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Translation of the Original Instructions

# Operating Instructions

## Appendix A

# Digital Continuous Printer

# CSAT ITS6 210

Serial No.: EG.LAA0-00135

**Save for use at a later date!**

**Markem-Image CSAT GmbH**  
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Revision				
Date	Version	Chapter	Reason	Responsible
Nov. 30, 2016	1.0	All	New	Matthias Lohrer

These operating instructions were drawn up to the best of our knowledge. Nevertheless, if they should contain errors or ambiguities, please let us know. Furthermore, we are grateful for any helpful hints or suggestions. Please contact us:

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# 1 EU Declaration of Conformity



## 2.1 Installation sites of the ITS6

For better clarity of the various wiring and pneumatic diagrams, the printer has been divided into several sections, each of which is assigned a three-part code. To avoid confusion with the actual component IDs, a plus sign "+" is always added to the beginning of the ID for the installation site.

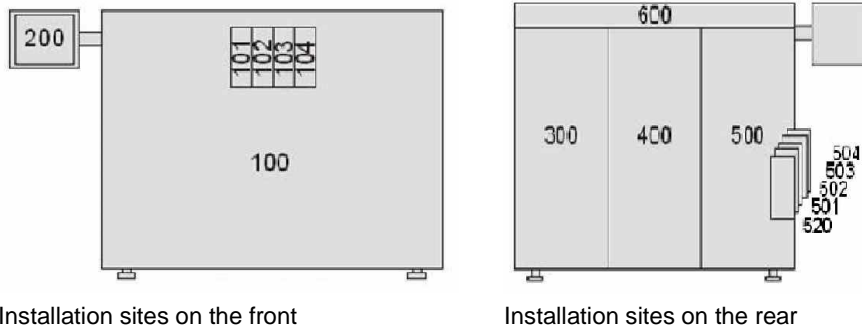


Fig. 3 Numerical code for the installation sites of components inside the printer

Code no:	Installation site:
+100	Front/operator side of the printer
+101	Print head unit, color"1"
+102	Print head unit, color"2"
+103	Print head unit, color"3"
+104	Print head unit, color"4"
+200	Control panel / MHI
+300	Rear of the printer, left
+400	Rear of the printer, center
+500	Rear of the printer, right
+501	Ink management, color "1"
+502	Ink management, color "2"
+503	Ink management, color "3"
+504	Ink management, color "4"
+520	Ink management, cleaning fluid
+600	Upper cover

## 2.2 Code letters of devices

Each device has a code letter in addition to its item number (see table below), which can be used to infer the type and function of a particular component when reading various diagrams:

Code letter:	... used for:
<b>A</b>	Complete assemblies and printed circuit boards in general
<b>B</b>	Sensors in general, e.g. photoelectric barriers, proximity switches,...
<b>F</b>	Fuses
<b>FU</b>	Frequency converter
<b>G</b>	Power supply system, mains adapters,...
<b>H</b>	Indicator lights, signal lights
<b>K</b>	Contacts, switches or circuit breakers
<b>KM</b>	Main or power contactors
<b>KN</b>	Emergency Stop relay
<b>M</b>	Motor, drive
<b>Q</b>	Main switch
<b>QM</b>	Motor protection switch
<b>R</b>	Resistor
<b>S</b>	Switch or button controlled directly by individuals
<b>SN</b>	Emergency Stop button
<b>T</b>	Transformer
<b>W</b>	Cable, wire
<b>X</b>	Plug contact
<b>Y</b>	Pneumatic and hydraulic parts, e.g. valves, pumps,...

Usually a minus sign "-" is placed before the code letters in order to clearly distinguish them from the installation site IDs, especially when the device ID is particularly complex.

### 3 **Installation diagram**

The PDF-file of the installation diagram has been saved on the documentation CD.



## 4

### **Wiring and pneumatic diagram**

The PDF-file of the wiring and pneumatic diagram has been saved of the documentation CD.

## 5 Replacement Parts

### 5.1 Parts for the printing machine

Item No.	Article designation	Number of parts per printer
<b>Print head</b>		
FF100323100	Print head DOD 600DPI	8
EG3VE001000	INK VALVE (VALVE UNIT PRINT HEAD)	8
EG3VE002000	CLEANING AND WASTE VALVE (VALVE UNIT PRINT HEAD)	8
FF100293100	PRINTED CIRCUIT BOARD CONVERTER FOR DSP3	8
FF100437100	CONTROL BOARD PRE-CURING	6
FF100289100	PCB INK HEATING	4
to be defined	Pre-curing	6
<b>Main curing</b>		
EG3HF001000	UV-Lamp 225/8W spare part	3
<b>Ink system</b>		
EG7TB021000	FILTER MODULE CPL.	1
ZETB.016.00.Z	PUMP BLOCK CPL.	5
EG3TB002000	FILTER ELEMENT SPARE PART	5
EG3TB003000	Ink tank spare part	4
EG3TB004000	Cleaner tank spare part	1
FF100268100	DEGASSER BIG CPL. SPARE PART	4
ZEAN14.0101	Printed circuit board cpl Degasing	1
FX105317100	Magnetic valve at pneumatic unit	5
<b>Control system</b>		
FF100292100	Printed circuit board AD24 cpl DSP3	2
FF100284100	Platine IJ Encoderboard	1
FF100291100	Printed circuit board Drehgeber-Konverter	1
FF100299100	Memory board SDHC Karte 16 GB	8
FX105576100	Battery NBBH2412	1
FX105774100	Power supply AkkuTEC2440-0 400V	1
FF100331100	Power supply PVSE 400/24V-10A	1
FF100332100	Power supply PVSE 400/24V-20A	4
FF100329100	POWER SUPPLY PVSE 400/24V-40A	2
FF100395100	RELAY 24VDC, 4 CHANGE OVER (51410)	6

Item No.	Article designation	Number of parts per printer
FF100286100	Printed circuit board Unwinder/Rewinder	1
ZEAD05.0303	M16 module for engine board	1
FF100333100	Power supply PVSE 400/48-20A	15
FF100253100	RELAY 24VDC, 2 CHANGEOVER (52102)	20
FF100298100	Hard disk 250GB SATA	1
ZEAD14.0000	USB-Stick 8 GB SanDisk Cruzer Glide	1
EG3EK001000	Fine-wire fuse package	1
Adapter to camera system		
ZEAU07.0002	Printed circuit board cpl Optokoppler	1
FF100290100	Printed circuit board cpl I/O-Karte	1
FX108351100	Interface adapter RS232 auf USB	1
PCBs		
FF100284100	AA04 – Encoder board	1
ZEAD03.0101	AD03 – HMI converter board	1
ZEAD16.0305	AD16 – Engine controller	1
FF100289100	AD21 – Ink heating	
FF100290100	AD22 – CSAT inspection controller	1
FF100290100	AD22 for Label Rejection Controller	1
FF100291100	AD23 – Shaft encoder converter board	1
FF100292100	AD24 – DSP3 (Digital Signal Processor)	4
FF100286100	AN05 – Unwinder control	1
FF100437100	AN12 – Pre-curing board	3
ZEAN14.0101	AN14 – Degassing / Cleaning board	
FF100293100	AP09 – IJ converter board	4
ZEAU07.0002	AU07 – Optocoppler board	
FF100294100	AU11 – Adapter board for Dunker motor at the winding unit	1
FF100285100	AX01 – Intermediate reservoir distributor board	
ZEAX04.0203	AX04 – Ink heating distributor board	
FF100288100	AX06 – Cleaning valves distributor board	
FF100296100	AX07 – Ink management distributor board	
FF100287100	AX09 – Needle control	

Item No.	Article designation	Number of parts per printer
ZEAX12.0303	AX12 – UV LED control	
ZEAX14.0202	AX14 – Curing distributor board	
FF100292100	AX17 – DSP distributor board	

## 5.2 Parts for the printing substrate cleaning module, supplied by Teknek

Part number	Description
FF100135100	Pneumatic cylinder
FF100136100	Mini regulator
FF100137100	Adhesive core chuck
FF100138100	Adhesive Roll off spring
FF100139100	Bearing, adhesive core chuck
FF100140100	Rubber roller off spring
FF100141100	24VDC Solenoid

## 5.3 Parts for the corona system, supplied by Softal

Part number	Description
FF100122100	LED white, 24VDC
FF100123100	Printed circuit board LP 710-BR
FF100124100	Printed circuit board LP DR7
FF100125100	IGBT-Modul SKM50GB12T4
FF100126100	Fine-wire fuse (VE=10) 1A
FF100127100	Fine-wire fuse (VE=10) 2A
FF100128100	Fine-wire fuse (VE=10) 25A
FF100129100	Fine-wire fuse (VE=10) 12,5A
FF100130100	Fine-wire fuse (VE=10) 0,5A
FF100132100	Ceramic electrode 16x16; 250mm KER-00232

## 5.4 Parts for the web guiders, supplied by Erhardt + Leimer

Part number	Description
FF100114100	Control board RK 4004, digital +software
FF100115100	Operating unit, digital controller RT4006
FF100116100	Actuator with Dunker-made motor
FF100117100	Ultrasonic edge sensor FX 4631
FF100120100	Roller BA 1060, AL ø60x250mm

Part number	Description
FF100452100	Web guider NB:250mm LUE: 300mm [statt FX105572100]

## 5.5 Parts for the vision system, supplied by ISRA Vision / Vision Experts

Part number	Description
EG3DE001000	Encoder Camera spare part
FF100143100	Encoder wheel
ZEE-12372-2	PC complete (camera system)
ZEE-12373-7	Camera set
ZEE-12376-2	Encoder & image start (camera)
ZEE-12377-7	Cell lighting (camera)
ZEE-12379-2	Configured system hard disc (camera)
ZEE-12374-2	Video rack (camera)
ZEE-12375-7	Touch screen (camera)

## 5.6 Storage of replacement parts

Based on our experience so far, all of the replacement parts for the Heidelberg CSAT ITS6 printer have virtually an unlimited shelf life when handled properly, which is why these articles are usually not marked with an expiration date.

If individual articles do have a limited lifetime due to special circumstances, this will be indicated on the package.

Please consider all those items as articles with limited lifetime which are currently filled with ink, since this fluid is slowly curing in the course of time.



### Notice

Leave all supplied replacement parts in their original packages in order to provide the best possible protection against damage or environmental influences.

### Storage conditions

The replacement parts and consumables should be stored in a cool, dry place and protected against exposure to light, the latter of which applies especially to ink.

Storage temperature:	+15°C (+59°F) to +30°C (+86°F)
Relative humidity:	30% r.h. to 60% r.h.

Electronic components should be left in their original packages to protect them against electrostatic charges, and they should be handled as little as possible.

**Attention!**

Parts or assemblies that have come into contact with ink must be thoroughly rinsed and cleaned with cleaning fluid before they may be removed and stored.

Otherwise there is the risk that ink could dry permanently on the parts, thus rendering them useless!

## **5.7 Disposal of replacement parts and pieces**

Defective metal and plastic parts can be disposed of in small quantities in the ordinary household garbage or at waste recycling centers.

Electronic components, such as circuit boards or drives, should always be turned into collection centers for electrical and electronic equipment.

Please observe also the local, regional and national laws and regulations as well as the provisions of the local waste disposal company!

Furthermore, defective replacement parts can also be returned to the manufacturer for recycling.

## 6 Consumables

Consumable	Order no.	Usual life cycle
CSAT ITS6 UV Ink Cyan <b>G2</b> , 1000 ml	HT4001201	When required
CSAT ITS6 UV Ink Magenta <b>G2</b> , 1000 ml	HT4001202	When required
CSAT ITS6 UV Ink Yellow <b>G2</b> , 1000 ml	HT4001203	When required
CSAT ITS6 UV Ink Black <b>G2</b> , 1000 ml	HT4001204	When required
Cleaning fluid for print heads, suitable for <b>G1/G2</b> UV ink	HT4001100	When required
Rubber roller, friction drive	ZEFI.007.00.E	300 000 m
Rubber roller, web tension control	ZEFI.007.00.E	300 000 m
Wiper	FF100251100	700 h
Activated charcoal filter 300 x 80 x 37 mm	FF100386100	250 h
Outlet filter fleece (rectangular), air circulation system	FF100312100	250 h
Filter fleece for collection pan	FF100313100	When required
Filter fleece for intermediate reservoir, 420 x 165 x 15 mm	ZETB.078.00.M	When required
Foam rubber for printing table	Zefd.029.00.M	When required
Intake filter fleece (round), air circulation system	ZECV.008.00.M	250 h
Cleaning cloth for print heads (300 pcs.)	FF100252100	For single use
Filter fleece for ink management (with cutout) 420 x 165 x 15 mm	FF100314100	When required
Filter fleece for degassing unit, 400 x 65 x 15 mm	FF100315100	When required
Roller with adhesive foil (1 item) for printing substrate cleaning module	FF100316100	When required
Cleaning roller (1 pc) for printing substrate cleaning module	ZE1010-42	12 months, or even earlier, if required
Tekwipes (1 package) for printing substrate cleaning module	FF100317100	When required

Consumable	Order no.	Usual life cycle
Roller Doctor Kit for printing substrate cleaning module	FX107428100	When required
Residual ink bottle	FF100318100	When required
Filter fleece below residual ink bottle	FF100319100	When required
Filter fleece drain module, 65 x 35 x 15 mm	FF100320100	When required
Ink filter module (incl. 5 ink filters)	EG7TB021000	2 000 h
Cleaning set ITS6	ZE1010-43	When required
Adhesive tape, red, 66 m x 50 mm (1 pack. with 3 rolls)	FF100321100	When required
Abrasive pad for the UV curing	ZE1010-75	For single use
Round blade no. 727 (Martor)	FF100322100	When required

Status: Nov. 09, 2016

#### Notice



If additional consumables are needed in addition to the initial procurement, then these must be obtained as new parts. It is not possible to purchase used and reconditioned components.

The exchange prices given in the list of consumables, which are much cheaper compared to the prices for new parts, refer only to the repair or reconditioning of components that have been supplied by the customer.



## 6.1 The handling of consumables

As opposed to conventional office printers, whose ink cartridges for example are disposed of in the garbage when they are empty, the worn and depleted consumables of the Heidelberg CSAT ITS6 printer can be returned to the manufacturer for exchange and then be reconditioned for reuse in the future. Besides the positive environmental aspects, there is also a great savings in costs compared to the purchase of new parts.

In order to ensure the longest possible useful life of consumables, they should always be handled carefully when removed and then be placed directly in the special package in which the exchange part was delivered.



### Notice

Please comply with the handling instructions in the description of how to replace the particular component as well as the instruction sheets in the shipping packages.

### Storage conditions

All recyclable consumables should be kept in their customized packages in a cool and dry place and be protected against exposure to direct sunlight, whereby the last condition applies in particular to the removed parts that come into contact with ink and which have to be stored until being shipped back to the manufacturer.

Storage temperature:	+15°C (+59°F) to +30°C (+86°F)
Relative humidity:	30% r.h. to 60% r.h.

Electronic components should be left in their original packages to protect them against electrostatic charges, and should be handled as little as possible.

### Attention!

Parts or assemblies that have come into contact with ink must be thoroughly rinsed and cleaned with cleaning fluid before they may be removed and stored.

Otherwise there is the risk that ink could dry permanently on the parts, thus rendering them useless!

## 6.2 Packing and shipping

All consumables that are going to be reconditioned should always be shipped in their customized packaging, and especially parts that contained ink should be emptied as much as possible and then be sealed securely, making sure that the seal cannot loosen as a result of vibrations during transport and leak out any remaining fluid.

### **Attention!**

Any additional repair or cleaning costs incurred as a result of improper storage and/or packing of the consumables shall be carried by the sender!

### **Attention!**

Include a separate and carefully filled out goods receipt with each article. Always indicate precisely any defects and the reason for return in order to ensure fast processing by Markem-Imaje CSAT GmbH. Non-observance of these requirements could result in the loss of all warranty rights!

Please send the package with the parts to be reconditioned with sufficient postage to the manufacturer.

## 6.3 Disposal of non-recyclable consumables

The ink is literally a consumable since it is continuously and irretrievably withdrawn from the printer during the printing process and, consequently, the ink supplies have to be constantly refilled. Therefore, the ink is consumed.

Although the cleaning fluid remains as a whole, the constant contact with ink causes it to become dirty eventually and it can no longer be used. Therefore, cleaning fluid is also consumed.

The situation is similar for the fleece in the collection pans and the filters used in the suction system: They cannot be returned to their original condition after being used and therefore have to be replaced with new ones.

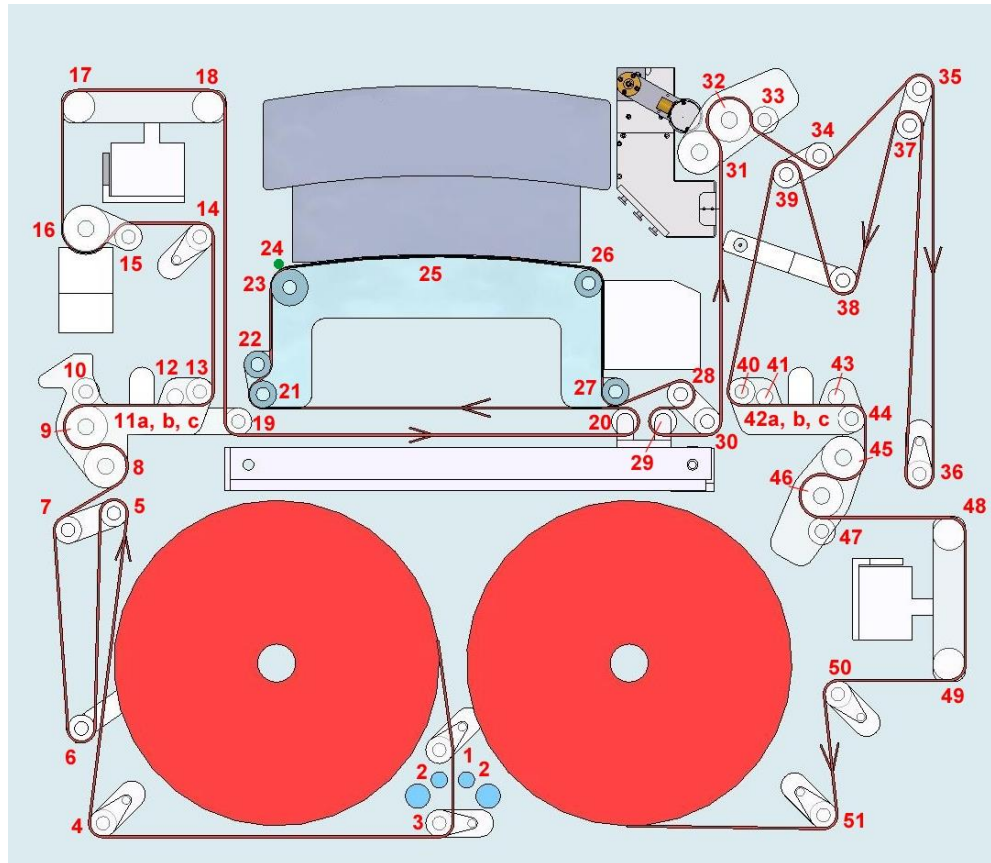
Since the return of non-recyclable consumables to the manufacturer makes little sense and also would be associated with unnecessarily high postage, it is easier and cheaper to first collect the used articles and then have them removed by a local company qualified to dispose of industrial and hazardous waste.

Please observe also the local, regional and national laws and regulations as well as the provisions of the local waste disposal company!

## 7 Parts that come into contact with the printing substrate

During the printing process, the printing substrate is under tension while it travels through the printer so that it only comes into contact with the various guide rollers, friction rollers and transfer cylinders.

The following table lists all of the printer parts that come into contact with the printing substrate.



Pos.	Designation	Drawing-No	Material
1	Guide roller	UR.032.02.D.LT (UR.024.00.Z.LT)	AlMgSi 0,5, natural anodized
2	Rubber roller	SA6684; RN53280	F3; Nanocleen
3	Guide roller	UR.032.02.D.LT (UR.024.00.Z.LT)	AlMgSi 0,5, natural anodized
4	Guide roller	UR.032.02.D.LT (UR.024.00.Z.LT)	AlMgSi 0,5, natural anodized
5	Guide roller	UR.032.02.D.LT (UR.024.00.Z.LT)	AlMgSi 0,5, natural anodized
6	Guide roller	UR.032.02.D.LT (UR.023.00.Z.LT)	AlMgSi 0,5, natural anodized

Pos.	Designation	Drawing-No	Material
7	Guide roller	UR.032.02.D.LT (UR.024.00.Z.LT)	AlMgSi 0,5, natural anodized
8	Guide roller, web tension control	UR.084.02.D.LT (UR.027.01.Z.LT)	AlMgSi 0,5, natural anodized
9	Rubber roller, web tension control	FI.001.00.D.LT	3.3206; AlMgSi 0,5 coated, NGW material 3471/L 70Shore+/-3A white similar RAL 1013/9001
10	Guide roller	UR.026.01.Z.LT (UR.032.02.D.LT)	AlMgSi 0,5, natural anodized
11a	Cut-and-splice device support (guide plate)	FK.039.00.B.LT (FK.006.01.Z.LT)	AlMgSi 0,5, natural anodized
11b	Cut-and-splice device support (double clamping table)	FK.040.00.F.LT (FK.006.01.Z.LT)	Alplan, natural anodized
11c	Cut-and-splice device support (guide plate_long)	FK.021.00.B.LT (FK.006.01.Z.LT)	AlMgSi 0,5, natural anodized
12	Clamp roller cut-and-splice device, rubber-coated	FK.017.00.D.LT (FK.006.01.Z.LT)	1.4305; coated NGW material 3471/L, 70 Shore +/-3A white similar RAL 1013/9001 Complies with Bundesamt für Risikobewertung (BfR) Kat. 3
13	Guide roller cut-and-splice device	UR.032.02.D.LT (UR.032.01.Z.LT)	AlMgSi 0,5, natural anodized
14	Guide roller	UR.032.02.D.LT (UR.024.00.Z.LT)	AlMgSi 0,5, natural anodized
15	Guide roller	UR.032.02.D.LT (UR.034.00.Z.LT)	AlMgSi 0,5, natural anodized
16	Guide roller	UR.098.04.D.LT (UR.035.01.Z.LT)	1.4541
17	Guide roller of web guider	BR.001.00.Z.LT	Erhardt + Leimer, Nr. DRS 2275; Al - blank
18	Guide roller of web guider	BR.001.00.Z.LT	Erhardt + Leimer, Nr. DRS 2275; Al - blank
19	Guide roller	UR.032.02.D.LT (UR.032.01.Z.LT)	AlMgSi 0,5, natural anodized
20	Guide roller of web retraction system	UR.022.00.Z.LT (UR.082.00.D.LT)	AlMgSi 0,5, natural anodized
21	Guide roller of web retraction system	UR.032.02.D.LT (UR.028.01.Z.LT)	AlMgSi 0,5, natural anodized
22	Guide roller	UR.032.02.D.LT (UR.028.01.Z.LT)	AlMgSi 0,5, natural anodized
23	Shaft encoder cylinder (Measuring roller_67)	DE.004.01.D.LT (DE.004.01.Z.LT)	V2A / AlMgSi 0,5
24	Sensing rod	EH.002.00.D.LT (EH.001.00.Z.LT)	Alu AWMP-10, eloxiert

Pos.	Designation	Drawing-No	Material
25	Roller 25	UR.104.02.D.LT _Rolle_25 (UR.040.00.Z.LT _Rolle_25)	AlMgSi 0,5, schwarz eloxiert
26	Precision guide roller	UR.103.02.D.LT (UR.039.01.Z.LT)	AlMgSi 0,5, natural anodized
27	Precision guide roller	UR.103.02.D.LT (UR.039.01.Z.LT)	AlMgSi 0,5, natural anodized
28	Guide roller	UR.032.02.D.LT (UR.024.00.Z.LT)	AlMgSi 0,5, natural anodized
29	Guide roller of web retraction system	UR.082.00.D.LT) (UR.022.00.Z.LT)	AlMgSi 0,5, natural anodized
30	Guide roller	UR.032.02.D.LT (UR.024.00.Z.LT)	AlMgSi 0,5, natural anodized
31	Guide roller of friction unit	UR.084.02.D.LT) (UR.027.01.Z.LT)	AlMgSi 0,5, natural anodized
32	Rubber roller of friction unit	FI.001.00.D.LT	3.3206; AlMgSi 0,5 beschichtet, NGW- Werkstoff 3471/L 70Shore+/-3A weiß ähnlich RAL 1013/9001
33	Guide roller of friction unit	UR.032.02.D.LT (UR.026.01.Z.LT)	AlMgSi 0,5, natural anodized
34	Guide roller	UR.032.02.D.LT (UR.024.00.Z.LT)	AlMgSi 0,5, natural anodized
35	Guide roller	UR.032.02.D.LT (UR.024.00.Z.LT)	AlMgSi 0,5, natural anodized
36	Guide roller	UR.032.02.D.LT (UR.024.00.Z.LT)	AlMgSi 0,5, natural anodized
37	Guide roller	UR.032.02.D.LT (UR.024.00.Z.LT)	AlMgSi 0,5, natural anodized
38	Guide roller	UR.032.02.D.LT (UR.023.00.Z.LT)	AlMgSi 0,5, natural anodized
39	Guide roller	UR.032.02.D.LT (UR.024.00.Z.LT)	AlMgSi 0,5, natural anodized
40	Guide roller of cut-and-splice device	UR.032.02.D.LT (UR.032.01.Z.LT)	AlMgSi 0,5, natural anodized
41	Clamp roller cut-and-splice device, rubber-coated	FK.017.00.D.LT (FK.007.00.Z.LT)	1.4305; beschichtet NGW- Werkstoff 3471/L, 70 Shore +/-3A weiß ähnlich RAL 1013/9001
42a	Cut-and-splice device support (guide plate, long)	FK.021.00.B.LT (FK.007.00.Z.LT)	AlMgSi 0,5, natural anodized
42b	Cut-and-splice device support (double clamping table)	FK.040.00.F.LT (FK.007.00.Z.LT)	Alplan, natural anodized
42c	Cut-and-splice device support (guide plate, short)	FK.020.00.B.LT (FK.007.00.Z.LT)	AlMgSi 0,5, natural anodized

Pos.	Designation	Drawing-No	Material
43	Clamp roller cut-and-splice device, rubber-coated	FK.017.00.D.LT (FK.007.00.Z.LT)	1.4305; beschichtet NGW-Werkstoff 3471/L, 70 Shore +/-3A weiß ähnlich RAL 1013/9001
44	Guide roller of cut-and-splice device	UR.032.02.D.LT (UR.032.01.Z.LT)	AlMgSi 0,5, natural anodized
45	Guide roller of cut-and-splice device	UR.027.01.Z.LT (UR.084.02.D.LT)	AlMgSi 0,5, natural anodized
46	Rubber roller of web tension control	FI.001.00.D.LT (FI.002.01.Z.LT)	3.3206; AlMgSi 0,5 coated, NGW material 3471/L 70Shore+/-3A White similar RAL 1013/9001
47	Guide roller	UR.032.02.D.LT (UR.026.01.Z.LT)	AlMgSi 0,5, natural anodized
48	Guide roller of web guider	BR.001.00.Z.LT	Erhardt + Leimer, Nr. DRS 2275; Al - blank
49	Guide roller of web guider	BR.001.00.Z.LT	Erhardt + Leimer, Nr. DRS 2275; Al - blank
50	Guide roller	UR.032.02.D.LT (UR.024.00.Z.LT)	AlMgSi 0,5, natural anodized
51	Guide roller	UR.032.02.D.LT (UR.024.00.Z.LT)	AlMgSi 0,5, natural anodized

## 8 Safety data sheets

This section contains the safety data sheets of all inks and the cleaning fluid for print heads.

Liquid	Document	Revision
CSAT Cyan G2 ink	MSDS-ink-G2-cyan.pdf	18-May-2015
CSAT Magenta G2 ink	MSDS-ink-G2-magenta.pdf	18-May-2015
CSAT Yellow G2 ink	MSDS-ink-G2-yellow.pdf	18-May-2015
CSAT Black G2 ink	MSDS-ink-G2-black.pdf	18-May-2015
CSAT Cleaning fluid for print heads	MSDS-Cleaning-fluid.pdf	18-May-2015

The PDF files of the safety data sheets have been saved on the documentation CD.