherung
	bis	550 V für Klemmenkasten mit Sicherung
Bemessungsstrom:	max.	50 A
Anschlußquerschnitt:	max.	6 mm
Umgebungstemperaturbereich:.....	max.	-50 °C bis +55 °C

Bemessungsstrom, Leiterzahl und Leiterquerschnitt sind in den zugehörigen Beiblättern festgelegt.

Die Zusammensetzung des Zündschutzartkurzzeichens richtet sich nach den Zündschutzarten der jeweils verwendeten Komponenten.

Die Bemessungswerte sind Höchstwerte, die tatsächlichen elektrischen Werte werden von den eingebauten elektrischen Betriebsmitteln bestimmt. Der Hersteller legt im Rahmen dieser Grenzwerte bei Einhaltung der zutreffenden Normen und abhängig von Netzbedingungen, Betriebsart, Gebrauchskategorie, usw. die endgültigen Bemessungswerte fest.

Physikalisch-Technische Bundesanstalt

PTB

Braunschweig und Berlin

1. Ergänzung zur EG-Baumusterprüfbescheinigung PTB 99 ATEX 3103

Hinweise für Herstellung und Betrieb

Die maximale Anzahl der Leiter pro Gehäusegröße in Abhängigkeit vom Querschnitt und dem zulässigen Bemessungsstrom ist den beiliegenden Beiblättern zu entnehmen.

Da das Gehäusematerial einen Oberflächenwiderstand von 10^{13} Ohm hat, ist der Hinweis des Herstellers "Nur mit feuchtem Tuch reinigen" zu beachten.

Prüfbericht: PTB Ex 01-11021

Zertifizierungsstelle Explosionsschutz
Im Auftrag

Braunschweig, 22. März 2001



Dr.-Ing. U. Klausmeyer
Regierungsdirektor



2. E R G Ä N Z U N G

gemäß Richtlinie 94/9/EG Anhang III Ziffer 6

zur EG-Baumusterprüfbescheinigung PTB 99 ATEX 3103

Gerät: Abzweigdosen bzw. Klemmenkästen Typ 8118/...-...

Kennzeichnung:  II 2 G EEx em II T6/T5/T4 bzw. EEx ia/ib IIA/IIB/IIC, T6/T5

Hersteller: R. STAHL Schaltgeräte GmbH

Anschrift: Am Bahnhof 30, 74638 Waldenburg (Württ.), Deutschland

Beschreibung der Ergänzungen und Änderungen

Die Abzweigdosen bzw. Klemmenkästen Typ 8118/...-... mit einem Gehäuse aus Kunststoff können auch in Bereichen eingesetzt werden, in denen damit zu rechnen ist, dass eine explosionsfähige Atmosphäre aus Staub/Luft-Gemischen gelegentlich auftritt.

Die maximale Umgebungstemperatur wird auf +75 °C erhöht.

Die Abzweigdosen bzw. Klemmenkästen wurden nach den Normen EN 60079-0, EN 60079-7, EN 60079-11, EN 60079-18, EN 61241-0 und EN 61241-1 neu geprüft.

Dadurch ändert sich das Kennzeichen in:

 II 2 G Ex em II T6/T5/T4 bzw. Ex ia/ib IIA/IIB/IIC T6/T5

 II 2 D Ex tD A21 IP66 T 80 ° / T 95 ° C / T 130 ° C

Technische Daten

Bemessungsspannung: bis 1100 V für Klemmenkasten ohne Sicherung
 bis 550 V für Klemmenkasten mit Sicherung

Bemessungsstrom: max. 50 A

Anschlussquerschnitt: max. 6 mm

Umgebungstemperaturbereich:..... max. -50 °C bis +75 °C

Berührungs-, Fremdkörper-
 und Wasserschutz: mind. IP66 nach EN 60529

Bemessungsstrom, Leiterzahl und Leiterquerschnitt sind in den zugehörigen Beiblättern festgelegt.

Die Zusammensetzung des Zündschutzartkurzzeichens richtet sich nach den Zündschutzarten der jeweils verwendeten Komponenten.

Braunschweig und Berlin

2. Ergänzung zur EG-Baumusterprüfbescheinigung PTB 99 ATEX 3103

Die Bemessungswerte sind Höchstwerte, die tatsächlichen elektrischen Werte werden von den eingebauten elektrischen Betriebsmitteln bestimmt. Der Hersteller legt im Rahmen dieser Grenzwerte bei Einhaltung der zutreffenden Normen und abhängig von Netzbedingungen, Betriebsart, Gebrauchskategorie, usw. die endgültigen Bemessungswerte fest.

Hinweise für Herstellung und Betrieb

Die maximale Anzahl der Leiter pro Gehäusegröße in Abhängigkeit vom Querschnitt und dem zulässigen Bemessungsstrom ist den beiliegenden Beiblättern zu entnehmen.

Da das Gehäusematerial einen Oberflächenwiderstand von 10^{13} Ohm hat, ist der Hinweis des Herstellers "Nur mit feuchtem Tuch reinigen" zu beachten.

Angewandte Normen

EN 60079-0:2004

EN 60079-7:2003

EN 60079-11:2007

EN 60079-18:2004

EN 61241-0:2006

EN 61241-1:2004

Prüfbericht: PTB Ex 07-17090

Braunschweig, 26. März 2007

Zertifizierungsstelle Explosionsschutz
Im Auftrag

Dr.-Ing. U. Klausmeyer
Direktor und Präsident


BEIBLATT 1



zur EG-Baumusterprüfbescheinigung PTB 99 ATEX 3103

Bestückung der Abzweigdosen Typ 8118/111 bzw. Typ 8118/113 und der Klemmenkästen Typ 8118/112 bzw. Typ 8118/114

Maximal zulässiger Dauerstrom der Klemme bzw. maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Leiterquerschnitt und der Anzahl der belasteten Klemmen, für die Temperaturklasse T6 bei $T_a \leq 40 \text{ °C}$ bzw. T5 bei $T_a \leq 55 \text{ °C}$ ⁴⁾.

Abzweigdosen Typ 8118/111 bzw. Typ 8118/113 ⁴⁾

Anzahl der belasteten Klemmen	zul. Bemessungsstrom in A bei Leiterquerschnitt		
	1,5 mm ²	2,5 mm ²	4 mm ²
5	13	18	24
4	15	19	25
≤ 3	16	20	25

Klemmenkästen Typ 8118/112 bzw. Typ 8118/114 ⁴⁾

Strom in A	Anzahl der Leiter ¹⁾ bei Leiterquerschnitt			
	1,5 mm ²	2,5 mm ²	4 mm ²	
3	16			2)
6				
10		12	12	3)
16	6			
20	-	6		
25	-	-	8	
	8	6	6	

max. Klemmenanzahl in Abhängigkeit vom Querschnitt bzw. max. zul. Leiterquerschnitt der eingebauten Klemmen

PTB Ex 01 - 11021



3. 8. 00

R. STAHL SCHALTGERÄTE GMBH
Bergstraße 2
D 74653 Künzelsau

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken, Schutzleiter und Sicherungen werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	1,5	10	10 (von 16)	= 63 %
	2,5	16	4 (von 12)	= 33 %
			Summe	= <u>96 %</u> < 100 %

- 4) Bei Einbau von Sicherungen ≤ 2 A Temperaturklasse „T6“
Bei Einbau von Sicherungen > 2 A bis ≤ 5A... Temperaturklasse „T5“
Bei Einbau von Sicherungen ≤ 6,3 A..... Temperaturklasse „T4“

i.V. i.V.
W. B. ...



BEIBLATT 2



zur EG-Baumusterprüfbescheinigung PTB 99 ATEX 3103

Bestückung der Abzweigdosen Typ 8118/121 bzw. Typ 8118/123 und der Klemmenkästen Typ 8118/122 bzw. Typ 8118/124

Maximal zulässiger Dauerstrom der Klemme bzw. maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Leiterquerschnitt und der Anzahl der belasteten Klemmen, für die Temperaturklasse T6 bei $T_a \leq 40 \text{ °C}$ bzw. T5 bei $T_a \leq 55 \text{ °C}$ ⁴⁾:

Abzweigdosen Typ 8118/121 bzw. Typ 8118/123 ⁴⁾

Anzahl der belasteten Klemmen	zul. Bemessungsstrom in A bei Leiterquerschnitt			
	1,5 mm ²	2,5 mm ²	4 mm ²	6 mm ²
7	13	17	24	32
6	14	18	25	33
5		20		35
≤ 4	16			

PTB Ex 01 - 11021

Klemmenkästen Typ 8118/122 bzw. Typ 8118/124 ⁴⁾

Strom in A	Anzahl der Leiter ¹⁾ bei Leiterquerschnitt				
	1,5 mm ²	2,5 mm ²	4 mm ²	6 mm ²	
3	26				2)
6					
10		26			
16	6	14	22	20	3)
20	-	6			
25	-	-	8		
35	-	-	-	4	
	13	13	11	10	

max. Klemmenanzahl in Abhängigkeit vom Querschnitt bzw. max. zul. Leiterquerschnitt der eingebauten Klemmen



Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken, Schutzleiter und Sicherungen werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel: (allgemein)	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
	1,5	10	5 (von 26)	= 19 %
	2,5	16	6 (von 14)	= 43 %
	4,0	20	8 (von 22)	= 37 %
			Summe	= 99 % < 100 %

- 4) Bei Einbau von Sicherungen ≤ 2 A Temperaturklasse „T6“
Bei Einbau von Sicherungen > 2 A bis ≤ 5A... Temperaturklasse „T5“
Bei Einbau von Sicherungen ≤ 6,3 A..... Temperaturklasse „T4“

3. 8. 00

R. STAHL SCHALTGERÄTE GMBH
Bergstraße 2
D 74653 Künzelsau

Handwritten signatures and initials



BEIBLATT 3



zur EG-Baumusterprüfbescheinigung PTB 99 ATEX 3103

Bestückung der Abzweigdosen Typ 8118/131 bzw. Typ 8118/133 und der Klemmenkästen Typ 8118/132 bzw. Typ 8118/134

Maximal zulässiger Dauerstrom der Klemme bzw. maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Leiterquerschnitt und der Anzahl der belasteten Klemmen, für die Temperaturklasse T6 bei $T_a \leq 40 \text{ °C}$ bzw. T5 bei $T_a \leq 55 \text{ °C}$ ⁴⁾:

Abzweigdosen Typ 8118/131 bzw. Typ 8118/133 ⁴⁾

Anzahl der belasteten Klemmen	zul. Bemessungsstrom in A bei Leiterquerschnitt				
	1,5 mm ²	2,5 mm ²	4 mm ²	6 mm ²	10 mm ²
7	13	17	24	32	44
6	14	18	25	33	46
5					
≤ 4	16	20		35	50

Klemmenkästen Typ 8118/132 bzw. Typ 8118/134 ⁴⁾

Strom in A	Anzahl der Leiter ¹⁾ bei Leiterquerschnitt					
	1,5 mm ²	2,5 mm ²	4 mm ²	6 mm ²	10 mm ²	
3						2)
6	36					
10	26	36				
16	6	18	32	24		3)
20	-	6	22			
25	-	-	8			
35	-	-	-	6		
50	-	-	-	-	4	
	18	18	16	12	10	

max. Klemmenanzahl in Abhängigkeit vom Querschnitt bzw. max. zul. Leiterquerschnitt der eingebauten Klemmen

Anmerkungen

- Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken, Schutzleiter und Sicherungen werden nicht gezählt.
- beliebig zusätzlich
- Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

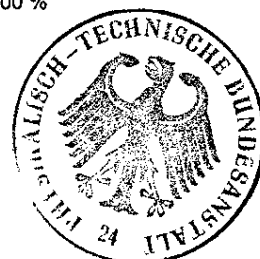
Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	1,5	10	2 (von 26)	= 8 %
	2,5	16	10 (von 18)	= 55 %
	4,0	20	8 (von 27)	= 30 %
			Summe	= 93 % < 100 %

- Bei Einbau von Sicherungen ≤ 2 A Temperaturklasse „T6“
Bei Einbau von Sicherungen > 2 A bis ≤ 5A... Temperaturklasse „T5“
Bei Einbau von Sicherungen ≤ 6,3 A..... Temperaturklasse „T4“

3. 8. 00
R. STAHL SCHALTGERÄTE GMBH
Bergstraße 2
D 74653 Künzelsau

W. J. ...
i.V. ...

PTB Ex 01 - 11021



Physikalisch-Technische Bundesanstalt

Braunschweig and Berlin

(1) EC-TYPE-EXAMINATION CERTIFICATE

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**



(3) EC Type Examination Certificate Number

PTB 99 ATEX 3103

(4) Equipment: Junction and Terminal Boxes Type 8118/...-...

(5) Manufacturer: R. Stahl Schaltgeräte GmbH

(6) Address: Bergstraße 2, D-74653 Künzelsau

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 99-30041.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50 014:1997

EN 50 019:1994

EN 50 020:1994

(10) If "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type-examination Certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

(12) The marking of the equipment shall include the following:

 **II 2 G EEx e II T6/T5 or EEx ia/ib IIA/IIB/IIC T6/T5**

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, 19 April 1999

signed: U. Engel *L.S.*

Dr.-Ing. U. Engel
Regierungsdirektor

Physikalisch-Technische Bundesanstalt

Braunschweig and Berlin

(13) SCHEDULE

(14) EC-Type Examination Certificate PTB 99 ATEX 3103

(15) Description of the equipment

Junction and terminal boxes of polyester resin with a surface resistance $\geq 1 \text{ G}\Omega$, Type series 8118/...-..., for fixed installation, with built-in - separately certified - line-up or hood-type terminals for non-intrinsically safe or - separately certified - intrinsically safe circuits.

Marking of explosion protection

Fitting with terminals

- | | |
|--|--|
| - only for non-intrinsically safe circuits | EEx e II T6 or T5 for $T_{\text{amb}} \leq + 55 \text{ }^\circ\text{C}$ |
| - only for intrinsically safe circuits | EEx ia/ib IIC/IIB /IIA T6 |
| - only for intrinsically safe circuits | EEx ia/ib IIC/IIB /IIA T5 for $T_{\text{amb}} \leq +55 \text{ }^\circ\text{C}$ |

Technical data

Rated voltage:

max. 1100 V
(depending on the operating voltage range of the terminals used)

Rated current, number of conductors and conductor cross section are determined in the associated additional sheets.

Ambient temperature range, max.:

$-50 \text{ }^\circ\text{C} \leq T \leq +55 \text{ }^\circ\text{C}$

Contact, foreign particles and water protection

min. IP 54 to EN 60 529: 1991

Note

The degree of protection - at least IP 54 - is achieved only when the tested gaskets, cable glands and stopping plugs are used properly.

Instruction of the manufacturer "Clean only with wet cloth" is to be followed.

The suitability for low ambient temperatures is visible by special marking. Only such separately certified sealing gaskets and built-in and built-on components, which are suitable for these temperatures, are used. Additional instructions of the manufacturer are to be followed.

(16) Test report PTB Ex 99-30041 (consisting of 6 pages, description and 2 drawings)

(17) Special requirements not applicable

(18) Essential health and safety requirements covered by standards

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, 19 April 1999

signed: U. Engel L.S.
Dr.-Ing. U. Engel
Regierungsdirektor

1st SUPPLEMENT
according to Directive 94/9/EC Annex III.6
to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 3103
(Translation)

Equipment: Branching boxes or terminal boxes, type 8118/...-...

Marking:  **II 2 G EEx e II T6/T5 or EEx ia/ib IIA/IIB/IIC T6/T5**

Manufacturer: R. STAHL Schaltgeräte GmbH

Address: Am Bahnhof 30
74638 Waldenburg (Württ.)

Description of supplements and modifications

The branching boxes or terminal boxes of type 8118/...-... can be used to house fuses designed to type of protection Encapsulation "m", which are covered by a separate certificate.

The enclosure may in addition be made from an alternative polyester resin.

The marking is extended to read

 **II 2 G EEx em II T6/T5/T4 or EEx ia/ib IIA/IIB/IIC T6/T5**

Technical data

Rated voltage: up to 1100 V for terminal box without fuse
up to 550 V for terminal box with fuse

Rated current: max. 50 A

Conductor cross section: max. 6 mm

Ambient temperatures:..... max. -50 °C to +55 °C

Current rating, number of conductors and conductor size are defined in the relevant specification sheets.

The composition of the protection symbol will be based on the types of protection of components actually used.

The ratings represent maximum values, actual values will be subject to the electrical equipment used from case to case. Depending on the system conditions, the mode of operation, the utilization category, etc., the manufacturer will specify the definitive ratings which will be within the range of these limiting values and will comply with the relevant standards.

Braunschweig und Berlin

1st SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 3103

Notes for installation and use

The maximum number of conductors that can be used for each enclosure size is subject to the cross section and the admissible current rating and is shown in the attached specification sheets.

The surface resistance of the material used for the enclosure is 10^{13} ohms. Due regard shall, therefore, be given to the note "to be cleaned with moist cloth only".

Test report: PTB Ex Ex 01-11021

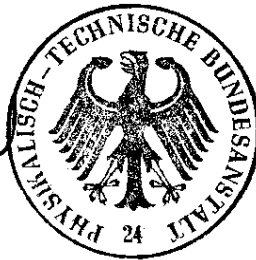
Zertifizierungsstelle Explosionsschutz

Braunschweig, March 22, 2001

By order:



Dr.-Ing. U. Klausmeyer
Regierungsdirektor



2nd SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 3103

(Translation)

Equipment: Branching / terminal boxes, type 8118/...-...

Marking:  **II 2 G EEx em II T6/T5/T4 and EEx ia/ib IIA/IIB/IIC, T6/T5**

Manufacturer: R. STAHL Schaltgeräte GmbH

Address: Am Bahnhof 30, 74638 Waldenburg (Württ.), Germany

Description of supplements and modifications

The branching / terminal boxes, type 8118/...-..., with plastic enclosure, may also be employed in areas in which a potentially explosive atmosphere as a mixture of dust and air can occasionally form.

The maximum ambient temperature is increased to +75 °C.

The branching / terminal boxes have been re-inspected on the basis of Standards EN 60079-0, EN 60079-7, EN 60079-11, EN 60079-18, EN 61241-0 and EN 61241-1.

The marking will thus change to:

 **II 2 G Ex em II T6/T5/T4 and Ex ia/ib IIA/IIB/IIC T6/T5**

 **II 2 D Ex tD A21 IP66 T 80 ° / T 95 °C / T 130 °C**

Technical data

Rated voltage: up to 1100 V for terminal boxes without fuse
up to 550 V for terminal boxes with fuse

Rated current: max. 50 A

Conductor size: max. 6 mm

Ambient temperature range: max. -50 °C to +75 °C

Protection against contact, foreign

bodies and water: IP66 in accordance with EN 60529 as a minimum

Rated current, number of conductors and conductor size are specified in the corresponding companion sheets.

The composition of the protection symbol is based on the types of protection of the components actually used.

Sheet 1/2

Rated values are maximum values, the actual electrical values are determined by mounted electrical apparatus. Within these limiting values complying with the appropriate standards the manufacturer specifies the final limiting values dependent on power supply specifications, operating mode, utilization category, etc.

Notes for manufacturing and operation

For the maximum number of conductors for each enclosure size, which is subject to the cross section and the permissible continuous current, reference is made to the attached companion sheets.

Since the surface resistance of the material used for the enclosure is 10^{13} ohm, due regard must be given to the warning "Only use moist cloth for cleaning!" provided by the manufacturer.

Applied standards

EN 60079-0:2004

EN 60079-7:2003

EN 60079-11:2007

EN 60079-18:2004

EN 61241-0:2006

EN 61241-1:2004

Test report: PTB Ex 07-17090

Zertifizierungsstelle Explosionsschutz

Braunschweig, March 26, 2007

By order:



Dr.-Ing. U. Gaupe
Direktor und Professor



Supplementary Sheet 1

to EC-Type Examination Certificate PTB 99 ATEX 3103

Fitting of the junction boxes Type 8118/111 or Type 8118/113 and terminal boxes Type 8118/112 or Type 8118/114

Maximum permissible continuous current of the terminal or maximum number of conductors ¹⁾ depending on the conductor size and the number of loaded terminals, for the temperature class T6 at $T_a \leq 40 \text{ °C}$ or T5 at $T_a \leq 55 \text{ °C}$ ⁴⁾:

junction boxes Type 8118/111 or Type 8118/114 ⁴⁾

number of loaded terminals	permissible rated current in A at conductor size		
	1,5 mm ²	2,5 mm ²	4 mm ²
5	13	18	24
4	15	19	25
≤ 3	16	20	25

terminal boxes Type 8118/112 or Type 8118/114 ⁴⁾

current in A	number of conductors ¹⁾ at conductor size			
	1,5 mm ²	2,5 mm ²	4 mm ²	
3	16			2)
6				
10		12	12	3)
16	6			
20	-	6		
25	-	-	8	
	8	6	6	
max. number of terminals depending on the cross section or the max. permissible conductor size of the terminals installed				

Note

1) Every entered conductor and every internal connection wire counts as conductor. Bridges and earth conductors are not counted.

2) additional conductors optional

3) When applying these tabular values, simultaneity factors or load factors according to IEC 439 may be considered. Mixed equipment with circuits with different cross sections and currents is possible by proportional utilization of the different tabular values:

example:	cross section / mm ²	current / A	number of conductors	utilization
(generally)	1,5	10	10 (of 16)	= 63 %
	2,5	16	4 (of 12)	= 33 %
			total	= 96 % < 100 %

4) When mounting fuses ≤ 2 A temperature class „T6“
 When mounting fuses > 2 A bis ≤ 5A temperature class „T5“
 When mounting fuses ≤ 6,3 A temperature class „T4“

Supplementary Sheet 2



to EC-Type Examination Certificate PTB 99 ATEX 3103

Fitting of the junction boxes Type 8118/121 or Type 8118/123 and terminal boxes Type 8118/122 or Type 8118/124

Maximum permissible continuous current of the terminal or maximum number of conductors ¹⁾ depending on the conductor size and the number of loaded terminals, for the temperature class T6 at $T_a \leq 40 \text{ °C}$ or T5 at $T_a \leq 55 \text{ °C}$ ⁴⁾.

junction boxes Type 8118/121 or Type 8118/123 ⁴⁾

number of loaded terminals	permissible rated current in A at conductor size			
	1,5 mm ²	2,5 mm ²	4 mm ²	6 mm ²
7	13	17	24	32
6	14	18	25	33
5		20		35
≤ 4	16			

terminal boxes type 8118/122 or Type 8118/124 ⁴⁾

current in A	number of conductors ¹⁾ at conductor size				
	1,5 mm ²	2,5 mm ²	4 mm ²	6 mm ²	
3	26				2)
6					
10		26			
16	6	14	22	20	3)
20	-	6			
25	-	-	8		
35	-	-	-	4	
	13	13	11	10	
max. number of terminals depending on the cross section or the max. permissible conductor size of the terminals installed					

Note

1) Every entered conductor and every internal connection wire counts as conductor. Bridges and earth conductors are not counted.

2) additional conductors optional

3) When applying these tabular values, simultaneity factors or load factors according to IEC 439 may be considered.
Mixed equipment with circuits with different cross sections and currents is possible by proportional utilization of the different tabular values:

example:	cross section / mm ²	current / A	number of conductors	utilization
(generally)	1,5	10	10 (of 16)	= 63 %
	2,5	16	4 (of 12)	= 33 %
			total	= 96 % < 100 %

4) When mounting fuses ≤ 2 A temperature class „T6“
When mounting fuses > 2 A bis ≤ 5A temperature class „T5“
When mounting fuses ≤ 6,3 A temperature class „T4“

Supplementary Sheet 3



to EC-Type Examination Certificate PTB 99 ATEX 3103

Fitting of the junction boxes Type 8118/131 or Type 8118/133 and terminal boxes Type 8118/132 or Type 8118/134

Maximum permissible continuous current of the terminal or maximum number of conductors ¹⁾ depending on the conductor size and the number of loaded terminals, for the temperature class T6 at $T_a \leq 40 \text{ °C}$ or T5 at $T_a \leq 55 \text{ °C}$ ⁴⁾:

junction boxes Type 8118/131 or Type 8118/133 ⁴⁾

number of loaded terminals	permissible rated current in A at conductor size				
	1,5 mm ²	2,5 mm ²	4 mm ²	6 mm ²	10 mm ²
7	13	17	24	32	44
6	14	18	25	33	46
5					49
≤ 4	16	20		35	50

terminal boxes Type 8118/132 or Type 8118/134 ⁴⁾

current in A	number of conductors ¹⁾ at conductor size					
	1,5 mm ²	2,5 mm ²	4 mm ²	6 mm ²	10 mm ²	
3						2)
6	36					
10	26	36				
16	6	18	32	24	20	3)
20	-	6	22			
25	-	-	8			
35	-	-	-	6		
50	-	-	-	-	4	
	18	18	16	12	10	
	max. number of terminals depending on the cross section or the max. permissible conductor size of the terminals installed					

Note

1) Every entered conductor and every internal connection wire counts as conductor. Bridges and earth conductors are not counted.

2) additional conductors optional

3) When applying these tabular values, simultaneity factors or load factors according to IEC 439 may be considered. Mixed equipment with circuits with different cross sections and currents is possible by proportional utilization of the different tabular values:

example:	cross section / mm ²	current / A	number of conductors	utilization
(generally)	1,5	10	10 (of 16)	= 63 %
	2,5	16	4 (of 12)	= 33 %
			total	= 96 % < 100 %

4) When mounting fuses ≤ 2 A temperature class „T6“
 When mounting fuses > 2 A bis ≤ 5A temperature class „T5“
 When mounting fuses ≤ 6,3 A temperature class „T4“

EG-Konformitätserklärung
EC-Declaration of Conformity
Déclaration de Conformité CE



Wir; we; nous

R. STAHL Schaltgeräte GmbH, Am Bahnhof 30, 74638 Waldenburg, Germany

8118

erklären in alleiniger Verantwortung, dass das Produkt
hereby declare in our sole responsibility, that the product
déclarons, sous notre seule responsabilité, que le produit

Abzweigdose und Klemmenkasten
Junction box and terminal box
Boîte de dérivation et de raccordement

mit der EG-Baumusterprüfbescheinigung:
under EC-Type Examination Certificate:
avec Attestation d'examen CE de type:

PTB 99 ATEX 3103
(Physikalisch-Technische Bundesanstalt
Bundesallee 100, 38116 Braunschweig)

auf das sich diese Erklärung bezieht, mit den folgenden Normen oder normativen Dokumenten übereinstimmt
which is the subject of this declaration, is in conformity with the following standards or normative documents
auquel cette déclaration se rapporte, est conforme aux normes ou aux documents normatifs suivants

Bestimmungen der Richtlinie <i>Terms of the directive</i> <i>Prescription de la directive</i>	Nummer sowie Ausgabedatum der Norm <i>Number and date of issue of the standard</i> <i>Numéro ainsi que date d'émission de la norme</i>
94/9/EG: ATEX-Richtlinie 94/9/EC: ATEX Directive 94/9/CE: Directive ATEX	EN 60079-0: 2006 EN 60079-7: 2007 EN 60079-11: 2007 EN 60079-18: 2004 EN 61241-0: 2006 EN 61241-1: 2004
2004/108/EG: EMV-Richtlinie 2004/108/EC: EMC Directive 2004/108/CE: Directive CEM	

Waldenburg, 20. Sept. 2010

Ort und Datum
Place and date
Lieu et date

i.V.

J.-P. Rückgauer
Leiter Entwicklung und Technik
Director Design and Technology
Directeur Développement et Technique

i.V.

Dr. S. Jung
Leiter Qualitätsmanagement
Director Quality Management Dept.
Directeur Dép. Assurance de Qualité



(1) EG-Baumusterprüfbescheinigung

- (2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - **Richtlinie 94/9/EG**



- (3) **TÜV 99 ATEX 1471**

- (4) Gerät: Impulsauswertegerät Typ KF**-UF*-Ex*.*
 (5) Hersteller: Pepperl + Fuchs GmbH
 (6) Anschrift: D-68307 Mannheim
 Königsberger Allee 87

- (7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.

- (8) Der TÜV Hannover/Sachsen-Anhalt e.V., TÜV CERT-Zertifizierungsstelle, bescheinigt als benannte Stelle Nr. 0032 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.

Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht Nr. 99/PX19690 festgelegt.

- (9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit

EN 50 014:1997

EN 50 020:1994

- (10) Falls das Zeichen "X" hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.

- (11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf die Konzeption und den Bau des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes.

- (12) Die Kennzeichnung des Gerätes muß die folgenden Angaben enthalten:

 II (1) G D [EEx ia] IIC

TÜV Hannover/Sachsen-Anhalt e.V.
 TÜV CERT-Zertifizierungsstelle
 Am TÜV 1
 D-30519 Hannover

Hannover, 08.11.1999

Glücksel

Der Leiter





(13)

ANLAGE

(14) **EG-Baumusterprüfbescheinigung Nr. TÜV 99 ATEX 1471**

(15) Beschreibung des Gerätes

Das Impulsauswertegerät Typ KF**-UF*-Ex*.* dient zur Impulsauswertung angeschlossener Geber, die sich innerhalb des explosionsgefährdeten Bereiches befinden dürfen. Das Impulsauswertegerät muß außerhalb des explosionsgefährdeten Bereiches errichtet werden. Die höchstzulässige Umgebungstemperatur beträgt 60°C.

Elektrische Daten

Versorgungsstromkreis (Klemmen 23, 24) oder über Power Rail	Nennspannungen:	
	U = 20 V .. 90 V DC	U _m = 125 DC oder
	U = 48 V .. 253 V AC	U _m = 253 V AC
	U = 20 V .. 30 V DC,	U _m = 40 V DC

Stromausgang (Klemmen 7, 8)	I = 0/4 .. 20 mA, R _{max} = 650 Ω,	U _m = 40 V
--------------------------------	---	-----------------------

Kontaktstromkreise (Klemmen 10, 11, 12 und 16, 17, 18)	Wechselspannung	Gleichspannung
	U = 253 V	U = 40 V
	I = 2 A	I = 2 A
	P = 506 W	P = 80 W

Schaltausgang (Klemmen 19, 20, 21)	U = 40 V, I = 50 mA	U _m = 40 V
---------------------------------------	---------------------	-----------------------

Anlaufüberbrückung (Klemmen 13, 14, 15)	passiv	U _m = 40 V
--	--------	-----------------------

Schnittstelle RS232 (Klinkenbuchse)		U _m = 40 V
--	--	-----------------------

Eingangsstromkreise (Klemmen 1, 3 bzw. 4, 6)	in Zündschutzart Eigensicherheit EEx ia IIC/IIB/IIA	
	Höchstwerte	
	je Eingang:	bzw. Parallelschaltung
	U _o = 10,1 V	U _o = 10,1 V
	I _o = 13 mA	I _o = 26 mA
	P _o = 34 mW	P _o = 68 mW
R _i = 758 Ω	R _i = 379 Ω	
Kennlinie: linear		
Die wirksame innere Induktivität und Kapazität ist vernachlässigbar klein.		

	je Eingang		
	EEx ia IIA	EEx ia IIB	EEx ia IIC
L _o	1 H	730 mH	195 mH
C _o	93 µF	19,4 µF	2,8 µF

Anlage zur EG-Baumusterprüfbescheinigung Nr. TÜV 99 ATEX 1471

	Eingänge parallel		
	EEx ia IIA	EEx ia IIB	EEx ia IIC
L_o	350 mH	170 mH	46 mH
C_o	93 μ	19,4 μ F	2,8 μ F

Die vorgenannten Höchstwerte der äußeren Reaktanzen gelten nur, sowie das gleichzeitige Auftreten der äußeren Induktivität und Kapazität nicht betrachtet werden muß (z.B. bei Leitungen).

Beim gleichzeitigen Auftreten von Kapazität und Induktivität in konzentrierter Form sind die höchstzulässigen Werte der folgenden Tabelle zu entnehmen:

	je Eingang		
	EEx ia IIA	EEx ia IIB	EEx ia IIC
L_o	20 mH	10 mH	5 mH
C_o	3,0 μ F	1,5 μ F	0,5 μ F

	Eingänge parallel		
	EEx ia IIA	EEx ia IIB	EEx ia IIC
L_o	20 mH	10 mH	5 mH
C_o	3,0 μ F	1,5 μ F	0,5 μ F

Die Eingangsstromkreise sind von allen übrigen Stromkreisen bis zu einem Scheitelwert der Nennspannung von 375 V sicher galvanisch getrennt.

(16) Prüfungsunterlagen sind im Prüfbericht Nr.: 99/PX19690 aufgelistet.

(17) Besondere Bedingung

keine

(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

keine zusätzlichen



Translation

EC-TYPE EXAMINATION CERTIFICATE



- (1) **EC-TYPE EXAMINATION CERTIFICATE**
- (2) Equipment or Protective System intended for use in potentially explosive atmospheres - **Directive 94/9/EC**
- (3) EC-Type Examination Certificate Number

TÜV 99 ATEX 1471

- (4) Equipment or Protective System: Impulse Evaluating Device Type KF**-UF*-Ex**
- (5) Manufacturer: Pepperl + Fuchs GmbH
- (6) Address: Königsberger Allee 87
D – 68307 Mannheim

- (7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- (8) The TÜV Hannover/Sachsen-Anhalt e.V., TÜV Certification Body N° 0032 in accordance with Article 9 of the Council Directive 94/9/EC of March 23, 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report N° 99/PX19690.

- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50 014:1997

EN 50 020:1994

- (10) If the sign "X" is placed after the certification number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.
- (12) The marking of the equipment or protective system shall include the following:

 **II (1) G D [EEEx ia] IIC**

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Hannover, 1999-11-08

Head of the
Certification Body





SCHEDULE

(13)

(14) **EC-TYPE EXAMINATION CERTIFICATE N° TÜV 99 ATEX 1471**

(15) Description of equipment or protective system

The impulse evaluating device type KF**-UF*-Ex*.* is used for the evaluation of impulses of connected transmitter. The impulse evaluating device is not allowed to be installed to be installed in the potentially explosive area.

The highest permissible ambient temperature is 60°C.

Electrical data

Supply circuit (Terminal 23, 24) or via Power Rail	nominal voltage:	
	U = 20 V .. 90 V d.c.	U _m = 125 d.c. or
	U = 48 V .. 253 V a.c.	U _m = 253 V a.c.
	U = 20 V .. 30 V d.c.	U _m = 40 V d.c.

Current output (terminals 7, 8)	I = 0/4 .. 20 mA, R _{max} = 650 Ω,	U _m = 40 V
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Contact circuits (terminals 10, 11, 12 and 16, 17, 18)	alternating voltage	direct voltage
	U = 253 V	U = 40 V
	I = 2 A	I = 2 A
	P = 506 W	P = 80 W

Output switched (terminals 19, 20, 21)	U = 40 V, I = 50 mA	U _m = 40 V
---	---------------------	-----------------------

Start up bridging (terminals 13, 14, 15)	passive	U _m = 40 V
---	---------	-----------------------

Interface RS232 (jacked)		U _m = 40 V
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Input circuit (terminals 1, 3 resp. 4, 6)	in type of protection "Intrinsic Safety" EEx ia IIC/IIB/IIA maximum values:
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input p.a.:	parallel wiring resp.:
U _o = 10,1 V	U _o = 10,1 V
I _o = 13 mA	I _o = 26 mA
P _o = 34 mW	P _o = 68 mW
R _i = 758 Ω	R _i = 379 Ω

characteristic line: linear

The effective internal inductance and capacitance is negligibly small.

	per input		
	EEx ia IIA	EEx ia IIB	EEx ia IIC
L _o	1 H	730 mH	195 mH
C _o	93 μF	19,4 μF	2,8 μF

	input, parallel		
	EEx ia IIA	EEx ia IIB	EEx ia IIC
L _o	350 mH	170 mH	46 mH
C _o	93 µF	19,4 µF	2,8 µF

The above mentioned values of the outer reactances apply only, on condition that the simultaneous appearance of the outer inductance and capacitance does not need to be considered (e.g. in case of lines).

In the case of simultaneous appearance capacitance and inductance in concentrated form the permissible maximum values have to be taken from the following table:

	per Input		
	EEx ia IIA	EEx ia IIB	EEx ia IIC
L _o	20 mH	10 mH	5 mH
C _o	3,0 µF	1,5 µF	0,5 µF

	Input, parallel		
	EEx ia IIA	EEx ia IIB	EEx ia IIC
L _o	20 mH	10 mH	5 mH
C _o	3,0 µF	1,5 µF	0,5 µF

The input circuits are safely galvanically separated from all other circuits up to a peak crest value of the nominal voltage of 375 V.

(16) Test documents are listed in the test report N° 99/19690.

(17) Special condition for safe use

none

(18) Essential Health and Safety Requirements

no additional ones

1. E R G Ä N Z U N G

zur Bescheinigungsnummer: **TÜV 99 ATEX 1471**
 Gerät: Impulsauswertegerät Typ KF**-UF*-Ex*.*
 Hersteller: **Pepperl + Fuchs GmbH**
 Anschrift: Königsberger Allee 87
 68307 Mannheim
 Auftragsnummer: 8000553321
 Ausstellungsdatum: 27.10.2006

Änderungen:

Das Impulsauswertegerät Typ KF**-UF*-Ex*.* darf künftig auch entsprechend den im Prüfbericht aufgelisteten Unterlagen gefertigt werden. Die Änderungen betreffen den Einsatz einer zusätzlichen Leiterplatte für die Stromversorgung sowie die Änderung der bereits verwendeten Leiterplatten.

Das Gerät darf künftig auch in Bereichen verwendet werden, die den Einsatz von Geräten der Gruppe I erfordern. Die entsprechende Kennzeichnung wurde ergänzt.

Die elektrischen Daten wurden angepasst.

Der zulässige Umgebungstemperaturbereich beträgt -20 °C bis +60 °C.

Elektrische Daten

Versorgungsstromkreis
(Klemmen 23, 24) U = 20 .. 30 V DC , U_m = 40 V (KFD2)

U = 20 .. 90 V DC , U_m = 253 V (KFU8)
 oder 48 .. 253 V AC

oder über Power Rail
(Klemmen PR: 1, 2) U = 20 .. 30 V DC , U_m = 40 V (nur KFD2)

Stromausgang
(Klemmen 7, 8) I = 0/4 .. 20 mA , U_m = 40 V
 R_{max} = 650 Ω

Kontaktstromkreise (Klemmen 10, 11, 12 und 16, 17, 18)	Wechselspannung	Gleichspannung
	U = 253 V AC	U = 40 V
	I = 2 A	I = 2 A
	P = 500 W	P = 80 W
	cos φ ≥ 0,7	ohmsche Last

Transistorausgänge
(Klemmen 19, 20 und 20, 21) U_m = 40 V

Kontrolleingänge
(Klemmen 13, 14 und 14, 15) U_m = 40 V

Schnittstelle RS232
(3.5 mm Klinkebuchse) U_m = 40 V

1. Ergänzung zur Bescheinigungsnummer TÜV 99 ATEX 1471

Schnittstelle RS485
(Klemmen PR: 3, 5)

$U_m = 40 \text{ V}$

Summenfehler
(Klemme PR: 4)

$U_m = 40 \text{ V}$

Eingangsstromkreise
(Klemmen 1, 3 bzw. 4, 6)

in Zündschutzart Eigensicherheit EEx ia IIC
bzw. EEx ia I

Höchstwerte:

je Eingang

2 Eingänge parallel

$U_o = 10,1 \text{ V}$

$U_o = 10,1 \text{ V}$

$I_o = 13,5 \text{ mA}$

$I_o = 27 \text{ mA}$

$P_o = 34 \text{ mW}$

$P_o = 68 \text{ mW}$

$R_i = 758 \text{ } \Omega$

$R_i = 379 \text{ } \Omega$

Kennlinie: linear

Wirksame innere Induktivität: $L_i =$ vernachlässigbar klein

Wirksame innere Kapazität: $C_i =$ vernachlässigbar klein

je Eingang				
	EEx ia IIC	EEx ia IIB	EEx ia IIA	EEx ia I
L_o	195 mH	730 mH	1000 mH	2120 mH
C_o	2,87 μF	19,4 μF	93 μF	79 μF
2 Eingänge parallel				
	EEx ia IIC	EEx ia IIB	EEx ia IIA	EEx ia I
L_o	46 mH	170 mH	380 mH	600 mH
C_o	2,87 μF	19,4 μF	93 μF	79 μF

Die vorgenannten Höchstwerte der äußeren Reaktanzen gelten nur, wenn das gleichzeitige Auftreten von äußerer Induktivität und Kapazität nicht betrachtet werden muss (z.B. bei Leitungen).

Bei gleichzeitigem Auftreten von Kapazität und Induktivität in konzentrierter Form sind die höchstzulässigen Werte je Eingang oder für 2 Eingänge parallel der folgenden Tabelle zu entnehmen:

	EEx ia IIC	EEx ia IIB	EEx ia IIA	EEx ia I
L_o	5 mH	10 mH	20 mH	20 mH
C_o	0,4 μF	1,5 μF	3,0 μF	3,0 μF

Die eigensicheren Eingangsstromkreise sind von allen anderen Stromkreisen bis zu einem Scheitelwert der Spannung von 375 V sicher galvanisch getrennt.

Die eigensicheren Eingangsstromkreise sind galvanisch miteinander verbunden.

1. Ergänzung zur Bescheinigungsnummer TÜV 99 ATEX 1471

Alle weiteren Angaben gelten unverändert für diese Ergänzung.

Die Kennzeichnung des Gerätes muss in Zukunft folgende Angaben enthalten:

 II (1) G D [EEx ia] IIC
I (M1) [EEx ia] I

Das Gerät incl. dieser Änderungen erfüllt die Anforderungen der folgenden Normen:

EN 50 014:1997+A1+A2 **EN 50 020:2002**

(16) Die Prüfungsunterlagen sind im Prüfbericht Nr. 06 YEX 553321 aufgelistet.

(17) Besondere Bedingungen

keine zusätzlichen

(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

keine zusätzlichen

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, akkreditiert durch die Zentralstelle der Länder für Sicherheitstechnik (ZLS), Ident. Nr. 0044, Rechtsnachfolger der TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

Der Leiter der Zertifizierungsstelle



Schwedt

Geschäftsstelle Hannover, Am TÜV 1, 30519 Hannover, Tel.: +49 (0) 511 986-1455, Fax: +49 (0) 511 986-1590

Translation

1. SUPPLEMENT

to Certificate No.	TÜV 99 ATEX 1471
Equipment:	Impulse Evaluating Device type KF**-UF*-Ex**
Manufacturer:	Pepperl + Fuchs GmbH
Address:	Königsberger Allee 87 68307 Mannheim, Germany
Order number:	8000553321
Date of issue:	2006-10-27

Amendments:

In the future, the impulse evaluating device type KF**-UF*-Ex** may also be manufactured according to the test documents listed in the test report. The amendments concern the application of an additional printed circuit board for the power supply as well as the change of the already used printed circuit boards.

In the future, the device may also be used in areas which require the application of devices of group I. The suitable marking was complemented.

The electrical data were adapted.

The permissible temperature range is -20 °C to + 60 °C.

Electrical data

Supply circuit (terminals 23, 24)	U = 20 .. 30 V d.c. , U _m = 40 V (KFD2)	
	U = 20 .. 90 V d.c. , U _m = 253 V (KFU8)	
	or 48 .. 253 V a.c.	
or via Power Rail (terminals PR: 1, 2)	U = 20 .. 30 V d.c. , U _m = 40 V (only KFD2)	
Current output (terminals 7, 8)	I = 0/4 .. 20 mA , U _m = 40 V R _{max} = 650 Ω	
Contact circuits (terminals 10, 11, 12 and 16, 17, 18)	alternating voltage	direct voltage
	U = 253 V AC I = 2 A P = 500 W cos φ ≥ 0.7	U = 40 V I = 2 A P = 80 W resistive load
Transistor outputs (terminals 19, 20 and 20, 21)	U _m = 40 V	
Control inputs (terminals 13, 14 and 14, 15)	U _m = 40 V	
Interface RS232 (3.5 mm plug)	U _m = 40 V	

1. Supplement to Certificate No. TÜV 99 ATEX 1471

Interface RS485
(terminals PR: 3, 5)

$U_m = 40\text{ V}$

Sum error
(terminal PR: 4)

$U_m = 40\text{ V}$

Input circuits
(terminals 1, 3 resp. 4, 6)

in type of protection „Intrinsic Safety“ EEx ia IIC
resp. EEx ia I

Maximum values:

per input

2 inputs parallel

$U_o = 10.1\text{ V}$

$U_o = 10.1\text{ V}$

$I_o = 13.5\text{ mA}$

$I_o = 27\text{ mA}$

$P_o = 34\text{ mW}$

$P_o = 68\text{ mW}$

$R_i = 758\ \Omega$

$R_i = 379\ \Omega$

Characteristic line: linear

Effective inner inductance: $L_i =$ negligibly small

Effective inner capacitance: $C_i =$ negligibly small

per input				
	EEx ia IIC	EEx ia IIB	EEx ia IIA	EEx ia I
L_o	195 mH	730 mH	1000 mH	2120 mH
C_o	2.87 μF	19.4 μF	93 μF	79 μF
2 inputs parallel				
	EEx ia IIC	EEx ia IIB	EEx ia IIA	EEx ia I
L_o	46 mH	170 mH	380 mH	600 mH
C_o	2.87 μF	19.4 μF	93 μF	79 μF

The above mentioned values of the outer reactances apply only on condition that simultaneous appearance of the outer inductance and capacitance does not to be considered (e.g. in case of lines).

In case of simultaneous appearance of capacitance and inductance in concentrated form the permissible maximum values per input or for 2 inputs parallel have to be taken from the following table:

	EEx ia IIC	EEx ia IIB	EEx ia IIA	EEx ia I
L_o	5 mH	10 mH	20 mH	20 mH
C_o	0.4 μF	1.5 μF	3.0 μF	3.0 μF

The intrinsically safe input circuits are safely galvanically separated from other circuits up to a peak crest value of the voltage of 375 V.

The intrinsically safe input circuits are galvanically connected with each other.

1. Supplement to Certificate No. TÜV 99 ATEX 1471

All other data apply unchanged for this supplement.

In the future, the marking of the equipment shall include the following:

 **II (1) G D [EEx ia] IIC**
I (M1) [EEx ia] I

The equipment incl. of this amendments meets the requirements of these standards:

EN 50 014:1997+A1+A2 **EN 50 020:2002**

(16) The test documents are listed in the test report No. 06 YEX 553321.

(17) Special conditions for safe use

no additional ones

(18) Essential Health and Safety Requirements

no additional ones

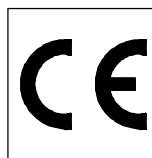
TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, accredited by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the certification body



Schwedt

Hanover office, Am TÜV 1, 30519 Hanover, Tel.: +49 (0) 511 986-1455, Fax: +49 (0) 511 986-1590



Doc No: 23424-0

Lenze

Déclaration de conformité CE

au sens de la directive 94/9/CE relative aux appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles, annexes VIII et X

Les produits suivants ont été mis au point, conçus et fabriqués conformément aux dispositions de la directive CE mentionnée ci-dessus, en la seule responsabilité de la société

Lenze Drive Systems GmbH, Postfach 10 13 52, D-31763 Hameln

Lenze Drive Systems GmbH
Postfach 10 13 52
D-31763 Hameln

Site de fabrication : Bösingfeld
Breslauer Straße 3
D-32699 Extertal
Téléphone : ++49 5154 82-0
Télécopie : ++49 5154 82-15 75

Produits :	Types :	Spezifikation lt. Typenschild
Motorréducteurs	GFL, GST, GKS GKR, GSS	3 GD

Par la présente, nous attestons la conformité des motorréducteurs ci-dessus à réductions constantes de Lenze Drive Systems GmbH aux exigences de la version actuelle des directives du Conseil concernant le rapprochement des législations des Etats membres pour les appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles (94/9/CE). La présente déclaration s'applique à tous les exemplaires produits par le constructeur suivant ses plans de fabrication, également concernés par cette déclaration de conformité.

Ces motorréducteurs sont des composants d'entraînement destinés à être installés, exclusivement par du personnel qualifié, dans les

zones 2 et 22 (catégorie 3 GD).

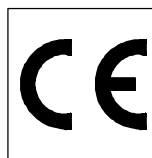
Les consignes de sécurité applicables doivent être strictement respectées !

Normes appliquées, in der zum Unterschriftsdatum gültigen Fassung :

EN 1127-1	Atmosphères explosibles - Prévention de l'explosion et protection contre l'explosion - Partie 1 : Notions fondamentales et méthodologie
EN 13463-1	Matériels non électriques pour utilisation en atmosphères explosibles - Partie 1 : Prescriptions et méthode de base
prEN 13463-5	Matériels non électriques pour utilisation en atmosphères explosibles - Partie 5 : Protection par sécurité de construction

Fait à Hameln, le 01/07/2003

(Dr Etienne Nitidem)
Responsable du développement des produits
électromécaniques



Doc No: 23424-0

Lenze

Déclaration de conformité CE

au sens de la directive 94/9/CE relative aux appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles, annexes VIII et X

Les produits suivants ont été mis au point, conçus et fabriqués conformément aux dispositions de la directive CE mentionnée ci-dessus, en la seule responsabilité de la société

Lenze Drive Systems GmbH, Postfach 10 13 52, D-31763 Hameln

Lenze Drive Systems GmbH
Postfach 10 13 52
D-31763 Hameln

Site de fabrication : Bösingfeld
Breslauer Straße 3
D-32699 Extertal
Téléphone : ++49 5154 82-0
Télécopie : ++49 5154 82-15 75

Produits :	Types :	Spezifikation lt. Typenschild
Motorréducteurs	GFL, GST, GKS GKR, GSS	2 GD

Par la présente, nous attestons la conformité des motorréducteurs ci-dessus à réductions constantes de Lenze Drive Systems GmbH aux exigences de la version actuelle des directives du Conseil concernant le rapprochement des législations des Etats membres pour les appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles (94/9/CE). La présente déclaration s'applique à tous les exemplaires produits par le constructeur suivant ses plans de fabrication, également concernés par cette déclaration de conformité.

Ces motorréducteurs sont des composants d'entraînement destinés à être installés, exclusivement par du personnel qualifié, dans les

zones 1 et 21 (catégorie 2 GD).

Les consignes de sécurité applicables doivent être strictement respectées !

Normes appliquées, in der zum Unterschriftsdatum gültigen Fassung :

EN 1127-1	Atmosphères explosibles - Prévention de l'explosion et protection contre l'explosion - Partie 1 : Notions fondamentales et méthodologie
EN 13463-1	Matériels non électriques pour utilisation en atmosphères explosibles - Partie 1 : Prescriptions et méthode de base
prEN 13463-5	Matériels non électriques pour utilisation en atmosphères explosibles - Partie 5 : Protection par sécurité de construction
prEN 13463-8	Matériels non électriques pour utilisation en atmosphères explosibles - Partie 5 : Schutz durch Flüssigkeitskapselung

Fait à Hameln, le 01/07/2003

(Dr Etienne Nitidem)
Responsable du développement des produits
électromécaniques

EG - Zertifikat**Nr.: EX2 03 04 20166 021**

Entscheidung gemäß Anhang IV der Richtlinie des Rates Nr. 94/9/EG für Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen.

Die Zertifizierstelle von TÜV PRODUCT SERVICE GMBH bestätigt hiermit, daß die Firma

**elobau Elektrobauelemente
GmbH & Co. KG
Scherrwiesenweg 12**

D-88316 Isny / Allgäu

in der/den Fertigungsstätte(n)

**elobau Elektrobauelemente
GmbH & Co. KG
Zeppelinstr. 44**

D-88299 Leutkirch

für die Produktion von:

Flachscharter:	Typenreihe 610
Rohrgehäuse:	Typenreihe 620
Rohrscharter:	Typenreihe 650
Maschinensicherheitsscharter:	Typenreihe 671
Hydraulikzylinderscharter:	Typenreihe 680

der Gruppe II, Kategorie 1G, 2G und 2D

in den elektrischen Zündschutzarten „Eigensicherheit (i)“ und „Vergusskapselung (m)“

ein Qualitätssicherungssystem anwendet, das den Anforderungen der EG-Richtlinie entspricht.

Ergebnisse siehe Auditbericht-Nr.: **70043882**

Unter der Voraussetzung, daß eine regelmäßige Überwachung durchgeführt wird, ist dieses Zertifikat gültig bis 2006-04-14.

Freigegeben mit der obigen Zertifikats-Nr. durch die Zertifizierstelle von TÜV PRODUCT SERVICE.

Abteilung:
Datum:

TECS / mre
14.04.2003



TÜV PRODUCT SERVICE GMBH ist benannte Stelle gemäß der Richtlinie des Rates Nr. 94/9/EG für Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen mit der Kennnummer 0123.



Doc No: 27255-1



(1) **EG-Baumusterprüfbescheinigung**

(2) **- Richtlinie 94/9/EG -**

**Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung
in explosionsgefährdeten Bereichen**

(3) **BVS 03 ATEX E 126 X**

(4) **Gerät: Endschalter Typ 6** *** **_****

(5) **Hersteller: elobau Elektrobauelemente GmbH & Co. KG**

(6) **Anschrift: D-88306 Isny/Allgäu**

(7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.

(8) Die Zertifizierungsstelle der Deutsche Montan Technologie GmbH, benannte Stelle Nr. 0158 gemäß Artikel 9 der Richtlinie 94/9/EG des Europäischen Parlaments und des Rates vom 23. März 1994, bescheinigt, dass das Gerät die grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie erfüllt.
Die Ergebnisse der Prüfung sind in dem Prüfprotokoll BVS PP 03.2287 EG niedergelegt.


(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit

EN 50014:1997 + A1 – A2 Allgemeine Bestimmungen
EN 50028:1987 Vergusskapselung 'm'
EN 50020:2002 Eigensicherheit 'i'
EN 50284:1999 Gerätegruppe II Kategorie 1G
EN 50281-1-1:1998 +A1 Staubexplosionsschutz

(10) Falls das Zeichen „X“ hinter der Bescheinigungsnummer steht, wird in der Anlage zu dieser Bescheinigung auf besondere Bedingungen für die sichere Anwendung des Gerätes hingewiesen.

(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf die Konzeption und die Baumusterprüfung des beschriebenen Gerätes in Übereinstimmung mit der Richtlinie 94/9/EG.
Für Herstellung und in Verkehr bringen des Gerätes sind weitere Anforderungen der Richtlinie zu erfüllen, die nicht durch diese Bescheinigung abgedeckt sind.

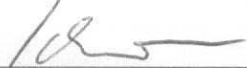
(12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:

II 1G EEx ia IIB / IIC T5 / T6 bzw. **II 1/2G EEx ia IIC T5 / T6**
 **II 2G EEx ia IIC T5 / T6** bzw. **II 2G EEx m II T5 / T6**
II 2D IP67 / IP 68 T105°C Zuordnung siehe Tabellen in 15.1.2

Deutsche Montan Technologie GmbH

Bochum, den 16. Dezember 2003


DMT Zertifizierungsstelle


Fachbereich

(13) Anlage zur

(14) **EG-Baumusterprüfbescheinigung**

BVS 03 ATEX E 126 X

(15) 15.1 Gegenstand und Typ

Endschalter Typ 6** *** ** *_**

15.1.1 Typenschlüssel 6** *** ** *_**

6ab c de f g h ij - kl

ab

Gehäusebauform

10 = Flachscharter Zink-Druckguss (GD-ZnAl4Cu1)

20 = Rohrscharter Kunststoff PA66

50 = Rohrscharter VA1.4571, (alternativ 1.4305 oder 1.4401, PG13,5 (M20)

71 = MSS VA 1.4571 (alternativ 1.4305 oder 1.4401), M30

80 = Hallsensor VA 1.4571 (alternativ 1.4401), G3/8.

c

Ausführungsvariante

0 = Standard

1 = (Kennziffer nicht verwendet)

2 = MSS

3 = Schutzschlauchverschraubung

V = MSS verknüpfbar

de

10 = Schließer "A"

20 = Öffner "B"

30 = Wechsler "C"

40 = "A/B" bistabil

45 = "C" bistabil

50 = npn-Transistor-Ausgang

55 = pnp-Transistor-Ausgang

61 = MSS 3 x Schließer

62 = MSS 2 x Schließer

71 = MSS ein Öffner, ein Schließer

f

M = Vergussgekapselt; ohne äußere Potentialausgleichsleiter-Anschlussklemme

N = Vergussgekapselt; mit äußerer Potentialausgleichsleiter-Anschlussklemme

O = Vergussgekapselt; ohne äußere Potentialausgleichsleiter-Anschlussklemme, geschweißt

P = Vergussgekapselt; mit äußerer Potentialausgleichsleiter-Anschlussklemme, geschweißt

I = Eigensicher; ohne äußere Potentialausgleichsleiter-Anschlussklemme

K = Eigensicher; mit äußerer Potentialausgleichsleiter-Anschlussklemme

G = Eigensicher; ohne äußere Potentialausgleichsleiter-Anschlussklemme, geschweißt

H = Eigensicher; mit äußerer Potentialausgleichsleiter-Anschlussklemme, geschweißt

- gr Kabeltyp *)
- 1 = Leitung Boflex W (PVC grau) 2 x 0,75 / 3 x 0,75 / 4 x 0,75
 - 2 = Leitung SIHSI (Silikon rot) 2 x 0,75 / 3 x 0,75
 - 3 = Leitung BOY11Y (PUR schwarz) 2 x 0,75 / 3 x 0,75
 - 4 = Leitung LIYCYW (PVC abgeschirmt) 2 x 0,75 / 3 x 0,75 / 4 x 0,5
 - 5 = Leitung SXCS (Silicon abgeschirmt) 2 x 0,75 / 3 x 0,75
 - 6 = Leitung LIFYY11Y (PUR schwarz) 3 x 0,25
 - 7 = Leitung LIYYW (PVC grau) 3 x 0,25
 - U = Leitung Y-UL 2517 (PVC grau) 3 x 0,75 / 4 x 0,75
- *) für eigensichere Ausführungen optional mit blauem Kabelmantel
oder mit grauem Schrumpfschlauch markiert
(betrifft nur 1/2G und 2G Anwendungen)
- h Schutzschlauch
- 0 = kein Schutzschlauch
 - 1 = Schutzschlauch Typ 455 MP 9,8X13,2
 - 2 = Schutzschlauch Typ Anaconda D.L.1/2"
- ij nicht Ex-relevante Angaben
- kl Kabelüberlänge; Standard = 1 Meter

15.1.2 Die Zuordnung der unterschiedlichen Ausführungen des Endschalters zu Zündschutzarten, Temperaturklassen, Umgebungstemperaturbereich und Gerätekategorien ist den folgenden Tabellen zu entnehmen:

Endschalter Typ	Kategorie des Endschalters	zusätzliche Kennzeichnung		Besonderheiten bzw. Einschränkungen	Umgebungstemperaturbereich
		nicht eigensicher	eigensicher		
610 010 M*0 **_** 610 010 N*0 **_** 610 020 M*0 **_** 610 020 N*0 **_** 610 030 M*0 **_** 610 030 N*0 **_** 610 040 M*0 **_** 610 040 N*0 **_** 610 045 M*0 **_** 610 045 N*0 **_**	2G	EEx m II T5/T6		IP67; siehe 17.4	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)
620 010 M*0 **_** 620 020 M*0 **_** 620 030 M*0 **_**	2G	EEx m II T5/T6		IP67; siehe 17.4	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)
650 *10 M** **_** 650 *10 N** **_** 650 *30 M** **_** 650 *30 N** **_**	2G	EEx m II T5/T6		IP67; siehe 17.4	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)
671 26* M*0 **_** 671 26* N*0 **_** 671 26* O*0 **_** 671 26* P*0 **_** 671 V62 M*0 **_** 671 V62 N*0 **_** 671 V62 O*0 **_** 671 V62 P*0 **_** 671 271 M*0 **_** 671 271 N*0 **_** 671 271 O*0 **_** 671 271 P*0 **_**	2G	EEx m II T5/T6		IP68 (10 bar); I ≤ 60 mA; siehe 17.4	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)
671 26* M*0 **_** 671 26* N*0 **_** 671 26* O*0 **_** 671 26* P*0 **_** 671 V62 M*0 **_** 671 V62 N*0 **_** 671 V62 O*0 **_** 671 V62 P*0 **_** 671 271 M*0 **_** 671 271 N*0 **_** 671 271 O*0 **_** 671 271 P*0 **_**	2G	EEx m II T5/T6		IP68 (10 bar); 60 mA ≤ I ≤ 150 mA; siehe 17.4	- 25° C ≤ T _a ≤ 50° C (T6) 70° C (T5)
680 0** M*0 **_** 680 0** N*0 **_**	2G	EEx m II T5/T6		IP68 (10 bar); siehe 17.4	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)



Endschalter Typ	Kategorie des Endschalters	zusätzliche Kennzeichnung		Besonderheiten bzw. Einschränkungen	Umgebungstemperaturbereich
		nicht eigensicher	eigensicher		
610 010 I*0 **_** 610 010 K*0 **_** 610 020 I*0 **_** 610 020 K*0 **_** 610 030 I*0 **_** 610 030 K*0 **_** 610 040 I*0 **_** 610 040 K*0 **_** 610 045 I*0 **_** 610 045 K*0 **_**	2G		EEx ia IIC T5/T6	IP67	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)
620 010 I*0 **_** 620 020 I*0 **_** 620 030 I*0 **_**	2G		EEx ia IIC T5/T6	IP67; siehe 17.1.2	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)
650 *10 I** **_** 650 *10 K** **_** 650 *30 I** **_** 650 *30 K** **_**	2G		EEx ia IIC T5/T6	IP67	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)
671 26* I*0 **_** 671 26* K*0 **_** 671 26* G*0 **_** 671 26* H*0 **_** 671 V62 I*0 **_** 671 V62 K*0 **_** 671 V62 G*0 **_** 671 V62 H*0 **_** 671 271 I*0 **_** 671 271 K*0 **_** 671 271 G*0 **_** 671 271 H*0 **_**	2G		EEx ia IIC T5/T6	IP68 (10 bar); I _i ≤ 60 mA	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)
671 26* I*0 **_** 671 26* K*0 **_** 671 26* G*0 **_** 671 26* H*0 **_** 671 V62 I*0 **_** 671 V62 K*0 **_** 671 V62 G*0 **_** 671 V62 H*0 **_** 671 271 I*0 **_** 671 271 K*0 **_** 671 271 G*0 **_** 671 271 H*0 **_**	2G		EEx ia IIC T5/T6	IP68 (10 bar); 60 mA ≤ I _i ≤ 150 mA; siehe 17.1.1	- 25° C ≤ T _a ≤ 50° C (T6) 70° C (T5)
680 0** I*0 **_** 680 0** K*0 **_**	2G		EEx ia IIC T5/T6	IP68 (10 bar);	- 25° C ≤ T _a ≤ 70° C (T6) 85° C (T5)



Endschalter Typ	Kategorie des Endschalters	zusätzliche Kennzeichnung		Besonderheiten bzw. Einschränkungen	Umgebungs-temperaturbereich
		nicht eigensicher	eigensicher		
620 010 I*0 **_** 620 020 I*0 **_** 620 030 I*0 **_**	1/2G		EEx ia IIC T5/T6	IP67; $P_i \leq 0,5 \text{ W}$ siehe 17.2.2	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
650 *10 K** **_** 650 *10 I** **_** 650 *30 K** **_** 650 *30 I** **_**	1/2G		EEx ia IIC T5/T6	IP67; $P_i \leq 0,5 \text{ W}$; siehe 17.2.1	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
671 26* I*0 **_** 671 26* K*0 **_** 671 26* G*0 **_** 671 26* H*0 **_** 671 V62 I*0 **_** 671 V62 K*0 **_** 671 V62 G*0 **_** 671 V62 H*0 **_** 671 271 I*0 **_** 671 271 K*0 **_** 671 271 G*0 **_** 671 271 H*0 **_**	1/2G		EEx ia IIC T5/T6	IP68 (10 bar); $I_i \leq 60 \text{ mA}$; siehe 17.2.1	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
671 26* I*0 **_** 671 26* K*0 **_** 671 26* G*0 **_** 671 26* H*0 **_** 671 V62 I*0 **_** 671 V62 K*0 **_** 671 V62 G*0 **_** 671 V62 H*0 **_** 671 271 I*0 **_** 671 271 K*0 **_** 671 271 G*0 **_** 671 271 H*0 **_**	1/2G		EEx ia IIC T5/T6	IP68 (10 bar); 60 mA $\leq I_i \leq$ 150 mA; siehe 17.2.1 und 17.2.3	- 25° C $\leq T_a \leq$ 50° C (T6) 70° C (T5)
680 0** I*0 **_** 680 0** K*0 **_**	1/2G		EEx ia IIC T5/T6	IP68 (10 bar); siehe 17.2.1	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)

Endschalter Typ	Kategorie des Endschalters	zusätzliche Kennzeichnung		Besonderheiten bzw. Einschränkungen	Umgebungs-temperaturbereich
		nicht eigensicher	eigensicher		
610 0*0 M30 **_** 610 0*0 M20 **_** 610 0*0 MU0 **_** 610 0*0 M60 **_** 610 0*0 M70 **_** 610 0*0 M10 **_** 610 0*0 N30 **_** 610 0*0 N20 **_** 610 0*0 NU0 **_** 610 0*0 N60 **_** 610 0*0 N70 **_** 610 0*0 N10 **_**	2D	IP67 T105°C		siehe 17.5	- 25° C ≤ T _a ≤ 85° C
620 0*0 M30 **_** 620 0*0 M20 **_** 620 0*0 MU0 **_** 620 0*0 M60 **_** 620 0*0 M70 **_** 620 0*0 M10 **_**	2D	IP67 T105°C		siehe 17.5	- 25° C ≤ T _a ≤ 85° C
650 0*0 M30 **_** 650 0*0 M20 **_** 650 0*0 MU0 **_** 650 0*0 M60 **_** 650 0*0 M70 **_** 650 0*0 M10 **_** 650 0*0 N30 **_** 650 0*0 N20 **_** 650 0*0 NU0 **_** 650 0*0 N60 **_** 650 0*0 N70 **_** 650 0*0 N10 **_** 650 0*0 M*1 **_** 650 0*0 N*1 **_**	2D	IP67 T105°C		siehe 17.5	- 25° C ≤ T _a ≤ 85° C
671 *** *30 **_** 671 *** *20 **_** 671 *** *U0 **_** 671 *** *60 **_** 671 *** *70 **_** 671 *** *10 **_**	2D	IP68 T105°C		IP68 (10 bar); I ≤ 60 mA; siehe 17.5	- 25° C ≤ T _a ≤ 85° C
671 *** *30 **_** 671 *** *20 **_** 671 *** *U0 **_** 671 *** *60 **_** 671 *** *70 **_** 671 *** *10 **_**	2D	IP68 T105°C		IP68 (10 bar); 60 mA ≤ I ≤ 150 mA; siehe 17.5	- 25° C ≤ T _a ≤ 70° C
680 0** M60 **_** 680 0** M70 **_** 680 0** N60 **_** 680 0** N70 **_**	2D	IP68 T105°C		IP68 (10 bar); siehe 17.5	- 25° C ≤ T _a ≤ 85° C

Endschalter Typ	Kategorie des Endschalters	zusätzliche Kennzeichnung		Besonderheiten bzw. Einschränkungen	Umgebungstemperaturbereich
		nicht eigensicher	eigensicher		
610 0*0 I60 **_** 610 0*0 I70 **_** 610 0*0 K60 **_** 610 0*0 K70 **_**	1G		EEx ia IIB T5/T6	IP67; $P_i \leq 0,5 \text{ W}$ siehe 17.3	-25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
620 0*0 I60 **_** 620 0*0 I70 **_**	1G		EEx ia IIB T5/T6	IP67; $P_i \leq 0,5 \text{ W}$ siehe 17.3	-25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
650 0*0 I60 **_** 650 0*0 I70 **_** 650 0*0 K60 **_** 650 0*0 K70 **_** 650 0*0 I*2 **_** 650 0*0 K*2 **_**	1G		EEx ia IIB T5/T6	IP67; $P_i \leq 0,5 \text{ W}$ siehe 17.3	-25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
650 0*0 I*1 **_** 650 0*0 K*1 **_**	1G		EEx ia IIC T5/T6	IP67; $P_i \leq 0,5 \text{ W}$ siehe 17.3	-25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
671 *** *60 **_** 671 *** *70 **_**	1G		EEx ia IIB T5/T6	IP68 (10 bar); $I \leq 60 \text{ mA}$; siehe 17.3	-25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
671 *** *60 **_** 671 *** *70 **_**	1G		EEx ia IIB T5/T6	IP68 (10 bar); 60 mA $\leq I \leq$ 150 mA; siehe 17.5	-25° C $\leq T_a \leq$ 50° C (T6) 70° C (T5)
680 0** I60 **_** 680 0** I70 **_** 680 0** K60 **_** 680 0** K70 **_**	1G		EEx ia IIB T5/T6	IP68 (10 bar); siehe 17.3	-25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)



15.2 Beschreibung

Der Endschalter Typ 610 0** **0 **.-** besteht aus einem metallischen Gussgehäuse (GD - Zn Al 4 Cu 1), das einen in Vergussmasse eingebetteten Reedkontakt (Ein/Aus- oder Umschaltkontakt) enthält. Eine Anschlussleitung mit freien Leitungsenden ist mittels einer geeigneten Leitungseinführung in das Gehäuse geführt und mit den Anschlüssen des Kontaktes fest verbunden.

Der Endschalter Typ 620 0** **0 **.-** besteht aus einem zylindrischen Kunststoffgehäuse (PA66), das einen in Vergussmasse eingebetteten Reedkontakt (Ein/Aus- oder Umschaltkontakt) enthält. Eine Anschlussleitung mit freien Leitungsenden ist mittels einer geeigneten Leitungseinführung in das Gehäuse geführt und mit den Anschlüssen des Kontaktes fest verbunden.

Der Endschalter Typ 650 0*0 **0 **.-** besteht aus einem Kunststoffrohr, das einen in Vergussmasse eingebetteten Reedkontakt (Ein/Aus- oder Umschaltkontakt) enthält. Das Kunststoffrohr ist von einem metallischen zylindrischen Gehäuse (Werkstoff 1.4571, 1.4305 oder 1.4401) umschlossen. Eine Anschlussleitung mit freien Leitungsenden ist mittels einer geeigneten Leitungseinführung in das Gehäuse geführt und mit den Anschlüssen des Kontaktes fest verbunden.

Der Endschalter Typ 650 3*0 **0 **.-** besteht aus einem Kunststoffrohr, das einen in Vergussmasse eingebetteten Reedkontakt (Ein/Aus- oder Umschaltkontakt) enthält. Das Kunststoffrohr ist von einem metallischen zylindrischen Gehäuse (Werkstoff 1.4571, 1.4305 oder 1.4401) umschlossen. Eine Anschlussleitung mit freien Leitungsenden ist mittels einer geeigneten Leitungseinführung in das Gehäuse geführt und mit den Anschlüssen des Kontaktes fest verbunden. Am Gehäuse ist eine Schlauchverschraubung angebracht, an der ein vom Kunden ausgewählter Schutzschlauch montiert werden kann.

Der Endschalter Typ 650 3*0 **1 **.-** und Typ 650 3*0 **2 **.-** besteht aus einem Kunststoffrohr, das einen in Vergussmasse eingebetteten Reedkontakt (Ein/Aus- oder Umschaltkontakt) enthält. Das Kunststoffrohr ist von einem metallischen zylindrischen Gehäuse (Werkstoff 1.4571, 1.4305 oder 1.4401) umschlossen. Eine Anschlussleitung mit freien Leitungsenden ist mittels einer geeigneten Leitungseinführung in das Gehäuse geführt und mit den Anschlüssen des Kontaktes fest verbunden. Am Gehäuse ist eine Schlauchverschraubung mit Schutzschlauch montiert. Ausführung des Schlauches siehe unter 15.1.1 Typenschlüssel „h“

Der Endschalter Typ 671 *** **0 **.-** besteht aus einem zylindrischen metallischen Gehäuse (Werkstoff Nr. 1.4571, 1.4305 oder 1.4401), das - je nach Ausführung - zwei oder drei Widerstände und zwei (drei) Reedkontakte (3 Schließer, 2 Schließer, Schließer/Öffner) enthält. Die Bauteile sind in Vergussmasse eingebettet. Eine Anschlussleitung mit freien Leitungsenden ist mittels einer geeigneten Leitungseinführung in das Gehäuse geführt und mit den Anschlüssen der Kontakte fest verbunden.

Der Endschalter Typ 680 *** **0 **.-** besteht aus einem Kunststoffrohr, das eine in Vergussmasse eingebettete Hybrid-Schaltung mit elektronischen Bauteilen und einem Magnetfeldempfindlichen Bauteil ((NPN oder PNP Ausgang) enthält. Das Kunststoffrohr ist von einem metallischen zylindrischen Gehäuse (Werkstoff 1.4571, 1.4305 oder 1.4401) umschlossen. Eine Anschlussleitung mit freien Leitungsenden ist mittels einer geeigneten Leitungseinführung in das Gehäuse geführt und mit den Anschlüssen des Kontaktes fest verbunden.

Die Endschalter mit Kennbuchstaben „M“, „N“, „O“ oder „P“ in Spalte „f“ des Typenschlüssels sind zum Anschluss an nichteigensichere Stromkreise bestimmt. Kennbuchstaben „O“ und „P“ nur für MSS geschweißt.

Die Endschalter mit Kennbuchstaben „I“, „K“, „G“ oder „H“ in Spalte „f“ des Typenschlüssels sind zum Anschluss an eigensichere Stromkreise bestimmt. Kennbuchstaben „G“ und „H“ nur für MSS geschweißt.

15.3 Kenngrößen

15.3.1 nichteigensicher betriebene Endschalter

15.3.1.1 Endschalter Typenreihe 610 0** M/N*0 **_**

Typ	610 010 **0**_** 610 020 **0**_**	610 030 **0**_**	610 040 **0**_**	610 045 **0**_**
Bemessungsspannung	AC/DC 250 V	AC/DC 230 V	AC/DC 250 V	AC/DC 230 V
Bemessungsstromstärke	3 A	1 A	1 A	0,6 A
Bemessungsleistung	100 VA / 100 W	60 VA / 60 W	60 VA / 60 W	45 VA / 45 W
Temperaturklasse	T6 / T5	T6 / T5	T6 / T5	T6 / T5
max. Umgebungstemperatur	70°C / 85°C	70°C / 85°C	70°C / 85°C	70°C / 85°C

15.3.1.2 Endschalter Typenreihe 620 0** M/N*0 **_**

Typ	620 010 **0**_** 620 020 **0**_**	620 030 **0**_**
Bemessungsspannung	AC/DC 230 V	AC/DC 48 V
Bemessungsstromstärke	2 A	1 A
Bemessungsleistung	60 VA / 60 W	20 VA / 20 W
Temperaturklasse	T6 / T5	T6 / T5
max. Umgebungstemperatur	70°C / 85°C	70°C / 85°C

15.3.1.3 Endschalter Typenreihe 650 *** M/N*** **_**

Typ	650 *10 *** **_**	650 *30 *** **_**
Bemessungsspannung	AC/DC 250 V	AC/DC 230 V
Bemessungsstromstärke	3 A	1 A
Bemessungsleistung	100 VA / 100 W	60 VA / 60 W
Temperaturklasse	T6 / T5	T6 / T5
max. Umgebungstemperatur	70°C / 85°C	70°C / 85°C

15.3.1.4 Endschalter Typenreihe 671 *** M/N/O/P*** **_**

Typ	671 *** **_**	671 *** **_**
Bemessungsspannung	AC/DC 24 V	AC/DC 24 V
Bemessungsstromstärke (statisch)	60 mA	150 mA
Bemessungsstromstärke (dynamisch)	500 mA für zwei Sekunden	500 mA für zwei Sekunden
Bemessungsschaltleistung	5 VA / 5 W	5 VA / 5 W
Temperaturklasse	T6 / T5	T6 / T5
max. Umgebungstemperatur	70°C / 85°C	50°C / 70°C

15.3.1.5 Endschalter Typenreihe 680 0** M/N*0 **_**

Typ	680 0** **0 **_**
Bemessungsspannung	DC 10 bis 30 V
Bemessungsstromstärke	200 mA
Nennleistung	0,5 W
Temperaturklasse	T6 / T5
max. Umgebungstemperatur	70°C / 85°C

15.3.2 eigensicher betriebene Endschalter

15.3.2.1 Endschalter Typenreihe 610 0** I/K*0 **_**

Typ	610 010 **0**_** 610 020 **0**_**	610 030 **0**_**	610 040 **0**_**	610 045 **0**_**
Spannung U_i	AC/DC 60 V	AC/DC 60 V	AC/DC 60 V	AC/DC 60 V
Stromstärke I_i	3 A	1 A	1 A	0,6 A
Leistung P_i	500 mW *)	500 mW *)	500 mW *)	500 mW *)
innere wirksame Kapazität C_i	siehe 15.3.2.6	siehe 15.3.2.6	siehe 15.3.2.6	siehe 15.3.2.6
innere wirksame Induktivität L_i	siehe 15.3.2.6	siehe 15.3.2.6	siehe 15.3.2.6	siehe 15.3.2.6
Temperaturklasse	T6 / T5	T6 / T5	T6 / T5	T6 / T5
max. Umgebungstemperatur	70°C / 85°C	70°C / 85°C	70°C / 85°C	70°C / 85°C

*) gilt nur für 1G und 1/2G Anwendung; für 2G Anwendung nicht relevant

15.3.2.2 Endschalter Typenreihe 620 0** I/K*0 **_**

Typ	620 010 **0**_** 620 020 **0**_**	620 030 **0**_**
Spannung U_i	AC/DC 60 V	AC/DC 48 V
Stromstärke I_i	2 A	1 A
Leistung P_i	500 mW *)	500 mW *)
innere wirksame Kapazität C_i	siehe 15.3.2.6	siehe 15.3.2.6
innere wirksame Induktivität L_i	siehe 15.3.2.6	siehe 15.3.2.6
Temperaturklasse	T6 / T5	T6 / T5
max. Umgebungstemperatur	70°C / 85°C	70°C / 85°C

*) gilt nur für 1G und 1/2G Anwendung; für 2G Anwendung nicht relevant

15.3.2.3 Endschalter Typenreihe 650 *** I/K** *_**

Typ	650 *10 *** *_**	650 *30 *** *_**
Spannung U_i	AC/DC 60 V	AC/DC 60 V
Stromstärke I_i	3 A	1 A
Leistung P_i	500 mW ')	500 mW *)
innere wirksame Kapazität C_i	siehe 15.3.2.6	siehe 15.3.2.6
innere wirksame Induktivität L_i	siehe 15.3.2.6	siehe 15.3.2.6
Temperaturklasse	T6 / T5	T6 / T5
max. Umgebungstemperatur	70°C / 85°C	70°C / 85°C

*) gilt nur für 1G und 1/2G Anwendung; für 2G Anwendung nicht relevant

15.3.2.4 Endschalter Typenreihe 671 *** I/K/G/H** *_**

Typ	671 *** *_**	671 *** *_**
Spannung U_i	AC/DC 24 V	AC/DC 24 V
Stromstärke I_i (statisch)	60 mA	150 mA
Stromstärke I_i (dynamisch)	500 mA für zwei Sekunden	500 mA für zwei Sekunden
innere wirksame Kapazität C_i	siehe 15.3.2.6	siehe 15.3.2.6
innere wirksame Induktivität L_i	siehe 15.3.2.6	siehe 15.3.2.6
Leistung P_i	500 mW	500 mW
Temperaturklasse	T6 / T5	T6 / T5
max. Umgebungstemperatur	70°C / 85°C	50°C / 70°C

15.3.2.5 Endschalter Typenreihe 680 0** I/K*0 *_**

Typ	680 0** *_**
Spannung U_i	DC 16 V
Stromstärke I_i	200 mA
Leistung P_i	500. mW
innere wirksame Kapazität C_i	150 nF + xx nF "xx" siehe 15.3.2.6
innere wirksame Induktivität L_i	siehe 15.3.2.6
Temperaturklasse	T6 / T5
max. Umgebungstemperatur	70°C / 85°C

15.3.2.6 wirksame innere Kapazität und Induktivität

Leitungslänge	≤ 10 m	≤ 50 m	≤ 100 m	≤ 200 m
C_i	2 nF	7 nF	12 nF	24 nF
L_i	10 μH	50 μH	100 μH	200 μH

- 15.3.3 Umgebungstemperaturbereich: - 25° C ≤ T_a ≤ 70° C (Temperaturklasse T6)
 - 25° C ≤ T_a ≤ 85° C (Temperaturklasse T5)
 - 25° C ≤ T_a ≤ 50° C / 70° C (Temperaturklasse T6 / T5) *)

*) gilt für Endschalter Typenreihe 671 *** ** *_** bei 60 mA ≤ I_i ≤ 150 mA

(16) Prüfprotokoll

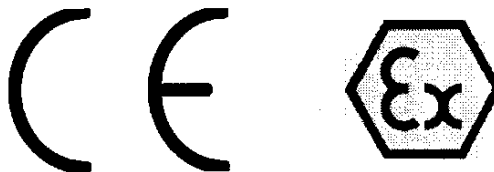
BVS PP 03.2287 EG, Stand 16.12.2003

(17) Besondere Bedingungen für die sichere Anwendung

- 17.1 Eigensicher betriebene Endschalter mit Kennzeichnung 2G EEx ia IIC T*
- 17.1.1 Endschalter Typ 671 *** ** *_**
 Für die Endschalter gilt bei 60 mA ≤ I_i ≤ 150 mA Temperaturklasse T6 / T5 bei einer maximalen Umgebungstemperatur von +50° C / + 70° C.
- 17.1.2 Endschalter Typ 620 0** **0 **_*
 Die metallische Leitungseinführung am Endschalter muss in den Potentialausgleich mit eingezogen sein.
- 17.2 Eigensicher betriebene Endschalter mit Kennzeichnung 1/2G EEx ia IIC T*
- 17.2.1 Endschalter Typ 650 *** ** *_**, Typ 671 *** ** *_**, Typ 680 *** ** *_**
- 17.2.1.1 Der Einbau des Endschalters in die Wand von Bereichen, die Kategorie 1G Betriebsmittel erfordern, hat so zu erfolgen, dass die Schutzart IP 67 gemäß EN 60529 gewährleistet ist.
- 17.2.1.2 Der Einbau des Endschalters in die Wand von Bereichen, die Kategorie 1G Betriebsmittel erfordern, hat so zu erfolgen, dass das Gehäuse des Endschalters in den Potentialausgleich mit einbezogen ist.
- 17.2.1.3 Die technischen Informationen des Herstellers zur Verwendung des Endschalters in Verbindung mit aggressiven / korrosiven Medien und zur Vermeidung von mechanischen Gefährdungen sind zu beachten.
- 17.2.2 Endschalter Typ 620 *** ** *_**
- 17.2.2.1 Der Einbau des Endschalters in die Trennwand hat so zu erfolgen, dass die wirksame freie Kunststoffoberfläche in Bereichen, die Kategorie 1G Betriebsmittel erfordern kleiner/gleich 4 cm² ist. Diese Auflage/Bedingung gilt für Gruppe IIC Anwendungen.
- 17.2.2.2 Der Einbau des Endschalters in die Trennwand zu Bereichen, die Kategorie 1G Betriebsmittel erfordern, hat so zu erfolgen, dass die metallischen Befestigungsmuttern des Endschalters in den Potentialausgleich mit einbezogen sind.
- 17.2.2.3 Bei Einbau des Endschalters in die Trennwand zu Bereichen, die Kategorie 1G Betriebsmittel erfordern, dürfen Befestigungsmuttern aus Kunststoff nicht verwendet werden.

- 17.2.2.4 Die technischen Informationen des Herstellers zur Verwendung des Endschalters in Verbindung mit aggressiven Medien und zur Vermeidung von mechanischen Gefährdungen sind zu beachten.
- 17.2.2.5 Die metallische Leitungseinführung am Endschalter muss in den Potentialausgleich mit einbezogen sein.
- 17.2.3 Endschalter Typ 671 *** ** *_**
Für die Endschalter gilt bei $60 \text{ mA} \leq I_i \leq 150 \text{ mA}$ Temperaturklasse T6 / T5 bei einer maximalen Umgebungstemperatur von $+50^\circ \text{ C} / +70^\circ \text{ C}$.
- 17.3 Eigensicher betriebene Endschalter mit Kennzeichnung 1G EEx ia IIB / IIC T*
- 17.3.1 Allgemeines
Die Verschraubung / Befestigung des Anschlusskabels in der Wand von Bereichen, die Kategorie 1G Betriebsmittel erfordern, hat so zu erfolgen, dass mindestens die Schutzart IP 67 gemäß EN 60529 gewährleistet ist.
- 17.3.2 Endschalter Typ 610 *** ** *_** Typ 650 *** ** *_**, Typ 671 *** ** *_**, Typ 680 *** ** *_**
- 17.3.2.1 Der Einbau des Endschalters hat so zu erfolgen, dass das Gehäuse des Endschalters in den Potentialausgleich mit einbezogen ist.
- 17.3.2.2 Die technischen Informationen des Herstellers zur Verwendung des Endschalters in Verbindung mit aggressiven / korrosiven Medien und zur Vermeidung von mechanischen Gefährdungen sind zu beachten.
- 17.3.3 Endschalter Typ 610 *** ** *_**
Die freie Vergussoberfläche muss im eingebauten Zustand von einer leitfähigen Montagefläche abgedeckt sein. Diese Auflage/Bedingung gilt für Ausführungen mit Vergussmasse Micafil Typ Mikares X1087NC weiß; Härter P 978.
- 17.3.4 Endschalter Typ 620 *** ** *_**
- 17.3.4.1 Der Einbau des Endschalters hat so zu erfolgen, dass die metallische Leitungseinführung am Endschalter in den Potentialausgleich mit einbezogen ist.
- 17.3.4.2 Der Einbau des Endschalters hat so zu erfolgen, dass die metallischen Befestigungsmuttern des Endschalters in den Potentialausgleich mit einbezogen sind.
- 17.3.4.3 Der Endschalter ist nur für Gruppe IIB bzw. IIA geeignet.
- 17.3.4.4 Die technischen Informationen des Herstellers zur Verwendung des Endschalters in Verbindung mit aggressiven Medien und zur Vermeidung von mechanischen Gefährdungen sind zu beachten.
- 17.3.5 Endschalter Typ 671 *** ** *_**
Für die Endschalter gilt bei $60 \text{ mA} \leq I_i \leq 150 \text{ mA}$ Temperaturklasse T6 / T5 bei einer maximalen Umgebungstemperatur von $+50^\circ \text{ C} / +70^\circ \text{ C}$.
- 17.4 Nicht-eigensicher betriebene Endschalter mit Kennzeichnung 2G EEx m II T*
- 17.4.1 Allgemeines
- 17.4.1.1 Die nichtabgeschlossenen freien Leitungsenden des Endschalters Typ 6** *** ** *_** müssen entsprechend den jeweils gültigen Errichtungsbestimmungen angeschlossen sein.

- 17.4.1.2 In dem Stromkreis des Endschalters Typ 6** *** ***_** muss eine an die Nenndaten des Schaltkontaktes / der Schalt-Elektronik angepasste Sicherung vorhanden sein mit einem Abschaltvermögen, das mindestens dem prospektiven Kurzschlussstrom des versorgenden Netzes am Einsatzort entspricht.
- 17.4.2 Endschalter Typ 610 *** *** ***_**
Die freie Vergussoberfläche muss im eingebauten Zustand von der Montagefläche gegen Lichteinwirkung abgedeckt sein. Diese Auflage/Bedingung gilt für Ausführungen mit Vergussmasse Micafil Typ Mikares X1087NC weiß; Härter P 978.
- 17.4.3 Endschalter Typ 620 0** **0 ***_**
- 17.4.3.1 Der Endschalter muss gegen mechanische Beanspruchung geschützt installiert werden.
- 17.4.3.2 Die metallische Leitungseinführung am Endschalter muss in den Potentialausgleich mit einbezogen sein.
- 17.4.4 Endschalter Typ 671 *** *** ***_**
Für den Endschalter gilt bei $60 \text{ mA} \leq I \leq 150 \text{ mA}$ Temperaturklasse T5/T6 bei einer maximalen Umgebungstemperatur von $+ 50^{\circ}\text{C} / +70^{\circ}\text{C}$.
- 17.5 Nicht-eigensicher betriebene Endschalter mit Kennzeichnung 2D
- 17.5.1 Allgemeines
- 17.5.1.1 Die nichtabgeschlossenen freien Leitungsenden des Endschalters Typ 6** *** ***_** müssen entsprechend den jeweils gültigen Errichtungsbestimmungen angeschlossen sein.
- 17.5.1.2 Das metallische Gehäuse des Endschalters muss in den Potentialausgleich mit einbezogen sein.
- 17.5.1.3 In dem Stromkreis des Endschalters Typ 6** *** ***_** muss eine an die Nenndaten des Schaltkontaktes / der Schalt-Elektronik angepasste Sicherung vorhanden sein mit einem Abschaltvermögen, das mindestens dem prospektiven Kurzschlussstrom des versorgenden Netzes am Einsatzort entspricht.
- 17.5.2 Endschalter Typ 610 *** *** ***_**
- 17.5.2.1 Die freie Vergussoberfläche muss im eingebauten Zustand von der Montagefläche gegen Lichteinwirkung abgedeckt sein. Diese Auflage/Bedingung gilt für Ausführungen mit Vergussmasse Micafil Typ Mikares X1087NC weiß; Härter P 978.
- 17.5.3 Endschalter Typ 620 0** **0 ***_**
- 17.5.3.1 Der Endschalter muss gegen mechanische Beanspruchung geschützt installiert werden.
- 17.5.3.2 Die metallischen Befestigungsmuttern des Endschalters müssen in den Potentialausgleich mit einbezogen sein



Declaration of conformity in compliance with ATEX Directive 94/9/EC

We herewith confirm that the pneumatic piston vibrators

Series NTP B E

are in compliance with the following regulations:

**94/9/EC
98/37/EC**

Used harmonised standards:

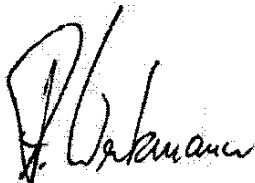
**DIN EN ISO 12100-1,
DIN EN ISO 12100-2,
EN 1127-1 and
EN 13463-1**

The sign X placed after the certificate number indicates that the equipment is subject to special conditions for safe use specified in the enclosure to this certificate.

The marking of the pneumatic piston vibrators includes additionally:

 II 2 G D 135°C (T4)

NetterVibration



i.A. **A. Werkmann**
(quality manager)



Annex to the declaration of conformity NTP B E

Description:

The pneumatic piston vibrators series NTB B E generate linear vibrations. The basic version B vibrator with base-plate, the piston strikes against a cushion of air. In version B + C an impact plate (elastomer plate) is inserted in the base plate, which creates a rubber hammer effect.

The body may be of hard coated aluminium, cast iron or stainless steel depending on the type of NTP B E whereas the pistons are made either of steel or bronze. The drive medium can be either clean (filtered), lubricated compressed air or lubricated nitrogen.

Markings:

Netter Vibration, address ...

type: ... (according version)

min. - max. - ambient temperature:(according version)

serial number

year

 II 2 G D 135°C (T4)

documentation number: NV 2004 001 X

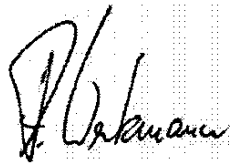
Technical documentation:

No. NV 2004 001

Special conditions for safe use:

- The pneumatic piston vibrator has to be fixed with the supplied safety washers. The safe fixing has to be checked regularly.
- In zones with explosive gas (zone 1) the exhaust air must be safely piped away, except special designs with bronze piston.
- The version NTP B+C E may only be operated in timed mode.

NetterVibration



i.A. A. Werkmann
(quality manager)



EG-Baumusterprüfbescheinigung

- (1)
- (2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - **Richtlinie 94/9/EG**
- (3) EG Baumusterprüfbescheinigungsnummer



TÜV 02 ATEX 1816 X

- (4) Gerät: Sensor Typ STS...
- (5) Hersteller: EGE-Elektronik Spezial Sensoren GmbH
- (6) Anschrift: Ravensberg 34
D-24214 Gettorf
- (7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.
- (8) Die TÜV NORD CERT GmbH & Co. KG, TÜV CERT-Zertifizierungsstelle, bescheinigt als benannte Stelle Nr. 0032 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.

Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht Nr. 02 YEX 162710 festgelegt.

- (9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit

EN 50014:1997 EN 50020:1994 EN 50284:1999 EN 50281-1-1:1999

- (10) Falls das Zeichen "X" hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.
- (11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konzeption und Prüfung des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes. Diese Anforderungen werden nicht durch diese Bescheinigung abgedeckt.
- (12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:

 **II 1/2 G EEx ia IIC T4 bzw. II 1 D T 100°C IP67**

TÜV NORD CERT GmbH & Co. KG
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover
Tel.: 0511 986-1470
Fax: 0511 986-2555



Hannover, 06.05.2002

TÜV NORD CERT


Der Leiter

(13)

A N L A G E

(14) **EG-Baumusterprüfbescheinigung Nr. TÜV 02 ATEX 1816 X**

(15) Beschreibung des Gerätes

Die Sensoren Typ STS... dienen zur Durchflussüberwachung von flüssigen bzw. gasförmigen Medien in gas- und staubexplosionsgefährdeten Bereichen. Der Messfühler darf in gasexplosionsgefährdeten Bereichen, die Betriebsmittel der Kategorie 1 erfordern und das Gehäuse in gasexplosionsgefährdeten Bereichen, die Betriebsmittel der Kategorie 2 erfordern, errichtet werden. Der Sensor insgesamt darf in staubexplosionsgefährdeten Bereichen, die Betriebsmittel der Kategorie 1 erfordern, errichtet werden.

Wenn die gas- bzw. staubexplosionsfähige Atmosphäre keine Betriebsmittel der Kategorie 1 erfordern, sind die höchstzulässigen Umgebungstemperaturen, Oberflächentemperaturen und Temperaturklassen den folgenden Tabellen zu entnehmen:

staubexplosionsgefährdete Bereiche		
Sensortyp	Umgebungs- /Mediumtemperatur	Oberflächentemperatur für Kennzeichnung
STS 212 K, STS 212 S, STS 10...	75°C	152°C
STS...K, STS...S	85°C	126°C

gasexplosionsgefährdete Bereiche		
Sensortyp	Umgebungs- /Mediumtemperatur	Temperaturklasse
STS 212 K, STS 212 S, STS 10...	65°C	T4
	85°C	T3
STS...K, STS...S	45°C	T6
	65°C	T5
	85°C	T4
	85°C	T3
STS...-KH	45°C	T6
	65°C	T5
	95°C	T4
	120°C	T3

Elektrische Daten

Sensorstromkreis
(Kabelschwanz bzw.
Stecker)

in Zündschutzart Eigensicherheit EEx ia/ib IIC/IIB
nur zum Anschluss an bescheinigte eigensichere Stromkreise
mit folgendem Höchstwert:
 $P_i = 0,69 \text{ W}$

Die wirksame innere Kapazität und Induktivität sind
vernachlässigbar klein.

(16) Prüfungsunterlagen sind im Prüfbericht Nr. 02 YEX 162710 aufgelistet.

(17) Besondere Bedingung

Die Messfühler dürfen in gas- bzw. staubexplosionsfähiger Atmosphäre, die Betriebsmittel der Kategorie 1 erfordern, nur dann betrieben werden, wenn atmosphärische Bedingungen vorliegen (Temperatur von -20°C bis 60°C , Druck von 0,8 bar bis 1,1 bar). Für diese Einsatzfälle sind die höchstzulässigen Umgebungstemperaturen, Oberflächentemperaturen und Temperaturklassen den folgenden Tabellen zu entnehmen:

staubexplosionsgefährdete Bereiche		
Sensortyp	Umgebungs- /Mediumtemperatur	Oberflächentemperatur für Kennzeichnung
STS 212 K, STS 212 S, STS 10...	60°C	137°C
STS...K, STS...S	60°C	100°C

gasexplosionsgefährdete Bereiche		
Sensortyp	Umgebungs- /Mediumtemperatur	Temperaturklasse
STS 212 K, STS 212 S, STS 10...	45°C	T4
	60°C	T3
STS...K, STS...S	35°C	T6
	45°C	T5
	60°C	T4
	60°C	T3
STS...-KH	35°C	T6
	45°C	T5
	60°C	T4
	60°C	T3

(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

keine zusätzlichen



Translation

(1) **EC-TYPE EXAMINATION CERTIFICATE**

(2) Equipment and protective systems intended for use in potentially explosive atmospheres - **Directive 94/9/EC**



(3) EC-Type Examination Certificate Number

TÜV 02 ATEX 1816 X

(4) Equipment: Sensor type STS...

(5) Manufacturer: EGE-Elektronik Spezial Sensoren GmbH

(6) Address: Ravensberg 34
D-24214 Gettorf

(7) This equipment or protective system and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The TÜV NORD CERT GmbH & Co. KG, TÜV CERT-Certification Body, notified body number N° 0032 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential report N° 02 YEX 162710.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014:1997 EN 50020:1994 EN 50284:1999 EN 50281-1-1:1999

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type examination certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment or protective system must include the following:



II 1/2 G EEx ia IIC T4 resp. II 1 D T 100°C IP67

TÜV NORD CERT GmbH & Co. KG
TÜV CERT-Certification Body
Am TÜV 1
D-30519 Hannover
Tel.: 0511 986-1470
Fax: 0511 986-2555

Hanover, 2003-10-28



TÜV NORD CERT

German original certificate
issued on 2002-05-06

Head of the
Certification Body

(13)

SCHEDULE

(14) **EC-TYPE EXAMINATION CERTIFICATE N° TÜV 02 ATEX 1816 X**

(15) Description of equipment

The sensors type STS... are intended for the flow control of liquid and gaseous media in potentially explosive gas or dust atmospheres. The measuring sensor may be installed in areas with potentially explosive gas atmospheres that require category-1-apparatus and the enclosure may be installed in areas with potentially explosive gas atmospheres that require category-2-apparatus.

The whole sensor may be installed in areas with potentially explosive dust atmospheres that require category1.

In case that the potentially explosive gas or dust require no apparatus of category 1 the maximum permissible ambient temperatures, surface temperatures and temperature classes have to be taken from the following tables:

Use in the presence of combustible dust		
Sensor type	Ambient/Media temperature	Surface temperature for marking
STS 212 K, STS 212 S, STS 10...	75°C	152°C
STS...K, STS...S	85°C	126°C

Use in areas with potentially explosive gas atmospheres		
Sensor type	Ambient/Media temperature	Temperature class
STS 212 K, STS 212 S, STS 10...	65°C	T4
	85°C	T3
STS...K, STS...S	45°C	T6
	65°C	T5
	85°C	T4
	85°C	T3
STS...-KH	45°C	T6
	65°C	T5
	95°C	T4
	120°C	T3

Electrical data

Sensor circuit
(prefabricated cable resp.
plug)

in type of protection Intrinsic Safety EEx ia/ib IIC/IIB
only for the connection to certified intrinsically safe circuits
with the following maximum value:
 $P_i = 0.69 \text{ W}$

The effective internal capacitance and inductance are negligibly small.

(16) Test documents are listed in the test report No.: 02 YEX 162710.

(17) Special conditions for safe use

The measuring sensor may only be operated in potentially gas or dust atmospheres that require apparatus of category 1 in the case that atmospheric conditions are present (temperature range from -20°C to 60°C , pressure range from -20°C to 60°C). For these kind of applications the permissible ambient temperatures, surface temperatures and temperature classes have to be taken from the following tables.

Use in the presence of combustible dust		
Sensor type	Ambient/Media temperature	Surface temperature for marking
STS 212 K, STS 212 S, STS 10...	60°C	137°C
STS...K, STS...S	60°C	100°C

Use in areas with potentially explosive gas atmospheres		
Sensor type	Ambient/Media temperature	Temperature class
STS 212 K, STS 212 S, STS 10...	45°C	T4
	60°C	T3
STS...K, STS...S	35°C	T6
	45°C	T5
	60°C	T4
	60°C	T3
STS...-KH	35°C	T6
	45°C	T5
	60°C	T4
	60°C	T3

(18) Essential Health and Safety Requirements

no additional ones



Translation

1. SUPPLEMENT to

EC TYPE-EXAMINATION CERTIFICATE No. TÜV 02 ATEX 1816 X

of the company: EGE-Elektronik Spezial-Sensoren GmbH
Ravensberg 34
D-24214 Gettorf

In the future, the sensors type STS... may also be operated according to the test documents listed in the test report.

The amendments concern the extension of the electrical data

Electrical data

Sensor circuit
(prefabricated cable resp.
plug)

in type of protection Intrinsic Safety EEx ia/ib IIC/IIB
only for the connection to certified intrinsically safe circuits
with the following maximum value:

$$U_i = 13,7 \text{ V}$$

$$I_i = 200 \text{ mA}$$

$$P_i = 0.69 \text{ W}$$

The effective internal capacitance and inductance are negligibly small.

All further statements and the special conditions for safe use apply unchanged this supplement.

Test documents are listed in the test report N° 03 YEX 550629.

TÜV NORD CERT GmbH & Co. KG
TÜV CERT-Certification Body
Am TÜV 1
D-30519 Hannover
Tel.: 0511 986-1470
Fax: 0511 986-2555

Head of the
Certification Body

Hanover, 2003-10-28

German original certificate
issued on 2003-06-03



Konformitätserklärung Nr. 1001b

Declaration of conformity No.

EGE-Elektronik Spezial-Sensoren GmbH
Ravensberg 34
D - 24214 Gettorf

Wir erklären in alleiniger Verantwortung, dass die
We declare under our sole responsibility that the

Produkte: Flow controller
products:

Typen: SC...
types:

auf die sich diese Erklärung bezieht, mit den folgenden Normen übereinstimmen
to which this declaration relates are in conformity with the following standards

Dokument-Nr. Document No.	Titel Title	Ausgabe / Ausgabedatum Edition / Date of issue
EN 61000-6-4:2001	Elektromagnetische Verträglichkeit Teil 6-4: Fachgrundnorm Störaussendung für Industriebereich <i>Electromagnetic compatibility Part 6-4: Generic standards Emission standard for industrial environment</i>	2001
EN 61000-6-2:2001	Elektromagnetische Verträglichkeit Teil 6-2: Fachgrundnorm Störfestigkeit für Industriebereich <i>Electromagnetic compatibility Part 6-2: Generic standards Immunity for industrial environment</i>	2001
EN 60947-1:1999 +A1 +A2	Niederspannungsschaltgeräte - Teil 1: Allgemeine Festlegungen <i>Low-voltage switchgear and controlgear - Part 1: General rules</i>	2001
EN 60947-5-2:1998 +A1 +A2	Niederspannungsschaltgeräte - Teil 5-2: Steuergeräte und Schaltelemente - Näherungsschalter <i>Low-voltage switchgear and controlgear - Part 5-2: Control circuit devices - Proximity switches</i>	2004
und wo anwendbar <i>and where applicable</i>		
EN 50014:1997+A1 +A2	Elektrische Betriebsmittel für explosionsgefährdete Bereiche - Allgemeine Bestimmungen <i>Electrical apparatus for potentially explosive atmospheres - general requirements</i>	1999
EN 50020:2002	Elektrische Betriebsmittel für explosionsgefährdete Bereiche - Eigensicherheit "I" <i>Electrical apparatus for potentially explosive atmospheres - intrinsic safety "I"</i>	2002
EN 50281-1-1:1998	Elektrische Betriebsmittel zur Verwendung in brennbaren Staub Teil 1-1: Konstruktion und Prüfung <i>Electrical apparatus for use in the presence of combustible dust Part 1-1: Construction and testing</i>	1998

Gemäß den Bestimmungen der Richtlinien (falls zutreffend)
According to the regulations of the Directives (if applicable)

EMV-Richtlinie EMC Directive	89 / 336 / EWG
Niederspannungsrichtlinie Low voltage Directive	73 / 23 / EWG
ATEX-Richtlinie ATEX Directive	94 / 9 / EG

Gettorf, 04. Oktober 2005
Ort und Datum der Ausstellung
Place and date of issue

Th. Stohlmann
Qualitätsbeauftragter
Quality management representative
Name, Funktion und Unterschrift
Name, function and signature

Diese Konformitätserklärung entspricht der Europäischen Norm EN ISO/IEC 17050-1:2004
„Allgemeine Kriterien für Konformitätserklärungen von Anbietern“.
This Declaration of conformity is according to EN ISO/IEC 17050-1:2004 „General criteria for supplier's Declaration of Conformity“.

Zertifikate



TÜV CERT

(1) EG-Baumusterprüfbescheinigung

(2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - Richtlinie 94/9/EG

(3) EG-Baumusterprüfbescheinigungsnummer

TÜV 02 ATEX 1816 X

(4) Gerät: Sensor Typ STZ...

(5) Hersteller: EGE-Elektronik Spezial-Sensoren GmbH

(6) Anschrift: Ravenberg 34, D-24214 Geestorf

(7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.

(8) Die TÜV NORD CERT GmbH & Co. KG, TÜV CERT-Zertifizierungsstelle, bescheinigt als benannte Stelle Nr. 0032 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.

Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht Nr. 02 YEX 162710 festgelegt.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit:

EN 50014:1997 EN 50020:1994 EN 50284:1999 EN 50281-1-1:1999

(10) Falls das Zeichen "X" hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.

(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konzeption und Prüfung des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes. Diese Anforderungen werden nicht durch diese Bescheinigung abgedeckt.

(12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:

Ex II 2 G EEx Ia IIC T4 bzw. II 1 D T 100°C IP67

Hannover, 06.05.2002

TÜV NORD CERT GmbH & Co. KG
TÜV CERT Zertifizierungsstelle
Am TÜV 1
D-30165 Hannover
Tel.: 9611 966-479
Fax: 9611 966-206
Der Leiter

TÜV NORD CERT

Hannover, 06.05.2002

TÜV NORD CERT

Hannover, 06.05.2002

Seite 1/2

TÜV 02 ATEX 1816 X

TÜV CERT

(1) EG-Baumusterprüfbescheinigung

(2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - Richtlinie 94/9/EG

(3) EG-Baumusterprüfbescheinigungsnummer

TÜV 02 ATEX 1821

(4) Gerät: Auswertelektronik Typ SZA 4...GA-Ex

(5) Hersteller: EGE-Elektronik Spezial-Sensoren GmbH

(6) Anschrift: D-24214 Geestorf, Ravenberg 34

(7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.

(8) Die TÜV NORD CERT GmbH & Co. KG, TÜV CERT-Zertifizierungsstelle, bescheinigt als benannte Stelle Nr. 0032 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.

Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht Nr. 02 YEX 162728 festgelegt.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit:

EN 60014:1997 EN 50020:1994

(10) Falls das Zeichen "X" hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.

(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konzeption und Prüfung des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes. Diese Anforderungen werden nicht durch diese Bescheinigung abgedeckt.

(12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:

Ex II (1) GD [EEx] Ia IIC

Hannover, 06.05.2002

TÜV NORD CERT GmbH & Co. KG
TÜV CERT Zertifizierungsstelle
Am TÜV 1
D-30165 Hannover
Tel.: 9611 966-479
Fax: 9611 966-206
Der Leiter

TÜV NORD CERT

Hannover, 06.05.2002

TÜV NORD CERT

Hannover, 06.05.2002

Seite 1/2

TÜV 02 ATEX 1821

TÜV CERT

(1) EG-Baumusterprüfbescheinigung

(2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - Richtlinie 94/9/EG

(3) EG-Baumusterprüfbescheinigungsnummer

TÜV 03 ATEX 2037

(4) Gerät: Induktiver Näherungsschalter Typ IDEX...

(5) Hersteller: EGE-Elektronik Spezial-Sensoren GmbH

(6) Anschrift: D-24214 Geestorf, Ravenberg 34

(7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.

(8) Die TÜV NORD CERT GmbH & Co. KG, TÜV CERT-Zertifizierungsstelle, bescheinigt als benannte Stelle Nr. 0032 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.

Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht Nr. 03 YEX 550383 festgelegt.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit:

EN 50014:1997 EN 50020:1994 EN 50284:1999 EN 50281-1-1:1999

(10) Falls das Zeichen "X" hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.

(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konzeption und Prüfung des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes. Diese Anforderungen werden nicht durch diese Bescheinigung abgedeckt.

(12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:

Ex II 1 G EEx Ia IIC T5 bzw. II 1 D T 100°C

Hannover, 20.01.2002

TÜV NORD CERT GmbH & Co. KG
TÜV CERT Zertifizierungsstelle
Am TÜV 1
D-30165 Hannover
Tel.: 9611 966-479
Fax: 9611 966-206
Der Leiter

TÜV NORD CERT

Hannover, 20.01.2002

TÜV NORD CERT

Hannover, 20.01.2002

Seite 1/2

TÜV 03 ATEX 2037

TÜV CERT

(1) EG-Baumusterprüfbescheinigung

(2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - Richtlinie 94/9/EG

(3) EG-Baumusterprüfbescheinigungsnummer

TÜV 97 ATEX 1148

(4) Gerät: Schallgerät Typ EGE-90...

(5) Hersteller: EGE-Elektronik Spezial-Sensoren GmbH

(6) Anschrift: Ravenberg 34, D-24214 Geestorf

(7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.

(8) Die TÜV Hannover/Sachsen-Anhalt e.V., TÜV CERT-Zertifizierungsstelle, bescheinigt als benannte Stelle Nr. 0032 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.

Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht Nr. 44-97/0036 festgelegt.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit:

EN 50 014:1997 EN 50 020:1994

(10) Falls das Zeichen "X" hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.

(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf die Konzeption und den Bau des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes.

(12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:

Ex II 2G [EEx] Ia IIC

Hannover, 1997-01-23

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT Zertifizierungsstelle
Am TÜV 1
D-30165 Hannover
Der Leiter

TÜV NORD CERT

Hannover, 1997-01-23

TÜV NORD CERT

Hannover, 1997-01-23


Seite 1/2

TÜV 97 ATEX 1148



EC-TYPE EXAMINATION CERTIFICATE

**Equipment or Protective System Intended for use
in Potentially explosive atmospheres
Directive 94/9/EC**

- 1 EC-Type Examination Certificate Number : **BAS98ATEX2168X**
- 2 Equipment or Protective System: **A TYPE EM6 SOLENOID**
- 3 Manufacturer: **ASCO JOUCOMATIC LTD**
- 4 Address: **2 Pit Hey Place, West Pimbo, Skelmersdale, Lancashire, WN8 9PG**
- 5 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- 6 The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.
- 7 The examination and test results are recorded in confidential Report N°
- 8 **98(C)0433 dated 6 July 1998**
- 9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
- EN50 014: 1997 PAS 022: 1997 EN50 028: 1987**
- 10 except in respect of those requirements listed at item 18 of the Schedule.
- 11 If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.
- 12 This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.
- 13 The marking of the equipment or protective system shall include the following:-
-  **II 2 G EEx m II T3 Ambient range -40°C to +40°C See Schedule**
- 14 This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0080/03/007

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.



Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244



I M CLEARE
DIRECTOR
8 July 1998



Schedule

EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2168X

15 Description of Equipment or Protective System

A Type EM6 Solenoid comprises a coil of polyurethane/polyamide enamelled copper wire wound on a polyphenylene sulphide bobbin. The coil is mounted within a mild steel yoke assembly. The electrical supply to the solenoid is via an integral cable supported by a cable gland mounted on the yoke assembly.

The cable has an earth conductor that is terminated on the yoke assembly using a ring terminal and rivet or screw. A barrier pad of 'Nomex' paper is wrapped round the coil to provide electrical insulation to the other cable conductors, one of which is wrapped and soldered to one end of a thermal fuse device with opening temperature 164°C or $165 \pm 3^{\circ}\text{C}$. The other end of the thermal fuse is connected to the coil with the joints being soldered and wrapped.

The whole assembly is encapsulated in Hysol Type MH6-0504 mineral filled glass fibre reinforced epoxy moulding compound.

The solenoids are designed for various voltages and wattages selected from the range listed below:-

Watts	Voltage	Max. ambient °C	T Class
up to 3.55W	up to 440V a.c. 50/60 Hz	65	T3
3.55W-9W	up to 440V a.c. 50/60 Hz	65	T3
up to 9.7W	up to 240V d.c.	40	T5
		65	T4
9.7W-15.3W	up to 240V d.c.	40	T4

VARIATION ONE

An increase in dimensions to form the EMXX solenoids which are selected from the range listed below:

Watts	Voltage	Max. ambient °C	T Class
up to 4.05W	up to 440V a.c.	65	T3
4.05W-9.25W	up to 440V a.c.	65	T3
up to 11.2W	up to 240V d.c.	65	T4
11.2W-19.7W	up to 240V d.c.	40	T4



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Schedule

14

EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2168X

VARIATION TWO

A reduction in overall dimensions to form the EM5 solenoids which are selected from the range listed below:

Watts	Voltage	Max. ambient °C	T Class
up to 2.5W	up to 440V a.c.	40	T4
2.5W-4W	up to 440V a.c.	65	T3
4W-10W	up to 440V d.c.	40	T3
up to 3.5W	up to 240V d.c.	40	T5
up to 3.5W	up to 240V d.c.	60	T4
3.5W-6.9W	up to 240V d.c.	40	T3
6.9W-22.0W	up to 240V d.c.	40	T3

16

Report Nos.

98(C)0433 dated 6 July 1998

17

Special Conditions For Safe Use

1. The solenoid shall be connected to a supply protected by fuses capable of interrupting a prospective short circuit current of 4000A.
2. Solenoids with normally be supplied with an electrostatic warning label. However, for operators specifically used within petrol pump dispenser enclosures no label is fitted.
3. For solenoid operators fitted to valves used in vapour recovery systems where a Zone 0 exists within the valve and pipework, the solenoid operators or valves fitted with solenoid operators must be subject to the routine test in accordance with PAS 022: 1997 Clause 4.8 Annex 1 using air as test media and a test pressure of 15 bar (+0.1), (-0). The pipework is limited to a maximum diameter of 15mm with pipe runs not exceeding 3m in length.
4. The integral cable shall be suitably terminated when installed.



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Schedule

14

EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2168X

18

Essential Health and Safety Requirements

Essential Health & Safety Requirements not covered by Standards listed at (9)		
ESR	Subject	Compliance: Report clause
1.0.4	Surrounding area conditions	4.1.1.0.4
1.0.6	Instructions	4.1.1.0.6
1.1.2	Constructional materials not to degrade	4.1.1.1.2
1.3.4	Frictional overheating	4.1.1.3.4
1.4.2	Attack by aggressive substances	4.1.1.4.2

19

DRAWINGS

Number	Sheet	Issue	Date	Description
HV 118611		R	25.6.98	EM6 coil detail
HVA 118466		H	29.6.98	EM6 general assembly
HVA 118231		H	24.6.98	EMXX general assembly
HV 118610		Q	25.6.98	EMXX coil detail
HVA 129657		F	25.6.98	EM5 coil detail
HVA 129682		D	25.6.98	EM5 general arrangement
*FV 122459		F	1.7.98	Cable insert
*FV-129491		C	1.7.98	Thermal fuse
*FV-122289		C	1.7.98	Thermal fuse
*GV-108864		S	26.6.98	Cable
GV-142270		-	13.5.98	EM5 label (Approval)
GV-142271		-	13.5.98	EM6 and EMXX label (Approval)
*FV-135845		-	1.7.98	Cable insert
*GV-135003		B	1.7.98	EM5 label (valve information)
GV-129131		A	1.7.98	EM6 and EMXX label (valve information)
*GV-135004		B	1.7.98	Warning label

* Drawings common to BAS98ATEX2167X

This certificate may only be reproduced in its entirety and without any change, schedule included.

BASEEFA List Keywords

2SOLENOI



1 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use
in Potentially explosive atmospheres
Directive 94/9/EC**

3 Supplementary EC-Type Examination Certificate Number: **BAS98ATEX2168X/1**

4 Equipment or Protective System: **A TYPE EM6 SOLENOID**

5 Manufacturer: **ASCO JOUCOMATIC LTD**

6 Address: **Pit Hey Place, West Pimbo, Skelmersdale, Lancashire, WN8 9PG**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS98ATEX2168X to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0080/03/007

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.



Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244



I M CLEARE
DIRECTOR
17 December 1998



Schedule

SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2168X/1

Description of the Variation to the Equipment or Protective System

VARIATION ONE

To permit modifications to the label and cable cut back dimensions which do not affect certification.

To record an increase in maximum permitted ambient for the EM5 10W solenoids as follows:-

Watts	Voltage	Maximum ambient	T Class
up to 10W	up to 440V 50/60 Hz	65°C	T3

Report Nos.

Assessment in 98(C)0883 refers.

Special Conditions For Safe Use

As for the original schedule.

Essential Health and Safety Requirements

See original certificate.

DRAWINGS

Number	Issue	Date	Description
HVA-129682	E	30.9.98	EM5 Assembly
GV-108864*	T	6.10.98	Cable specification
GV-142270	A	30.9.98	Nameplate

*Drawing common to BAS98ATEX2167X

This certificate may only be reproduced in its entirety and without any change, schedule included.



1 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use
in Potentially explosive atmospheres
Directive 94/9/EC**

3 Supplementary EC-Type Examination Certificate Number: **BAS98ATEX2168X/2**

4 Equipment or Protective System: **A TYPE EM6 SOLENOID**

5 Manufacturer: **ASCO JOUCOMATIC LIMITED**

6 Address: **Skelmersdale, Lancashire, WN8 9PG**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS98ATEX2168X to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0080/03/007

BASEEFA Report No. 99(C)0071 dated 7 July 1999

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.



Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244



I M CLEARE
DIRECTOR
17 August 1999



13

Schedule

14

EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2168X/2

Description of the Variation to the Equipment or Protective System

VARIATION ONE

Allows for a small printed circuit board to be introduced to simplify assembly of the cable and thermal fuse to the solenoid coil. An alternative and simplified cable insert is incorporated in the design. An optional suppression diode is introduced which, when used, results in a T3 temperature class for the coil.

VARIATION TWO

Allows for the addition of alternative cable supplier, APEX Cables Limited, cable types 30753HT and 30754HT.

Report Nos.

99(C)0071

SPECIAL CONDITIONS FOR SAFE USE

As for the original certificate

Essential Health and Safety Requirements

See original certificate.

DRAWINGS

Number	Issue	Date	Description
JVA-129657	G	18-11-98	Coil/Cable assembly for EM5
HV-118610	R	19-1-99	Coil/Cable assembly for EMXX
HV-118611	S	19-1-99	Coil/Cable assembly for EM6
GV-108864	V	14-4-99	Cable cutback details
HVA-118466	J	2-7-99	General assembly EM6
HVA-118231	J	2-7-99	General assembly EMXX

This certificate may only be reproduced in its entirety and without any change, schedule included.



1 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use
in Potentially explosive atmospheres
Directive 94/9/EC**

3 Supplementary EC-Type Examination Certificate Number: **BAS98ATEX2168X/3**

4 Equipment or Protective System: **A TYPE EM6 SOLENOID**

5 Manufacturer: **ASCO JOUCOMATIC LIMITED**

6 Address: **Skelmersdale, Lancashire, WN8 9PG**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS98ATEX2168X to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0080/03/007

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Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244



I M CLEARE
DIRECTOR
20 July 2000



13

Schedule

14 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2168X/3**

Description of the Variation to the Equipment or Protective System

VARIATION ONE

Allows for the addition to the range of EMXX solenoids of a unit rated at up to 1.7W and up to 240V d.c. This arrangement has a T6 rating at a maximum ambient of 65°C.

VARIATION TWO

Allows for the use of alternative cable entry inserts as defined on the drawings for the EM5, EM6 and EMXX solenoids; it also allows for the use of an optional heat shrink sleeve covering the cable sheath/cable insert joint.

VARIATION THREE

Allows for the addition of a suppression diode on the types EM5 and EMXX which is added to the printed circuit board already included. When the diode option is used the temperature class for all units is limited to T3.

VARIATION FOUR

Allows for the addition of an alternative cable supplier Concordia for items 1 and 5, the 3 core and 4 core cables but with identical specification and the removal of detailed cut back dimensions from the certification documents.

VARIATION FIVE

The removal of drawings GV-135003 issue B and GV-129131 issue A from the schedule of the certificate. These drawings deal with label details for the valve itself. These drawings become certificate related drawings.

VARIATION SIX

Allows for the fitting of a modified combined certification label.

Report No.

None.

Special Conditions For Safe Use

As for the original certificate.

Essential Health and Safety Requirements

See original certificate.



13

Schedule

14 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2168X/3**

DRAWINGS

Number	Issue	Date	Description
JVA-129657	H	2-7-99	Coil/cable assembly EM5
HVA 129682	F	5-11-99	General Assembly EM5
JV-118610	S	12-05-99	Coil/cable assembly EMXX
JVA-118231	K	7-2-99	General Assembly EMXX
HV-118611	T	2-7-99	Coil/cable assembly EM6
*GV-108864	W	08-10-99	Cable specification
GV-142703	-	3-11-99	Combined label

*This drawing is common to BAS98ATEX2167X

This certificate may only be reproduced in its entirety and without any change, schedule included.



1 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use
in Potentially explosive atmospheres
Directive 94/9/EC**

3 Supplementary EC-Type Examination Certificate Number: **BAS98ATEX2168X/4**

4 Equipment or Protective System: **A TYPE EM6 SOLENOID**

5 Manufacturer: **ASCO JOUCOMATIC LIMITED**

6 Address: **Skelmersdale, Lancashire, WN8 9PG**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS98ATEX2168X to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

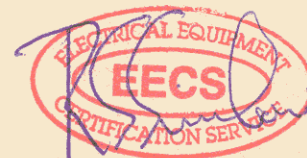
This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0080/03/007

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Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244



I M CLEARE
DIRECTOR
28 September 2000



13

Schedule

14 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2168X/4**

Description of the Variation to the Equipment or Protective System

VARIATION ONE

To allow the use of an alternative cable entry insert resulting in an increase in width of the coil assembly.

Report No.

None

Special Conditions For Safe Use

As for the original certificate.

Essential Health and Safety Requirements

See original certificate.

DRAWINGS

Number	Issue	Date	Description
JVA-129657	J	2-8-00	Coil/cable assembly EM5
HVA 129682	G	2-8-00	General Assembly EM5
JV-118610	T	2-8-00	Coil/cable assembly EMXX
JVA-118231	L	3-8-00	General Assembly EMXX
HV-118611	U	2-8-00	Coil/cable assembly EM6
HVA-118466	K	3-8-00	EM6 encapsulation

This certificate may only be reproduced in its entirety and without any change, schedule included.



1 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use
in Potentially explosive atmospheres
Directive 94/9/EC**

3 Supplementary EC-Type Examination Certificate Number: **BAS98ATEX2168X/5**

4 Equipment or Protective System: **A TYPE EM6 SOLENOID**

5 Manufacturer: **ASCO JOUCOMATIC LIMITED**

6 Address: **Skelmersdale, Lancashire, WN8 9PG**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS98ATEX2168X to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0080/03/007

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.



Electrical Equipment Certification Service
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I M CLEARE
DIRECTOR
3 July 2001



13

Schedule

14 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2168X/5**

Description of the Variation to the Equipment or Protective System

VARIATION 5.1

To allow the use of an alternative cable supplier.

VARIATION 5.2

To allow an increase in operating power from 9.25W to 10.5W on the EMXX model.

Report No.

01(C)0301

Special Conditions For Safe Use

As for the original certificate.

Essential Health and Safety Requirements

See original certificate.

DRAWINGS

Number	Issue	Date	Description
JV-118610	U	18-6-01	Coil/cable assembly EMXX
GV-145064		14-2-01	PVC cable

This certificate may only be reproduced in its entirety and without any change, schedule included.



EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER BAS98ATEX2168X Dated 8 July 1998

SIRA VARIATION NUMBER 1 (ONE) Dated 3 January 2003

VARIATION TO EQUIPMENT

To permit:

- 1 The standard EN 50281-1-1:1999 to be included in section 9 that lists the documents used to ensure compliance with the Essential Health and Safety requirements; in consequence the label will include the following marking required by Directive 94/9/EC to show that the equipment is suitable for use in the presence of combustible dust:



II 2 D (TXXX°C) – where XXX is equal to the maximum surface temperature permitted by the temperature class

- 2 The flying lead to be obtained from an alternative supplier.

DESCRIPTIVE DOCUMENTS - 1

Number	Sheet	Rev	Date	Description
HVA 118466	1 of 1	L	21 Jan 02	Type EM6 solenoid operator
HVA 129682	1 of 1	H	21 Jan 02	Type EM5 solenoid operator
JVA 118231	1 of 1	M	21 Jan 02	Type EMXX solenoid operator

DESCRIPTIVE DOCUMENTS – 2

Number	Sheet	Rev	Date	Description
GV 108864	1 of 1	X	08 Oct 02	Cable

ADDITIONAL CONDITIONS OF CERTIFICATION

None

File No 52A9530

Report No. R52A9530A


C Ellaby
Certification Officer

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Sira Certification Service

Rake Lane, Eccleston, Chester, CH4 9JN, England
Tel: +44 (0) 1244 670900 Fax: +44 (0) 1244 681330
Email: exhazard@siratc.co.uk



EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER BAS98ATEX2168X Dated 8 July 1998

SIRA VARIATION NUMBER 2 (TWO) Dated 15 May 2003

VARIATION TO EQUIPMENT

To permit:

- 1 The introduction of an alternative construction that does not have an earth washer; the earth is provided by a spring clip that forces the coil/cable assembly onto the solenoid operator bonnet.

DESCRIPTIVE DOCUMENTS

Number	Sheet	Rev	Date	Description
118231	1 of 1	N	10 Jan 03	EMXX Solenoid Operator General Arrangement

ADDITIONAL CONDITIONS OF CERTIFICATION

None

File No 53V9882

Report No. NA


C Ellaby
Certification Officer

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Page 1 of 1



EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER BAS98ATEX2168X Dated 8 July 1998

SIRA VARIATION NUMBER 3 (THREE) Dated 10 February 2004

VARIATION TO EQUIPMENT

To permit:

- 1 An increase in size of the outer encapsulant moulding around the cable entry on the EM5, EMXX and EM5X solenoids to provide greater strength at this point.
- 2 Alternative coil fixing arrangements on the EM5 solenoid.
- 3 The use of revised nameplates.
- 4 Addition to the range of solenoids with loose conductor supply leads.
- 5 Minor drawing changes.

DESCRIPTIVE DOCUMENTS

Number	Sheet	Rev	Date	Description
HVA 129682	1 of 1	J	07 July 03	General Assembly EM5
118231	1 of 1	P	10 Jan 03	General Assembly EMXX
JVA 129657	1 of 1	K	11 July 03	Coil/Cable Assembly EM5
JV 118610	1 of 1	V	10 July 03	Coil/Cable Assembly EMXX
GV 145969	1 of 1	-	29 Dec 03	Conductor (Lead Wire)

CONDITIONS OF CERTIFICATION

- 1 An electric strength test in accordance with clause 7.2 of EN 50 028:1987 shall be carried out at 1000V + 2Un, or 1500V, which ever is the greater, for 60 seconds on the encapsulated solenoid. Alternatively, if this test voltage is multiplied by 1.2 times, it may be applied for between 3 to 5 seconds. The exposed metal surface of the solenoid shall be connected to earth. The voltage shall be applied between the coil circuit joined together and earth.

ADDITIONAL SPECIAL CONDITIONS FOR SAFE USE

- 5 The loose supply conductors are to be suitably protected from mechanical damage.

File No 53V10570

Report No. R53V10570A

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D R Stubbings
Certification Manager



EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER BAS98ATEX2168X Dated 8 July 1998

SIRA VARIATION NUMBER 4 (FOUR) Dated 30 June 2004

VARIATION TO EQUIPMENT

To include:

- 1 An alternative EM5 a.c. solenoid with the following rating:

Nominal watts (W)	Ambient temperature range	Max fluid temp.	Temperature class	Surface temperature
<5 a.c.	-40°C to +60°C	90°C	T4	135°C

- 2 An additional temperature class and maximum ambient for the EMXX solenoid:

Nominal watts (W)	Ambient temperature range	Max fluid temp.	Temperature class	Surface temperature
<19.7 d.c.	-40°C to +70°C	90°C	T3	200°C

- 3 Additional electrical insulation.

DESCRIPTIVE DOCUMENTS

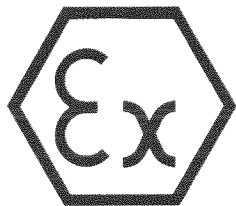
Number	Sheet	Rev	Date	Description
HVA129682	1 of 1	K	16 Mar 03	Type EM5 Encapsulation 'm' solenoid
118231	1 of 1	R	16 Jun 04	Type EMXX Encapsulation 'm' solenoid
JV118610	1 of 1	W	24 Jun 04	Coil / Cable assembly for EMXX operator

File No 52A11750

Report No. R52A11750A

D R Stubbings
Certification Manager

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EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER BAS98ATEX2168X Dated 8 July 1998

SIRA VARIATION NUMBER 5 (FIVE) Dated 13 September 2004

VARIATION TO EQUIPMENT

To permit:

- 1 The use of alternative types of flying leads.

DESCRIPTIVE DOCUMENTS

Number	Sheet	Rev	Date	Description
284582	1 of 1	-	25 Aug 04	3 and 4 core cable for EEx m solenoid operators

ADDITIONAL CONDITIONS OF CERTIFICATION

None

File No. 51V12405

Report No. R51V12405A

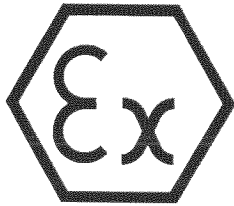
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C Ellaby
Certification Officer

Sira Certification Service

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Email: exhazard@siratc.co.uk

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EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER BAS98ATEX2168X Dated 8 July 1998

SIRA VARIATION NUMBER 6 (SIX) Dated 16 September 2005

VARIATION TO EQUIPMENT

To permit:

- 1 The use of an alternative cable supplier and the amendment of drawing note 3 to clarify the alternative cable outer sheath colours.

DESCRIPTIVE DOCUMENTS

Number	Sheet	Rev	Date	Description
284582	1 of 1	A	(Sira Stamp) 08 Sep 05	3 and 4 core cable for EEx m solenoid operators

ADDITIONAL CONDITIONS OF CERTIFICATION

None

File No. 51A13905

Report No. R51A13905A

C Ellaby
Certification Officer

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1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: BAS98ATEX2168X

4 Equipment: EMXX and EM5 Solenoids

5 Applicant: ASCO JOUCOMATIC Limited

6 Address: 2 Pit Hey Place
West Pimbo
Skelmersdale
Lancashire
WN8 9PG
(For other manufacturing sites, see certificate schedule)

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report numbers BASEEFA 98(C)0433, BASEEFA 98(C)0883, BASEEFA 99(C)0071, BASEEFA 99(T)0455, BASEEFA 01(C)0301, ST&C report number R52A9530A, R53V9882, R53V10570A, R52A11750A, R51V12405A, R51A13905A, R51A14805A, R51A15527A, R51L15207B and R51E16205A.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

- | | |
|------------------|-------------------|
| EN 60079-0:2006 | EN 61241-18:2004 |
| EN 60079-18:2004 | EN 13617 -18:2004 |
| EN 61241-0:2006 | PAS 022:1997 |

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:



II 2 GD
Ex mb II Tx Ta -40°C to +yy°C
Ex mD 21 IP67 Tz°C

Where: x is the assigned temperature class
yy is the maximum ambient temperature range
z is equal to the maximum surface temperature permitted by the temperature class i.e. T6 = T85°C, T5 = T100°C, T4 = T135°C and T3 = T200°C

Project Number 51E16205
Date 8 July 1998
Latest Issue 25 May 2007
C. Index 03

C Ellaby
Certification Officer

Sira Certification Service
Rake Lane, Eccleston, Chester, CH4 9JN, England

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

BAS98ATEX2168X

Re-issued 13 April 2006 to remove the EM6 solenoid and associated drawings, and to include all the supplements and variations into one, new, prime certificate and give a definitive drawing list, summarising all BASEEFA supplements, and Sira variations preceding this date.

Re-issued 14 December 2006 to certify the equipment for compliance with the latest European Standards and incorporate the variation 1 (ONE) dated 21 November 2006.

Re-issued 25 May 2007 to introduce the changes described in report number R51E16205A.

13 DESCRIPTION OF EQUIPMENT

The type EMXX and EM5 solenoids comprise of a coil of polyurethane/polyamide enamelled copper wire wound on a polyphenylene sulphide bobbin. The bobbin is mounted onto a PCB, which in turn is mounted onto a mild steel yoke assembly. The electrical supply to the solenoid is via an internal cable supported by the encapsulant and an optional cable gland arrangement. The cable has an earth conductor that is terminated onto the yoke assembly by means of a solder tag. In addition to the requirements of the standards listed in section 1, the permanently attached cables have been assessed for their suitability for use inside liquid fuel dispensers.

Thermal protection is provided by means of a non-resetting thermal fuse connected in series with supply conductor and the coil winding. The thermal fuse is soldered onto the PCB and has an operating temperature of 165°C ±3°C. There is an optional suppression diode which, when used, results in a T3 temperature class for the coil on all units. The solenoid also has an alternative construction that does not have an earth washer; the earth is provided by a spring clip that forces the coil cable assembly onto the solenoid operator bonnet.

The complete assembly is encapsulated using HYSOL Type MH6-0504 mineral filled glass fibre reinforced epoxy moulding compound.

EMXX Solenoids - the EMXX solenoids are selected from the range listed below:

Watts	Voltage	Ambient -40°C to yy°C	T Class, TDust
Up to 4.05 W	Up to 440 V a.c.	65°C	T3, T200°C
4.05 W to 10.5W	Up to 440 V a.c.	65°C	T3, T200°C
Up to 11.2 W	Up to 240 V d.c.	65°C	T4, T135°C
Up to 11.2 W	Up to 240 V d.c.	65°C	T3, T200°C
11.2 W to 19.7 W	Up to 240 V d.c.	40°C	T4, T135°C
Up to 1.7 W	Up to 240 V d.c.	65°C	T6, T85°C
≤19.7 W	Up to 240 V d.c.	70°C	T3, T200°C

EM5 Solenoids - the dimensions are reduced overall to form the EM5 solenoids, which are selected from the range listed below:

Watts	Voltage	Ambient -40°C to yy°C	T Class, TDust
Up to 5 W	Up to 440 V a.c.	60°C	T4, T135°C
Up to 3.5 W	Up to 240 V d.c.	40°C	T5, T100°C
Up to 3.5 W	Up to 240 V d.c.	40°C	T3, T200°C
Up to 3.5 W	Up to 240 V d.c.	60°C	T4, T135°C
Up to 3.5 W	Up to 240 V d.c.	60°C	T3, T200°C
3.5 W to 6.9 W	Up to 240 V d.c.	40°C	T3, T200°C
6.9 W - 22.0 W	Up to 240 V d.c.	40°C	T3, T200°C
Up to 10 W	Up to 440V 50/60 Hz	65°C	T3, T200°C

Date 8 July 1998
Latest Issue 25 May 2007

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Sira Certification Service

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

BAS98ATEX2168X

Other manufacturing sites

Asco Controls B.V., Industrielaan 21, Postbus 3, 3925 ZG Scherpenzeel, Netherlands

Asco Joucomatic, 49-53 rue de BEauce, BP 17, 28111 Luce France

Ascoval Industria e Comercio Ltda, Rodovia Pres. Castelo Branco, Km 20 - Jardim Santa Cecilia 06465-300 Barueri - SP - Brazil

Asco (India) Ltd, 147 Karapakkan Village, Chennai - 600 096, Tamil Nadu, India

14 DESCRIPTIVE DOCUMENTS

14.1	Drawing No.	Sheet	Rev.	Date	Description
	108864	1 of 1	AB	22 Jun 06	Cable
	118231	1 of 1	V	09 May 07	Solenoid Type EMXX (General Assembly)
	118610	1 of 1	AB	27 Jul 06	Coil/Cable Assembly for EMXX Solenoid Operator
	129657	1 of 1	M	22 Jun 06	Coil/Cable Assembly for EM5 Solenoid Operator
	129682	1 of 1	M	27 Jul 06	Type EM5 Encapsulation
	284582	1 of 1	B	15 Aug 06	Cable
	144220	1 of 1	B	13 Oct 03	Warning Label
	144215	1 of 1	B	13 Oct 03	Product Label

14.2 Report numbers BASEEFA 98(C)0433, BASEEFA 98(C)0883, BASEEFA 99(C)0071, BASEEFA 99(T)0455, BASEEFA 01(C)0301, ST&C report numbers R52A9530A, R53V9882, R53V10570A, R52A11750A, R51V12405A, R51A13905A, R51A14805A, R51A15527A, R51L15207B and R51E16205

15 SPECIAL CONDITIONS FOR SAFE USE (denoted by X after the certificate number)

15.1 The solenoids shall be connected to a supply protected by a fuse capable of interrupting the prospective short circuit current.

15.2 For solenoid operators fitted to valves used in vapour recovery systems where a Zone 0 exists within the valve and pipework, the solenoid operators or valves fitted with solenoid operators shall be subject to the routine test in accordance with PAS 022: 1997 Clause 4.8 Annex 1 using air as test media and a test pressure of 15 bar (+0.1), (-0). The pipework is limited to a maximum diameter of 15 mm with pipe runs not exceeding 3 m in length.

15.3 When installed, the free end of the permanently connected, integral cable shall be suitable terminated. The leads of solenoids that are supplied with an integral cable that does not have the additional cable glanding feature shall also be suitably protected from mechanical damage.

15.4 The EMXX & EM5 Solenoids are only suitable for use within liquid fuel metering pumps, dispensers and remote pumping units when they are fitted with cables that marked with either H05V2V2-F or H05V2V5-F.

16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in report numbers BASEEFA 98(C)0433, BASEEFA 98(C)0883, BASEEFA 99(C)0071, BASEEFA 99(T)0455, BASEEFA 01(C)0301, ST&C report number R52A9530A, R53V9882, R53V10570A, R52A11750A, R51V12405A, R51A13905A, R51A14805A, R51A15527A, R51L15207B and R51E16205.

Date 8 July 1998
Latest Issue 25 May 2007

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

BAS98ATEX2168X

17 CONDITIONS OF CERTIFICATION

- 17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.
- 17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.
- 17.3 The solenoids shall be subjected to an electric strength test in accordance with clause 9.2 of EN 60079-18:2004 shall be carried out at $1000\text{ V} + 2 U_n$, or 1500 V, whichever is the greater, for 60 seconds on the encapsulated solenoid. Alternatively, if this test voltage is multiplied by 1.2 times, it may be applied for at least 100 ms. the exposed metal surface of the solenoid shall be connected to earth. The voltage shall be applied between the coil circuit joined together and earth.
- 17.4 The integral leads of the EMXX and EM5 Solenoids that are intended to be used with liquid fuel metering pumps, dispensers and remote pumping units shall be made from cables that marked with either H05V2V2-F or H05V2V5-F.
- 17.5 Solenoids will normally be supplied with an electrostatic warning label, however, for operators specifically used within petrol pump dispenser enclosures no label is fitted.
- 17.6 The finished manufactured equipment is to be visually inspected to verify no damage cracks, shrinkage, swelling etc.

Date 8 July 1998
Latest Issue 25 May 2007

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EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER	BAS98ATEX2168X	Dated	8 July 1998
		Latest Issue	25 May 2007
Sira VARIATION NUMBER	1 (ONE)	Dated	23 April 2008

VARIATION TO EQUIPMENT

To permit:

- 1 The use of an alternative polyurethane insulated cable type FLRY 2C x 1 mm² within EMXX & EM5 solenoids rated 12VDC and 24VDC; the cable is not intended to be used with solenoids intended for use in liquid fuel metering pumps, dispensers and remote pumping units applications.
- 2 Permit the manufacturer of the equipment at the following, additional, manufacturing site:

Asco Asia – Shanghai, No8, Hua Min Road, Xin Qiao, Song Jiang District, Shanghai 201612, China

DESCRIPTIVE DOCUMENTS

Number	Sheet	Rev.	Date	Description
118610	1 of 1	AC	10 Dec 07	Solenoid Type EMXX (General Assembly)
129657	1 of 1	N	10 Dec 07	Solenoid Type EM5 (General Assembly)
294117	1 of 1	-	10 Dec 07	PU cable for Type EMXX & EM5 Solenoids

ADDITIONAL CONDITIONS OF CERTIFICATION

None

File No. 51L18075
Report No. R51L18075A

C Ellaby
Certification Officer

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EG-Baumusterprüfbescheinigung

- (1) EG-Baumusterprüfbescheinigungsnummer
- (2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - **Richtlinie 94/9/EG**
- (3) EG-Baumusterprüfbescheinigungsnummer



PTB 01 ATEX 1016

- (4) Gerät: Klemmenkasten Typ 8146/1.... und Typ 8146/2....
- (5) Hersteller: R. STAHL Schaltgeräte GmbH
- (6) Anschrift: Am Bahnhof 30, 74638 Waldenburg (Württ.)
- (7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.
- (8) Die Physikalisch-Technische Bundesanstalt bescheinigt als benannte Stelle Nr. 0102 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.

Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht PTB Ex 01-11019 festgehalten.

- (9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit

EN 50014:1997 + A1 + A2 EN 50018:1994 EN 50019:1994
EN 50020:1994 EN 50028:1987

- (10) Falls das Zeichen „X“ hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.
- (11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konzeption und Bau des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes.
- (12) Die Kennzeichnung des Gerätes muß die folgenden Angaben enthalten:

Ex II 2 G EEx edm ia/ib [ia] IIC/IIB/IIA T6, T5 bzw. T4

Zertifizierungsstelle Explosionsschutz

Braunschweig, 13. Juni 2001

Im Auftrag

Dr.-Ing. U. Klausmeyer
Regierungsdirektor



(13)

Anlage

(14)

EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

(15) Beschreibung des Gerätes

Der Klemmenkasten vom Typ 8146/1...-.. und Typ 8146/2...-.. besteht aus einem Gehäuse aus Polyesterharz in der Zündschutzart Erhöhte Sicherheit "e". Er dient zum Einbau von Klemmen für eigensichere und nichteigensichere Stromkreise. Es können nach Bedarf auch Trennklemmen und Sicherungen eingebaut werden. Der Kastenbereich für eigensichere Stromkreise ist gekennzeichnet, z.B. mit hellblauer Farbe. Es können mehrere Klemmenkästen miteinander kombiniert werden. Der Anschluß erfolgt über Ex-Kabel- und Leitungseinführungen.

Das Gehäuse sowie alle ein- und angebauten Komponenten sind nach gesonderter Prüfbescheinigung geprüft und bescheinigt.

Technische Daten

Bemessungsspannung*	bis	1100	V
Bemessungsstrom*	max.	500	A
Bemessungsquerschnitt*	max.	300	mm ²

*) je nach Klemmentyp und verwendeten Ex-Komponenten

Umgebungstemperatur	abhängig von der Temperaturklasse und der verwendeten Dichtung
	-20°C bis +40°C, T6
	-40°C bis +40°C, T6
	-20°C bis +55°C, T5
	-40°C bis +55°C, T5

Die Bemessungswerte sind Höchstwerte, die tatsächlichen elektrischen Werte werden von den eingebauten elektrischen Betriebsmitteln bestimmt. Der Hersteller legt im Rahmen dieser Grenzwerte bei Einhaltung der zutreffenden Normen und abhängig von Netzbedingungen, Betriebsart, Gebrauchskategorie usw. die endgültigen Bemessungswerte fest.

Die Zusammensetzung des Zündschutzartkurzzeichens richtet sich nach den Zündschutzarten der jeweils verwendeten Komponenten.

(16) Prüfbericht PTB Ex 01-11019

(17) Besondere Bedingungen

Keine;

Hinweise für Herstellung und Betrieb

Die maximale Anzahl der Leiter pro Gehäusegröße in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom ist den Beiblättern zu entnehmen.

Der Einbau der Betriebsmittel in der Zündschutzart Eigensicherheit "i" muß so erfolgen, dass die nach EN 60079-14 geforderten Abstände sowie die Luft- und Kriechstrecken zwischen eigensicheren und nichteigensicheren Stromkreisen eingehalten sind.

Werden die Abstandsforderungen für die Anschlußmittel nach EN 50020 nicht durch die Errichtung sichergestellt, sind Leitungen der Qualität Erhöhte Sicherheit "e" zu verwenden oder die Leitungen sind entsprechend ausfallsicher festzulegen.

Bei Verwendung von mehr als einem eigensicheren Stromkreis sind die Regeln der Zusammenschaltung zu beachten.

Die EG-Baumusterprüfbescheinigung und künftige Nachträge dazu gelten gleichzeitig als Nachträge zur Konformitätsbescheinigung PTB Nr. Ex-90.C.3145.


(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

Die durchgeführten Prüfungen und deren positive Ergebnisse zeigen, dass der Klemmenkasten vom Typ 8146/1...-.. und Typ 8146/2...-.. die Anforderungen der Richtlinie 94/9/EG und der auf dem Deckblatt angegebenen Normen erfüllt.

Zertifizierungsstelle Explosionsschutz

Braunschweig, 13. Juni 2001

Im Auftrag


Dr.-Ing. U. Klausmeyer
Regierungsdirektor




1. ERGÄNZUNG

gemäß Richtlinie 94/9/EG Anhang III Ziffer 6

zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Gerät: Klemmenkasten Typ 8146/1...-.. und Typ 8146/2...-..

Kennzeichnung:  II 2 G EEx edm ia/ib [ia] IIC/IIB/IIA T6, T5 bzw. T4

Hersteller: R. STAHL Schaltgeräte GmbH

Anschrift: Am Bahnhof 30
74638 Waldenburg (Württ.), Deutschland

Beschreibung der Ergänzungen und Änderungen

In den Klemmenkasten Typ 8146/1...-.. können auch mit Stromschienen verbundene Bolzenanschlussklemmen eingebaut werden.

Technische Daten

Bemessungsspannung	bis	750 V
Bemessungsstrom	max.	315 A bei T6 400 A bei T5
Bemessungskurzschlußstrom	max.	70 kA
Bemessungsquerschnitt.....	max.	185 mm ² , Anschluß mit Kabelschuh

Hinweise für Herstellung und Betrieb

Die vorgeschaltete Sicherung oder Schutzeinrichtung muss so ausgewählt werden, dass der max. Bemessungsstrom, der max. Bemessungskurzschlußstrom und der max. Bemessungskurzzeitstrom (1 s) sicher abgeschaltet werden.

Die Ergänzung der EG-Baumusterprüfbescheinigung gilt gleichzeitig als Nachtrag zur Konformitätsbescheinigung PTB Nr. Ex-94.C.3147.

Prüfbericht: PTB Ex 01-11145

Zertifizierungsstelle Explosionsschutz

Braunschweig, 30. Januar 2002

Im Auftrag



Dr.-Ing. U. Klausmeyer
Regierungsdirektor



2. E R G Ä N Z U N G

gemäß Richtlinie 94/9/EG Anhang III Ziffer 6

zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016



Gerät: Klemmenkasten Typ 8146/1...-.. und Typ 8146/2...-..
Kennzeichnung:  II 2 G EEx edm ia/ib [ia] IIC/IIB/IIA T6,T5,T4
Hersteller: R. STAHL Schaltgeräte GmbH
Anschrift: Am Bahnhof 30, 74638 Waldenburg (Württ.), Deutschland

Beschreibung der Ergänzungen und Änderungen

Der Klemmenkasten Typ 8146/1...-.. und Typ 8146/2...-.. kann auch in Bereichen eingesetzt werden, in denen damit zu rechnen ist, dass eine explosionsfähige Atmosphäre aus Staub/Luft-Gemischen gelegentlich auftritt.

Er wurde nach den Normen EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-11 und EN 60079-18 neu geprüft.

Dadurch ändert sich das Kennzeichen in:

 II 2 G Ex dem ia/ib [ia] IIA, IIB, IIC T6, T5, T4
 II 2 D Ex tD A21 IP66 T 80 °C, T 95 °C, T 130 °C

Der maximale Umgebungstemperaturbereich wird geändert auf:

Typ 8146/1 ...-.. -40 °C bis +55 °C
Typ 8146/2 ...-.. -40 °C bis +75 °C

Technische Daten

Bemessungsspannung* bis 1100 V
Bemessungsstrom* max. 500 A
Bemessungsquerschnitt* max. 300 mm²

*) je nach Klemmentyp und verwendeten Ex-Komponenten

Umgebungstemperaturbereich

Typ 8146/1 ...-.. -40 °C bis +55 °C
Typ 8146/2 ...-.. -40 °C bis +75 °C

Braunschweig und Berlin

2. Ergänzung zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Der tatsächliche Umgebungstemperaturbereich richtet sich nach dem zulässigen Temperaturbereich der jeweils verwendeten Bauteile und der Temperaturklasse.

Berührungs-, Fremdkörper- und Wasserschutz:..... IP66 nach EN 60529

Die Bemessungswerte sind Höchstwerte; die tatsächlichen elektrischen Werte werden von den eingebauten elektrischen Betriebsmitteln bestimmt. Der Hersteller legt im Rahmen dieser Grenzwerte bei Einhaltung der zutreffenden Normen und abhängig von Netzbedingungen, Betriebsart, Gebrauchskategorie usw. die endgültigen Bemessungswerte fest.

Die Zusammensetzung des Zündschutzartkurzzeichens richtet sich nach den Zündschutzarten der jeweils verwendeten Komponenten.

Angewandte Normen

EN 60079-0:2006	EN 60079-1:2004	EN 60079-7:2003	EN 60079-11:2007
EN 60079-18:2004	EN 61241-0:2006	EN 61241-1:2004	

Prüfbericht: PTB Ex 07-17094

Zertifizierungsstelle: Explosionsschutz

Braunschweig, 17. Oktober 2007

Im Auftrag


Dr.-Ing. M. Thedens
Oberregierungsrat



BEIBLATT 01

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1031

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²			
	1,5	2,5	4	
3				2)
6				
10	42			
16	14	28	108	4)
20	6	16	31	
25		7	17	
35			5	
50				3)
	14	14	14	
max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen				

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 02

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1041

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²						
	1,5	2,5	4	6	10	16	
3							2)
6							
10	44						
16	15	29	114				
20	6	17	33				
25		8	18	36			
35			5	14	35		4)
50				2	11	29	
63					3	13	
80						5	
100							3)
	28	28	28	10	10	8	
	max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen						

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 03

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1241

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²								
	1,5	2,5	4	6	10	16	25	35	
3									2)
6									
10	45								
16	15	29	116						
20	6	17	33						
25		8	19	36					
35			5	14	35				
50				2	11	29			
63					3	13	48		
80						5	15	54	
100							6	14	
125								5	
150									3)
	56	56	33	20	10	8	6	5	
	max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen								

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 04

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1242

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²								
	1,5	2,5	4	6	10	16	25	35	
3									2)
6									
10	55								
16	19	37	143						
20	8	21	41						
25		10	23	45					
35			7	17	44				
50				2	14	36			
63					4	17	60		
80						6	19	67	
100							8	17	
125								7	
160									3)
	56	56	33	20	10	8	6	5	
	max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen								

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 05

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1051

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²						
	1,5	2,5	4	6	10	16	
3							2)
6							
10	50						
16	17	33	129				
20	7	19	37				
25		9	21	41			
35			6	16	39		4)
50				2	13	33	
63					4	15	
80						5	
100							3)
	46	46	46	17	17	13	
	max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen						

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 06

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1052

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²						
	1,5	2,5	4	6	10	16	
3							2)
6							
10	61						
16	21	41	159				
20	8	24	46				
25		11	26	50			
35			7	19	49		4)
50				2	16	40	
63					5	18	
80						7	
100							3)
	46	46	46	17	17	13	
	max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen						

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 07

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1061

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²								
	1,5	2,5	4	6	10	16	25	35	
3									2)
6									
10	53								
16	18	35	137						
20	7	20	39						
25		9	22	43					
35			6	17	42				
50				2	13	35			
63					4	16	57		
80						6	18	64	
100							7	17	
125								6	
160									3)
	92	92	66	34	24	19	11	9	
	max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen								

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 08

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1062

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²								
	1,5	2,5	4	6	10	16	25	35	
3									2)
6									
10	64								
16	22	42	166						
20	9	25	48						
25		11	27	52					
35			8	20	51				4)
50				3	16	42			
63					5	19	69		
80						7	21	78	
100							9	20	3)
125								8	
160									
	92	92	66	34	24	19	11	9	
	max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen								

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 09

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1071 und Typ 8146/1S71

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²								
	1,5	2,5	4	6	10	16	25	35	
3									2)
6									
10	55								
16	19	36	142						
20	7	21	41						
25		10	23	45					
35			6	17	44				
50				2	14	36			
63					4	17	60		
80						6	18	67	
100							8	17	4)
125								7	
160									3)
	138	138	104	51	38	30	22	9	
	max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen								

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 10

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1072 und Typ 8146/1S72

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²										
	1,5	2,5	4	6	10	16	25	35	50	70	
3											2)
6											
10	66										
16	22	44	170								
20	9	25	49								
25		12	28	54							
35			8	21	52						
50				3	17	43					
63					5	20	71				
80						7	22	80			
100							9	21			
125								8	21		
160									7	19	
200										6	
225										2	
250											
	138	138	104	51	38	30	22	9	6	6	3)
max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen											

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 11

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1073 und Typ 8146/1S73

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²										
	1,5	2,5	4	6	10	16	25	35	50	70	
3											2)
6											
10	71										
16	24	47	184								
20	10	27	53								
25		13	30	58							
35			8	22	56						
50				3	18	47					
63					6	21	77				
80						8	24	86			
100							10	22			
125								9	23		
160									8	20	
200										7	
225										2	
250											
	138	138	104	51	38	30	22	9	6	6	3)
max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen											

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 12

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1075 und Typ 8146/1S75

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²											
	1,5	2,5	4	6	10	16	25	35	50	70		
3												2)
6												
10	82											
16	28	54	212									
20	11	32	61									
25		15	35	67								
35			10	26	65							
50				3	21	54						
63					7	25	89					
80						9	28	99				
100							12	26				
125								10	26			
160									9	23		
200										8	4)	
225										3		
250											3)	
	138	138	104	51	38	30	22	9	6	6		

max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 13

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1081

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²								
	1,5	2,5	4	6	10	16	25	35	
3									2)
6									
10	74								
16	25	49	192						
20	10	29	55						
25		13	31	61					
35			9	23	59				
50				3	19	49			
63					6	22	80		
80						8	25	90	
100							10	23	
125								9	
160									3)
	312	312	208	117	76	60	50	20	
	max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen								

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 14

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1082

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²										
	1,5	2,5	4	6	10	16	25	35	50	70	
3											2)
6											
10	86										
16	29	57	221								
20	12	33	64								
25		15	36	70							
35			10	27	68						
50				4	22	56					
63					7	26	93				
80						10	29	104			
100							12	27			
125								11	28		
160									9	24	
200										8	
225										3	
250											
	312	312	208	117	76	60	50	20	14	14	3)
	max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen										

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel: (allgemein)	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 15

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1083

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²										
	1,5	2,5	4	6	10	16	25	35	50	70	
3											2)
6											
10	91										
16	31	60	235								
20	13	35	68								
25		16	38	74							
35			11	29	72						
50				4	23	60					
63					8	28	99				
80						10	31	111			
100							13	29			
125								11	29		
160									10	26	
200										9	
225										3	
250											
	312	312	208	117	76	60	50	20	14	14	3)
	max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen										

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 16

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1084

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²										
	1,5	2,5	4	6	10	16	25	35	50	70	
3											2)
6											
10	97										
16	33	64	251								
20	14	37	73								
25		18	41	79							
35			12	31	77						
50				4	25	64					
63					8	29	105				
80						11	33	118			
100							14	31			
125								12	31		
160									11	27	
200										10	
225										3	
250											
	312	312	208	117	76	60	50	20	14	14	3)
	max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen										

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel: (allgemein)	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 17

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1085

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²										
	1,5	2,5	4	6	10	16	25	35	50	70	
3											2)
6											
10	102										
16	35	68	265								
20	14	40	77								
25		19	43	84							
35			12	33	81						
50				4	26	67					
63					9	31	111				
80						12	35	124			
100							15	33			4)
125								13	33		
160									11	29	3)
200										10	
225										4	
250											
	312	312	208	117	76	60	50	20	14	14	
max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen											

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 18

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1086

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²										
	1,5	2,5	4	6	10	16	25	35	50	70	
3											2)
6											
10	114										
16	39	76	294								
20	16	44	85								
25		21	48	93							
35			14	36	90						
50				5	29	75					
63					10	35	123				
80						13	38	138			
100							16	36			
125								14	37		
160									12	32	
200										11	
225										4	
250											
	312	312	208	117	76	60	50	20	14	14	3)
	max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen										

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 19

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1091

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²								
	1,5	2,5	4	6	10	16	25	35	
3									2)
6									
10	86								
16	29	57	222						
20	12	33	64						
25		16	36	70					
35			10	27	68				
50				4	22	56			
63					7	26	93		
80						10	29	104	
100							12	27	4)
125								11	
160									3)
	676	676	468	273	190	128	106	60	
	max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen								

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 20

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1092

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²																
	1,5	2,5	4	6	10	16	25	35	50	70	95	120	150	185	240	300	
3																	
6																	
10	97																
16	33	64	250														
20	13	37	72														
25		18	41	79													
35			12	31	77												
50				4	25	63											
63					8	29	105										
80						11	33	117									
100							14	31									
125								12	31								
160									10	27							
200										10	24	74					
225										3	13	29					
250											7	17	36				
315												3	10	22			
400														4	15	44	4)
500															2	8	
																	3)
	676	676	468	273	190	128	106	60	29	29	8	8	6	6	6	6	

max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel: (allgemein)	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 21

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1093

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²															
	1,5	2,5	4	6	10	16	25	35	50	70	95	120	150	185	240	300
3																
6																
10	102															
16	35	68	263													
20	14	39	76													
25		18	43	83												
35			12	32	81											
50				4	26	67										
63					9	31	110									
80						12	34	123								
100							15	32								
125								13	33							
160									11	29						
200										10	25	78				
225										4	14	30				
250											7	18	38			
315												4	11	23		
400														5	16	46
500															2	9
																3)
	676	676	468	273	190	128	106	60	29	29	8	8	6	6	6	6

max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %

BEIBLATT 22

Zur EG-Baumusterprüfbescheinigung PTB 01 ATEX 1016

Bestückung der Klemmenkästen Typ 8146/1095

Maximale Anzahl der Leiter ¹⁾ in Abhängigkeit vom Querschnitt und dem zulässigen Dauerstrom:

Strom in A	Querschnitt in mm ²																	
	1,5	2,5	4	6	10	16	25	35	50	70	95	120	150	185	240	300		
3																		2)
6																		
10	113																	
16	38	75	291															
20	16	44	84															
25		20	48	92														
35			14	36	89													
50				5	29	74												
63					10	34	122											
80						13	38	137										
100							16	36										
125								14	36									
160									12	32								
200										11	28	86						
225										4	16	33						
250											8	20	43					
315												4	12	25				
400														5	17	51	4)	
500															2	10		
																	3)	
	676	676	468	273	190	128	106	60	29	29	8	8	6	6	6	6		

max. Klemmenanzahl in Abhängigkeit von oben genannter Gehäusegröße und dem Querschnitt bzw. dem max. zul. Leiterquerschnitt der eingebauten Klemmen

Anmerkungen

- 1) Als Leiter zählt jeder eingeführte Leiter und jeder interne Verbindungsleiter. Brücken und Schutzleiter werden nicht gezählt.
- 2) beliebig zusätzlich
- 3) vom Hersteller zu projektieren (mit gesondertem Erwärmungsnachweis)
- 4) Bei der Anwendung dieser Tabellenwerte dürfen Gleichzeitigkeitsfaktoren oder Belastungsfaktoren entsprechend IEC 439 berücksichtigt werden. Mischbestückung mit Stromkreisen unterschiedlicher Querschnitte und Ströme ist möglich durch anteilige Ausnutzung der verschiedenen Tabellenwerte:

Beispiel:	Querschnitt / mm ²	Strom / A	Leiteranzahl	Auslastung
(allgemein)	2,5	16	10 (von 30)	= 33 %
	16	50	12 (von 48)	= 25 %
	25	63	36 (von 90)	= 40 %
			Summe	= 98 % < 100 %



(1) EC-TYPE-EXAMINATION CERTIFICATE (Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**



(3) EC-type-examination Certificate Number:

PTB 01 ATEX 1016

(4) Equipment: Terminal box, type 8146/1...-.. and type 8146/2...-..
(5) Manufacturer: R. STAHL Schaltgeräte GmbH
(6) Address: Am Bahnhof 30, 74638 Waldenburg (Württ.), Germany

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 01-11019.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014:1997 + A1 + A2 EN 50018:1994 EN 50019:1994
EN 50020:1994 EN 50028:1987

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type-examination Certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

(12) The marking of the equipment shall include the following:

II 2 G EEx edm ia/ib [ia] IIC/IIB/IIA T6, T5 or T4

Zertifizierungsstelle Explosionsschutz

Braunschweig, June 13, 2001

By order:

Dr.-Ing. U. Klausmeyer
Regierungsdirektor



(13) **SCHEDULE**

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016**

(15) Description of equipment

The terminal box of types 8146/1...-.. and 8146/2...-.. is a polyester-resin housing designed to type of protection increased safety "e". It is used to house terminals for intrinsically safe and non-intrinsically safe circuits and may optionally be provided with disconnect terminals and fuses. The box area intended for intrinsically safe circuits will be marked by a special colour (e.g. light-blue). Connection will be made by means of explosion-proof cable entries.

The enclosure as well as any installed and attached components have been tested and certified under a separate test certificate.

Technical data

Rated voltage*	up to	1100	V
Rated current*	max.	500	A
Rated cross section*	max.	300	mm ²

*) depending on type of terminal and explosion-proof components used

Ambient temperature	depending on temperature class and sealing used
	-20°C to +40°C, T6
	-40°C to +40°C, T6
	-20°C to +55°C, T5
	-40°C to +55°C, T5

The ratings specified are maximum values, actual values will be subject to the electrical equipment used from case to case. Depending on the system conditions, the mode of operation, the utilisation category, etc., the manufacturer will define the definitive ratings which will be within the range of these limiting values and will comply with the relevant standards.

The composition of the protection symbol will be based on the types of protection of the components actually used.

(16) Test report PTB Ex 01-11019

(17) Special conditions for safe use

None;

Notes for installation and use

For the maximum number of conductors, which for each size of enclosure is determined by the cross section and the admissible continuous current, reference is made to the specification sheets.

Equipment of the type of protection Intrinsic Safety "i" shall be installed in such a way that the clearances and creepage distances between intrinsically safe and non-intrinsically safe circuits as set forth in 60079-14 are duly accounted for.

If the clearance requirements for the connectors as specified in EN 50020 cannot be safeguarded with the system installation and layout, wiring that meets the quality criteria Increased Safety "e" shall be used, or the wiring shall be of the fail-safe type.

When using more than one intrinsically safe circuit, the rules and regulations for interconnection shall duly be observed.

This EC type-examination certificate as well as any future supplements thereto shall at the same time be regarded as supplements to Certificate of Conformity PTB No. Ex-90.C.3145.

(18) Essential health and safety requirements

The tests and the favourable results these have produced reveal that the terminal box of types 8146/1...-.. and 8146/2...-.. meets the requirements of directive 94/9/EC as well as those of the standards quoted on the cover sheet.

Zertifizierungsstelle Explosionsschutz

Braunschweig, June 13, 2001

By order



Dr.-Ing. U. Klausmeyer
Regierungsdirektor



1st SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

(Translation)

Equipment: Terminal box, type 8146/1...-... and type 8146/2...-...

Marking:  II 2 G EEx edm ia/ib [ia] IIC/IIB/IIA T6, T5 or T4

Manufacturer: R. STAHL Schaltgeräte GmbH

Address: Am Bahnhof 30
D-74638 Waldenburg (Württ.), Germany

Description of supplements and modifications

The terminal box, type 8146/1...-..., may also be fitted with bolt-type screw terminals connected with busbars.

Technical data

Rated voltage	up to	750 V
Rated current.....	max.	315 A for T6 400 A for T5
Rated short-circuit current.....	max.	70 kA
Rated cross section	max.	185 mm ² , connection with cable lug

Notes for manufacture and operation

The line-side fuse or protective device shall be selected so as to provide for safe interruption of the max. rated current, the max. rated short-circuit current, and the max. rated short-time current (1 s).

The supplement for the EC type-examination certificate shall at the same time be regarded as a supplement for Certificate of Conformity PTB No. Ex-94.C.3147.

Test report: PTB Ex 01-11145

Zertifizierungsstelle Explosionsschutz

Braunschweig, January 30, 2002

By order:


Dr.-Ing. U. Klausmeyer
Regierungsdirektor



Sheet 1/1

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

SUPPLEMENTARY SHEET 01

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1031

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²			
	1,5	2,5	4	
3				2)
6				
10	42			
16	14	28	108	4)
20	6	16	31	
25		7	17	
35			5	
50				3)
	14	14	14	
max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals				

Notes

- 1) Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- 2) additional conductors optional
- 3) to be specified by the manufacturer (including temperature rise test)
- 4) When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	<u><u>= 98 % < 100 %</u></u>

SUPPLEMENTARY SHEET 02

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1041

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²						
	1,5	2,5	4	6	10	16	
3							2)
6							
10	44						
16	15	29	114				
20	6	17	33				
25		8	18	36			4)
35			5	14	35		
50				2	11	29	
63					3	13	
80						5	3)
100							
	28	28	28	10	10	8	
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals						

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 03

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1241

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²								
	1,5	2,5	4	6	10	16	25	35	
3									2)
6									
10	45								
16	15	29	116						
20	6	17	33						
25		8	19	36					
35			5	14	35				
50				2	11	29			
63					3	13	48		
80						5	15	54	
100							6	14	
125								5	
150									3)
	56	56	33	20	10	8	6	5	
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals								

Notes

- 1) Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- 2) additional conductors optional
- 3) to be specified by the manufacturer (including temperature rise test)
- 4) When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 04

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1242

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²								
	1,5	2,5	4	6	10	16	25	35	
3									2)
6									
10	55								
16	19	37	143						
20	8	21	41						
25		10	23	45					
35			7	17	44				
50				2	14	36			
63					4	17	60		
80						6	19	67	
100							8	17	4)
125								7	
160									3)
	56	56	33	20	10	8	6	5	
max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals									

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 05

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1051

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²						
	1,5	2,5	4	6	10	16	
3							2)
6							
10	50						
16	17	33	129				
20	7	19	37				
25		9	21	41			4)
35			6	16	39		
50				2	13	33	
63					4	15	
80						5	3)
100							
	46	46	46	17	17	13	
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals						

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 06

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1052

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²						
	1,5	2,5	4	6	10	16	
3							2)
6							
10	61						
16	21	41	159				
20	8	24	46				
25		11	26	50			
35			7	19	49		4)
50				2	16	40	
63					5	18	
80						7	
100							3)
	46	46	46	17	17	13	
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals						

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 07

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1061

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²								
	1,5	2,5	4	6	10	16	25	35	
3									2)
6									
10	53								
16	18	35	137						
20	7	20	39						
25		9	22	43					
35			6	17	42				
50				2	13	35			
63					4	16	57		
80						6	18	64	
100							7	17	
125								6	
160									3)
	92	92	66	34	24	19	11	9	
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals								

Notes

- 1) Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- 2) additional conductors optional
- 3) to be specified by the manufacturer (including temperature rise test)
- 4) When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 08

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1062

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²								
	1,5	2,5	4	6	10	16	25	35	
3									2)
6									
10	64								
16	22	42	166						
20	9	25	48						
25		11	27	52					
35			8	20	51				
50				3	16	42			
63					5	19	69		
80						7	21	78	
100							9	20	4)
125								8	
160									3)
	92	92	66	34	24	19	11	9	
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals								

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 09

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1071 and Type 8146/1S71

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²								
	1,5	2,5	4	6	10	16	25	35	
3									2)
6									
10	55								
16	19	36	142						
20	7	21	41						
25		10	23	45					
35			6	17	44				
50				2	14	36			
63					4	17	60		
80						6	18	67	
100							8	17	4)
125								7	
160									3)
	138	138	104	51	38	30	22	9	
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals								

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 10

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1072 and Type 8146/1S72

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²										
	1,5	2,5	4	6	10	16	25	35	50	70	
3											2)
6											
10	66										
16	22	44	170								
20	9	25	49								
25		12	28	54							
35			8	21	52						
50				3	17	43					
63					5	20	71				
80						7	22	80			
100							9	21			
125								8	21		
160									7	19	
200										6	
225										2	
250											
	138	138	104	51	38	30	22	9	6	6	3)
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals										

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 11

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1073 and Type 8146/1S73

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²										
	1,5	2,5	4	6	10	16	25	35	50	70	
3											2)
6											
10	71										
16	24	47	184								
20	10	27	53								
25		13	30	58							
35			8	22	56						
50				3	18	47					
63					6	21	77				
80						8	24	86			
100							10	22			
125								9	23		
160									8	20	
200										7	
225										2	
250											
	138	138	104	51	38	30	22	9	6	6	3)
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals										

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 12

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1075 and Type 8146/1S75

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²										
	1,5	2,5	4	6	10	16	25	35	50	70	
3											2)
6											
10	82										
16	28	54	212								
20	11	32	61								
25		15	35	67							
35			10	26	65						
50				3	21	54					
63					7	25	89				
80						9	28	99			
100							12	26			
125								10	26		
160									9	23	
200										8	
225										3	
250										3)	
	138	138	104	51	38	30	22	9	6	6	
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals										

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 13

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1081

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²								
	1,5	2,5	4	6	10	16	25	35	
3									2)
6									
10	74								
16	25	49	192						
20	10	29	55						
25		13	31	61					
35			9	23	59				
50				3	19	49			
63					6	22	80		
80						8	25	90	
100							10	23	4)
125								9	
160									3)
	312	312	208	117	76	60	50	20	
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals								

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 14

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1082

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²											
	1,5	2,5	4	6	10	16	25	35	50	70		
3												2)
6												
10	86											
16	29	57	221									
20	12	33	64									
25		15	36	70								
35			10	27	68							
50				4	22	56						
63					7	26	93					
80						10	29	104				
100							12	27				
125								11	28			
160									9	24		
200										8	4)	
225										3		
250											3)	
	312	312	208	117	76	60	50	20	14	14		
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals											

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 15

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1083

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²											
	1,5	2,5	4	6	10	16	25	35	50	70		
3												2)
6												
10	91											
16	31	60	235									
20	13	35	68									
25		16	38	74								
35			11	29	72							
50				4	23	60						
63					8	28	99					
80						10	31	111				
100							13	29				
125								11	29			
160									10	26		
200										9	4)	
225										3		
250											3)	
	312	312	208	117	76	60	50	20	14	14		
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals											

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 16

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1084

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²											
	1,5	2,5	4	6	10	16	25	35	50	70		
3												2)
6												
10	97											
16	33	64	251									
20	14	37	73									
25		18	41	79								
35			12	31	77							
50				4	25	64						
63					8	29	105					
80						11	33	118				
100							14	31				
125								12	31			
160									11	27		
200										10	4)	
225										3		
250											3)	
	312	312	208	117	76	60	50	20	14	14		
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals											

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 17

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1085

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²										
	1,5	2,5	4	6	10	16	25	35	50	70	
3											2)
6											
10	102										
16	35	68	265								
20	14	40	77								
25		19	43	84							
35			12	33	81						
50				4	26	67					
63					9	31	111				
80						12	35	124			
100							15	33			4)
125								13	33		
160									11	29	
200										10	
225										4	
250											
	312	312	208	117	76	60	50	20	14	14	3)
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals										

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 18

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1086

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²											
	1,5	2,5	4	6	10	16	25	35	50	70		
3												2)
6												
10	114											
16	39	76	294									
20	16	44	85									
25		21	48	93								
35			14	36	90							
50				5	29	75						
63					10	35	123					
80						13	38	138				
100							16	36				
125								14	37			
160									12	32		
200										11	4)	
225										4		
250											3)	
	312	312	208	117	76	60	50	20	14	14		
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals											

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 19

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1091

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current / A	cross section / mm ²								
	1,5	2,5	4	6	10	16	25	35	
3									2)
6									
10	86								
16	29	57	222						
20	12	33	64						
25		16	36	70					
35			10	27	68				
50				4	22	56			
63					7	26	93		
80						10	29	104	
100							12	27	4)
125								11	3)
160									
	676	676	468	273	190	128	106	60	
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals								

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 20

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1092

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current A	cross section / mm ²																
	1,5	2,5	4	6	10	16	25	35	50	70	95	120	150	185	240	300	
3																	
6																	
10	97																
16	33	64	250														
20	13	37	72														
25		18	41	79													
35			12	31	77												
50				4	25	63											
63					8	29	105										
80						11	33	117									
100							14	31									
125								12	31								
160									10	27							
200										10	24	74					
225										3	13	29					
250											7	17	36				
315												3	10	22			
400														4	15	44	4)
500															2	8	
																	3)
	676	676	468	273	190	128	106	60	29	29	8	8	6	6	6	6	
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals																

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 21

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1093

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current A	cross section / mm ²																
	1,5	2,5	4	6	10	16	25	35	50	70	95	120	150	185	240	300	
3																	
6																	
10	102																
16	35	68	263														
20	14	39	76														
25		18	43	83													
35			12	32	81												
50				4	26	67											
63					9	31	110										
80						12	34	123									
100							15	32									
125								13	33								
160									11	29							
200										10	25	78					
225										4	14	30					
250											7	18	38				
315												4	11	23			
400														5	16	46	4)
500															2	9	
																	3)
	676	676	468	273	190	128	106	60	29	29	8	8	6	6	6	6	
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals																

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

SUPPLEMENTARY SHEET 22

to EC TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 1016

Fitting of terminal boxes Type 8146/1095

Max. number of conductors ¹⁾ depending on cross section and the permissible continuous current:

current A	cross section / mm ²																	
	1,5	2,5	4	6	10	16	25	35	50	70	95	120	150	185	240	300		
3																		2)
6																		
10	113																	
16	38	75	291															
20	16	44	84															
25		20	48	92														
35			14	36	89													
50				5	29	74												
63					10	34	122											
80						13	38	137										
100							16	36										
125								14	36									
160									12	32								
200										11	28	86						
225										4	16	33						
250											8	20	43					
315												4	12	25				
400														5	17	51	4)	
500															2	10		
																	3)	
	676	676	468	273	190	128	106	60	29	29	8	8	6	6	6	6		
	max. number of terminals depending of the above mentioned enclosure size and the cross section resp. max. permissible conductor cross section of the built-in terminals																	

Notes

- Each incoming conductor and each internal connection wire is counted as a conductor. Bridges and earthing conductors are not counted.
- additional conductors optional
- to be specified by the manufacturer (including temperature rise test)
- When applying the values of this table simultaneous factors or load factors to IEC 439 may be considered. Mixed equipment with circuits of different cross sections and currents is possible if the various values of the table are applied proportionally:

Example: (general)	cross section / mm ²	current / A	number of conductors	utilization
	2,5	16	10 (of 30)	= 33 %
	16	50	12 (of 48)	= 25 %
	25	63	36 (of 90)	= 40 %
			total	= 98 % < 100 %

EG-Konformitätserklärung
EC-Declaration of Conformity
Déclaration de Conformité CE



Doc No: 40520-1

Wir (we; nous)

R. STAHL Schaltgeräte GmbH, Am Bahnhof 30, 74638 Waldenburg, Germany

8146/1
8146/2

erklären in alleiniger Verantwortung, dass das Produkt
hereby declare in our sole responsibility, that the product
déclarons, sous notre seule responsabilité, que le produit

Klemmenkasten
Terminal box
Boîtier de raccordement

mit der EG-Baumusterprüfbescheinigung:
(under; EC-Type Examination Certificate:
avec) Attestation d'examen CE de type:

PTB 01 ATEX 1016

auf das sich diese Erklärung bezieht, mit den folgenden Normen oder normativen Dokumenten übereinstimmt

which is the subject of this declaration, is in conformity with the following standards or normative documents

auquel cette déclaration se rapporte, est conforme aux normes ou aux documents normatifs suivants

Bestimmungen der Richtlinie
terms of the directive
prescriptions de la directive

Nummer sowie Ausgabedatum der Norm
Number and date of issue of the standard
Numéro ainsi que date d'émission de la norme

94/9/EG: ATEX-Richtlinie
94/9/EC: ATEX Directive
94/9/CE: Directive ATEX

EN 60079-0:2006
 EN 60079-1:2007
 EN 60079-7:2007
 EN 60079-11:2007
 EN 60079-18:2004
 EN 61241-0:2006
 EN 61241-1:2004

2004/108/EG: EMV-Richtlinie
2004/108/EC: EMC Directive
2004/108/CE: Directive CEM

EN 60947-1:1999

Qualitätssicherung Produktion:
Production Quality Assessment:
Assurance Qualité Production:

PTB 96 ATEX Q006-4

Kenn-Nr. der benannten Stelle / Notified Body number / N° de l'organisme de certification: 0102

Waldenburg, 27. Juni 2008

i.V.

i.V.

Ort und Datum
Place and date
Lieu et date

B. Limbacher
Leiter Entwicklung
Head of Development
Directeur Développement

Dr. S. Jung
Leiter Qualitätsmanagement
Director Quality Management Dept.
Directeur Dept. Assurance de Qualité



Translation

EC-TYPE EXAMINATION CERTIFICATE

- (1) **EC-TYPE EXAMINATION CERTIFICATE**
- (2) Equipment or Protective System intended for use in potentially explosive atmospheres - **Directive 94/9/EC**
- (3) EC-Type Examination Certificate Number

**TÜV 96 ATEX 1097**

- (4) Equipment or Protective System: flow controller SKZ 400 Ex...; SZA 400 Ex...
- (5) Manufacturer: EGE-Elektronik
Spezial Sensoren GmbH
- (6) Address: Ravensberg 34
D-24214 Gettorf
- (7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- (8) The TÜV Hannover/Sachsen-Anhalt e.V., TÜV Certification Body N° 0032 in accordance with Article 9 of the Council Directive 94/9/EC of March 23, 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report N° 44/96/2005.

- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
- EN 50 014:1977 + A1...A5 1.87 EN 50 020:1977 + A1... A5 4.92**
- (10) If the sign „X“ is placed after the certification number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.
- (12) The marking of the equipment or protective system shall include the following:

II 1G/2G [EEx ia] IIC resp. [EEx ib] IIC

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Head of the
Certification Body



Hannover, 1996-07-16



1. ERGÄNZUNG
zur
EG-Baumusterprüfbescheinigung Nr. TÜV 96 ATEX 1097

der Firma: EGE-Elektronik Spezial-Sensoren GmbH
Ravensberg 34
D-24214 Gettorf

Der eigensichere Stromkreis des Strömungswächters SKZ 400 Ex... ; SZA 400 Ex... darf künftig auch in durch Staub explosionsgefährdete Bereiche geführt werden.

Die Änderungen betreffen die Kennzeichnung, die künftig

II (1) GD [EEx ia] IIC

lautet.

Die elektrischen Daten und alle weiteren Angaben gelten unverändert für diese Ergänzung.

Prüfungsunterlagen sind im Prüfprotokoll Nr. 03 YEX 550598-1 aufgelistet.

TÜV NORD CERT GmbH & Co. KG
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover
Tel.: 0511 986-1470
Fax: 0511 986-2555

Hannover, 20.05.2003

Der Leiter



(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

keine zusätzlichen

Translation

**1. SUPPLEMENT
to
EC TYPE-EXAMINATION CERTIFICATE No. TÜV 96 ATEX 1097**

of the company: EGE-Elektronik Spezial-Sensoren GmbH
Ravensberg 34
D-24214 Gettorf

In the future, the intrinsically safe electric circuit of the evaluation unit type SKZ 400 Ex... ;
SZA 400 Ex... may also be lead trough dust explosion-endangered areas .

The changes apply to the marking which reads in the future

II (1) GD [EEx ia] IIC .

The electrical data and all further statements apply unchanged to this supplement.

Test documents are listed in the test report N° 03 YEX 550598-1.

TÜV NORD CERT GmbH & Co. KG
TÜV CERT-Certification Body
Am TÜV 1
D-30519 Hannover
Tel.: 0511 986-1470
Fax: 0511 986-2555

Hanover, 2003-05-20

**Head of the
Certification Body**

Doc No: 46108-2

Konformitätserklärung / Declaration of Conformity

Nach DIN EN ISO/IEC 17050-1 / In accordance with DIN EN ISO/IEC 17050-1

Diese Konformitätserklärung gilt für folgende Produkte:
This Declaration of Conformity is valid for the following parts:

Produktbezeichnung/Description :

Temperatur Messumformer / Temperature converter:	KFD2-UT2-Ex1	Part.Nr. : 116917
	KFD2-UT2-Ex1-1	Part.Nr. : 185079
	KFD2-UT2-Ex2	Part.Nr. : 117073
	KFD2-UT2-Ex2-1	Part.Nr. : 185080

Diese Konformitätserklärung gilt nur in Zusammenhang mit dem gültigen Pepperl+Fuchs Datenblatt, der gültigen Pepperl+Fuchs Betriebsanleitung sowie den besonderen Bedingungen für den Einsatz in Zone 2.

This Declaration of Conformity is only valid in connection with the valid datasheet of Pepperl+Fuchs, the valid instruction of Pepperl+Fuchs and the special conditions for the installation in zone 2.

Die Pepperl+Fuchs GmbH, Königsberger Allee 87, 68307 Mannheim erklärt hiermit in alleiniger Verantwortung, daß das oben genannte Produkt mit den angegebenen Normen oder normativen Dokumenten übereinstimmt.

We, Pepperl+Fuchs GmbH, Königsberger Allee 87, 68307 Mannheim hereby declare under our sole responsibility that the above mentioned product is in accordance with the listed harmonised standards or normative documents.

EG-Richtlinie EU-Directive	Angewandte harmonisierte Normen Applied harmonized standards
-------------------------------	---

94/9/EG (ATEX)	EN 60079-15: 2005 EN 60079-0: 2004
----------------	---------------------------------------

Kennzeichnung Marking	 II 3 G Ex nA II T4 X
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Technische Daten:
Technical data:

siehe gültiges Datenblatt, Betriebsanleitung
see valid datasheet, instruction

www.pepperl-fuchs.com

Besondere Bedingungen für den Einsatz in Zone 2 Special conditions for the installation in zone 2

Die Geräte sind in Schalt- oder Verteilerkästen zu installieren,

- die mindestens der Schutzart IP54 gemäß EN 60529 entsprechen,
- die den Anforderungen an die Lichtbeständigkeit sowie an die Schlagfestigkeit gemäß EN 50014 / IEC 60079-0 entsprechen,
- die den Anforderungen an die Wärmebeständigkeit gemäß EN 50014 / IEC 60079-0 entsprechen,
- bei denen durch bestimmungsgeäßen Gebrauch, bei der Wartung und der Reinigung keine Zündgefahren durch elektrostatische Aufladung auftreten.

Die für das Gerät gültige EG-Baumusterprüfbescheinigung muss beachtet werden.

An nicht eigensichere Stromkreise in der Zone 2 dürfen nur Geräte angeschlossen werden, welche für den Betrieb in explosionsgefährdeten Bereichen der Zone 2 und die am Einsatzort vorliegenden Bedingungen geeignet sind (IEC EN 60079-14).

Die Benutzung der Programmierbuchse ist nur während der Installation, Wartung oder für Reparaturzwecke zulässig. Das Verbinden und Trennen der Anschlüsse von nicht eigensicheren Stromkreisen unter Spannung ist nur bei der Installation, der Wartung oder für Reparaturzwecke zulässig.

Anmerkung: Das zeitliche Zusammentreffen von explosionsfähiger Atmosphäre und Installation, Wartung bzw. Reparatur wird in der Zone 2 als unwahrscheinlich bewertet.

The devices should be installed in a switch or junction box which:

- corresponds at least IP54 in accordance to EN 60529,
- is confirm to the requirements of resistance to light and resistance to impact corresponding to EN 50014 / IEC 60079-0,
- is confirm to the requirements of thermal endurance corresponding to EN 50014 / IEC 60079-0,
- must not cause ignition danger by electrostatic charge during intended use, maintenance and cleaning.

The for the device additional available EC-type examination certificate has to be observed.

Only devices which are suitable for the operation in explosion hazardous areas of the zone 2 and the conditions available at the place of operation (IEC EN 60079-14), are allowed to be connected to non intrinsically safe circuits in the zone 2.

The operation of the programming jack is only permitted during installation, for maintenance or for repair purposes. The connecting and disconnecting of the connections of non intrinsically safe circuits under voltage is only permitted during installation, for maintenance or for repair purposes.

Note: The temporal coincidence of explosion hazardous atmosphere and installation, maintenance resp. repair purposes is assessed as unlikely.



Reg. Nr. 14 780-02

Hersteller-Unterschrift:
Signature of Manufacturer

Dr. Kege

Funktion des Unterzeichners:
Function of the signer

Geschäftsführer
Managing Director

Datum / date : Oktober 2006

CESI

CESI
Centro Elettrotecnico
Sperimentale Italiano
Giacinto Motta SpA

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Registro Imprese di Milano
Sezione Ordinaria
N. R.E.A. 429222
P.I. IT00793580150

Schema di certificazione

CESI-ATEX

Il CESI è stato autorizzato dal governo italiano ad operare quale organismo di certificazione di apparecchi e sistemi destinati a essere utilizzati in atmosfera potenzialmente esplosiva con D.M. 1/3/1983, D.M. 19/6/1990, D.M. 20/7/1998 e D.M. 27/9/2000

ATEX E C-02

CERTIFICATE



[1] EC-TYPE EXAMINATION CERTIFICATE

[2] Equipment or Protective System intended for use
in potentially explosive atmospheres
Directive 94/9/EC

[3] EC-Type Examination Certificate number:
CESI 04 ATEX 143

[4] Equipment: **Galvanically Isolated Barrier Type
KFD2-UT2-Ex Universal Temperature Module**

[5] Manufacturer: **Pepperl+Fuchs Elcon S.r.l.**

[6] Address: **Via delle Arti e Mestieri 4, 20050 - Sulbiate (MI) - Italia**

[7] This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] CESI, notified body n. 0722 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report n. EX-A4/521883.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 A1..A2 EN 50020: 2002 EN 50284: 1999

[10] If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

[11] This EC-TYPE EXAMINATION CERTIFICATE relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

[12] The marking of the equipment or protective system shall include the following:

II (1) G [EEx ia] IIC

This certificate may only be reproduced in its entirety and without any change, schedule included.

Date December 3, 2004 - Translation issued the December 3, 2004

Prepared
Francesco Esposito

Verified
Damiano Cavanna

Approved
Ulisse Colombo

CESI
CENTRO ELETTROTECNICO SPERIMENTALE ITALIANO
Business Unit Certificazioni

Responsabile

CESI

[13]

Schedule

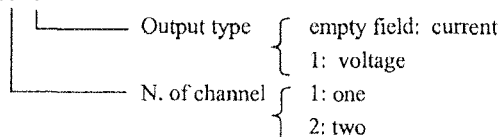
[14] EC-TYPE EXAMINATION CERTIFICATE n. CESI 04 ATEX 143

[15] **Description of equipment**

The Galvanically Isolated Barrier type KFD2-UT2-Ex is an associated apparatus suitable to interface intrinsic safety apparatus measuring temperature as mV/TC or RTD (2,3 or 4 wires) or Potentiometers, placed in hazardous area, providing isolated analogue signal at the output in non hazardous area, voltage or current. The module is housed in a plastic case suitable for DIN rail mounting complete of terminal blocks to allow the connection of the external circuits.

Different versions available are identified as follows:

KFD-UT2-Ex . . .



Electrical characteristics of module

Non intrinsically safe circuits

Um : 250Vac / 375Vdc
 Tamb : -20°C + +60°C
 Power dissipation : 0,6W
 Current consumption : 30 mA
 Rated voltage Un : 20 ÷ 30 Vdc

Model	N. of channel	Input	Output
KFD2-UT2-Ex1	1	TC/mV or RTD (2,3 or 4 wire) or Potentiometer in Zone 0,1	0/4 +20 mA or
KFD2-UT2-Ex2	2		0/1 + 5 V on 250Ω in non hazardous area

4 wire RTD input is available in the KFD2-UT2-Ex1 version only

Intrinsic safety electrical parameters

Models	Terminals	Uo	Io	Po	Gas Group	Co (μF)	Lo (mH)	Lo/Ro (μH/Ω)
KFD2-UT2-Ex1-	1-2-3-4	9V	22mA	50mW	IIC	4.9	68	695
					IIB	40	275	2780
					IIA	500	550	5561
KFD2-UT2-Ex2-	1-2-3 4-5-6	9V	22mA	50mW	IIC	4.9	68	695
					IIB	40	275	2780
					IIA	500	550	5561

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CESI

[13]

Schedule

[14] EC-TYPE EXAMINATION CERTIFICATE n. CESI 04 ATEX 143

[16] **Report n.**

CESI EX-A4/521883

Routine tests

The manufacturer must carry out the routine tests prescribed at clause 24 of EN 50014 standard and at clause 8.1.5 of EN 50020.

Descriptive documents (prot. EX-A4/521886)

<u>Doc. No.</u>	<u>Details of Title</u>	<u>Rev.</u>	<u>n. pages</u>	<u>date</u>
366-024-00	Description		11	19.11.2004
366-024-01	Electrical schematics		6	17.11.2004
366-024-03	Components layout		5	15.11.2004
366-024-04	Mechanical Parts		8	15.11.2004
366-024-05	PCB artwork		12	15.11.2004
366-024-06	Transformers		4	15.11.2004
366-024-07	Assembling Notes		4	15.11.2004
366-024-09	Instructions		4	15.11.2004
366-024-10	Labels, nameplates		2	15.11.2004
	EC Declaration of conformity		1	15.11.2004

One copy of all documents is kept in CESI files.

[17] **Special conditions for safe use**

None.

[18] **Essential Health and Safety Requirements**

Assured by the conformity to the standards indicated in [9].



EXTENSION n. 01/08

to EC-Type Examination Certificate CESI 04 ATEX 143

Equipment: Galvanically isolated barrier type **KFD2-UT2-Ex**
Universal temperature module

Manufacturer: **Pepperl+Fuchs GmbH**


Address: **Königsberger Allee 87, 68307 - Mannheim - Germany**

Admitted variation

- Change denomination Manufacturer.
- Constructive modifications.
- New type of protection for combustible dust "iD".
- Upgrade to EN60079-0 (2006), EN60079-11 (2007), EN 60079-26: (2007); EN61241-0 (2006), EN61241-11 (2006) Standards.
- Update data plate.

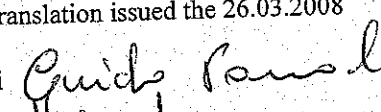
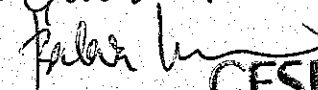
Marking

The barriers **KFD2-UT2-Ex** shall be marked as follows:

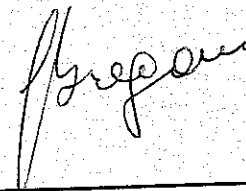
 **II (1) GD [Ex ia] IIC [Ex iaD]**

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 04 ATEX 143.

This document may only be reproduced in its entirety and without any change.

date 26.03.2008 - translation issued the 26.03.2008
prepared Guido Prazzoli 
verified Mirko Balaz 
approved Fiorenzo Bregani

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Divisione Energia
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Il Responsabile



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EXTENSION n. 01/08

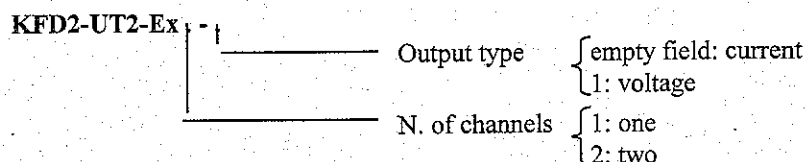
to EC-Type Examination Certificate CESI 04 ATEX 143

Description of equipment

The galvanically isolated barrier type **KFD2-UT2-Ex** is an associated apparatus suitable to interface intrinsic safety apparatus measuring temperature as mV/TC or RTD (2.3 or 4 wires) or potentiometers, placed in hazardous area, providing isolated analogue signal at the output in not hazardous area, voltage or current. The module is housed in a plastic case suitable for DIN rail mounting complete of terminal blocks to allow the connection of the external circuits. The introduced constructive modifications regard:

- Replacement isolation transformer with similar component manufactured by Pepperl+Fuchs;
- Use of opto-coupler named TOC2 as an alternative to opto-coupler OPI-100LE.

Different versions available are identified as follows:



Electrical characteristics

Unchanged

Not intrinsically safe circuits

Um	:	250Vac / 375Vdc
Power dissipation	:	0,6W
Current consumption	:	30mA
Rated voltage Un	:	20 ÷ 30 Vdc
Tamb.	:	-20 ÷ +60°C

Intrinsically safe circuits

Models	Terminals	Uo	Io	Po	Gas Groups	Co (µF)	Lo (mH)	Lo/Ro (µH/Ω)
KFD2-UT2.Ex1-	1 - 2 - 3 - 4	9V	22mA	50mW	IIC	4.9	68	695
					IIB	40	275	2780
					IIA	500	550	5561
KFD2-UT2.Ex2-	1 - 2 - 3 4 - 5 - 6	9V	22mA	50mW	IIC	4.9	68	695
					IIB	40	275	2780
					IIA	500	550	5561

The capacitance Co and either the inductance Lo or the inductance to resistance ratio (Lo/Ro) of circuits connected to the output terminals of the apparatus must not exceed the above values.

Note: The above load parameters apply where:

- the external circuit contains no combined lumped inductance Li and capacitance Ci greater than 1% of the above values;
- or
- the inductance and capacitance are distributed as in a cable;
- the external circuit contains either only lumped inductance Li or lumped capacitance Ci in combination with a cable.

In all other situations e.g. the external circuit contains combined lumped inductance Li and capacitance Ci, up to 50% of each of the L and C values is allowed.

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EXTENSION n. 01/08

to EC-Type Examination Certificate CESI 04 ATEX 143

Report n. EX-A8008956

Routine tests

The Manufacturer shall carry out the routine tests prescribed at clause 27 on EN 60079-0, clause 11.1.1 on EN 60079-11 and clause 24 on EN 61241-0 standards.

Descriptive documents (prot. EX-A8009118)

- Change denomination Manufacturer n. TD-07-011	pg. 3	dated	01.02.2008
- Description calculations n.366-024-00A	pg.12	dated	28.01.2008
- Schematics n. 366-024-01A	pg.3	dated	27.09.2007
- Components list n. n.366-024-02A	pg.1	dated	27.09.2007
- Components layout n.366-024-03A	pg.2	dated	28.09.2007
- Mechanical parts n.366-024-04A	pg.10	dated	09.10.2007
- Layouts multilayer n.366-024-05A	pg.4	dated	28.09.2007
- Transformers n.366-024-06A	pg.4	dated	09.10.2007
- Lacquering details n.366-024-07B	pg.2	dated	30.01.2008
- Instructions n.366-024-09A	pg.4	dated	28.01.2008
- Labels nameplate n.366-024-10A	pg.2	dated	28.01.2008
- Transformer type test report n.366-024-13	pg.2	dated	28.01.2008

One copy of all documents is kept in CESI files.

Essential Health and Safety Requirements

The Essential Health and Safety Requirements are assured by compliance to the following standards:

EN 60079-0: (2006) – Electrical apparatus for explosive gas atmospheres - General requirements.

EN 60079-11: (2007) – Equipment protection by intrinsic safety "i".

EN 60079-26: (2007) – Construction, test and marking of Group II Category 1 G electrical apparatus.

EN 61241-0: (2006) – Electrical apparatus for use in the presence of combustible dust - General requirements.

EN 61241-11: (2006) – Electrical apparatus for use in the presence of combustible dust - Protection by intrinsic safety 'iD'.

EXTENSION n. 02/08



to EC-Type Examination Certificate CESI 04 ATEX 143

Equipment: Galvanically isolated barrier type **KFD2-UT2-Ex**
Universal temperature module

Manufacturer: **Pepperl+Fuchs GmbH**

Address: Königsberger Allee 87, 68307 - Mannheim - Germany

Admitted variation

- Constructive modifications.

Marking

The barriers type **KFD2-UT2-Ex** shall be marked as follows:

II (1) GD [Ex ia] IIC [Ex iaD]

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 04 ATEX 143.

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date 30.09.2008 - translation issued the 30.09.2008

prepared Guido Prazzoli

verified

Enrico Radaelli

approved

Fiorenzo Bregani

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EXTENSION n. 02/08

to EC-Type Examination Certificate CESI 04 ATEX 143

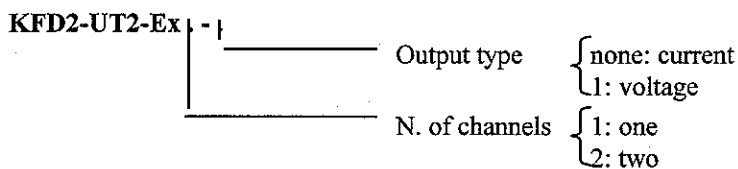
Description of equipment

The galvanically isolated barrier type KFD2-UT2-Ex is an associated apparatus suitable to interface intrinsic safety apparatus measuring temperature as mV/TC or RTD (2, 3 or 4 wires) or potentiometers, placed in hazardous area, providing isolated analogue, voltage or current, signal at the output. The module is housed in a plastic case suitable for DIN rail mounting, complete of terminal blocks to allow the connection of the external circuits.

The introduced construction modifications regard:

- Replacement zener diode N26 from 5.6V to 6.8V (unchanged power and tolerance).

Different versions available are identified as follows:



Electrical characteristics

Unchanged

Not intrinsically safe circuits

Um	:	250Vac / 375Vdc
Power dissipation	:	0.6W
Absorbed current	:	30mA
Rated voltage Un	:	20 ÷ 30 Vdc
Tamb.	:	-20 ÷ +60°C

Intrinsically safe circuits

Models	Terminals	Uo	Io	Po	Gas Groups	Co (µF)	Lo (mH)	Lo/Ro (µH/Ω)
KFD2-UT2.Ex1-	1 - 2 - 3 - 4	9V	22mA	50mW	IIC	4.9	68	695
					IIB	40	275	2780
					IIA	500	550	5561
KFD2-UT2.Ex2-	1 - 2 - 3	9V	22mA	50mW	IIC	4.9	68	695
	4 - 5 - 6				IIB	40	275	2780
					IIA	500	550	5561

The capacitance Co and either the inductance Lo or the inductance to resistance ratio (Lo/Ro) of circuits connected to the output terminals of the apparatus must not exceed the above values.

Note: The above load parameters apply where:

- the external circuit contains no combined lumped inductance Li and capacitance Ci greater than 1% of the above values;
- or
- the inductance and capacitance are distributed as in a cable;
- the external circuit contains either only lumped inductance Li or lumped capacitance Ci in combination with a cable.

In all other situations e.g. the external circuit contains combined lumped inductance Li and capacitance Ci, up to 50% of each of the L and C values is allowed.

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EXTENSION n. 02/08

to EC-Type Examination Certificate CESI 04 ATEX 143

Report n. EX-A8027524

Routine tests

The Manufacturer shall carry out the routine tests prescribed at clause 27 of EN 60079-0, clause 11 of EN 60079-11 and clause 24 of EN 61241-0 standards.

Descriptive documents (prot. EX-A8027530)

- Summary n.366-024-B	pg.1	dated	2008.Jun.30
- Description calculations n.366-024-00B	pg.12	dated	2008.Jun.30
- Relevant Components n. n.366-024-02B	pg.1	dated	2008.Jun.30

One copy of all documents is kept in CESI files.

Essential Health and Safety Requirements

The Essential Health and Safety Requirements are assured by compliance to the following standards:

EN 60079-0: (2006) – Electrical apparatus for explosive gas atmospheres - General requirements.

EN 60079-11: (2007) – Equipment protection by intrinsic safety "i".

EN 60079-26: (2007) Construction, test and marking of Group II Category 1 G electrical apparatus.

EN 61241-0: (2006) – Electrical apparatus for use in the presence of combustible dust - General requirements.

EN 61241-11: (2006) – Electrical apparatus for use in the presence of combustible dust - Protection by intrinsic safety 'iD'.

EXTENSION n. 03/09



to EC-Type Examination Certificate CESI 04 ATEX 143

Equipment: Galvanically isolated barrier type **KFD2-UT2-Ex**
Universal temperature module

Manufacturer: **Pepperl+Fuchs GmbH**


Address: Lilienthalstraße 200 - 68307 Mannheim - Germany

Admitted variation

- Constructive modifications.
- Added Group I equipment marking
- Change Manufacturer address.

Marking

The barriers type **KFD2-UT2-Ex** shall be marked as follows:

 **I (M1) [Ex ia] I**

 **II (1) GD [Ex ia] IIC [Ex iaD]**

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 04 ATEX 143.

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date 09.11.2009 - translation issued the 09.11.2009

prepared Guido Prazzoli

verified Mirko Balaz

approved Fiorenzo Bregani

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EXTENSION n. 03/09

to EC-Type Examination Certificate CESI 04 ATEX 143

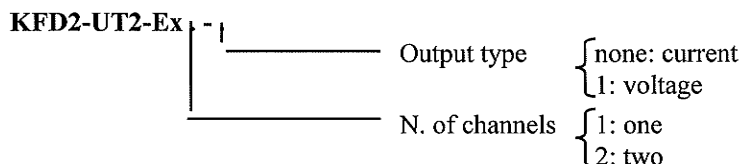
Description of equipment

The galvanically isolated barrier type **KFD2-UT2-Ex** is an associated apparatus suitable to interface intrinsic safety apparatus measuring temperature as mV/TC or RTD (2, 3 or 4 wires) or potentiometers, placed in hazardous area, providing isolated analogue, voltage or current, signal at the output. The module is housed in a plastic case suitable for DIN rail mounting, complete of terminal blocks to allow the connection of the external circuits.

The modifications regard:

- changed value of F1 fuse from 250 mA to 160 mA (unchanged dimensions)
- added fuse F10 160 mA (equal to F1)
- added zener diode N21 6.8V, 1W
- changed transformer wire thickness increased to 0.14 mm diameter
- addition of Group I equipment marking
- change Manufacturer address from *Königsberger Allee 87 - 68307 Mannheim;* to *Lilienthalstraße 200 - 68307 Mannheim Koenigs .*

Different versions available are identified as follows:



Electrical characteristics

Unchanged

Not intrinsically safe circuits

Um	:	250Vac / 375Vdc
Power dissipation	:	0.6W
Absorbed current	:	30mA
Rated voltage Un	:	20 ÷ 30 Vdc
Tamb.	:	-20 ÷ +60°C

Intrinsically safe circuits

Models	Terminals	Uo	Io	Po	Gas Groups	Co (µF)	Lo (mH)	Lo/Ro (µH/Ω)
KFD2-UT2.Ex1-	1 – 2 – 3 – 4	9V	22mA	50mW	I	226	964	9125
					IIA	500	550	5561
					IIB	40	275	2780
					IIC	4.9	68	695
KFD2-UT2.Ex2-	1 – 2 – 3 4 – 5 – 6	9V	22mA	50mW	I	226	964	9125
					IIC	4.9	68	695
					IIB	40	275	2780
					IIA	500	550	5561

The capacitance Co and either the inductance Lo or the inductance to resistance ratio (Lo/Ro) of circuits connected to the output terminals of the apparatus must not exceed the above values.

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EXTENSION n. 02/08**to EC-Type Examination Certificate CESI 04 ATEX 143**

Note: The above load parameters apply where:

- the external circuit contains no combined lumped inductance L_i and capacitance C_i greater than 1% of the above values;
- or - the inductance and capacitance are distributed as in a cable;
- the external circuit contains either only lumped inductance L_i or lumped capacitance C_i in combination with a cable.

In all other situations e.g. the external circuit contains combined lumped inductance L_i and capacitance C_i , up to 50% of each of the L and C values is allowed

Report n. EX-A9031510

Routine tests

The Manufacturer shall carry out the routine tests prescribed at clause 27 of EN 60079-0, clause 11 of EN 60079-11 and clause 24 of EN 61241-0 standards.

Descriptive documents (prot. EX-A9031518)

- Description calculations n.366-024-00C	pg.12	dated	2009.Oct.01
- Schematics n.366-024-01C	pg.3	dated	2009.Oct.05
- Relevant component n.366-024-02C	pg.1	dated	2009.Jan.15
- Component layout n.366-024-03C	pg.2	dated	2009.Jan.15
- PCB layout n.366-024-05C	pg.5	dated	2009.May.12
- Transformer for KFD2-UT2.EX. n.366-024-06C	pg.4	dated	2009.Jan.19
- Lacquering details n.366-024-07C	pg.2	dated	2009.Jan.20
- Instructions n.366-024CE-09C	pg.4	dated	2009.Oct.05
- Type labels n.366-024-10C	pg.3	dated	2009.Oct.05
- Transformer type test report n.366-024-13A	pg.3	dated	2009.Oct.05
- Declaration of Conformity	pg.1	dated	2009.Oct.01

One copy of all documents is kept in CESI files.

Essential Health and Safety Requirements

The Essential Health and Safety Requirements are assured by compliance to the following standards:

- EN 60079-0: 2006 – Electrical apparatus for explosive gas atmospheres – Part 0: General requirements.
- EN 60079-11: 2007 – Explosive atmospheres – Part 11: Equipment protection by intrinsic safety “i”.
- EN 60079-26: 2007 – Explosive atmospheres – Part 26: Equipment with equipment protection level (EPL) Ga.
- EN 61241-0: 2006 – Electrical apparatus for use in the presence of combustible dust – Part 0: General requirements.
- EN 61241-11: 2006 – Electrical apparatus for use in the presence of combustible dust – Part 11: Protection by intrinsic safety ‘iD’.
- EN 50303: 2000 – Equipment intended for use in potentially explosive atmospheres - Group I, Category M1 equipment intended to remain functional in atmospheres endangered by firedamp and/or coal dust.

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SIEMENSPrüf-Nr./Q-Nr.: **2236 c**
Certificate No.:Dienststelle: **A&D CD CC TS2 / Drutschmann**
Department:Ort: **Amberg**
Place:Tag: **2003-10-21**
Date: **Page 1 of 2**

Deckblatt / Cover Page

PTB - EC-Type-Examination Certificate (Physikalisch-Technische-Bundesanstalt)

Erzeugnis / Product

Thermistor Motor Protection UnitTyp: **3RN10**
Type:Hersteller: **Siemens AG, Amberg**
Manufacturer:Art der Prüfung / Type of test: **Explosive Atmospheres**Prüfer / Tested by: **Dr.-Ing. F. Lienesch**
Dr.-Ing. U. EngelTag der Prüfung / Date of
test: **2001-03-26**
2002-12-11
2003-09-09Prüfort / Test site: **Braunschweig**Prüfstelle / Testing authority **PTB**

Angewandte Prüfbestimmungen / Test specifications applied:

EN 60947-1, EN 60947-5-1
DIN VDE 0660 Teil 302 und Teil 303
DIN EN 60079-14
EN 50281-1-1

Anlage / Enclosure:

EC-Type-Examination Certificate No. PTB 01 ATEX 3218, dated 2001-03-26

- 1. Supplement to EC-Type-Examination Certificate No. PTB 01 ATEX 3218, dated 2002-12-11**
- 2. Supplement to EC-Type-Examination Certificate No. PTB 01 ATEX 3218, dated 2003-09-09**
- 3. Supplement to EC-Type-Examination Certificate No. PTB 01 ATEX 3218, dated 2003-09-09**

Safety- and Instructionmanual, dated 2003-07-10

Test Report No. PTB Ex 3.43-30087/99, dated 1999-09-06 (confidential)

Test Report No. PTB Ex 02-32216, dated 2002-12-11 (confidential)

Test Report No. PTB Ex 02-33316, dated 2003-09-09 (confidential)

Test Report No. PTB Ex 02-33317, dated 2003-09-09 (confidential)

Prüfergebnis / Test results:

- This equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, give in Annex II to the Directive.
- The TMP tripping devices type 3RN1011-B / 3RN1011-G / 3RN1012-B / 3RN1012-G and 3RN1013-...0 can also be used as protection device for motors in locations with explosive dust atmospheres according to EN 50281-1-1 (refer to Supplement 3 dated 2003-09-09).

Gültigkeit (Datum, Gerät) / Validity (date, device):

Bemerkungen / Remarks: **Erstellt / Issued: 1999-09-27**

Index a dated 2001-05-31: Rearrangement for EC-Type-Examination Certificate

Index b dated 2003-01-10: 1. Supplement to EC-Type-Examination Certificate added, Safety- and Instructionmanual replaced by version dated 14.08.2002

**Index c dated 2003-10-21: 2. Supplement to EC-Type-Examination Certificate added
3. Supplement to EC-Type-Examination Certificate added
Safety- and Instructionmanual dated 2002-08-14 replaced by version dated 2003-07-10**

**Deckblatt ist nicht Bestandteil der Bescheinigung
Cover Page is not part of the Certificate**



A&D CD CC TS2 Mr. Drutschmann



(1) EC-TYPE-EXAMINATION CERTIFICATE (Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) EC-type-examination Certificate Number:

PTB 01 ATEX 3218



(4) Equipment: Tripping units for thermal machine protection, types: 3RN10..

(5) Manufacturer: Siemens AG, A&D CD CP

(6) Address: Werner-von-Siemens-Str. 48, 92220 Amberg, Germany

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 3.43-30087/99.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60947-1 EN 60947-5 DIN VDE 0660 Teil 302 und Teil 303 EN 60079-14

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type-examination Certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

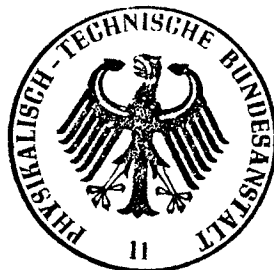
(12) The marking of the equipment shall include the following:

II (2) G

Zertifizierungsstelle Explosionsschutz

By order:

Dr.-Ing. F. Lienesch
Regierungsrat



Braunschweig, March 26, 2001

(13)

SCHEDULE

(14)

EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 3218

(15)

Description of equipment

All tripping units for thermal machine protection of type 3RN10 work on the closed-circuit principle and are self-monitoring with respect to the breakage of a detector wire. The tripping units of types 3RN1011, 3RN1012, 3RN1013, 3RN1022 and 3RN1062 are monitored and controlled by a microcontroller. The status of the units is stored, and the status is preserved in the event of mains failure (no resetting on voltage failure). The most important functions of these units are the self-checking function, integrated low-voltage detection and oscillator monitoring. In addition, two detector circuits can be connected to the type 3RN1022 units and six detector circuits to the type 3RN1062 units.

In addition to the functions stated above, the detector circuit of the type 3RN1013 units is equipped with a short-circuit detection unit which constantly checks the resistor of detector circuit for a short-circuit during operation. Installation and use are subjected to the safety and operate installation.

All functions of the tripping units for thermal machine protection serve for the protection of non-explosion-protected motors and explosion-protected motors in operation and in the event of a disturbance. 32 variants of types 3RN10 are manufactured (16 variants with screw-type terminal and 16 variants with cage clamp). Additional information can be gathered from the description of the type 3RN10 units and from the Siemens catalogue concerning low-voltage circuit logic (NS K), chapter: Tripping units for load feeders, Thermal motor protection.

(16)

Test report PTB Ex 3.43-30087/99

(17)

Special conditions for safe use

none

(18)

Essential health and safety requirements

The tests carried out and their positive results as well as the proof furnished dated March 2, 2001 have confirmed compliance with the standards and thus with Directive 94/9/EC, Annex II (in particular point 1.5). Suitably selected and adjusted safety devices of this type are necessary for the safe operation of motors of the type of protection "increased safety". The devices themselves are installed outside potentially explosive atmospheres (article 1, section 2 of the Directive).

Zertifizierungsstelle Explosionsschutz

Braunschweig, March 26, 2001

By order:


Dr.-Ing. F. Lienesch
Regierungsrat



sheet 2/2

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.


1. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 3218

(Translation)

Equipment: Tripping devices for thermal motor protection, types: 3RN10..

Marking:  II (2) G

Manufacturer: Siemens AG, Gerätewerk Amberg
Address: Werner-von-Siemens-Str. 48
92220 Amberg, Germany

Description of supplements and modifications

All 3RN10 TMP tripping devices work according to the closed-circuit principle and are self-monitoring with respect to the breakage of a detector wire.

Among the most important functions are: the self-checking function, integrated low-voltage detection and oscillator monitoring, overtemperature detection, detection of wire interruption or dynamic wire break detection.

The tripping units of types 3RN1011 and 3RN1012 (two change-over switch) of compact devices and types 3RN1013 of multifunctional devices are configured with short-circuit detection in the detector circuit.

Two PTC detector circuits can be connected to the types 3RN1022 and six PTC detector circuits to the types 3RN1062.

All functions in the TMP tripping devices serve to protect non-explosion-protected motors and explosion-protected motors in regular operation and in case of failure.

58 variants of types 3RN10 are manufactured (29 variants with screw-type terminal and 29 variants with spring-loaded terminal).

Additional information can be gathered from the description of the type "3RN10" units (of August 14, 2002), and from the Siemens catalogue concerning low-voltage circuit logic (NS K) and from the internet address "www.ad.siemens.de/csi/cd"

Test report: PTB Ex 02-32216

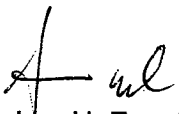
1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 3218

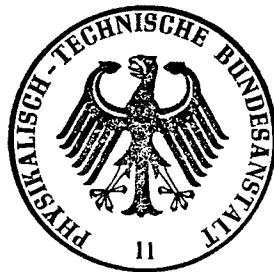
Essential health and safety requirements

The tests carried out and their positive results as well as the proof furnished have confirmed compliance with the standards and thus with Directive 94/9/EC, Annex II (in particular point 1.5) of July 31, 2002 (directive949 EG_01_b.xls). Suitably selected and adjusted safety devices of this type are necessary for the safe operation of motors of the type of protection "increased safety". The devices themselves are installed outside potentially explosive atmospheres (article 1, section 2 of the Directive).

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, December 11, 2002


Dr.-Ing. U. Engel
Regierungsdirektor



2. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 3218

(Translation)

Equipment: Tripping devices for thermal motor protection, types: 3RN10..

Marking:  II (2) G

Manufacturer: Siemens AG, Gerätewerk Amberg

Address: Werner-von-Siemens-Str. 48
92220 Amberg, Germany

Description of supplements and modifications

In the course of a deflection of the production, for types 3RN1000 and 3RN1010 the 24 V AC/DC power supply unit and for type 3RN1010-.CW.. the long-range power supply unit were revised and optimized.

Additional information can be gathered from the description of the type "3RN1" units of Juli 10, 2003, and from the Siemens catalogue concerning low-voltage circuit logic (NS K) and from the internet address "www.ad.siemens.de/csi/cd"

All functions in the TMP tripping devices serve to protect non-explosion-protected motors and explosion-protected motors in regular operation and in case of failure.

Test report: PTB Ex 03-33316

Additional information can be taken from Test Reports PTB Ex 3.43-30087/99 and PTB Ex 02-32216.

Essential health and safety requirements

The tests carried out and their positive results as well as the proof furnished have confirmed compliance with the standards and thus with Directive 94/9/EC, Annex II (in particular point 1.5 with document "Directive 94 9 EG_91_b.xls of July 31, 2002". Suitably selected and adjusted safety devices of this type are necessary for the safe operation of motors of the type of protection "increased safety". The devices themselves are installed outside potentially explosive atmospheres (article 1, section 2 of the Directive).

Zertifizierungsstelle Explosionschutz

By order:



Dr.-Ing. F. Lienesch
Oberregierungsrat



Braunschweig, September 09, 2003

Sheet 1/1

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.


3. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 3218

(Translation)

Equipment: Tripping devices for thermal motor protection, types: 3RN1011-.B/-G, 3RN1012-.B/-G and RN1013-...0

Marking:  II (2) GD

Manufacturer: Siemens AG, Gerätewerk Amberg
Address: Werner-von-Siemens-Str. 48
92220 Amberg, Germany

Description of supplements and modifications

The TMP tripping devices, types 3RN1011-.B/-G, 3RN1012-.B/G and 3RN1013-...0, can be used to protect motors in areas with explosive gas atmospheres against inadmissible heating due to overload. With the extension to "D": dust" in the ATEX marking they can also be used as protection device for motors in locations with explosive dust atmospheres (EN 50282-1-1).

Additional information can be gathered from the description of the type "3RN1" units of Juli 10, 2003, and from the Siemens catalogue concerning low-voltage circuit logic (NS K) and from the internet address "www.ad.siemens.de/csi/cd"

All functions in the TMP tripping devices serve to protect non-explosion-protected motors and explosion-protected motors in regular operation and in case of failure.

Test report: PTB Ex 03-33317

Additional information can be taken from Test Reports PTB Ex 3.43-30087/99 and PTB Ex 02-32216.

Essential health and safety requirements

The tests carried out and their positive results as well as the proof furnished have confirmed compliance with the standards and thus with Directive 94/9/EC, Annex II (in particular point 1.5)) with document "Directive 94 9 EG_91_b.xls of July 31, 2002". Suitably selected and adjusted safety devices of this type are necessary for the safe operation of motors of the type of protection "increased safety". The devices themselves are installed outside potentially explosive atmospheres (article 1, section 2 of the Directive).

Zertifizierungsstelle Explosionsschutz

Braunschweig, September 09, 2003

By order:



Dr.-Ing. F. Lienesch
Oberregierungsrat



Sheet 1/1

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.



Caution
Follow Safety and Installation Instructions!

Manufacturer

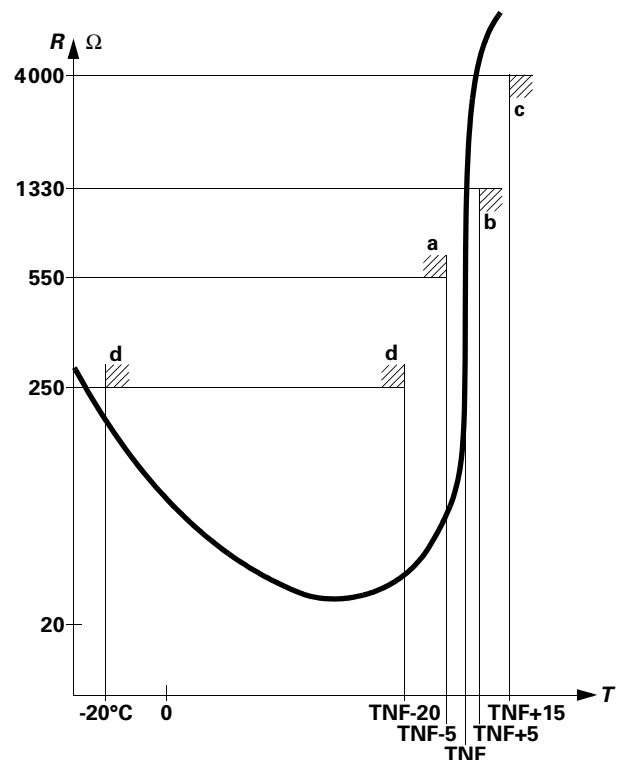
Siemens AG
 A&D CD CC
 Werner-von-Siemens-Str. 48
 D-92220 Amberg

General

3RN1 thermistor motor protection tripping units are thermal protective devices that can be used to monitor the temperature of electric drives, transformer windings, oils, bearings, air etc. in conjunction with type A PTC resistors.

If a type A temperature sensor is connected to a type A tripping unit, the working temperatures (tripping and reset) in accordance with IEC 60034-11-2 (DIN VDE 0660 Part 303) are observed.

The characteristics of type A temperature sensors are described in IEC 60034-11-2 (DIN VDE 0660 Part 303), DIN 44081 and DIN 44082.



Typical characteristic of a type A sensor
 (logarithmic scale)

In addition to tripping units with automatic and manual reset functions, the 3RN1 device series also includes the *3RN1013-BW01* tripping unit with a bistable output relay, the *3RN1022* with two measuring circuits (this unit outputs an alarm signal if the first tripping threshold is exceeded and switches off the motor on reaching the second threshold) and the *3RN1062* tripping unit for multi-motor protection with six measuring circuits and centralized fault indication.

The tripping and reset temperatures referred to TNF (rated operating temperature of the sensor) are as follows, depending on the number of sensors:

	Tripping temperature	Reset temperature
3 sensors	TNF +4K	TNF -7K
6 sensors	TNF -5K	TNF -20K

(The specified temperatures are limit values)

Use in potentially explosive atmospheres

All 3RN1 devices are approved for group II, category (2) in the "G" area (area in which potentially explosive gas, vapor, mist or air mixtures are present).

PTB 01 ATEX 3218  II (2) G

The 3RN1011-.B, /-.G, 3RN1012-.B, /-.G and 3RN1013-....0 device variants are additionally approved for the "D" area (area with combustible dust).

PTB 01 ATEX 3218  II (2) GD

The increased hazard in potentially explosive atmospheres demands strict adherence to the Operating Instructions (Safety and Installation Instructions), assembly instructions and the **EN 60079-14** / VDE 0165 standard concerning electrical equipment for use in locations with explosive **gas** atmospheres or the **EN 50281-1-1** standard concerning electrical equipment for use in locations with explosive **dust** atmospheres.

All connection, commissioning and maintenance work must be carried out **by qualified, responsible** personnel. Improper handling may result in **serious personal injury and considerable material damage**.

The devices 3RN1 comply with the requirements of the following classes:

Device	Class
3RN1000, 3RN1010, 3RN1011-.C, 3RN1012-.C, 3RN1022, 3RN1062	DIN V 19250 EN 954-1 Requirement class 2 Category 1
3RN1011-.B, 3RN1011-.G, 3RN1012-.B, 3RN1012-.G, 3RN1013	Requirement class 3 Category 2

A risk analysis must be drawn up for the complete machine or plant. If this analysis yields a lower hazard potential (category 1), all 3RN1 thermal motor protection tripping units can be used providing the safety regulations are observed. If the plant or machine has a higher hazard potential, a device variant with integrated short-circuit detection in the sensor circuit is necessary.

Wiring

The measuring circuit cables must be laid as separate control cables. It is not permissible to use wires belonging to the motor supply cables or to any other main circuit cables. If parallel power cables are likely to cause extreme inductive or capacitive interference, shielded control cables must be used.

Maximum length of sensor circuit cables:

Cable cross-section	Cable length for tripping units	
	without short-circuit detection	with short-circuit detection ¹⁾
	3RN1000, 3RN1010, 3RN1011 - .C, 3RN1012 - .C, 3RN1022, 3RN1062	3RN1011 -.B/ -.G, 3RN1012 -.B/ -.G, 3RN1013
2,5 mm ²	2 x 2800 m	2 x 250 m
1,5 mm ²	2 x 1500 m	2 x 150 m
0,5 mm ²	2 x 500 m	2 x 50 m

¹⁾ Short-circuits in the sensor circuit are detected up to this maximum cable length.

Technical data

Rated operational voltage U_e	AC/DC 24 V to AC/DC 240 V
Rated insulation voltage U_i	300 V
Rated frequency	50 / 60 Hz
Permissible ambient temperature	-25 to +60 °C
Storage temperature	-40 to +80 °C
Resistance to extreme climates	In acc. with DIN 50017
Degree of protection	IP20
Conductor cross-sections	In acc. with EN 60947-1
Approvals	EEx e, EEx d (PTB), CSA, UL
Marine classification	GL, LRS, BV

Technical data of the integrated auxiliary contacts

Conventional thermal current I_{th}	5 A
Rated operational current I_e	
AC15 to 240 V	3 A
DC13 to 24 V	
3RN1	1 A
3RN1010/11/12-.C	2 A
Short-circuit protection gL/gG	6 A

Installation and commissioning

Install as described in Assembly Instructions No.: 3ZX1012-0RN10-1AA1 (enclosed with each device).

3RN1 devices are suitable for snap-on mounting onto a 35 mm standard rail in accordance with EN 50022 or for screw mounting with an adapter (accessory).

They can be mounted in any position.

If the device has a "manual reset" function, the test function can be activated and tripping simulated by pressing the blue test/reset button > 2 s.

Check that the protection function is working correctly prior to starting up the machine or plant.

Maintenance and repair

The devices require no maintenance.

All repairs to the devices must be carried out by the manufacturer.

Warranty

All warranty claims are subject to compliance with these Operating Instructions (Safety and Installation Instructions) and Assembly Instructions No.: 3ZX1012-0RN10-1AA1.

Important

- The machine or plant must also be shut down immediately if the thermistor motor protection tripping unit is tripped in conjunction with a frequency converter. This must be taken into account in the circuit design.
- 3RN1 thermistor motor protection tripping units are suitable for protecting motors and machines with the EEx e type of protection. They have been tested and approved by the *Physikalisch Technische Bundesanstalt (PTB) in Braunschweig* (German Federal Testing Laboratory (PTB) in Brunswick).
- The devices are only allowed to be assembled and installed by suitably trained persons in accordance with the relevant standards and regulations!
- The 3RN10 is not intended for installation in potentially explosive atmospheres. If it needs to be installed in a potentially explosive atmosphere, the 3RN1 must be provided with a flameproof enclosure.
- Devices with AC/DC 24 V control voltage must be provided with electrical isolation in the form of a battery system or a safety isolating transformer in accordance with DIN VDE 0551.
- Devices with an "Auto RESET" function are automatically reset when the cooling time expires. In this case, an external interlock (latching with a separate ON/OFF button) must be provided to ensure that the monitored machine does not start up again independently.
- Devices with an "Auto RESET" function are not allowed to be used in applications where serious injury to persons or considerable damage to materials could ensue if the machine or plant starts up again unexpectedly.
- If a device without a short-circuit detection function is used, the sensor resistance must be measured with a suitable instrument when the machine or plant is started up as well as after all modifications or maintenance work (assembly/dismantling). The sensor circuit must be tested for short-circuiting if the resistance is < 50 ohms.
- If a *3RN1000* is used to protect EEx e motors, it is advisable to monitor the control voltage separately because there is **no** "Ready" LED to indicate that this voltage is present.
- If a *3RN1013-BW01* is used to protect EEx e motors, it is advisable to monitor the control voltage separately because the output state of the auxiliary contact elements does not change (using bistable relays) if this voltage fails.

For more information about the 3RN1, please consult the Siemens Low-Voltage Control-gear, Switchgear and Systems Catalogue or visit

<http://www.ad.siemens.de/csi/cd>



(1) TYPE EXAMINATION CERTIFICATE

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC**

(3) Type Examination Certificate Number: **KEMA 06ATEX0266 X** Issue Number: **4**

(4) Equipment: **SIMATIC Operator Panels Type 6AV6 ...**

(5) Manufacturer: **Siemens AG**

(6) Address: **Werner-von-Siemens-Strasse 50, 92224 Amberg, Germany**

(7) This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) KEMA Quality B.V. certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the directive.

The examination and test results are recorded in confidential report no. 212254500.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 61241-0: 2006

EN 61241-1 : 2004

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This Type Examination Certificate relates only to the design, examination and tests of the specified equipment and not to the manufacturing process and supply of this equipment.

(12) The marking of the equipment shall include the following:



II 3 D Ex tD A22 IP6X T52 °C or T70 °C

This certificate is issued on 18 December 2008 and, as far as applicable, shall be revised before the date of cessation of presumption of conformity of (one of) the standards mentioned above as communicated in the Official Journal of the European Union.

KEMA Quality B.V.

C.G. van Es
Certification Manager

Page 1/3



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T +31 26 3 56 20 00 F +31 26 3 52 58 00 customer@kema.com www.kema.com Registered Arnhem 09085396

Experience you can trust.



(13) **SCHEDULE**

(14) **to Type Examination Certificate KEMA 06ATEX0266 X** Issue No. 4

(15) **Description**

SIMATIC Operator Panels Type 6AV6 ... are used for machine operating and monitoring.

The frontside of the Flat Panel provides a degree of protection of IP5X, for non-conductive dust and IP6X, for conductive dust, in accordance with EN 60529.

For the different types, the ambient temperature range and the maximum surface temperature T at the maximum ambient temperature shall be taken from **Table 1**.

Electrical data

The electrical data of the equipment shall be taken from **Table 1**.

Installation instructions

The manual provided with the equipment shall be followed in detail to assure proper and safe operation.

(16) **Test Report**

KEMA No. 212254500.

(17) **Special conditions for safe use**

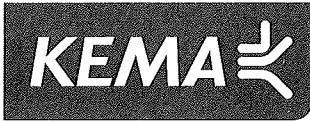
1. The frontside of the SIMATIC Operator Panels provides a degree of protection of at least IP6X. It shall be installed in a suitable enclosure providing a degree of protection of IP5X, for non-conductive dust and IP6X, for conductive dust, in according to EN 60529, taking into account the environmental conditions under which the equipment is used.
2. The SIMATIC Operator Panels Type 6AV6 ... shall be installed in such a way that the risk of mechanical danger is low.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at (9).

(19) **Test documentation**

As listed in Test Report No. 212254500.



(13) **SCHEDULE**

(14) **to Type Examination Certificate KEMA 06ATEX0266 X**

Issue No. 4

Table 1

Description	Type/MLFB No.	Max. Surface Temp.	Ambient Range Ta	Degree of Ingress Protection IP	Technical Data	Supply Volt.
MP 277T10" INOX	6AV6 643-8AD10-a	52 °C	+0...+50 °C	66	—————	24 Vdc
TP 277 6"	6AV6 643-0AA01-a	70 °C	+0...+50 °C	66	—————	24 Vdc
MP277 8" Touch	6AV6 643-0CB01-a	70 °C	+0...+50 °C	66	—————	24 Vdc
MP277 10" Touch	6AV6 643-0CD01-a	70 °C	+0...+50 °C	66	—————	24 Vdc
MP277 10" Key	6AV6 643-0DD01-a	70 °C	+0...+50 °C	66	—————	24 Vdc
MP377 12" Key	6AV6 644-0BA01-a	70 °C	+0...+50 °C	66	—————	24 Vdc
MP377 12" Touch	6AV6 644-0AA01-a	70 °C	+0...+50 °C	66	—————	24 Vdc
MP377 15" Touch	6AV6 644-0AB01-a	70 °C	+0...+50 °C	66	—————	24 Vdc
MP377 19" Touch	6AV6 644-0AC01-a	70 °C	+0...+50 °C	66	—————	24 Vdc
MP377 15" Touch INOX	6AV6 545-0DB10-a	70 °C	+0...+50 °C	66	—————	24 Vdc

The Suffix –a denotes any letter or number referring to non-electrical properties as product associates, language, delivery packing, documentation etc.

Übersetzung, Originalsprache: Englisch

(1) **BAUMUSTERPRÜFBESCHEINIGUNG**

(2) **Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen – Richtlinie 94/9/EG**

(3) Baumusterprüfbescheinigung Nummer: **KEMA 06ATEX0266 X** Ausgabe Nummer: 4

(4) Gerät: **SIMATIC Operator Panels Type 6AV6 ...**

(5) Hersteller: **Siemens AG**

(6) Anschrift: **Werner-von-Siemens-Strasse 50, 92224 Amberg, Deutschland**

(7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung und in den zugehörigen Unterlagen festgelegt.

(8) KEMA Quality B.V. bescheinigt die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.

Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht Nr. 212254500 festgelegt worden.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit:

EN 61241-0: 2006

EN 61241-1 : 2004

(10) Falls das Zeichen "X" hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.

(11) Diese Baumusterprüfbescheinigung bezieht sich nur auf Konstruktion, Überprüfung und Tests des spezifizierten Gerätes und nicht auf das Herstellungsverfahren und die Lieferung dieses Gerätes.

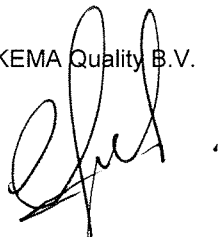
(12) Die Kennzeichnung des Gerätes muß die folgenden Angaben enthalten:



II 3 D Ex tD A22 IP6X T52 °C oder T70 °C

Diese Bescheinigung ist erstellt am 18. Dezember 2008 und ist, soweit zutreffend, zu revidieren vor dem Datum der Beendigung der Annahme der Konformitätsvermutung (einer) der oben erwähnten Normen, wie angekündigt im Amtsblatt der Europäischen Union.

KEMA Quality B.V.



C.G. van Es
Certification Manager

Seite 1/3



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(13) **ANLAGE**

(14) **Zur Baumusterprüfbescheinigung KEMA 06ATEX0266 X** Ausgabe Nr. 4

(15) **Beschreibung**

SIMATIC Operator Panels Typ 6AV6 ... werden für die Bedienung und Beobachtung von Maschinen und Anlagen verwendet.

Die Vorderseite des Flat Panels gewährleistet eine Schutzart von IP5X, bei nichtleitfähigem Staub und IP6X, bei leitfähigem Staub, nach EN 60529.

Der Umgebungstemperaturbereich und die Höchsttemperatur T am Oberfläche des Betriebsmittels bei maximaler Umgebungstemperatur sind für die verschiedenen Typen **Tabelle 1** zu entnehmen.

Elektrische Daten

Die elektrischen Daten der Betriebsmittel sind **Tabelle 1** zu entnehmen.

Errichtungshinweise

Das mit dem Betriebsmittel mitgelieferte Handbuch ist um eine sachgerechte und sichere Anwendung zu gewährleisten bis ins Detail zu befolgen.

(16) **Prüfbericht**

KEMA Nr. 212254500.

(17) **Besondere Bedingungen**

1. Die Vorderseite des SIMATIC Operator Panels gewährleistet eine Schutzart von mindestens IP6X. Es muss in ein geeignetes Gehäuse eingebaut werden, das unter Berücksichtigung der Einsatzbedingungen der Anlage eine Schutzart von IP5X, bei nichtleitfähigem Staub und IP6X, bei leitfähigem Staub, nach EN 60529 gewährleistet.
2. Die SIMATIC Operator Panels sind derart zu errichten dass das Risiko mechanischer Gefährdung niedrig ist.

(18) **Grundlegende Sicherheits- und Gesundheitsanforderungen**

Von den Normen unter (9) abgedeckt.

(19) **Prüfungsunterlagen**

Wie erwähnt in Prüfbericht Nr. 212254500.

(13) **ANLAGE**(14) **Zur Baumusterprüfbescheinigung KEMA 06ATEX0266 X**

Ausgabe Nr. 4

Tabelle 1

Description	Type/MLFB No.	Max. Surface Temp.	Ambient Range Ta	Degree of Ingress Protection IP	Technical Data	Supply Volt.
MP 277T10" INOX	6AV6 643-8AD10-a	52 °C	+0...+50 °C	66	—————	24 Vdc
TP 277 6"	6AV6 643-0AA01-a	70 °C	+0...+50 °C	66	—————	24 Vdc
MP277 8" Touch	6AV6 643-0CB01-a	70 °C	+0...+50 °C	66	—————	24 Vdc
MP277 10" Touch	6AV6 643-0CD01-a	70 °C	+0...+50 °C	66	—————	24 Vdc
MP277 10" Key	6AV6 643-0DD01-a	70 °C	+0...+50 °C	66	—————	24 Vdc
MP377 12" Key	6AV6 644-0BA01-a	70 °C	+0...+50 °C	66	—————	24 Vdc
MP377 12" Touch	6AV6 644-0AA01-a	70 °C	+0...+50 °C	66	—————	24 Vdc
MP377 15" Touch	6AV6 644-0AB01-a	70 °C	+0...+50 °C	66	—————	24 Vdc
MP377 19" Touch	6AV6 644-0AC01-a	70 °C	+0...+50 °C	66	—————	24 Vdc
MP377 15" Touch INOX	6AV6 545-0DB10-a	70 °C	+0...+50 °C	66	—————	24 Vdc

Das Suffix –a bezeichnet jeden Buchstaben oder Zahl, bezogen auf nicht elektrische Eigenschaften wie Sprache, Verpackung, Dokumentation usw.

(1) EG-BAUMUSTERPRÜFBESCHEINIGUNG

(2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen – Richtlinie 94/9/EG

(3) EG-Baumusterprüfbescheinigung Nummer: **KEMA 98ATEX1651 U** Ausgabe Nummer: 2

(4) Komponente: **Durchgangs-Reihenklemmen**
UK 1,5 N; UK 3 N; UK 5 N und UK 6 N

(5) Hersteller: **Phoenix Contact GmbH & Co. KG**

(6) Anschrift: **Flachmarktstraße 8, D-32825 Blomberg, Deutschland**

(7) Die Bauart dieser Komponente sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser EG-Baumusterprüfbescheinigung und in den zugehörigen Unterlagen festgelegt.

(8) KEMA Quality B.V. bescheinigt als benannte Stelle Nr. 0344 nach Artikel 9 der Richtlinie 94/9/EG des Rates der Europäischen Gemeinschaften vom 23. März 1994, die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.

Die Ergebnisse der Prüfung sind im vertraulichen Prüfbericht Nr. 2094047 festgelegt worden.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit:

EN 60079-0 : 2004

EN 60079-7 : 2003

EN 50281-1-1 : 1998 + A1

(10) Das Zeichen "U" hinter der Bescheinigungsnummer zeigt an, daß diese Bescheinigung Komponenten beschreibt und nicht mit einer Bescheinigung für ein Gerät oder Schutzsystem verwechselt werden darf. Diese EG-Baumusterprüfbescheinigung dient lediglich als Grundlage zur Bescheinigung eines Geräts oder Schutzsystems.

(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konstruktion, Überprüfung und Tests der spezifizierten Komponente in Übereinstimmung mit Richtlinie 94/9/EG. Weitere Anforderungen der Richtlinie gelten für das Herstellungsverfahren und die Lieferung dieser Komponente. Diese sind von vorliegender Bescheinigung nicht abgedeckt.

(12) Die Kennzeichnung der Komponente muß die folgenden Angaben enthalten:

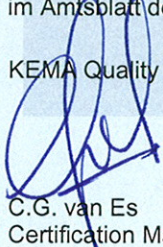


II 2 G D

Ex e II

Diese Bescheinigung ist erstellt am 26. September 2006 und ist, soweit zutreffend, zu revidieren vor dem Datum der Beendigung der Annahme der Konformitätsvermutung (einer) der oben erwähnten Normen, wie angekündigt im Amtsblatt der Europäischen Union.

KEMA Quality B.V.


C.G. van Es
Certification Manager

Seite 1/3



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(13) **ANLAGE**

(14) **zur EG-Baumusterprüfbescheinigung KEMA 98ATEX1651 U** Ausgabe Nr. 2

(15) **Beschreibung**

Die Durchgangs-Reihenklemmen (alle Farben) UK 1,5 N; UK 3 N; UK 5 N und UK 6 N mit Zubehör dienen zum Anschließen oder Verbinden von Kupferleitern in Gehäusen der Zündschutzart Erhöhte Sicherheit "e" oder "D" (Staub). Die Montage erfolgt auf Tragschienen Typ NS 32 nach EN 60715-G 32 oder Typ NS 35 nach EN 60715-TH 35.

Einsatztemperaturbereich -50 °C ... +110 °C.

Elektrische Daten

Durchgangs-Reihenklemmen

Typ:	UK 1,5 N	UK 3 N
Bemessungsisolationsspannung [V]	320	630
Bemessungsspannung [V]	352	690
- bei überspringender Brückung [V]	69	176
Nennstrom [A]	17	23
Max. Belastungsstrom [A]	17	29
bei Querverbindung		
- Bemessungsquerschnitt mit FB [A]	16	18
- max. Leiterquerschnitt mit FB [A]	16	24
- Bemessungsquerschnitt mit EB [A]	-	20
- max. Leiterquerschnitt mit EB [A]	-	23
Bemessungsquerschnitt [mm ²] (AWG)	1,5 (16)	2,5 (14)
Anschließbare Leiterquerschnitte		
- starr [mm ²] (AWG)	0,14-1,5 (26-16)	0,2-4 (24-12)
- flexibel [mm ²] (AWG)	0,14-1,5 (26-16)	0,2-2,5 (24-14)
Mehrleiteranschluss (2 Leiter gleichen Querschnitts und gleicher Leiterart)		
- starr [mm ²] (AWG)	0,14-0,75 (26-18)	0,2-1,5 (24-16)
- flexibel [mm ²] (AWG)	0,14-0,75 (26-18)	0,2-1,5 (24-16)

Typ:	UK 5 N		UK 6 N
	NS 35	NS 32	
Montage auf Trageschiene			
Bemessungsisolationsspannung [V]	630	500	630
Bemessungsspannung [V]	690	550	690
- bei überspringender Brückung [V]		176	176
Nennstrom [A]		32,5	43,5
Max. Belastungsstrom [A]		37,5	58,5
bei Querverbindung			
- Bemessungsquerschnitt mit FB(I)/FB150 [A]		30/26	39,5
- max. Leiterquerschnitt mit FB(I)/FB150 [A]		34/31	52,5
- Bemessungsquerschnitt mit KB/KBI [A]		27	-
- max. Leiterquerschnitt mit KB/KBI [A]		32	-
Bemessungsquerschnitt [mm ²] (AWG)		4 (12)	6 (10)
Anschließbare Leiterquerschnitte			
- starr [mm ²] (AWG)		0,2-6 (24-10)	0,2-10 (24-8)
- flexibel [mm ²] (AWG)		0,2-4 (24-12)	0,2-6 (24-10)
Mehrleiteranschluss (2 Leiter gleichen Querschnitts und gleicher Leiterart)			
- starr [mm ²] (AWG)		0,2-1,5 (24-16)	0,2-1,5 (24-16)
- flexibel [mm ²] (AWG)		0,2-1,5 (24-16)	0,2-1,5 (24-16)

(13) **ANLAGE**

(14) **zur EG-Baumusterprüfbescheinigung KEMA 98ATEX1651 U** Ausgabe Nr. 2

Errichtungshinweise

Die Durchgangs-Reihenklemmen sind geeignet zum Einsatz in Gehäusen zur Verwendung in Bereichen mit brennbaren Gasen oder brennbarem Staub. Für brennbare Gase müssen die Gehäuse den Anforderungen gemäß EN 60079-0 und EN 60079-7 entsprechen. Für brennbaren Staub müssen die Gehäuse den Anforderungen gemäß EN 50281-1-1 entsprechen.

Bei Mischung mit anderen bescheinigten Baureihen und -größen und bei Verwendung von deren Zubehör ist auf die Einhaltung der erforderlichen Luft- und Kriechstrecken zu achten.

Bezüglich der Verwendung von Abschlussplatten, Querverbindungen und Endhaltern sind die Anweisungen des Herstellers zu beachten.

Bei Verwendung von Leitern mit Querschnitten kleiner als Nennquerschnitt ist der zugehörige niedrigere Strom in der EG-Baumusterprüfbescheinigung des vollständigen Gerätes festzulegen.

Die Durchgangs-Reihenklemmen dürfen auf Grund der betriebsmäßigen Eigenerwärmung bei dem Nennstrom und bei Umgebungstemperaturen von -50 °C bis +40 °C an der Einbaustelle in Betriebsmitteln, vorwiegend in Abzweig- und Verbindungskästen, für die Temperaturklasse T6 eingesetzt werden. Bei Einsatz der Reihenklemmen in Betriebsmitteln der Temperaturklassen T1 bis zu T5 ist sicherzustellen, dass die höchste Temperatur an den Isolationsteilen den Höchstwert des Einsatztemperaturbereiches nicht überschreitet.

Stückprüfungen

Es sind Stückprüfungen in Form einer Spannungsprüfung gemäß EN 60079-7, Abschnitt 7.2 in Verbindung mit Abschnitt 6.1 durchzuführen.

(16) **Prüfbericht**

KEMA Nr. 2094047.

(17) **Besondere Bedingungen**

Keine.

(18) **Grundlegende Sicherheits- und Gesundheitsanforderungen**

Von den Normen unter (9) abgedeckt.

(19) **Prüfungsunterlagen**

Wie erwähnt im Prüfbericht Nr. 2094047.

Translation, original language: German

(1) **EC-TYPE EXAMINATION CERTIFICATE**

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC**

(3) EC-Type Examination Certificate Number: **KEMA 98ATEX1651 U** Issue Number: **2**

(4) Component: **Terminal Blocks**
UK 1,5 N ; UK 3 N; UK 5 N and UK 6 N

(5) Manufacturer: **Phoenix Contact GmbH & Co. KG**

(6) Address: **Flachmarktstraße 8, D-32825 Blomberg, Germany**

(7) This component and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) KEMA Quality B.V., notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this component has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the directive.

The examination and test results are recorded in confidential report no. 2094047.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0 : 2004

EN 60079-7 : 2003

EN 50281-1-1 : 1998 + A1

(10) The sign "U" placed after the certificate number indicates that this certificate describes components and must not be mistaken for a certificate intended for an equipment or protective system. This EC-Type Examination Certificate may be used as a basis for certification of an equipment or protective system.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified component according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this component. These are not covered by this certificate.

(12) The marking of the component shall include the following:

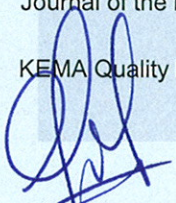


II 2 G D

Ex e II

This certificate is issued on 26 September 2006 and, as far as applicable, shall be revised before the date of cessation of presumption of conformity of (one of) the standards mentioned above as communicated in the Official Journal of the European Union.

KEMA Quality B.V.


C.G. van Es
Certification Manager

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Experience you can trust.

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 98ATEX1651 U** Issue No. 2

(15) **Description**

The Terminal Blocks (all colours) UK 1,5 N; UK 3 N; UK 5 N and UK 6 N with accessories, are intended for the connection of copper conductors in enclosures in type of protection increased safety “e” or “D” (dust). Fixing is made on mounting rails type NS 32 according to EN 60715-G 32 or type NS 35 according to EN 60715-TH 35.

Operating temperature range -50 °C ... +110 °C.

Electrical data

Terminal blocks

Type:	UK 1,5 N	UK 3 N
Rated insulation voltage [V]	320	630
Rated voltage [V]	352	690
- with skipping jumper [V]	69	176
Nominal current [A]	17	23
Max. rated current [A]	17	29
With jumper		
- rated cross section with FB [A]	16	18
- max. conductor cross section with FB [A]	16	24
- rated cross section with EB [A]	-	20
- max. conductor cross section with EB [A]	-	23
Rated cross section [mm ²] (AWG)	1,5 (16)	2,5 (14)
Connectable conductor cross section		
- rigid [mm ²] (AWG)	0,14-1,5 (26-16)	0,2-4 (24-12)
- flexible [mm ²] (AWG)	0,14-1,5 (26-16)	0,2-2,5 (24-14)
Multi-conductor connection (two conductor with the same cross section and conductor type)		
- rigid [mm ²] (AWG)	0,14-0,75 (26-18)	0,2-1,5 (24-16)
- flexible [mm ²] (AWG)	0,14-0,75 (26-18)	0,2-1,5 (24-16)
 Type:	 UK 5 N	 UK 6 N
assembled on mounting rail	NS 35 NS 32	
Rated insulation voltage [V]	630 500	630
Rated voltage [V]	690 550	690
- with skipping jumper [V]	176	176
Nominal current [A]	32,5	43,5
Max. rated current [A]	37,5	58,5
With jumper		
- rated cross section with FB(I)/FB150 [A]	30/26	39,5
- max. conductor cross section with FB(I)/FB150 [A]	34/31	52,5
- rated cross section with KB/KBI [A]	27	-
- max. conductor cross section with KB/KBI [A]	32	-
Rated cross section [mm ²] (AWG)	4 (12)	6 (10)
Connectable conductor cross section		
- rigid [mm ²] (AWG)	0,2-6 (24-10)	0,2-10 (24-8)
- flexible [mm ²] (AWG)	0,2-4 (24-12)	0,2-6 (24-10)
Multi-conductor connection (two conductor with the same cross section and conductor type)		
- rigid [mm ²] (AWG)	0,2-1,5 (24-16)	0,2-1,5 (24-16)
- flexible [mm ²] (AWG)	0,2-1,5 (24-16)	0,2-1,5 (24-16)



(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 98ATEX1651 U** Issue No. 2

Installation instructions

The Terminal Blocks are suitable for use in enclosures in atmospheres with flammable gases or combustible dust. For flammable gases these enclosures must satisfy the requirements according to EN 60079-0 and EN 60079-7. For combustible dust these enclosures must satisfy the requirements according to EN 50281-1-1.

When assembling with other certified series and sizes and when using belonging accessories, the required creepage distances and clearances have to be observed.

Regarding the use of covers, cross-connectors (jumpers) and end brackets the instructions of the manufacturer must be followed.

If conductors with smaller cross sections as the rated cross section are used, the belonging lower current has to be laid down in the EC-Type Examination Certificate of the complete apparatus.

The Terminal Blocks may be used, based on the self-heating when used at the nominal current and at ambient temperatures of -50 °C to +40 °C at the mounting position in electrical apparatus, e.g. connection and junction boxes, for temperature class T6. When the Terminal Blocks are used in electrical apparatus of temperature classes T1 up to T5, the highest temperature of the insulating material shall not exceed the maximum value of the operating temperature range.

Routine tests

Routine dielectric strength tests according to EN 60079-7, Clause 7.2 in combination with Clause 6.1, have to be carried out.

(16) **Report**

KEMA No. 2094047.

(17) **Special conditions for safe use**

None.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at (9).

(19) **Test documentation**

As listed in Test Report No. 2094047.

(1) EG-BAUMUSTERPRÜFBESCHEINIGUNG

(2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen – Richtlinie 94/9/EG

(3) EG-Baumusterprüfbescheinigung Nummer: **KEMA 97ATEX1622 U**

(4) Komponent: **Schutzleiter-Reihenklammern USLKG 3 (-1)**

(5) Hersteller: **Phoenix Contact GmbH & Co. KG**

(6) Anschrift: **Flachmarktstraße 8, D-32825 Blomberg, Deutschland**

(7) Die Bauart dieser Komponent sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser EG-Baumusterprüfbescheinigung und in den zugehörigen Unterlagen festgelegt.

(8) KEMA Quality B.V. bescheinigt als benannte Stelle Nr. 0344 nach Artikel 9 der Richtlinie 94/9/EG des Rates der Europäischen Gemeinschaften vom 23. März 1994, die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.

Die Ergebnisse der Prüfung sind im vertraulichen Prüfbericht Nr. 2092655 festgelegt worden.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit:

EN 60079-0 : 2004

EN 60079-7 : 2003

EN 50281-1-1 : 1998 + A1

(10) Das Zeichen "U" hinter der Bescheinigungsnummer zeigt an, daß diese Bescheinigung Komponenten beschreibt und nicht mit einer Bescheinigung für ein Gerät oder Schutzsystem verwechselt werden darf. Diese EG-Baumusterprüfbescheinigung dient lediglich als Grundlage zur Bescheinigung eines Geräts oder Schutzsystems.

(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konstruktion, Überprüfung und Tests der spezifizierten Komponente in Übereinstimmung mit Richtlinie 94/9/EG. Weitere Anforderungen der Richtlinie gelten für das Herstellungsverfahren und die Lieferung dieser Komponente. Diese sind von vorliegender Bescheinigung nicht abgedeckt.

(12) Die Kennzeichnung der Komponente muß die folgenden Angaben enthalten:



II 2 G D Ex e II

Arnhem, den 22. Mai 2006
KEMA Quality B.V.

T. Pijpker
Certification Manager

Neuauflage
Seite 1/3



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(13) **ANLAGE**

(14) **zur EG-Baumusterprüfbescheinigung KEMA 97ATEX1622 U**

(15) **Beschreibung**

Die Schutzleiter-Reihenklemme USLKG 3 (-1) dient zum Anschließen oder Verbinden von Kupferleitungen in Gehäusen der Zündschutzart Erhöhte Sicherheit "e" oder "D" (Staub). Die Montage erfolgt auf Tragschienen Typ NS 32 nach EN 60715, G-schienenprofil G32 oder NS 35 nach EN 60715, Hutschienenprofil TH 35.

Einsatztemperaturbereich: -50 °C ... +110 °C.

Elektrische Daten

Typ:	USLKG 3 (-1)
Bemessungsquerschnitt [mm ²] (AWG)	2,5 (14)
Anschließbare Leiterquerschnitte	
- starr [mm ²] (AWG)	0,2 - 4 (24 - 12)
- flexibel [mm ²] (AWG)	0,2 - 2,5 (24 - 14)

Errichtungshinweise

Die Schutzleiter-Reihenklemme ist geeignet zum Einsatz in Gehäusen zur Verwendung in Bereichen mit brennbaren Gasen oder brennbarem Staub. Für brennbare Gase müssen die Gehäuse den Anforderungen gemäß EN 60079-0 und EN 60079-7 entsprechen. Für brennbaren Staub müssen die Gehäuse den Anforderungen gemäß EN 50281-1-1 entsprechen.

Bei Aneinanderreihung mit den Durchgangs-Reihenklemmen werden die geforderten Luft- und Kriechstrecken für die nachfolgend aufgeführten Bemessungsspannungen nach EN 60079-7 eingehalten:

<u>Durchgangs-Reihenklemmen</u>	<u>Zertifikatnummer</u>	<u>Schutzleiter-Reihenklemmen</u>	<u>Bemessungsspannung</u>
UK 3 N	KEMA 98ATEX1651U	USLKG 3 (-1)	690 V

Bei Mischung mit anderen bescheinigten Baureihen und -größen und Verwendung von deren Zubehör ist auf die Einhaltung der erforderlichen Luft- und Kriechstrecken zu achten.

Bezüglich der Verwendung von Abschlussplatten, Querverbindungen und Endhaltern sind die Anweisungen des Herstellers zu beachten.

Die Schutzleiter-Reihenklemme darf bei Umgebungstemperaturen von -50 °C bis +40 °C an der Einbaustelle in Betriebsmitteln, vorwiegend in Abzweig- und Verbindungskästen, für die Temperaturklasse T6 eingesetzt werden. Bei Einsatz der Reihenklemmen in Betriebsmitteln der Temperaturklassen T1 bis zu T5 ist sicherzustellen, dass die höchste Temperatur an den Isolationsteilen den Höchstwert des Einsatztemperaturbereiches nicht überschreitet.

Stückprüfungen

Es sind Stückprüfungen in Form einer Spannungsprüfung gemäß EN 60079-7, Abschnitt 7.2 in Verbindung mit Abschnitt 6.1 durchzuführen.

- (13) **ANLAGE**
- (14) **zur EG-Baumusterprüfbescheinigung KEMA 97ATEX1622 U**

- (16) **Prüfbericht**
KEMA Nr. 2092655.
- (17) **Besondere Bedingungen**
Keine.
- (18) **Grundlegende Sicherheits- und Gesundheitsanforderungen**
Von den Normen unter (9) abgedeckt.
- (19) **Prüfungsunterlagen**
Wie erwähnt in Prüfbericht Nr. 2092655.

Translation, original language: German

(1) **EC-TYPE EXAMINATION CERTIFICATE**

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC**

(3) EC-Type Examination Certificate Number: **KEMA 97ATEX1622 U**

(4) Component: **Protective Conductor Terminal Blocks USLKG 3 (-1)**

(5) Manufacturer: **Phoenix Contact GmbH & Co. KG**

(6) Address: **Flachmarktstraße 8, D-32825 Blomberg, Germany.**

(7) This component and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) KEMA Quality B.V., notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this component has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the directive.

The examination and test results are recorded in confidential report no. 2092655.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0 : 2004

EN 60079-7 : 2003

EN 50281-1-1 : 1998 + A1

(10) The sign "U" placed after the certificate number indicates that this certificate describes components and must not be mistaken for a certificate intended for an equipment or protective system. This EC-Type Examination Certificate may be used as a basis for certification of an equipment or protective system.

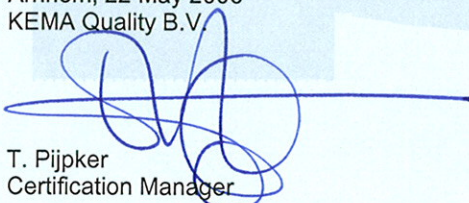
(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified component according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this component. These are not covered by this certificate.

(12) The marking of the component shall include the following:



II 2 G D Ex e II

Arnhem, 22 May 2006
KEMA Quality B.V.


T. Pijpker
Certification Manager

Re-issued
Page 1/3



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KEMA Quality B.V. Utrechtseweg 310, 6812 AR Arnhem P.O. Box 5185, 6802 ED Arnhem The Netherlands
T +31 26 3 56 20 00 F +31 26 3 52 58 00 customer@kema.com www.kema.com Registered Arnhem 09085396

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 97ATEX1622 U**

(15) **Description**

The Protective Conductor Terminal Block USLKG 3 (-1) for the connection of copper conductors in enclosures in type of protection increased safety “e” or “D” (dust), for fixing on mounting rails type NS 32 acc. to EN 60715, G-section rail G 32 or NS 35 acc. to EN 60715, Top hat section rail TH 35.

Operating temperature range: -50 °C ... +110 °C.

Electrical data

Type:	USLKG 3 (-1)
Rated cross-section [mm ²] (AWG)	2,5 (14)
Connectable conductor cross-section	
- rigid [mm ²] (AWG)	0,2 - 4 (24 - 12)
- flexible [mm ²] (AWG)	0,2 - 2,5 (24 - 14)

Installation instructions

The Protective Conductor Terminal Block is suitable for use in enclosures in atmospheres with flammable gases or combustible dust. For flammable gases these enclosures must satisfy the requirements according to EN 60079-0 and EN 60079-7. For combustible dust these enclosures must satisfy the requirements according to EN 50281-1-1.

In combination with the Terminal Blocks the required clearances and creepage distances are kept for the rated voltages according to EN 60079-7 as listed below:

<u>Terminal Blocks</u>	<u>Certificate number</u>	<u>Protective conductor terminal blocks</u>	<u>Rated voltage</u>
UK 3 N	KEMA 98ATEX1651U	USLKG 3 (-1)	690 V

When assembling with other certified series and sizes and using belonging accessories, the required creepage distances and clearances have to be observed.

Regarding the use of covers, cross-connectors and end brackets the instructions of the manufacturer must be followed.

The Protective Conductor Terminal Block may be used at ambient temperatures of -50 °C to +40 °C at the mounting position in electrical apparatus, e.g. junction and connection boxes, for temperature class T6. When the Terminal Blocks are used in electrical apparatus of temperature classes T1 up to T5, the highest temperature of the insulating material shall not exceed the maximum value of the operating temperature range.

Routine tests

Routine dielectric strength tests according to EN 60079-7, Clause 7.2 in combination with Clause 6.1, have to be carried out.



(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 97ATEX1622 U**

(16) **Report**

KEMA No. 2092655.

(17) **Special conditions for safe use**

None.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at (9).

(19) **Test documentation**

As listed in Test Report No. 2092655.

Translation, original language: German

(1) **EC-TYPE EXAMINATION CERTIFICATE**

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC**

(3) EC-Type Examination Certificate Number: **KEMA 96ATEX4370 U**

(4) Component: **Protective Conductor Terminal Blocks USLKG 2,5 N (-1)
USLKG 6 N (-1)**

(5) Manufacturer: **Phoenix Contact GmbH & Co. KG**

(6) Address: **Flachmarktstraße 8, D-32825 Blomberg, Germany.**

(7) This component and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) KEMA Quality B.V., notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this component has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the directive.

The examination and test results are recorded in confidential report no. 2092655.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0 : 2004

EN 60079-7 : 2003

EN 50281-1-1 : 1998 + A1

(10) The sign "U" placed after the certificate number indicates that this certificate describes components and must not be mistaken for a certificate intended for an equipment or protective system. This EC-Type Examination Certificate may be used as a basis for certification of an equipment or protective system.

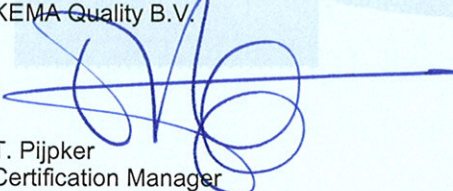
(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified component according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this component. These are not covered by this certificate.

(12) The marking of the component shall include the following:



II 2 G D Ex e II

Arnhem, 22 May 2006
KEMA Quality B.V.


T. Pijpker
Certification Manager

Re-issued
Page 1/3





(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 96ATEX4370 U**

(15) **Description**

The Protective Conductor Terminal Blocks USLKG 2,5 N (-1) and USLKG 6 N (-1) for the connection of copper conductors in enclosures in type of protection increased safety “e” or “D” (dust), for fixing on mounting rails type NS 32 acc. to EN 60715, G-section rail G 32 or NS 35 acc. to EN 60715, Top hat section rail TH 35.

Operating temperature range: -50 °C ... +110 °C.

Electrical data

Type:	USLKG 2,5 N (-1)	USLKG 6 N (-1)
Rated cross-section [mm ²] (AWG)	2,5 (14)	6 (10)
Connectable conductor cross-section		
- rigid [mm ²] (AWG)	0,2 - 4 (24 - 12)	0,2 - 10 (24 - 8)
- flexible [mm ²] (AWG)	0,2 - 2,5 (24 - 14)	0,2 - 6 (24 - 10)

Installation instructions

The Protective Conductor Terminal Blocks are suitable for use in enclosures in atmospheres with flammable gases or combustible dust. For flammable gases these enclosures must satisfy the requirements according to EN 60079-0 and EN 60079-7. For combustible dust these enclosures must satisfy the requirements according to EN 50281-1-1.

In combination with the Terminal Blocks the required clearances and creepage distances are kept for the rated voltages according to EN 60079-7 as listed below:

<u>Terminal Blocks</u>	<u>Certificate number</u>	<u>Protective conductor terminal blocks</u>	<u>Rated voltage</u>
UK 2,5 N	KEMA 06ATEX0119U	USLKG 2,5 N (-1)	550 V
UK 6 N	KEMA 98ATEX1651U	USLKG 6 N (-1)	690 V

When assembling with other certified series and sizes and using belonging accessories, the required creepage distances and clearances have to be observed.

Regarding the use of covers, cross-connectors and end brackets the instructions of the manufacturer must be followed.

The Protective Conductor Terminal Blocks may be used at ambient temperatures of -50 °C to +40 °C at the mounting position in electrical apparatus, e.g. junction and connection boxes, for temperature class T6. When the Terminal Blocks are used in electrical apparatus of temperature classes T1 up to T5, the highest temperature of the insulating material shall not exceed the maximum value of the operating temperature range.

Routine tests

Routine dielectric strength tests according to EN 60079-7, Clause 7.2 in combination with Clause 6.1, have to be carried out.

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 96ATEX4370 U**

(16) **Report**

KEMA No. 2092655.

(17) **Special conditions for safe use**

None.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at (9).

(19) **Test documentation**

As listed in Test Report No. 2092655.

(1) EG-BAUMUSTERPRÜFBESCHEINIGUNG

(2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen – Richtlinie 94/9/EG

(3) EG-Baumusterprüfbescheinigung Nummer: **KEMA 96ATEX4370 U**

(4) Komponent: **Schutzleiter-Reihenklempen USLKG 2,5 N (-1)
USLKG 6 N (-1)**

(5) Hersteller: **Phoenix Contact GmbH & Co. KG**

(6) Anschrift: **Flachmarktstraße 8, D-32825 Blomberg, Deutschland**

(7) Die Bauart dieser Komponente sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser EG-Baumusterprüfbescheinigung und in den zugehörigen Unterlagen festgelegt.

(8) KEMA Quality B.V. bescheinigt als benannte Stelle Nr. 0344 nach Artikel 9 der Richtlinie 94/9/EG des Rates der Europäischen Gemeinschaften vom 23. März 1994, die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.

Die Ergebnisse der Prüfung sind im vertraulichen Prüfbericht Nr. 2092655 festgelegt worden.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit:

EN 60079-0 : 2004

EN 60079-7 : 2003

EN 50281-1-1 : 1998 + A1

(10) Das Zeichen "U" hinter der Bescheinigungsnummer zeigt an, daß diese Bescheinigung Komponenten beschreibt und nicht mit einer Bescheinigung für ein Gerät oder Schutzsystem verwechselt werden darf. Diese EG-Baumusterprüfbescheinigung dient lediglich als Grundlage zur Bescheinigung eines Geräts oder Schutzsystems.


(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konstruktion, Überprüfung und Tests der spezifizierten Komponente in Übereinstimmung mit Richtlinie 94/9/EG. Weitere Anforderungen der Richtlinie gelten für das Herstellungsverfahren und die Lieferung dieser Komponente. Diese sind von vorliegender Bescheinigung nicht abgedeckt.

(12) Die Kennzeichnung der Komponente muß die folgenden Angaben enthalten:



II 2 G D Ex e II

Arnhem, den 22. Mai 2006
KEMA Quality B.V.


T. Pijpker
Certification Manager

Neuauflage
Seite 1/3



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(13) **ANLAGE**

(14) **zur EG-Baumusterprüfbescheinigung KEMA 96ATEX4370 U**

(15) **Beschreibung**

Die Schutzleiter-Reihenklammern USLKG 2,5 N (-1) und USLKG 6 N (-1) dienen zum Anschließen oder Verbinden von Kupferleitungen in Gehäusen der Zündschutzart Erhöhte Sicherheit "e" oder "D" (Staub). Die Montage erfolgt auf Tragschienen Typ NS 32 nach EN 60715, G-schienenprofil G 32 oder NS 35 nach EN 60715, Hutschienenprofil TH 35.

Einsatztemperaturbereich: -50 °C ... +110 °C.

Elektrische Daten

Typ:	USLKG 2,5 N (-1)	USLKG 6 N (-1)
Bemessungsquerschnitt [mm ²] (AWG)	2,5 (14)	6 (10)
Anschließbare Leiterquerschnitte		
- starr [mm ²] (AWG)	0,2 - 4 (24 - 12)	0,2 - 10 (24 - 8)
- flexibel [mm ²] (AWG)	0,2 - 2,5 (24 - 14)	0,2 - 6 (24 - 10)

Errichtungshinweise

Die Schutzleiter-Reihenklammern sind geeignet zum Einsatz in Gehäusen zur Verwendung in Bereichen mit brennbaren Gasen oder brennbarem Staub. Für brennbare Gase müssen die Gehäuse den Anforderungen gemäß EN 60079-0 und EN 60079-7 entsprechen. Für brennbaren Staub müssen die Gehäuse den Anforderungen gemäß EN 50281-1-1 entsprechen.

Bei Aneinanderreihung mit den Durchgangs-Reihenklammern werden die geforderten Luft- und Kriechstrecken für die nachfolgend aufgeführten Bemessungsspannungen nach EN 60079-7 eingehalten:

<u>Durchgangs-Reihenklammern</u>	<u>Zertifikatnummer</u>	<u>Schutzleiter-Reihenklammern</u>	<u>Bemessungsspannung</u>
UK 2,5 N	KEMA 06ATEX0119U	USLKG 2,5 N (-1)	550 V
UK 6 N	KEMA 98ATEX1651U	USLKG 6 N (-1)	690 V

Bei Mischung mit anderen bescheinigten Baureihen und -größen und Verwendung von deren Zubehör ist auf die Einhaltung der erforderlichen Luft- und Kriechstrecken zu achten.

Bezüglich der Verwendung von Abschlussplatten, Querverbindungen und Endhaltern sind die Anweisungen des Herstellers zu beachten.

Die Schutzleiter-Reihenklammern dürfen bei Umgebungstemperaturen von -50 °C bis +40 °C an der Einbaustelle in Betriebsmitteln, vorwiegend in Abzweig- und Verbindungskästen, für die Temperaturklasse T6 eingesetzt werden. Bei Einsatz der Reihenklammern in Betriebsmitteln der Temperaturklassen T1 bis zu T5 ist sicherzustellen, dass die höchste Temperatur an den Isolationsteilen den Höchstwert des Einsatztemperaturbereiches nicht überschreitet.

Stückprüfungen

Es sind Stückprüfungen in Form einer Spannungsprüfung gemäß EN 60079-7, Abschnitt 7.2 in Verbindung mit Abschnitt 6.1 durchzuführen.



(13) **ANLAGE**

(14) **zur EG-Baumusterprüfbescheinigung KEMA 96ATEX4370 U**

(16) **Prüfbericht**

KEMA Nr. 2092655.

(17) **Besondere Bedingungen**

Keine.

(18) **Grundlegende Sicherheits- und Gesundheitsanforderungen**

Von den Normen unter (9) abgedeckt.

(19) **Prüfungsunterlagen**

Wie erwähnt in Prüfbericht Nr. 2092655.

Ultraschallsensor
Reflexionstaster
RUC130-M30-LIAP8X-H1151/3GD
RUC300-M3047-LIAP8X-H1151/3GD
RUC600-M3065-LIAP8X-H1151/3GD

Item No. : 460 244
 Order No. : 10-1335
 Checked : 19.06.2010
 Rgb

Betriebsanleitung (Ex-Schutz relevanter Teil)

Die Betriebsanleitung ist mit der beiliegenden allgemeinen Betriebsanleitung D101311 0202 zu verwenden.

Bestimmungsgemäße Verwendung

Dieses Gerät erfüllt die Richtlinie 94/9/EG (ATEX) und ist gemäß EN50021, EN50281-1-1 und EN60947-5-2 geeignet für den Einsatz im explosionsgefährdeten Bereich. Für den bestimmungsgemäßen Betrieb sind die nationalen Vorschriften und Bestimmungen einzuhalten.

Einsatz in explosionsgefährdeten Bereichen gemäß Klassifizierung

II 3 G und II 3 D (Gruppe II, Kategorie 3 G, Betriebsmittel für Gasatmosphäre und Kategorie 3 D, Betriebsmittel für Staubatmosphäre).

Kennzeichnung (siehe Gerät oder technisches Datenblatt)

⊕ II 3 G und EEX nA II T6 X „nicht funkend“ nach EN50021 und ⊕ II 3 D IP65 T 60 °C X nach EN50281-1-1

Zulässige Umgebungstemperatur am Einsatzort

-20...+40 °C

Installation / Inbetriebnahme (siehe auch Errichtungsbestimmungen EN60079-14/EN50281-1-2)

Die Geräte dürfen nur von qualifiziertem Personal aufgebaut, angeschlossen und in Betrieb genommen werden. Das qualifizierte Personal muss Kenntnisse haben über Zündschutzarten, Vorschriften und Verordnungen für Betriebsmittel im Ex-Bereich. Prüfen Sie, ob die Klassifizierung (siehe oben „Kennzeichnung“ und Kennzeichnung auf dem Gerät) für den Einsatzfall geeignet ist.

Einbauhinweise / Montage

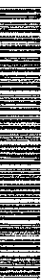
Vermeiden Sie statische Aufladungen an Kunststoffgeräten und Kabeln. Reinigen Sie das Gerät nur mit einem feuchten Tuch. Montieren Sie das Gerät nicht in den Staubstrom und vermeiden Sie Staubablagerungen auf den Geräten. Die Geräte und Kabel sind vor mechanischen Beschädigungen und starken elektromagnetischen Feldern zu schützen. Die Anschlussbelegung und die elektrischen Kenngrößen entnehmen Sie bitte der Gerätekenzeichnung oder dem technischen Datenblatt. Entfernen Sie, um Verschmutzung zu vermeiden, evtl. vorhandene Verschlussstopfen der Kabelverschraubungen bzw. der Stecker erst unmittelbar vor dem Einführen von Leitungen bzw. dem Aufschrauben der Kabeldose.

Besondere Bedingungen für den sicheren Betrieb

Bei Geräten mit M12-Steckverbindung verwenden Sie bitte den im Lieferumfang enthaltenen Sicherheitsclip SC-M12/3GD. Falls Sie keinen Sicherheitsclip verwenden, stellen Sie bitte durch ein ausreichendes Anzugsmoment sicher, dass die Überwurfmutter nicht von Hand zu lösen ist. Trennen Sie die Steckverbindung oder die Anschlussleitung nicht unter Spannung. Bringen Sie in geeigneter Form dauerhaft einen Warnhinweis in der Nähe der Steckverbindung an mit folgender Aufschrift: Nicht unter Spannung trennen / Do not separate when energized. Gerät muss vor jeglicher mechanischer Beschädigung geschützt werden.

Instandhaltung / Wartung

Reparaturen sind nicht möglich. Die Zulassung erlischt durch Reparaturen oder Eingriffe am Gerät, die nicht vom Hersteller ausgeführt werden. Die wichtigsten Daten aus der Herstellerbescheinigung sind aufgeführt.



D101543 0405

GWA 4NEB 839 1813-10

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Hans Turck GmbH & Co. KG • D-45466 Mülheim/Ruhr • Tel. 0208/4952-0 • Fax 0208/4952-264 • E-Mail: turckmh@turck.com • www.turck.com

SERVOLIFT

Declaration of Conformity for Machinery (Directive 2006/42/EC)

This is to declare that the following listed machinery, on the basis of its design, structure and execution presented by us to trade, conforms to the relevant Essential Health and Safety Requirements of the EC guideline(s).

With by us non allowed modification of the machinery, this declaration becomes invalid.

This declaration is only valid for directed use of the machinery by instructed personal.

Type of machine: Lifter
Machine number: 12551
Year of construction: 2011

Used EC guidelines:

- EC guidelines of European Machinery Directive 2006/42/EC
- Low Voltage Directive 2006/95/EEC
- EMC correct installation 2004/108/EEC

in case of **explosion proofed** machines refer to and note enclosed

- Declaration of Conformity of EX-proofed guidelines

Used EN and ISO standards:

- DIN EN 12100-part 1 and 2; 2003; DIN EN 60204-1; 2006, DIN EN ISO 13849-1; 2007, DIN EN ISO 14121-1; 2007, DIN EN ISO 22915-2; 2008, DIN EN 1175-1; 1998

Restricted Placing on the market: We wish to point out, that given declaration is only valid for service performed by us. Service which has to be performed on site is defined by interfaces, to be inspected and confirmed before initial operation.

Interfaces: Errection and installation acc. to operation instruction,
 Installation of emergency stop (customer site) acc. electric scheme page 8

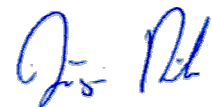
Attorney for technical documentation: Servolift GmbH

Servolift GmbH
 Albert-Einstein-Str. 9
 D- 77656 Offenburg

Telefon : +49 (0) 781/61 00-0
 Fax : +49 (0) 781/61 00-99
 E-Mail : sl@servolift.de
 web : www.servolift.de

Offenburg 24. Aug. 2011
 Place / Date

Jürgen Rieber, Geschäftsführer
 Name



Signature

SERVOLIFT



Appendix to EC declaration of conformity (as defined by the EC Guidelines for Machinery Directive 2006/42/EC, Appendix IIA)

or

Appendix to EC- manufacturer's declaration (as defined by the EC Guidelines for Machinery Directive 2006/42/EC, Appendix IIB)

EC-Declaration of Conformity for Explosion protection guidelines

Herewith we confirm, that the following product:

Type of machine:	Lifter
Machine number:	12551
Year of construction:	2011
Category:	II3D (Zone 22)
Marking according to ATEX:	 II3D IP 54 T130°C
Marking of non-electrical equipment:	 c b T1 (max. 450°C)

correspond to the following EC-guidelines:

- Explosion protection guideline 94/9/EC
The documentation has been given to TÜV Product-Service, München (registration No. 0123) for archiving under registration No. 70039620. Place of archiving: TÜV Product-Service, Gottlieb Daimler Straße 7, D-70794 Filderstadt
- EC Low voltage guideline for electrical equipment installed within non potential explosive area.

The following standards are fully or partly used (where applicable):

- EN 1127-1:2007, EN 60079-14:2008, EN 13463-1:2009, EN 13463-5:2003,
- EN 60204-1:2006

Commissioning is not allowed until machine is proved to correspond to the guideline Directive 2006/42/EC.

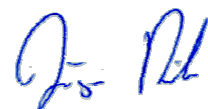
We hereby confirm, that the installation of the electrical equipment is carried out according to the instructions of the manufacturer and of the standard EN 60079-14:2008

SERVOLIFT GmbH
Albert-Einstein-Str. 9
D- 77656 Offenburg

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Offenburg, den 24. Aug. 2011
Place / Date

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Signature

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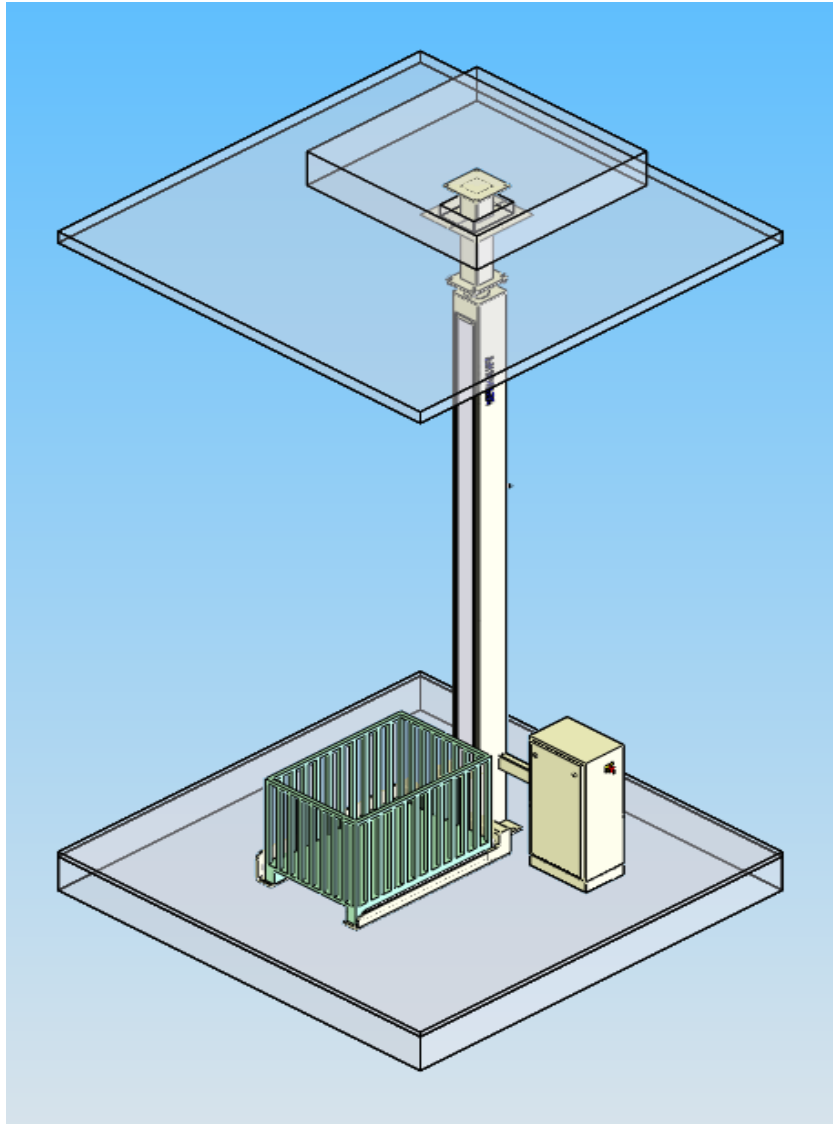
OUTER ELEMENTS LIFTING TOWER

(SEE ADDITIONAL BINDER)

SERVOLIFT

Operating Instructions: Lifter (HS) 12551

- Original Instructions -



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1. Description of Product

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1.1. Intended Use of the Machine

The machine is used to be loaded with a special pallet, to be raised to a higher level. The pallet is discharged from a work platform.

The lifter is controlled from two different remote installed operator panels.

It is only allowed to use the described pallets with a maximum weight of 600 kg in all.

The machine not designed for other use as above listed – this applies as misuse of the machine.



INFORMATION

The machine is intended to be used in a room! It is NOT suited for being operated under open air. By installation of explosion proofed components, the machine is intended to be used within explosion hazardous atmosphere, classed: ATEX zone 22

Especially we point out, that it is forbidden to:

- Lift and transport personnel.
- Climb up the unit.
- Stay under the load.
- Be present within the direct working area during operation of the machine.
- Lift up loads with other parts than the provided load suspension devices.
- Put the unit into operation, if any fault is notified.
- Modify the unit without the expressly written confirmation of the manufacturer.
- By pass or remove any of the installed interlocks and safety installations.
- Use other loads than shown below.
- Use damaged loads, specially at the load suspension points.



DANGER

Operation of the machine.

Vital wounds, death and or damage to machinery.

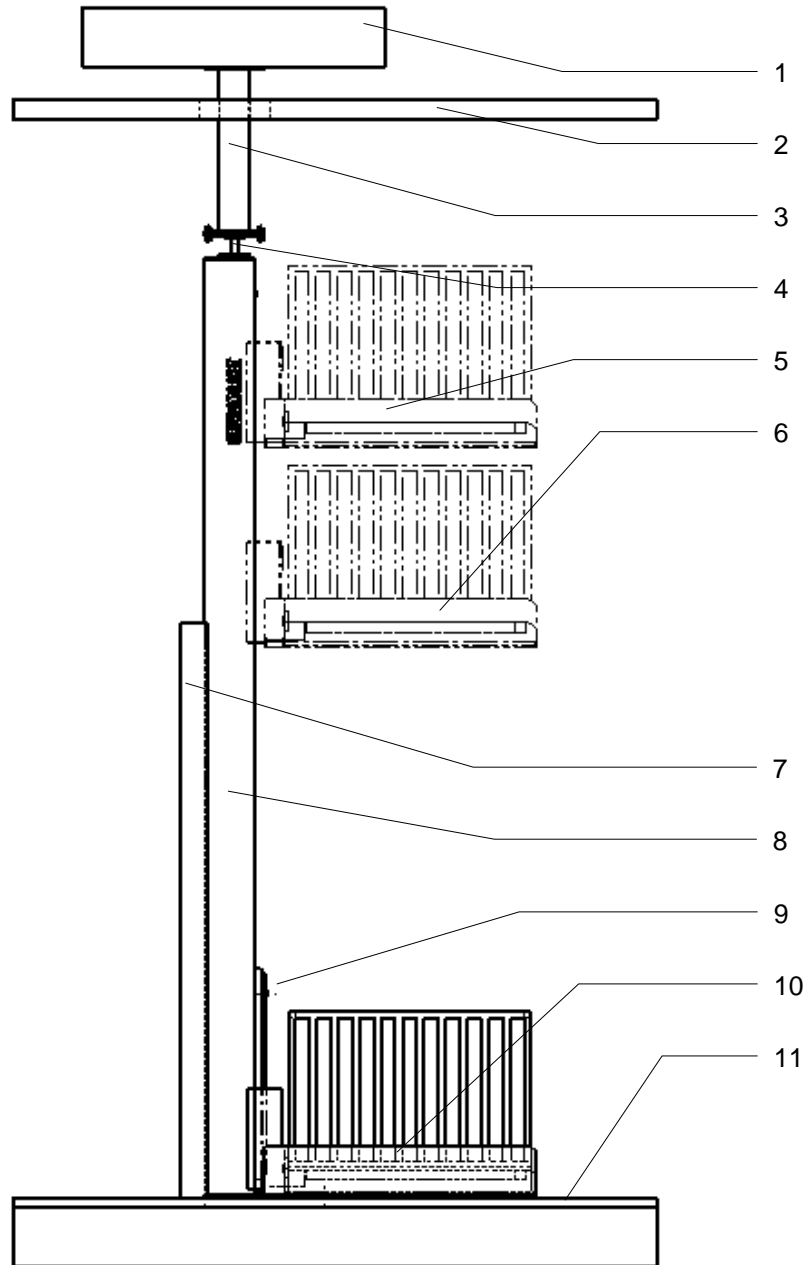
- The machine must only be operated / used according to its intended use
- It is imperative that all safety precautions be observed, in this operation instruction and at the machine



INFORMATION

This manual does not contain all safety information. Depending on local regulations and legal provisions at site, further safety measures might be necessary. Indication to health hazard caused by the product itself or by a customer specific working procedure is not subject of this manual.

1.2. Design



- | | |
|--|---|
| 1) blanket | 8) column with internal guide and lift system |
| 2) cleanroom ceiling | 9) control cabinet with hydraulic and electric components |
| 3) column bracing | 10) supporting arm in min.-height |
| 4) column ceiling pin | 11) floor with finished surfaces |
| 5) supporting arm in max.-height | |
| 6) supporting arm in intermediate height | |
| 7) cover sheet | |

For more details and dimensions refer to general arrangement and/or layout drawing at the attachment of this manual.

1.3. Functional characteristic

The machine consists of a column with guide and lift system, floor fixing plate, top fixing device and the lifting platform. After erection, it is fixed to floor.

Lifting is powered by a hydraulic cylinder with chain system. On the side of the column a height stop is attached that allows an exact height positioning when lowering onto upper discharge position. Lowering below the height stop is done after pneumatic retraction of the height stop latch.

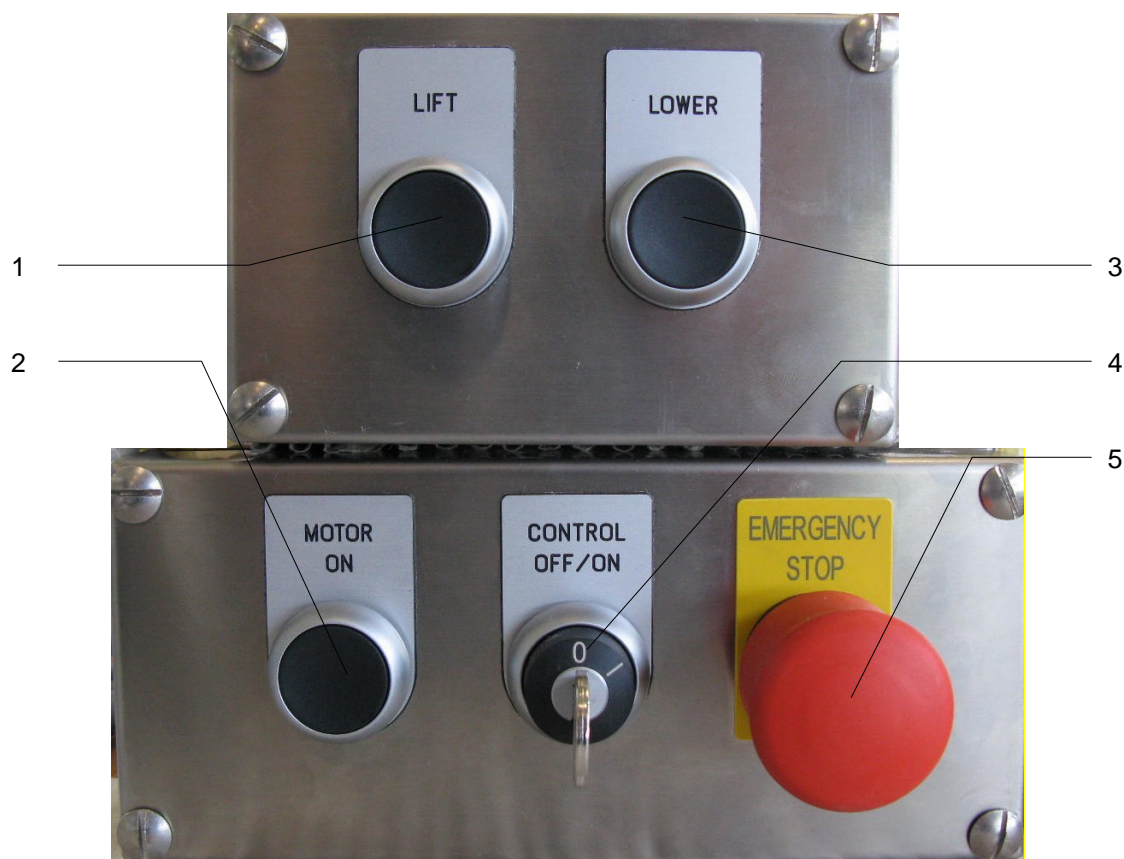
The pallet is carried by a supporting arm with two L-shaped arms as stand for the pallet.

The hydraulic power pack, the valves and the terminal box for connection of the electric elements are installed in a cabinet at the rear side of the column. Manually actuated operating elements are installed on the topside of the cabinet.

Operation is executed via push buttons on the separated operation panel.

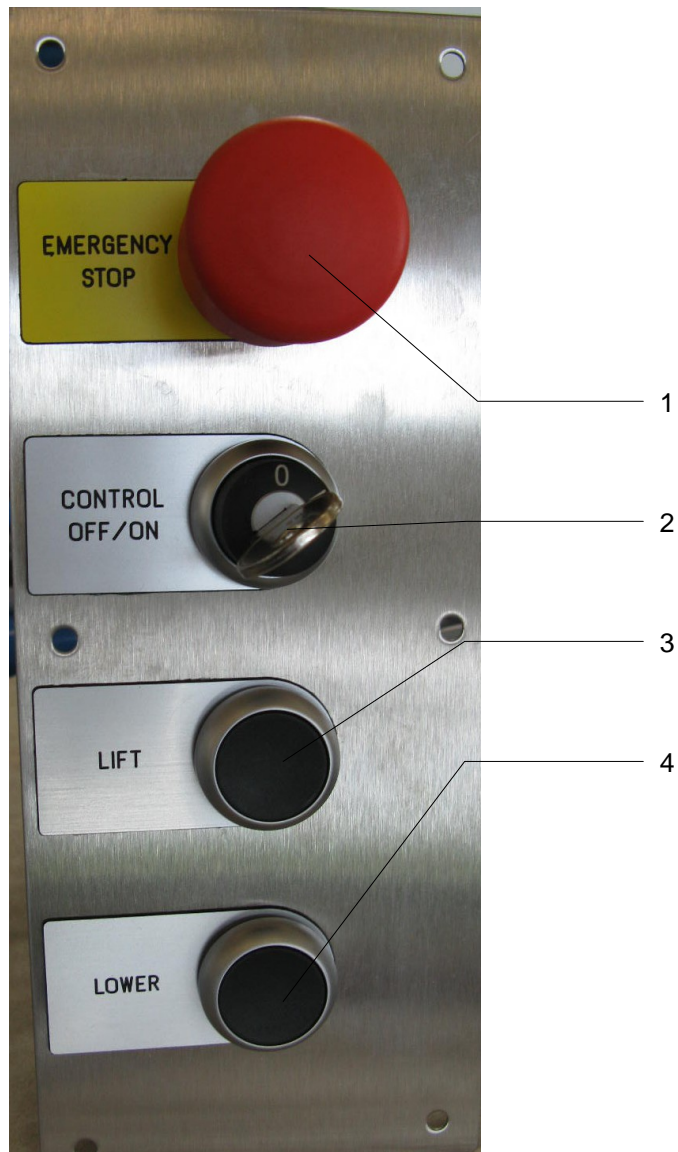
1.4. Operating elements

1.4.1. Mezzanine panel 1 & 2



- 1) push button, LIFT
- 2) push button, MOTOR ON
- 3) push button, LOWER
- 4) key switch, CONTROL OFF / ON
- 5) button, EMERGENCY STOP

1.4.2. Base floor plate panel



- 1) button, EMERGENCY STOP
- 2) key switch, CONTROL OFF / ON
- 3) push button, LIFT
- 4) push button, LOWER

1.5. Operation sequence

1.5.1. operation first from base floor panel, then panel 1 at mezzanine

- operator puts a loaded pallet into the supporting arm,
- turns key switch at base floor panel ON,
- lifts to max. height,
- switches the control OFF, removes the key and inserts it into upper panel 1,
- empties the pallet,
- switches control ON,
- pushes the button MOTOR ON and simultaneously LOWER,
- lowers the supporting arm to a mezzanine height,
- switches the control OFF, removes the key and inserts it into base floor panel,
- switches control ON,
- lowers the arm to minimum height,
- removes the empty pallet by a hand pallet jack,
- starts next sequence.

1.5.2. operation first from panel 1 at mezzanine, then base floor panel

- operator puts a loaded pallet into the supporting arm,
- turns key switch ON at upper panel 1,
- lifts to max. height,
- empties the pallet,
- pushes the button MOTOR ON and simultaneously LOWER,
- lowers the supporting arm to a mezzanine height,
- switches the control OFF, removes the key and inserts it into base floor panel,
- switches control ON at base floor panel,
- lowers the arm to minimum height,
- removes the empty pallet by a hand pallet jack,
- starts next sequence.



INFORMATION

Operation sequences in more detail are described in chapter 6. Operation!

1.6. Technical Data

Load

Load	pallet or wire mesh crate 1200mm s 800 mm, approx. 900 high
Safe working load	600kg
Pallet to be presentet	by hand pallet jack

Dimension and Execution

Column height	4721mm
min. height (to top of platform)	35mm
max. height (to top of platform)	3771mm
Reach (middle of column – middle of pallet)	870mm
Height of mezzanine ceiling	5400mm
Installation height of top fixing	5660mm (+/- 50mm)
Erection	stationary with floor and top fixing <ul style="list-style-type: none"> - floor fixing by compound anchors M12 - floor must be even and horizontal - top fixing by compound anchors M12 - thickness of concrete \geq 200mm
Compressed air supply	6 - 7bar, from column flying PVC hose ND 6, 10m long to mezzanine junction box
Electric supply	400 V, 50 Hz, 3Ph+PE, 2 kW, from column flying lead 10m long to mezzanine junction box.
explosion protection rate	ATEX-category II3D (zone 22): Explosive atmosphere in the form of a cloud of combustible dust in air is not likely to occur in normal operation but, if it does occur, will persist for a short period only. motor protection rate II3D IP55 T125°C
Sound level	< 80dB(A)
Stoke	3736mm

Continued – technical data

Total width	approx. 1631mm
Total length	approx. 1770mm
Ingress protection	IP 54
Cabinet	W x H x D 500mm x 1050mm x 335mm lateral the column with between installed duct
Total load	approx. 1400kg (incl. load)

Stainless steel design

Exterior parts	<ul style="list-style-type: none">– 1.4301 (AISI 304)– 1.4306 (AISI 304L)– 1.4541 (AISI 321)
Mechanical treated parts (bearing flanges, handles, distance blocks)	<ul style="list-style-type: none">– 1.4104 (AISI 430F)– 1.4057 (AISI 431)
Interior parts	<ul style="list-style-type: none">– St37-2 (S235JR)– St52-3 (S355JO)
Surfaces	Pharma-Design: <ul style="list-style-type: none">– faces, attached parts, mechanical treated stainless steel parts polished, $R_a \leq 1,5 \mu\text{m}$– flat weld seams polished, other weld seams brushed

Assembly groups

Lift gear	<ul style="list-style-type: none">– column with internal guide system– hydraulic lift cylinder with pilot operated check valve as safety element– chain pulley– two chains of same dimension, whereas one chain is used as lift chain and one chain as safety chain
Supporting arm	<ul style="list-style-type: none">– L- shaped profile as stand for palette– lateral glide pieces– rear stop with sensor "pallet in position"– stop dogs at front of stands to prevent slipping of the pallet
Cabinet	Stainless steel cabinet: <ul style="list-style-type: none">– remote from the column– connected to column by fixed duct– hydraulic power pack with valves– electric control (only one point power supply at 400V will be provided to the cabinet)

Continued – technical data

Control

Control

- installed into cabinet
- motor protection switch
- hydraulic-/ pneumatic control
- operation at base floor: plate with installed push buttons
- operation from mezzanine floor: elements installed into two panels

Operating elements

- main switch at cabinet
- base floor plate panel:
 - E-STOP
 - key switch CONTROL OFF / ON
 - LIFT
 - LOWER
- mezzanine panel 1 :
 - MOTOR ON
 - key switch CONTROL OFF / ON
 - E-STOP
 - LIFT
 - LOWER
- mezzanine panel 2 :
 - LIFT
 - LOWER

Sensors

- pallet in position
- mezzanine height

Interfaces

Both E-STOP buttons are installed to the complete E-Stop system (according to Frewitt requirements)

Safety

Safety installation

- pilot operated check valve to hold lift position in case of line rupture
- lift capacity limited by pressure limiting valve
- safety chain carries load in case of lift chain rupture
- stroke mechanically limited

Interlocks

- LIFT / LOWER only possible with pallet in place
- panel to be used must be activated by key switch
- LOWER operated from upper panel only possible to intermediate height
- further interlocks are not installed

2. Safety Advices

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2.3.	Basic Safety Measures	5
2.4.	Basic Safety Measures during Maintenance and Servicing	6
2.5.	Demands on Operators.....	7

2.1. User's Duty of Care



INFORMATION

**This manual does NOT refer to health hazards caused by the used product itself or by customers specific working procedure!
Warnings on this matter and appropriate safety precautions belongs to users undivided responsibility!**

This machine has been designed under consideration and careful selection of the harmonized standards which have to be kept, as well as further technical specifications. Therefore it agrees with the state of art and guarantees a maximum of safety.

This safety can only be achieved during normal operation, if all recommended measures are met. It belongs to the user's duty of care, to plan these steps and to control the execution.

The user especially has to control, that

- the machine is only employed for its intended use.
- the machine is only operated in perfect and working state and especially the safety installations are checked periodically for their functioning.
- the necessary personnel protective equipment for the operating-, maintaining-, and repair staff is at hand and used by the corresponding people.
- the owner's manual is always complete and in a readable condition and available at the machine's site.
- only sufficiently qualified and authorized personnel operate, maintain and repair the machine.
- this personnel is periodically instructed regarding all appropriate questions of operational safety and environmental protection and that they know the owner's manual and especially the included safety advice.
- all installed safety and warning labels will not be removed and are always readable.
- the machine will not operate with demounted covers.

2.2. Explanation of the Used Safety Signs

Following safety signs are used in the present owner's manual. These signs should call above all the readers attention to the text opposite the safety sign.



DANGER

Danger indicates a hazardous situation which, if not avoided, will result in death or serious injury.



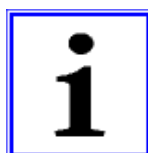
WARNING

Warning indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Caution, used with a safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



INFORMATION

This sign indicates information which is used for a better under-standing among other things of the machines function.



**SEPARATE
INSTRUCTION**

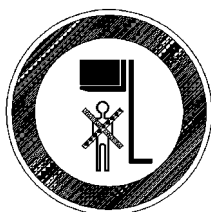
This sign points to (attached or separately delivered) additional manuals or guides for operating and servicing of OEM (original equipment manufacturer) parts which have to be read and followed attentively! Safety instructions referring to this must be respected absolutely!

2.2.1. Explanation of the Used Safety Signs at the machine



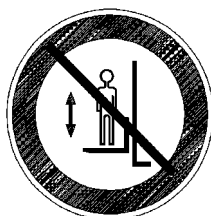
**OVERHEAD LOAD
WARNING**

Warning of raised loads. Those machines are labeled, which are exclusively destined for stay under the raised load only by the operator, e.g. to open the discharge valve or to install a discharge nozzle. At this time the load must be mechanically set on the height stop. The max. lift capacity is indicated below the pictogram.



**STAY UNDER THE
LOAD PROHIBITED**

This sign strictly prohibits any stay under the raised load. Those machines are labeled which are not equipped by a height stop device and a stay under the load is not exclusively intended. The max. lift capacity is indicated below the pictogram..



**MAN RIDING
PROHIBITED**

This sign strictly prohibits any man riding on the load suspension device. Those machines are labeled which offers evidently the possibility of riding the supporting arm, e.g. platforms, forks etc..

2.3. Basic Safety Measures

- The legal rules for prevention of accidents must be followed.
- Lifting personnel and climbing up the machinery is forbidden.
- It is only allowed to handle the described loads.
- If other bins should be handled, the written approval of the manufacturer is necessary.
- Prior each start of the unit, a safe pick up of the load is to be checked.
- Do not exceed the maximum allowed working load.
- Do not stand within the working area of the machine.
- Do not do any work on the electric installation with alive electric.
- Any work on the electric installation is only allowed to licensed electricians.
- The owner's manual must be always accessible to the operating staff. One copy must be stored at the machine. (e.g. cabinet door)
- When putting machine out of service, it has to be locked against unauthorized use by the lockable main switch.
- Prior to each start of production the machine has to be checked for visible faults. Make sure, that it is only used in perfect shape. Discovered faults have to be reported to the superior.
- Prior to each start of production, material and objects which are not necessary for production have to be removed from the working area, e.g. forklift truck.



CAUTION

Prevent from electrostatic self-charge, while discharging non-conducting products! (Fluids, powders, granulates) If conductivity is greater than 10^{-8} S/m, self-charge can be excluded.

Electrostatic discharge.

- For an suitable deduction / grounding, wear applicable shoes and clothes

2.4. Basic Safety Measures during Maintenance and Servicing

The provided inspection and maintenance interval must be kept!

Respect maintenance and repair manuals of individual components attached to this manual

- Prior to the execution of maintenance and servicing, the access to the working area of the machinery has to be closed against non-authorized staff. Attach or install information signs, which indicates the maintenance or repair work!
- Prior to the execution of maintenance and servicing the electric main switch has to be locked by a padlock. The control has to be switched off by the key. Both keys must be in hands of the person, who carries out the maintenance and servicing.
- For the exchange of heavy machine parts, only suitable and perfect load suspension devices and sling units must be used!
- Lubricants, cooling and cleaning agents, dangerous to environment, have to be disposed according to legal regulations.
- Hydraulic and pneumatic system must be depressurized for maintenance.
- Works on the electric and electronic components as well as the hydraulic installation are only allowed to licensed expert persons.



DANGER

Supply lines under voltage despite switched of main switch.

Vital wounds, death by electric shock.

- By installation of supply lines, disconnect electrical connections on side.



WARNING

Release pressurized hydraulic and pneumatic lines.

Vital wounds, death by pressure plunge.

- Switch off supply of energy and check pressure at the corresponding manometer



CAUTION

Oil and grease handling.

Skin irritation, sickness / vomit if swallowed.

- Wear suitable protective clothing
- Wear safety goggles
- Observe the safety instructions of manufacturer
- Avoid skin contact – by skin contact, deep clean
- By eye contact, eye rinsing

2.5. Demands on Operators



DANGER

By operating errors.

Vital wounds, death and or damage to machinery.

- Following regulations must be kept

- Operation of the unit is only allowed to trained persons above an age of 18 years. The operator must be "expressly" instructed by the user.
- Only authorized personnel are allowed to be present at the working area of the machine.
- The operator must have read and understood the manual and knows the shown safety information.
- Works on the electric and electronic components are only allowed to licensed expert persons. Maintenance and repair work on hydraulic and pneumatic components must only be done by special trained persons.

3. Transport

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3.3.	Admissible Devices for Transport	4
3.4.	Suspension of the machine.....	5
3.5.	Remove the eye bolt screws.....	6

3.1. General



DANGER

Transport.

Vital wounds, death and or damage to machinery.

- Following regulations must be kept

- Transport work is only allowed to qualified personnel, taking the safety regulations into account.
- It is only allowed to lift up the machine at the designed supporting spots or possibilities respectively.
- To transport the machine, use only appropriate load suspension devices and hanging equipment. At selection, consider the crate or packing list indicated load.
- Read also chapter "Safety Advice"!
- Loose or bulky parts have to be removed before transport or must be fastened against independent movement.
- Loose hangings out cable and hoses have to be tied up safe. On this occasion pay attention that these are not bent.
- The hydraulic power pack (tank) must be emptied and the electric motor must be supported within the cabinet if the machine is NOT transported vertically! (Note: In case of an installed, so called "mini- power- pack"-(black colored oil tank!)-replace of tank vent screw by a (closed) screw plug will be sufficiently)
- Leave machine parts as long as possible on transport pallets.

3.2. Transport to installation site

The machine / machine parts are delivered on pallets or crates. Let the machine if possible on the way to the the assembly location as long as possible on the range or in the crate and carry the load with a forklift or pallet truck.



DANGER

Suspended machine can swing.

Vital wounds, death and or damage to machinery.

- Hang up the machine as shown with appropriate load suspension device
- Manoeuvre slowly and gently
- The location of the central suspension point must be coincide with the centre of gravity and must not be moved



INFORMATION

If no suitable holes or attachment points for slings are available, the machine parts are hung with suitable cable loops. Make sure that no parts are crushed or torn.

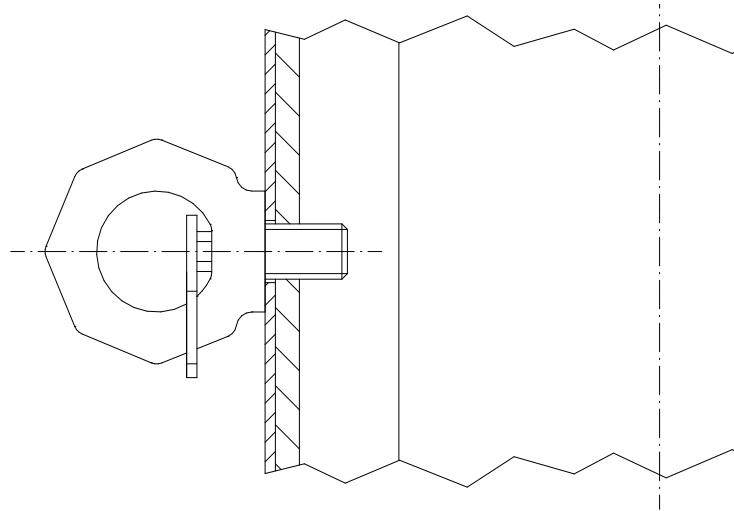
3.3. Admissible Devices for Transport



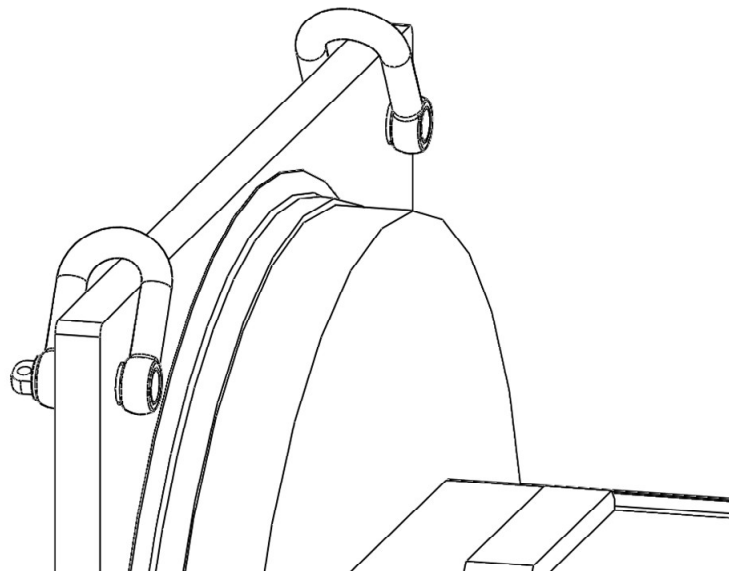
Max. allowed load at 45° pulling direction:
M16 = 500 kg
M20 = 830 kg

INFORMATION

- eye bolt at right or left side face of column



- shackle at floor plate (in the mounting holes)

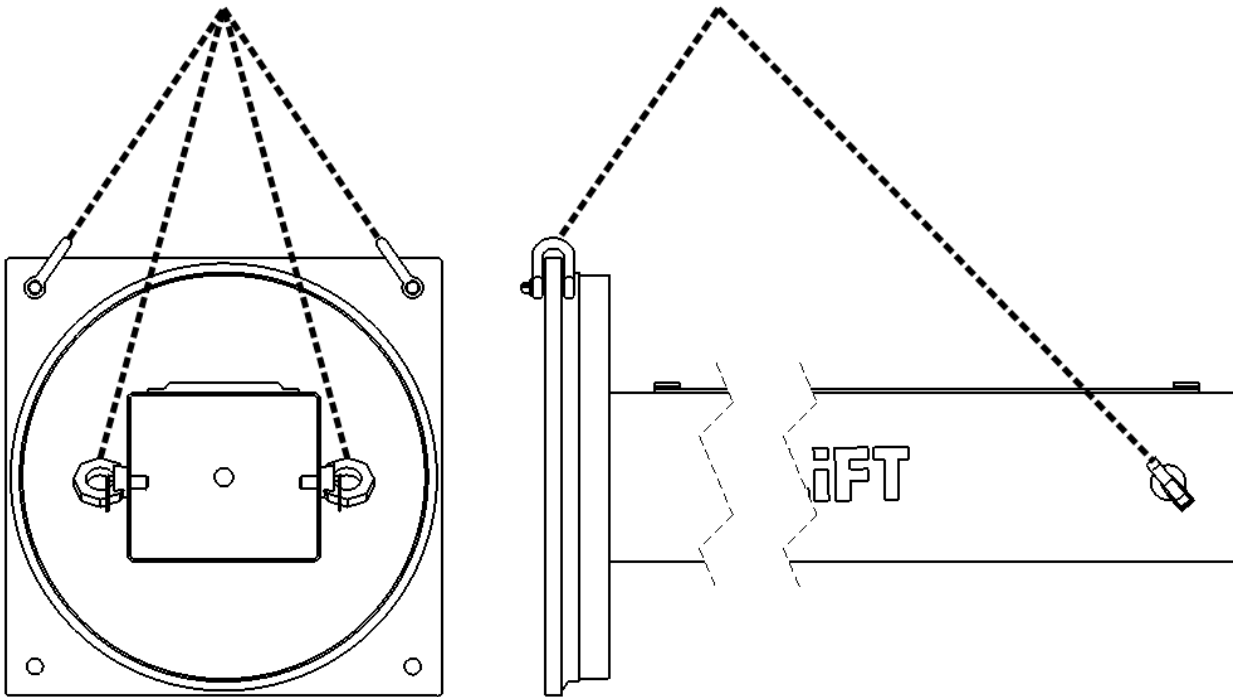


Orientate eyebolts into pulling direction.
Max. allowed load at 90° pulling direction:
M16 = 500 kg
Do not hook up the unit at any part of the supporting arm system!
Orientate eyebolts into pulling direction.

INFORMATION

3.4. Suspension of the machine

To hang up the machine, mount the lifting devices as shown in the picture below.



- Original Instructions -



INFORMATION

Do not hook up the unit at any part of the supporting arm system!

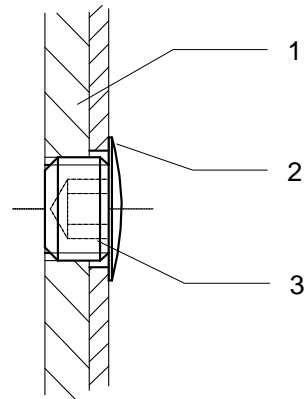
3.5. Remove the eye bolt screws



INFORMATION

Eye bolts at the right and left side of the unit must be removed before operation of the unit! Close threaded holes as shown below.

- 1 Hex socket set screw, flat with outer surface
- 2 Plastic cap pressed into socket set screw
- 3 Outer surface of column



4. Installation

Table of Contents

4.	Installation	1
4.1.	General	2
4.2.	Conditions of Surroundings for Installation	3
4.3.	Assembly and Erection	4

4.1. General



DANGER

Installation of the machine.

Vital wounds, death and or damage to machinery.

- Following regulations must be kept

- Installation work- assembly and connection of the machine is only allowed to qualified staff by keeping the safety advice.
- Prior to installation, the device has to be checked for transport damage. The manufacturer has to be informed immediately about possible damages.
- Use only the delivered fixing material as dowels and bolts.
- Pay attention especially to the tightening torque of the fixing screws of the supporting arm.



INFORMATION

Attention: The chemical anchors are subject of approval certificates by building authorities, that means that during installation of the anchors records are to be kept , confirming the actual concrete strength and the installation in accordance with regulations by the construction supervisor or one of his representatives. The corresponding records have to be kept available 5 years at minimum by the contractor.



DANGER

Respect exactly curing time of chemical anchors.

Vital wounds, death and or damage to machinery.

- Avoid any stress or displacement during curing time
- Remove the load suspension device after curing time

- Let the hook up and the bracing at the machine as long at the machine till it is perfectly anchored.
- Do not stress the machine, before the anchors have reached their full load carrying ability.
- Refer also to chapter "General safety advice"

4.2. Conditions of Surroundings for Installation

- For installation within an explosion proof area the user has to be informed in time, to arrange any necessary steps. (e.g. interruption of production, to confer a welding permit, as well as the allowance to run non x-p rated machines and tools).

This is valid analogous for the installation of machines within clean rooms used in the pharmaceutical industry.

- The load carrying ability the quality of the floor must be guaranteed (even, resistant concrete floor with minimum thickness of 250mm to allow an anchoring depth of 140mm).
- The area shown at the top view must be free of obstacles.
- The place for installation is prepared in that way, that the machine can be installed on smooth ground (possible pitch) and erected exactly vertical.
- Electricity is available near the machine's supply (backside of the column).
- Cranes or lifting equipment (e.g. fork lift truck) or fixing spots above the area of the installation of the unit for a pulley block.
- The unit is intended to be installed in a room. It is not suited for being operated under open air.

4.3. Assembly and Erection

If the machine is delivered on a pallet or in a crate, the single parts and accessories have to be removed to have free access to the column.

The column has to be hooked up at the above described point(s) (refer also to chapter "transport" item 2) and erected at the intended place.

- Mark emplacement of the machine onto the floor, depending on ambient equipment. (see attached general arrangement drawing)
- Erect the column exactly vertical at the place of installation (e.g. by help of sheet metal stripes under the floor plate). Take care, that it is not hollow between the base plate and the floor.
- Check vertical position of column.
- Drill and install the floor anchors (chemical anchors HILTI HAS-TZ M12x98/100 with dynamic set, see information in the separate instruction) directly through the holes of the floor plate.
- Drill and install the top fixing device at the concrete ceiling and fasten the fixing pin and ceiling cover plate.
- Now lift the load suspension device horizontal in front to the guide system. (a forklift truck with pallet has proved to be a good remedy to lift and position the load suspension device for installation).
- Connect the electric control lines from supporting arm to guide system according to attached electric scheme.
- Join the supporting arm to the lift guide and installed the fixing screws according to assembly drawing with the needed torque.
- Install the control cabinet beside the column on the floor and embarrassed the supply lines (electric & pneumatic) to the corresponding connection point.
- Install the three operation panels (floor level and mezzanine level) at the required position and embarrassed the control lines into the control cabinet.
- Install the cover sheet and the cable cover.
- Close all covers
- Seal the rim of the plate to the floor with silicone rubber.

5. Commissioning

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5.1. General



DANGER

Its only allowed to instructed and authorized expert to hook up of the supply lines.

Vital wounds and or death by electrocution.

- By installation of supply lines, disconnect electrical connections on side.

5.2. Installation of supply lines

- Connect the control lines from the three operation panels according to the attached electric scheme.
- Install the E-Stop interfaces between machine and customer control unit.
- Install main supply cable to the site mains corresponding to electric scheme. Use the strain relief.
- Connect pneumatic maintenance unit to compressed air supply.
- Connect machine to buildings equipotential bonding conductor!



INFORMATION

Refer to enclosed schemes.

5.3. Basic Adjustments

- Remove all crating material and transport fasteners from unit, especially the supporting piece from the electric motor of the power pack.
- Check whether the electric- and control cables have been connected and safe installed.
- Open the door of the rear cabinet behind the column.
- Check the manometer of the pneumatic maintenance unit, whether pressure is adjusted to 6 bars, but not higher than 8 bar.
- Open the filling cap of the hydraulic oil tank and fill in the provided oil (approx. 6 lt.) e.g. by help of a funnel. (See chapter "Change of oil")
- If the tank has been filled up by the manufacturer, the blanking plug is to be replaced with the delivered ventilated tank filler cap!

The oil level has to be checked with load suspension device at minimum level. It has to be at upper mark of oil level gauge.

- Turn main switch ON and start motor (MOTOR ON) of hydraulic pump short- lived to verify its sense of rotation.



INFORMATION

If the tank is already filled and provided with a screw, it must be replaced by closure with vent.



INFORMATION

The motor and thus the pump must not be run without oil. A so called "dry run" destroys the pump. Prior the first operation of the machine, the sense of rotation of the pump motor has to be checked (refer to red arrow).

5.4. First function run

During test run, height positions may be adjusted if necessary see chapter "Adjustment".

Follow step by step the sequence of operation described in chapter "Operation". Pay attention to speeds, pressures and eventual collisions. Adjustments on hydraulic system must be done carefully and very slightly.

6. Operation

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6.3.	Start position	3
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6.4.2.	Operation first from panel 1 at mezzanine, then base floor panel.....	5

6.1. Generals



DANGER

Operating of the machine.

Vital wounds and or death to by power-driven movement.

- Don't stay at reach of efficacy
- To watch out the load and movement of the machine
- By faults / troubles switch the machine off and locked against not allowed use until the defect has been rectified

6.2. Working place of operator

During working with the machine, only the operator himself is allowed to be present within the active range of the machine.

The usual working place of the operator to put a pallet into the supporting arm is in front of them. The pallet will be moved and positioned by help of a hand palette truck.

Only for insertion and removal of the palette, the operator is allowed to be present within the working area of the machine. It is not foreseen, that personnel is present within the area with any machine movement.

To operate the machine the operator can activate the functions optional from base floor panel or mezzanine panel.

The two panels have a key switch to locked against dual operate. If the operator works at base floor level the key switch disable the control elements at mezzanine level.

Do not stay within the working area while machine is running.



WARNING

Inappropriate installation of the load.

Vital wounds, death and or damage to machinery by slipping off / drop down of the load.

- Max. load don't exceed
- Pick up the load with the provided load suspension device
- Don't stay under the load



CAUTION

Pay attention by the lowering movement of the supporting arm.

Contusive by lowering to the floor.

- Wear appropriate personal protective equipment

6.3. Start position



Make sure that no persons or obstacles stay within range of the machine.

INFORMATION

- machine set up and connected,
- main switch turned on,
- compressed air available,
- machine in basic position:
 - supporting arm in min.-height
- No pallet is loaded to arm.



All functions are available in a so called dead man's control. The function stops immediately after the release of button.

INFORMATION

6.4. Sequence of operation



INFORMATION

The followed refers to the functions of the SERVOLIFT machine.

6.4.1. Operation first from floor panel, then panel 1 at mezzanine

#	action	reaction
	<ul style="list-style-type: none"> Maneuver a loaded pallet into the supporting arm. 	Pallet in position.
	<ul style="list-style-type: none"> Turn the key switch at base floor panel ON. 	The control elements at mezzanine are deactivated.
	<ul style="list-style-type: none"> Push and hold the LIFT button until the movement stops. 	The supporting arm lifts up to max.-height and stops at the end stops.
	<ul style="list-style-type: none"> Turn the key switch at base floor panel OFF, remove the key and insert into upper panel 1. 	The control elements at floor base are deactivated.
	<ul style="list-style-type: none"> Empties the pallet. 	Pallet is empty.
	<ul style="list-style-type: none"> Push and hold the MOTOR ON and additionally the LOWER button until the movement stops. 	The supporting arm lower down to mezzanine height and stops.
	<ul style="list-style-type: none"> Turn the key switch at mezzanine panel OFF, remove the key and insert into base floor panel and turn the switch ON. 	The control elements at mezzanine are deactivated.
	<ul style="list-style-type: none"> Push and hold the LOWER button until the movement stops. 	The supporting arm lower down at min.-height and stops at the end stops.
	<ul style="list-style-type: none"> Remove the pallet. 	Supporting arm emptied.
	<ul style="list-style-type: none"> Starts next sequence or switch the main switch of. 	

6.4.2. Operation first from panel 1 at mezzanine, then base floor panel

#	action	reaction
•	Maneuver a loaded pallet into the supporting arm.	Pallet in position.
•	Turn the key switch at mezzanine panel ON.	The control elements at base floor panel are deactivated.
•	Push and hold MOTOR ON and additionally the LIFT button until the movement stops.	The supporting arm lifts up to max.-height and stops at the end stops.
•	Empties the pallet.	Pallet is empty.
•	Push and hold the MOTOR ON and additionally the LOWER button until the movement stops.	The supporting arm lower down to mezzanine height and stops.
•	Turn the key switch at mezzanine panel OFF, remove the key and insert into base floor panel and turn the switch ON.	The control elements at mezzanine are deactivated.
•	Push and hold the LOWER button until the movement stops.	The supporting arm lower down at min.-height and stops at the end stops.
•	Remove the pallet.	Supporting arm emptied.
•	Starts next sequence or switch the main switch of.	



DANGER

Prevention from not allowed use.

Vital wounds and or death by electrocution.

- Main switch deactivation and locked by an padlock.

7. Troubleshooting

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7.2.	List of faults	2

7.1. General



INFORMATION

If any defect or malfunction is noted before, during or after the operation of the machine, usually experts have to be consulted.

The operator has to inform his supervisor. He is not allowed to remedy the fault, e.g. defects at the electric installation, on his own.

In case of faults, the machine has to be switched off and locked against further use, till the defect has been repaired by the competent expert.

7.2. List of faults

Kind of fault	Reason	Steps to repair
no operation possible	<ul style="list-style-type: none"> main switch OFF or main power failure emergence stop activated not enough or no compressed air 	<ul style="list-style-type: none"> check main switch position resp. mains supply relock emergence stop check or adjust compressed air unit
electric motor of power pack is not running	<ul style="list-style-type: none"> motor protection relay is active oil temperature > 70°C 	<ul style="list-style-type: none"> in case of motor protection switch release, experts have to be consulted switch main switch of for 2min, after repeated fault – consult an expert
supporting arm is not lifted up	<ul style="list-style-type: none"> max. load is exceeded pressure limiting valve is adjusted too low 	<ul style="list-style-type: none"> check weight adjust pressure limiting valve to necessary value
supporting arm is not lifted up to max. height	not enough oil in oil tank	fill in oil with supporting arm at lowest position and evacuate cylinder according to instructions
supporting arm is lifted elastically	cylinder contains air	evacuate cylinder and find out, why air had been come into cylinder

SERVOLIFT

Continued – list of faults

height stop device without function	compressed air unit adjust to low or have a leak	adjust pressure or check system of leakage
height positioning not correct	height stop position not correct	loosen height stop latch and clamp to required height.



INFORMATION

Further errors can be caused by the built-in interlocks. Press each selected function until the movement automatically stops.

8. Maintenance and Adjustment

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8.1. Generals



INFORMATION

The information regarding an annual service by a competent expert person is given.



DANGER

Maintenance work.

Vital wounds, death and or damage to machinery.

- Following regulations must be kept
- All working steps must be executed in rotation

- The area for maintenance has to be protected spaciouly.
- Mark the machine by a sign that it is out of operation for maintenance.
- Switch off all terminals and lock them against non intended switch on (by a padlock).
- Switch the control off at the key switch. Hand both keys (padlock and key of key switch) to the person in charge with the maintenance work.
- Release the pneumatic maintenance unit from pressure.
- Use exclusively the spare parts listed at our lists, or parts which are confirmed by us in writing.
- Refer also to the chapter "safety advises"



INFORMATION

We recommend abrasive and solvent free cleaning agents, which correspond to the company's internal validation regulations.



INFORMATION

Never open electric components with alive electric within explosive atmosphere.

Completion of repairs on Pressure-proof encapsulated components are strictly forbidden! Defective parts or components must be changed completely!

Be aware that electrical power supply lines running to the electric cabinet are still alive after having switched off the main switch at the machine

8.2. Maintenance and care

On request:

- purge water from pneumatic maintenance unit

Monthly:

- check oil level and tightness of hydraulic components (put the supporting arm in min.-height),
- visual control of front case with load suspension device for cracks or deformation,
- check state and readability of the operating elements, clean if necessary,
- clean the machine,
- check coverband for bends and wave lines.

Every ½ year:

- check the fixing of the load suspension device,
- visual check of the floor- and ceiling fixing,
- check complete unit for visual damage as deformation and cracks,
- check oil level at hydraulic power pack. If oil level needs to be to be filled up, check the device and its supply pipes and hoses for any leaks.

every year: (check by a competent person)

- remove all covers,
- all carrying parts have to be checked visually for corrosion, cracks and loose fixings,
- check hydraulic oil and change if necessary. Even if the unit is used rarely, the oil must be changed every two years at the latest,
- grease U-tracks inside column with common machine grease. On this occasion check tightness of lift cylinder. Bear in mind that all cylinder rods are coated with a thin film of oil which might summarize during the course of time,
- oil lift chains. (Delivered hydraulic oil may be used!),
- tighten the floor and ceiling anchors with recommended torque by torque wrench,
- check fixing screws of supporting arm by a torque wrench,
- check function of the height stop device and the adjust height position,
- Check the length of suspension and safety chain. The elongation is maximum allowed. 3%.
- testing according to DIN EN 60204: (protective) ground wired resistance, insulation resistance, residual voltage and also a function check.

Continued – maintenance and care

Every two years:

- change the hydraulic oil (put the supporting arm in min.-height).

Every six years:

- The hydraulic hoses have to be exchanged every six years. On this occasion open oil tank and remove dirt out from tank.
- Replace suction filter

8.3. Hydraulic oil and lubricants

Application site:	Type:	Applied product:	Quantity:
Hydraulic system guidances, joints and tooth systems	CLPHC 46, ISO-VG 46 universal grease, acid free, not resinifying food safe – if necessary	BIOLUBE 46 SORAJA FM 372	approx. 6 Liter to be applied thinly and evenly

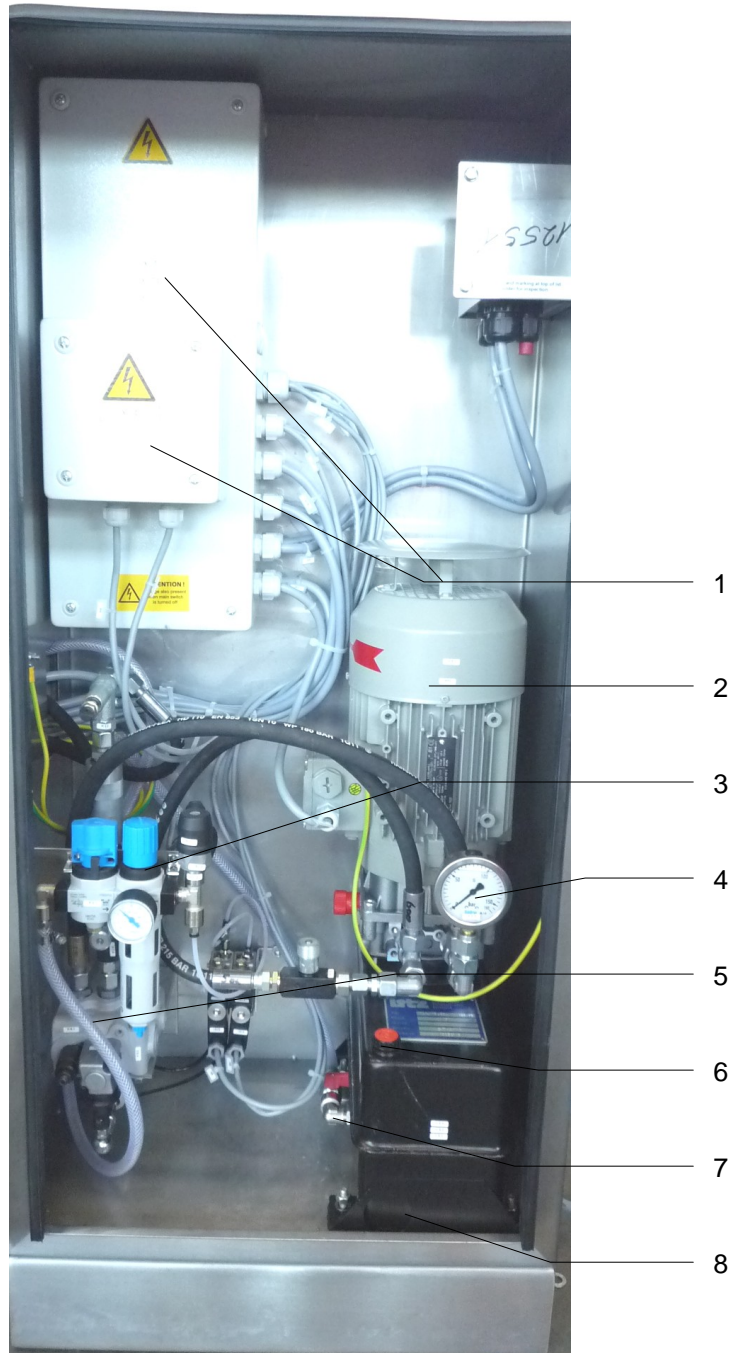


INFORMATION

The factory provided oil is **MOLYDUVAL Biolube 46** with viscosity class 46 acc. DIN 51519. This oil is conforming DAB and USDA H1 and is suitable for use in food industries with incidental food contact. All ingredients correspond to USDA respectively to FDA-direction. It can be ordered from **SERVOLIFT** under Art.No. 126424

8.4. Hydraulic

8.4.1. Hydraulic power pack / overview control cabinet



- 1) electric connection box
- 2) motor with rotational direction
- 3) compressed air unit
- 4) hydraulic manometer
- 5) hydraulic control valve
- 6) filler port for oil
- 7) drain cock with drain hose
- 8) oil tank with internal gear pump

8.4.2. Change of oil



ATTENTION

Leaking / spill oil.

Environment polluting.

- At first cover the working area with appropriate measures
- Immediately remove of leaking oil
- Disposed waste oil according to the valid regulations

The change of oil has to be carried out as follows:

- Lower load suspension device down to minimum height.
- Switch the machine off at the electric main switch.
- Open the access of the hydraulic cabinet.
- Place a recipient (approx. 8 lt.) in front of the oil tank.
- Open tank filler cap.
- Place drain hose into recipient and open drain cock or use a suction pump for pumping off the content of hydraulic tank.
- After oil has completely run off from tank and drain hose, close drain cock and clean drain hose. Restore drain hose as shown above.
- Pour in new oil (approx. 6 lt., type as above) until oil level is appr. 20 mm below upper rim of filling nozzle.
- Close filling nozzle.
- Switch machine ON, lift supporting arm to max.-height position and lower back to minimum height and check oil level again.
- Correct oil level if necessary.
- Remove spilled or wasted oil.
- Close access of cabinet.

8.5. Adjustments



INFORMATION

Pressures and speeds have been adjusted by the manufacturer corresponding to customers operating conditions as far as known during manufacturing. Any changes of necessary adjustments have to be done carefully and step by step, respecting max. pressure and speeds.



**SEPERATE
INSTRUCTION**

The manufacturer-set pressures and speeds are listed in the **MACHINE BOOK** related to the engine.

8.5.1. Adjustment of hydraulic main pressure

1. Lift supporting arm to maximum height till it stops by itself. Check pressure at manometer (H 0.2) with activated solenoid valve (H 6.2).
2. Release lock nut at pressure limiting valve (no. 2) by a wrench.
3. Adjust new rate with allen key (using allen key 3mm) with running motor and actuated valve (clockwise "+", counter clockwise "-")
4. Tighten counter nut by holding the screw.



hydraulic control
valve (H 6.0)

pressure limiting
valve (H 6.1) with
counter nut

pneumatic cylinder



CAUTION

Modification of hydraulic pressure to increase load capacity.

Vital wounds, death and or damage to machinery.

- Is strictly forbidden to raise hydraulic pressure for increase load capacity. The machine / machine parts are dimensioned for the max. load capacity

8.5.2. Pneumatic maintenance unit

Necessary pressure for the machine is to be adjusted at the maintenance unit as follows:

- lift up the upper blue cap till it is released noticeably
- now the pressure can be adjusted to the requested value by turning the cap (clockwise "+" or counter clockwise "-")
- lock the adjustment by pressing down the cap till it is caught

To release the water from the sight glass, the nozzle at the bottom has to be turned counter- clockwise (seen from below) with pressurized unit.

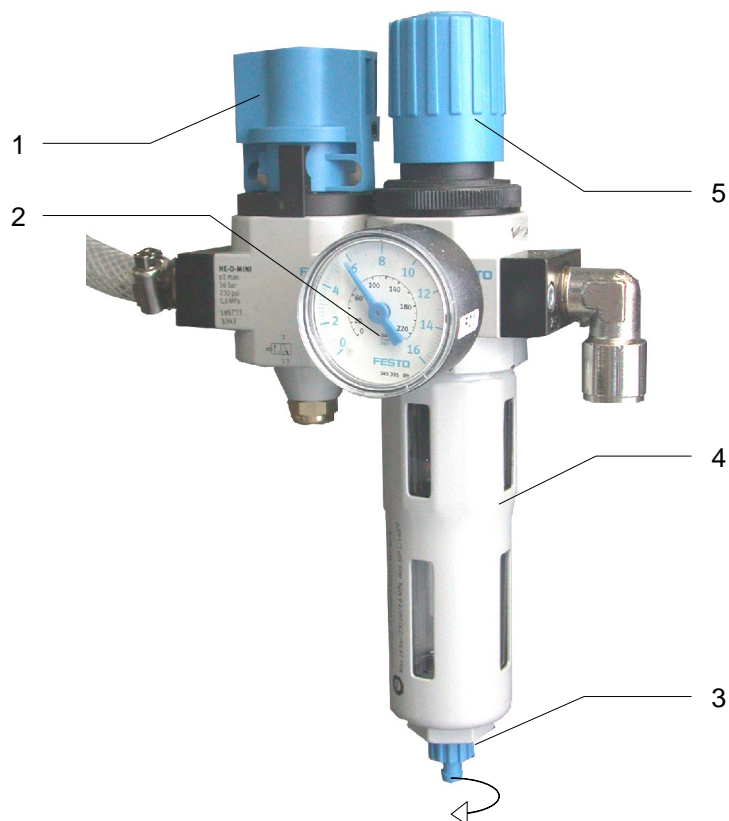
Replace the filter element as follows:

Close shut- off valve: system will be depressurized.

Turn filter bowl counter- clockwise, take out used filter element and put in the new one.

Remount filter bowl.

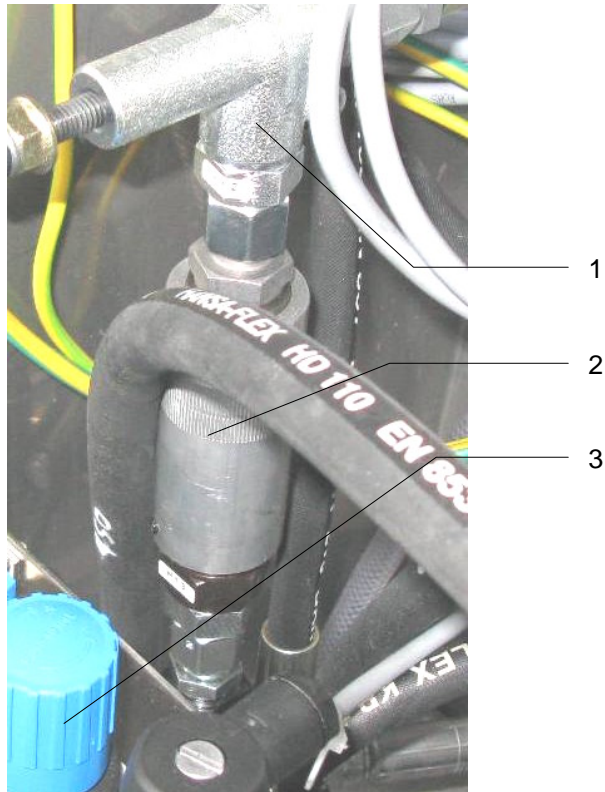
Readjust pressure if necessary.



- 1) shut off valve („open-position“)
- 2) manometer
- 3) water release
- 4) filter bowl (filter and water separator inside)
- 5) pressure adjustment by pulling up and turning the cap (right "+", left "-")

8.5.3. Adjustment of lowering speed

This speed can be adjusted at flow control valve (H 1.3) by turning the outer, silver colored cylindrical bushing of the valve. The adjustment has to be done with maximum load. Prior to adjustment the little set screw at the side of the bushing has to be loosened. (by allen key size 2,5mm).



- 1) Flow control valve (H 1.3)
- 2) Pressure limiting valve (H 1.2)

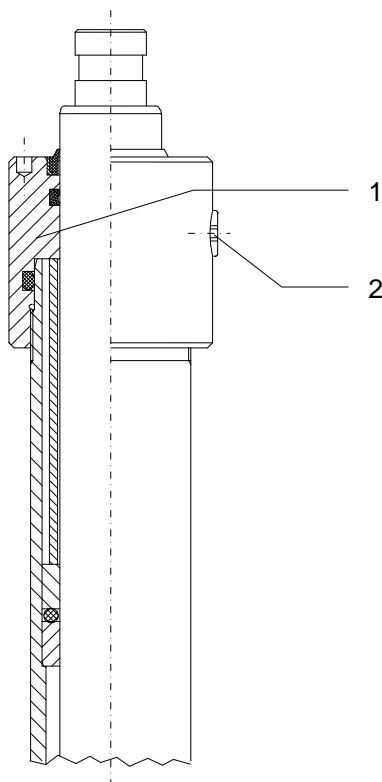


INFORMATION

All "speed" settings must be adjusted with the maximal load!

8.6. Air- bleed of hydraulic cylinder

If the lift movement is springy and irregular, air is contained in the lift cylinder, which now must be evacuated.



- 1) cylinder head
- 2) vent screw, accessible from front side of column

- Lift supporting arm and though the lift cylinder to maximum lift height.
- Open vent screw (only 1/4- 1/2 turn) by an Allen Key (5mm)
- Activate "LIFT" function
- Check the out coming oil till it is free of bubbles.
- Repeat this process two times to evacuate complete air from cylinder.
- Close vent screw carefully and wipe of the oil.
- Check oil level with supporting arm at minimum height.

9. Cleaning

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9.1. Principle	2
9.1.1. External Cleaning.....	2
9.1.2. Internal cleaning:.....	3
9.2. Product contact parts.....	3

The machine has to be cleaned periodically according to operational use or to production based requirements. Normally no danger of pollution from the machine itself is expected, as well as no or minor pollution are taken up from the environment, e.g. by cooling fans.

During the intended maintenance intervals, the machine has to be cleaned only just for prevention from operational malfunctions caused by accumulation of dirt-, dust- and production residuals. This has to be limited to external cleaning, removal of oil leakage and coming out lubricates, condensate and particles of out blowing compressed air, as well as exchange of installed filter.

Production based cleaning (e.g. during change of product) has to be performed according to customer's instructions (method, scope and period of repetition) and if necessary recorded.

9.1. Principle

Switch machine off at main switch, remove mobile unit from mains (pull off plug).

Do not use:

- abrasive cleanser
- aggressive detergents (acid or alkaline)
- polish or abrasive polishing paste
- abrasive clothes or scrub sponges

9.1.1. External Cleaning

Stainless steel surfaces:

- remove dust by soft cotton cloth, do not use compressed air
- use neutral cleaning agents with soft sponge or similar.
- rinse with soft water, dry with cotton cloth/ fleece.
- if necessary remove greasy dirt with alcohol (e.g. isopropyl)

Painted surfaces:

- as above, please note additionally data sheets of used cleaning detergent!
- pay attention, if alcoholic or solvent solutions are used.



INFORMATION

Do not clean machine by hose or flush water, do not use solvents or hot water or steam and high pressure cleaners! Prevent water and cleaning detergents from internal the hoist, cabinet, over terminal boxes and motors or further electric, pneumatic or hydraulic components!

Avoid direct contact of seals and rubber parts during sprinkling (w/o pressure) with cleaning detergents. Applied plastics and seal materials usually are resistant against alcoholic-, low acid- and alkaline solutions.

These are not resistant against chlorinated hydrocarbon, concentrated acids and alkaline solutions, polycyclic aromatic hydrocarbons, oils and fuels.
(exception according to execution or requirement)

9.1.2. Internal cleaning:

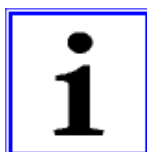
- remove dust by soft cotton cloth and/ or clean housing by vacuum cleaner.
(do not used compressed air to blow out housings)
- remove greasy dirt with alcohol (e.g. isopropyl).
- take up spilled oil by absorptive clothes.
- do not use water or watery solutions.

9.2. Product contact parts

- These parts are usually manufactured by high quality material, thus deviating from a.m. principles regarding cleaning and disinfection, other cleaning agents and procedures can be used, which correspond to company's internal and product specific validation requirements

Supplier has to be informed at order about possibly used detergents and methods or procedures to determine appropriate materials. Based on our experience no objections are raised against detergents and disinfection solutions used within the pharmaceutical industry.

- In case of doubt contact our service department, describing detergent and machine part intended to be cleaned



INFORMATION

Environment polluting cleaning and disinfection agents must be disposed according to national regulations. Consider corresponding safety data sheets.

10. Disposal

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10.1.	General	2

10.1. General

The machine consists of various components and parts, which have to be disposed or recycled according to local or legal provisions.



INFORMATION

Clean machine carefully from all product residuals.

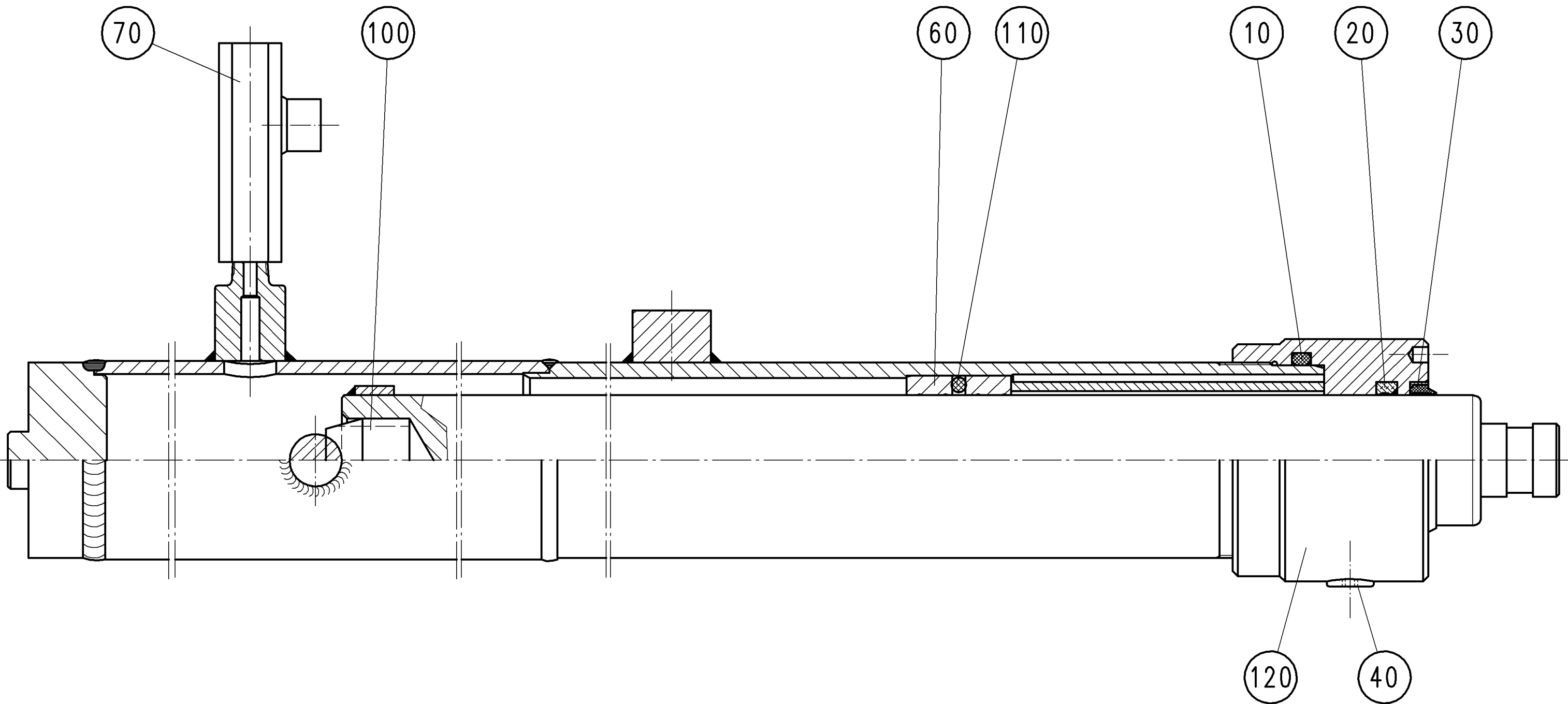
After complete emptying of the hydraulic system and removal of the machine from place of installation, disassemble it and sort parts into the following groups:

- steel scrap
- aluminium
- plastic
- electronic parts and cables
- hydraulic oil and grease



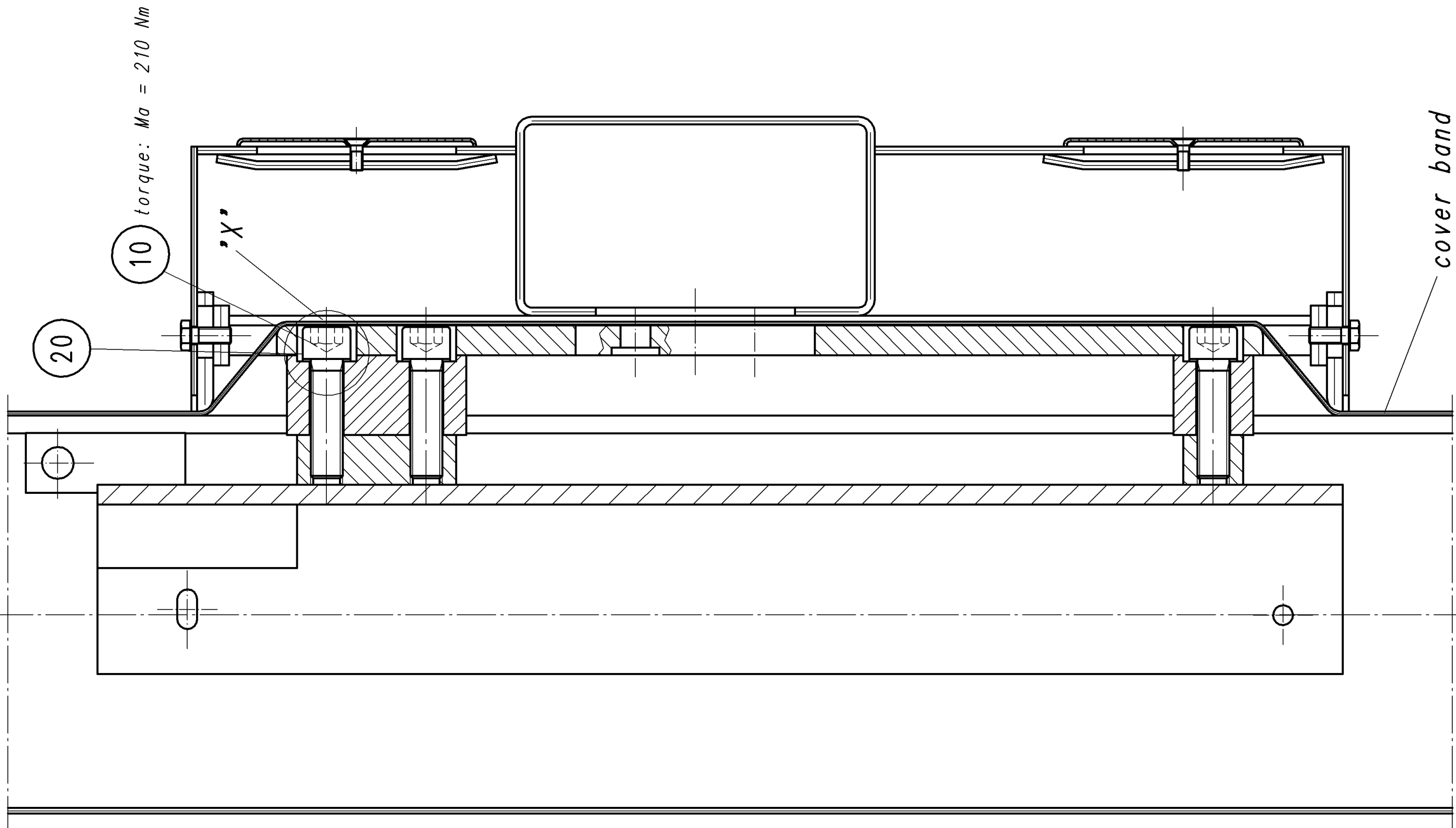
INFORMATION

Please note, that especially hydraulic cylinders and the pipe and hose system will still contain oil even with emptied hydraulic tank. Environment polluting lubricants and cleaning agents have to be disposed properly according to effective regulations.



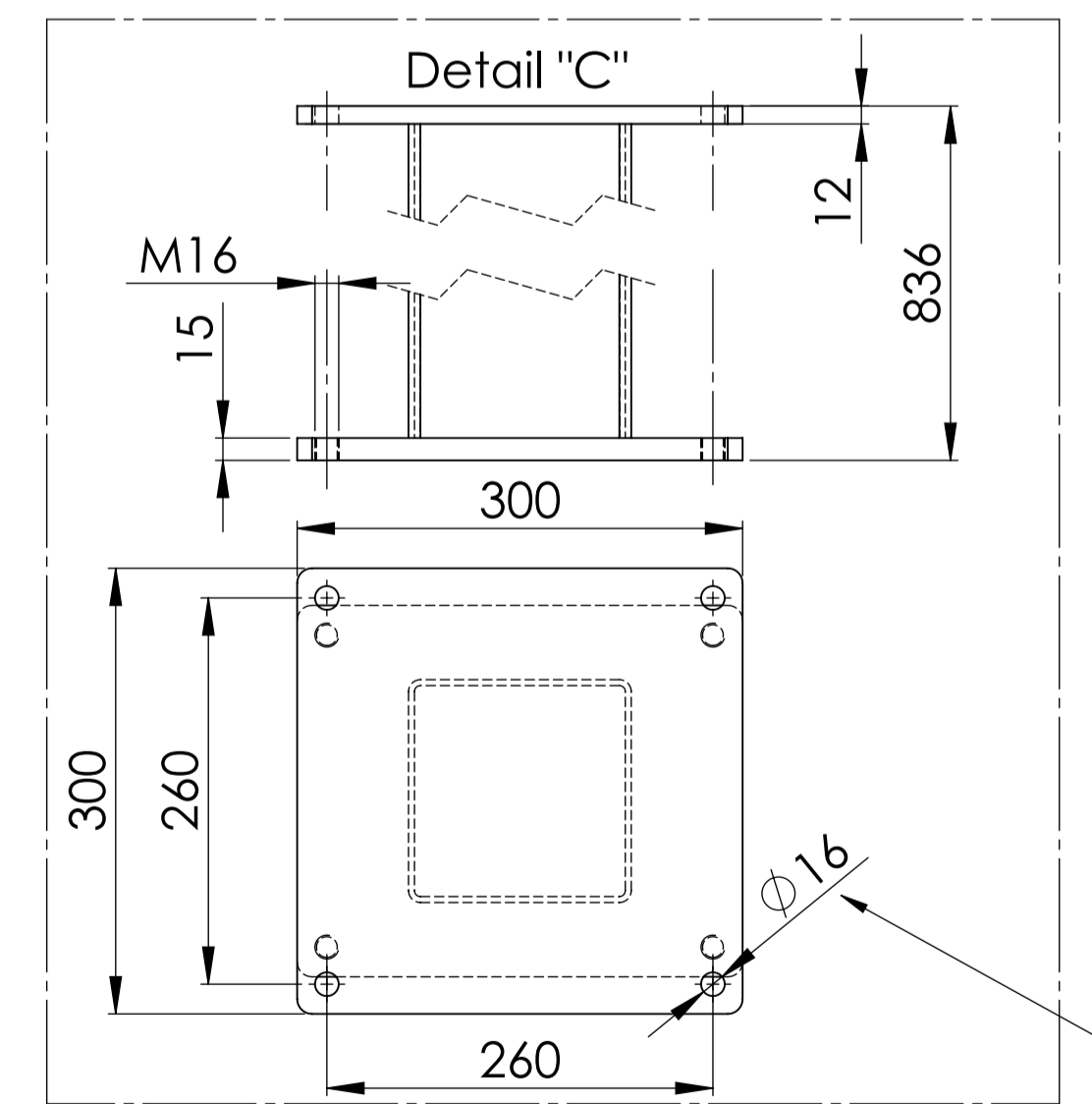
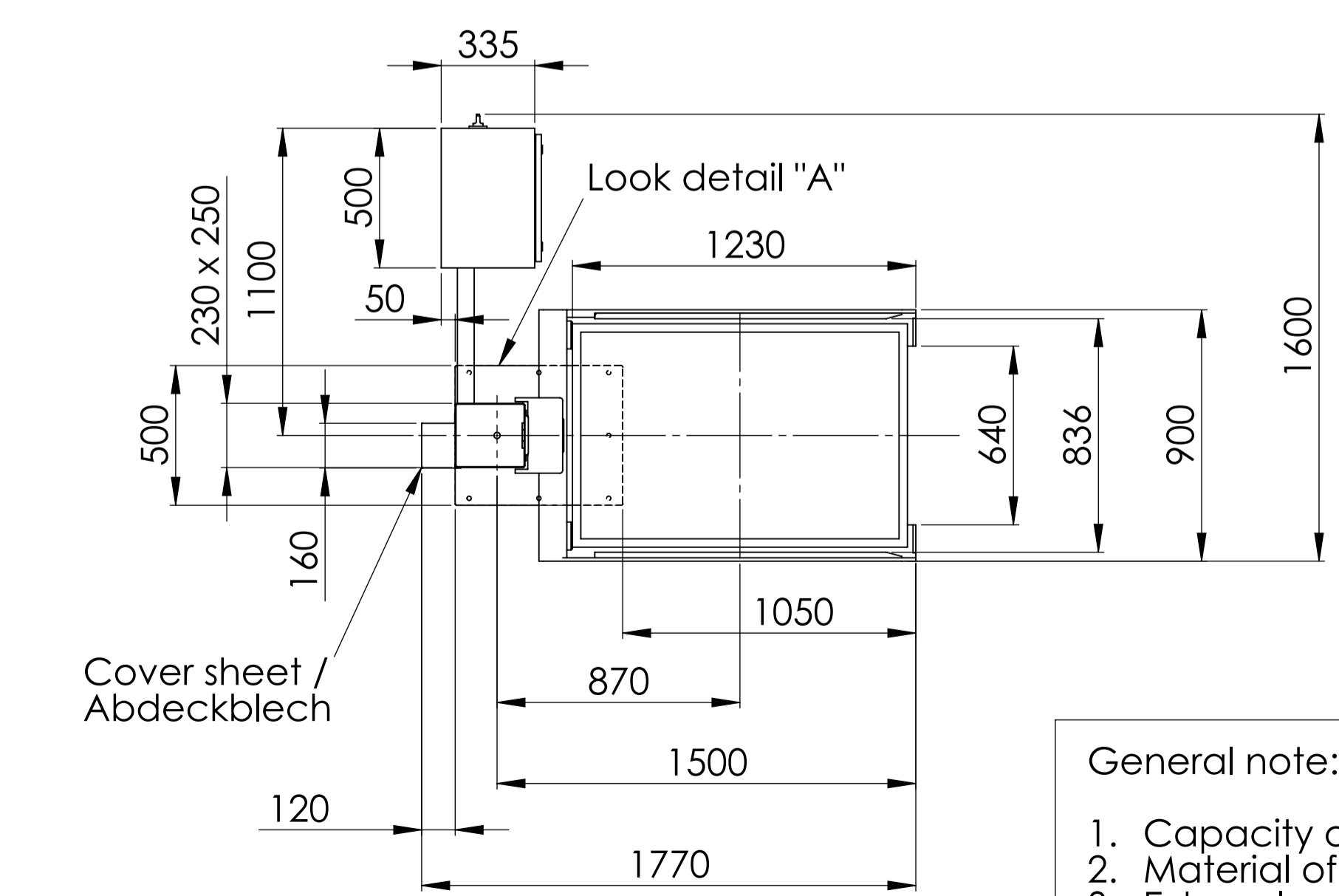
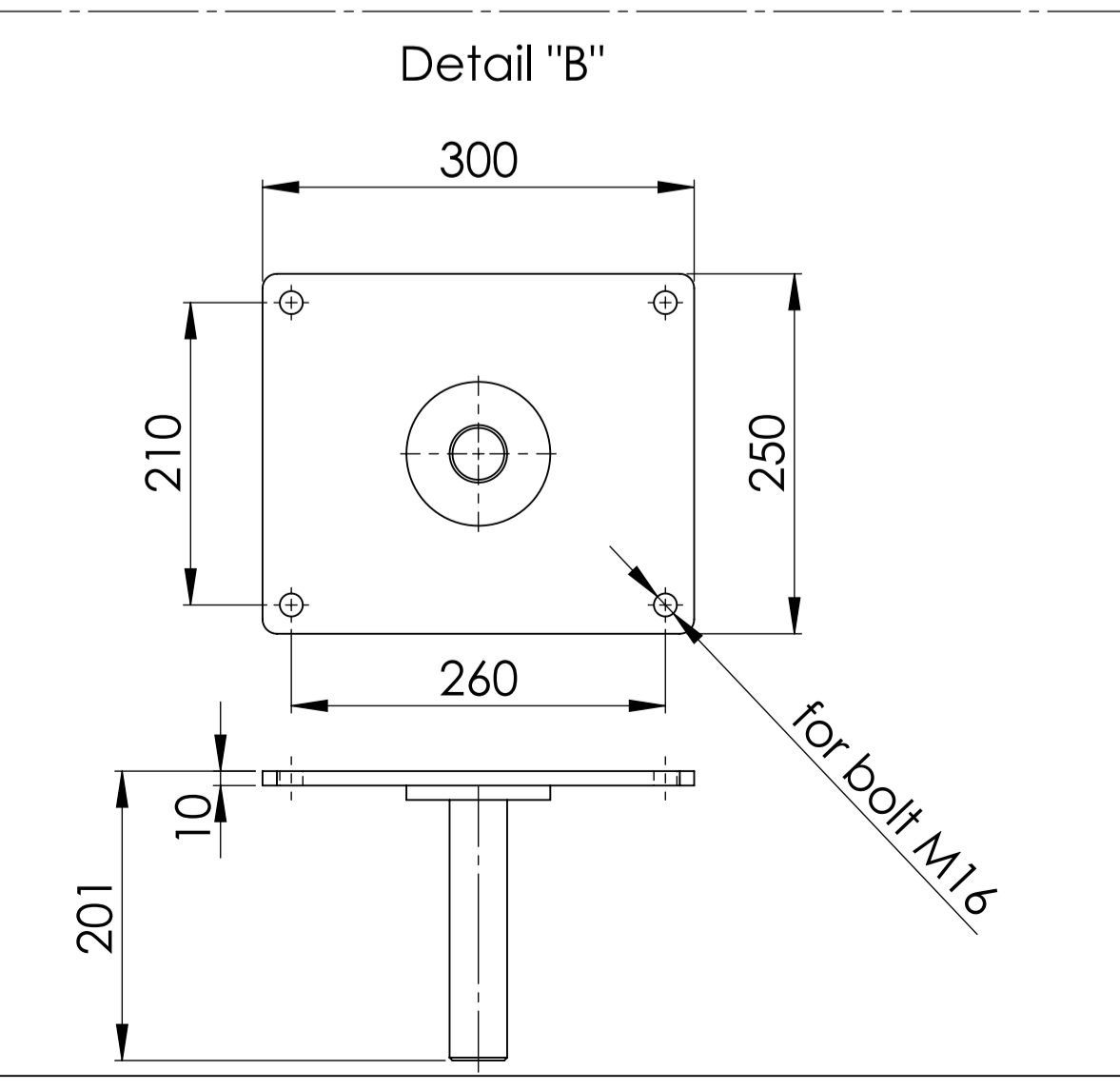
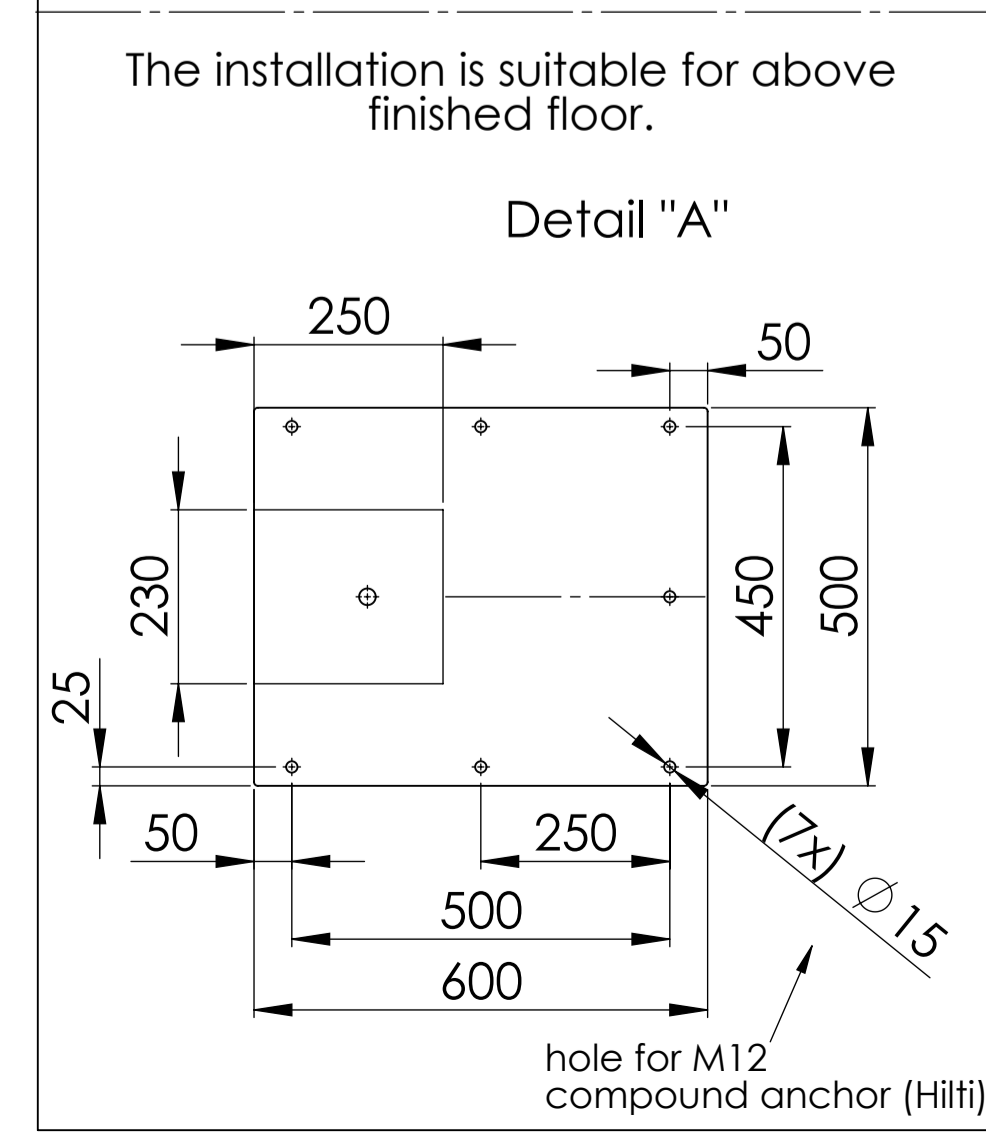
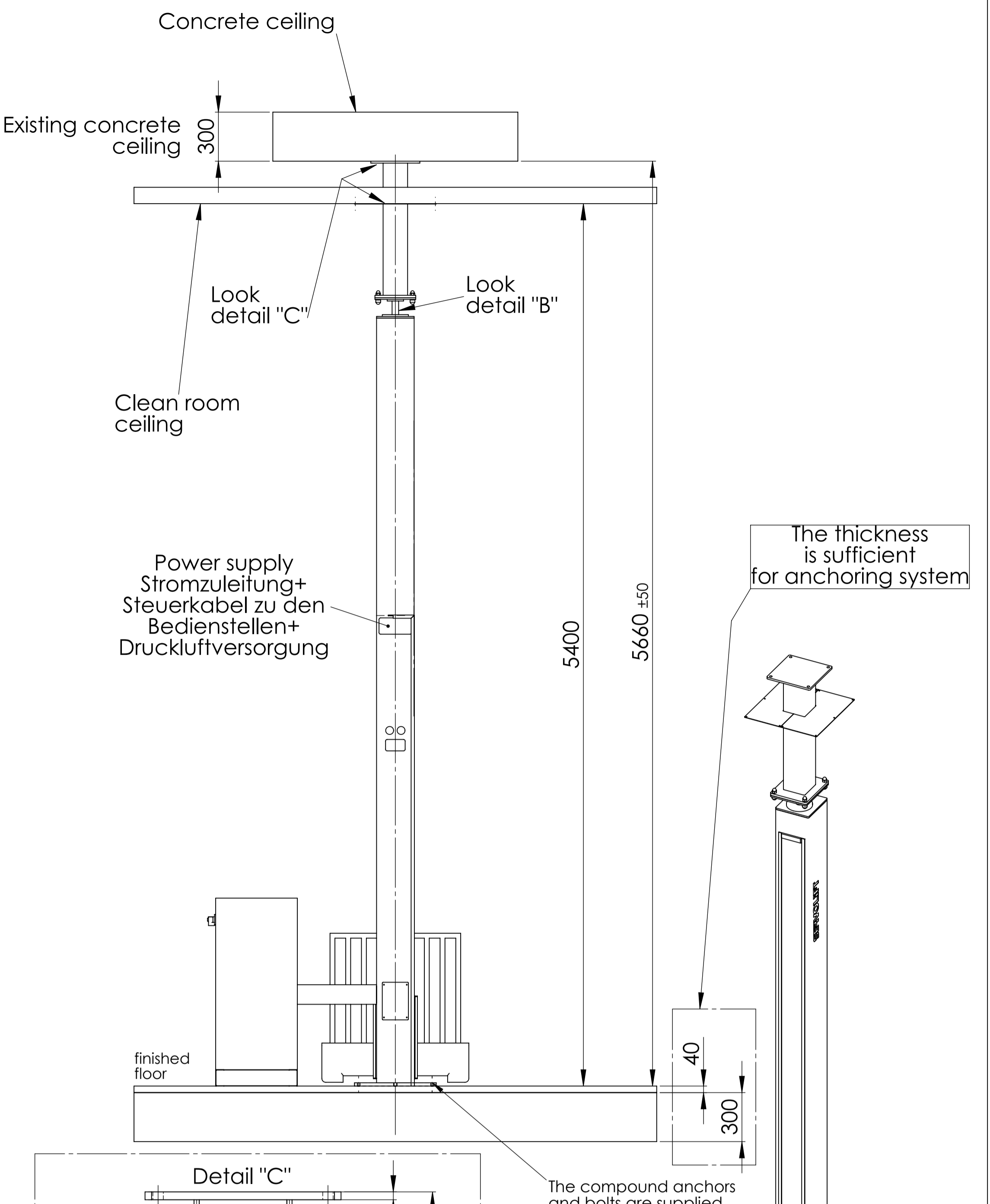
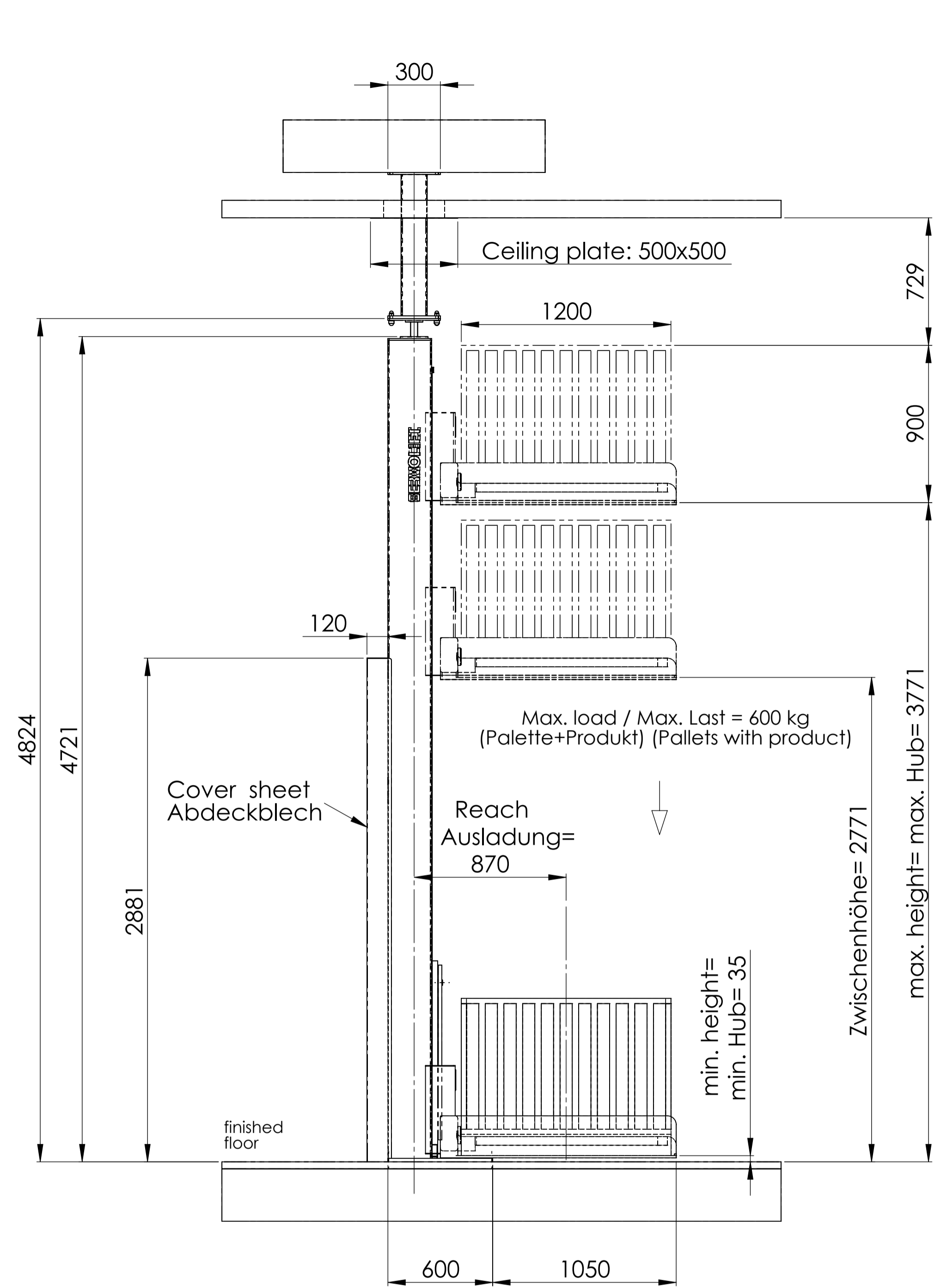
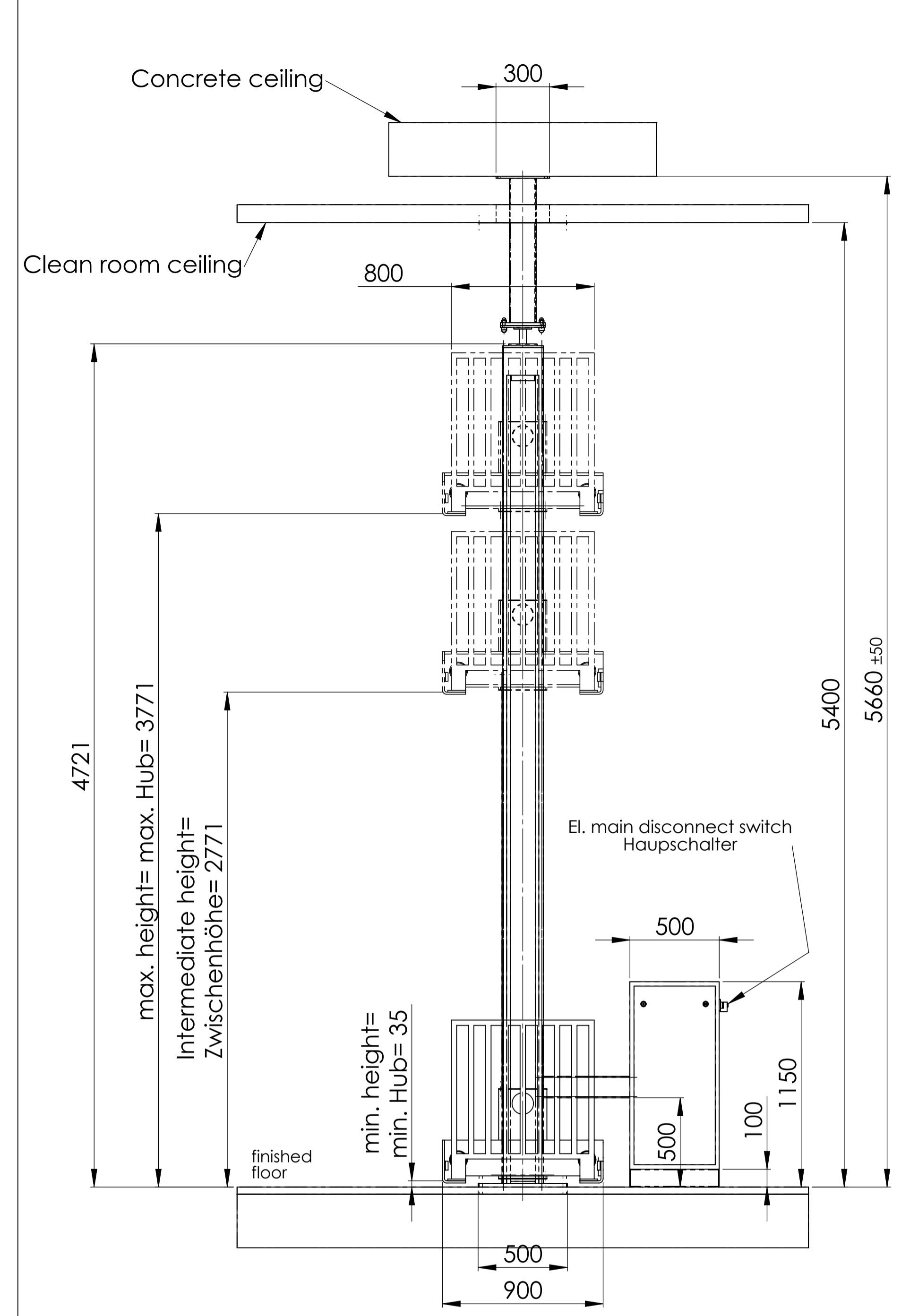
POS.	PCS.	DESCRIPTION	DRAWING-NO.	ART.-NO.	SPECIFICATION
10	1	O-Ring		101645	O-Ring 72.2x5.7
20	1	ROD SEAL		100790	S39-50-60-8
30	1	ROD WIPER		100805	50-60-7-10 AS
40	1	SCREW PLUG		100507	R1/8"
60	2	GUIDE BUSHING	00-41-217	112400	Rohr $\varnothing 65 \times \varnothing 50 - 17,5$ lg. -Rg7-DIN 1705
70	1	CHECK VALVE		101190	RH1
	1	LINE RUPTURE VALVE		110258	LB 1 C - 10
100	1	RUBBER BUMPER		112325	80-32 - EFFBE-Urelast 90 Shore A
110	1	O-RING		100813	52,2x5,7
120	1	CYLINDER HEAD $\varnothing 50$	00-41-202	101618	Rd 95-75 lg. -DIN 1691-GGG25
	1	SEAL SET		112433	POS.: 10, 20, 30, 100, 110

Projekt-Nr.		Maße ohne Toleranzangaben mittel ISO 2768	Oberflächenreihe R 2 DIN ISO 1302	Maßstab 1:1,5 Werkstoff, Halbzeug	Art.-Nr. 125039
	Datum	Name	Benennung		
	Erst. 02.05.02	schmitt	Liftcylinder plungertyp $\varnothing 50$		
	Änder.		Spare and wear parts		
	Bearb. 07.12.04	Pielawa	Zeichnungsnummer U:0205\ZE1\ST&NDF4G.ZE1		
	Gepr. 04.04.05	luckerm	Index		
			Blatt		
			2/3		
SERVO LIFT GmbH Handhabungstechnik Albert-Einstein-Str.9 D-77656 Offenburg-Zunsweier Tel.0781/6100-0		Zust. Änderung		Datum	Name
a Sivas Aufbereitung		31.08.2004	Stichling		
Ersatz für: DO-41-201		Ersatz durch:			



Pos. PCS.	DISCRIPTION	ART. #	SPECIFICATION
1	4 cylinder head screw	100320	ISO 4762 - M 16x60 - 8.8 verz.
2	4 lock washer	111815	Schnorr S 16

Projekt-Nr.		Maße ohne Toleranzangaben	Oberflächenreihe	Maßstab 1:2	Art.-Nr. -
		ISO 2768	R 2 DIN ISO 1302	Werkstoff, Halbzeug	
	Datum	Name	Benennung		
Erst.	18.05.11	Schanz	Assembly of Support Arm to Lift Slide. - 200x230, Std 0		
Änder.					
Bearb.	18.05.11	Schanz			
Gepr.	07.06.11	Schanz			
Zust. Änderung			Datum	Name	
			SERVO LIFT GmbH Handhabungstechnik Albert-Einstein-Str.9 D-77656 Offenburg-Zunsweier Tel.0781/6100-0		Zeichnungsnummr: STANDARD\00\SCKZKTN9.ZE1
					Index
					Blatt 2/3
			Ersatz für:		Ersatz durch:
			12510-39-001		0



Total weight = 1400 kg (including 600 kg load)

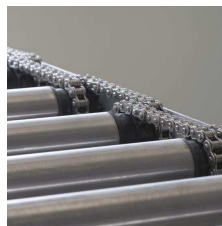
- General note:
1. Capacity of lifter = 600 kg
 2. Material of construction AISI 304
 3. External surface finish Ra ≤ 1.5µm
 4. All anchoring/mounting bolts are suitable for clean room installation

Equipment TAG: SG.TBP.202.M.5214/C001

SERVOLIFT		Allgemeintoleranzen für Schweißkonstruktionen nach ISO 13920		Maßstab: 1:20		BG/fg.-Nr. 00	
SERVOLIFT GmbH 77656 Offenburg, Germany www.servolift.de		Maße ohne Toleranzangaben nach ISO 2768		Oberflächenreine R DIN ISO 1302		Werkstoff: Halbozeug: Symbol Fertigmaß: Benennung	
				Paletten-Hubsäule Post hoist for pallets			
		Datum: 17.05.2011		Name: schilli		Ident.-Nr. 12551-00-001	
		Datum: 14.06.2011		Name: schilli		Index: b	
		Datum:		Name:		Blatt von 1	
		Datum:		Name:		A1	

MOLYDUVAL

Biolube 46



Lubrication Oil for Food Industry

A high performance versatile lubricant for applications where incidental contact with foodstuff may occur, or where a clean, non-toxic lubricant is preferred. The used base fluids are released to DAB/FDA/USDA as well as the containing corrosion protective and wear protective additives.

Properties

- * good cleaning properties
- * water and sea water resistant
- * food grade - all components conform to USDA H1 or the FDA regulations for Lubricants in incidental food contact
- * clear and transparent
- * tasteless
- * good penetrative properties
- * odor less
- * unsoluble in water

Applications

- * for gear boxes in food industry
- * for hydraulic equipment in food and pharma industry
- * for non-cutting metal working
- * for chains in food industry, for packing and filling machines
- * for chains, drive and transport chains, in conveying machines, pasteurize plants, sorting stations, peelers, packing and labelling machines, shrinking tunnels
- * for anti-friction and sleeve bearings in textile industry
- * for rolling and sleeve bearings
- * as lubricant for rubber, latex, and plastics
- * for hooks, sleeve elements, rolls, joints, clutches
- * for metal working of aluminium, copper and their alloys

Technical Datas

Color		transparent
Base Fluid		Paraffin
Viscosity Class	ISO-VG	46
Density 20°C	kg/m ³	860
Temperature Range	°C	-10 -> +90
Viscosity 40°C	mm ² /s	46
Flash Point	°C	190
Viscosity Index		110
Pour Point	°C	-18
Wear Protection FZG Test A/8.3/90	Grade	12

The indicated service temperatures are guide values depending on the lubricants composition and on the application. They may vary in case of special influences or ongoing use.

For further information, please see our website www.molyduval.com or consult your local representative.

The technical data in this information sheet represents our present knowledge and is based on our general experience. It is intended to give information of possible applications to a reader with technical experience. It constitutes neither an assurance of product properties nor does it release the user from the obligation of performing preliminary tests with the selected product to ensure that the product is safe, effective and fully satisfactory for the intended end use. It does also not form part of any sales contract as guaranteed properties of the delivered material.

EC-Safety Data Sheet conforming to 1907/2006/EG, Article 31

MOLYDUVAL Biolube 46

Date 15.04.2011 Page 1

1. Commercial Product Name and Company/Manufacturer

1.1 Trade Name:	MOLYDUVAL Biolube 46
1.2 Product Application	for gear boxes in food industry for hydraulic equipment in food and pharma industry for non-cutting metal working for chains in food industry, for packing and filling machines for chains, drive and transport chains, in conveying machines, pasteurize plant
1.3 Producer / Distributor:	MOLYDUVAL GmbH * Halskestr.6 * D-40880 Ratingen * H.Wunsch
1.4 Emergency Phone	+49 (2102) 9757-00

2. Hazards Identification

2.1 Classification	No health hazards known. Product may be used for lubrication of food processing equipment.
2.2 Information pertaining to particular dangers for man	Is improbable, that the product leads to eye irritations, to a provoking the skin, to an endangerment of the respiratory organs, to a provoking of the lungs or that swallowing leads to effects injurious to health.
2.3 Information pertaining to particular dangers for environment:	Although no environmental damages and bioaccumulations were expected, withdrawing should be avoided into the environment. Into drains to arrive do not leave

3. Composition - Information on Ingredients

3.1 Composition - Information on Ingredients	Mixture from paraffinic base fluids and additives. All components conform to USDA H1.
--	---

4. First Aid Measures

4.1 General Instructions	Remove victim from danger zone, without exposing yourself to any personal risk. Remove wetted clothing and shoes and clean items before using them again.
4.2 After Inhalation	Not applicable.
4.3 After Skin Contact	Wash with soap and much water.
4.4 After Eye Contact	Flush with water
4.5 After Ingestion	Do not induce vomiting. Seek medical advise
4.6 Symptoms and effects	no
4.7 Instructions for attending physician	Prolonged or repeated exposure may cause skin discomfort.

5. Fire-Fighting Measures

5.1 Extinguishing media - Usable	Water Spray, Powder, Alcohol Foam, Sand, CO2
5.2 Extinguishing media - Not usable	Waterjet
5.3 Special personal protection	No
5.4 Further information	Water may cause splattering.

6. Accidental Release Measures

6.1 Special Personal Protection	Use oil-proofed clothing
6.2 Special Environmental Protection	Do not expose to environment or in effluent water.
6.3 Absorbing Materials	Use oil sucking materials f.e chemical absorbents.
6.4 Cleaning Methods	Take up mechanically.

7. Handling and Storage

7.1 Handling	No special steps
7.2 Storage	No special steps

8. Exposure Controls / Personal Protection

8.2 Eye Protection:	None required
8.3 Skin Protection:	None required
8.4 Respiratory Protection:	None required
8.5 Technical Protection	None required

9. Physical and Chemical Properties

9.1 Appearance Form	liquid
9.2 Color	light
9.3 Appearance	like oil
9.4 Odour	without
9.6 Boiling Point / Boiling Range	--°C
9.7 Melting Point / Melting Range	-15°C
9.8 Flash Point	n.b.
9.13 Specific Gravity, 20°C	0,86 g/cm³
9.14 Water Solubility	N
9.15 Viscosity, 40°C	47 mm²/s

EC-Safety Data Sheet conforming to 1907/2006/EG, Article 31

MOLYDUVAL Biolube 46

Date 15.04.2011 Page 2

10. Stability und Reactivity

- | | |
|-------------------------------|---|
| 10.1 Stability | This product is stable in normal-use temperatures and will not react violently with water |
| 10.2 Conditions to be avoided | No |
| 10.3 Substances to be avoided | No |

11. Toxicological Information

- | | |
|--------------------------|--|
| 11.1 Toxicological Tests | Under current criteria, this material is considered to be non-hazardous (is not to be marked). |
| 11.2 At Eye Contact | No hazard. |
| 11.3 At Skin Contact | No hazard. |
| 11.4 At Inhalation | no data available |
| 11.5 At Ingestion | May cause sickness and vomiting. |

12. Ecological Information

- | | |
|-----------------------------|--|
| 12.1 Ecological Information | Product is WGK 2. Don't let into canalisation. |
|-----------------------------|--|

13. Disposal Considerations

- | | |
|------------------------------|---|
| 13.1 Disposal Considerations | May not be disposed together with domestic rubbish. Disposal in compliance with federal, state, and local laws. EAK Waste Product Code : 130205 |
|------------------------------|---|

14. Transport Information

- | | |
|--|---------------------------|
| 14.1 UN-No | No |
| 14.2 Land Transport ADR/GGVS
RID/GGVE | No |
| 14.3 Sea Transport
ADNR/IMDG/GGVSee | No |
| 14.4 Air Transport IATA/ICAO | No |
| 14.5 Other | No transport regulations. |

15. Regulatory Information

- | | |
|---|--------------------------|
| 15.1 Limits for Disposal at Places of
Employment | No MAK Values defined |
| 15.2 Characterisation symbols | No Precautionary Labels. |
| 15.5 Further Prescriptions | WGK 1 |

16. Further Information

- | | |
|--------------------------|---|
| 16.1 Further Information | Although the information on this safetysheet is based on the by us known and reliable considered information, we can neither accept any responsibility for the use of it. Please contact us if more infos are needed. |
|--------------------------|---|

MOLYDUVAL

Soraja FM 372



Special Grease for Food Industry

Virtually odourless and tasteless lubrication grease. It is made with a white mineral oil and an aluminium complex soap thickener. Extreme care is taken throughout the manufacture to protect its purity. If any incidental contact with food occurs, the grease will not affect the colour, odour, or taste of the product.

Contains an FDA approved oxidation inhibitor which gives high stability against chemical changes. It also contains rust inhibitor protecting bearings and metal surfaces subjected to wet conditions, humidity, water washing, steam. It also protects during periods of machine idleness. It resists water washout and provides a sealing of the bearing against entrance of water, or fruit and vegetable juices. Because it is compatible with beverages and food juices, it maintains its consistency. And because it is shear-stable, it also maintains its consistency when it is severely worked in the bearing.

Properties

- * free from mineral oil
- * very good corrosion protection
- * suitable for centralized lubrication systems
- * excellent tackiness
- * good resistant against cold and hot water, even sea water
- * excellent wear protection
- * food grade - all components conform to USDA H1 or the FDA regulations for Lubricants in incidental food contact
- * very good water resistance
- * withstands many alcohols and acids
- * good resistant against washing off
- * good resistant against cold and hot water, even sea water

Applications

- * for anti-friction and sleeve bearings at high temperatures, in ovens, ventilators, engines
- * for bearings in refrigeration equipment
- * for chains in food industry, for packing and filling machines
- * for bearings at funnels and weirs
- * for slide bars in butcheries or slaughterhouses
- * as corrosion preservative
- * for gear boxes in food industry
- * for anti-friction and sleeve bearings in fish production
- * for hooks, sleeve elements, rolls, joints, clutches
- * for slow running bearings, especially heavy loaded bearings

Technical Datas

Color		white
Consistency Class NLGI		2
Name		KPF2K-20
Base Fluid		White Oil
Name		ISO-L-XBCEB2
Density 15°C	kg/m ³	1000
Water Resistance Static	Grade	0
Water Resistance Static	Grade	1-90
Temperature Range	°C	-20 -> +120
Temperature Range kurzzeitig bis	°C	140
Corrosion Protection Kupfer	Grade	1b

For further information, please see our website www.molyduval.com or consult your local representative.

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EC-Safety Data Sheet conforming to 1907/2006/EG, Article 31

MOLYDUVAL Soraja FM 372

Date 23.03.2011 Page 1

1. Commercial Product Name and Company/Manufacturer

1.1 Trade Name:	MOLYDUVAL Soraja FM 372
1.2 Product Application	for gear boxes in food industry for anti-friction and sleeve bearings at high temperatures, in ovens, ventilators, engines for bearings in refrigeration equipment for chains in food industry, for packing and filling machines for bearings at funnels and we
1.3 Producer / Distributor:	MOLYDUVAL GmbH * Halskestr.6 * D-40880 Ratingen * H.Wunsch
1.4 Emergency Phone	+49 (2102) 9757-00

2. Hazards Identification

2.1 Classification	No health hazards known. Product may be used fro lubrication of food processing equipment.
2.2 Information pertaining to particular dangers for man	Is improbable, that the product leads to eye irritations, to a provoking the skin, to an endangerment of the respiratory organs, to a provoking of the lungs or that swallowing leads to effects injurious to health.
2.3 Information pertaining to particular dangers for environment:	Although no environmental damages and bioaccumulations were expected, withdrawing should be avoided into the environment. Into drains to arrive do not leave

3. Composition - Information on Ingredients

3.1 Composition - Information on Ingredients	Mixture from synthetic oils, and thickeners. All components conform to FDA regulation FDA 21 CFR 178.3570 or the german DAB.
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4. First Aid Measures

4.1 General Instructions	Remove victim from danger zone, without exposing yourself to any personal risk. Remove wetted clothing and shoes and clean items before using them again.
4.2 After Inhalation	Not applicable.
4.3 After Skin Contact	Wash with soap and much water.
4.4 After Eye Contact	Flush eyes with copious amounts of water for 15 minutes holding lid away from eye.
4.5 After Ingestion	Consult a physician
4.6 Symptoms and effects	no
4.7 Instructions for attending physician	Prolonged or repeated exposure may cause skin discomfort.

5. Fire-Fighting Measures

5.1 Extinguishing media - Usable	Water Spray, Powder, Alcohol Foam, Sand, CO2
5.2 Extinguishing media - Not usable	Waterjet
5.3 Special personal protection	No
5.4 Further information	Water may cause splattering.

6. Accidental Release Measures

6.1 Special Personal Protection	Use oil-proofed clothing
6.2 Special Environmental Protection	Do not expose to environment or in effluent water.
6.3 Absorbing Materials	Sabbia
6.4 Cleaning Methods	Take up mechanically.

7. Handling and Storage

7.1 Handling	No special steps
7.2 Storage	No special steps

8. Exposure Controls / Personal Protection

8.2 Eye Protection:	None required
8.3 Skin Protection:	None required
8.4 Respiratory Protection:	None required
8.5 Technical Protection	None required

9. Physical and Chemical Properties

9.1 Appearance Form	pasty
9.2 Color	white
9.3 Appearance	like grease
9.4 Odour	like lubrication oil
9.6 Boiling Point / Boiling Range	--°C
9.7 Melting Point / Melting Range	250°C
9.8 Flash Point	n.b.
9.13 Specific Gravity, 20°C	0,96 g/cm³
9.14 Water Solubility	N
9.15 Viscosity, 40°C	950 mm²/s

EC-Safety Data Sheet conforming to 1907/2006/EG, Article 31

MOLYDUVAL Soraja FM 372

Date 23.03.2011 Page 2

10. Stability und Reactivity

10.1 Stability	This product is stable in normal-use temperatures and will not react violently with water
10.2 Conditions to be avoided	No
10.3 Substances to be avoided	No

11. Toxicological Information

11.1 Toxicological Tests	Under current criteria, this material is considered to be non-hazardous (is not to be marked).
11.2 At Eye Contact	No hazard.
11.3 At Skin Contact	No hazard.
11.4 At Inhalation	no data available
11.5 At Ingestion	May cause sickness and vomiting.

12. Ecological Information

12.1 Ecological Information	Product is WGK 2. Don't let into canalisation.
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13. Disposal Considerations

13.1 Disposal Considerations	May not be disposed together with domestic rubbish. Disposal in compliance with federal, state, and local laws. EAK Waste Product Code : 130899 Ölabfälle, nicht anders spezifiziert
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14. Transport Information

14.1 UN-No	No
14.2 Land Transport ADR/GGVS RID/GGVE	No
14.3 Sea Transport ADNR/IMDG/GGVSee	No
14.4 Air Transport IATA/ICAO	No
14.5 Other	No transport regulations.

15. Regulatory Information

15.1 Limits for Disposal at Places of Employment	No MAK Values defined
15.2 Characterisation symbols	No Precautionary Labels.

16. Further Information

16.1 Further Information	Although the information on this safety sheet is based on the by us known and reliable considered information, we can neither accept any responsibility for the use of it. Please contact us if more infos are needed.
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MOLYDUVAL

Soraja FM 372

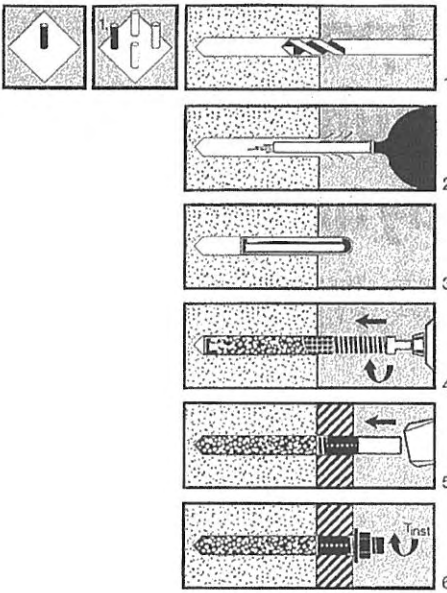
Technical Datas

Oxidation Resistance	kPa	< 35
Dropping Point	°C	265
Lubricating Ability 02-SKF-R2F 120°C		pass
Wear Protection VKA Schweißkraft	N	6000
Wear Protection VKA Verschleißtiefe 40kg/107C/1200U/1h	mm	0,7

The indicated service temperatures are guide values depending on the lubricants composition and on the application. They may vary in case of special influences or ongoing use.

For further information, please see our website www.molyduval.com or consult your local representative.

The technical data in this information sheet represents our present knowledge and is based on our general experience. It is intended to give information of possible applications to a reader with technical experience. It constitutes neither an assurance of product properties nor does it release the user from the obligation of performing preliminary tests with the selected product to ensure that the product is safe, effective and fully satisfactory for the intended end use. It does also not form part of any sales contract as guaranteed properties of the delivered material.



D Upat UMV multicone dynamic – Montageanleitung

Einzelbefestigung

- Mit Hammerbohrer Dübelloch bohren. Vorgeschriebene Bohrdurchmesser und Bohrtiefe beachten.
- Bohrloch gründlich reinigen. Vom Bohrlochfesten her ausblasen.
- Upat multicone Patronen prüfen: Die Verwendbarkeit ist gewährleistet, wenn die Patrone unverkehrt ist und das Harz homogen fließt. Die Patrone ist in das gesäuberte Bohrloch einzuführen.
- Upat multicone dynamic Gewindestahl auf das Setzwerkzeug aufstecken und mit dem Bohrhämmer bei eingeschaltetem Schlagwerk bis zum Ende der Drahtgewebshülse einvibrieren. Die Maschine ist beim Erreichen der Setztiefe abzuschalten. Setzwerkzeug abziehen und die Aushärtezeit des Verbundmörtels vor dem Belasten der Verankerung einhalten (siehe Tabelle). Montagen sind auch bei tieferen Temperaturen möglich.

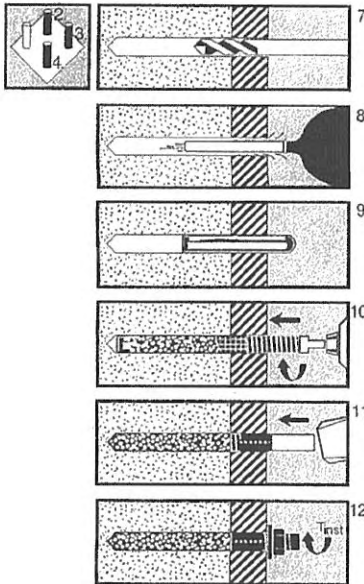
Achtung:
Zu langes Drehen mit der Maschine führt zur fehlerhaften Montage. Ohne Maschine gesetzte Anker, z. B. mit dem Hammer eingeschlagene Gewindestähle, erhalten keinen Verbund und gelten somit als Fehlmontage.

Achtung:
Die Vermörtelung muß bis an die Betonoberfläche reichen. Wird kein Mörtel an der Betonoberfläche sichtbar, so ist der Gewindestahl sofort zu ziehen und mit einer zweiten Mörtelpatrone neu zu setzen.

Temperatur im Verankerungsgrund	Aushärtezeit
± 0 °C	60 min
+ 10 °C	30 min
> 20 °C	25 min

Die Wartezeiten gelten für trockenen Verankerungsgrund. Im feuchten Verankerungsgrund sind die Wartezeiten zu verdoppeln.

- Nach Einhaltung der in der Tabelle angegebenen Aushärtezeiten kann das Anbauteil angebracht werden: Spannbuchse auf den Gewindestahl stecken und mit der Montagehülse einschlagen. Die Spannbuchse sitzt korrekt, sobald die Montagehülse bündig mit dem Gewindestahl abschließt. Die Buchse darf nicht überstehen!
- Montagehülse abziehen. Mutter mit angegebenem Drehmoment anziehen (siehe Tabelle).



Mehrfachbefestigungen

Bei Mehrfachbefestigungen wird in der Regel der erste Anker zur Bauteilfixierung in Vorsteckmontage gesetzt. Alle weiteren Anker in Durchsteckmontage! Bei großen Bauteilen, z. B. Ankerplatten für Krane, können alle Anker in Durchsteckmontage gesetzt werden.

Montage erster Anker: siehe Einzelbefestigung (Punkt 1 bis 5)

6. Montagehülse abziehen. Anbauteil justieren. Mutter mit angegebenem Drehmoment anziehen (siehe Tabelle).

Montage der weiteren Anker:

7. Weitere Dübellöcher durch das Anbauteil bohren. Das Durchgangsloch (d_f) im anzuschließenden Bauteil ist zwingend einzuhalten. Es ist darauf zu achten, daß sich die Bohrtiefe um den Betrag der Befestigungsdicke ($h_0 + t_{fix}$) vergrößert.

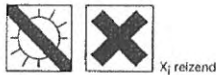
- Bohrlöcher gründlich reinigen. Vom Bohrlochfesten her ausblasen.
- Patronen in die gesäuberten Bohrlöcher einführen.
- Upat multicone dynamic Gewindestahl auf das Setzwerkzeug aufstecken und mit dem Bohrhämmer bei eingeschaltetem Schlagwerk bis zum Erreichen der Setztiefe abzuschalten.
- Setzwerkzeug abziehen und sofort die Spannbuchse über den noch nicht ausgehärteten Anker mit der Montagehülse einschlagen. Montagehülse abziehen. Dieser Vorgang wird so oft wiederholt, bis alle Anker gesetzt sind.

Achtung:
Können die Buchsen nicht eingeschlagen werden, so ist das Anbauteil abzunehmen und der überschüssige Mörtel zu entfernen. Anbauteil wieder aufstecken und die Buchsen mit der Montagehülse einschlagen.

12. Nach Einhaltung der angegebenen Aushärtezeiten (siehe Tabelle) kann das Drehmoment bei den restlichen Anker aufgebracht werden (siehe Tabelle).

Sicherheitsratschläge:

- R43 Sensibilisierung durch Hautkontakt möglich.
- S2 Darf nicht in die Hände von Kindern gelangen.
- S3 Kühl aufbewahren (0°C bis +25°C, kurzfristig max. +35°C).
- S26 Bei Augenkontakt sofort gründlich mit Wasser spülen. Arzt konsultieren.
- S28 Bei Hautkontakt gründlich mit Wasser und Seife abwaschen.
- S37/39 Bei der Arbeit geeignete Schutzhandschuhe und Schutzbrille tragen.



GB Upat UMV multicone dynamic – Installation instructions

Single installation

- Use a hammer drill to drill the hole. Observe the specified hole diameter and depth.
- Thoroughly clean out the drill hole, blowing it out from the base.
- Check the Upat multicone capsule. Proper function is guaranteed if the capsule is intact and the resin has a honey-like viscosity, insert the capsule into the clean drill hole.
- Attach the Upat multicone dynamic anchor stud onto the setting tool. Use the drill hammer (impact setting) to vibrate the anchor stud into the drill hole up to the end of the wire-mesh sleeve. Switch the drill hammer off when reaching the appropriate setting depth. Pull off the setting tool and observe the curing time of the chemical mortar before loading the anchor (see Table). Anchor installations are also possible at lower temperatures.

Caution:
Power-turning the anchor stud for too long results in incorrect installations. Anchors set without drill hammer (e.g. set by hammer blows) are not bonding properly and are deemed to be incorrectly installed.

Caution:
The mortaring must reach up to the concrete surface. If no mortar protrudes at the concrete surface, immediately pull out the stud and reset using a second mortar capsule.

Temperature in the anchor base	Curing time
± 0 °C	60 min
+ 10 °C	30 min
> 20 °C	25 min

The curing times apply to dry anchor bases. Double the above curing times in wet or moist anchor bases.

- At the end of the curing time specified in the Table, attach the building component or fixture. Plug the clamping chuck onto the anchor stud and drive in with the installation sleeve. The clamping chuck is seated correctly as soon as the installation sleeve lies flush with the stud. Do not allow the chuck to project!
- Pull off the installation sleeve and tighten the nut with the specified torque (see Table).

Multiple installation

When setting multiple anchorings, the first anchor is usually set in pre-fixing installation to fix the building component in place, while the remaining anchors are set in through-fixing installation. For large building components (e.g. anchor plates for cranes), all anchors may be set in through-fixing installation.

Installation of the first anchor: see Single installation (items 1 to 5 above).

6. Pull off the installation sleeve and align the building component/fixture. Tighten the nut with the specified torque (see Table).

Installation of subsequent anchors:

7. Drill the remaining holes through the component/fixture. The clearance hole (d_f) in the fixture to be attached must be complied with. Make sure that the drilling depth increases by the same amount as the thickness of the fixture ($h_0 + t_{fix}$).

- Thoroughly clean out the drill holes, blowing them out from the base.
- Insert the capsules into the clean drill holes.
- Attach the Upat multicone dynamic anchor stud onto the setting tool. Use the drill hammer (impact setting) to vibrate the stud into the drill hole until reaching the setting depth. Switch the drill hammer off when reaching the appropriate setting depth.
- Pull off the setting tool and immediately use the installation sleeve to drive the clamping chuck over the as yet uncured anchor. Pull off the installation sleeve. Repeat these steps until all anchors are set.

Caution:
If the chucks cannot be driven in, take off the component/fixture and remove excess mortar. Re-attach the component/fixture and drive in the chuck with the installation sleeve.

12. At the end of the curing time (see Table), apply the specified torque to the remaining anchors (see Table).

Safety notices:

- R43 Potential sensitisation through skin contact
- S2 Keep out of reach of children
- S3 Store in a cool place (0°C to +25°C, short-term storage at max. +35°C)
- S26 In the event of eye contact, immediately rinse in water and consult a doctor
- S28 In the event of skin contact, thoroughly wash off with water and soap.
- S37/39 Wear suitable protective gloves and protective goggles.



Typ UMV dyn	No.	mm	t_{fix} min./max.	d_f mm	h_0 mm	T_{inst} Nm
UMV dyn 100 M 12/25	8004	160	15-25	16	15	40
UMV dyn 100 M 12/50	8005	185	25-50	16	15	40
UMV dyn 125 M 16/30	8006	200	15-30	19	15	60
UMV dyn 125 M 16/60	8007	230	30-60	19	15	60
UMV dyn 170 M 20/40	8008	255	20-40	26	20	100
UMV dyn 220 M 24/50	8009	325	25-50	29	25	120

Typ UMV	No.	ϕ mm	mm
UMV 100 M 12 P	7947	15	115
UMV 100 M 12 P	7947	15	115
UMV 125 M 16 P	7948	18	140
UMV 125 M 16 P	7948	18	140
UMV 170 M 20 P	7949	25	190
UMV 220 M 24 P	7973	28	245

Material Safety Data Sheet

(according to § 6 GefStoffV and Directive 91/155/EEC)



Upat multicone Chemical Anchor Capsules

Article number: See 1.2

Prepared on: 09/06th/2002
Version: 3.0

Reviewed on: 05/29th/2006

Printing date: 29.05.2006
Page: 1 of 6

1. Identification of the substance/preparation and company

1.1 Trade name: Upat multicone Chemical Anchor Capsules
1.2 Article number: 7945/7946/7947/7948/79/497973
1.3 Typical application: For the anchorage in cracked and uncracked concrete
1.4 Manufacturer/supplier: Upat Vertriebs GmbH
1.5 Address: D-79211 Denzlingen, Otto-Hahn-Straße 15
1.6 Contact: Mr. Werner Schäuble
1.7 Telephone: 0049 7666/902-2965
1.8 Telefax: 0049 7666/902-2929
1.9 Emergency information: 0049 6132-84463 GBK Gefahrgut Büro GMBH Ingelheim

2. Composition/information on ingredients

Component A:

A.2.1 Chemical characterization: Formulation of methacrylates

A.2.2 Dangerous components:

CAS – No.	EWG-No.	Index-No.	Material	Content [%]	Symbol	R-Phrases
27813-02-1	248-666-3	607-125-00-5	2-Hydroxypropylmethacrylate	< 5	Xi	36, 43

Component B:

B.2.1 Chemical characterization: Formulation of dibenzoyl peroxide, phlegmatized

B.2.2 Dangerous components:

CAS – No.	EWG-No.	Material	Content [%]	Symbol	R-Phrases
94-36-0	202-327-6	Dibenzoyl peroxide	< 5	E, Xi	2, 36, 43

3. Hazards identification

3.1 Hazard description:

A, B Xi Irritant

3.2 Information pertaining to particular dangers for man and environment:

A, B R 43 May cause sensitization by skin contact.

4. First aid measures

- 4.1 General information: Remove contaminated clothing.
4.2 After inhalation: Rest, fresh air.
4.3 After skin contact: Rinse thoroughly using water and soap.
4.4 After eye contact: Open lid and thoroughly flush for 10 – 15 minutes using clean water. Avoid mechanical irritation by rubbing the eyes. Consult a doctor.
4.5 After swallowing: Immediately rinse out the mouth. Consult a doctor.
4.6 Indications for the doctor: None.

5. Fire-fighting measures

- 5.1 Suitable extinguishing media: Spray water, foam, dry powder extinguisher, carbon dioxide (CO₂).
5.2 For safety reasons unsuitable extinguishing media: Water applied with full jet.

Material Safety Data Sheet

(according to § 6 GefStoffV and Directive 91/155/EEC)



Upat multicone Chemical Anchor Capsules

Article number: See 1.2

Prepared on: 09/06th/2002
Version: 3.0

Reviewed on: 05/29th/2006

Printing date: 29.05.2006
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- 5.3 **Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases:** Fire may release carbon monoxide (CO) and carbon dioxide (CO₂).
- 5.4 **Special protective equipment for fire fighting:** Use breathing apparatus with independent air supply.
- 5.5 **Other information:** None.

6. Accidental release measures

- 6.1 **Person-related safety precautions:** Move all persons out of the hazard area.
- 6.2 **Measures for environmental protection:** Do not allow to reach open waters, sewers or water pipes.
- 6.3 **Measures for cleaning/absorption:** Use liquid-binding material (e.g. sand, dry earth) to soak up. Take up solids by mechanical means. Fill into sealable and labelled containers and dispose as described in chapter 13.
- 6.4 **Other information:** None.

7. Handling and storage

7.1 Handling:

- 7.1.1 **Information for safe handling:** Use only in well ventilated work areas. Avoid direct exposure to sunlight. Maximum temperature (short-term) 35 °C, minimum temperature 0 °C.
- 7.1.2 **Information about protection against explosions and fires:** Keep product away from heat sources, open fires, etc., do not smoke.

7.2 Storage:

- 7.2.1 **Requirements to be met by storerooms and receptacles:** Keep capsule in its original package and store in a dry, cool (max. 25 °C) and well ventilated place.
- 7.2.1 **Rules for the mixed storage of chemicals:** Do not store together with combustible substances.
- 7.2.3 **Further information about storage conditions:** Keep dry.
- 7.2.4 **Storage class:** 10, 11 according to VCI guideline.

8. Exposure controls and personal protection

8.1 Additional information about design of technical systems:

No further information. See chapter 7.

8.2 Components with limit values that require monitoring at the workplace:

CAS – No.	Material	Content [%]	Type	mg/m ³	Ppm	Fibre/m ³
14808-60-7	Quartz		MAK	0,15 A		
94-36-0	Dibenzoyl peroxide		MAK	5 E		

8.3 Additional information: ----

8.4 Personal protective equipment:

Respiratory protection: Not required.

Material Safety Data Sheet

(according to § 6 GefStoffV and Directive 91/155/EEC)



Upat multicone Chemical Anchor Capsules

Article number: See 1.2

Prepared on: 09/06th/2002
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Printing date: 29.05.2006
Page: 3 of 6

Hand protection:	Wear suitable protective gloves made of nitrile. See EN 374.
Eye protection:	Tight-fitting safety goggles. See EN 166 F.
Body protection:	Wear closed working clothes.
General protective and hygienic measures:	Do not eat, drink or smoke while working. Immediately remove Contaminated clothes. Protect skin with protective skin cream. Avoid contact with skin, eyes and clothes.

9. Physical and chemical properties

9.1 Appearance:	Component A	Component B	
Form:	Liquid in capsule of glass	Capsule of glass, containing powder components	
Colour:	Clear	Like sand	
Odour:	Weak	Odourless	
9.2 Safety parameters:	Component A	Component B	Method:
ph - Value at ... g/l H₂O; ... °C	Acid content < 0.5 mg/g KOH	7	
Change of state:			
Boiling point/boiling range:	Polymerization > 114 °C	n.d.	
Melting point/melting range:	< - 20 °C	Ca. 55°C	
Flash point:	n.d.	n.a.	
Inflammability: (Solid):	-	n.d.	
Ignition temperature:	-	n.d.	
Self igniting:	> 400 °C	The product is not self igniting	
Oxidizing properties:	No	No	
Danger of explosion:	n.d.	No	
Explosion limits:			
LEL:	n.d.	-	
UEL:	n.d.	-	
Vapour pressure: at 20 °C	n.d.	n.d.	
Density: at 20 °C	1.1 - 1.2 g/cm ³	1.1 g/cm ³	
Solubility:			
Water: at 20 °C	Insoluble	Insoluble	
Organic solvents: at 20 °C	Soluble in most organic solvents	Acetone	
Partition coefficient n-Octanol/Water (log p_{OW}):	n.d.	n.d.	
Viscosity: at 25 °C	Ca. 500 mPa s	n.a.	

9.3 Further information:

Material Safety Data Sheet

(according to § 6 GefStoffV and Directive 91/155/EEC)



Upat multicone Chemical Anchor Capsules

Article number: See 1.2

Prepared on: 09/06th/2002
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Bulk density at 20 °C - 1.2 - 1.3 g/m³

10. Stability and reactivity

- 10.1 Conditions to be avoided:** Direct exposure to sunlight and temperatures exceeding 35 °C.
- 10.2 Materials to be avoided:** Keep away from reducing substances, acids, alkalies and heavy metal compounds.
- 10.3 Hazardous decomposition products:** None, if used as specified.
- 10.4 Further information:** None.

11. Toxicological information

- 11.1 Acute toxicity:** LD50/LC50 values which are relevant for classification: The product has not been tested.
- 11.2 Specific symptoms in animal studies:** The product has not been tested.
- 11.3 Irritant effects:** The product has not been tested.
- 11.4 Sensitization:** May cause sensitization by skin contact.
- 11.5 Effects after repeated or longtime Exposition:** ---
- 11.6 Carcinogenic, mutagenic, teratogenic or dangerous effects on fertility:** ---
- 11.7 Further toxicological information:** ---

12. Ecological information

- 12.1 Information on elimination:** (Persistence and degradability)
Component A, liquids: Biologically not easy degradable.
Component B: In water stable. Can be removed from the water mechanically.
- 12.2 Behaviour in environmental compartments:** The product has not been tested.
- 12.3 Ecotoxicological effects:** The product has not been tested.
- 12.4 Further ecological information:** Water hazard class: 1

13. Disposal consideration

13.1 Product:

- 13.1.1 Recommendation:** Waste material requiring special supervision, to be disposed in compliance with official local regulations (e.g. suitable incineration plant).
- 13.1.2 European waste code:** 07 02 08, other still bottoms and reaction residues

13.2 Contaminated packaging:

- 13.2.1 Recommendation:** ---
- 13.2.2 Recommended cleaning agent:** ---

Material Safety Data Sheet

(according to § 6 GefStoffV and Directive 91/155/EEC)



Upat multicone Chemical Anchor Capsules

Article number: See 1.2

Prepared on: 09/06th/2002
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Printing date: 29.05.2006
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13.2.3 European waste code: 15 01 10; packaging containing residues of or contaminated by dangerous substances

14. Transport information

- 14.1 Land transport ADR/RID/GGVS/GGVE: The product is not considered as dangerous good.
- 14.2 Inland navigation ADN/ADNR: The product is not considered as dangerous good.
- 14.3 Transport by sea IMDG/GGVSea: The product is not considered as dangerous good.
- 14.4 Air transport ICAO/IATA: The product is not considered as dangerous good.
- 14.5 Transport /further information Please contact Mr. Elmar Müller; telephone: ++49 7443/12 - 4896
mobile: ++49 151 -18504887

15. Regulations

15.1 Labelling according to EC Directives/Gefahrstoffverordnung:

Labelling is based on GefStoffV and directive 1999/45/EG.

Component A:

15.1.1 Symbol(s) and indication(s) of danger:



Irritant

15.1.2 Hazard-determining component(s) for labelling:

Contains: 2-Hydroxypropylmethacrylate

15.1.3 R-Phrases:

R 43 May cause sensitization by skin contact.

15.1.4 S-Phrases:

S 2 Keep out of the reach of children.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

Component B:

15.1.1 Symbol(s) and indication(s) of danger:



Irritant

15.1.2 Hazard-determining component(s) for labelling:

Contains: Dibenzoyl peroxide

15.1.3 R-Phrases:

R 43 May cause sensitization by skin contact.

Material Safety Data Sheet

(according to § 6 GefStoffV and Directive 91/155/EEC)



Upat multicone Chemical Anchor Capsules

Article number: See 1.2

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Version: 3.0

Reviewed on: 05/29th/2006

Printing date: 29.05.2006
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15.1.4 S-Phrases:

- S 2 Keep out of the reach of children.
- S 3/7 Keep container tightly closed in a cool place.
- S 14 Keep away from dirt, rust, chemicals, in particular from concentrated alkalies and acids as well as from activators (e.g. heavy metal salts and amines).
- S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

15.1.5 Special designations for certain preparations:

15.2 National regulations (Germany):

15.2.1 Indications for employment control: Gesetz zum Schutze der arbeitenden Jugend (Jugendarbeitsschutzgesetz - JArbSchG)

15.2.2 Regulations for incidents:

15.2.3 Giscode: n.s.

15.2.4 Technical instructions (Air):

15.2.5 Water hazard class: 1

15.2.6 Further regulations:

15.2.7 Limitations and prohibition regulations:

16. Other information

16.1 Further information:

The above information describes exclusively the safety requirements of the product(s) and is based on our present knowledge. It does not represent a guarantee for the properties of the product(s) described in terms of the legal warranty regulations. Properties of the product are to be found in the respective product leaflet. This data sheet has been created on basis of the information given by the departments, which are responsible for this product.

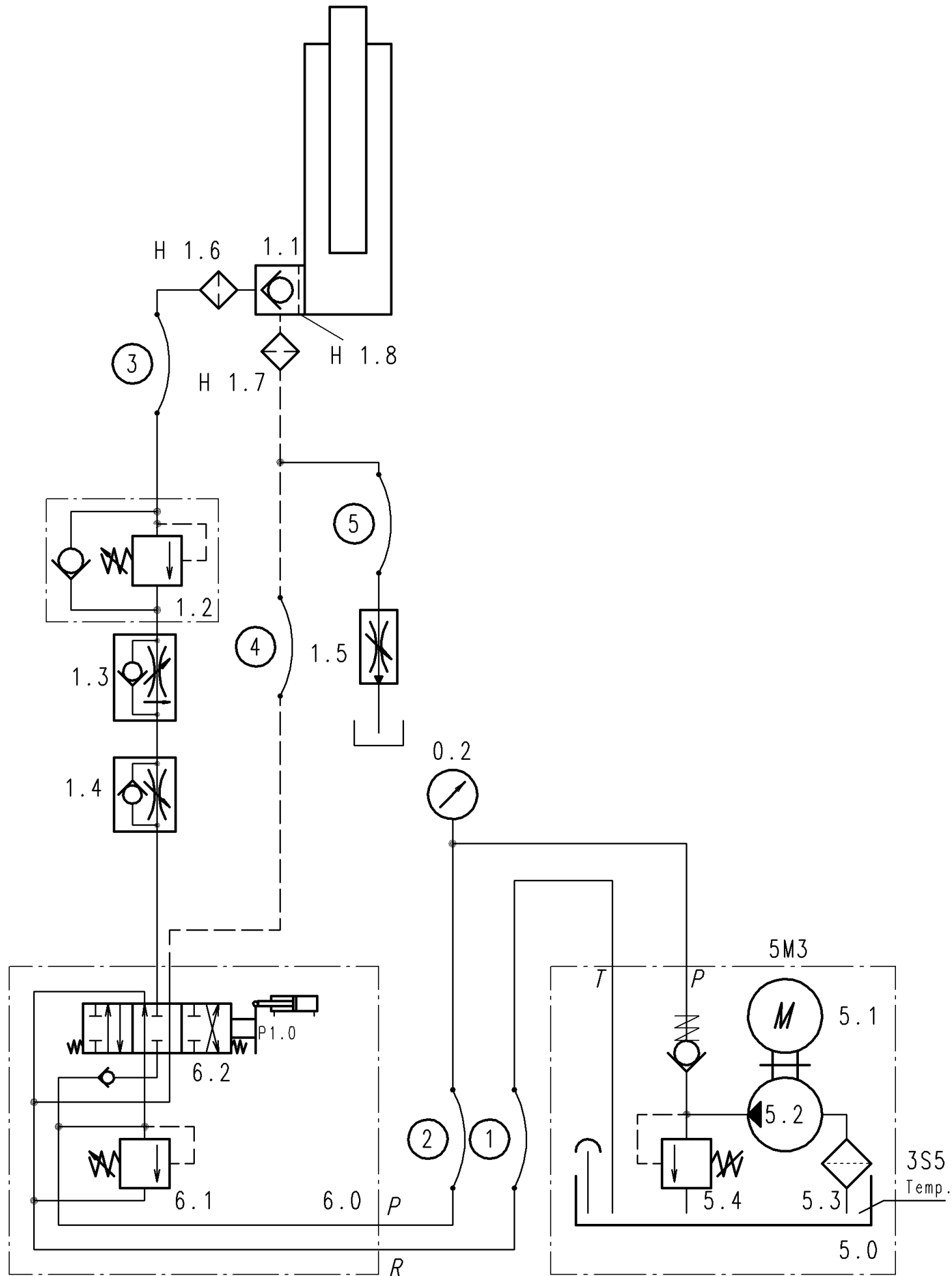
16.2 Department issuing MSDS: Department T-C (Environment and Safety)
fischer Group of companies, location Denzlingen

16.3 Contact: Mr. Werner Schäuble; see chapter 1

16.4 Full text of the R-Phrases in chapter 2: R 2 Risk of explosion by shock, friction, fire or other sources of ignition.
R 36 Irritating to eyes.
R 43 May cause sensitisation by skin contact.

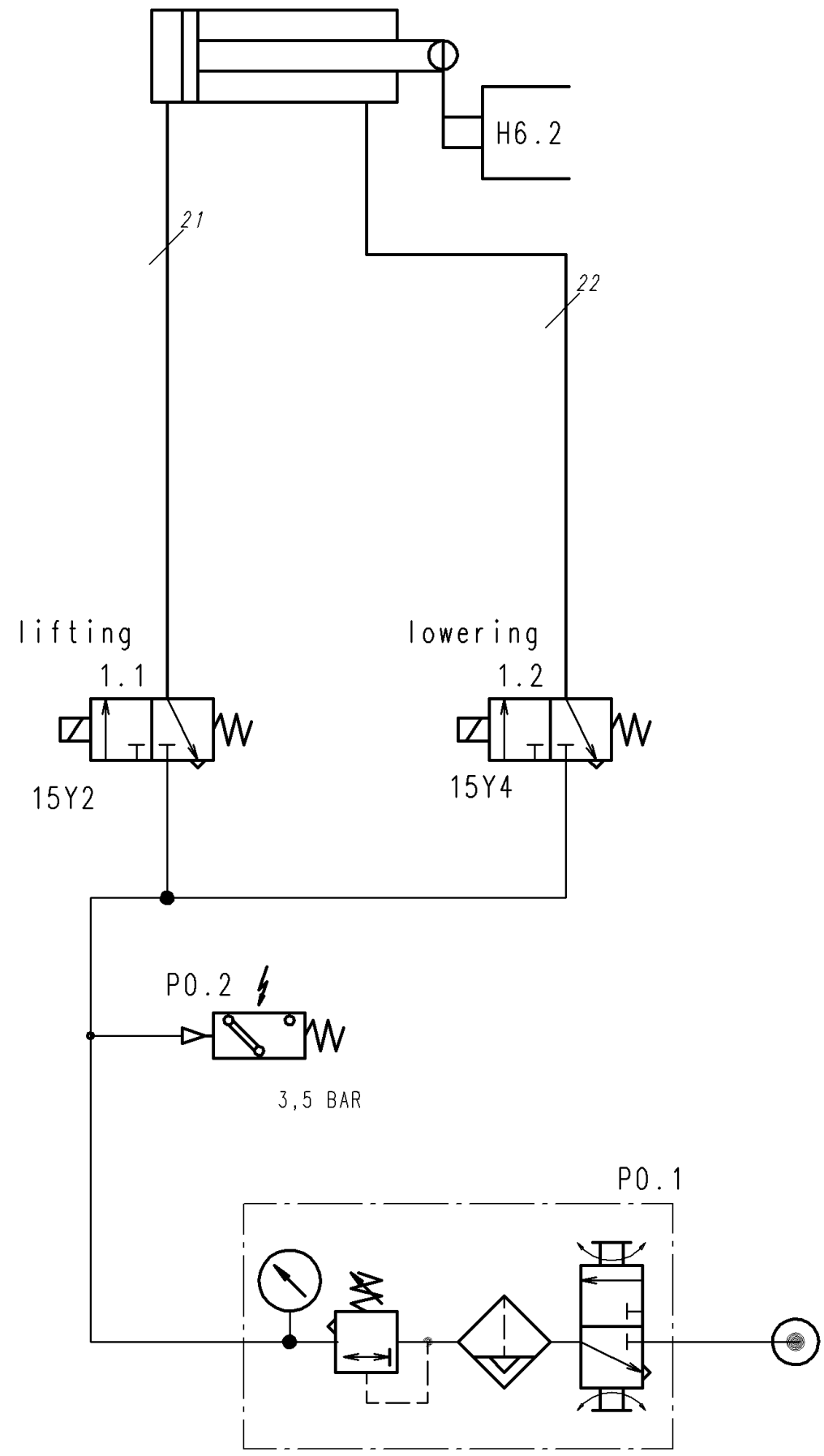
16.5 Alterations have been made in chapter: 1

1.0 Lifting Cylinder



Projekt-Nr.	Maße ohne Toleranzangaben	Oberflächenreihe	Maßstab 1:1	Art.-Nr. -
	ISO 2768	R 2 DIN ISO 1302	Werkstoff, Halbzeug	Frewitt
		Datum	Benennung	
		Erst. 07.06.11	Hydraulic Schematic	
		Änder.		
		Bearb. 07.06.11		
		Gepr. 29.08.11		
		SERVO LIFT GmbH		Zeichnungsnummer U:97\973321\SCB9B49M.ZE1
		Handhabungstechnik		Index
		Albert-Einstein-Str.9		0
		D-77656 Offenburg-Zunsweier		Blatt 1/1
		Tel.0781/6100-0		Ersatz für:
Zusl. Änderung	Datum	Name	Ersatz durch:	

1.0 Cylinder
lifting/lowering



Projekt-Nr.		Maße ohne Toleranzangaben		Oberflächenreihe		Maßstab 1:1		Art.-Nr. -	
		ISO 2768		R 2 DIN ISO 1302		Werkstoff, Halbzeug		Frewitt	
		Datum		Name		Benennung			
		Erst. 07.06.11		Schanz		Pneumatic Schematic			
		Änder.							
		Bearb. 19.08.11		Schanz					
		Gepr. 29.08.11		Labude					
		SERVO LIFT GmbH		Handhabungstechnik		Zeichnungsnummer U:9807\ZE1\SCQPUSM5.ZE1		Index	
		Albert-Einstein-Str.9		D-77656 Offenburg-Zunsweier		12551-62-001		0	
		Tel.0781/6100-0				Ersatz für:		Ersatz durch:	
Zusl. Änderung		Datum		Name					

SERVOLIFT

Albert-Einstein-Str. 9
D-77656 Offenburg
Tel.: +49 (0) 781 6100-0

12551

Customer : Frewitt Fabrique
Plant designation : LIFTING COLUMN

Power supply : 230/400V 50Hz
Input lead : 5x2,5mm²
Power : 2 kW
Fuse : 16 A
Control Voltage : 24 V
Manufacturing date : 2011
Ex - rating : ZONE 22



Designed / checked : 23.10.2009
Creator : HARMS
Last Modification : 29.08.2011
Last modification by : harms
Ver. : 4
CAD - Ver. : 2.0.9

DESIGN REFERENCE

WIRING WIDTH

MAIN CIRCUIT : 400V AC - min. 1,5mm²
 CONTROL CIRCUIT : 24V DC - min. 0,5mm²
 CONTROL CIRCUIT : 230V AC - min. 1,5mm²

SPECIFIC REFERENCE

CABLE ENTRY : FROM HYDRAULIC CABINET
 CUSTOMER SPECIFICATIONS : 
 CONDUCTOR MARKING : 
 LANGUAGE : ENGLISH

THE INSTALLATION OF THE MACHINE IS ACCORDING TO VDE 0100, VDE 0113.

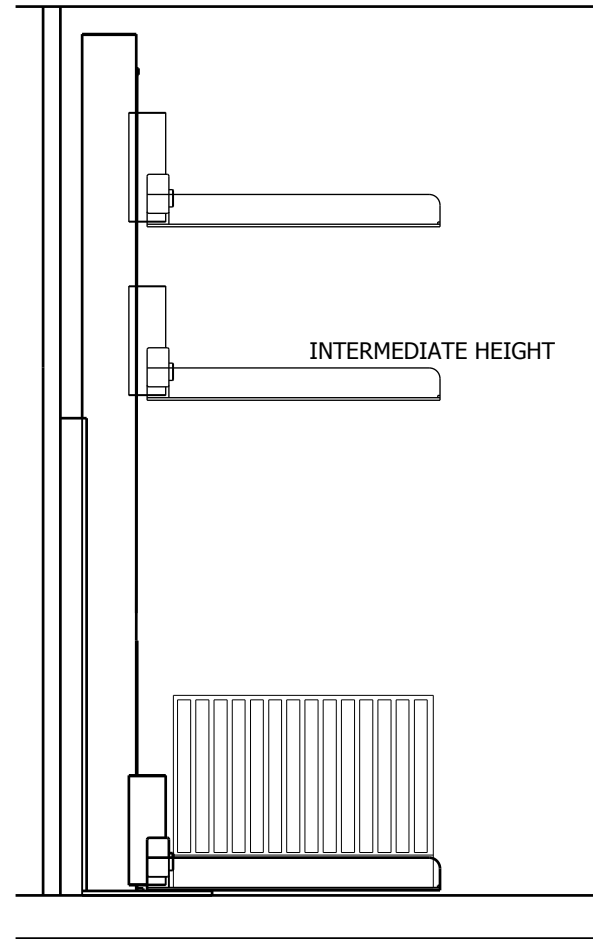
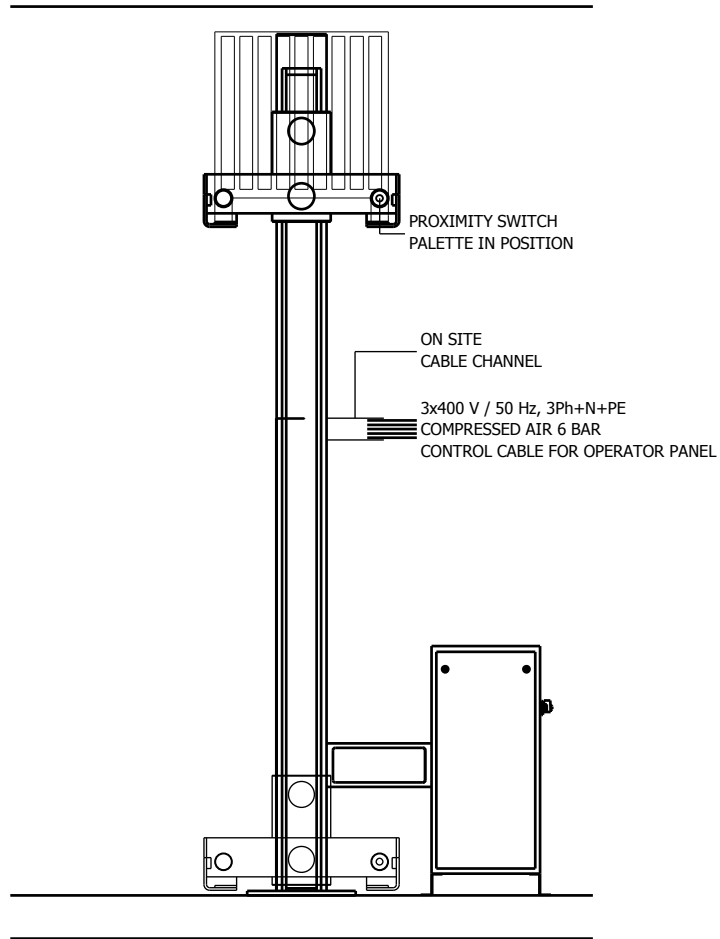
WIRING COLOURS

MAIN CIRCUIT : BLACK
 NEUTRAL CONDUCTOR : LIGHT BLUE
 PROTECTIVE WIRE : GREEN-YELLOW
 CONTROL CIRCUIT 230V AC : RED
 GROUND / 230V AC : RED
 CONTROL CIRCUIT 24V DC : BLUE
 GROUND / 24V DC : BLUE
 EXTERNAL VOLTAGE : ORANGE
 ANALOGUE SIGNAL : WHITE
 PT 100 : WHITE
 INTRINSICALLY SAFE (Ex i) : LIGHT BLUE

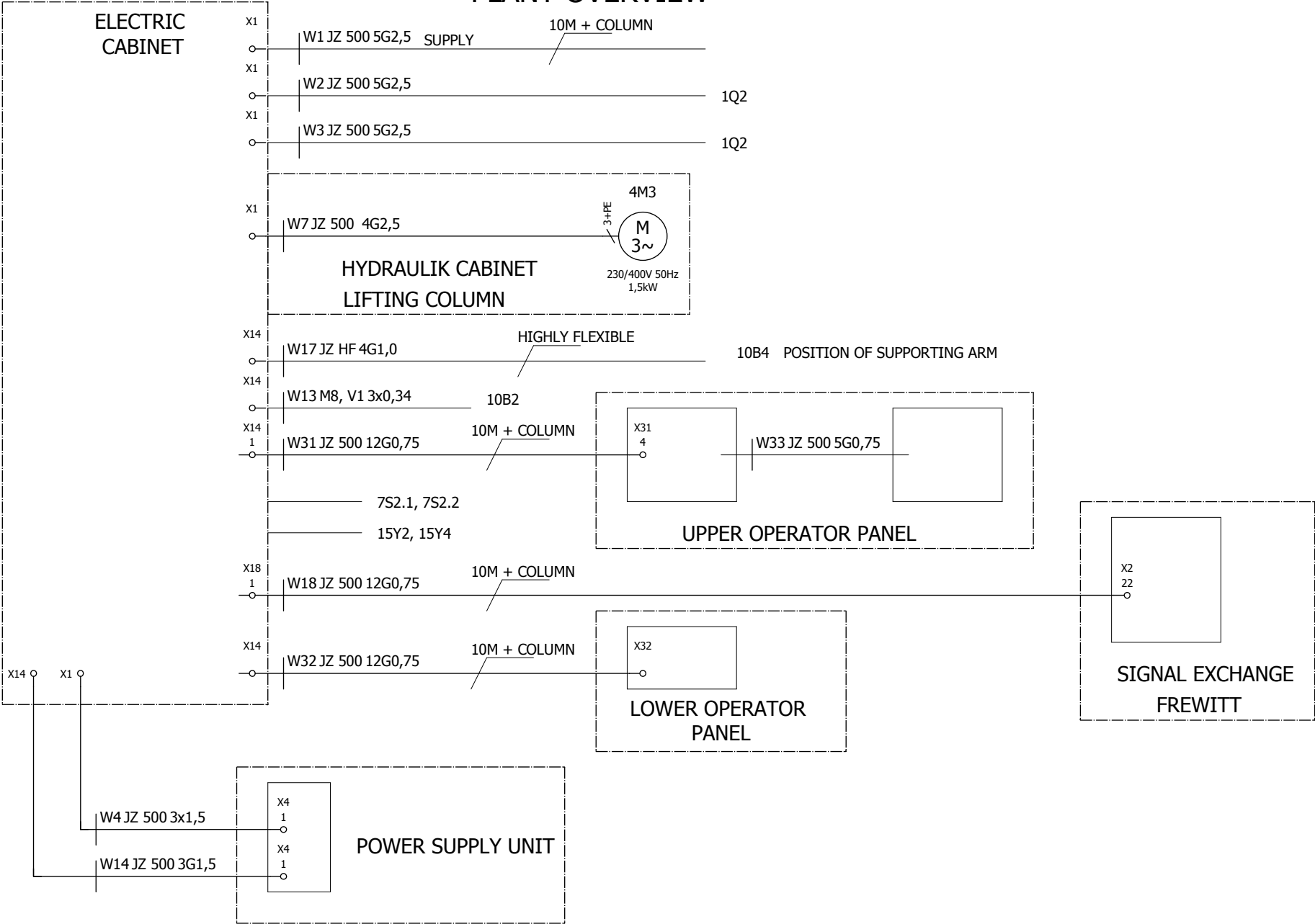
CUSTOMER SPECIFICATIONS

1

3

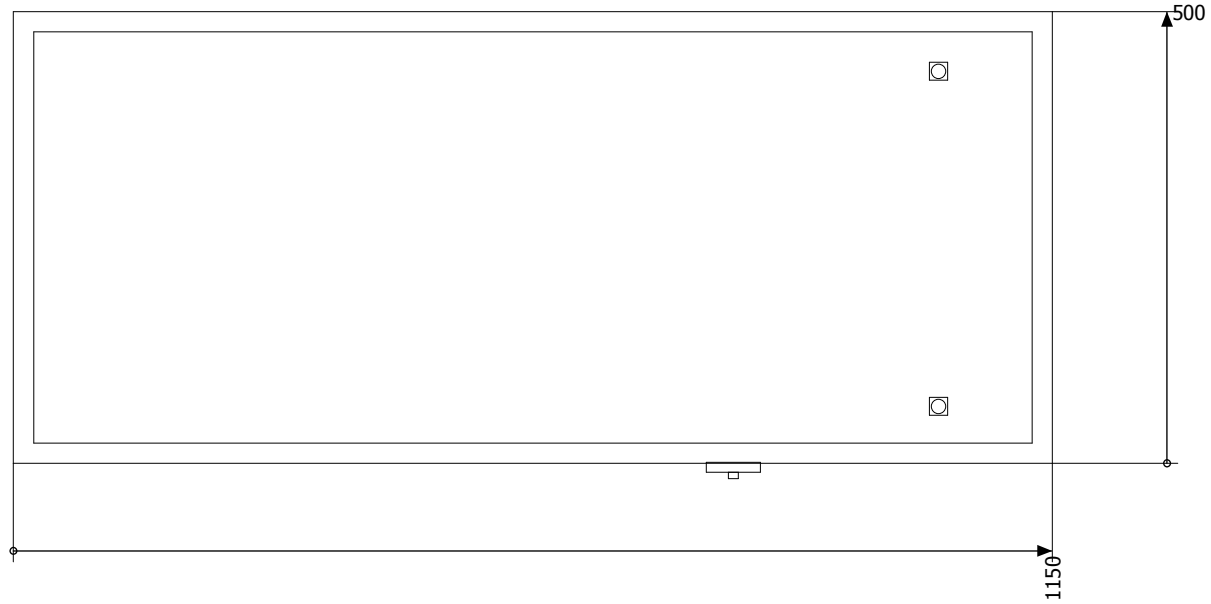


PLANT OVERVIEW



3

6



designed/checked
 date 23.10.2009
 user HAKWS

change
 date 29.08.2011
 user harms
 ver.: 4

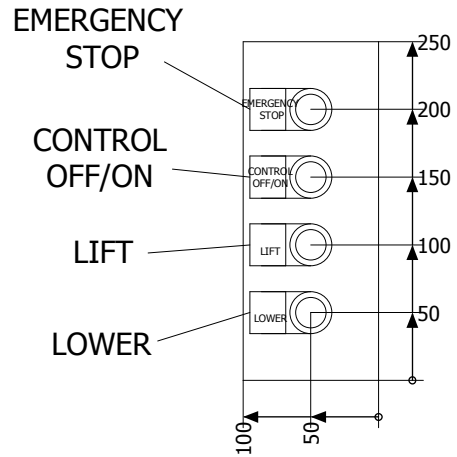
project: LIFTING COLUMN
 project no.: 12551

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 MOUNTING PLATE

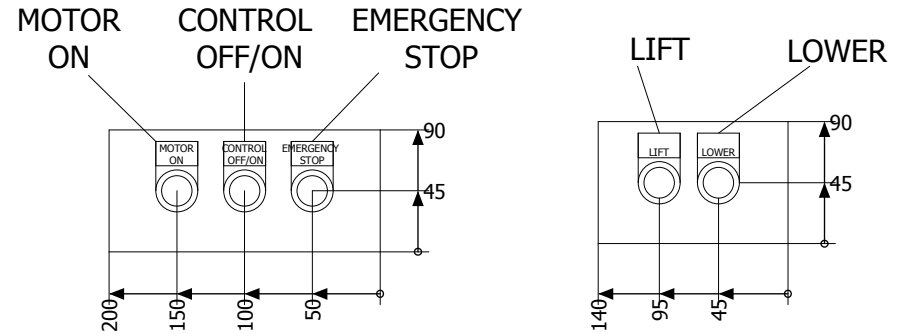
Frewitt Fabrique
 Granges-Paccot

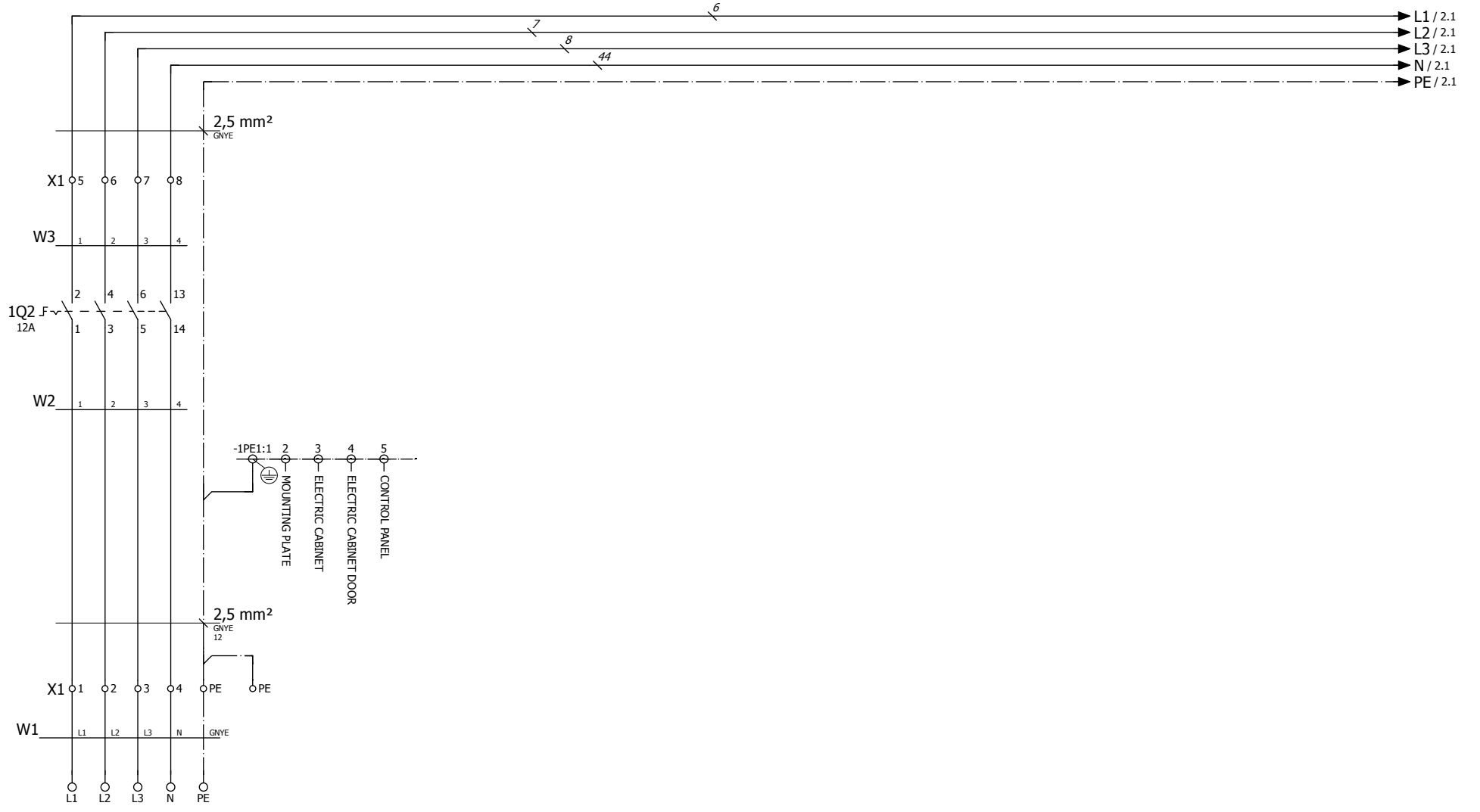
= MC
 + DOK

LOWER OPERATOR PANEL



UPPER OPERATOR PANEL





+DOK/9

SERVOLIFT
 Albert-Einstein-Str. 9
 77656 Offenburg
 Phone +49 (0) 781-6100-0
 Email: sl@servolift.de

designed/checked
 date 23.10.2009
 user HARMS

change
 date 29.08.2011
 user harms
 ver.: 4

project: LIFTING COLUMN

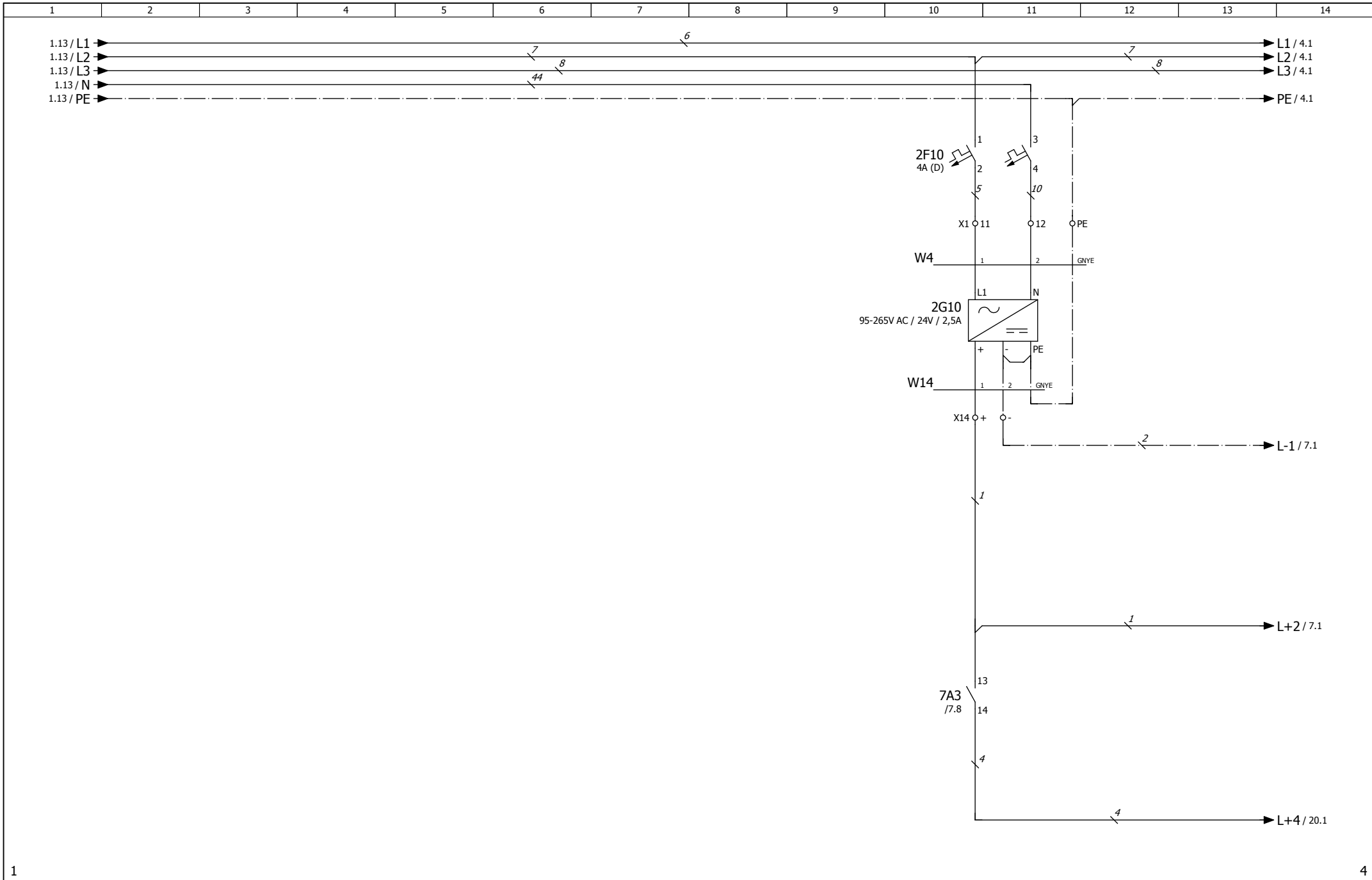
project no.: 12551

description
 SUPPLY

Frewitt Fabrique

Granges-Paccot

= MC	
+ EP	
page	1
of	108



1

4

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 user HARMS

change
 date 29.08.2011
 user harms
 ver.: 4

project: LIFTING COLUMN

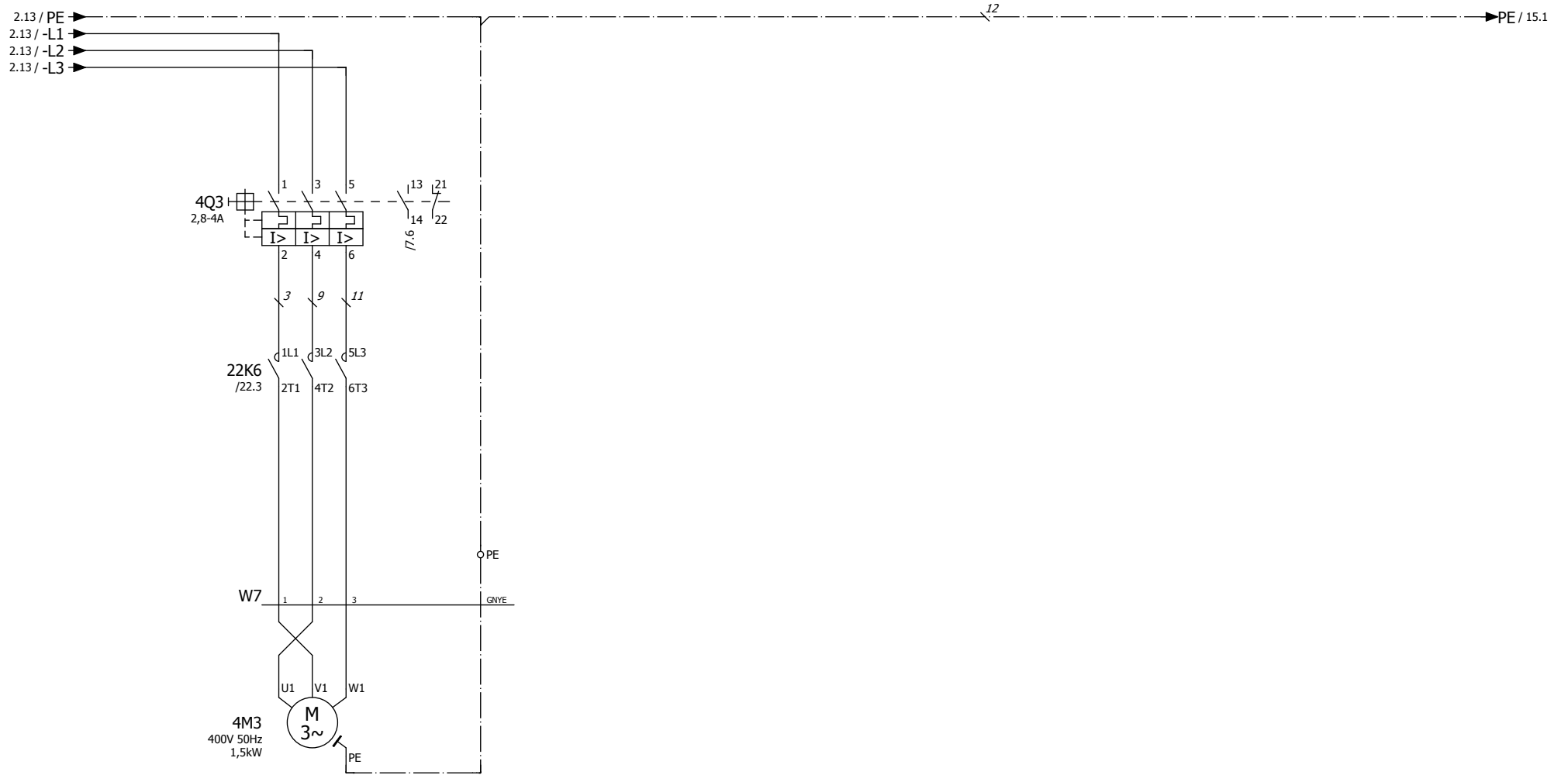
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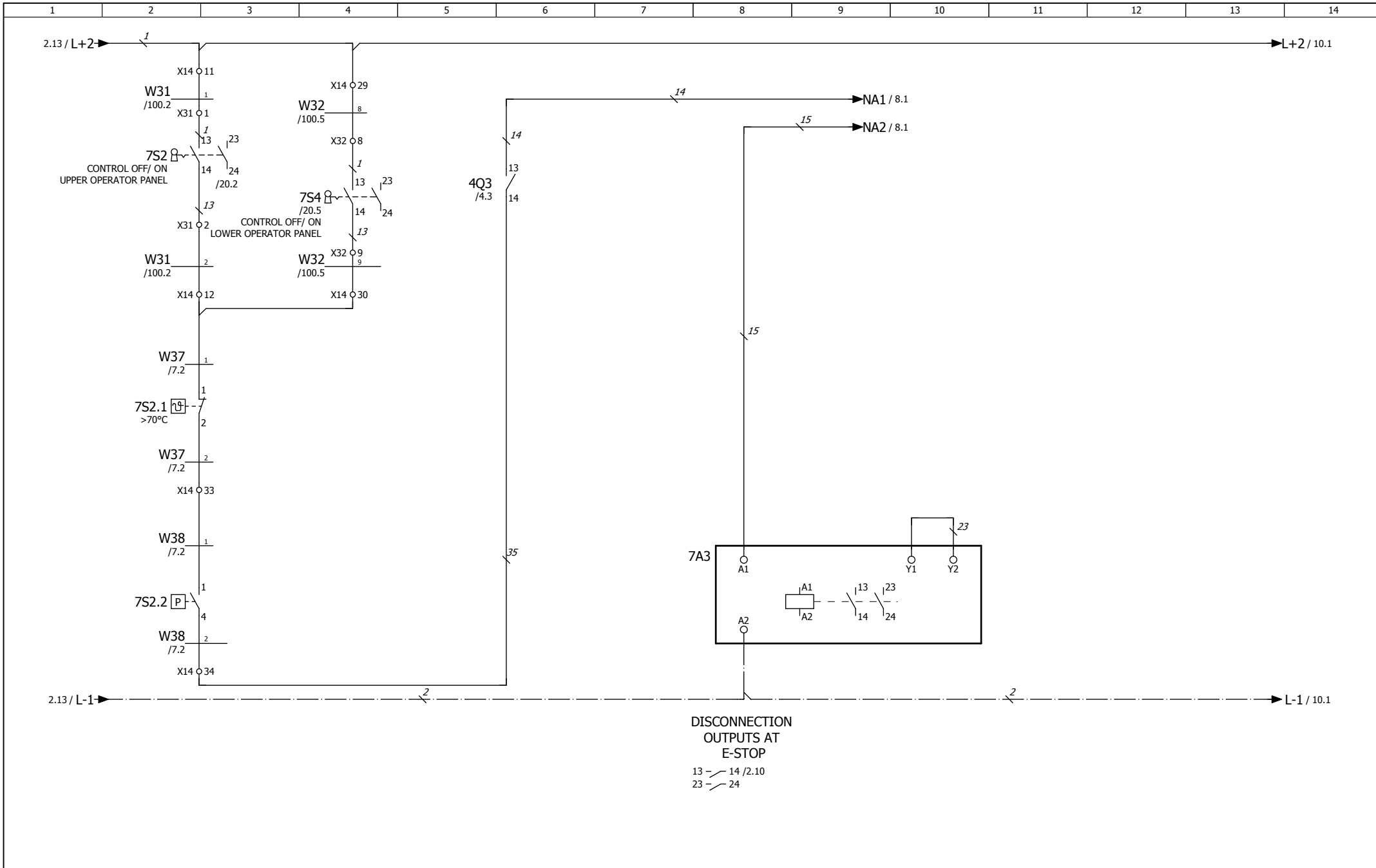
Frewitt Fabrique

Granges-Paccot

= MC	
+ EP	
page	2
of	108

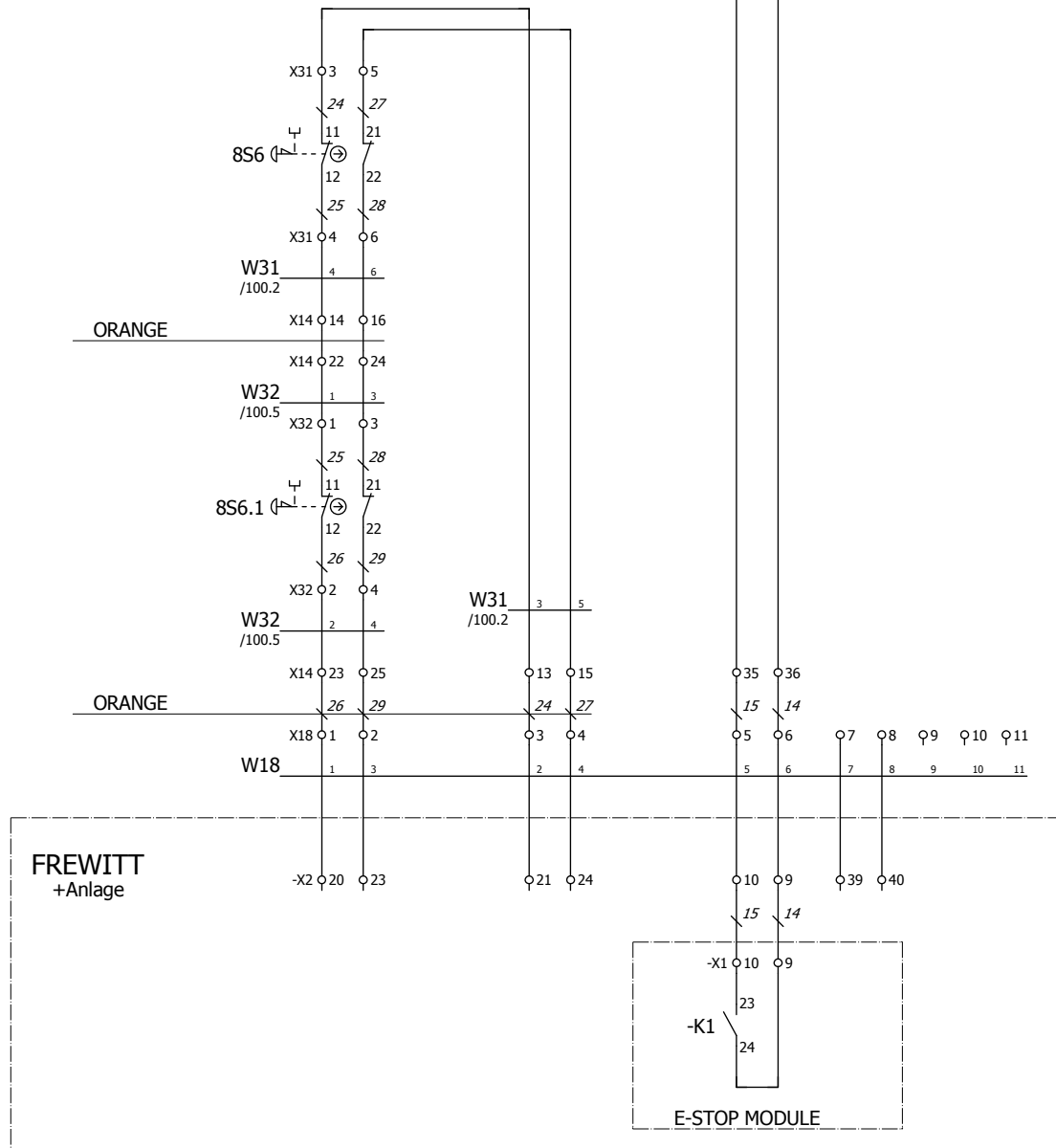


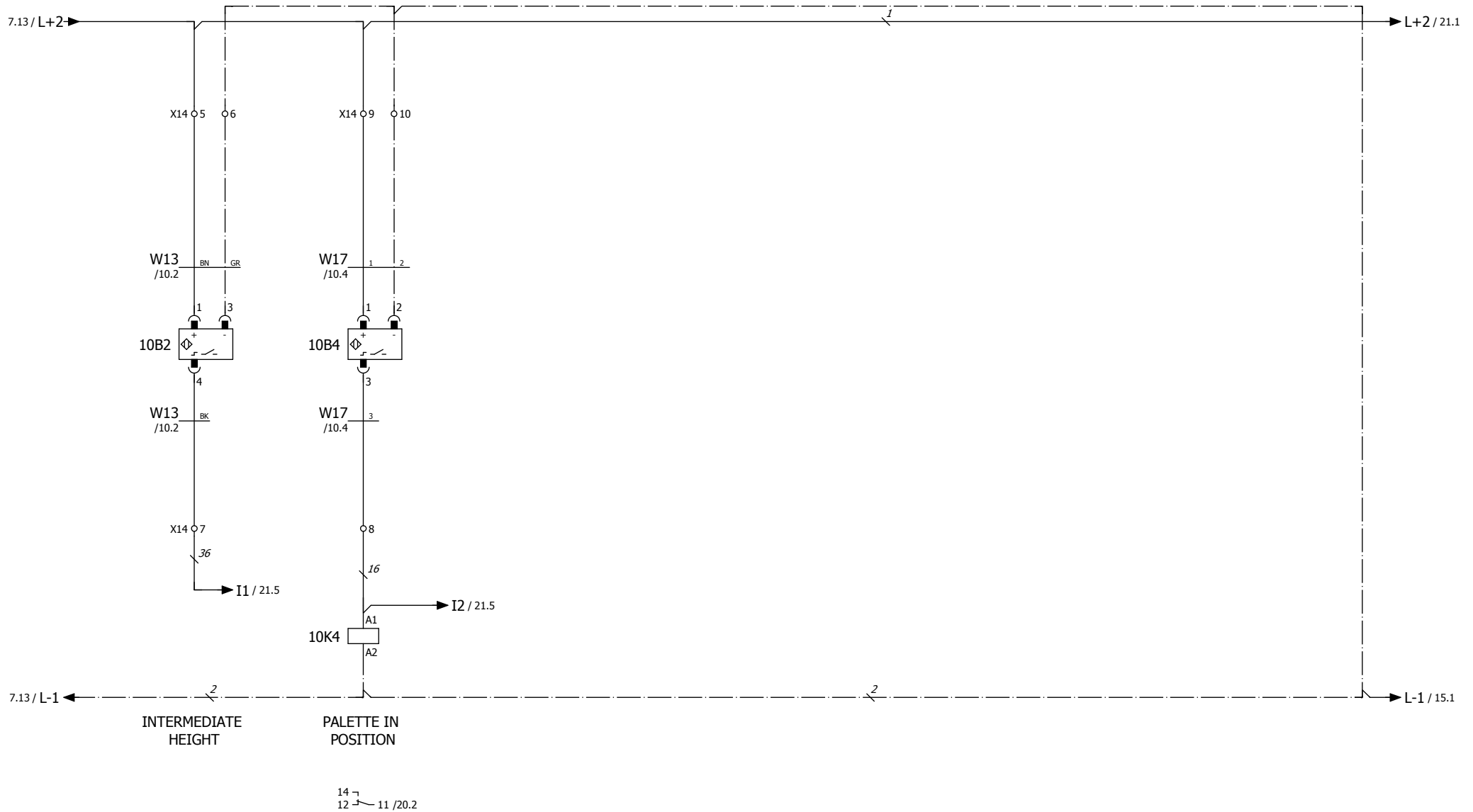
MOTOR
HYDRAULIC
PUMP

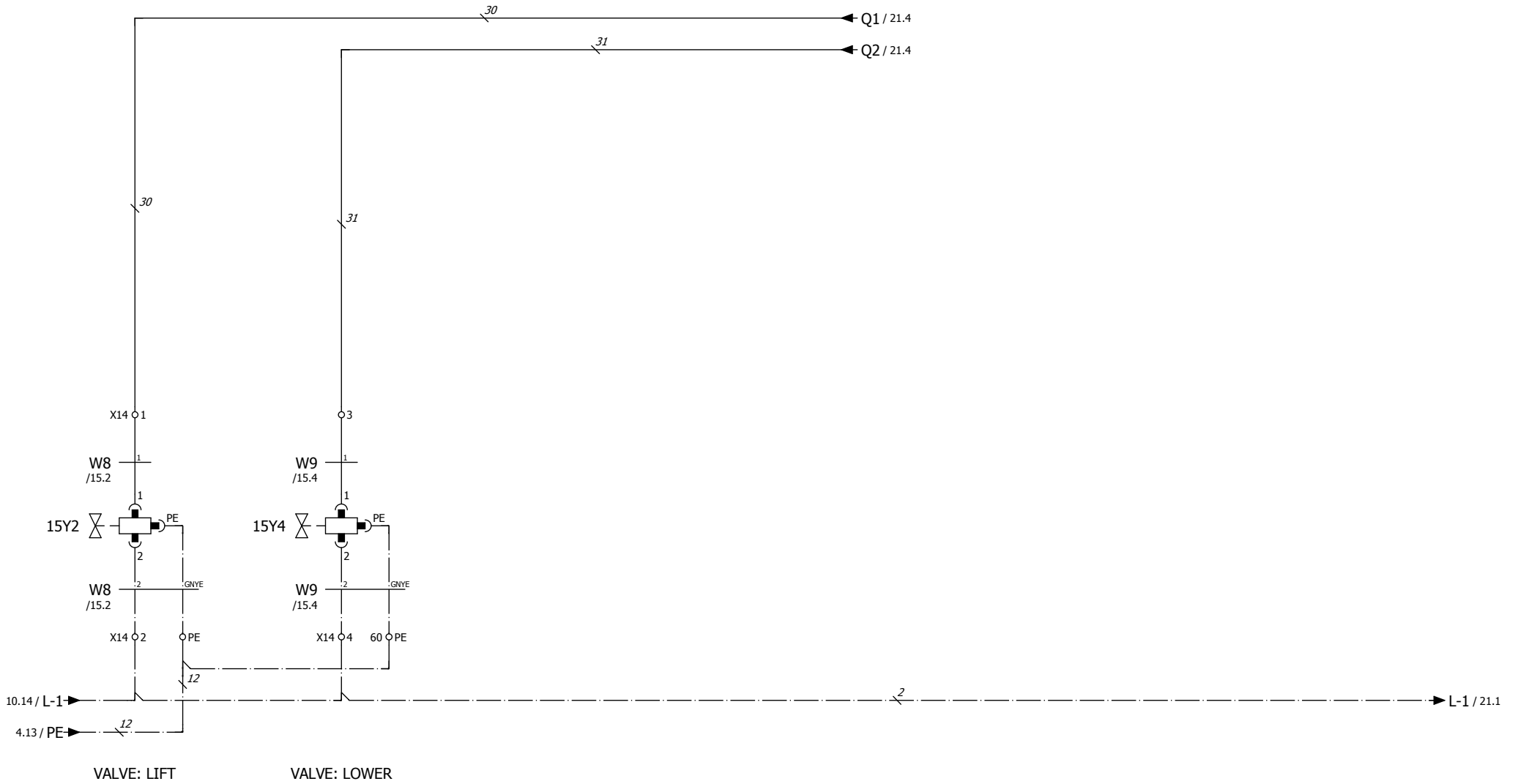


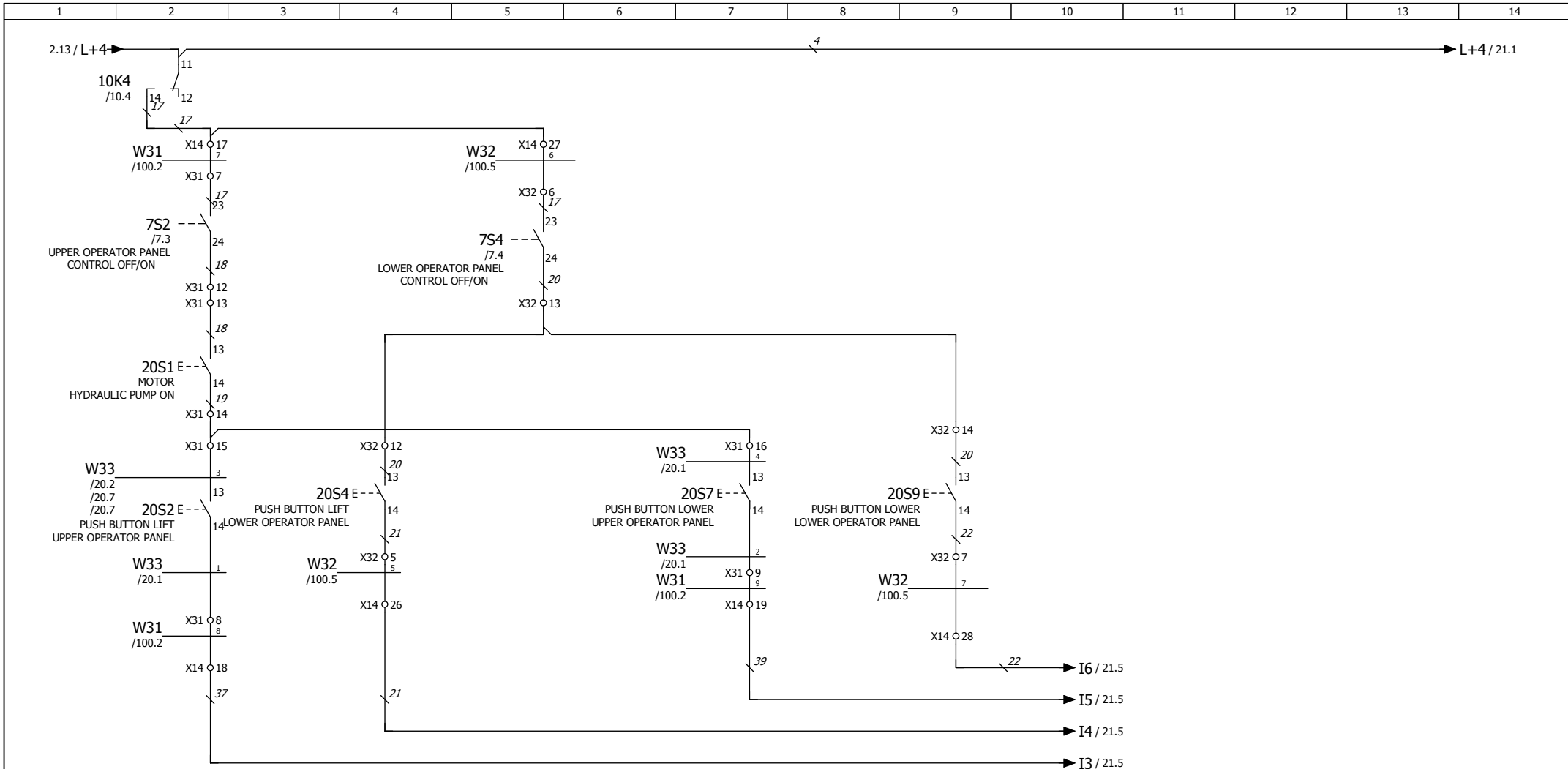
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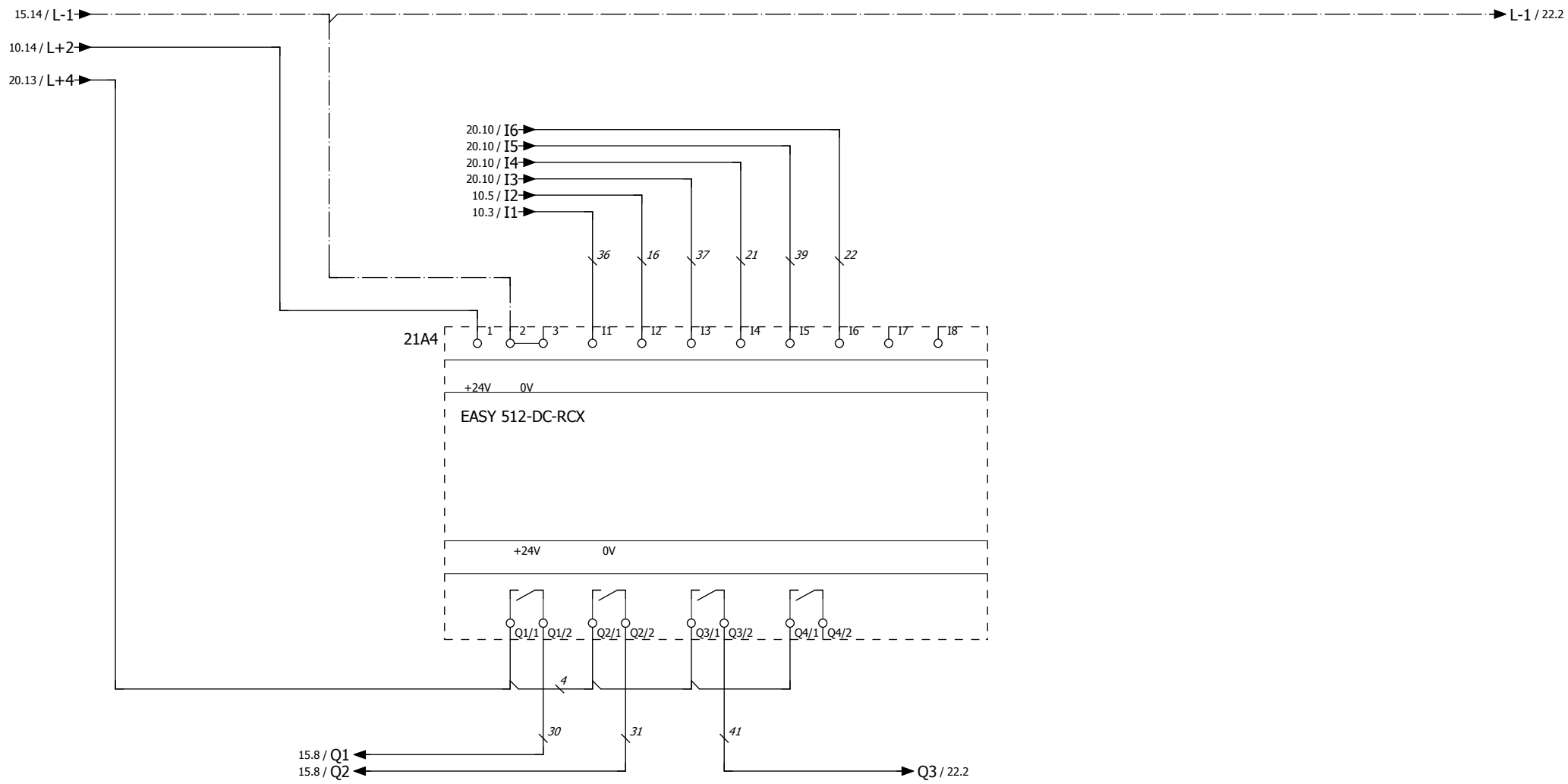
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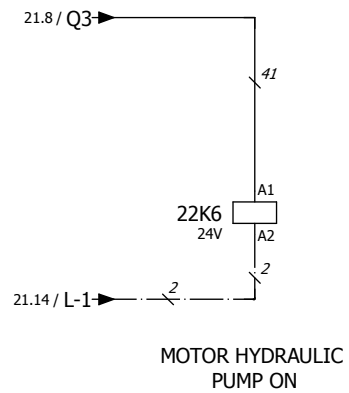




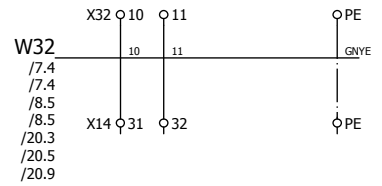
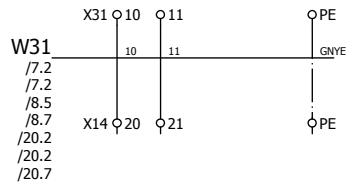








- 1L1 2T1 /4.3
- 3L2 4T2 /4.3
- 5L3 6T3 /4.4
- 21 22



<p>SERVOLIFT Albert-Einstein-Str.9 77656 Offenburg Phone +49 (0) 781-6100-0 Email: sl@servolift.de</p>	designed/checked	change	project: LIFTING COLUMN	description OVERVIEW SPARE TERMINALS	Frewitt Fabrique	= MC
	date 23.10.2009	date 29.08.2011	project no.: 12551		Granges-Paccot	+ EP
	user HARMS	user harms				page 100
		ver.: 4				of 108

												W7		JZ 500		4G2,5 mm ²	
												Cable name		Cable type			
												Wire number					
												Target design.		Strip designation			
												Connection					
												Terminal number					
												Jumpers					
												Target design.					
												Connection					
												Cable name		Cable type			
												Page/ path		=MC+EP/4.5			

										Cable name		Cable type	
										Wire number			
										Target design.		Strip designation X4	
										Connection			
										Terminal number			
										Jumpers			
										Target design.			
										Connection			
										Cable name		Cable type	
										W4		JZ 500 3G1,5 mm ²	
										W14		JZ 500 3G1,5 mm ²	
										Page/ path			
										=MC+DOK/4.4			
										=MC+DOK/4.4			

Cable name		Cable type		Strip designation			
W33		JZ 500 5G0,75 mm ²		X31			
Wire number	Target design.	Connection	Terminal number			Jumpers	Target design.
1	752	13	1				X14
13	752	14	2				X14
24	856	11	3				X14
25	856	12	4				X14
27	856	21	5				X14
28	856	22	6				X14
17	752	23	7				X14
2	2057	14	8				X14
1	2057	14	9		X14		
18	752	24	12		X14		
18	2051	13	13		X14		
19	2051	14	14		X14		
3	2052	13	15		X14		
4	2057	13	16		X14		
Cable name		Cable type		Page/ path			
W31		JZ 500 12G0,75 mm ²		1			
				2			
				3			
				4			
				5			
				6			
				7			
				8			
				9			
				10			
				11			
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HYDRAULIC PARTS LIST

12551

Project no.

1031529

Project:		Name	Date	Revision	Dwg. no.	
Lifter for Pallets		Schanz	07.06.2011	0	12551-61-001	
Pos. Nr.	Qty	Description	Parts-# Manufacturer	Manufacturer	Parts-# Servolift	location
10	H 1.0	1 pcs lift cylinder		Servolift	127586	column
20	H 1.1	1 pcs check valve with hydr. release RH 1		HAWE Hydraulik SE	101190	control cabinet
30	H 1.2	1 pcs hydr. pressure limiting valve G3/8" MVCS46 E, Bypass, R=500bar		HAWE Hydraulik SE	101192	control cabinet
40	H 1.3	1 pcs flow control valve VCD-RU 3/8"		Oil Control GmbH	110982	control cabinet
50	H 1.4	1 pcs throttle non-return valve G1/4" F-Serie, steel		Parker Hannifin GmbH & Co. KG	130006	control cabinet
60	H 1.5	1 pcs throttle valve G1/4" F-Serie		Parker Hannifin GmbH & Co. KG	130912	control cabinet
70	H 1.6	1 pcs sieve and filter element HFE 1/4 F in housing		HAWE Hydraulik SE	122971	lift cylinder
80	H 1.7	1 pcs sieve and filter element HFE 1/4 F in housing		HAWE Hydraulik SE	122971	lift cylinder
90	H 1.8	1 pcs filtration disk for screwing in HFC 1/4 F 3 elements, 100µm		HAWE Hydraulik SE	122907	lift cylinder
100	H 5.0	1 pcs power pack		Servolift	128285	control cabinet
110	H 6.0	1 pcs control-block		Servolift	128309	control cabinet
120	H 0.2	1 pcs pressure gauge NG63/DIN - 160 bar bottom fitting		Lotz Hydraulik GmbH	103252	control cabinet

HOSE LIST

12551

Project no.

1031529

Project:		Name	Date	Revision	Dwg. no.
Lifter for Pallets		Labude	29.08.2011	0	12551-61-001

Pos. Nr.	Qty	Description	Parts-# Manufacturer	Parts-# Servolift	location
10	Nr. 1	1 pcs hydraulic hose SN1 DN10x 750mm 2x DKO-L M18x1,5 length: 750 mm	Hansa-Flex Hydraulik GmbH	100783	
20	Nr. 2	1 pcs hydraulic hose SN1 DN10x 600mm 2x DKO-L M18x1,5 length: 600 mm	Hansa-Flex Hydraulik GmbH	124675	
30	Nr. 3	1 pcs hydraulic hose SN1 DN 8x 850mm 2x DKO-L M16x1,5 length: 850 mm	Hansa-Flex Hydraulik GmbH	107075	
40	Nr. 4	1 pcs hydraulic hose SN1 DN 6x 900mm 2x DKO-L M14x1,5 length: 900 mm	Hansa-Flex Hydraulik GmbH	129679	
50	Nr. 5	1 pcs hydraulic hose SN1 DN 6x 500mm 2x DKO-L M14x1,5 length: 500 mm	Hansa-Flex Hydraulik GmbH	101361	

PNEUMATIC PARTS LIST

12551

Project no.

1031529

Project:		Name	Date	Revision	Dwg. no.	
Lifter for Pallets		Schanz	07.06.2011	0	12551-62-001	
Pos. Nr.	Qty	Description	Parts-# Manufacturer	Manufacturer	Parts-# Servolift	location
10	P 1.0	1 pcs pneu. cylinder dia.20, stroke 50, ISO 6432		<i>Festo KG</i>	103078	control cabinet
20	P 1.1	1 pcs 3/2 valve G1/8" MFH-3-1/8-EX solenoid/ spring actuated		<i>Festo KG</i>	128171	control cabinet
30		1 pcs solenoid coil Ex-protect zone 2+22 MSFG-24-EX		<i>Festo KG</i>	128092	P 1.1
31		1 pcs plug for valves (20x28mm) for MSFG-24-EX type MSSD-F-M16		<i>Festo KG</i>	129839	P 1.1
40	P 1.2	1 pcs 3/2 valve G1/8" MFH-3-1/8-EX solenoid/ spring actuated		<i>Festo KG</i>	128171	control cabinet
50		1 pcs solenoid coil Ex-protect zone 2+22 MSFG-24-EX		<i>Festo KG</i>	128092	P 1.2
51		1 pcs plug for valves (20x28mm) for MSFG-24-EX type MSSD-F-M16		<i>Festo KG</i>	129839	P 1.2
60	P 0.2	1 pcs pressure switch, 0-10 bar IP65, 230V/2A		<i>Suco</i>	107325	control cabinet
70	P 0.1	1 pcs Air maintenance unit combination (1.150 l/min) LFR-1/4-D-MINI-KC		<i>Festo KG</i>	127112	control cabinet

SPARE PARTS LIST

12551

Project no.

1031529

Parts-# Servolift	Qty	Description	Manufacturer	location
112433	1 pcs	seal set for lift cylinder Ø50, plunger type	Servolift	lift cylinder
100629	2 pcs	slide bearing, cyl. ISO 3547-3220 DU (32x36x20) steel back	Glacier Garlock	idler pulley
108012	2 pcs	bushing GFM-3236-16	Igus GmbH	idler pulley
128355	2 pcs	lift chain, type flyer 3/4"-4x4 with end plates	Arnold & Stolzenberg GmbH	column
103212	2 pcs	plastic cap for hexagon head screw M12 19 A/F .grey	Pöppelmann	column
101249	4 pcs	idler pulley standard 0 HMTR 24x61,8x24 2RS	Schaeffler Technologies GmbH&Co.	lift sled
106325	4,7 m	cover band 140 mm width, with sealed rim white, with FDA cert.	Siegling Ernst	column
111489	1 pcs	round cover lid Ø160 for supporting arm or column AISI 316L, BI 0,7	Hommel GmbH	column
104923	2 pcs	cover element M 10 for socket head cap screw in countersinking, GPN 340, grey	Pöppelmann GmbH & Co.	column
130664	1 pcs	tension spring Z 155I 2,5x22,5x93	Gutekunst & Co. Federnfabriken	column
126424	10 l	hydraulic oil, Molyduval Biolube 46 (food grade quality)		control cabinet
8012821	1 pcs	E-Motor EX Zone 22, 1,5/1,75kW, 90L	Siemens AG	control cabinet
8003730	1 pcs	tank 7 ltr. with pump 4,3 ccm/rev.	Hydr-App. SpA	control cabinet
101785	4 pcs	rubber bumper 30x20 - M8, 55 Shore A bolt / thread, NR	Reiff Technische Produkte GmbH	power pack
125204	1 pcs	coupling for hydraulic power pack type MC2/MC4 for shaft Ø 24	Lotz Hydraulik GmbH	power pack
103078	1 pcs	pneu. cylinder dia.20, stroke 50, ISO 6432	Festo KG	control cabinet
127112	1 pcs	Air maintenance unit combination (1.150 l/min) LFR-1/4-D-MINI-KC	Festo KG	control cabinet
110160	2,9 m	sealing for cabinet door self clamping	Dirak GmbH & Co. KG	control cabinet
101349	2 pcs	lock, assembled 7mm/26mm with H26/L45	Dirak GmbH & Co. KG	control cabinet
101350	1 pcs	square socket key 7 mm black PA, black	Dirak GmbH & Co. KG	control cabinet
103212	7 pcs	plastic cap for hexagon head screw M12 19 A/F .grey	Pöppelmann	bottom group
103212	4 pcs	plastic cap for hexagon head screw M12 19 A/F .grey	Pöppelmann	top bearing
101272	1 pcs	Spherical ball bearing 40x80x18 CS 208 NPPB	Steinebronn Industrietechnik	top bearing
103884	2 pcs	cover DP 1500 d=38,0 2763 black	Heymann Manufacturing GmbH	support arm
123138	2 pcs	guiding piece for coverband 140 with guidance PE conductive	Servolift	frontcase
100625	2 pcs	slide bearing, cyl. ISO 3547-2515 DU (25x28x15) steel back	Glacier Garlock	
111636	1 pcs	temperatur switch, IP65 TS-70/X/12	Hydac/Flutec	
107325	1 pcs	pressure switch, 0-10 bar IP65, 230V/2A	Suco	

ELECTRIC PARTS LIST**12551**Lifter
17.08.2011 Ver.3
Name: Harms/Lg**Project no.****1031529**

Pos.	Qty	Unit	Component/ Marking	Description	Manufacturer	Parts-#	
10	1	pcs.	7A3	safety relay, 24V DC, 2 NC SNO2004K AC/DC 24V 50-60Hz	Wieland Electric GmbH	614723	
20	1	pcs.	21A4	control relay, 24V DC, 8In/4Out, relay without display, EASY 412-DC-RCX	Eaton	613756	
30	1	pcs.	10B2	proximity switch, flat housing, 3G/3D NO, 2m cable	Pepperl+Fuchs GmbH	6902442	II 3D Ex tD A22 IP67 T80°C X II 3G Ex nA IIC T6 X
40	1	pcs.		non pre-wired cable socket for prox.switch, M8 3 poles, without LED, Slimline	Murrelektronik GmbH	615024	
50	1	pcs.		cable socket, straight, M8 10m, 4-pole, PVC cable	Pepperl+Fuchs GmbH	614916	
60	1	pcs.	10B4	proximity switch M30 NO, DC, 10b, plugable, 3D	Pepperl+Fuchs GmbH	6901476	II 3D IP67 T87°C X
70	1	pcs.		sensor plug connector, 4-poles,SACC-M12FR-4CON-PG7 female, angle	Phoenix Contact	614049	
80	1	pcs.		interlock protection for M12 connector V1-CLIP, category 3G/3D	Pepperl+Fuchs GmbH	614404	
90	1	pcs.	2F10	miniature circuit breaker, 4A, 2 pole, D-10-20xIN	Siemens AG	613996	
100	1	pcs.	2G10	Netzgerät primär getaktet MCS-B 2,5A 95-265VAC/24VDC; 2,5A	Murrelektronik GmbH	614066	
110	1	pcs.	10K4	relay module MIRO, plugable,incl. output relay 1CO 24V DC, spring clamp	Murrelektronik GmbH	614628	
120	1	pcs.	22K6	motor contactor 4KW 3NO, 1NC, 24V DC, with diode	Siemens AG	615120	
130	1	pcs.	4M3	E-Motor EX Zone 22, 1,5/1,75kW, 90L 3x230/400V 50Hz/3x460V 60Hz, V18, IP55, FI Ø140	Siemens AG	8012821	II3D Ex tD A22 IP55 T125°C
140	1	pcs.	1Q2	safety switches EX, 10A, 3 poles, red/yellow	Stahl R. Schaltgeräte GmbH	611985	II 2G EEx de ia IIC T6 PTB 02 ATEX 1033 II 2D IP66 T80°C LCIE 02 ATEX 6241
150	1	pcs.	4Q3	motor protective circuit breaker, S00 2,8-4A, without aux. switch	Siemens AG	615105	
160	1	pcs.		aux. contacts for motor-protective circuit-breaker 1NO/1NC	Siemens AG	615113	
170	1	pcs.	7S2	key operated actuator, 2NO, key removable in 0 M22-WRS-A1	Moeller	613455	
180	2	pcs.		contact element, NO, M22-K10 for RMQ-Titan, front fixing	Moeller	613379	
190	1	pcs.		fixing adapter, M22-A for contact elements M22-K	Moeller	613381	

ELECTRIC PARTS LIST**12551**Lifter
17.08.2011 Ver.3
Name: Harms/Lg**Project no.****1031529**

Pos.	Qty	Unit	Component/ Marking	Description	Manufacturer	Parts-#	
200	1	pcs.	7S2.1	temperatur switch, IP65 TS-70/X/12	Hydac/Flutec	111636	IP65
210	1	pcs.	7S2.2	pressure switch, 0-10 bar IP65, 230V/2A	Suco	107325	
220	1	pcs.	7S4	key operated actuator, 2NO, key removable in 0 M22-WRS-A1	Moeller	613455	
230	1	pcs.		limit switch, LS-Titan, 31mm 2NO, IP66, type LS-20	Moeller	614522	
240	1	pcs.		position switch fixing adapter group RMQ-Titan, type M22-LS	Moeller	614130	
250	1	pcs.	8S6	emergency stop button M22-PV	Moeller	613438	
260	1	pcs.		fixing adapter, M22-A for contact elements M22-K	Moeller	613381	
270	2	pcs.		contact element, NC, M22-K01	Moeller	613380	
280	1	pcs.		emergency stop plate M22-XCK-GB99 "Emergency Stop"	Eaton	613441	
290	1	pcs.	8S6.1	emergency stop button M22-PV	Moeller	613438	
300	1	pcs.		limit switch, LS-Titan, plastic version 31mm, 2NC, IP66, LS-02	Moeller	614181	
310	1	pcs.		position switch fixing adapter group RMQ-Titan, type M22-LS	Moeller	614130	
320	3	pcs.	20S1, 20S2, 20S7	push button M22D-S black	Moeller	613446	
330	3	pcs.		fixing adapter, M22-A for contact elements M22-K	Moeller	613381	
340	3	pcs.		contact element, NO, M22-K10 for RMQ-Titan, front fixing	Moeller	613379	
350	2	pcs.	20S4, 20S9	push button M22D-S black	Moeller	613446	
360	2	pcs.		position switch fixing adapter group RMQ-Titan, type M22-LS	Moeller	614130	
370	2	pcs.		limit switch, LS-Titan, 31mm 2NO, IP66, type LS-20	Moeller	614522	
380	1	pcs.	X1	terminal box KL 1505.210 500x200x120	Rittal	606490	
390	6	pcs.		double desk spring-cage terminal, 2 connections 0,08-2,5qmm; ZDK 2,5/1,5	Weidmüller	614498	

ELECTRIC PARTS LIST**12551**Lifter
17.08.2011 Ver.3
Name: Harms/Lg**Project no.****1031529**

Pos.	Qty	Unit	Component/ Marking	Description	Manufacturer	Parts-#	
400	2	pcs.		double desk earth spring-cage terminal, 2 connect. 0,08-2,5qmm; ZDK 2,5/1,5PE	Weidmüller	614702	
410	18	pcs.	X14	double desk spring-cage terminal, 2 connections 0,08-2,5qmm; ZDK 2,5/1,5	Weidmüller	614498	
420	2	pcs.		double desk earth spring-cage terminal, 2 connect. 0,08-2,5qmm; ZDK 2,5/1,5PE	Weidmüller	614702	
430	6	pcs.	X18	double desk spring-cage terminal, 2 connections 0,08-2,5qmm; ZDK 2,5/1,5	Weidmüller	614498	
440	1	pcs.		double desk earth spring-cage terminal, 2 connect. 0,08-2,5qmm; ZDK 2,5/1,5PE	Weidmüller	614702	
450	1	pcs.	X31	terminal box,inox 1.4301 - V2A,without mount.plate 90x200x90mm, Mod. APD 9 20, IP66	IRINOX	614621	
460	1	pcs.		Klemmenkasten Edelstahl 1.4301 - V2A, o.Montagepl. 90x140x90mm, Mod. APD 9 14, IP66	IRINOX	614620	
470	16	pcs.		spring-cage terminal for TS 15 0,13-2,5qmm, ZDUA 2,5-2	Weidmüller	614477	
480	2	pcs.		ground spring-cage terminal for TS 15 0,13-2,5qmm, ZPEA 2,5-2	Weidmüller	614480	
490	1	pcs.	X32	terminal box 75x160x55	Rose Elektrotechnik GmbH&Co KG	602187	
500	14	pcs.		spring-cage terminal for TS 15 0,13-2,5qmm, ZDUA 2,5-2	Weidmüller	614477	
510	1	pcs.		ground spring-cage terminal for TS 15 0,13-2,5qmm, ZPEA 2,5-2	Weidmüller	614480	
520	1	pcs.	X4	terminal box KL 1500.210 150x150x120	Rittal	602055	
530	2	pcs.	15Y2, 15Y4	solenoid coil Ex-protect zone 2+22 MSFG-24-EX	Festo KG	128092	II 3GD EEx nA II 130°C X IP65
540	2	pcs.		plug for valves (20x28mm) for MSFG-24-EX type MSSD-F-M16	Festo KG	129839	

SERVOLIFT



Appendix to EC declaration of conformity (as defined by the EC Guidelines for Machinery Directive 2006/42/EC, Appendix IIA)

or

Appendix to EC- manufacturer's declaration (as defined by the EC Guidelines for Machinery Directive 2006/42/EC, Appendix IIB)

EC-Declaration of Conformity for Explosion protection guidelines

Herewith we confirm, that the following product:

Type of machine:	Lifter
Machine number:	12551
Year of construction:	2011
Category:	II3D (Zone 22)
Marking according to ATEX:	 II3D IP 54 T130°C
Marking of non-electrical equipment:	 c b T1 (max. 450°C)

correspond to the following EC-guidelines:

- Explosion protection guideline 94/9/EC
The documentation has been given to TÜV Product-Service, München (registration No. 0123) for archiving under registration No. 70039620. Place of archiving: TÜV Product-Service, Gottlieb Daimler Straße 7, D-70794 Filderstadt
- EC Low voltage guideline for electrical equipment installed within non potential explosive area.

The following standards are fully or partly used (where applicable):

- EN 1127-1:2007, EN 60079-14:2008, EN 13463-1:2009, EN 13463-5:2003,
- EN 60204-1:2006

Commissioning is not allowed until machine is proved to correspond to the guideline Directive 2006/42/EC.

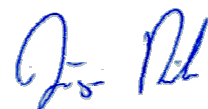
We hereby confirm, that the installation of the electrical equipment is carried out according to the instructions of the manufacturer and of the standard EN 60079-14:2008

SERVOLIFT GmbH
Albert-Einstein-Str. 9
D- 77656 Offenburg

Phone : +49 (0) 781/61 00-0
Fax : +49 (0) 781/61 00-99
E-mail : sl@servolift.de
web : www.servolift.de

Offenburg, den 24. Aug. 2011
Place / Date

Jürgen Rieber, Geschäftsführer
Name



Signature

Datei: 12551_E_EX-Anhang-zu-
IIA&IIB.doc
Erstellt: G. Macke
Datum: 10.03.2003

Version: 3
Geprüft: J. Rieber
Datum: 16.10.2009

QM- Überwachung und Messung
Freigegeben: J. Rieber
Datum: 16.10.2009

SERVOLIFT

Declaration of Conformity for Machinery (Directive 2006/42/EC)

This is to declare that the following listed machinery, on the basis of its design, structure and execution presented by us to trade, conforms to the relevant Essential Health and Safety Requirements of the EC guideline(s).

With by us non allowed modification of the machinery, this declaration becomes invalid.

This declaration is only valid for directed use of the machinery by instructed personal.

Type of machine: Lifter
Machine number: 12551
Year of construction: 2011

Used EC guidelines:

- EC guidelines of European Machinery Directive 2006/42/EC
- Low Voltage Directive 2006/95/EEC
- EMC correct installation 2004/108/EEC

in case of **explosion proofed** machines refer to and note enclosed

- Declaration of Conformity of EX-proofed guidelines

Used EN and ISO standards:

- DIN EN 12100-part 1 and 2; 2003; DIN EN 60204-1; 2006, DIN EN ISO 13849-1; 2007, DIN EN ISO 14121-1; 2007, DIN EN ISO 22915-2; 2008, DIN EN 1175-1; 1998

Restricted Placing on the market: We wish to point out, that given declaration is only valid for service performed by us. Service which has to be performed on site is defined by interfaces, to be inspected and confirmed before initial operation.

Interfaces: Errection and installation acc. to operation instruction,
Installation of emergency stop (customer site) acc. electric scheme page 8

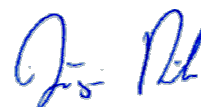
Attorney for technical documentation: Servolift GmbH

Servolift GmbH
Albert-Einstein-Str. 9
D- 77656 Offenburg

Telefon : +49 (0) 781/61 00-0
Fax : +49 (0) 781/61 00-99
E-Mail : sl@servolift.de
web : www.servolift.de

Offenburg 24. Aug. 2011
Place / Date

Jürgen Rieber, Geschäftsführer
Name



Signature

Datei: 12551_E_EG-Konform-IIA.doc
Erstellt: Macke
Datum: 07.12.2005

Version: 5
Geprüft: G. Macke
Datum: 04.11.2008

QM- Dokumente/Aufzeichnungen
Freigegeben: Hasenpusch
Datum: 08.12.2005

Documentation

»12551_1.e60«

EASY 512-DC-RCX
12551



Customer:
Customer Doc. No.:

FREWITT / CH

Order No.:
Factory No.:
Document No.:

LIFTER
12551

Author:
Editor:
Checked:
Creation Date and Time:
Last Changed:
Print Date and Time:

M.BRUDER

30.08.2011 16:24:37
23.08.2011 16:49:52
30.08.2011 16:27:55

Device Information:

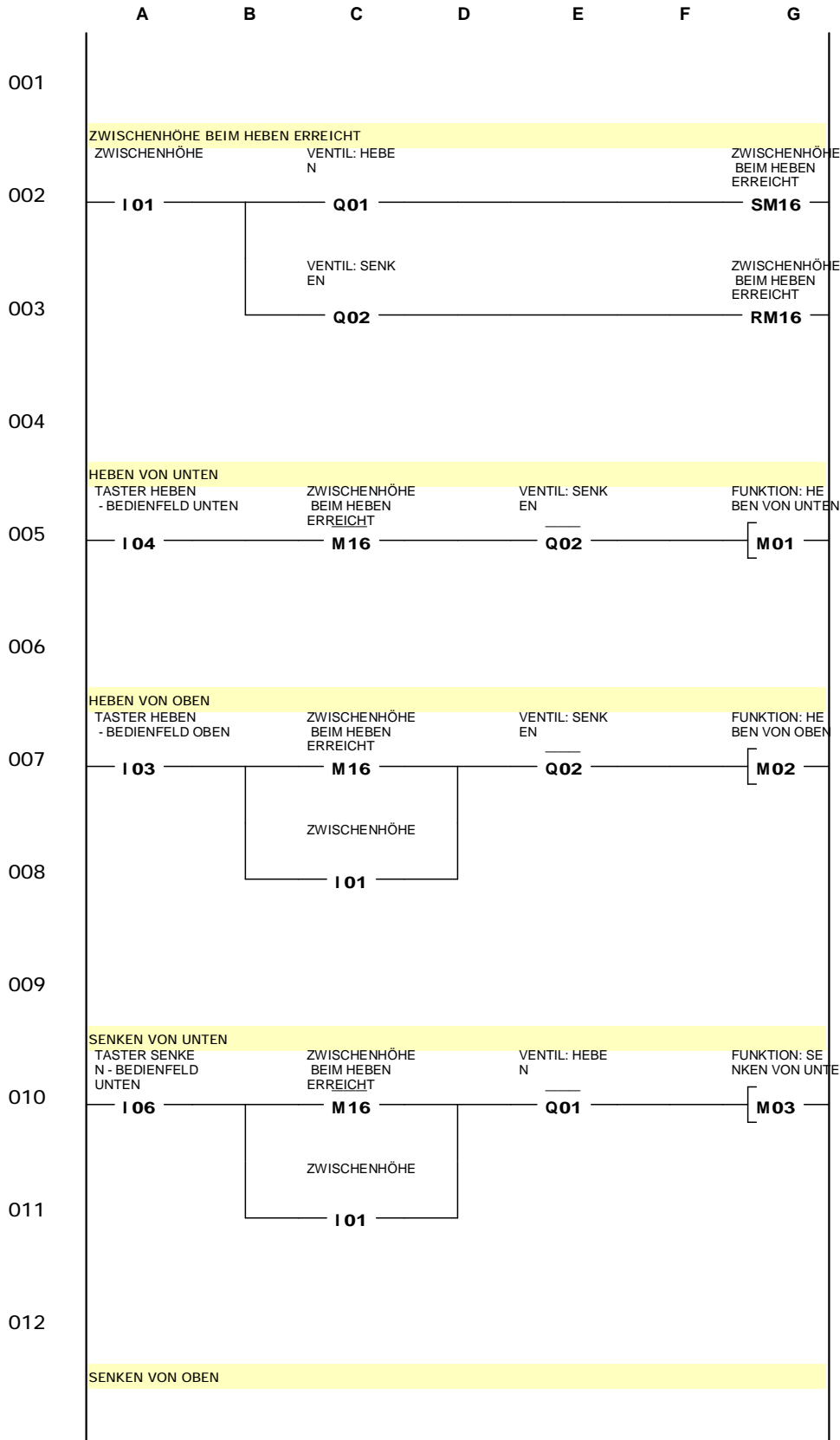
Documentation created with: easySoft-Pro V6.81 , Build 5061
Device Type: EASY 512-DC-RCX
Device version: 01 - xxxxxxxxxxxx
Program Name: »12551«
I Debounce: off
P Buttons: off
Card Mode: off

Retention: M9 - M12: off M13 - M16: off
N9 - N16: off C5 - C7: off
C8: off C13 - C16: off
D1 - D8: off T7: off
T8: off T13 - T16: off

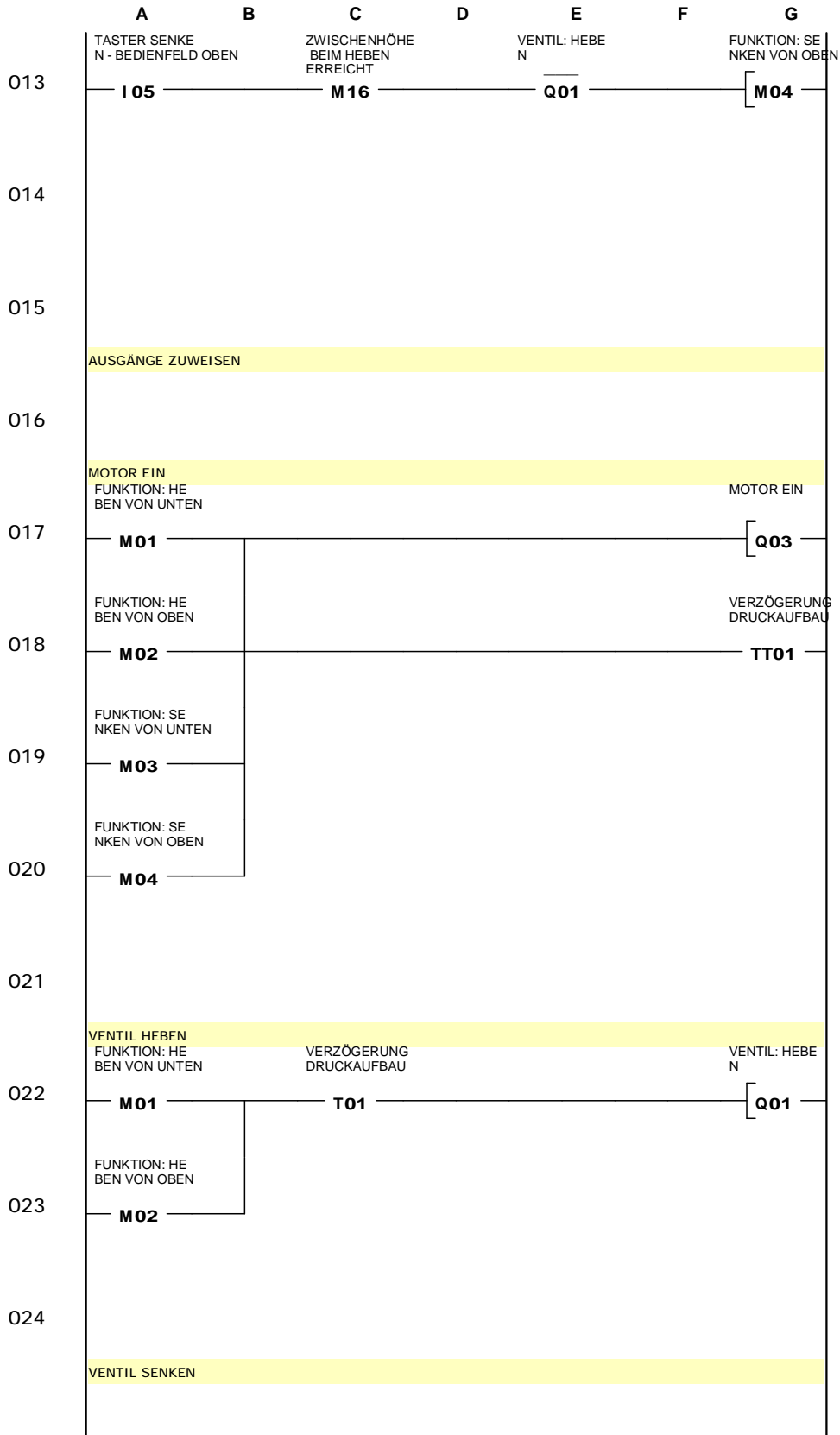
Daylight Saving Time: off

Password: off
Cycle time: 0 ms

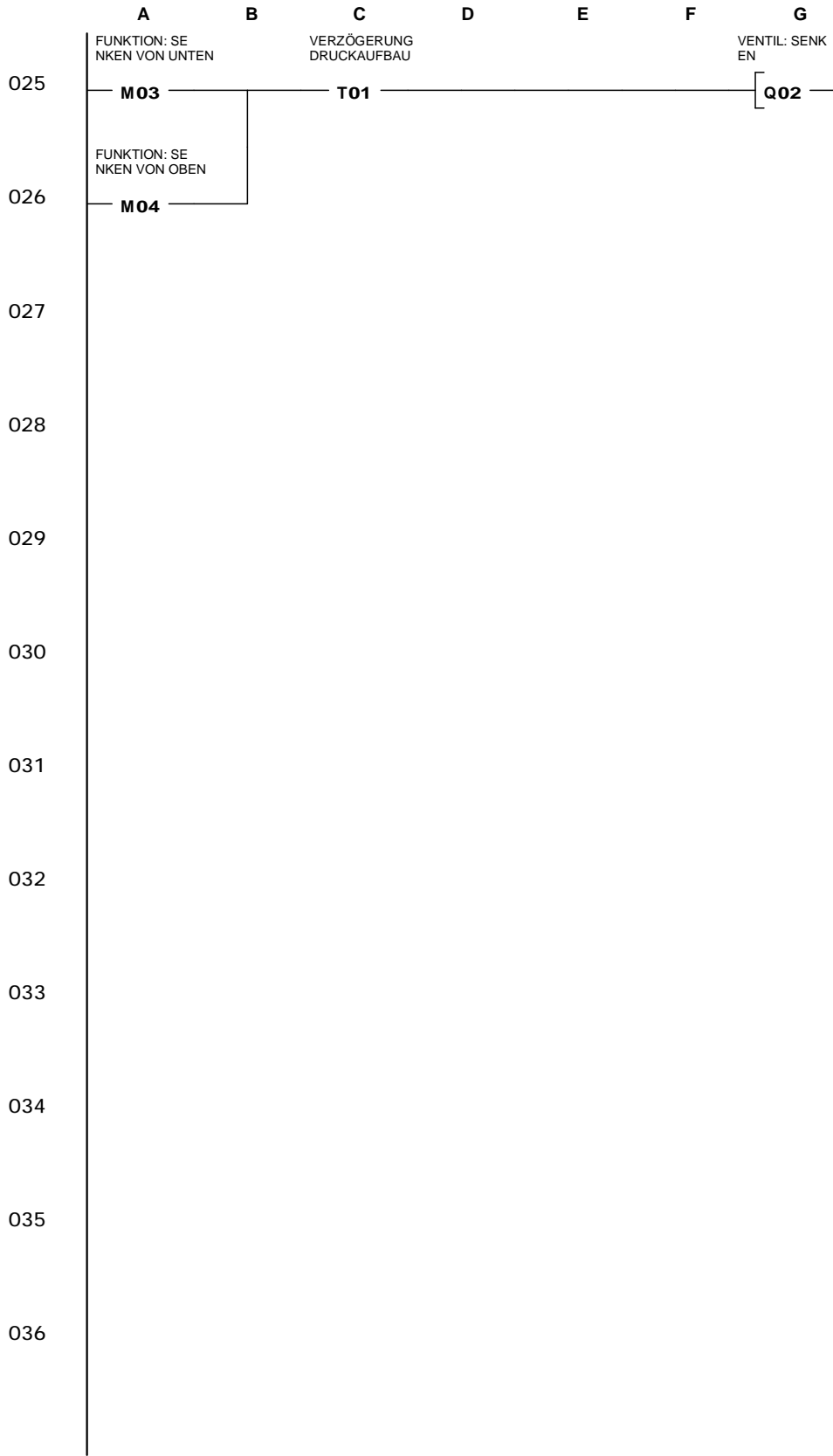
Date:	8/30/2011	Customer:	FREWITT / CH	Order No.:	LIFTER
Editor:	M.BRUDER	Customer Doc. No.:		Factory No.:	12551
Checked:				Document No.:	
			VERSION 1 DATE 23.08.2011	Author:	
				Sheet: 1 of 6	
				NET-ID: -	



Date:	8/30/2011	Customer:	FREWITT / CH	Order No.:	LIFTER
Editor:	M.BRUDER	Customer Doc. No.:		Factory No.:	12551
Checked:				Document No.:	
			VERSION 1 DATE 23.08.2011	Author:	
				Sheet: 2 of 6	
				NET-ID: -	



Date:	8/30/2011	Customer:	FREWITT / CH	Order No.:	LIFTER
Editor:	M.BRUDER	Customer Doc. No.:		Factory No.:	12551
Checked:				Document No.:	
			VERSION 1 DATE 23.08.2011	Author:	
				Sheet: 3 of 6	
				NET-ID: -	



Date:	8/30/2011	Customer:	FREWITT / CH	Order No.:	LIFTER
Editor:	M.BRUDER	Customer Doc. No.:		Factory No.:	12551
Checked:				Document No.:	
			VERSION 1 DATE 23.08.2011	Author:	
				Sheet: 4 of 6	
				NET-ID: -	

T 1 (Ansprechverzögert)
Parameteranzeige = ein
l1ein

Date:	8/30/2011	Customer:	FREWITT / CH	Order No.:	LIFTER
Editor:	M.BRUDER	Customer Doc. No.:		Factory No.:	12551
Checked:				Document No.:	
			VERSION 1 DATE 23.08.2011	Author:	
				Sheet: 5 of 6	
				NET-ID: -	

Operand	Verwendungsstelle
I01	"ZWISCHENHÖHE" (002, A); (008, C); (011, C)
I03	"TASTER HEBEN - BEDIENFELD OBEN" (007, A)
I04	"TASTER HEBEN - BEDIENFELD UNTEN" (005, A)
I05	"TASTER SENKEN - BEDIENFELD OBEN" (013, A)
I06	"TASTER SENKEN - BEDIENFELD UNTEN" (010, A)
Q01	"VENTIL: HEBEN" (002, C); (010, E); (013, E); (022, G)
Q02	"VENTIL: SENKEN" (003, C); (005, E); (007, E); (025, G)
Q03	"MOTOR EIN" (017, G)
M01	"FUNKTION: HEBEN VON UNTEN" (005, G); (017, A); (022, A)
M02	"FUNKTION: HEBEN VON OBEN" (007, G); (018, A); (023, A)
M03	"FUNKTION: SENKEN VON UNTEN" (010, G); (019, A); (025, A)
M04	"FUNKTION: SENKEN VON OBEN" (013, G); (020, A); (026, A)
M16	"ZWISCHENHÖHE BEIM HEBEN ERREICHT" (002, G); (003, G); (005, C); (007, C); (010, C); (013, C)
T01	"VERZÖGERUNG DRUCKAUFBAU" (018, G); (022, C); (025, C)

Date:	8/30/2011	Customer:	FREWITT / CH	Order No.:	LIFTER
Editor:	M.BRUDER	Customer Doc. No.:		Factory No.:	12551
Checked:		Document No.:			
			VERSION 1 DATE 23.08.2011	Author:	
				Sheet: 6 of 6	
				NET-ID: -	

TESTS PROTOCOL

Qualité	Qualität	Qualité
<p>Selon le système de management de la qualité ISO 9001:2000 et 14001:2004 établi dans l'entreprise Frewitt, nous attestons que l'installation à été construite, testée et contrôlée selon les règles de l'art pour assurer la qualité de l'installation et la conformité à la commande.</p>	<p>Gemäss des Qualitätsmanagement-System ISO 9001:2000 und 14001:2004, welches für die Firma Frewitt erstellt wurde, bestätigen wir, dass die Anlage regelrecht konstruiert, getestet und kontrolliert wurde, um die Qualität der Anlage und die Übereinstimmung mit dem Auftrag zu gewährleisten.</p>	<p>According to the system of management of quality ISO 9001:2000 and 14001:2004 established in the company Frewitt, we confirm that the installation has been built, tested and controlled according to the rules of practice to ensure the quality of the installation and its conformity to the order.</p>



N° d'enregistrements	Registrier Nr:	Record Numbers
	ISO 9001 : 02-103-118 ISO 14001 : 02-103-523	

Résponsable Qualité

Fabienne Reynaud



**Protocole de test pour
 l'admission de machines
 électriques**

Test de la sécurité électrique de
 l'équipement de machines
 électriques
 selon DIN VDE 0113 / EN
 60204-1 / IEC 204-1

**Pruefprotokoll für die
 Abnahme von Elektrischen
 Maschinen**

Prüfung der elektrischen
 Sicherheit der Ausrüstung
 elektrischer Maschinen gemäss
 DIN VDE 0113 / EN 60204-1 /
 IEC 204-1

**Test protocol for the ad-
 mission of electrical ma-
 chines**

Test of the electrical security of
 the equipment of electrical
 machines according to DIN VDE
 0113 / EN 60204-1 / IEC 204-1

Client:

Kunde:

Customer:

NOVARTIS SINGAPORE PHARMACEUTICAL

SG-Singapore

N° de série

Serien-Nr.

Serial Nr.

11007635096

Appareil de test

Verwendetes Prüfgerät

test unit

PROFITEST 204, M 5522 8968

Date

Datum

Date

13.07.2011 / 21.07.2011

Contrôleur

Prüfer

Inspector

Cosimo Pinto

Ce protocole de test confirme la
 réalisation adéquate de tous les
 tests prescrits par les normes
 susmentionnées lors de la
 réception de la
 machine/installation électrique
 susmentionnée.

Das hier vorliegende
 Prüfprotokoll bestätigt die
 sachgemässe Durchführung
 aller im Rahmen o.g. Normen
 vorgeschriebener Prüfungen bei
 der Abnahme o.g. elektrischer
 Maschine/Anlage.

This test protocol confirms the
 realisation appropriated to all
 stipulated norms mentioned
 above during the reception of
 the above-mentioned electrical
 machine/installation.

**Vérification des connec-
 tions directes de la mise à
 la terre.**

**Ueberprüfung der
 durchgehenden Verbindung
 des Schutzleiters.**

**Check of the direct connec-
 tions of the earth connec-
 tion**

Crusher Unit ProFi-Sword

2.100E-01 V	2.160E-02 Ω	3.000E+01 s	4.960E-01 Ω
1.400E-01 V	1.480E-02 Ω	3.000E+01 s	4.960E-01 Ω
1.300E-01 V	1.350E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.500E-01 V	2.560E-02 Ω	3.000E+01 s	4.960E-01 Ω
1.700E-01 V	1.780E-02 Ω	3.000E+01 s	4.960E-01 Ω
4.000E-01 V	4.010E-02 Ω	3.000E+01 s	4.960E-01 Ω
4.900E-01 V	4.980E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.200E-01 V	2.210E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.900E-01 V	2.900E-02 Ω	3.000E+01 s	4.960E-01 Ω
3.600E-01 V	3.660E-02 Ω	3.000E+01 s	4.960E-01 Ω
1.500E-01 V	1.550E-02 Ω	3.000E+01 s	4.960E-01 Ω

Les valeurs limitées ont été respectées à chaque endroit !

An keiner Stelle wurden die Grenzwerte nicht eingehalten !

The limit values have been respected at each place !

Vérification de la résistance de l'isolation.

Ueberprüfung des Isolationswiderstandes.

Test of the isolation resistance.

> 3.00E+09 Ω	1.000E+03 V	1.000E+09 Ω
> 3.00E+09 Ω	1.000E+03 V	1.000E+09 Ω
> 3.00E+09 Ω	1.000E+03 V	1.000E+09 Ω

Vérification des connexions directes de la mise à la terre. /
 Ueberprüfung der durchgehenden Verbindung des Schutzleiters.
 Check of the direct connections of the earth connection

Grinding Unit ConiWitt-250

2.500E-01 V	2.500E-02 Ω	3.000E+01 s	4.960E-01 Ω
3.000E-01 V	3.000E-02 Ω	3.000E+01 s	4.960E-01 Ω
1.700E-01 V	1.770E-02 Ω	3.000E+01 s	4.960E-01 Ω
1.600E-01 V	1.630E-02 Ω	3.000E+01 s	4.960E-01 Ω
4.200E-01 V	4.250E-02 Ω	3.000E+01 s	4.960E-01 Ω
1.400E-01 V	1.460E-02 Ω	3.000E+01 s	4.960E-01 Ω
1.300E-01 V	1.350E-02 Ω	3.000E+01 s	4.960E-01 Ω
1.400E-01 V	1.430E-02 Ω	3.000E+01 s	4.960E-01 Ω
3.500E-01 V	3.560E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.700E-01 V	2.760E-02 Ω	3.000E+01 s	4.960E-01 Ω
1.600E-01 V	1.640E-02 Ω	3.000E+01 s	4.960E-01 Ω

Les valeurs limitées ont été respectées à chaque endroit !

An keiner Stelle wurden die Grenzwerte nicht eingehalten !

The limit values have been respected at each place !

Vérification de la résistance de l'isolation.

Ueberprüfung des Isolationswiderstandes.

Test of the isolation resistance.

> 3.00E+09 Ω	1.000E+03 V	1.000E+09 Ω
> 3.00E+09 Ω	1.000E+03 V	1.000E+09 Ω
> 3.00E+09 Ω	1.000E+03 V	1.000E+09 Ω

Vérification des connexions directes de la mise à la terre. /
Überprüfung der durchgehenden Verbindung des Schutzleiters.
Check of the direct connections of the earth connection

DelumpWitt

2.800E-01 V	2.830E-02 Ω	3.000E+01 s	4.960E-01 Ω
1.800E-01 V	1.880E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.400E-01 V	2.460E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.200E-01 V	2.220E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.400E-01 V	2.460E-02 Ω	3.000E+01 s	4.960E-01 Ω
1.900E-01 V	1.960E-02 Ω	3.000E+01 s	4.960E-01 Ω
1.800E-01 V	1.880E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.100E-01 V	2.120E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.400E-01 V	2.430E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.400E-01 V	2.410E-02 Ω	3.000E+01 s	4.960E-01 Ω
3.100E-01 V	3.180E-02 Ω	3.000E+01 s	4.960E-01 Ω
1.100E+00 V	1.170E-01 Ω	3.000E+01 s	4.960E-01 Ω
2.400E-01 V	2.480E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.500E-01 V	2.550E-02 Ω	3.000E+01 s	4.960E-01 Ω
3.500E-01 V	3.570E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.800E-01 V	2.880E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.600E-01 V	2.680E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.600E-01 V	2.630E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.000E-01 V	2.010E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.700E-01 V	2.730E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.100E-01 V	2.140E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.500E-01 V	2.570E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.000E-01 V	2.030E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.300E-01 V	2.310E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.300E-01 V	2.320E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.800E-01 V	2.850E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.200E-01 V	2.250E-02 Ω	3.000E+01 s	4.960E-01 Ω
2.200E-01 V	2.280E-02 Ω	3.000E+01 s	4.960E-01 Ω


Les valeurs limitées ont été respectées à chaque endroit ! An keiner Stelle wurden die Grenzwerte nicht eingehalten ! The limit values have been respected at each place !

La machine / installation testée remplit les exigences selon DIN VDE 01113 / EN 60204-1 / IEC 204-1 **Die geprüfte Maschine / Anlage erfüllt die Anforderungen nach DIN VDE 0113 / EN 60204-1 / IEC 204-1** **The tested machine / installation fulfils the demands according to DIN VDE 01113 / EN 60204-1 / IEC 204-1**

Frewitt Fabrique de Machines SA



Cosimo Pinto
 Contrôleur
 Prüfer
 Inspector

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Manufacturer

FREWITT Maschinenfabrik AG
Rte du Coteau 7
CH - 1763 Granges-Paccot







Customer

Novartis Pharmaceutical
10, Tuas Bay Lane
69115 Singapore

Type 1 DelumpWitt FREWITT (ConiWitt-250 / ProFi-Sword)
Installation number ProFi-Sword 11007643002 / ConiWitt-250 11007619050
Project number PRO-11-0076
Order CDC-11-0761 / 4500260529
Novartis Equipment Tag SG.TBP.202.M.5214/I001, I002

Pre-Approval:

This FAT test Protocol of the equipment was created, reviewed and accepted by:

Name	Signature Reason	Function/ Department	Signature	Date
Karsten Kutnar	Author	Frewitt Project Manager		25.08.2011
Yves Grossrieder	Reviwer	Frewitt Technical Project Manager		25.08.2011
Rajesh Tralshawala + TOH SWE-ANN	Reviewer	NSPM Qualification Coordinator		26 Aug 11
Panicker Shreekumar	Approver	NSPM Process Engineer		26 Aug 11
S Shivalaksh Komara Sony Suroso	Approver	NSPM Automation Engineer		26 Aug 11
Teo Szu Hui	Approver	NSPM Technical Project Manager		26 Aug 11
Shrinivas Tata	Approver	NSPM Project QA		26 Aug 11



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Formular

Factory Acceptance Test

Process: **P4 – Réalisation**
20 – Offre – Commande – Location I

Position	Number	Designation	Released	
			Yes	No
1	1	DelumpWitt FREWITT		
		Execution	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		ATEX execution		
		Milling chamber: ATEX II 1G/1D cb Ex T157°C IP65		
		Protection		
		Outside: ATEX II 3D ATEX II 3D c Ex tD T125°C IP65		
		Part in contact with the product	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		Stainless steel AISI-316, Ra ≤ 0,4 µm, Sieve AISI-316 Seals made of silicone, EPDM, Novafalon and PTFE		
		other part Construction		
		AISI-304, Ra ≤ 1.4 µm (grain 220) According to GMP guidelines		
1.1		Inlet hopper With inlet cone	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		hopper with cover, vibrator, safety magnet on the door. Suction connection DN100 Jacob. 2 Filters on side of the hopper. DN250 chute bag clamped on side of the hopper.		
1.2		Inlet cone	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		The inlet cone serves as a connecting piece, crushing assistance as well as a security unit between the crusher module and customer's dispensing device for hardened and lumpy powdery solid blocks. The inlet cone is provided with stators enabling the pre-crushing process of large blocks.		
1.3	1	Crusher module	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<ul style="list-style-type: none"> ▪ Machine cone equipped with flange for fixation of vibrator ▪ Inlet flange specific to be connected to the outlet of the inlet cone ▪ Outlet transition funnel fitted with a cone for connection to the sizing unit 		
		Tools		
		<ul style="list-style-type: none"> ▪ Upper sword for the primary crushing ▪ Lower crown for the secondary crushing 		
		Drive unit		
		0.70 EE <i>EE</i> Refer IADC Page No 10 <i>EE</i>		
		<ul style="list-style-type: none"> ▪ Motor with 0.75 kW with frequency converter for stepless speed adjustment of rotor speed. 		
		With Motor protection		

EE 30 Aug 11
29 Aug 11

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1.4 1 **Grinding unit**

Basic equipment

- Inlet milling head with special TriClamp flange
- Safety device inlet magnetic safety switch ELOBAU at inlet to stop the machine if the crusher module is not mounted
- Outlet milling head with TriClamp flange DN 300 (ISO 2852)
- Bearing rotor drive housing cast in one piece preventing any risk of leakage and product contamination
- Connection channel between machine head and control box

Tools

- 1xConical Rasp 3mm ~~436241~~ *436242 EE*
- Rotor with 2 arms *436255 & 29 Aug 11*

Drive unit

- Motor with 5,5 kW with frequency converter for stepless speed adjustment of rotor speed *EE 29 Aug 11 30 Aug 11 Ref. page 10 J@ Test protocol 202-M-S214 / IUS*
- With Motor protection

Manual lifting and swivelling system

- The grinding unit is mounted on the manual lifting and swivelling system allowing its easily disconnection without using external lift device (for example to change the tools) with the crusher module.

1.5 1 **Outlet funnel** Tri-Clamp connection DN300 ISO2852. Compensator antistatic for manual docking.

1.6 1 **Outlet funnel For Cleaning** Tri-Clamp connection DN300 outlet DN50 with two wash nozzles.

1.7 1 **Inlet flange for Cleaning** Tri-Clamp connection DN250 with two wash nozzles.

1.8 1 **Connection** *EE one 29 Aug 11 EE 30 Aug 11* Electrical connection 3x400V, 3P+N+PE, 50 Hz

1.8 1 **Control**
Control panel for the above system, for controlling the actuators, solenoid valves, limit switches, etc. The installation is equipped with a PLC (Siemens S7 – 300) with all the necessary switching and control devices.



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1.9 1 Gas control system
 installed in the control cabinet:
 - Electro-pneumatic solenoid valve
 - Filter unit
 - Pressure reducing valve for gas flow control.

2 1 **Tubular steel support frame**
 Tubular steel support frame square tube dimensions as per Layout 464769

3 1 **Scale**
 Mettler wight scale with terminal

4 1 **Hoist**
 Servolift lifting hoist for DelupWitt

Documentation for Delumpwitt:

5 1 **Manual in English**
 (2x paper / 1x on CD)

6 1 **Surface quality with certificate**


7 1 **FAT IQ/OQ Support protocol for Delumpwitt**
 • FAT IQ / OQ – Protocol on CD-Rom

8 1 **Sets of material certificates (3.1) for Delumpwitt**
 For the part in contact with the product

9 1 **Factory Calibration certificates (3.1) for Delumpwitt** (for critical instrument, if any)

10 1 **Factory Calibration of Mettler scale**


Name	Signature Reason	Department / Function	Date	Signature
Gross. eden yves Frewitt	Executed By	Project Manager	02.09.11	
Ponckeo Shree Kumar	Reviewed By	Novartis P4	02-09-11	

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Deficiencies to be remedied:

- The transmission rapport of the ConiWitt-250 is 1:1,5 (1 motor / 1,5 rotor)
- Speed of motor is 1000 rpm by 50 Hz
- If there is no IBC under the DelumpWitt the machine must stop
- All IBC and drum must be open during the transport
- this tags must be added on the DelumpWitt (see PID) ⁴⁶⁴⁸⁸⁹ ^{PIG 02 / FS / F4} ^{G-101}
- We measured this speed during the FAT

ConiW.H-250	702,8 rpm
	99,7 rpm
crusher	13,95
	10,06
- We will remove the stopper on the scales (all four)
- Give the dates of validity for the speed calibration (master calibration)
- We will microballised the plate of the structure SS
- Polishing and Passivat the inside of the crusher cover
- CMA 456 200 p. 8, make a new measure Ok ~~30.08.11~~ 30.08.11
- Doc 29.961* Comment in English
- Add scales datasheet and certificat.
- Calibration for roughness plate (specimen)
- make a new marking of scales (see PID)
- add filter certificat in the documentation
- add servalif documentation in Frewitt documents
- electrical part: see deviation sheet 5 of PRO-11-0076

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Date of delivery:

Machines: 27. sept. 2011

Accessories: ''


Documentation: ''

Issued by:

FREWITT Fabrique de machines SA
Rte du Coteau 7
CH-1763 Granges-Paccot


Final Approval


The Signers confirm the FAT, for the rightness of the included data with their signature. All ascertained critical deviations are adequate documented.

Name	Signature Reason	Function/ Department	Signature	Date
Yves Grossrieder	Reviwer	Frewitt Technical Project Manager		02. sept. 11
Rajesh Tralshawala	Reviewer	NSPM Qualification Coordinator		
Panicker Shreekumar	Approver	NSPM Process Engineer		
Sony Suroso	Approver	NSPM Automation Engineer		
Teo Szu Hui	Approver	NSPM Technical Project Manager		
Shrinivas Tata	Approver	NSPM Project QA		

5 Deviation Sheet


Deviation ² To Test No: ¹⁶	Frewitt PAT O& DelumpWitt
Description of Deviation Supervisory level has the same access with Administrator level. Refer to document: Functional Design specification of DelumpWitt, chapter "2.5.8 -System" on its current version (v 2.0).	
Evaluation and Proposed Corrective Action Evaluation: it is a mistake on HMI program configuration. Corrective Action proposed: <ol style="list-style-type: none"> a. To rectify the mistake. b. Record the new software version. 	
Resolution	


Deviation Prepared By				
Name	Signature Reason	Department / Function	Date	Signature
Sony P Broso	Author	Automation Engineer NSPM	30 Aug 11	

Deviation Accepted By				
Name	Signature Reason	Department / Function	Date	Signature
Kutnar	Approver	Frewitt/Andandion	25 Sep 11	

5 Deviation Sheet

Deviation 3 To Test No: 10	Frewitt FAT OQ DelumpWitt
Description of Deviation : Imperfect Batch Report Batch report contents are not as per NSPM requirements. Refer to Attachment 2 of document: FAT OQ Test Protocol, SG-TBP-202-M-5214/1001, 1002	
Evaluation and Proposed Corrective Action - Evaluation : It may be due to : a. Program configuration error b. Development software limitations. - Proposed Corr. Action : a. To rectify the error and/or to look for a solution as a workaround of development software limitations. b. To record the modification on the next software program version.	
Resolution	

Deviation Prepared By				
Name	Signature Reason	Department / Function	Date	Signature
Sony Puroto	Author	Automation Engineer NSPM	30 Aug 11	

Deviation Accepted By				
Name	Signature Reason	Department / Function	Date	Signature
Kutner	Approver	Frewitt/Automation	2 Sep. 11	

SERVOLIFT

Acceptance test protocol

issued: Horst Jekal
 tel.: 0781 / 6100-114
 fax.: 0781 / 6100-814
 e-mail: jekal@servolift.de

customer: Frewitt Fabrique, Granges-Paccot, Swiss MV: J-C. Lolivrel

Serial no.: 12551 PL: B. Schanz

Participant: customer: Frewitt : Participant: Servolift: Mr. Jekal

Mr. Grossrieder

Novartis Singapore Pharmaceutical :

Mr. Shreekumar Panicker

The machine has passed the acceptance test:

according specification
 according to approved drawing

without objection
 with the following objection
 with the following request of the customer

Remarks / Objections	response.	done
1. The pneumatic supply shall be provided with a hose coupling and an adaptor for Festo supply, outer diameter 8 mm.		
2. Material for mounting of the operator terminal and the side sheet (drilling on site) shall be given with.		
3. The packaging should be modified for air shipping. A wooden crate has to be build.		
4. The Lifter is approved for shipment.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		

Zunsweier, 31.08.2011
 place, date

Jekal
 name in block letters (Servolift)

H. Jekal
 signature (Servolift)

Grossrieder Yves
 name in block letters (customer)

[Signature]
 signature (customer)

QUALIFICATION AND VALIDATION

FAT IQ Test Protocol

SG.TBP.202.M.5214/I001, I002

Delumpwitt

Professional Milling and Handling of Powders

■ Frewitt SA
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■ No. TVA 489 197
IBAN EUR: CH90 0483 5036 3818 0200 0
IBAN CHF: CH27 0483 5036 3818 0100 0
Credit Suisse CH-3001 Bern/Swift CRESCH ZZ30 R

Project Name :	Novartis Singapore, DelumpWitt
Client :	NOVARTIS SINGAPORE PHARMACEUTICAL
Location :	SG-Singapore
Customer Order # :	4500260529
Supplier :	Frewitt Fabrique de Machines S.A.
Object :	DelumpWitt (Crusher/Grinding)
Serial # :	11007635096 - Installation 11007643002 - Crusher PR-Sword 11007619050 - Grinding CW-250

Document Name :	Qualification IQ DelumpWitt (Crusher/Grinding) 11007635096 - Installation 11007643002 - Crusher PR-Sword 11007619050 - Grinding CW-250
Document Reference :	135426-1-en.doc
Document Version # :	01

Pre-Approval:

This FAT-IQ test Protocol of the equipment was created, reviewed and accepted by:

Name	Signature Reason	Function/ Department	Signature	Date
Karsten Kutnar	Author	Frewitt Project Manager		25.08.2011
Yves Grossrieder	Reviwer	Frewitt Technical Project Manager		25.08.2011
Rajesh Tralshawala + TOH SUE-ANN	Reviewer	NSPM Qualification Coordinator		26 Aug 11
Panicker Shreekumar	Approver	NSPM Process Engineer		26 Aug 11
+ Shrinivas Tata Sony Suroso	Approver	NSPM Automation Engineer		26 Aug 11
Teo Szu Hui	Approver	NSPM Technical Project Manager		26 Aug 11
Shrinivas Tata	Approver	NSPM Project QA		26 Aug 11

Professional Milling and Handling of Powders

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Professional Milling and Handling of Powders

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 IBAN CHF: CH27 0483 5036 3818 0100 0
 Credit Suisse CH-3001 Bern/Swift CRESCH ZZ30 R

2. General tests

Test No.	Test Description	Expected Result / Acceptance Criteria	Actual Results	Fulfilled (Y/N)	Deviation No.	Executed by : (Initial, Date)
2.1	Visible transport-related damage	No visible signs of impacts	No damage	Y	NA	JS 29 Aug 11
2.2	User access to machine	There must be enough space around the machine to allow access to the control panel, accessories and tooling systems for normal operation of the machine. For units installed as permanent fixtures, there must also be enough room around the machine to allow maintenance work to be carried out	There is enough space as per FAT but actual will be checked during FAT	Y	NA	JS 29 Aug 11
2.3	Machine dimensions	As per approved GA/ drawing	As per drawing ver A	Y	NA	JS 29 Aug 11
2.4	Metallic material in contact with product (Verify as per part list for each item)	Stainless steel AISI-316 / AISI-316L Test report as per EN 10204-2.2 included in manual. Materials certificate as per EN 10204-3.1 included in manual	464969-A 464969-B Stainless steel AISI-316/AISI-316L. Test report as per EN 10204-2.2 included in section 11 of PRO-11-0076. Material certificate as per EN 10204-3.1 included in section 11 of PRO-11-0076.	Y	NA	JS 29 Aug 2011
2.5	Non-metallic material in contact with product (Verify as per part list for each item)	Meets FDA requirements Test report as per EN 10204-2.2 included in manual. FDA certificates included in manual-	Meets FDA requirements. Test report as per EN 10204-2.2 included in section 11 of PRO-11-0076. FDA certificates included in section 11 of PRO-11-0076.	Y	NA	JS 29 Aug 2011

Professional Milling and Handling of Powders

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IBAN CHF: CH27 0483 5036 3818 0100 0
Credit Suisse CH-3001 Bern / Swift CRESCH ZZ30 R

3. Feeding hopper with inlet cone

Test No.	Test Description	Expected Result / Acceptance Criteria	Actual Results	Fulfilled (Y/N)	Deviation No.	Executed by : (Initial, Date)
3.1	Feeding hopper with inlet cone	Product contact parts - Stainless steel 1.4404/1.4435, Ra ≤ 0.5 μm Seals made of EPDM, Silicone Other parts - Stainless steel 1.4301 Ra ≤ 1.4 μm (Certificates to be attached)	Product contact parts - stainless steel 1.4404/1.4435 Ra ≤ 0.5 μm Seals made of EPDM, silicone Other parts - stainless steel 1.4301 Ra ≤ 1.4 μm Certificates attached in section 11 of PRA-11-0076.	Y	N.A.	fk 29 Aug 2011
3.2	Inlet cone (stator)	Inlet flange with inner Ø 900 mm and outer Ø 980 mm, pitch circle Ø 950 mm, borehole 24 x 12 mm. Outlet flange specific for connection to pre-crusher unit. (Certificates to be attached)	At refer	Y	N.A.	B 30 Aug 2011
			3-1 for Cruth flange Inlet flange 900 mm x 980 mm pitch circle 950 mm. and borehole 24x12 mm. Refer drawing for 456221-cmA	Y	N.A.	B 30 Aug 11

4. Crusher unit (ProFi-Sword)

Test No.	Test Description	Expected Result / Acceptance Criteria	Actual Results	Fulfilled (Y/N)	Deviation No.	Executed by : (Initial, Date)
4.1	Crusher unit	Product contact parts - Stainless steel 1.4404/1.4435, Ra ≤ 0.5 µm Seals made of FEP-O-SEAL, PTFE, FKM, Gy-lon, Novaflon Non contact parts - Stainless steel 1.4404 Ra ≤ 1.4 µm (Certificates to be attached)	Product contact parts-stainless steel 1-4404/1-4435 Ra ≤ 0.5 µm Seals made of FEP-O-SEAL, PTFE, FKM, Gy-lon, Novaflon. Non contact parts-stainless steel 1-4404 Ra ≤ 1.4 µm Certificates in Section II of PRO-II-0076.	Y	N.A.	fu 29 Aug 11
4.2	Inlet connection to pre-crusher	Stainless steel 1.4404/1.4435 Flange with inner Ø 630 mm ; outer Ø 710 mm, pitch circle Ø 680 mm, borehole 16 x 12 mm. Seal O-Ring in FEP-O-SEAL. (Certificates to be attached)	Stainless steel 1-4404/1-4435 certificates in section II- Seal O-ring in FEP-O-SEAL Flange size checked, 630 - outer Ø, 710 - pitch circle 29 Aug 11 30 Aug 11	Y	N.A.	fu 29 Aug 2011 29 Aug 11 30 Aug 11
4.3	Outlet funnel (fitted with a cone for connection to the grinding unit)	Stainless steel 1.4404/1.4435. Seal O-Ring in FEP-O-SEAL. Tri-Clamp DN 300 connection to grinding unit (Certificates to be attached)	Stainless steel 1-4404/1-4435 Seal O-ring in FEP-O-SEAL Certificates is attached in section II. Tri clamp DN 300	Y	N.A.	fu 29 Aug 11 29 Aug 11

* pitch circle 680 mm and borehole 16 x 12 mm. Y N.A. fu 30 Aug 11

5. Grinding unit (ConiWitt-250)

Test No.	Test Description	Expected Result / Acceptance Criteria	Actual Results	Fulfilled (Y/N)	Deviation No.	Executed by : (Initial, Date)
5.1	Grinding unit -Materials of construction of Product contact parts, seals and Non-product contact parts	Product contact parts - Stainless steel 1.4404/1.4435, Ra ≤ 0.5 µm Seals made of PTFE, EPDM, MVQ, Fluoroloy Non contact parts - Stainless steel 1.4404 Ra ≤ 1.4 µm (Certificates to be attached)	Product contact parts - stainless steel 1-4404/1-4435 Ra ≤ 0.5 µm Seals made of PTFE, EPDM, MVQ, Fluoroloy Non contact parts - stainless steel 1-4404 Ra ≤ 1.4 µm Certificates in section II, of PRO-11-0076.	Y	N.A.	flu 28 Aug 2011 29 flu 29 Aug 2011

Professional Milling and Handling of Powders

6. Tools

Test No.	Test Description	Expected Result / Acceptance Criteria	Actual Results	Fulfilled (Y/N)	Deviation No.	Executed by : (Initial, Date)
6.1	Rotor CW-250 - Mounting in an installation	Rotor with 2 arms ; square profile for dry milling	Rotor provided with 2 arm square profile is installed	Y	NA	<i>[Signature]</i> 29 Aug 11
6.2	Cutters (upper / intermediate) Mounting in an installation		cutters mounted	Y	NA	<i>[Signature]</i> 30 Aug 11
6.3	Conical rasp 3mm Mounting in an installation	Stainless steel AISI-316L (Certificates to be attached)	Rasp installed is 3mm stainless steel AISI-316L Certificates are attached in section 11 of PRO-11-0076.	Y Y	NA N.A.	<i>[Signature]</i> 30 Aug 11 <i>[Signature]</i> 30 Aug 2011

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7. Lifting tower

Test No.	Test Description	Expected Result / Acceptance Criteria	Actual Results	Fulfilled (Y/N)	Deviation No.	Executed by : (Initial, Date)
7.1	Material of construction	Construction stainless steel 1.4301	Stainless steel 1.4301	Y	N.A.	RL 02 Sept 11
7.2	Function	lifting tower: up and down movements	Function testing done	Y	N.A.	RL 02 Sept 11
7.3	Speed	approx. 8 – 12 cm /sec.	8-12 cm/sec	Y	N.A.	RL 02 Sept 11
7.4	Max. applicable load	500 kg	500 kg	Y	N.A.	RL 02 Sept 11
7.5	Total height of the tower	approx. 5'000 mm	app 5000mm	Y	N.A.	RL 02 Sept 11
7.6	Construction	for ATEX zoning II 3D (ATEX Zone 22)	ATEX Zone 22	Y	N.A.	RL 02 Sept 11
7.7	Drive	electro-hydraulic	Electro hydraulic	Y	N.A.	RL 02 Sept 11
7.8	Motor	2.2 kW	2.2 kW	Y	N.A.	RL 02 Sept 11
7.9	Electrical connection	230/400 V, 50 Hz, 3Ph + N + E	230/400V 50HZ 3ph TN+E	Y	N.A.	RL 02 Sept 11

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■ No. TVA 489 197
IBAN EUR: CH90 0483 5036 3818 0200 0
IBAN CHF: CH27 0483 5036 3818 0100 0
Credit Suisse CH-3001 Bern/Swift CRESCH ZZ30 R

8. Motorisation

Test No.	Test Description	Expected Result / Acceptance Criteria	Actual Results	Fulfilled (Y/N)	Deviation No.	Executed by : (Initial, Date)
Motor of Grinding unit						
8.1	Motor	6P LSPX132M 5.0kW with PTC probe	6P LSPX132M 5.0kW with PTC probe	Y	N.A	82 30 Aug 11
8.2	Frequency converter (mounted in electrical panel) for stepless rotor speed adjustment	between 100 – max. 700 rpm	Yes. between 100 – 700 rpm	Y	N.A	82 30 Aug 11
Motor of Crusher unit						
8.3	Motor	4P LSPX80L 0.70kW	4P LSPX80L 0.70kW	Y	N.A	82 30 Aug 11
8.4	Reduction	(439572) Lenze GKR05-2NHAK-7C 439572	Lenze GKR05-2NHAK-7C 439572	Y	N.A	82 30 Aug 11

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9. Energies connections

Test No.	Test Description	Expected Result / Acceptance Criteria	Actual Results	Fulfilled (Y/N)	Deviation No.	Executed by : (Initial, Date)
9.1	Electrical connections	As per circuit diagram.	Checked SWD 4650F3 14 July 11	N	3	[Signature] 30 Aug 11
9.2	Pneumatic connections	As per pneumatic diagram.	NA Dwg No 30 Aug 11 464782-sch checked	Y	NA	[Signature] 30 Aug 11

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IBAN CHF: CH27 0483 5036 3818 0100 0
Credit Suisse CH - 3001 Bern / Swift CRESCH ZZ30 R

10. Documentation

Manual contents

Test No.	Test Description	Expected Result / Acceptance Criteria	Actual Results	Fulfilled (Y/N)	Deviation No.	Executed by : (Initial, Date)
Check that the following documents are present:						
10.1	Index	Document present	Present	Y	N.A	RZ 30 Aug 11
10.2	General	Document present	Present	Y	N.A	RZ 30 Aug 11
10.3	Safety	Document present	Present	Y	N.A	RZ Aug 11
10.4	Start-up	Document present	Present	Y	N.A	RZ Aug 11 20
10.5	Operating instructions	Document present	Present	Y	N.A	RZ 30 Aug 11
10.6	Cleaning	Document present	Present	Y	N.A	RZ 30 Aug 11
10.7	Maintenance and support	Document present	Present	Y	N.A	RZ 30 Aug 11
10.8	Spare parts	Document present	Present	Y	N.A	RZ 30 Aug 11
10.9	Tools	Document present	Present	Y	N.A	RZ 30 Aug 11
10.10	Electrical / drive / pneumatic	Document present	Present	Y	N.A	RZ 30 Aug 11
10.11	Certificates	Document present	Present	Y	N.A	RZ 30 Aug 11
10.12	ATEX certificates	Document present	Present	Y	N.A	RZ 30 Aug 11
10.13	Lifting Tower documentation	Document present	Present	Y	N.A	RZ 02 Sept 11
10.14	Qualification IQ / OQ	Document present	Present	Y	N.A	RZ 30 Aug 11

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11. Software and Hardware Installation

Test No.	Test Description	Expected Result / Acceptance Criteria	Actual Results	Fulfilled (Y/N)	Deviation No.	Executed by : (Initial, Date)
11.1	Software installation and version verification (PLC & HMI)	Latest revision of software installed	* See Notes 1 below	Y	NA	[Signature] 30 Aug 11
11.2	Hardware installation and verification	Latest revision of software installed	* See Notes 2 below	Y	NA	[Signature] 30 Aug 11
11.3	Software and hardware configuration and verification	Latest revision of software installed	* See Notes 3 below	Y	NA	[Signature] 30 Aug 11

Notes 1 : Test result of Test No. 11.1 :
 - Development Software : - HMI : WinCC Flexible Advanced 2008 SP2
 - PLC : STEP 7 V5.5
 - Application program : - HMI : 11-0076 Ver 0.0
 - PLC : 11-0076 Ver 0.0 [Signature] 30 Aug 11

Notes 2 : Hardware (Operating Panel/Interface/HMI, PLC, VFDs) are installed properly and verified as according to test point 9.1 (electrical connection test).

Notes 3 : 11.3.a Software and hardware configuration has been configured properly and verified to be working as required. The configuration of the hardware is recorded on software revision as per test result of test no. 11.1 [Signature] 30 Aug 11

11.3.b Software and hardware configuration of the following device:
 - Proximity switches S40, to detect mill speed of M10 & M20 is recorded as per version:
 - Installation : PRO-11-0076 11007635096, model : KF*UT2-*FDT
 - Parameters : PactWare-P2P\KFD2-UT-Ex1 (U11-U12)
 - Print out date : 25.08.2011 [Signature] 30 Aug 11

11.3.c Software & hardware of frequency converters (variable speed drives):
 - Mill (ConiWitt250) : version dated on 12.08.2011 (CPI)
 - Crusher (Profi-Sword) : version dated on 12.08.2011 (CPI) [Signature] 30 Aug 11

11.3.d Software & hardware of frequency converter S40 to detect mill speed (motor M10):
 - version : dated on 12.08.2011 (CPI)
 - Item : 417735 [Signature] 30 Aug 11

Professional Milling and Handling of Powders

12. Additional tests



Test No.	Test Description	Expected Result / Acceptance Criteria	Actual Results	Fulfilled (Y/N)	Deviation No.	Executed by : (Initial, Date)
12.1	Verify Insertable Sieve ie mesh sieve size, material test and identifiable screen tag.	Sieve mesh size meets URS/FDS requirements	Sieve mesh size meets URS/FDS requirements	Y	N.A.	fc 30 Aug 2011
12.2	Verification of instruments and components with tags as per P&ID	Instruments and tags correspond to P&ID	The list checked against P&ID (missing tag)	YN	2	fc 30 Aug 11
12.3	Verification of lubrications, if any	FDA certification/MSDS present	FDA certificate and MSDS present in section 11.	Y	N.A.	fc 29 Aug 11
12.4	I/O loop checks	I/O loop checks performed	performed	Y	N.A.	fc 30 Aug 11
12.5	EMI/CE certification	EMI/CE certificate present	CE certificate present	Y	N.A.	fc 02 sept
12.6	Factory calibration certificates	Factory calibration certificates present	factory calibration present in sec 11 of pro-11-0076	Y	1	fc 30 Aug 11

Actual calibration certificate will be done during SAT.
Factory certificate for weigh scale not available

Professional Milling and Handling of Powders

15. Deviation Sheet

Deviation / To Test No: 126	
Description of Deviation The factory certificates for the weighing scale was not available.	
Evaluation and Proposed Corrective Action Frewitt will contact Mettler Toledo and provide the certificates	
Resolution	

Deviation Prepared By				
Name	Signature Reason	Department / Function	Date	Signature
S Panicker	Author 	P4	02 Sep 11	


Deviation Accepted By				
Name	Signature Reason	Department / Function	Date	Signature
	Approver			

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Credit Suisse CH-3001 Bern/Swift CRESCH ZZ30 R

16. Post-Approval

This FAT-IQ test Protocol of the equipment has been executed and accepted by:

Name	Signature Reason	Function/ Department	Signature	Date
Yves Grossrieder	Reviewer	Frewitt Project Manager		02.09.2017
Rajesh Tralshawala	Reviewer	NSPM Qualification Coordinator		
Panicker Shreekumar	Approver	NSPM Process Engineer		
Sony Suroso	Approver	NSPM Automation Engineer		
Teo Szu Hui	Approver	NSPM Technical Project Manager		
Shrinivas Tata	Approver	NSPM Project QA		

Professional Milling and Handling of Powders

15. Deviation Sheet

Deviation To Test No: 122	
Description of Deviation The following tags were missing PK02 , G10 , and filters F4 and F5	
Evaluation and Proposed Corrective Action TAGS to be provided by Frewitt.	
Resolution	

Deviation Prepared By				
Name	Signature Reason	Department / Function	Date	Signature
S Panicka	Author	PK	02 Sept 11	02 Sept 11

Deviation Accepted By				
Name	Signature Reason	Department / Function	Date	Signature
	Approver			

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 0575 200 1200, 2152 5036 3811 0199 0
 Export Sales: CH - 2009 Basel/Switzerland, 81127 2011

15. Deviation Sheet

3 AP
02 sept 11

Deviation # Test No: 9.i	To FAT IQ DelumpWitt
Description of Deviation Mistakes found on Electrical Wiring Diagram as attached on Attachment 7.	
Evaluation and Proposed Corrective Action - Frewitt is to revise the Electrical Wiring Diagram - Frewitt is to update the version of the Electrical Wiring Diagram.	
Resolution	

Deviation Prepared By				
Name	Signature Reason	Department / Function	Date	Signature
Sony P Brown	Author	Automation Eng N RPM	02 sept	[Signature]

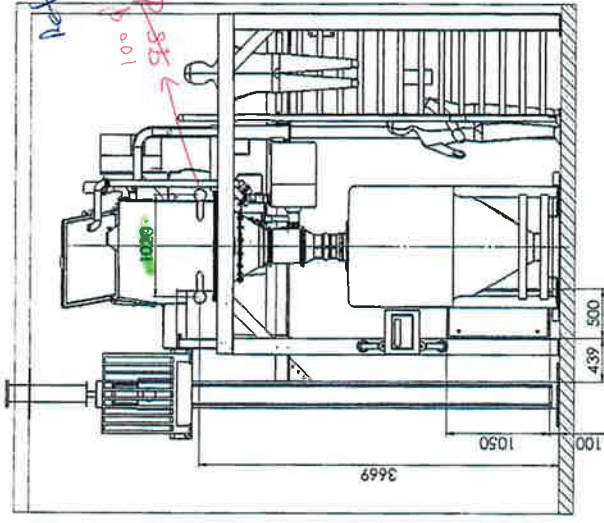
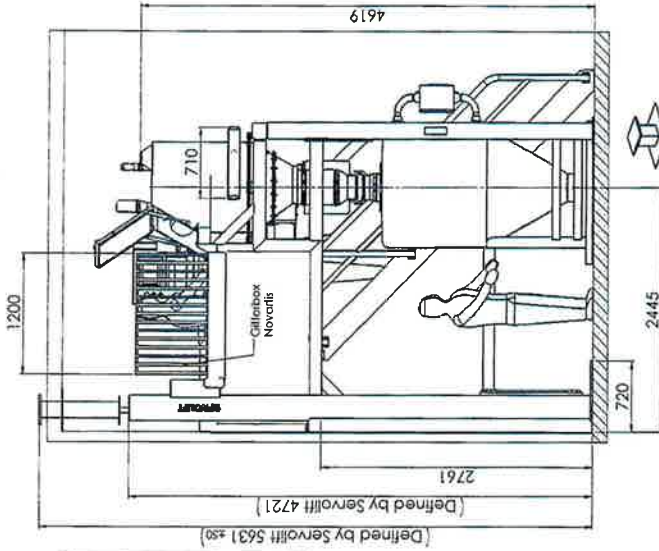
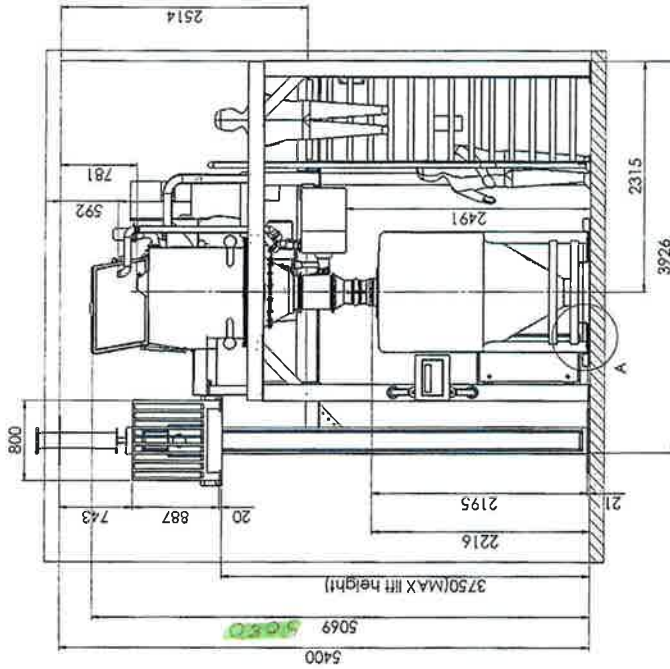
Deviation Accepted By				
Name	Signature Reason	Department / Function	Date	Signature
	Approver			

Professional Milling and Handling of Powders

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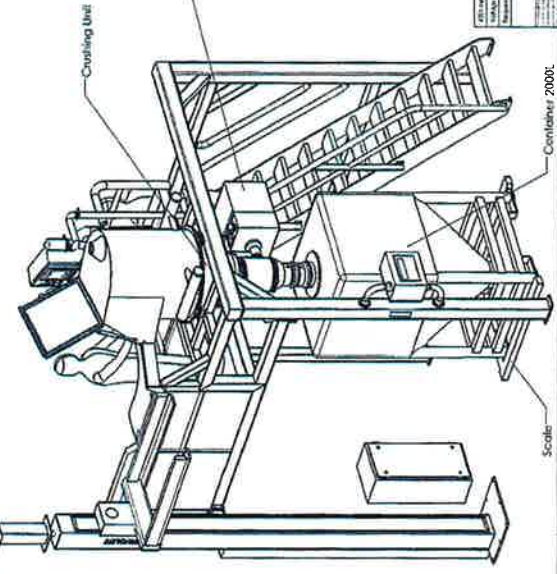
General notes :

1. Material of construction :
 -Product contact parts AISI 316/316L
 -Non-product contact parts AISI 304/304L
2. Surface finish :
 -Product contact part < Ra 0.4
 -Non-product contact parts < Ra 1.4
3. All non-metallic parts in contact with product shall be FDA approved food grade
4. Design fabrication shall comply with GMP requirement with no sharp corners, dead legs, easily drainable and crevices free



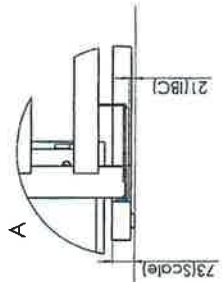
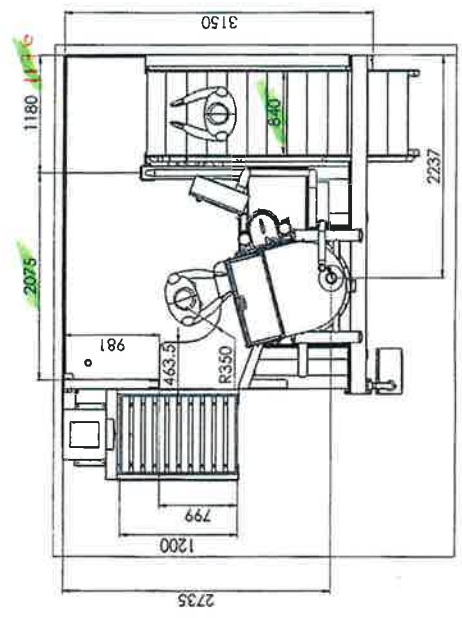
Approved

Shival
 2 Aug 11



Total Installed empty weight : 3000kg
 Total operating weight : 4000kg

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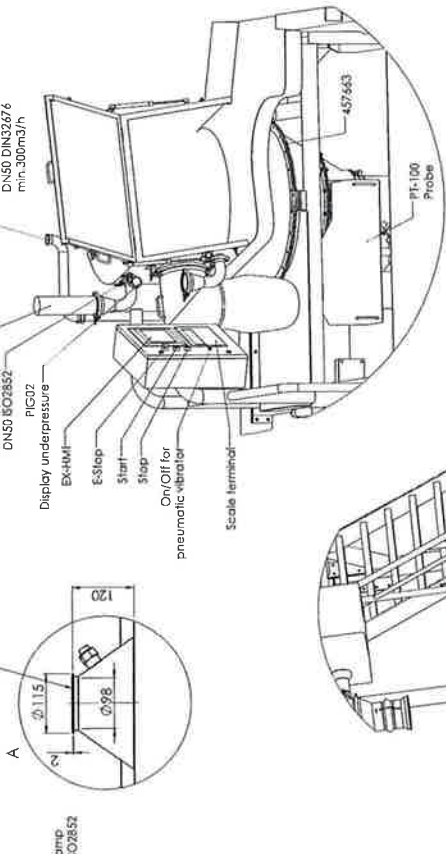
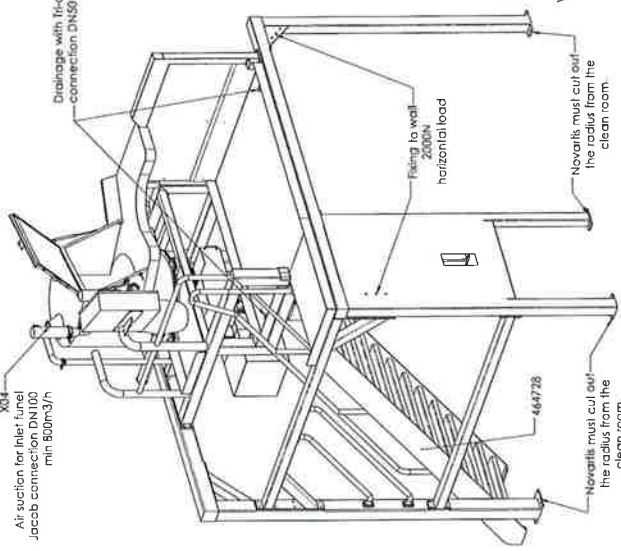
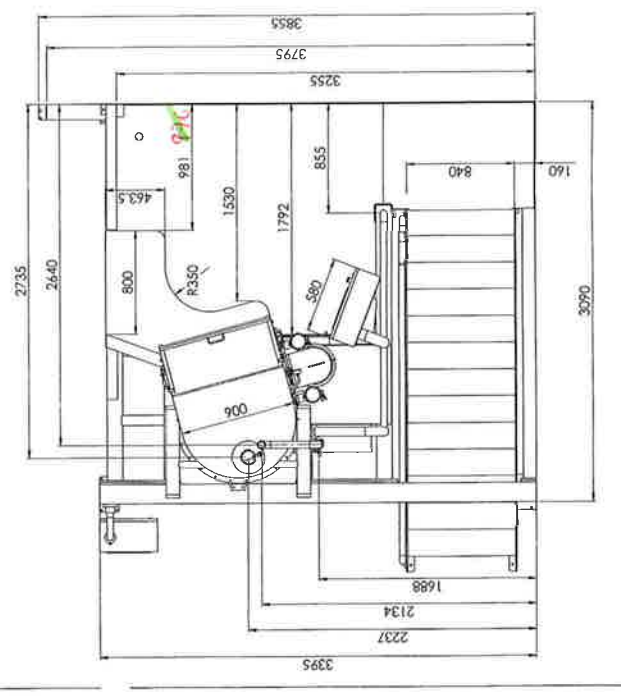
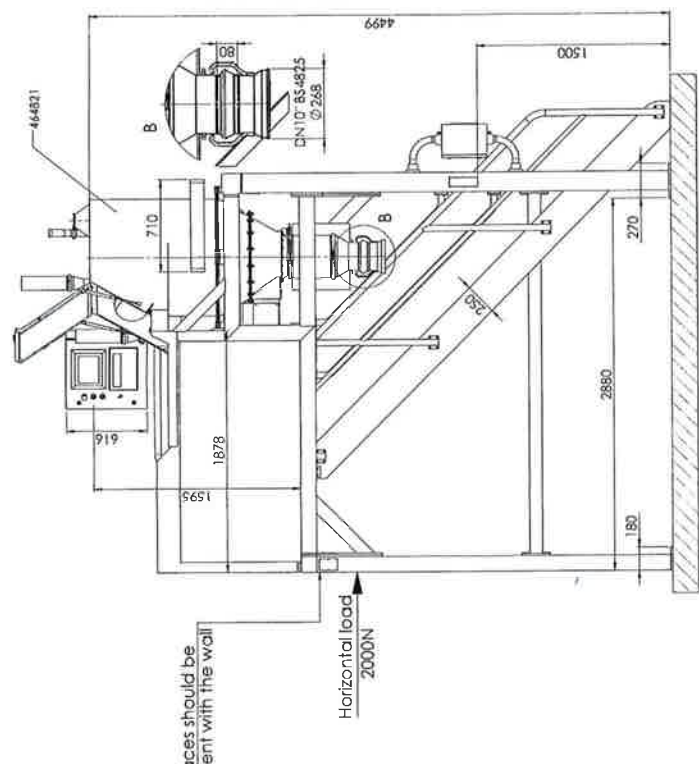
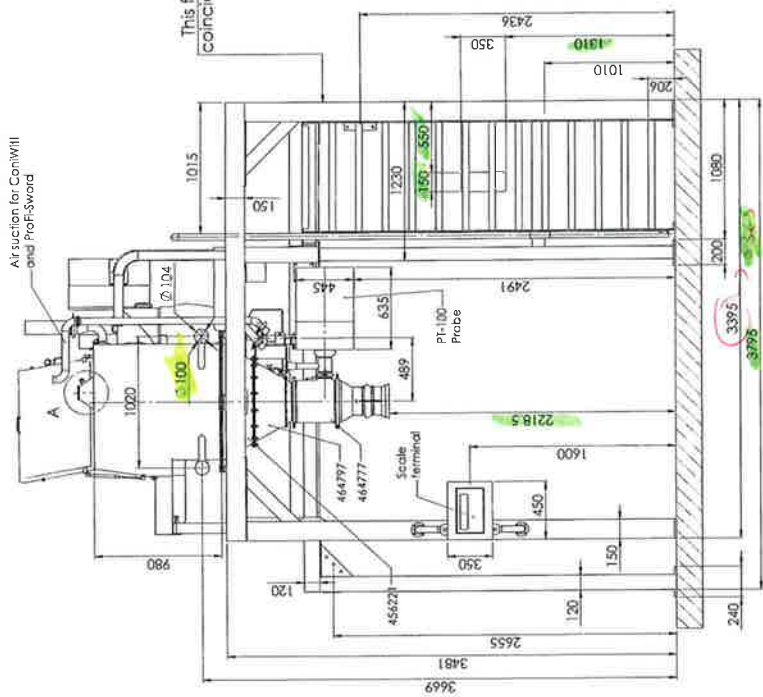
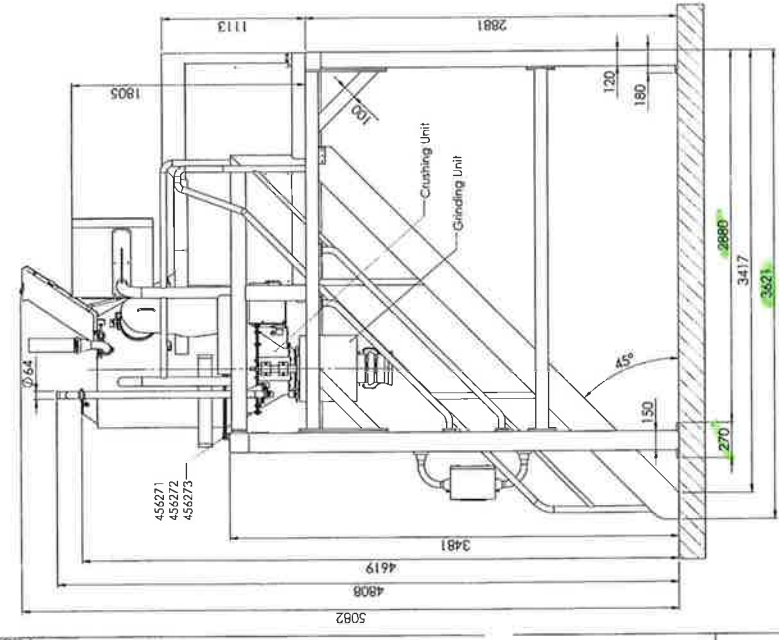


Scale
 Container 2000

REV. NO.	DATE	DESCRIPTION	BY	CHKD.
01	11/08/11	ISSUED FOR FABRICATION		
02	11/08/11	ISSUED FOR FABRICATION		
03	11/08/11	ISSUED FOR FABRICATION		
04	11/08/11	ISSUED FOR FABRICATION		
05	11/08/11	ISSUED FOR FABRICATION		
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98	11/08/11	ISSUED FOR FABRICATION		
99	11/08/11	ISSUED FOR FABRICATION		
100	11/08/11	ISSUED FOR FABRICATION		

Attached to 135426-1

Attachment 32 82 11



SG.TBP.202.M.5214

Revision		Date		Author		Checked		Approved	
No.	Description	DD.MM.YY	DD.MM.YY	Name	Name	Name	Name	Name	Name
01	Initial design	12.01.17	12.01.17
02
03
04
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Attached to 135425-1 31 April 2017

Tests de ligne - Profiling



Projet: PRO-11-0076

Client: Novartis

Date: 22.8.2011

Responsable(s):

Mnémorique	Etat	Type	Commentaire	Couleur HMI		Automate	Remarques
				Activé	Désactivé		
Not-Aus	E 0.0	BOOL	Zustand Not-Aus Relais				
Watchdog	E 0.1	BOOL	Zustand Watchdog Relais				
G10	E 0.2	BOOL	Einlauf Sicherheit CW-250				
StörungU1	E 0.3	BOOL	Störung Freq. Umricht. CW-250				
T10	E 0.4	BOOL	PTC Motor CW-250				
StörungU2	E 0.5	BOOL	Störung Freq. Umricht. ProFi-Sword				
M20Blockiert	E 0.6	BOOL	ProFi-Sword blockiert Signal				
T20	E 0.7	BOOL	PTC Motor ProFi-Sword				
T12	E 1.0	BOOL	Lager PTC CW-250				
T11	E 1.1	BOOL	Sieb PTC CW-250				
T22	E 1.2	BOOL	Lager PTC ProFi-Sword				
T21	E 1.3	BOOL	Lager PTC ProFi-Sword				
U10.P10	E 1.4	BOOL	Druckschalter CW-250				
Q2	E 1.5	BOOL	Motorschutzschalter CW-250				
Q3	E 1.6	BOOL	Motorschutzschalter ProFi-Sword				
S3Taster	E 1.7	BOOL	Taster Ein				
S2	E 4.0	BOOL	Taster Aus				
F10	E 4.1	BOOL	Durchflusssensor CW-250				
F01	E 4.2	BOOL	Absaugmessung				
Q12	E 4.3	BOOL	Wartungsschalter ConiWitt Motor				
Q13	E 4.4	BOOL	Wartungsschalter Sword Motor				
G30	E 4.5	BOOL	Container detection				
S10	PEW 128	INT	Geschw. Detektor CW-250				stoppt nicht
T13	PEW 136	INT	Temperatur Ueberwachung 1				
T23	PEW 138	INT	Temperatur Ueberwachung 2				
K2	A 2.0	BOOL	Reset Not-Aus Relais				
K3Imp	A 2.1	BOOL	Impuls Watchdog Relais				
K3Res	A 2.2	BOOL	Reset Watchdog Relais				
K5	A 2.3	BOOL	Reset Sicherheitsrel.				
RücklaufM20	A 2.4	BOOL	Drehrichtungswechsel ProFi-Sword Motor				
S3Lampe	A 2.5	BOOL	Leuchtmelder Ein				
StartM10	A 3.0	BOOL	Start CW-250				
StartM20	A 3.1	BOOL	Start ProFi-Sword				
U10.SV10	A 3.2	BOOL	Luft oder Gas CW-250				
GeschwM10	PAW 128	INT	Geschw. Einstellung CW-250				
GeschwM20	PAW 130	INT	Geschw. Einstellung ProFi-Sword				

Note: this 1/0 list is an extract of Electrical Diagram of Delumplit. See page 4/6, 5/6, 6/6 of this attachment.

Kisten aus

Attachment 4
Attached to 135426-1

Page 1/6

01 Sep 11

NOTE: translation of the I/O loop week list. 01 Apr 11



I/O Check - Profiling

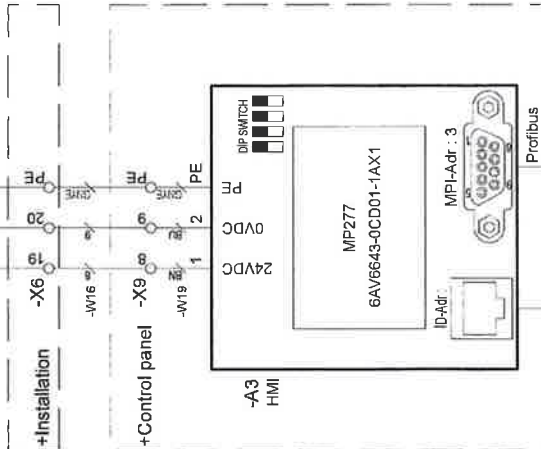
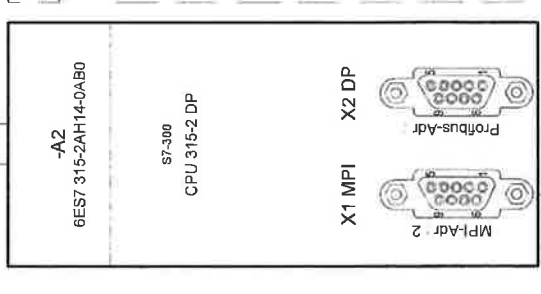
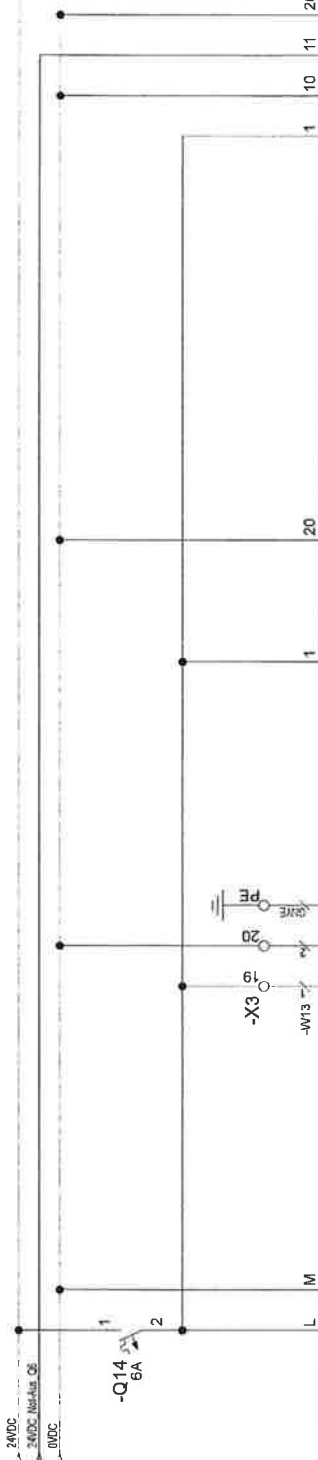
Projct: PRO-11-0076		Customer: Novartis		Date:			
Responsible:							
Mnémonique	Address	Type	Name	Color on HMI		PLC	Remarks
				ON	OFF		
Emergency-Stop	E 0.0	BOOL	Status Emergency-Stop relay				
Watchdog	E 0.1	BOOL	Status Watch dog relay				
G10	E 0.2	BOOL	Inlet Safety CW-250				
StörungU1	E 0.3	BOOL	Default Freq. Converter CW-250				
T10	E 0.4	BOOL	PTC Motor CW-250				
StörungU2	E 0.5	BOOL	Default Freq. Converter ProFi-Sword				
M20Blockiert	E 0.6	BOOL	ProFi-Sword lockedSignal				
T20	E 0.7	BOOL	PTC Motor ProFi-Sword				
T12	E 1.0	BOOL	Bearing PTC CW-250				
T11	E 1.1	BOOL	Sieve PTC CW-250				
T22	E 1.2	BOOL	Bearing PTC ProFi-Sword				
T21	E 1.3	BOOL	Bearing PTC ProFi-Sword				
U10.P10	E 1.4	BOOL	Pressure switch CW-250				
Q2	E 1.5	BOOL	Motor circuit breaker CW-250				
Q3	E 1.6	BOOL	Motor circuit breaker ProFi-Sword				
S3Taster	E 1.7	BOOL	Push button ON				
S2	E 4.0	BOOL	Push button OFF				
F10	E 4.1	BOOL	Flow sensor CW-250				
F01	E 4.2	BOOL	Exhaust measure				
Q12	E 4.3	BOOL	ContiWitt Motor disconnected switch				
Q13	E 4.4	BOOL	Sword Motor disconnected switch				
G30	E 4.5	BOOL	Container detection				
S10	PEW 128	INT	Speed detectorCW-250				
T13	PEW 136	INT	Temperature control 1				
T23	PEW 138	INT	Temperature control 2				

Handwritten notes: "JA" and "OK Sept 11 N/A" with arrows pointing to specific rows in the table.

Note: translation of '0 loop check list of Prof11

K2	A	4.0	BOOL	Reset Emergency-Stop relay				
K3Imp	A	4.1	BOOL	Impulse Watchdog Relay				
K3Res	A	4.2	BOOL	Reset Watchdog Relay				
K5	A	2.3	BOOL	Reset Safety relay				
RücklaufM20	A	2.4	BOOL	Reverse rotation direction ProFi-Sword Motor				
S3Lampe	A	2.5	BOOL	Lamp ON				
StartM10	A	3.0	BOOL	Start CW-250				
StartM20	A	3.1	BOOL	Start ProFi-Sword				
U10.SV10	A	3.2	BOOL	Air or gas CW-250				
SpeedM10	PAW	128	INT	Speed adjustment CW-250				
SpeedM20	PAW	130	INT	Speed adjustment ProFi-Sword				

24VDC / I/O.A.1
0VDC / I/O.A.1

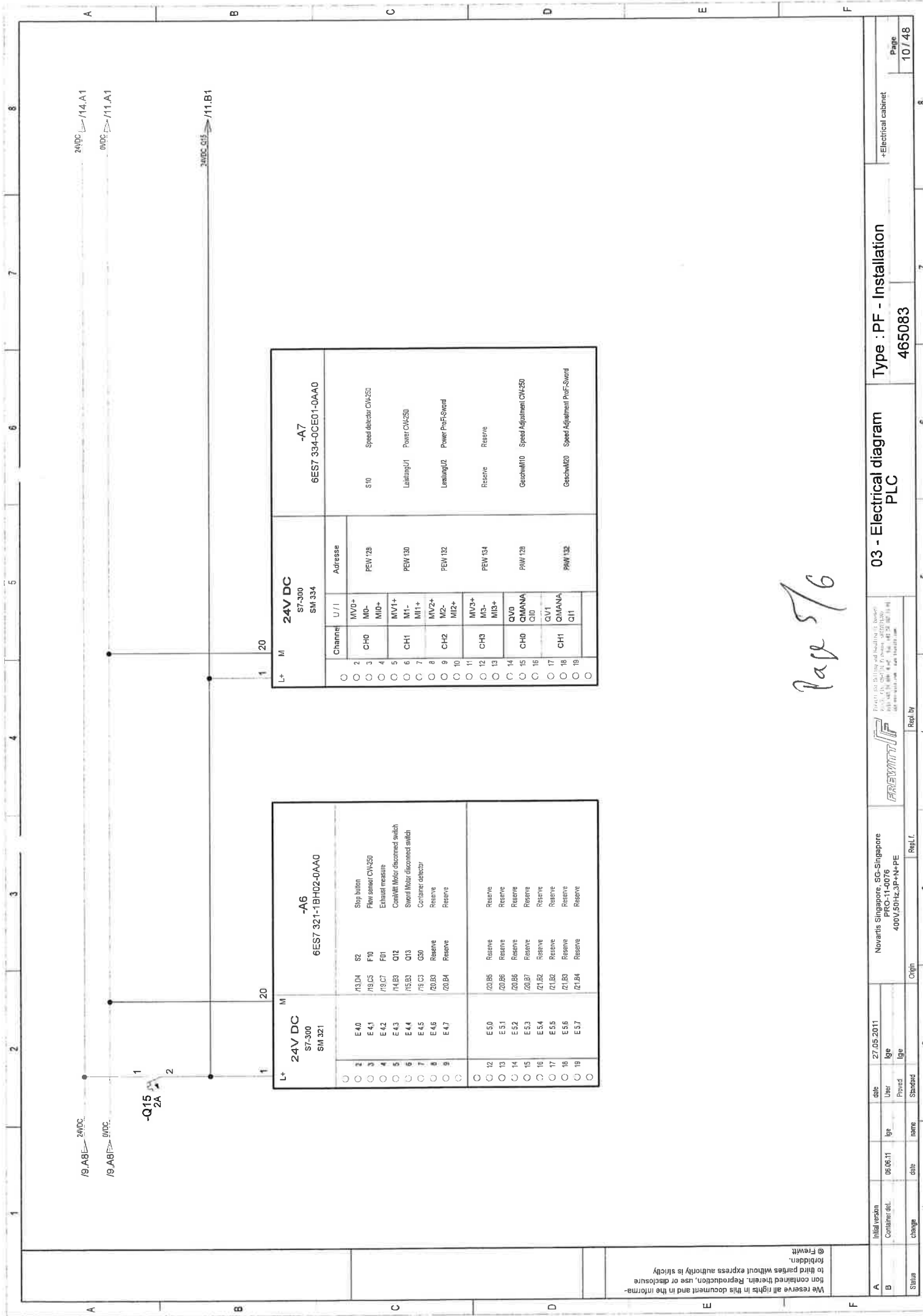


-A4		6ES7 321-1BH02-0AA0	
24V DC		SM 321	
L+	M		
1	20		
2	/R B4	Na-Act	Status Emergency-Stop relay
3	/R B6	Watchdog	Status Watchdog relay
4	/I 05	G10	Inlet safety CVM-250
5	/M 06	StopInj1	Default Inp. com. CVM-250
6	/M 07	T10	PTC Motor CVM-250
7	/S 08	StopInj2	Default Trau. com. Prof-Sword
8	/S 03	M2Blockdet	Prof-Sword locked signal
9	/S 07	T20	PTC Motor Prof-Sword
10			
11			
12	/E 10		Bearing PTC CVM-250
13	/E 11		Sieve PTC CVM-250
14	/E 12		Bearing PTC Prof-Sword
15	/E 13		Bearing PTC Prof-Sword
16	/E 14		Pressure switch CVM-250
17	/M 02		Motor Circuit breaker CVM-250
18	/S 02		Motor Circuit breaker Prof-Sword
19	/S 02		Push button ON

-A5		6ES7 322-1BH01-0AA0	
24V DC		SM 322	
L+	M		
1	20		
2	/R D4	K2	Reset Emergency-Stop relay
3	/I 02	K3Imp	Impulse Watchdog relay
4	/I 03	K3Res	Reset Watchdog relay
5	/I 05	K5	Reset Safety rel.
6	/S 06	RocketM20	Reverse rotation direction Prof-Sword
7	/I 03	SLampe	Lamp ON
8	/O 02	Reserve	Reserve
9	/O 03	Reserve	Reserve
10			
11			
12	/I 04	StartM10	Starting CVM-250
13	/I 04	StartM20	Starting Prof-Sword
14	/I 02	U10.SV10	Air or Gas CVM-250
15	/O 04	Reserve	Reserve
16	/O 05	Reserve	Reserve
17	/O 06	Reserve	Reserve
18	/O 06	Reserve	Reserve
19	/O 07	Reserve	Reserve
20	/O 07	Reserve	Reserve

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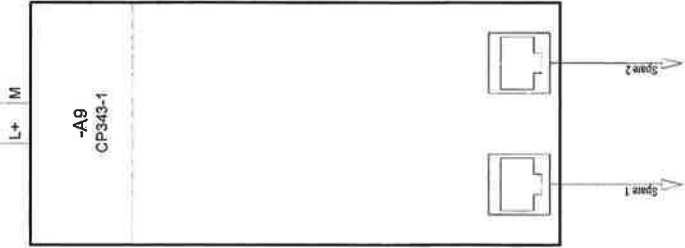
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A	Initial version	27.05.2011	Novartis Singapore, SG-Singapore PRO-11-0076 400V, 50Hz, 3P+N+PE	Repl. by	4	03 - Electrical diagram PLC	Type : PF - Installation 465083	Page 10 / 48
	Container del.	08.06.11						
B	change							
	date	lgt	name	Standard				
	User	lgt	name	Standard				
	date	lgt	name	Standard				

0000 → /12.E1

/10.AB ← 0000

/10.BB ← 2000.015



L+ M		24V DC		-A8	
		S7-300		6ES7 334-0CE01-0AA0	
		SM 334			
Channel	U/I	Adresse			
0	MV0+				
1	CH0	PEW136		T13 Temperature control 1	
2	MV0-				
3	MV0+				
4	MV1+	PEW138		T23 Temperature control 2	
5	MV1-				
6	MV1+				
7	MV2+	PEW140		Reserve	
8	MV2-				
9	MV2+				
10	MV3+	PEW142		Reserve	
11	MV3-				
12	MV3+				
13	OMANA Q10	PEW134		Reserve	
14	OMANA Q11				
15	OMANA Q11				
16	OMANA Q11				
17	OMANA Q11				
18	OMANA Q11				
19	OMANA Q11				
20	OMANA Q11				

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SERVOLIFT

Acceptance test protocol

issued: Horst Jekal
 tel.: 0781 / 6100-114
 fax.: 0781 / 6100-814
 e-mail: jekal@servolift.de

customer: Frewitt Fabrique, Granges-Paccot, Swiss MV: J-C. Lolivrel

Serial no.: 12551 PL: B. Schanz

Participant: customer:

Participant: Servolift:

Frewitt :

Mr. Jekal

Mr. Grossrieder

Novartis Singapore Pharmaceutical :

Mr. Shreekumar Panicker

The machine has passed the acceptance test:

according specification
 according to approved drawing

without objection
 with the following objection
 with the following request of the customer

Remarks / Objections	response.	done
1. The pneumatic supply shall be provided with a hose coupling and an adaptor for Festo supply, outer diameter 8 mm.		
2. Material for mounting of the operator terminal and the side sheet (drilling on site) shall be given with.		
3. The packaging should be modified for air shipping. A wooden crate has to be build.		
4. The Lifter is approved for shipment.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		

Zunsweier, 31.08.2011
 place, date

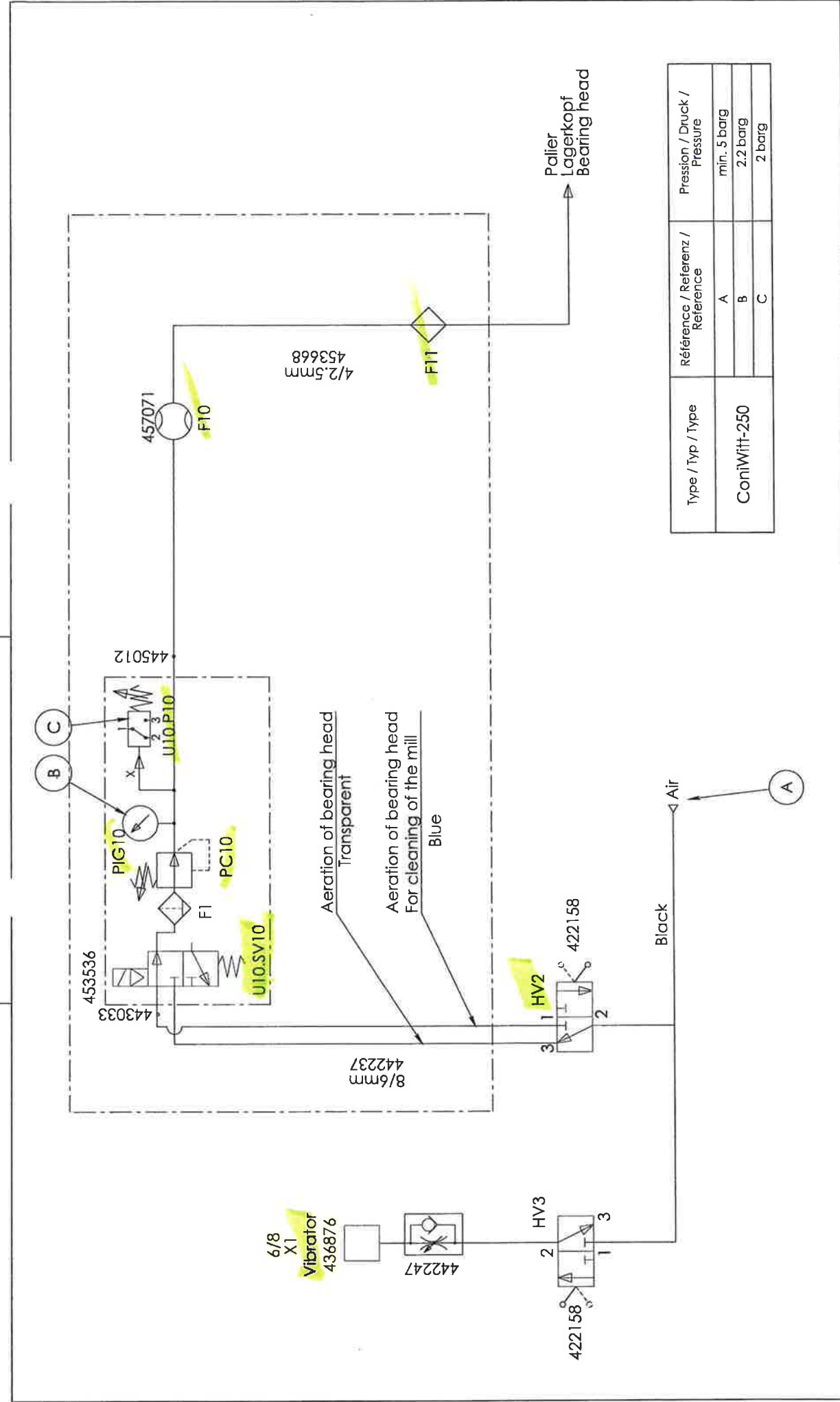
Jekal
 name in block letters (Servolift)

ich. Jekal
 signature (Servolift)

Grossrieder
 name in block letters (customer)

[Signature]
 signature (customer)

Attachment 5
 Attached to 135428-1 & 02sept11



Attachment 6 → Attached to 135426-1
 02 sept 11

Type / Typ / Type	Référence / Referenz / Reference	Pression / Druck / Pressure
ContWitt-250	A	min. 5 barg
	B	2.2 barg
	C	2 barg

Dimensions without tolerance [mm]		MATERIAL :			
above	6	30	120	400	1000
up to	6	30	120	400	1000
Machine	ISO 2768 m	±0.10	±0.20	±0.30	±0.50
Weighting Assembly	ISO 2768-c	±0.30	±0.50	±0.80	±1.20
Similar		Scale		Designed	
457598		%		04/05/2011	
Weight [kg]		A3		Controlled	
Atex				19/07/2011	
464782-SCH				Revised	
1/1				Page	
A				Ver.	

Schéma pneumatique ATEX DelumpWitt Novartis
 Frewitt S.A. Milling and Handling of Powders
 P.O.B. 415, CH-1701 Fribourg, SWITZERLAND
 Tel: +41 26 480 74 00 / Fax: +41 26 480 74 10
 info@frewitt.com / www.frewitt.com

FAT OQ Test Protocol

SG.TBP.202.M.5214/I001, I002

Delumpwitt



Project Name :	Novartis Singapore DelumpWitt
Client :	NOVARTIS SINGAPORE PHARMACEUTICAL
Location :	SG-Singapore
Customer Order # :	4500260529
Supplier :	Frewitt Fabrique de Machines S.A.
Object :	DelumpWitt (Crusher/Grinding)
Serial # :	11007635096 – Installation 11007643002 – Crusher PR-Sword 11007619050 – Grinding CW-250

Document Name :	Qualification OQ DelumpWitt (Crusher/Grinding) 11007635096 – Installation 11007643002 – Crusher PR-Sword 11007619050 – Grinding CW-250
Document Reference :	135424-1-en.doc <i>135254-1-en.doc EE</i>
Document Version # :	01

02.09.11

Pre-Approval:

This FAT-OQ test Protocol of the equipment was created, reviewed and accepted by:

Name	Signature Reason	Function/ Department	Signature	Date
Karsten Kutnar	Author	Frewitt Project Manager	<i>[Signature]</i>	25.08.2011
Yves Grossrieder	Reviewer	Frewitt Technical Project Manager	<i>[Signature]</i>	25.08.2011
Rajesh Tralshawala <i>f TOH SUE-ANN</i>	Reviewer	NSPM Qualification Coordinator	<i>[Signature]</i>	26 Aug 11
Panicker Shreekumar	Approver	NSPM Process Engineer	<i>[Signature]</i>	26 Aug 11
<i>f Shrinivas Karson</i> Sony Suroso	Approver	NSPM Automation Engineer	<i>[Signature]</i>	26 Aug 11
Teo Szu Hui	Approver	NSPM Technical Project Manager	SH	26 Aug 11
Shrinivas Tata	Approver	NSPM Project QA	<i>[Signature]</i>	26 Aug 11

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1 Introduction

1.1 Purpose

The purpose of this document is to verify the control function of the machine and the properties of the machine as per documented evidence.

1.2 Operation qualification (OQ)

With this operation qualification the functions according to the functional specification are controlled and documented.

1.3 General

The protocol "Operation qualification (OQ)" defines the procedure for implementation of the qualification.

1.4 Basis

The following references are the basis of these documents

- General standards of GMP
- General standards of safety

2 Function tests

2.1 Test of each element

Test No	Test Description	Expected Result Acceptance Criteria	Actual Results	Fulfilled (Y/N)	Deviation No.	Executed by : (Initial, Date)
1	Check Start/Stop	The machine can be switched on and off with the "Start" and "Stop" push buttons.	The machine can be switched ON and off with start and stop button	Y	N.A	EE 29 Aug 11
2	Check E-stop	The E-stop is pushed. The machine stops and an alarm message is indicated on the HMI. A direct start is not possible. After pressing the "reset" a new start is possible.	The Alarm message appeared. After pressing Quit a new start is possible	Y	N.A	EE 29 Aug 11
3	Review of the function of flow control	Flow Control purge bearing of the mill. The minimum flow is simulated; the machine stops and indicates an alarm text.	The Flow control when $< 0.5 \text{ l/min}$ the machine stopped with alarm	Y	N.A	EE 29 Aug 11
4	Review of the function of flow control	Flow Control purge bearing mill. The minimum pressure is simulated; the machine stops and indicates an alarm text. Minm Pressure 1.8 bar	When the pressure dropped below 1.8 bar the machine stopped indicating the alarm	Y	N.A	EE 29 Aug 11

Test No	Test Description	Expected Result Acceptance Criteria	Actual Results	Fulfilled (Y/N)	Deviation No.	Executed by : (Initial, Date)
5	Check of PTC	<p>The following temperature sensors are used. The switching is simulated. The machine stops and an alarm is displayed.</p> <p>1.TSA+T11 PTC mill sieve 2.TSA+T12 PTC mill bearing 3.TSA+T21 PTC crusher bearing 4.TSA+T22 PTC crusher bearing 5. TSA+T20 PTC crusher motor 6.TSA+T10 PTC mill motor</p>	<p>All the PTC tested from 1 to 6 and Ref. Attachment 1 of Batch report.</p>	Y	N.A	 29 Aug 11
6	Parameterization exists and is documented for the mill	Parameterization exists for the mill drive(CD or Paper)	Parameterization exists for the mill drive in a form of paper records.	Y*	N.A	 30 Aug 11
7	Check the speed setting according recipes	<p>Speed setting of the mill is possible</p> <p>Recipes 1 100 r/min; Recipes 2 700 r/min;</p>	<p>The speed setting checked and was possible for low r/min 700 r/min</p>	Y	N.A	 29 Aug 11
8	Parameterization exists and is documented for the crusher module	Parameterization exists for the crusher drive (CD or Paper)	Parameterization exists for the crusher drive in a form of paper records.	Y*	N.A	 30 Aug 11

* Paper records of the drives' parameters are stored/documented on document folder:

Folder Name : Operating Instructions
 Machine name : DelumpWitt, Grinding unit ConiWitt-250, Crusher Unit Propi-Sword
 Project number : PRO-11-0076
 Series numbers :
 DelumpWitt : 11007635096
 ConiWitt-250 : 11007619050
 Propi-Sword : 11007643002

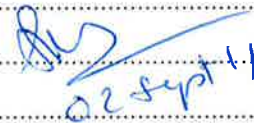
Chapter : 7 - Maintenance and Support. 30 Aug 11

Test No	Test Description	Expected Result Acceptance Criteria	Actual Results	Fulfilled (Y/N)	Deviation No.	Executed by : (Initial, Date)
9	Check the speed setting of the crusher	Speed setting of crusher is possible from 10- 14 r/min An exceeding or falling under the limits is not possible.	The range tested for 10, 12 and 14 r/min.	Y	N A	JP 29 Aug 11
10	Input / Review of the process parameters for each batch	Input / Review of the process parameters for each batch must be possible. A batch report is printed out and verifies the parameters, alarm messages and audit trail.	Review of the process parameters for each batch is possible since the batch report is printed automatically upon batch completion. However, batch report still contains issue.	Y N	3	JP 30 Aug 11
11	Drain ability check	Cleaning drainability check to be carried out	Drainability checked and found satisfactory	Y	N A	JP 30 Aug 11
12	Check Vibrator operation	Vibrator operation in inlet	vibrator operating	Y	N A	JP 30 Aug 11
13	Check inlet-safety magnetic switch operation	To check the Delumpwitt does not start while ConiWitt is not in good position	The delump witt do not start	Y	N A	JP 30 Aug 11
14	Test function of safety switches (interlocks) door inlet funnel	To check the Delumpwitt does not start while the ConiWitt is not in good position	This is Repeat test as in step 13	Y	N A	JP 30 Aug 11
15	* JP or MP 11 (not required) Test of power	Switching off power and switching on again. New login is needed, but parameters stay.	Switching off and on power leads an issue to batch information but not to parameters.	N	1	JP 30 Aug 11
16	* Test of access level	Login with different access levels to check the accesses JP or MP 11 (not required)	Access rights of Administrator, Operator, and Maintenance are OK, but not Supervisor level.	N	2	JP 30 Aug 11

Notes on test 15 and 16 : Term "Maintenance" as put on this test result is equivalent to access level "Service" as stated on DelumpWitt PDS JP or MP 11

4 OQ – Conclusion

The IBC sensor has to be interlocked with the machine. i.e. if there is no IBC sensed then the machine should not start.


02 Sept 11

5 Deviation Sheet

Deviation To Test No:	
Description of Deviation	
Evaluation and Proposed Corrective Action	
Resolution	

Deviation Prepared By				
Name	Signature Reason	Department / Function	Date	Signature
	Author			

Deviation Accepted By				
Name	Signature Reason	Department / Function	Date	Signature
	Approver			

6 Post-Approval

This FAT-OQ test Protocol of the equipment has been executed and accepted by:

Name	Signature Reason	Function/ Department	Signature	Date
Yves Grossrieder	Reviwer	Frewitt Technical Project Manager		02.09.2017
Rajesh Tralshawala	Reviewer	NSPM Qualification Coordinator		
Panicker Shreekumar	Approver	NSPM Process Engineer		
Sony Suroso	Approver	NSPM Automation Engineer		
Teo Szu Hui	Approver	NSPM Technical Project Manager		
Shrinivas Tata	Approver	NSPM Project QA		



	Nr.	Time	Date	State	Text	QGR	
Main screen	6	13:41:44	29/08/2011	ADQ	TSA+ (Z)T21 Error PTC... 0		Maintenance mode
	28	13:41:39	29/08/2011	AD	G30 Container not detect... 0		
	18	13:41:39	29/08/2011	AD	M20 Motor crusher mai... 0		
Active Alarme	17	13:41:39	29/08/2011	AD	M10 Motor mill maintena... 0		Store Recipe
	6	13:41:39	29/08/2011	AD	TSA+ (Z)T21 Error PTC... 0		
	17	13:41:30	29/08/2011	A	M10 Motor mill maintena... 0		
Alarm Archive	18	13:41:28	29/08/2011	A	M20 Motor crusher mai... 0		System User
	6	13:41:27	29/08/2011	A	TSA+ (Z)T21 Error PTC... 0		
	28	13:41:23	29/08/2011	A	G30 Container not detect... 0		
Batch	28	13:41:20	29/08/2011	AQD	G30 Container not detect... 0		Print Report
	18	13:41:20	29/08/2011	AQD	M20 Motor crusher mai... 0		
	17	13:41:20	29/08/2011	AQD	M10 Motor mill maintena... 0		
Trend	7	13:41:20	29/08/2011	AQD	TSA+ (Z)T22 Error PTC... 0		Print Page
	28	13:41:20	29/08/2011	AQ	G30 Container not detect... 0		
	18	13:41:20	29/08/2011	AQ	M20 Motor crusher mai... 0		
Logout	17	13:41:20	29/08/2011	AQ	M10 Motor mill maintena... 0		Quit
	7	13:41:20	29/08/2011	AQ	TSA+ (Z)T22 Error PTC... 0		
	18	13:40:47	29/08/2011	A	M20 Motor crusher mai... 0		
	7	13:40:45	29/08/2011	A	TSA+ (Z)T22 Error PTC... 0		
	28	13:40:40	29/08/2011	A	G30 Container not detect... 0		

Attachment 1 page 1 of 4

Attached to 135424-1

[Signature]
29 Aug 11



	Nr.	Time	Date	State	Text	QGR	
Main screen	4	13:40:35	29/08/2011	ADQ	TSA+ (Z)T11 Error PTC... 0		Maintenance mode
	28	13:40:32	29/08/2011	AD	G30 Container not detect... 0		
Active Alarme	18	13:40:32	29/08/2011	AD	M20 Motor crusher mai... 0		Store Recipe
	17	13:40:32	29/08/2011	AD	M10 Motor mill maintena... 0		
Alarm Archive	4	13:40:32	29/08/2011	AD	TSA+ (Z)T11 Error PTC... 0		System User
	17	13:39:56	29/08/2011	A	M10 Motor mill maintena... 0		
	18	13:39:53	29/08/2011	A	M20 Motor crusher mai... 0		
Batch	4	13:39:52	29/08/2011	A	TSA+ (Z)T11 Error PTC... 0		Print Report
	28	13:39:43	29/08/2011	A	G30 Container not detect... 0		
	28	13:39:29	29/08/2011	ADQ	G30 Container not detect... 0		
Trend	18	13:39:29	29/08/2011	ADQ	M20 Motor crusher mai... 0		Print Page
	17	13:39:29	29/08/2011	ADQ	M10 Motor mill maintena... 0		
	5	13:39:29	29/08/2011	ADQ	TSA+ (Z)T12 Error PTC... 0		
Logout	28	13:39:27	29/08/2011	AD	G30 Container not detect... 0		Quit
	18	13:39:27	29/08/2011	AD	M20 Motor crusher mai... 0		
	17	13:39:27	29/08/2011	AD	M10 Motor mill maintena... 0		
	5	13:36:42	29/08/2011	A	M10 Motor mill maintena... 0		
	18	13:36:40	29/08/2011	A	M20 Motor crusher mai... 0		
	5	13:36:39	29/08/2011	A	TSA+ (Z)T12 Error PTC... 0		
	28	13:36:12	29/08/2011	A	G30 Container not detect... 0		

Attachment 1 page 2 of 4

[Signature]
29 Aug 11



	Nr.	Time	Date	State	Text	QGR	
Main screen	8	13:36:04	29/08/2011	AQD	TSA+ (Z)T20 Error PTC... 0		Maintenance mode
	28	13:34:26	29/08/2011	AQD	G30 Container not detect... 0		
Active Alarme	28	13:34:26	29/08/2011	AQ	G30 Container not detect... 0		Store Recipe
	18	13:34:26	29/08/2011	AQ	M20 Motor crusher mai... 0		
	17	13:34:26	29/08/2011	AQ	M10 Motor mill maintena... 0		
	9	13:34:26	29/08/2011	ADQ	TSA+ (Z)T10 Error PTC... 0		
Alarm Archive	8	13:34:26	29/08/2011	AQ	TSA+ (Z)T20 Error PTC... 0		System User
	17	13:34:07	29/08/2011	A	M10 Motor mill maintena... 0		
	18	13:34:06	29/08/2011	A	M20 Motor crusher mai... 0		
	8	13:34:05	29/08/2011	A	TSA+ (Z)T20 Error PTC... 0		
Batch	28	13:33:51	29/08/2011	A	G30 Container not detect... 0		Print Report
	18	13:33:35	29/08/2011	AD	M20 Motor crusher mai... 0		
	17	13:33:35	29/08/2011	AD	M10 Motor mill maintena... 0		
	9	13:33:35	29/08/2011	AD	TSA+ (Z)T10 Error PTC... 0		
Trend	17	13:30:30	29/08/2011	A	M10 Motor mill maintena... 0		Print Page
	18	13:30:27	29/08/2011	A	M20 Motor crusher mai... 0		
	9	13:30:24	29/08/2011	A	TSA+ (Z)T10 Error PTC... 0		
Logout	28	13:29:43	29/08/2011	AD	G30 Container not detect... 0		Quit
	28	13:29:04	29/08/2011	A	G30 Container not detect... 0		
	1	13:28:57	29/08/2011	AQD	Safety stop E-stop 0		
	28	13:28:57	29/08/2011	ADQ	G30 Container not detect... 0		

Attachment 1 page 3 of 4

[Signature]
29 Aug 11



	Nr.	Time	Date	State	Text	QGR	
Main screen	8	13:36:04	29/08/2011	AQD	TSA+ (Z)T20 Error PTC... 0		Mainte. mode
	28	13:34:26	29/08/2011	AQD	G30 Container not detect... 0		
Active Alarme	28	13:34:26	29/08/2011	AQ	G30 Container not detect... 0		Store Recipe
	18	13:34:26	29/08/2011	AQ	M20 Motor crusher mai... 0		
	17	13:34:26	29/08/2011	AQ	M10 Motor mill maintena... 0		
	9	13:34:26	29/08/2011	ADQ	TSA+ (Z)T10 Error PTC... 0		
Alarm Archive	8	13:34:26	29/08/2011	AQ	TSA+ (Z)T20 Error PTC... 0		System User
	17	13:34:07	29/08/2011	A	M10 Motor mill maintena... 0		
	18	13:34:06	29/08/2011	A	M20 Motor crusher mai... 0		
	8	13:34:05	29/08/2011	A	TSA+ (Z)T20 Error PTC... 0		
	28	13:33:51	29/08/2011	A	G30 Container not detect... 0		
Batch	18	13:33:35	29/08/2011	AD	M20 Motor crusher mai... 0		Print Report
	17	13:33:35	29/08/2011	AD	M10 Motor mill maintena... 0		
	9	13:33:35	29/08/2011	AD	TSA+ (Z)T10 Error PTC... 0		
	17	13:30:30	29/08/2011	A	M10 Motor mill maintena... 0		
Trend	18	13:30:27	29/08/2011	A	M20 Motor crusher mai... 0		Print Page
	9	13:30:24	29/08/2011	A	TSA+ (Z)T10 Error PTC... 0		
	28	13:29:43	29/08/2011	AD	G30 Container not detect... 0		
	28	13:29:04	29/08/2011	A	G30 Container not detect... 0		
Logout	1	13:28:57	29/08/2011	AQD	Safety stop E-stop 0		Quit
	28	13:28:57	29/08/2011	ADQ	G30 Container not detect... 0		

Attachment 1 page 4 of 4


29 Aug 11

Attachment No. : 2
 Attached to : FAT OR Tech Protocol, SG.TBP.202.M.5214/1001, 1002
 Test # : 10
 Page : 1/3

Batch report

DelumpWitt SG.TBP.202.M.5214

29/08/2011 14:26:06

Operator: Admin Batch name: SD001-1
 Start batch: 29/08/2011 14:23:47 Product name: Eucreas 750/1000
 Batch end: 29/08/2011 14:26:06 Product number: 55555

Screening Metformin1

speed mill LL Setpoint HL Feedback
 90 110 120 107

Speed crusher 10.0

Screening HPC

Speed mill LL Setpoint HL Feedback
 650 700 1500 700

Missing: Speed Crusher *ll 30 Aug 11*

To verify the meaning and to consider for deletion. ll 30 Aug 11
To verify the meaning and to consider modification of the Device value. ll 30 Aug 11

No.	Time	State	Date	AGR	Device
24	14:24:59	(A)D	29/08/2011	0	Liaison_1
	Stop active				
24	14:24:58	A	29/08/2011	0	Liaison_1
	Stop active				
25	14:24:45	(A)D	29/08/2011	0	Liaison_1
	Start active				
25	14:24:43	A	29/08/2011	0	Liaison_1
	Start active				
24	14:24:26	(A)D	29/08/2011	0	Liaison_1
	Stop active				
24	14:24:25	A	29/08/2011	0	Liaison_1
	Stop active				
25	14:23:48	(A)D	29/08/2011	0	Liaison_1
	Start active				

whether (Type) ll 30 Aug 11
To verify again that this information really is required and necessary for NSPM. ll 30 Aug 11

Date : _____

Signature : _____

Page : 1

Total pages : _____

Attachment # : 2
 Attached to : FAT OR Test Protocol, SG.TBP.202.M.5214/1001, 1002
 Test # : 10
 Page : 2/3

Batch report

DelumpWitt SG.TBP.202.M.5214

29/08/2011 14:26:12

RecordID	TimeStamp	DeltaToUTC	UserID
0	29.08.2011 14:23:46	-1:00	System
ObjectID: Application Description: New log file during run of on device HMI_Panelmp277d. Project: 'PROJECT_2.Station SIMATIC HMI(1) - 0' Build 191, created with WinCC flexible 2008 SP2 Advanced.WinCC flexible RT 2008 SP2			
87	29.08.2011 14:24:36	-1:00	Admin
ObjectID: Tag: PAR.Siebung Description: Change the value of the 'PAR.Siebung' tag from '1' to '2' by entering '2'.			
88	29.08.2011 14:25:09	-1:00	Admin
ObjectID: Tag: PAR.Siebung Description: Change the value of the 'PAR.Siebung' tag from '2' to '1' by entering '1'.			
89	29.08.2011 14:26:05	-1:00	Admin
ObjectID: Logs: AuditTrail_1 Description: Stop Audit Trail '\\Storage Card MMC\AuditTrail\AuditTrail_10.csv'. No user actions will be logged.			

To modify program configuration of HMI to refer to Singapore timing. Expected result: +8:00. 30 Aug 11

Date : _____

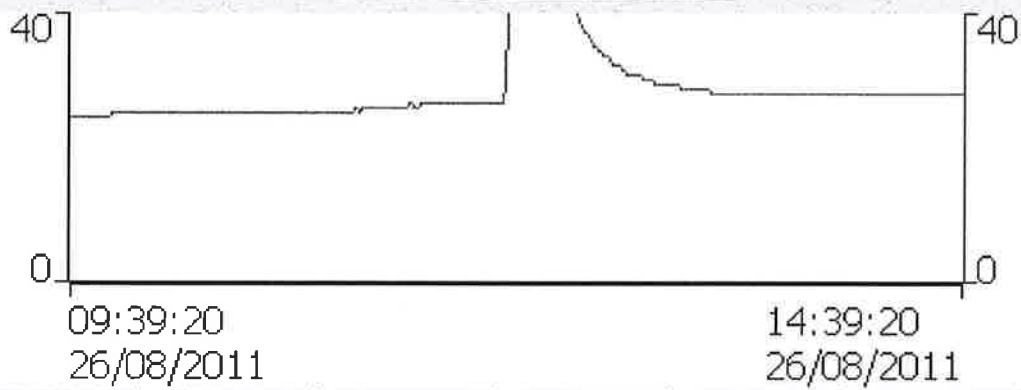
Signature : _____

Page : 2

Total pages : ____



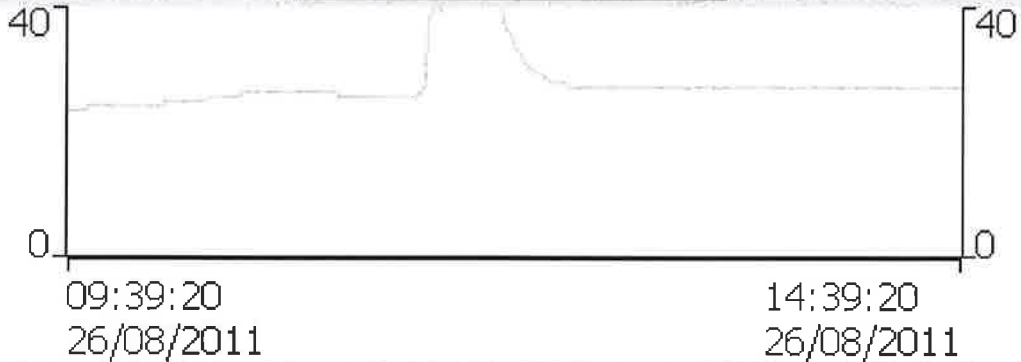
PT 100 crusher (°C)



09:39:20 26/08/2011 14:39:20 26/08/2011

■ [Pause] [Previous] [Next] [Zoom In] [Zoom Out]

PT 100 Mill (°C)



09:39:20 26/08/2011 14:39:20 26/08/2011

■ [Pause] [Previous] [Next] [Zoom In] [Zoom Out]

- Main screen
- Active Alarme
- Alarm Archive
- Batch
- Trend
- Logout

- Mainte. mode
- Store Recipe
- System User
- Print Report
- Print Page
- Quit

Attachment # : 2
 Attached to : FAT OQ Test Protocol, per USP 202.M. 5214/1001, 1002
 Test # : 10
 Page : 3/3

