Process Engineering
Division

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Novartis Singapore Manufacturing Pte Ltd
Tuas
Singapore

Equipment – IBC Blender
SP2000 Blender (B01)
Post Hoist (D01)
Mill (M01)

Buck Ref: G1951-B01/D01/M01
OPERATION & MAINTENANCE MANUAL

A company of GEA Group

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Process Engineering Division

DOCUMENT NUMBER G1951-B01/D01/M01-OMM

Title Operation and Maintenance Manual: IBC Blender

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CUSTOMER: Novartis Singapore Manufacturing Pte Ltd
Tuas,
Singapore

Purchase Order:

Buck Systems Ref: G1951-B01/D01/M01

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This Manual describes the following equipment:

Designation: G1951-B01/D01/M01

Supplied to: Novartis Singapore Manufacturing Pte Ltd
Tuas, Singapore

Purchase Order No

1 – SP2000 Blender – G1951-B01-001

1 – PH600 Post Hoist – G1951-D01-001

1 – Comill U5 Mill with Hopper – G1951-M01-001

Revision History

Rev	Date	Revision Description	Prepared By (Signature)	Authorised by (Signature)
R0	05 June 07	Initial Issue	Barrie James	S. Eling
R1	07 Aug 07	As built	B Walmsley	S Eling
R2				
R3				
R4				
R5				

ABBREVIATIONS

The following abbreviations may be used within this document.

AFGB	Aeromatic-Fielder Ltd
AHU	Air Handling Unit
API	Active Pharmaceutical Ingredient
BSL	Buck Systems Limited
C&I	Controls and Instrumentation
CIP	Clean In Place
COSHH	Control of Substances Hazardous to Health
DQ	Design Qualification
DSCR	Design Specification Change Request
EMC	Electro-Magnetic Compatibility
FAT	Factory Acceptance Test
FBD	Fluid Bed Dryer
FBGD	Fluid Bed Granulator Dryer
FDS	Functional design Specification
FHU	Fluid Handling Unit
FIBC	Flexible Intermediate Bulk Container
FS	Functional Specification
GAMP	Good Automated Manufacturing Practice
HD	Head
HEX	Hexagonal
HDS	Hardware Design Specification
HHT	Hand Held Terminal
HMI	Human-Machine Interface
IBC	Intermediate Bulk Container
ICQ	Installation, Commissioning & Qualification
IQ	Installation Qualification
OIT	Operator Interface Terminal
MP	Multi Processor
N/A	Not Applicable
NWL	Narrow-Way Loaded
OEM	Other Equipment Manufacturer
OMM	Operation & Maintenance Manual
OQ	Operation Qualification
PC	Personal Computer
P & I D	Process & Instrumentation Diagram
PLC	Programmable Logic Controller
PLS	Proximity Laser Scanner
PM/PE	Project Manager / Engineer
QASV	Quick Acting Safety Valve
QC	Quality Control
RMDU	Raw Material Dispensing Unit
SAT	Site Acceptance Test
SG	Spray Granulation
SKT	Socket
SO	Shop Order
SWL	Safe Working Load
VFC	Volt-Free Contact
WIP	Wash in Place

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Safety and General Notices

I. *Machine Use Disclaimer*

These machines must NOT be used for purposes other than those for which they have been supplied under contract from Buck Systems. Failure to use the machines for the purposes as described in the contract nullifies any warranty or injury claim that could arise as a result of this misuse.

II. *Safety*

II.1 General

As automatic machines accessible to operators, the equipment described in this manual is potentially dangerous!

No attempt to install, run or maintain the equipment must be made before referring to this manual.

Ensure all personnel are clear of all rotating and hazardous parts before pressing reset, or releasing the emergency stop button.

Always turn off the main disconnect switch before approaching the active parts of the machine or performing any operation within reach of live or moving parts.

II.2 Guards & Interlocks

This equipment is guarded to prevent injury to operators. Do NOT attempt to run this equipment with any guards or panels removed (or incorrectly fitted) or with any of the safety interlocks overridden (either mechanically or electrically). Failure to observe this instruction may result in serious injury to personnel.

II.3 Guard against Electric Shock

All electrical connections must be made by a qualified electrician and must conform to local electrical codes and earthing (grounding) practices. Before connecting the machine to a power source, ensure the supply voltage is the same as specified in the electrical wiring diagrams, in Section 5 of this manual. Disconnect and lock out power before opening any electrical enclosures.

II.4 Safety Glasses

Industry approved safety glasses should be worn at all times while operating or maintaining any part of the equipment.

II.5 Hearing Protection

Industry approved hearing protection should be worn at all times while operating or maintaining any part of the equipment.

II.6 Clothing

Ensure that suitable protective clothing for the products being run is worn correctly at all times. Do NOT wear loose clothing, or have long hair or jewellery exposed when operating or maintaining the machine. All operators and maintenance personnel should wear non-slip footwear.

II.7 Warning Labels

Pay strict attention to the caution, warning and danger signs displayed on the machine.

II.8 Working Environment

Ensure all sides of the machine are easily accessible for maintenance.

Keep the floor around the machine clean and free from product, water or other objects. Clutter of all types MUST be kept to a minimum. Run the machine only when all personnel and foreign objects are clear.

II.9 Personnel

All operating and maintenance actions must be carried out by qualified personnel.

II.10 Cleaning

Protective clothing and hand and face protection must be worn to avoid injury to personnel during the cleaning of the machine.

II.11 Residual Risk

Before carrying out any preventive/ corrective maintenance to the machine, ensure the following;

- the machine has been shut down correctly,
- the main electrical supply has been switched off at the isolator,
- the main electrical isolator has been locked off,
- the pneumatic system has been de-pressurised.

II.12 COSHH

All oils and lubricants recommended for use on the equipment, as supplied under contract, are suitable for the purpose for which the equipment was supplied. The oils and lubricants are safe for use under the Terms and Conditions of the Substances Hazardous to Health (COSHH) Act, 2002.

II.13 De-Commissioning

Should you require to de-commission the machine as supplied under the contract, from Buck Systems, please contact us at the address listed below. Buck Systems is pleased to offer this service.

II.14 Safe Handling

In the interests of safety and for the general protection of the machine Buck Systems strongly recommend that all installation procedures (*i.e.* transportation in plant on initial machine delivery, positioning and connection of supplies) are supervised by Buck Systems personnel. In addition, should the machine require relocation at anytime this should also be supervised by Buck Systems personnel.

II.15 Lifting Heavy Weights

HEAVY WEIGHTS - Equipment weighing more than 20kg must be lifted using suitable mechanical lifting apparatus.

LIFTING APPARATUS – Lifting apparatus must only be used in accordance with the manufacturers instructions and local health and safety regulations. All lifting apparatus and slings must be approved.

II.16 Disposal

This equipment should be disposed of in accordance with local regulations. Electrical and electronic components used in this equipment may contain toxic or hazardous substances and must be disposed of in accordance with the equipment manufacturer's disposal instructions and local regulations for the disposal of hazardous waste.

III. *Buck Details*

If you do have any questions, please do not hesitate to contact us at the following address:

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E-mail: engineering@buck-systems.com.

IV. *Spares and Service*

For spare parts or service queries, please do not hesitate to contact us at the above address: or r mail: spares@buck-systems.com**.**

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SECTION 1

Equipment Description

SECTION 1

Equipment Description

1.1 Overview *(Fig 1)*

1.1.1 General

The IBC Blender suite consists of SP2000 Single Pedestal Blender (G1951-B01), PH600 Slewing Post Hoist (G1951-D01) and a Mill Assembly (G1951-M01). All machines are located within a safe zone protected by a 'Trapped Fortress Key' safety system.

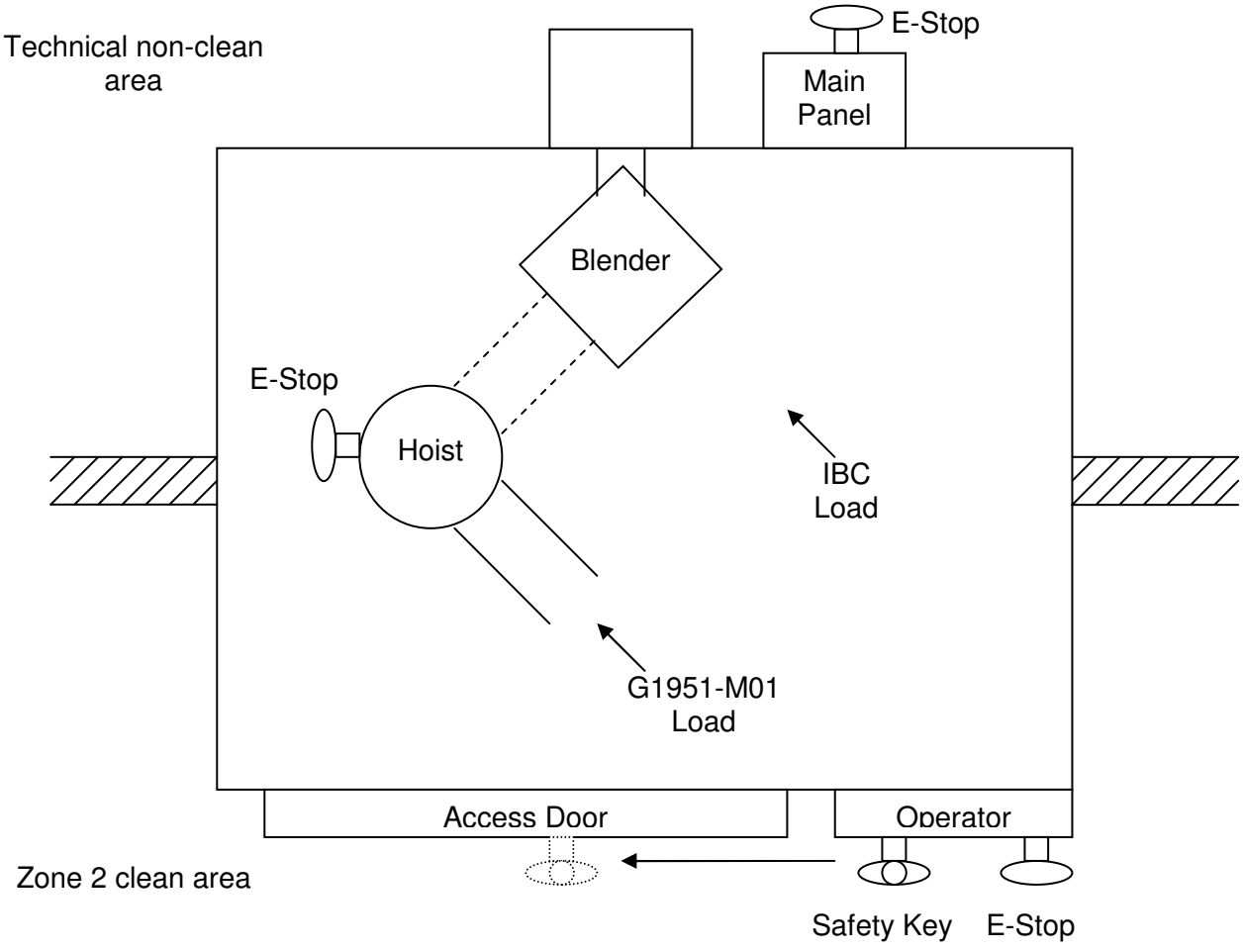

Fig 1 - IBC Blending Suite

1.1.2 Blender (G1951-B01)

SP2000 Single Pedestal Blender (G1951-B01) is designed to mix homogeneous dry powder and granular materials contained within a sealed Intermediate Bulk Container (IBC). It allows large quantities of product to be blended in short time periods, and in completely hygienic conditions. The unit is a single pedestal, tumbling Blending Machine designed to handle standard Buck Systems' IBC with a footprint of 1200 mm x 1200 mm, and capacities of 750, 1500 or 2000 Litre.

The IBC is located and clamped in a cage, mounted on a rotating shaft. As the shaft turns, the IBC is rotated about one of its diagonals. At each rotation the product contained comes into contact with the following:

- One flat surface (top of container).
- Two edges (diagonals of container).
- One truncated pyramid (hopper of container).

The product turns on itself in a non-symmetrical way, thus ensuring effective blending. Rotation speed of the blender is in the range 2 to 15 RPM.

1.1.3 Post Hoist (G1951-D01)

The Post Hoist allows the G1951-M01 assembly (Comil U5 Mill with an 80 L. hopper and an active Buck 'C' valve) to be lifted and docked over the passive Buck 'C' valve of the inverted IBC clamped in the blender. This is to allow gravity discharge product from the IBC. The Post Hoist forks hold the U5 frame in position during the discharge sequence, thus eliminating the need for a complete discharge station.

1.1.4 Mill Assembly (G1951-M01)

The Mill Assembly allows the milling of the product contained within the hopper as it flows into the inverted IBC. A Buck 'C' Type Active Valve is fitted to the Mills discharge chute to provide an interface with the passive valve on the receiving IBC. The mill assembly is fitted with a dust extraction facility. A design function of the Mill Assembly enables avoidance of cross contamination between the product in the IBC and the product in the Hopper. Mill and Buck valve derive their service and control from the Post Hoist control system via a Harting connection.

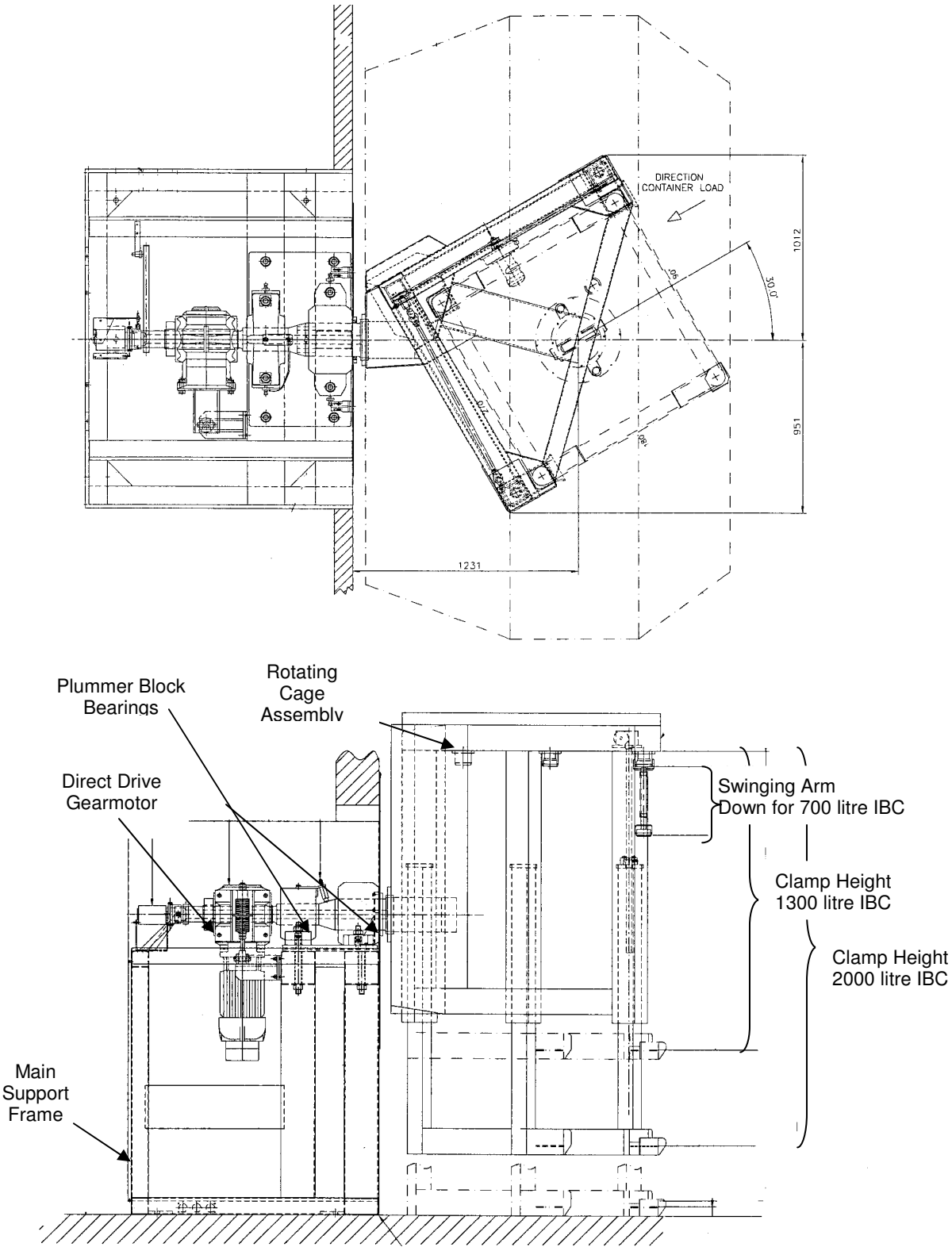

Fig 2 - SP2000 Blender – Construction Drawing (Plan & Side Views)

1.2 Description

1.2.1 SP2000 Blender (G1951-B01)

General

The SP2000 Blender, is illustrated in Figs 2 - 11,

The IBC is loaded onto the Blender's lift platen, by hand pallet truck, where it is raised and clamped in position by a pneumatic system, and screw jacks. Main drive for rotating the IBC is through a shaft mounted, inverter controlled, direct drive, 3 phase electrical gearmotor with brake.

Construction

In construction the SP2000 Blender comprises the following principle assemblies:

- Support Frame
- Drive Assembly
- Pneumatic System
- Rotating Cage with Swinging Arms Assembly
- Control Panels

The support frame is mounted outside the blending room and provides a 'Through the Wall' drive for the Rotating Cage (containing the IBC), which is inside the blending room.

Support Frame

A static frame supports the drive system and provides anchor points for fixing the complete machine to the floor. The support frame is made from grade BS EN 10088-1.4301 (304) stainless steel, rolled, hollow section, and is enclosed in a housing made from grade BS EN 10088-1.4301 (304) stainless steel plate. It houses the following sub-assemblies:

- Shaft-mounted, direct drive, gearmotor with brake and torque arm (Figs 2, 4, 6 & 7).
- Drive shaft and bearings (Figs 2, 4 & 6).
- Pneumatic control system (Fig 11).
- Electrical junction box (Fig 11).
- Stainless Steel Wall Plate (Fig 8).

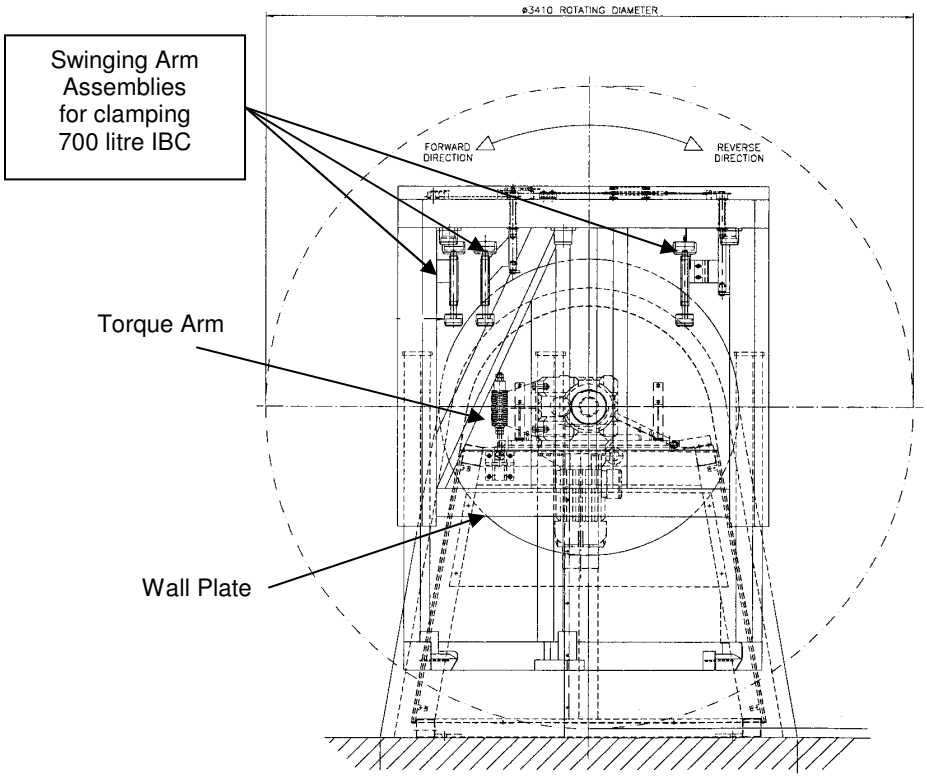

Fig 3 - Blender (G1951-B01) – Construction Diagram (end view)

Drive System

Two Plummer block bearings, mounted on the static frame, support the rotating cage's 100mm diameter shaft. The cage is driven via a shaft mounted, inverter controlled AC gearmotor. A torque arm prevents rotation of the drive unit (Figs 4, 6 & 7).

Three different sensors monitor Cage and IBC rotation:

- Cage Upright position is detected by a base-frame-mounted sensor, which senses the end of a long arm that rotates with the drive shaft (Fig 5).
- Number of rotations is detected by a base-frame mounted sensor that senses each passage of a target disc mounted on the drive shaft (Fig 5).
- Speed of rotation is detected by a base-frame mounted sensor, which senses the passage of teeth on a 30 tooth indexing wheel mounted on the drive shaft (Fig 6).

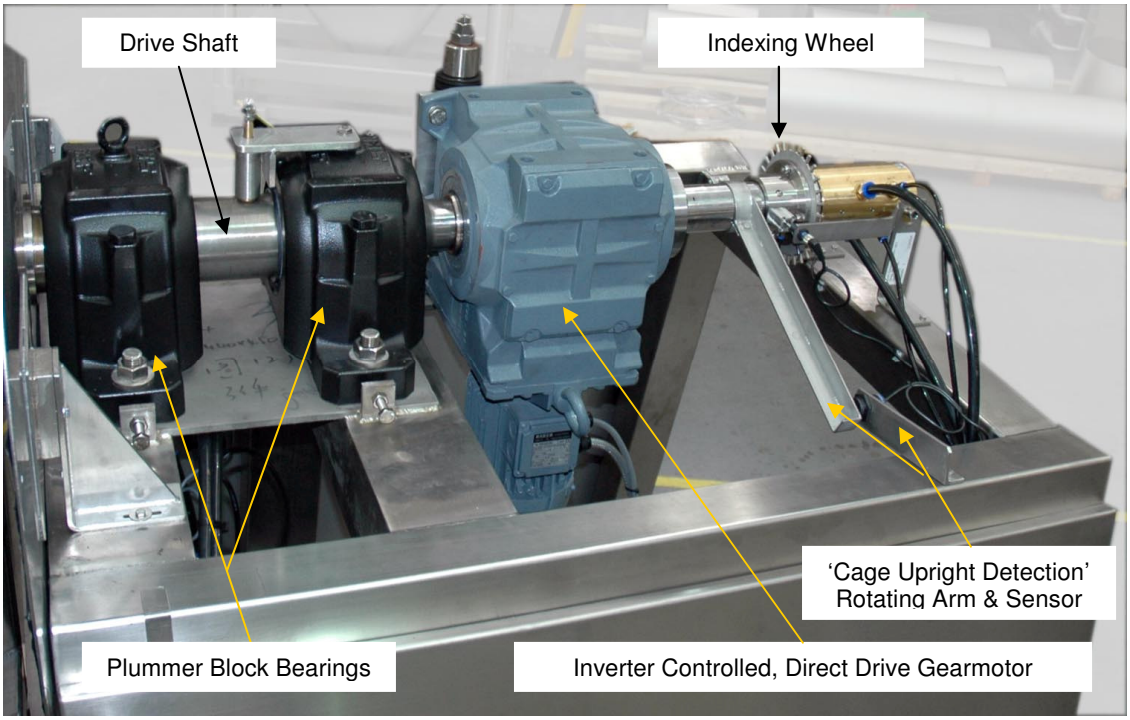

Fig 4 - Blender (right side) – Rotating Cage shaft, bearing blocks and gearmotor

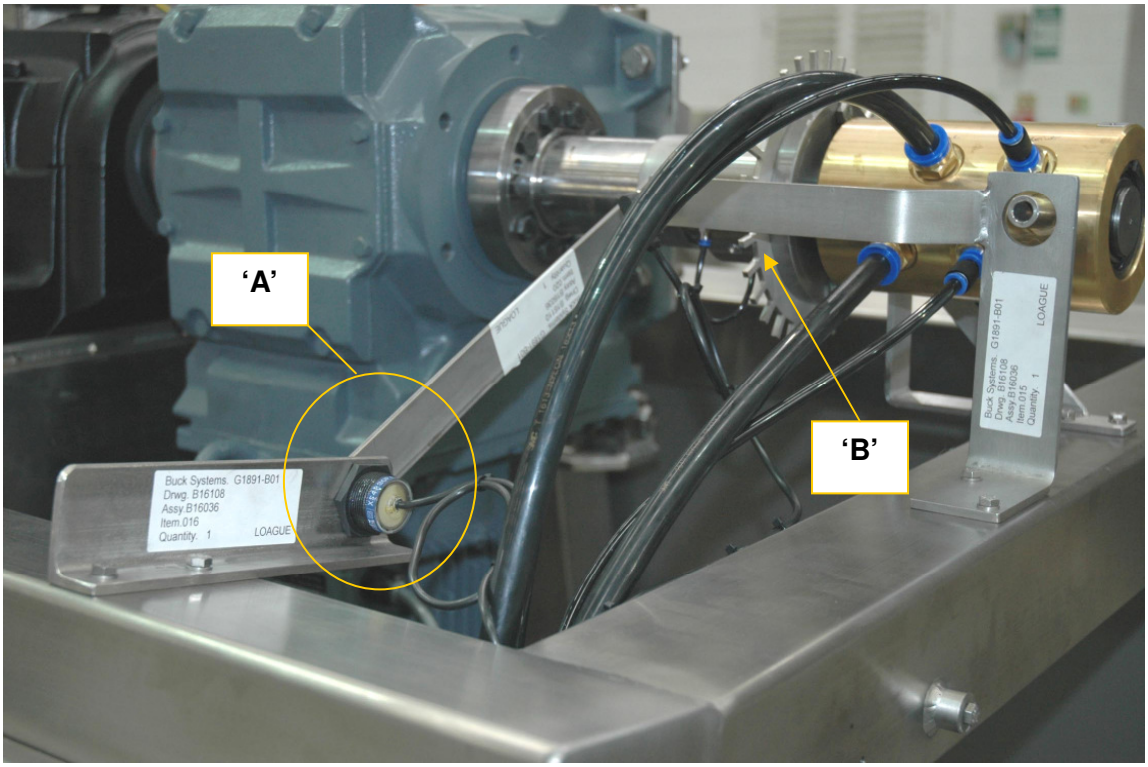

Fig 5 - Blender – 'A' Cage position arm and 'B' indexing wheel/sensor

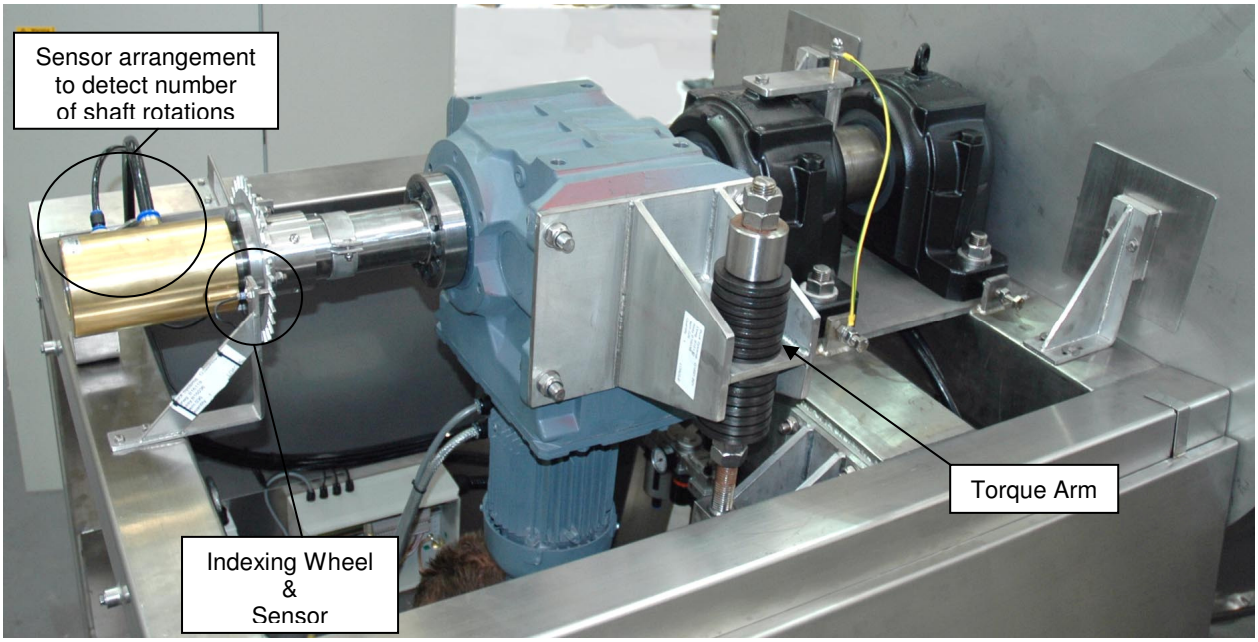

Fig 6 - Blender (left side) – Rotating Cage shaft, indexing wheel, gearmotor and bearing blocks

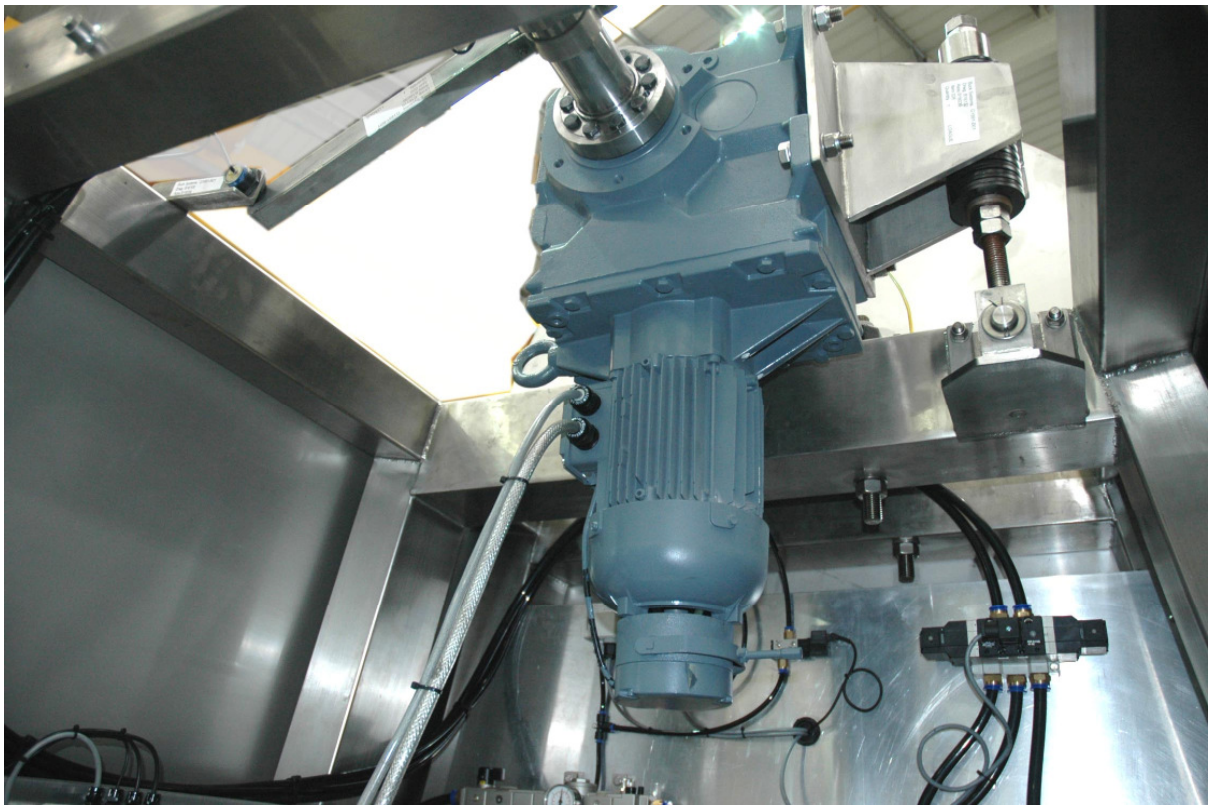

Fig 7 - Blender – Direct Drive Gearmotor Assembly & torque Arm

Rotating Cage

A rotating cage, made from BS EN 10088-1.4301 (304) stainless steel, is fixed to the main shaft. The cage clamps the container and supports it while the blending operation takes place. A screw jack system, driven by pneumatic (Air) motor, is used to actuate the clamping mechanism. When a 700 litre IBC is loaded onto the machine, a swinging arm assembly is activated, and lowered, to enable supplementary top clamp air bungs engage with the respective corner stops on the top side of the container. All moving parts are totally enclosed in the box section construction of the rotating cage (See Figs 2 - 4 & 8 – 10)

Fig 8 - Blender – Cage Assembly with IBC in position

Fig 9 - Blender Cage – Air motor Assembly

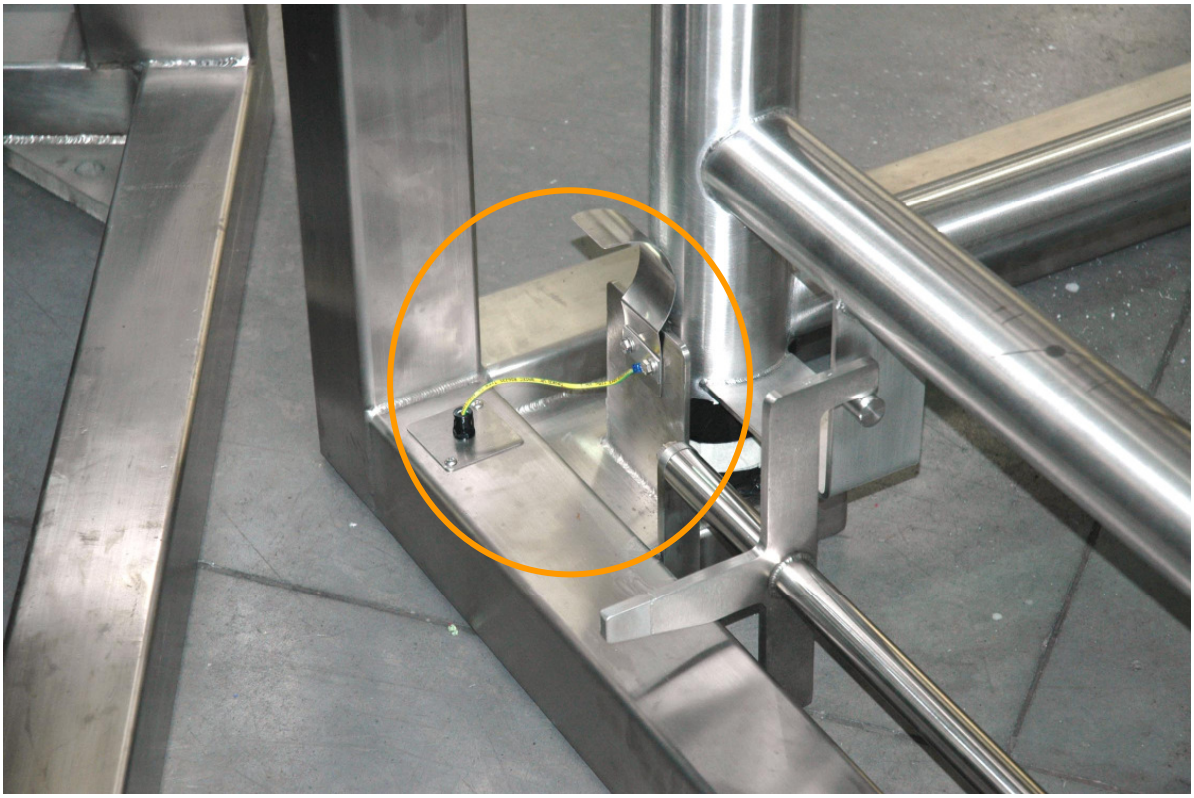

Fig 10 - Blender Cage – IBC Earthing Arrangement

Pneumatic Control System *(Fig 11)*

The pneumatic system has the following functions:

- To provide a clamping system mechanism, including activation of the Swinging Arm assembly for 700 litre IBC.
- To monitor container security in the cage by means of air check pressure sensing pads.

Plastic pipework and rotating unions are used to connect the pneumatic system through the support frame. The air supply is connected to machine via the filter/regulator assembly mounted on the base panel behind the motor. See Fig 11.

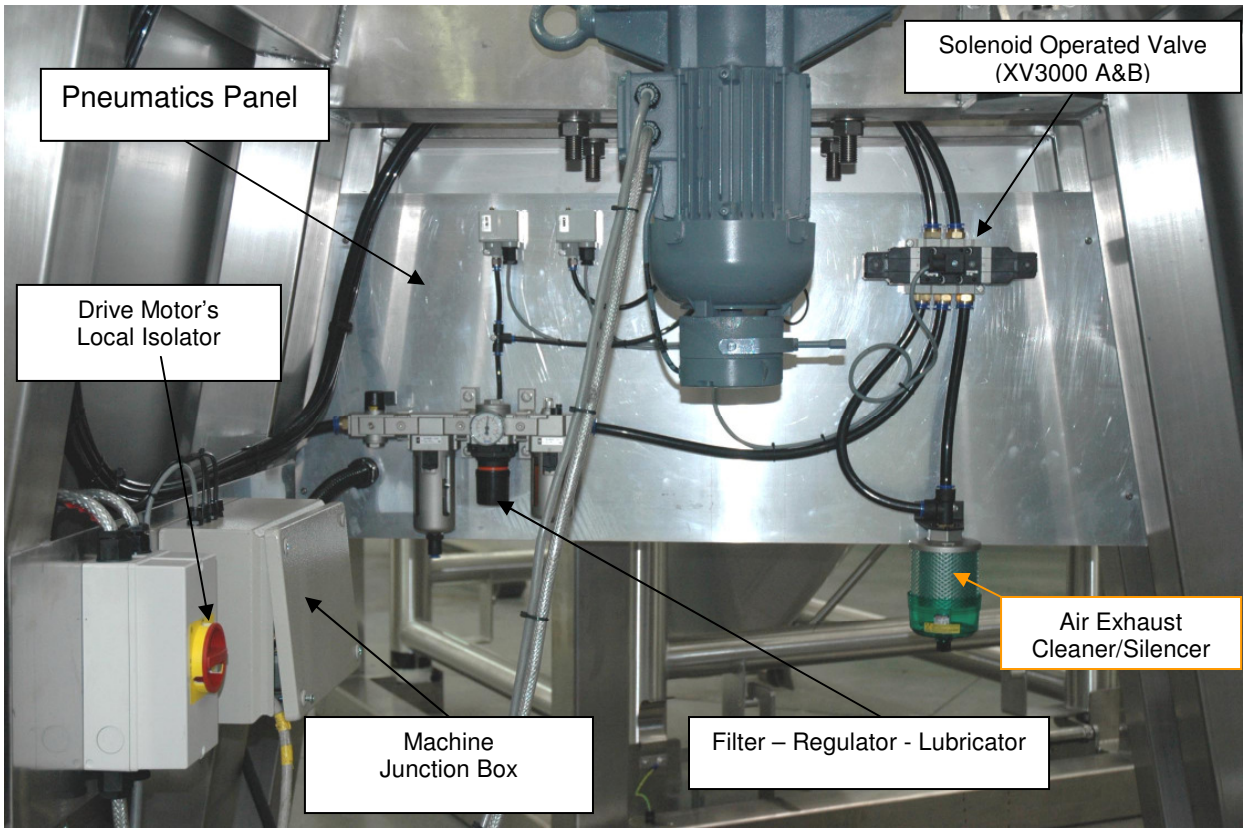

Fig 11 - Blender – Drive Motor, Pneumatics' Base Plate Assembly, Machine Junction Box

1.2.2 PH600 Slewing Post Hoist (G1951-D01) *(Figs 12 – 14)*

General

The PH600 Post Hoist enables an IBC be lifted and docked over the inlet of a downstream process. This allows gravity discharge of product from the IBC. The Post Hoist forks hold the IBC in position during discharge sequence, eliminating the need for a dedicated discharge station.

Construction

In construction, PH600 Post Hoist comprises the following principle assemblies:

- Lifting Column
- Slewing Base
- Lifting Forks
- Control Panel

The hoist is located within the secure zone alongside the Blender.

Lifting Column *(Fig 12)*

The basic hoist column construction consists of a carbon steel structure housed within a stainless steel shroud. Lift assemblies fitted to all hoists consist of a braked motor/gearbox assembly mounted at the top of the column which drives a double continuous chain loop connected to the lift carriage.

The Hoist utilises a 1.5 kW, inverter controlled lift motor complete with brake and fitted with thermistors. Any services required to or from the lifted load are passed through the carriage to the cable chain inside the column.

The normal lift assembly uses a white smooth fabric reinforced belt to pass through the carriage to close off the open front of the hoist column. This is fixed top and bottom.

Lift limit switches are mounted on a rail within the hoist column. These are mechanical limit switches which can be positioned anywhere in the lift height of the column. The position of the lower limit switch is the datum for the optical encoder system. See Section 5, G1951-D0`-901 P&I Drawing for the location, quantity/function of limit switches and encoded stops.

Slewing Base *(Figs 12 & 13)*

General

The slewing base consists of a base plate mounted slewing ring to which the slewing column is fastened. The hoist cannot be slewed more than 350°. The slewing end stops are mounted within the base unit on a continuous ring of mounted holes, allowing the end stops to be positioned anywhere within the slewing range of the hoist.

Powered Slew

Slewing is powered by a 0.18 kW, braked, motor/gearbox unit fitted with thermistors. Proximity switches mounted on the slewing ring's end stops to control the slew positions. Stops are inserted/released pneumatically.

Lifting Forks *(Figs 12)*

A standard fork assembly with 1450 mm reach is attached to the column by means of the carriage assembly. The forks are designed to handle Buck Systems' Intermediate Bulk Containers of up to 900 kg capacity.

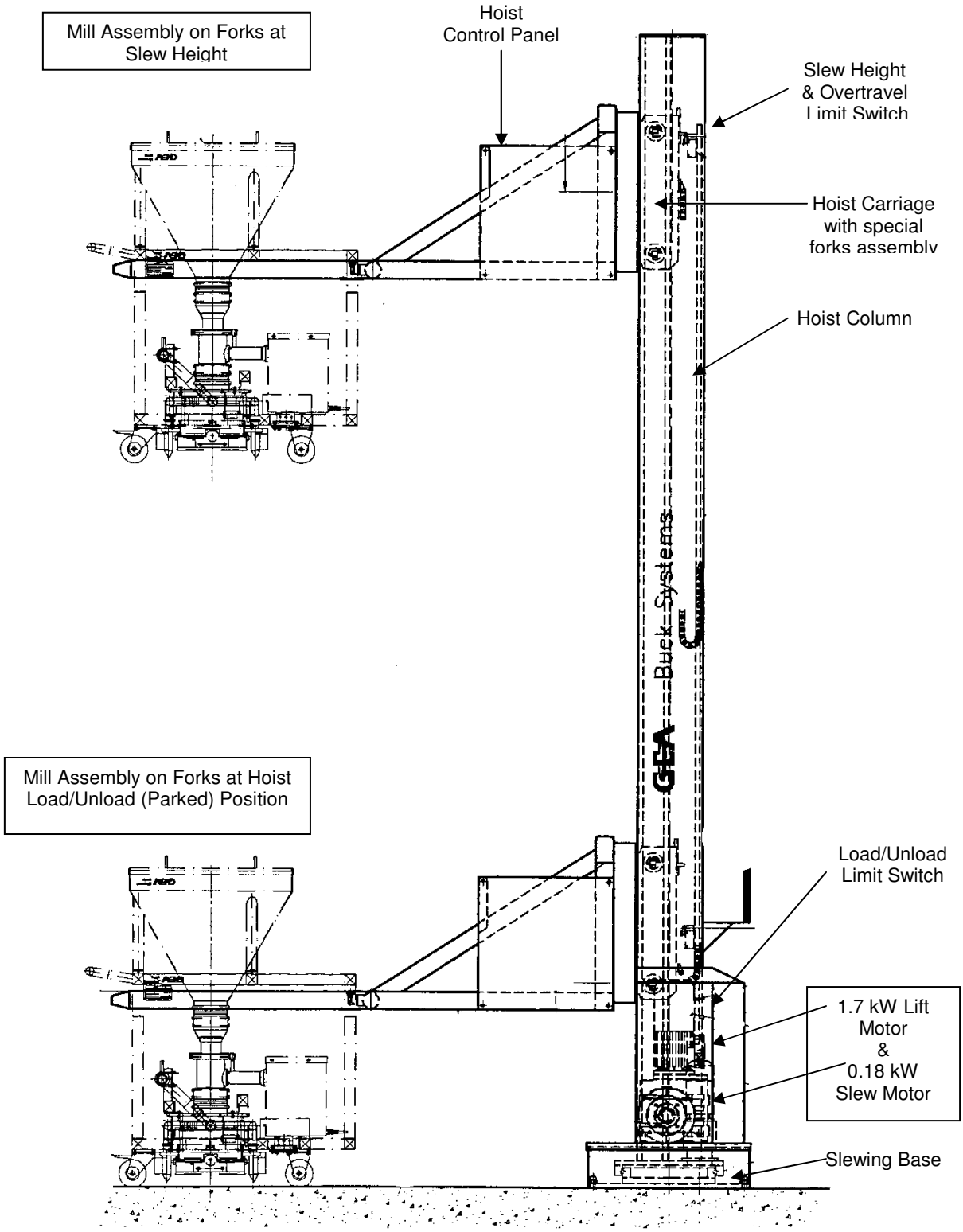

Fig 12 - PH600 Post Hoist

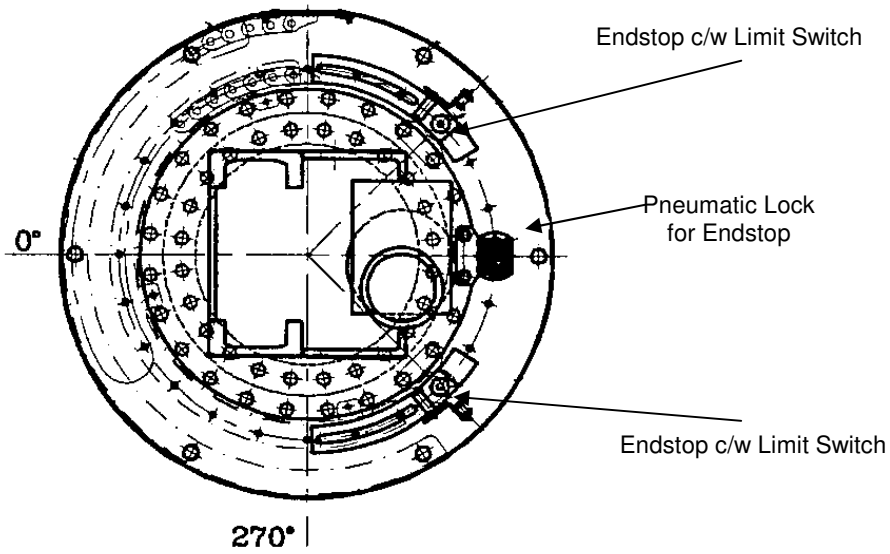

Fig 13 - PH600 Post Hoist Powered Slewing Ring

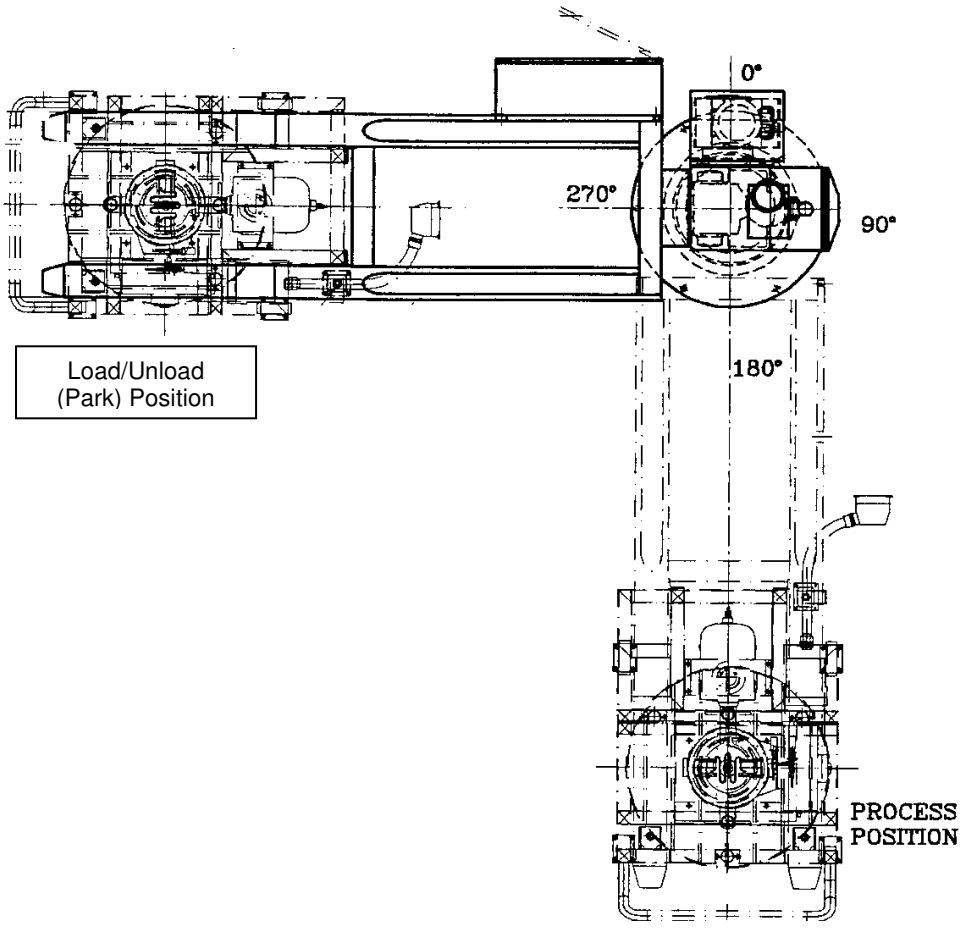

Fig 14 - PH600 Post Hoist – Operating Positions

1.2.3 Mill Assembly *(Figs 15 & 16)*

General

The Mill assembly consists of a Comil U5 Mill unit with an additions hopper mounted on its infeed, and 250 mm dia. Buck Type 'C' Active Valve mounted on its discharge chute. The whole assembly is mounted on Trolley frame.

In construction:

The trolley assembly is fabricated from tubular stainless steel and is fitted with four wheels (two fixed and two castors).

The Ytron-Quadro U5 Comil, which is fabricated from stainless steel is attached to the trolley's mid support cross members. Buck 250 mm dia Type 'C' Active valve is flange-bolted to the mill's discharge chute.

A stainless steel hopper with lid and clamp assembly is mounted on the cross supports of the trolley and connected to the mill's infeed by means of 6" flexible joint, spool piece and clamps.

A junction box is mounted on the trolley frame to interface the Mil and Valves service and control requirement with the Post Hoist control panel, via a Harting connection.

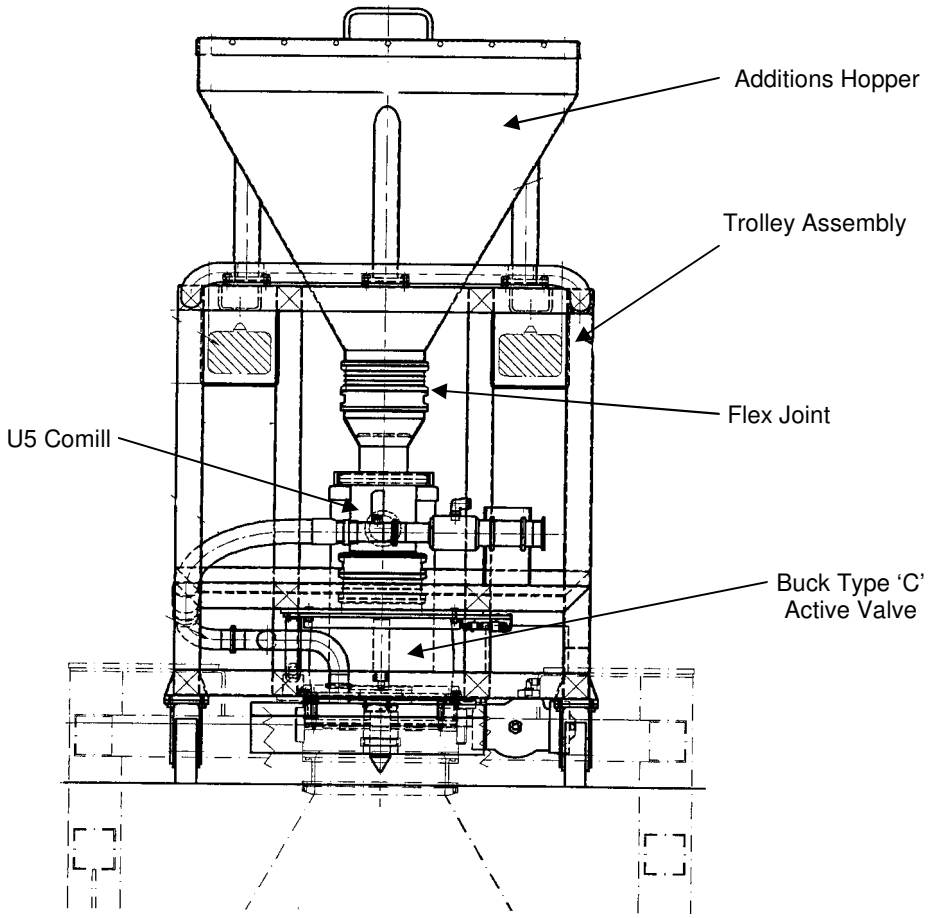

Fig 15 - Mill Assembly (G1951-M01)

Buck 'C' Active Valve

Two x 250 mm dia. Buck 'C' Valve Assemblies, which include valve support plate, are flange-bolted respectively to the infeed and discharge chutes of the Frewitt Mill (The mill is mounted on a trolley assembly), with electrical pneumatic connection made to the Post Hoist Control Cabinet by means of Harting plug arrangements.

The following additional items are fitted as part of the Buck valve assembly:

- A 90^{o} rotary actuator on the Buck valve that opens and closes the valve when it is docked with the receiving IBC.
- EPDM Seal and Compensator
- Vibroflow vibrator

Valve Docked & Safety Proximity Switches *(Fig 16)*

A proximity sensor detects the presence of the container when it is properly docked with the Buck Valve. A second (safety) switch, identified as 'Docking Over Travel, is activated if there is docking detection failure. This second switch is a hardwired interlock used to stop the hoist immediately.

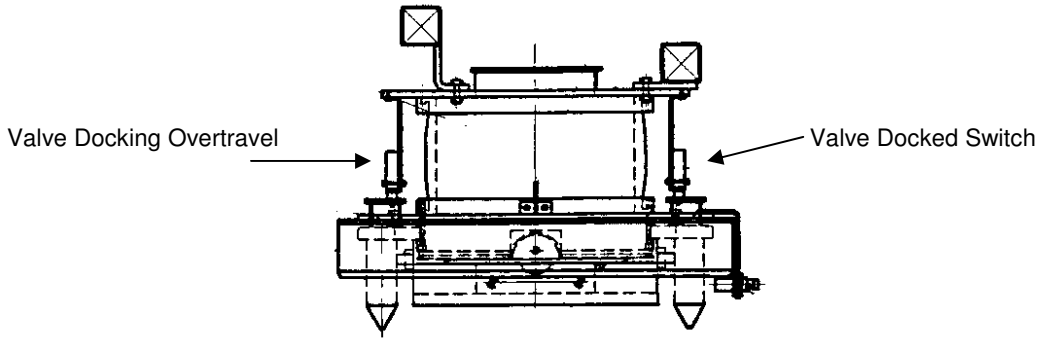

Fig 16 - Mill Assembly (G1951-M01) – Buck Valve

1.3 Buck Valve – Principles of Operation

A 250 mm Dia Buck 'C' Type Active Valve is fitted to the Mill The BUCK® valve consists of one active half flap mounted on the stationary equipment which docks with the appropriate passive half-flap mounted on an IBC. In operation, the BUCK® valve system ensures that product can be transferred between a process and an IBC with almost no contamination of the surrounding area. When closed, the two parts of the valve seal the product areas. The two halves are brought together in a docking manoeuvre, and clamped.

A vacuum generator is used to improve adhesion between the active and passive faces of the BUCK® valves during clamping operations. Vacuum pressure is monitored and if it rises above the nominal operating pressure prior to locking, the opening of the valve will be inhibited.

The combined valve can then be opened to allow passage of product. The design of the valve ensures that product flows over the inside surfaces of the valve halves, and does not touch the outside surfaces. This means that when the two halves of the valve are separated again, there should be no product to contaminate the surrounding area.

1.4 Control (Figs 11, 17 & 18)

1.4.1 General

The IBC Blender's control system consists of a Main Control Panel, Operators'' Control Panel, and Pneumatics Control Panel. Two modes of operation are available to the Operator/Technician i.e. Auto and Manual which are selected via the Human Machine Interface (HMI). There are three levels of access to the control system, i.e. Operator, Supervisor and 'Configuration'. Access to each level is controlled by entering a four digit code via the HMI.

1.4.2 Main Control Panel

The control system comprises a painted, mild steel Main Control Panel, is located in a technical area. The panel and devices supplied are suitable for operation in a safe (non-hazardous) area. The panel houses the controlling PLC, the AC inverter for the drive motor and the associated control and protection equipment. An emergency stop pushbutton is fitted on the panel door which forms part of the hardwired safety circuit.

1.4.3 Operator Control Panel

The stainless steel, flush, wall mounted operator control panel, is mounted outside the blending room. The panel and devices supplied are suitable for operation in a safe (non-hazardous) area. An Industrial PC with Touch Screen (SCADA) is mounted within the panel, to provide the operator the means by which to interact with the machine. An emergency stop, local control pushbuttons /indicators and one of a dual trapped key safety system are fitted to the panel.

1.4.4 Hoist (Remote Buck 'C' Valve Control)

The control (opening and closing) of the IBC Buck 'C' valve is actuated by G1951-M01 via an umbilical line and Harting type plug and socket arrangement. The umbilical line will supply the services required to control the valve and provide feedback to the control system, when connected to the post hoist plug.

1.4.5 Pneumatics Control Panel

A panel mounted on the back plate, within the pedestal, includes the pneumatic controls for the blender.

1.4.6 Control Hardware

The PLC which is supplied to control the blender is a Siemens S7-300 series model which will interface via the Siemens MPI protocol to a Fanuc Industrial PC with Touch Screen. Drive motors are controlled via Siemens inverters.

1.4.7 Trapped Key System *(Fig 17)*

A trapped fortress key safety system is incorporated which will control access to specific functions or operations of the machine. The protected zone will be the room where the blender will be located. Access to the room will be via a locked door, which can only be opened via the safety key, which normally resides in the operator panel. With the Safety key located and operated in the operator panel, the machine will function normally and all the blender functionality can be facilitated. The Safety key is then transferred from the operator panel to the blender room access door. This action will unlock the door and access to the blending room will be granted. Upon completion of the IBC operations (load/unload IBC); the door may then be locked in the closed position, which will allow the removal of the Safety key, which is then transferred back to the operator panel. With the key back in the panel and operated, the blender functionality is again enabled after the controls circuits have been reset via a pushbutton.

Fig 17 - IBC Blender Suite – Operator Control Panel

1.5 Services

To function correctly the IBC Blender system requires the following services:

Electrical

Electrical supply voltage: Customer Supply – 400V +/- 10%, 3ph N + E, 50Hz.

Pneumatic

Compressed air at: Max I/P Pressure - 10 Barg

Working pressure - 5.5 Barg

Earthing

The customer is responsible for providing a good quality, noise-free earth supply, with sufficiently low, earth loop impedance. Failure to provide such a supply may render the machine out of compliance with the requirements of the EMC directive[1].

[1] Electromagnetic compatibility directive (89/336/EEC, as amended) of the European Economic Area as implemented by the UK EMC regulations 1992 (SI 1992/2372, as amended).

SECTION 2

OPERATING INSTRUCTIONS

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SECTION 2

Operation

2.1 Operator Safety

Safety Notes

The IBC Blender and associated equipment must only be operated by persons trained to do so.

Do not stand or climb on any part of any machine.

Only start machines when:

All guards (as applicable) are in place and Control Panel doors are closed.

Nobody is in the immediate vicinity of the working area or will be endangered when the machine starts.

Check the machine for any obvious visible damage or defects before operating.

Any faults are to be reported and rectified immediately.

2.2 Machine Initial Set-up

WARNING

COLLISION HAZARD, ENSURE THAT THE BLENDER AREA IS CLEAR OF PERSONNEL, TOOLS AND OTHER PORTABLE EQUIPMENT.

Complete the following procedure:

At the Blender check/ensure:

- Air supplies are connected, turned ON and regulated to 5.5.BarG.
- Drive motor local Isolator set to ON.
- All guards/covers in place and secure.

At the Post Hoist check/ensure

- E.Stop push button set to 'restored' position (twist clockwise to release).
- Control Panel door closed and locked.
- Mains disconnect switch/local isolator set to ON

At the MCP check/ensure:

- Emergency Stop is in 'released' position (twist clockwise).
- Main power disconnect switch set to ON

At the OCP:

- Ensure 'Trapped Key' is in position on the panel.
- Check that the Emergency Stop is in 'released' position (twist clockwise).
- Press Controls ON/RESET push button – integral indicator will illuminate and the control circuit is activated.
  If the indicator fails to illuminate request technical assistance.
- Fanuc PC is active with default screen displayed.

The IBC Blender System is now ready for operation in Automatic or Manual mode.

2.3 Auto Mode Operation

To operate the Blender in 'Auto mode' complete the procedure outline in Paras 2.3.1 to 2.3.3.

2.3.1 IBC Blending System - Loading Procedure

The blender access door is opened following the transfer of the Safety key from the operator panel. The IBC is loaded, via a pallet truck onto the lifting platen of the blender. The door is closed and locked, and the key returned to the operator panel. The blend recipe is selected from the SCADA, the parameters reviewed by the operator and provided the operator is satisfied, the cycle is initiated.

2.3.2 Blend Cycle

The operator manually enters in the SCADA the blend recipe ID indicated by a 3rd. party terminal, and a 10 character alpha-numeric batch number. The operator then checks the following three points:

- Nobody is in the process room
- No objects potentially interfering in the machine operation
- There is IBC in the blender (waiting to be clamped)
- The Mill assembly is loaded onto the hoist forks (only if recipe requires product addition)
- The Harting plug is connected (only if recipe requires product addition)
- Displayed parameters are correct

Provided the operator is satisfied with all six checks, command to start is given by means of the "Start" softkey. This softkey is interlocked as follows:

- "Start" softkey disabled if IBC is not detected
- "Start" softkey disabled if Mill assembly (G1951-M01) is required but not detected
- "Start" softkey disabled if Mill assembly (G1951-M01) is required but Harting plug not connected

After the command to start the blend cycle has been received, an audible alarm beacon (HS xxx-9201) will warn during 5 seconds about the imminent start of machine operation. Once are these 5 seconds elapsed, the lifting platen will be raised by energising the raise solenoid valve (XV xxx-3000A), which in turn will drive the raise/lower air motor (M xxx-3000). An air check circuit is utilised to confirm the IBC is clamped. This is achieved by the IBC itself, sealing the venting air, which is normally escaping via a port within each of two rubber stoppers. As the IBC seals the ports, the pressure within the check unit rises, which in turn operates the cage clamped pressure switch (PS xxx-3300) to confirm the IBC is clamped. The switch is continually monitored in the software during blending processes to ensure the IBC remains clamped.

After a minimal delay, the brake is released by energising the brake contactor (JY xxx-2000B) and the drive motor forward run signal to the AC inverter drive will be energised, the blending cage will accelerate up to the speed referenced within the recipe. The controlled operating range of the blender is between 2-15 RPM, which is detected by a rotational

speed sensing switch (ST xxx-2102), fed back to the PLC and continuously monitored against a tolerance of SP±0,5 RPM.

The blender will continue to run at this speed until the blend cycle timer has elapsed, which will result in the blender decelerating to creep speed, which is approximately 1 RPM. When the creep speed signal has been achieved, the blender will continue to rotate at creep speed until the cage upright proximity switch (XS xxx-2200) detects that the IBC is in the upright position within the cage. The IBC will continue to rotate as before, at creep speed, until an over run timer has elapsed within the PLC, which will de-energise the drive motor forward run signal. After a short delay, the drive motor reverse run signal will energise, and the blender will run at creep speed in the reverse direction until the cage upright switch is detected again. This will result in the inverter de-energising and the brake contactor (JY xxx-2000B) de-energising to stop the rotation of the blender. The blend report will be automatically generated.

Since PDF files are also stored locally for backup purposes, the transfer failure of these files is not regarded as critical and the system will be able to carry on in the sequence regardless of the transfer check result. After the check, the blend cycle is considered complete and the system unloads the IBC as described within §3.3.3.

A facility is included on the blend cycle, which will permit the operator to hold the current blend cycle via the SCADA. Should the hold be selected during the cycle, the blender will decelerate and then stop at the upright position, which will also freeze the cycle timer.

When the blender has stopped, the SCADA will display options to either Abort or Continue the cycle.

If abort is selected, the batch report will be automatically generated, and once again, the operator will have the possibility to reprint it as many times as necessary, before clearing the batch data. If continue is selected, the cycle will continue from the point at which the cycle was stopped.

2.3.3 Product Addition Procedure (Hoist operation)

Note: If product addition is needed during the blending cycle, the Post Hoist will be used and therefore it needs to be prepared for operation before starting the blend cycle. The milling sequence will require two parameters the mill speed in % and a milling time in seconds. With the hoist at the Load/Unload position (ZS xxx-3510A) and at the Load/Unload Slew Position (XS xxx-3520), the operator will load the G1951-M01 assembly onto the Post Hoist by pedestrian truck. Once G1951-M01 assembly is loaded, the operator will connect the Harting plug, in order to make possible the Mill assembly operation by the system.

Upon completion of a blending phase, the system can perform an “Add product” action. This is according to the previously downloaded recipe, and fully automatically executed. To add product, the system decelerates the blending cage into creep speed and initiates the invert function. The blender will continue to rotate at creep speed until the cage inverted proximity switch (XS xxx-2201) detects that the IBC is in the inverted position within the cage. The IBC will continue to rotate at creep speed, until an over run timer has elapsed within the PLC, which will de-energise the drive motor forward run signal. After a short delay, the drive motor reverse run signal will energise, and the blender will run at creep speed in the reverse direction until the cage inverted proximity switch (XS xxx-2201) is detected again. This will result in the inverter de-energising and the brake contactor (JY xxx-2000B) de-energising to stop the rotation of the blender.

At this point, the IBC is inverted, the Lift Motor run forward signal is energised and the Post Hoist will rise at fast speed to the pre-stop Slew Height (UA xxx-3511/2). The Inverter will then run at slow speed to the Slewing Height (UA xxx-3511/4). The Lift Motor run forward signal is then de-energised and the Lift Motor will stop. The Slew Motor run Forward Contactor (JY xxx-3502B) is energised and the Post Hoist will slew. The Post Hoist will Slew to the Discharge Slew position (XS xxx-3521), as confirmed by the SCADA status mimic 'Discharge Slew Position'. The Slew Motor run forward signal is then de-energised and the Slew Motor will stop. The Lift Motor run reverse signal is energised and the Post Hoist will lower at slow speed until docking is detected by the proximity switch (ZS xxx-4000) mounted in G1951-M01. The SCADA status mimic will display 'G1951-M01 Docked to IBC'. The Lift Motor run reverse signal is then de-energised and the Lift Motor will stop. Docking Overtravel position switch (YS xxx-4001/1,2) is a hardwired interlock utilised to stop the hoist, in the event of a docking detection failure.

Buck Valve Vacuum Generator solenoid (XV xxx-5203) is energised to generate vacuum between the two Buck valve disks and any hoist movement will be inhibited as long as vacuum is active. After a short delay, the Open Buck Valve solenoid (XV xxx-5000A) is energised to open the Buck 'C' valve, confirmed by (ZSO xxx-5100) and this feedback triggers the start signal for the mill to run at its fixed speed. The speed of the Mill will be displayed on the HMI screen in RPM. The time remaining for the milling sequence will also be displayed on the HMI screen in seconds.

When the recipe mill time elapses, the mill stops and the Buck Valve will close and de-dust in the following way. The Buck Valve solenoid (XV xxx-5000A) is de-energised to close the Buck 'C' valve, confirmed by (ZSC xxx-5100). Then the dust extract shroud vacuum generator (XV xxx-5204) will energise for ten seconds confirmed by the vacuum switch (PS xxx-5204). Then the Buck valve vacuum solenoid (XV xxx-5203) will de-energise to stop vacuum generation between the two Buck valve disks. With the dust extract complete the hoist raise function is no longer interlocked.

The Lift Motor run forward signal is energised and the Post Hoist will rise at slow speed to the Slew Height (UA xxx-3511/4), as confirmed by the SCADA status mimic 'Discharge Slew Position'. The Lift Motor run forward signal is de-energised and the Lift Motor will stop. The Slew Motor run reverse contactor (JY xxx-3502C) is energised and the Post Hoist will Slew to the Load/Unload Slew position, detected by XS xxx-3520, as confirmed by the SCADA status mimic 'Load/Unload Slew Position'. The Slew Motor run reverse signal is then de-energised and the Slewing Motor will stop. The lift motor run reverse signal is energised and the Post Hoist will lower at fast speed to the Pre-stop Load/Unload height (UA xxx-3511/1). The Inverter will then run at slow speed to the Load/Unload height detected by (ZS xxx-3510A). At this point, the SCADA status mimic will indicate 'Load/Unload Position', the Lift Motor run reverse signal is de-energised to stop the Lift Motor and the next blending phase will start.

The blender motor brake is released by energising the brake contactor (JY xxx-2000B). The drive motor forward run signal to the AC inverter drive will be energised and the blending cage will accelerate up to the speed referenced within the recipe and will follow the sequence already described in chapter 3.3.1. Blend Cycle.

2.3.4 Unloading Procedure

Once all Blend Phases are completed, the system initiates the unload sequence. The lifting platen is lowered by energising the lower solenoid valve (XV xxx-3000B) and driving the raise/lower air motor (M xxx-3000) in the reverse direction. A high signal detected for the cage-lowered proximity switch (XS xxx-3400) completes the lowering process. At this point in the process, the SCADA will display that the unload sequence is complete, and the IBC can be unloaded. After the operator has gained access to the blender room, the operator will unload the IBC from the blender platen to complete the blending process. The machine is then available for processing the next blend cycle.

2.4 Manual Operation

2.4.1 General

Manual operation for maintenance or diagnostic routines is only available to supervisors and configurators. All the functionality achieved by the automatic sequence is available via the manual operations facility, and the mode of operation is subject to the global machine interlocks. All the movements will be at the lowest speed available and executed by momentary action (soft keys need to be pressed and hold for continuous movement. If softkey is released, movement stops immediately, no latch).

2.4.2 List of Manual operations:

Equipment	Manual Action	Comment
Blender (B01)	Cage Raise	Nominal Speed (only speed available)
	Cage Lower	Nominal Speed (only speed available)
	Cage rotation forward	Low Speed (aprox. 1 RPM)
	Cage rotation reverse	Low Speed (aprox. 1 RPM)
Hoist (D01)	Hoist Raise	Low Speed
	Hoist Lower	Low Speed
	Hoist Slew to Process	Nominal Speed (only speed available)
	Hoist Slew to Load	Nominal Speed (only speed available)
Mill/Buck ‘C’ valve (M01)	Mill Rotate	Nominal Speed (only speed available)
	Open Buck ‘C’ valve	None
	Close Buck ‘C’ valve	None
	Generate Vacuum	None

2.5 System Tags

The system tags listed in the following table relate to P&I Diagrams G1951-B01-901, G1951-D01-901 and G1951-M01-901, which are contained in Section 5

TAG	Description
Main Control Panel	
PS XXX-9010	Main Air Pressure Switch
HSS XXX-8002	Emergency Stop
Operator Panel	
OIT XXX-8200	HMI (Fanuc Touch Screen PC)
HS XXX-9200	Controls ON reset button
YI XXX-9200	Controls ON lamp
HSS XXX-8260	Fortress Key
HSS XXX-8000	Emergency Stop
Hoist	
HSS XXX-3510	Emergency Stop
XS XXX-3521	Process Position Slew
XS XXX-3520	Load/Unload Position Slew
M XXX-3502	Slew Motor
HSS XXX-3502	Slew Motor Isolator
JY XXX-3502B	Forward Contactor
JY XXX-3502C	Reverse Contactor
JY XXX-3502A	Run Contactor
ISS XXX-3502	Slew Motor Circuit Breaker
TS XXX-3502	Slew Motor Thermostat
M XXX-3500	Lift Motor
HSS XXX-3500	Lift Motor Isolator
TS XXX-3500	Thermistor
SC XXX-3500	Lift Motor Inverter
JY XXX-3500A	Supply Contactor
JY XXX-3500B	Brake Contactor
ISS XXX-3500A	Lift Motor Circuit Breaker
ISS XXX-3500B	Lift Motor Brake Circuit Breaker
ZS XXX-3510A	Load/Unload Overtravel Switch
SE XXX-3511	Position Encoder
ZS XXX-3512/2	Overtravel Switch
XS XXX-4701	Mill in Position
YI XXX-3001	Power Supply Healthy
Blender	
PS XXX-9000	Main Air Pressure Switch
PS XXX-3300	Cage Clamped Pressure Switch
ZS XXX-3410	IBC in Position
XS XXX-3400	Cage Down Position Switch
XV XXX-3000A	Clamp Solenoid
XV XXX-3000B	Clamp Solenoid
XV XXX-3000C	Air Check Enabled Solenoid

XS XXX-2200	IBC Upright Position Switch
XS XXX-2201	IBC Inverted Position Switch
ST XXX-2102	Rotational Speed Sensing Switch
M XXX-3000	Clamp/ Clamp air motor
M XXX-2000	Rotation motor
JY XXX-2000B	Brake Contactor
ISS XXX-2000B	Circuit Breaker
TS XXX-2000	Thermistor
HSS XXX-2000	Rotation motor Isolator
JY XXX-2000A	Supply Contactor
ISS XXX-2000A	Circuit Breaker
SC XXX-2000	Rotation Motor Inverter
MILL ASSEMBLY	
M XXX-4000	Mill Motor
HSS XXX-4000	Mill Motor Isolator
TS XXX-4000	Mill Motor Thermistor
SC XXX-4000	Mill Motor Inverter
JY XXX-4000A	Mill Motor Supply Contactor
ISS XXX-4000A	Mill Motor Circuit Breaker
ST XXX-4000	Rotational Speed Sensing Switch
ZS XXX-4000	Docking Switch
YS XXX-4001	Safety Switch
XV XXX-5203	Buck ‘C’ Valve Vacuum Generator Solenoid
FE XXX-5203	Buck ‘C’ Valve Vacuum Generator
PS XXX-5203	Buck ‘C’ Valve Vacuum Generator Vacuum switch
XV XXX-5204	Dust Extract Shroud Vacuum Generator Solenoid
FE XXX-5204	Dust Extract Shroud Vacuum Generator
PS XXX-5204	Dust Extract Shroud Vacuum Generator Vacuum Switch
XV XXX-5000A	Buck ‘C’ Valve Open Solenoid
XV XXX-5000B	Buck ‘C’ Valve Close Solenoid
XU XXX-5100	Buck ‘C’ Valve Open/Close Rotary Actuator
ZSO XXX-5100	Buck ‘C’ Valve Open Signal
ZSC XXX-5100	Buck ‘C’ Valve Closed Signal
Miscellaneous	
HS XXX-9201	Audio/Visual Alarm
YI XXX-9201	Audio/Visual Alarm

2.6 Interlocks

2.6.1 General

Read this Sub-section in conjunction with P&I Diagrams G1951-B01-901, G1951-D01-901and G1951-M01-901 in Section 5. Machine sequences, regardless of whether in 'automatic' or 'manual' mode, are interlocked as described below.

2.6.2 Hardwired Safety Interlocks

Operator Panel Emergency Stop (HSS xxx-8000)

An emergency stop button is located on the operator control panel and will initiate an emergency stop of the entire Blending Room (Blender, Hoist and Mill) if pressed. Alarm recovery depends on the status of the equipment prior to emergency stop. If blending, the blending head will stop within one revolution.

Main Panel Emergency Stop (HSS xxx-8002)

An emergency stop button is located on the main control panel and will initiate an emergency stop of the entire Blending Room (Blender, Hoist and Mill) if pressed. Alarm recovery depends on the status of the equipment prior to emergency stop. If blending, the blending head will stop within one revolution.

Hoist Mounted Emergency Stop (HSS xxx-8001)

An emergency stop button is located on the machine and will initiate an emergency stop of the entire Blending Room (Blender, Hoist and Mill) if pressed. Alarm recovery depends on the status of the equipment prior to emergency stop.

Hoist Junction Box Mounted Emergency Stop (HSS xxx-3510)

An emergency stop button is located on the hoist junction box and will initiate an emergency stop of the entire Blending Room (Blender, Hoist and Mill) if pressed. Alarm recovery depends on the status of the equipment prior to emergency stop.

Safety Interlock Key (HSS xxx-8260)

The blender is protected by a dual trapped key safety interlock system. When the Safety key is removed from the operator control panel, the operation of the system (Blender, Hoist and Mill) is inhibited.

Blender Motor Overload

The blender is protected from overload by the inverter (SC xxx-2000). The current required to operate system at safe working load is set at the inverter. If this current is exceeded the blender will stop and the brake will be applied.

Lift Motor Overtravel

The hoist is fitted with an over travel switch ZS xxx-3512/1 which is integrated into the lift motor

M xxx-3500 raise control circuit. If the switch is operated the raise contactor control circuit is interrupted and the raise command to the inverter will remain de-energised, regardless of the state of the post hoist controlling PLC.

Note: the signal from the switch is also input to the controlling PLC, for alarm purposes.

2.6.3 System Interlocks

Hoist operation

The hoist cannot be moved from the 'parked' position if the blender is active.

Blender Operation

Blending operations cannot be initiated if the hoist is not in the 'parked' position

Cage Clamped Pressure Switch (PS 3300)

The cage clamped pressure switch (PS xxx-3300) monitors the pressure within the air check circuit. If the switch detects a low state, the blender drive motor is inhibited from operation.

Blending Head Rotation

The blending head will only rotate when the cage is clamped confirmed by the clamped pressure switch (PS xxx-3300).

Lift Motor Interlocks

The lift motor will not raise or lower, unless the hoist is slewed to the Load/Unload Slew Position confirmed by XS xxx-3520 or the Discharge Slew Position confirmed by XS xxx-3521.

Slew Motor Interlocks

The slew motor will not slew in either direction, unless the hoist is at the correct slewing height, confirmed by UA xxx-3511/4.

Batch Start Interlocks

The command to start a batch cycle is given by the operator by pressing the "Start" softkey. This softkey will be interlocked if any of the following situations occurs:

"Start" softkey disabled if IBC is not detected

"Start" softkey disabled if Mill assembly (G1951-M01) is required but not detected

"Start" softkey disabled if Mill assembly (G1951-M01) is required but Harting plug not connected.

This is to avoid the start of a batch cycle if the operator forgot any batch start prerequisite.

2.7 Process Alarms

2.7.1 General

Alarm conditions are monitored at all times whilst power is applied to the machine. If a fault occurs, the cause of the fault is indicated at the SCADA.

If an alarm occurs the system is immediately shut down. In this state, all motors are stopped, and all valves revert to their default state.

Once the cause of the alarm has been rectified and the alarm has been acknowledged, operations may continue.

In the event of an alarm occurring during blending, the alarm is recorded on the batch report. Once the cause of the alarm has been rectified and the alarm has been acknowledged the operator is given the option of continuing or aborting the blend. If the operator continues the blend a single batch report is generated on completion detailing both blend cycles. If the cycle is aborted, this will be confirmed on the batch report.

If the cause of the alarm is not corrected, the alarm will be re-displayed.

2.7.2 Alarm Conditions

Blender (G1951-B01)

The single pedestal blender monitors the following fault conditions:

Emergency Stop Pressed

Critical alarm. Alarm instantly when any of the Emergency Stops (HSS xxx-8000, HSS xxx-8002, HSS xxx-3510 or HSS xxx-8001) are activated.

Safety Key

Critical alarm. Alarm instantly when safety key (HSS xxx-8260) is removed from the Operator Panel.

Main Air Pressure Low

Critical alarm. Alarm instantly if pressure switch (PS xxx-9000) indicates below 4.5 BarG.

Monitoring will be “fail-safe” (0 = Pressure fault / low, 1 = Pressure OK).

Clamping Pressure Fault

Critical alarm. Alarm instantly if the clamp pressure (P xxx-3300) switch signal is low whilst the blender is rotating.

Monitoring will be “fail-safe” (0 = Pressure fault / low, 1 = Pressure OK).

Clamp Failure

The Clamping system is monitored by a watchdog timer, which is initiated when (XV xxx-3000A) is energised. If pressure switch (PS xxx-3300) remains false on expiry of this timer solenoid valve (XV xxx-3000A) is de-energised and an alarm message is indicated on the SCADA.

Unclamp Failure

The Unclamping system is monitored by a watchdog timer, which is initiated when (XV xxx-3000B) is energised. If the cage lowered switch remains false on expiry of this timer solenoid valve (XV xxx-3000B) is de-energised and an alarm message is indicated on the SCADA.

Blender Inverter Circuit Breaker Tripped

Critical alarm. Alarm instantly on opening. Blender will stop within one revolution.

Blender Motor Brake Overload

Critical alarm. Alarm instantly on opening.

Blender Inverter Drive Fault

Critical alarm. Alarm instantly on opening. Blender will stop within one revolution.

Blender Failed To Reach Pre-set Speed

Critical alarm. Alarm if the blend set speed has not been achieved after a pre-set value of seconds after request to start.

Blender Deceleration Failure

Critical alarm. Alarm if the blend creep speed has not been achieved after a pre-set value of seconds after request.

Blender Low Speed

Critical alarm. Alarm if the blender speed falls below pre-set speed for longer than the pre-set value of seconds.

Blender High Speed

Critical alarm. Alarm if the blender speed rises above pre-set speed for longer than the pre-set value of seconds.

Stop Detect Fault

Critical alarm. Alarm if the rotating cage has failed to stop in the vertical position when requested, on completion of watchdog timer.

Blend Motor Disconnect Fault

Critical alarm. Alarm if the Motor Isolation switch is off.

Post Hoist (G1951-D01)

The Post Hoist monitors the following fault conditions:

Emergency Stop Operated

If an emergency stop operated is detected, then alarm immediately.

Controls Not On Fault

If the emergency stop relay is de-energised, but the emergency stop has not been operated, then alarm.

Lift Motor Over Temperature

If the lift motor thermistor relay detects an over-temperature condition, then alarm immediately.

Lift Motor Inverter Fault

If the lift motor inverter detects a fault, then alarm immediately.

Slew Motor Over Temperature

If the slew motor thermistor relay detects an over-temperature condition, then alarm immediately.

Slew Motor Circuit Breaker Tripped

If the system detects that the circuit breaker has tripped, then alarm immediately.

Lift Motor Raised Overtravel

If the raised overtravel switch has been operated, then alarm immediately.

Lift Motor Docked Overtravel

If the docked overtravel switch has been operated whilst in the discharge slew position, then alarm immediately.

Lift Motor Disconnect Fault

Critical alarm. Alarm if the Motor Isolation switch is OFF.

Slew Motor Disconnect Fault

Critical alarm. Alarm if the Motor Isolation switch is OFF.

Lift Motor Inverter Circuit Breaker Tripped

Critical alarm. Alarm instantly on opening. Blender will stop within one revolution.

Mill Assembly (G1951-M01)

The Mill will monitor the following alarms only when the Mill is detected as plugged in.

Mill Motor Disconnect Fault

Critical alarm. Alarm if the Motor Isolation switch is OFF.

Mill Low Speed

Critical alarm. Alarm if the Mill speed falls below pre-set speed for longer than the pre-set value of seconds.

Mill High Speed

Critical alarm. Alarm if the Mill speed rises above pre-set speed for longer than the pre-set value of seconds.

2.7.3 Alarm/Fault Summary

Alarm Message (Blender)	Type
Emergency Stop Pressed	Critical
Safety Key	Critical
Main Air Pressure Low	Critical
Clamping Pressure Fault	Critical
Clamp Failure	Critical
Unclamp Failure	Critical
Blender Inverter Circuit Breaker Tripped	Critical
Blender Motor Brake Overload	Critical
Blender Inverter Drive Fault	Critical
Blender Failed To Reach Pre-set Speed	Critical
Blender Deceleration Failure	Critical
Blender Low Speed	Critical
Blender High Speed	Critical
Stop Detect Fault	Critical
Blend Motor Disconnect Fault	Critical

Alarm Message (Hoist)	Type
Emergency Stop Operated	Critical
Controls Not On	Critical
Lift Motor Over temperature	Critical
Lift Motor Inverter Fault	Critical
Slew Motor Over temperature	Critical
Slew Motor Circuit Breaker	Critical
Lift Motor Raised Overtravel	Critical
Lift Motor Docking Overtravel	Critical
Lift Motor Inverter Circuit Breaker Tripped	Critical
Lift Motor Disconnect Fault	Critical
Slew Motor Disconnect Fault	Critical

Alarm Message (Mill)	Type
Mill Motor Disconnect Fault	Critical
Mill Low Speed	Critical
Mill High Speed	Critical

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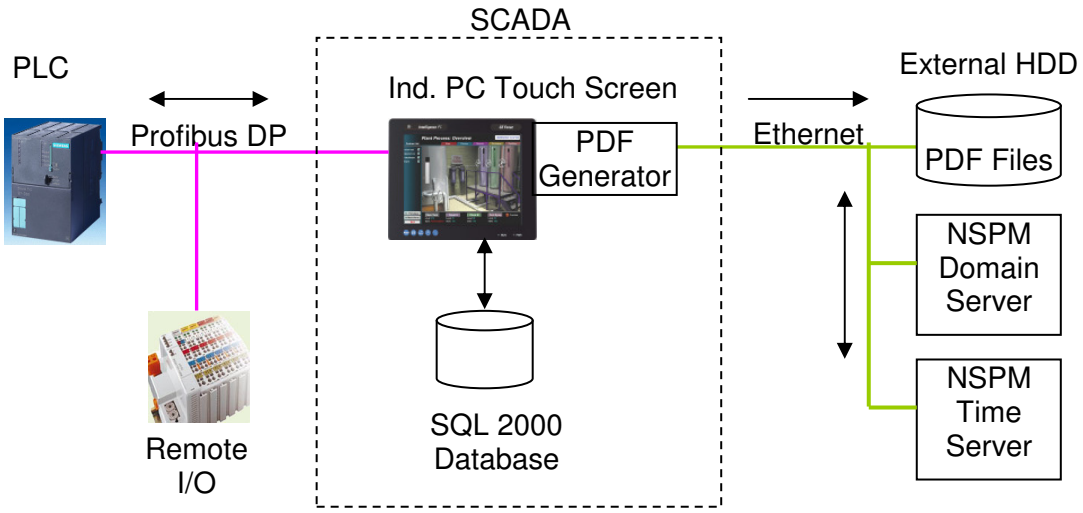
Appendix 'A

Electronic Records and 21 CFR Part 11 compliance

Data Flow

The data flow within the system is as indicated in the following diagram:



Machine Control Management

The system is batch orientated control software based on the ISA S88.01 standard for automation of batch process, designed to be compliant to the FDA 21 CFR Part 11 guideline.

Process automation offers manual operation, recipe handling, automatic operation, batch reporting and alarm reporting.

The software package to visualise and control the process takes into account the specific requirements of batch processing in the pharmaceutical industry.

In the Auto mode all process data will be recorded and stored to local hard drive. The system will give messages to the operator i.e. in case of error messages (text messages) or machine faults. This ensures very easy operation and quick understanding of the machine thus leading to a positive attitude and acceptance of the operator.

Recipe handling features creation of new recipes, modification of existing unused ones, create derivatives of existing recipes as well as export and download capability of recipes.

A recipe consists of the following process steps: IBC loading & clamping, IBC rotation speed, IBC rotation time, Milling Time & speed (if required), IBC unloading & clamping. Every process step is represented by a programmable recipe step with a specific set of parameters that can be arranged to compose a recipe. A recipe may contain up to 16

steps, the sequence of steps is not fixed. The same step may be selected several times without restriction. This ensures maximum flexibility to create recipes according to your requirements for the broadest range of products.

Automated processing means reproducible process conditions according to recipes. The process is controlled by the control software but permits intervention through the operator. Every intervention, fault etc. will be logged. The analogue process values are recorded and will be shown graphically on the screen. The only operator process steps will be to load the IBC on the Blender, plug the mill into the Hoist (once this is done it will not be required again, unless unplugged) and unload the IBC from the blender

Complete batch documentation is generated including log files and will be stored locally.

Four Emergency Stops are included in the systems which are hard wired to the safety circuit of the equipment. When operated all machinery stops and the machine must be reset via the operator control panel. All functionality is operated via the following Fanuc Touch screen PC.

Fanuc Panel

The operator panel also includes a graphical display showing the actual status of the unit. All operator screens are in English.

In case of failure, the control system generates alarm/failure messages that are shown on the screen. Alarm/failure messages will be in English.

The PC is to be installed in a non-explosion hazard Zone 2 clean area.

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SECTION 3

Maintenance Information

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SECTION 3

Maintenance Information

3.1 Maintenance Schedules

3.1.1 General

All Buck Systems machinery uses components that are 'maintenance free' wherever possible. However, the following routine maintenance should be carried out at the intervals stated as regular planned maintenance will increase machine efficiency and reduce machine 'downtime'.

All maintenance actions must be carried out by alert, qualified personnel.

3.1.2 Schedule of Maintenance

The frequency of maintenance checks and replacements depends on the amount that the Single Pedestal Blender is used. The following table shows that frequency. If usage is irregular, then take the frequency of maintenance as the shortest appropriate.

Maintenance Schedule	Frequency of use	When the maintenance is to be done
A	More than once a day	At least once during the day.
	Otherwise	On every day of operation.
B	At least twice a week	Every week.
	At least twice a month	Every month.
	Less than twice a month	At the time of use and at least once a year.
C	At least twice a week	Every month.
	At least twice a month	Every three months.
	Less than twice a month	Every six months.
D	Intensively (many times a day)	Every three months.
	Less intensively but at least twice a month	Every six months.
	Less than twice a month	Every year.
E	Intensively (many times a day)	Every six months.
	Less intensively but at least twice a month	Every year.
	Less than twice a month	Every two years.
F	Any usage	Every two years.

WARNINGS

1. **DANGER TO LIFE AND LIMB- ROTATING MACHINERY - THE MACHINE MUST BE INSTALLED IN AN ENCLOSED AREA WITH RESTRICTED ACCESS. INTERLOCK SYSTEMS AND LOCAL OPERATING PROCEDURES MUST ENSURE THAT NO PERSONNEL ARE WITHIN THE DANGER AREA WHEN THE MACHINE IS OPERATING.**

2. **HEAVY WEIGHTS - EQUIPMENT WEIGHING MORE THAN 20KG MUST BE LIFTED USING SUITABLE MECHANICAL LIFTING APPARATUS.**

3. **LIFTING APPARATUS – LIFTING APPARATUS MUST ONLY BE USED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS AND LOCAL HEALTH AND SAFETY REGULATIONS. ALL LIFTING APPARATUS AND SLINGS MUST BE APPROVED.**

3.2 SP2000 Blender (B01)

3.2.1 Scheduled Maintenance

Schedule A

The following operations should be done at least once a day for frequently used equipment, and once a day for each day the equipment is used otherwise. See *Schedule of Maintenance* above.

Step	**Action**
1	Check machine for signs of air leaks, lubricant leaks, loose fasteners or damage.
2	Check pneumatics supply pressure is 5.5 barG
3	Exhaust cleaner B18047/004. Check the level of the liquid in the sump. Discharge the trapped liquid from the drain cock before it reaches the element.
4.	Blender Room – Trapped Key Safety System: Check for correct operation. *See Section 2.*

Schedule B

This schedule should be carried out every week for busy units and at least once a year in all cases. See *Schedule of Maintenance* above.

Step	Action
1	Check the oil level in the lubricator B18047/001 on the pneumatic panel inside the blender pedestal. If the level is low, fill with oil. See *Maintenance Procedures* on page 7.
2	Check all fittings in the pneumatic system for signs of air leakage. Check all hoses on the pneumatic system for signs of cracking, chafing or leakage, especially those adjacent to moving parts. Replace any hoses or fittings that are damaged.
3	Check machine holding down fixing for security

Schedule C

This schedule should be carried out every month for busy stations, and at least once a year in all cases. See *Schedule of Maintenance* above.

Step	Action
1	Check the condition of the filter/regulator B18047/001. Change filter if it appears clogged or damaged. See *Supplier's Information* in Section 4
2	Clean and check Earth Prod and Earthing spring.
3	SKF Bearing Seal, B18038/003: Check condition, replace if necessary.
4	Main drive motor B18038/001: Carry out periodic maintenance as described in Section 4, Suppliers Information.
5	Screw jack B01-004/003: Lubricate every 30 – 50 hours
6	Control Panel Fan & Filter unit (G1951-B01-610); Check Filter, replace if clogged.
7	Control Panel Outlet Filter (G1903-B01-610) unit; Check Filter, replace if clogged.
8	Exhaust Cleaner B18047/004: Check condition of element and replace if necessary.

Schedule D

This schedule should be carried out every three to six months for busy units, and at least once a year in all cases. See *Schedule of Maintenance* above. If extremely abrasive product is being used, shorten the frequency between checks.

Step	Action
1.	Inspect the machine thoroughly:
2.	Check/lubricate cage lifting equipment. See *Maintenance Procedures* on page 7).
3.	Check for endplay in the screw jack assembly. This should not exceed 1.8 mm of longitudinal float. If the nut has more play than this, it should be replaced.
4.	Check the drive belts on the lifting gear. Replace belts if they are worn or cracked.
5.	Visually check main shaft bearings. If they appear to be leaking, apply grease. See Maintenance Procedure at Page 14, and Schedule E maintenance procedure outlined below.
6.	Check the white rubber 'air check pressure pad bungs', B01-002/003, in the top of the blender cage. Replace them if they show any signs of wear or deformation. ***Failure to do this might affect the ability of cage to clamp container correctly.***

Schedule E

This schedule should be carried out every six to twelve months for busy units, and at least once every two years in all cases. See *Schedule of Maintenance* above.

Step	Action
1	Filter/regulator B18047/001 (pneumatic pane): Overhaul unit and replace element.
2	Oil fog lubricator B18047/001: Clean.
3	Main shaft pillow block bearings: replace grease. Refer to SKF maintenance information in Section 4, *Supplier's Information*
4	Air motor: See *Supplier's Information* in Section 4

Schedule F

This schedule should be carried out at least every two years in all cases.

Step	Action
1.	Main drive motor B18038/001: Perform routine maintenance in accordance with motor manufacturer's instructions.

Note:

The worm gear box used on the lifting equipment is packed and life sealed. It should require no routine maintenance.

3.2.2 Maintenance Procedures

The following are maintenance procedures adapted from supplier's information, but which do not appear in Section 4, *Supplier's Information*.

Cleaning Filter/Regulators

Important: The container must be completely depressurised before removal. Wash the filter element using hot water with normal household detergents. Then blow compressed air from the inside to the outside and dry before refitting. Use only cold or hot water with normal household detergents for cleaning bowl and baffle plate.

Filling Lubricator

If the oil level is low in the lubricator on the pneumatic panel, follow this procedure to refill it.

1. Turn off the air supply.
2. Unscrew the lubricator bowl.
3. Fill with oil.
4. Refit bowl and turn air supply on.
5. Ensure that the lubricator delivers 10drops/minute (air motor requirement). This can be checked during the cage clamp/unclamp sequence. Adjust if necessary.

   Recommended oil:
   - BP Energol RD-E80
   - Castrol RD oil light
   - Esso Arox EP 56
   - Gulf Gulfstone Oil 20
   - Mobil Almo Oil 525

   Equivalent grades of other suitable oils may also be used.
6. Unscrew the collection bowl on the silencer/re-classifier and empty out any oil residue collected there.

Lubricate Cage Lifting Equipment

Part of the regular maintenance is to check and lubricate the cage lifting equipment. Follow this procedure:

1. Remove the cage top covers and the air motor cover and inspect the universal joints.
2. The universal joints are fitted with rubber gaiters that are grease packed before leaving the Buck Systems works. If the gaiters are cracked or leaking, they should be replaced and re-packed with grease.
3. Using the "Unclamp/Clamp" control, raise the cage fully up.
4. Remove the nylon plugs in the cage legs.
5. Grease nipples are facing outwards, in line with the holes, and can be greased with a gun.

Recommended greases are as follows:
- Darmex 123
- Shell Alvania EP2
- Mobil Mobilplex46
- Texaco EP 00

Main Shaft Plummer Block Bearings

The grease in these bearings should be replaced periodically. As the shaft runs at slow rotational speeds, it is unlikely that the bearings will ever run dry or overheat. However the grease can oxidise if left for long periods. Replace the grease:

1. With the cage upright and the machine in local manual mode, using the "Unclamp/Clamp" control, lower the cage so that the lifting frame rests on the floor posts.
2. Dismantle the Plummer block, clean out the old grease and inspect the bearing. (See *Supplier's Information* in Section 4.).
3. Replace the bearing if it is damaged or worn: Otherwise, re-pack with fresh grease and replace the Plummer block cover.
4. Repeat the operation for the second bearing.

Electrical Maintenance

Always turn off the main control panel disconnect before approaching the active parts of the machine or performing any operation within reach of live or moving parts. Allow only qualified personnel access to the electrical enclosure.

Note: The inverter unit retains a charge for 5-10 minutes after disconnection.

3.3 PH600 Post Hoist (D01)

3.3.1 Safety

All maintenance actions must be carried out by, alert qualified personnel capable of recognising risks and dangers associated with maintenance operations. For maintenance tasks the following should be adhered to:

Do not climb on the machine, use approved climbing/access equipment.

Isolate power supply

Hang a sign on the machine isolator to clearly show that the machine is undergoing maintenance.

WARNING:

DUST CAN FORM AN EXPLOSIVE MIXTURE WITH AIR AND BE IGNITED BY A VARIETY OF METHODS. PARTICULAR ATTENTION MUST BE PAID TO REGULAR CLEANING PROCEDURES TO PREVENT ACCUMULATIONS OF HAZARDOUS DUST INTERNALLY AND EXTERNALLY.

3.3.2 Scheduled Maintenance

Schedule A

There is no specific routine daily maintenance for this equipment.

Schedule B

The following operations are to be carried out every week for busy units in all cases:

1. For self-testing equipment, perform a self-test at least once a week, or each time the equipment is used, if less frequent.
2. Check the Hoist drive chain for lubrication. If necessary, lubricate with suitable chain lubricant as listed in the supplier's information in Section 4.
3. Check for any signs of pneumatic leaks and rectify.
4. Check operation of the all sensors and encoder.
5. Run sequence to ensure all interlocks and movements are operating correctly
6. Check the condition of the hoist cover band for any wear and replace as required.
7. Clean the inside and outside of the Hoist to remove all deposits of potentially hazardous dust. Pay particular attention to the areas around both the top and bottom stops, which may be impacted in the event of an over-run fault, and the slewing stops, which may be impacted in the event of over-aggressive slewing action.

Schedule C

The following operations are to be carried out every three to six months for busy units, and at least once a year in all cases. If extremely abrasive product is being used, shorten the frequency between checks for all components that may come into contact with product:

1. Complete Schedule B checks in addition to below
2. Empty and clean the pneumatic supply line filter bowl.
3. Check all movements are smooth in operation.
4. Check condition of welds on all load bearing points.
5. Grease carriage guides, slew ring, slew gear teeth and pinion (where applicable).
6. Inspect and tighten if necessary slewing ring fasteners.
7. Inspect and tighten if necessary floor (and ceiling if applicable) mounting bolts.
8. Carry out checks on the electrical and mechanical operation of all 'position' switches inside the hoist. If there is any indication of hesitancy or erratic operation the switch must be replaced.

Schedule D

There are no Schedule 'D' tasks for hoist.

Schedule E

The following operations are to be carried out every six to twelve months for busy units, and at least once every two years in all cases.

1. Check for loose electrical connections and re-tighten as required.
2. Clean and replace oil or grease in all relevant systems.
3. Replace PLC Battery.

CAUTION...

To prevent the loss of programs or data, the battery is to be changed only when power is applied to the PLC.

4. Carry out all maintenance as for three to six monthly inspections
5. Check electrical connections for security.
6. Check the condition of the lift chain. Re-tension if necessary. Replace chain and sprockets if there is no further adjustment available.
8. Annual insurance inspection.

Schedule F

Remove the electric brake motor and have it inspected and cleaned by a qualified service company.

3.3.3 Lubrication Schedule

Use only the type and quantity of lubricant recommended. Damage to the equipment may result if an incorrect lubricant is used.

Old lubricants should always be disposed of in accordance with local statutory regulations.

Lubrication point	Hoist Model	Lubricant	Quantity
Lift Motor	PH600	Gearbox oil CLP H1 220 (See also manufacturer's recommendations)	3.6 litre
Slew Ring Gear & Pinion	ALL	NLGI 2 Lithium soap grease. See manufacturer's recommendation	
Slewing Ring Bearing	ALL	See manufacturer's recommendation	
Lift Chain	ALL	Any dedicated spray chain lubricant	
Latch Locking Assembly	PH600	NLGI 2 Lithium soap grease. See manufacturer's recommendation	

3.3.4 Hoist Chain Adjustment & Torque Values

Feature	Hoist Model	Value
Lift Chain Tension Adjustment		
Bolt Torque - Fork/attachment to lift carriage	PH600	200 Nm
Bolt Torque – Slewing Ring Fasteners	PH600	130 Nm

3.3.5 Hoist Fault Finding

See Table below for possible start up and operational faults for the hoist. Faults are to be dealt with only by someone trained and qualified in the use and maintenance of this machine.

NOTE . . .

Un-rectified faults may cause damage, or leave the machine in an unsafe condition! If in doubt, contact Buck Systems for technical assistance.

FAULT FINDING – PH600 Post Hoist

Fault	Possible Cause		Check	
When the hoist 'raise' or 'lower' button/key is pressed the hoist does not raise or lower	1)	Hoist not in correct slew position.	i)	Check hoist is slewed all the way to the endstop and the proximity switch is made.
	2)	End stop proximity switch not working.	ii)	Check adjustment.
	3)	Mains power switched off. Circuit breaker tripped.	iii)	Check position of main isolator.
	4)	Possible motor overload.	iv)	Check cause and reset.
	5)	Control fuse blown	v)	Check cause and replace.
Hoist carriage does not stop at lift limit switches.	1)	Hoist not in correct slew position.	i)	Check hoist is slewed to the correct end position and the switch is made.
	2)	Switch not working	ii)	Check operation of switch and replace if necessary.
Hoist carriage does not stop in correct place.	1)	Lift limit switch not in correct position.	i)	Check position and adjust.
Slew lock does not release.	1)	Compressed air not switched on	i)	Check compressed air is switched on.
	2)	Compressed air not at correct pressure.	ii)	Compressed air is set to correct pressure.
	3)	Fault with push button valve.	iii)	Check operation and replace if necessary.
	4)	Mechanism sticking	iv)	Check operation, lubricate if necessary.
Valve actuator fails to open/closeQ2	1)	Compressed air not switched on	i)	Check compressed air is switched on.
	2)	Compressed air not at correct pressure.	ii)	Compressed air is set to correct pressure.
	3)	Control fuse blown	iii)	Check cause and replace

3.4 Mill Assembly

3.4.1 General

The Mill Assembly comprises a Trolley fitted with Comill U5 Mill. A hopper is installed on the mill infeed and a 2500 mm Dia. Buck Type 'C' Active on the mill discharge.

3.4.2 Maintenance Schedules

Schedule A

The following operations should be done at least once a day for frequently used equipment, and once a day for each day the equipment is used otherwise. See *Schedules of Maintenance*.

Step	Action
1	Check all fittings in the pneumatic system for signs of air leakage.
2	Check trolley frame (including wheels) for signs of damage or excess wear; take corrective action as necessary

Schedule B

There are no weekly tasks for this station.

Schedule C

This schedule should be carried out every month for busy stations, and at least once a year in all cases. See *Schedules of Maintenance*.

Step	Action
1	Check all plastic hoses for signs of cracking or chaffing.
2	Flange Bolts securing the Buck Valve Assemblies to the Mill's discharge and discharge are to be inspected and tightened if necessary.
3	6" Flexible Joint M01-001/030: Check condition, replace if necessary
4	1.5" Crystaflex Hose M01-001/042: check condition, replace if necessary
4	Seals M01-001/033,046 Check condition – replace if necessary.
5	Compression seals (part of Buck Valves M01-001/026) check condition, replace if necessary.

Schedule D

This schedule should be carried out every three to six months for busy units, and at least once a year in all cases. See *Schedules of Maintenance*. If extremely abrasive product is being used, shorten the frequency between checks.

Step	Action
1	Calibrate all critical monitors and gauges
2	Rotary actuators (part of Buck 'C' Valve M01-001/026): Refer to supplier information in Section 4 and Check alignment.
3	SMC Vacuum GeneratorsM01-001/039: Check serviceability as directed Supplier's information (Section 4)

Schedule E

This schedule should be carried out every six to twelve months for busy units, and at least once every two years in all cases. See *Schedules of Maintenance*.

Step	Action
1	Check condition of all the pneumatic pipes, replacing where necessary.
2	Check for loose electrical connections and re-tighten as required.
3	Replace seals not replaced at Schedule 'C' Item 4.
4	Compression seal (part M01-001/026): replace.
5	Buck 'C' Valve (M01-001/026): service as directed in Supplier's Informatic at Section 4.
6	U5 Mill M01-001/027: service as directed in Supplier's Information at Section 4.

Schedule F

There is no schedule F maintenance required on this equipment.

3.5 Recommended Spare Parts

A listing of recommended spare parts is given in the tables on the following pages.

Part numbers are given in the format: drawing number-item number. For example, item B01-002-021 refers to the item 021 on the general assembly drawing G1959-B01-002. The circled number 021 on the drawing points to item 021. The letter following the number indicates a part related to the item: 'A' being used for the complete item and subsequent letters for its component parts.

A *full* drawing number is unique in Buck's registry and consists of the contract number (G-number), equipment letter and sequence number, and the drawing number.

NOTE:
Spare Part --- item to be held in stock to minimize any machine repair time.
Wear Part --- item that would require replacing as part of a maintenance schedule.

Buck Systems Contract No. / Equipment No. G1951-B01
Equipment Description: SP2000 Single Pedestal Blender x 1
Date: 31-October-2006
Customer: Novartis - Singapore
Customer Reference:

Buck Systems Part No.	Description	Qty on each M/c	Wear Part (w) Spare Part (s)	Recommended Stock Quantity
	Cage Ass'y with Swinging Arms G1951- B01- 002			
002-003	Air check pressure bung 81 dia. x 40 long	2	w	4
	2 Jack Drive Ass'y G1951- B01- 004			
004-025	Universal joint ref : 940F ME32	2	s	2
004-026	Universal joint gaiter ref : B01123	2	s	2
004-033	Polychain belt 12 mm widw x 180 teeth ref : 274J0144	1	w	1
004-034	Polychain belt 12 mm wide x 193 teeth ref : 274J0179	1	w	1
004-054	LZL 15 Air motor maintenance kit	1	w	1
	SP2000 Swinging Arm Ass'y G1951- B01 - 005			
005-037	Air check pressure bung 81 dia. x 40 long	3	w	6
	Heavy Duty Rotating Coupling B02012			
B02012-007	O' Ring 60 i/d x 5 mm section ref : 0600-50	8	w	8
	SP2000 Standard Direct Drive Ass'y B18038			
B18038-009	Proximity switch ref : XS4-P30PA340D	1	s	1
B18038-010	Proximity switch ref : XS3-P12PA340D	1	s	1
B18038-011	Cable for above switches ref : XZ-CP1241L5	2	s	1
B18038-037	Proximity switch ref : XS1-N08PA349	1	s	1
	Pneumatic Ass'y (with Swinging Arms) B18047			
B18047-002	1/4" Pressure switch ref : IS3000-02	2	s	1
B18047-003	5/3 Double solenoid valve 24 v. ref : VS7-8-FJG-D-3Z-Q	1	s	1
B18047-004	Exhaust cleaner ref : AMC810-14	1	w	1
B18047-005	1/8" BSP 3/2 Solenoid valve 24 v. ref : VZ512-5MNZ-01	1	s	1
B18047-008	3/8" BSP - 8 mm Speed controller ref : AS3001F-08	1	s	1
B18047-016	3/4" BSP 2/2 Pilot valve ref : VNA301A-20A-B	1	s	1
B18047-018	4 mm 3/2 n/c Poppet valve ref : VM1000-4N-00	2	s	1
B18047-019	Compact S.A. cylinder x 10 stk.ref : CQ2B12-10T	1	s	1
B18047-021	1/8" BSP 3/2 Pilot valve ref : VTA301-01	1	s	1
B18047-042	1/8" BSP 3/2 valve with roller plunger ref : VM130-01-06	1	s	1
B18047-044	M5 5/2 Pilot valve ref : VZA3120-M5	1	s	1
B18047-046	Quick exhaust valve ref : AQ340F-06-00	1	s	1

Buck Systems Contract No. / Equipment No. G1951-D01
Equipment Description: PH 600 Post Hoist x 1
Date: 31-October-2006
Customer: Novartis - Singapore
Customer Reference:

Buck Systems Part No.	Description	Qty on each M/c	Wear Part (w) Spare Part (s)	Recommended Stock Quantity
	Size 1 Slewing Bottom Lift Ass'y D01170			
D01170-035	PVC coated cover - AGR21MB - 230 wide x 4568 long	1	w	1
	Std Lift Limit Switch Ass'y D99108			
D99108-002	Limit switch ref : XCK-J10511H29 (roller lever type)	1	s	1
	Std IBC Proximity Switch Ass'y D99109			
D99109-002	Proximity switch ref : XS1-N18PA340D	1	s	1
D99109-003	Cable for above switch x 10.0 m long ref : XZ-CP1241L10	1	s	1
	Size 1 & 2 Latch Endstop c/w Limit Switch D99116			
D99116-003	Proximity switch c/w 5.0 m cable ref : NJ2-F1-E2-MKA	2	s	1

Buck Systems Contract No. / Equipment No. G1951-M01
Equipment Description: U5 Mill & Support Frame x 1
Date: 30-October-2006
Customer: Novartis - Singapore
Customer Reference:

Buck Systems Part No.	Description	Qty on each M/c	Wear Part (w) Spare Part (s)	Recommended Stock Quantity
	U5 Mill & Support Frame G1951- M01- 001			
001-026	**DN250 Buck 'C' Valve - Active - spares listed below :**			
	DN250 Bearing Shell	2	w	8
	DN250 Catch - Brass Bearing Guide	2	w	2
	DN250 Cover Pin	2	w	2
	DN250 Disc locking pin	2	w	2
	DN250 Main body seal EPDM white	1	w	1
	DN250 Passive C valve Bush	2	w	2
	DN250 locking pin spring	2	w	2
	DN250 Bush Bracket	2	s	4
	DN250 Passive Disc	1	s	1
001-027	**Quadro U5 Comill spares as listed below :**			
U5-19-10171D	Spares kit comprising : chute 'o' ring - viton	1	w	1
	impeller 'o' ring - viton	1	w	1
	impeller bolt	1	w	1
001-030	6" dia. Q-connect flexible joint translucent silicone/316 s.s.	1	w	1
001-033	6" Tri-clamp seal - EPDM	4	w	4
001-036	Limit switch ref : XCS-M3902L1 (roller plunger type)	2	s	1
001-038	Lead for above switch ref : XZ-CP1241L10	2	s	1
001-040	Pressure switch ref : ZSE-01-55L-Q	2	s	1
001-041	Silencer ref : AN200-02	1	w	1
001-042	11/2" Crystaflex hose x 1.0 m	1	w	1
001-043	11/2" Dipmould ends	3	w	3
001-046	11/2" Tri-clamp seal - EPDM	4	w	4

SECTION 4

Supplier's Information

See Volume 2

Blank Page

SECTION 5

Simplified Parts Lists & Drawings

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Drawings ***.... ....Drawing #***

Blender (G1951-B01)

PH600 Post Hoist (G1951-D01)

Mill (G1951-M01)

BLENDER (G1951-B01)

G1951-B01-001 SP2000 Single Pedestal Blender Assembly

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	G1951-B01-002		ROTATING CAGE RHN ASSY WITH SWINGING ARMS	1
002	G1951-B01-004		2 JACK DRIVE ASSEMBLY	1
003	B18023		EARTHING ASSEMBLY (OLD IBC)	1
004	B18037		THRO WALL PEDESTAL BASE & COVERS	1
005	B18038		STANDARD DIRECT DRIVE ASSEMBLY (SAFE ZONE)	1
006	G1951-B01-003		LIFTING FRAME RHN ASSEMBLY (OLD IBC)	1
007	B02012		ROTARY COUPLING (SEE SEPARATE BOM)	1
008	B18047		PNEUMATIC CIRCUIT WITH SWINGING ARMS	1
009	B18050		TAGGING ASSEMBLY	1
010	G1951-B01-005		SWINGING ARM ASSEMBLY	1
011	B18046		LEG DELAY CAM ASSEMBLY	1
012			MAIN CONTROL CABINET LAYOUT	
013			OPERATOR PANEL LAYOUT	
014			MACHINE JUNCTION BOX LAYOUT	

G1951-B01-002 Cage Assembly with Swinging Arms

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	G1951-B01-021		ROTATING CAGE RHN	1
002	B18157		BUNG PLATE :- 70 DIA x 12 LG	2
003	B18158		BUNG - 81 DIA x 40LG	2
			new drg 1016539	
004	B04111		BEARING PAD LONG :- 30 x 19 x 100 LONG BAR	12
005			M8 x 20 LONG SLOTTED PAN HD SETSCREW	24

G1951-B01-003 Lifting Frame Assembly

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	G1951-B01-023		LIFTING FRAME -	1
002	G1951-B01-024		ANTI TIP RAIL	1
003	B04151		BEARING PAD SHORT :- 30 x 19 x 90 LONG BAR	12
004			M6 x 20 LONG SLOTTED PAN HD SETCREW	24

G1951-B01-004 2-Jack Drive Assembly

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	B01128		MULI-3 JACK MOUNTING PLATE : - 130 x 150 x 16 THK PLATE	1
002	B01129		MULI-3 JACK MOUNTING PLATE : - 110 x 170 x 16 THK PLATE	1
003			INKOMA PRECISION SCREW JACK HSG-3-R-1100 NUT FLANGED FMS-3, VERSION A, M/c TO ACCEPT GREASE NIPPLE TWO OFF INPUT SHAFTS (STANDARD)	2
004			NOT REQUIRED	
005	B01111		JACK NUT RETAINER : - 100 DIA BAR x 40 LONG	2
006			ANTI-ROTATION PIN : - 6 DIA BAR x 39 LONG	4
007			GREASE NIPPLE ¼" x 28 UNF STRAIGHT – KINGFISHER LONG STRAIGHT REF. HUF4/Y	2
008			M10 x 60 LONG HEX. HD BOLT	8
009			M10 PLAIN WASHER	8
010			M10 x 30 LONG SOCKET HD CAP SCREW	8
011			(M8) 10 x 20 LONG SOCKET HD SHOULDER SCREW	8
012	B01130		JACK RESTRAINER : - 65 x 206 x 16 THK PLATE	2
013	B01132		BELLEVILLE MANDREL : - 25 DIA BAR x 63 LONG	2
014	B01133		STRIKER PLATE : - 70 DIA x 3 THK PLATE	2
015	B01134		SPRING HOUSING : - 35 DIA BAR x 40 LONG	2
016	B01135		LOCKNUT : - 55 DIA BAR x 12 LONG	2
017			BELLEVILLE DISC SPRING GROUP 1B TO DIN 2093 PART REF. D22511208	64

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
018			M5 x 12 LONG BUTTON HD CAP SCREW	48
019			M6 x 20 LONG HEX. HD SETSCREW	4
020	B01141		BEARING HOUSING	1
021			DEEP GROOVE BALL BEARING 20 x 32 x 7 - 2 SEALS	2
022	B01136		STUB SHAFT : - 22 DIA BAR x 135 LONG	1
023			CIRCLIP D1400 20 DIA SHAFT	2
024	G1951-B01-025		SHAFT : - 25 DIA BAR x 955 LONG	1
025			UNIVERSAL JOINT BORE 16.0 DIA H7 BOTH ENDS FENNER REF. 940F ME32 KEYWAY TO BS SQ 2.3 DEPTH x 5.0 WIDE & M4 THD HOLES 10 MM FROM END	2
026	B01123		U.J. GAITER TO DRAWING (P.M. PLASTIC MOULDINGS)	2
027			M8 x 20 LONG HEX. HD SETSCREW	4
028			M8 PLAIN WASHER	9
029			8 MM POLYCHAIN GT SPROCKET FOR 12 mm wide belt 25 GROOVES FENNER SPROCKET 8M-25S-12 CATALOGUE CODE 050J0025	2
030			TAPER LOCK BUSH NO. 1108 BORED 28 mm FENNER CATALOGUE CODE 029B0028	2
031			8 MM POLYCHAIN GT SPROCKET FOR 12 mm wide belt 40 GROOVES FENNER SPROCKET 8M-40S-12 CATALOGUE CODE 050J0040	2
032			TAPER LOCK BUSH NO. 1610 BORED 16 MM FENNER CATALOGUE CODE 029G0016	2
033			8 MM POLYCHAIN GT BELT 12 mm Wide 180 Teeth 1440 Pitch Length FENNER CATALOGUE CODE 274J0144	1
034			8 MM POLYCHAIN GT BELT 12 mm Wide 193 Teeth 1544 Pitch Length FENNER CATALOGUE CODE 274J0179	1
035	B01142		COVER PLATE : - 132 SQUARE x 1.6 THK SHEET	2
036	B01146		AIR MOTOR ADAPTER BLOCK : - 140 x 200 LONG x 40 THK BAR	1
037	B01147		AIR MOTOR STUB SHAFT : - 40 DIA BAR x 105 LONG	1
038			M8 x 50 LONG HEX. HD BOLT	4

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
039			M8 HEX. DOME NUT	4
040			M8 x 60 LONG HEX. HD BOLT	4
041	B01148		SPECIAL WASHER : - 20 DIA BAR x 3 THK	4
042			M8 x 75 LONG HEX. HD BOLT	1
043			6 x 6 x 40 LONG SQUARE PARALLEL KEY	1
044			8 x 5 x 55 LONG RECTANGULAR PARALLEL KEY	1
045			5 x 5 x 35 LONG SQUARE PARALLEL KEY	4
046			5 x 5 x 30 LONG SQUARE PARALLEL KEY	2
047	B01138		VALVE BRACKET : - 35 x 67 x 5 THK PLATE	2
048	B01139		VALVE TAPPING PLATE : - 16 x 30 x 3 THK PLATE	2
049			M3 x 20 LONG BUTTON HD CAP SCREW	4
050	B01131		LOCATING DOWEL PIN:- 8DIA BAR x 25 LONG	4
051	G1951-B01-026		AIR MOTOR COVER : - 707 x 870 x 1.6 THK SHEET (SHAPED TO SUIT)	2
052			SPARE NUMBER	
053	G1951-B01-027		PIPE COVER : - 220 x 300 x 1.6 THK SHEET	1
054			AIR MOTOR FLG MTD 3/4” BSP PORTS 2.5 KW - ATLAS COPCO - MODEL LZL 15	1
056			EARTH WIRE - 10mm x 100 LG	1
057			EYE CRIMP FOR M8	2

G1951-B01-005 SP2000 Swinging Arm Assembly

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	B18170		DOUBLE SPROCKET SWINGING ARM SHAFT	1
002	B18171		INVERTED SINGLE SPROCKET SWINGING ARM SHAFT	1
003	B18172		SINGLE SPROCKET SWINGING ARM SHAFT	1
004	B18193		SWING ARM SHAFT SPACER TUBE – 1" NB SCH. 40 PIPE (33.40 O/DIA x 3.38 mm WALL) x 101 LONG	3
005	B18173-1		BUSH HOUSING - 60 DIA BRT BAR x 30 LONG	5
006	B18173-2		BUSH HOUSING - 60 DIA BRT BAR x 30 LONG	1
007			PINION - 3/8" PITCH , 19 TOOTH SIMPLEX (TO ISO STD 606) – BORE Ø30 H8 – CROSS & MORSE CAT. No. 06B1-19.	2
008	B18174		IDLER PINION SHAFT – 45 DIA x 36 LG	2
009	B18194		RETAINING WASHER – 40 O/D x 9 I/D x 3 THK PLATE	2
010	G1951-B01-028-1		TIE ROD - 6 O/DIA x 475 LG	2
011	B18175-2		TIE ROD - 6 O/DIA x 100 LG	1
012	B18175-3		TIE ROD - 6 O/DIA x 60 LG	1
013	G1951-B01-028-2		TIE ROD - 6 O/DIA x 835 LG	1
014	G1951-B01-028-3		TIE ROD - 6 O/DIA x 335 LG	1
015	B18175-6		TIE ROD - 6 O/DIA x 190 LG	1
016	B18189-2		CONNECTING ROD TERMINAL – 10 O/DIA x 40 LG R.H. THREAD	5
017	B18189-1		CONNECTING ROD TERMINAL – 10 O/DIA x 40 LG L.H. THREAD	7
018	B18176		ACTUATOR/ CHAIN TERMINAL – M10 ALLTHREAD x 45 LG	2
019	B18177-2		ROD GUIDE – 40 x 70 x 12 THK	1
020	B18178		ROD GUIDE – 50 x 32 x 12 THK	1
021	B18195		ARM SPROCKET SHAFT SPACER - 35 O/D x 26 I/D x 4 LG	3
022	B18196		PIVOT PIN – 25 DIA BRT BAR x 60 LG (1x45° chamfer both ends)	3

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
023	B18179		CYLINDER MOUNT BLOCK - 90 x 65 x 20 THK	2
024	B18180		AIR MOTOR STOP CAM – Ø85 x 12 LG BAR	1
025	B18181		DELAY VALVE BRACKET - 40 x 96 x 3 THK PLATE	1
026	B18197		SPROCKET SHAFT SPACER - 60 O/D x 26 I/D x 5 THK	2
027	B18182		STRAIGHT SWINGING ARM	2
028	B18183		SWINGING ARM SLEEVE	3
029	B18190		OFFSET SWINGING ARM RHN	1
030	B18185		ARM LOCATING CUP	3
031	B18198		DRIVE PIN :- 6 DIA x 33 LONG BRT BAR	6
032	B18186		ARM LOCATING PAD – Ø95 BAR x 60 LG	3
033			ROLLER CHAIN - 3/8” PITCH x 200 PITCHES (MAKES SIX)	1
034			CONNECTING LINK - 3/8” PITCH (No.26)	12
035			OILITE BUSH – 30 O/DIA x 25 I/DIA x 30 LG.	8
036			OILITE BUSH – 35 O/DIA x 30 I/DIA x 20 LG.	6
037	B18158		BUNG - 81 O/DIA x 40 LG – WHITE RUBBER 70-80 SHORE	3
038	B18199		STOP PIN :- 25 DIA BRT BAR x 50 LONG	3
039			M10 x 45 LG HEX HEAD SETSCREW	6
040			M6 x 30 LONG CAP HEAD SETSCREW	4
041			M8 x 30 LONG CAP HEAD SETSCREW	4
042			M6 PLAIN NUT	5
043			M6 PLAIN NUT L.H. THREAD	7
044			M8 x 20 LG HEX HEAD SETSCREW	1

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
045			M8 x 55 LG HEX HEAD SETSCREW	2
046			M8 FLAT WASHER	1
047			M8 HEX PLAIN NUT	2
048			M8 x 10 LG SOCKET SETSCREW - W POINT	6
049			M10 FLAT WASHER	12
050			M10 HEX PLAIN NUT	6
051			M4 x 25 LG SOCKET BUTTON HEAD SETSCREW	2
052			M4 FLAT WASHER	4
053			M4 HEX PLAIN NUT	2
054			M4 x 12 LONG HEX HD. SETSCREW	2
055			M6 x 40 LONG HEX HD. BOLTS	2
056			M6 x 50 LONG HEX HD. BOLTS	4
057			M6 FLAT WASHERS	6
058	B18177-1		ROD GUIDE – 40 x 95 x 12 THK	1
059	B18187-1		SWINGING ARM STOP PAD PLATE : 67 x 50 x 5 THK	3
060	B18187-2		SWINGING ARM STOP PAD : 30 x 50 x 10 THK	3
061			M5 x 15 LG SOCKET BUTTON HEAD SETSCREW	6
062			M5 LARGE FLAT WASHER	6
063	B18191-1		AIR MOTOR TOP COVER RHN: 1115 x 627 x 1.6THK SHEET	1
064	B18191-2		SWING ARM CHAIN COVER RHN	1

B18023 Earthing Assembly

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	B16112-1		ACCESS COVER PART No B16112-1:- 65 SQ x 1.6 THK SHEET	1
002	B16112-2		ACCESS COVER PART No B16112-2:- 170 SQ x 1.6 THK SHEET	1
003	B18112		ACCESS COVER :- 130 x 121 x 1.6 THK SHEET	1
004	B18110		SHAFT EARTH MOUNTING PLATE	1
005	B02125		PLUNGER DETAIL – 25 DIA x 125 LG	1
006			SPRING – LEE SPRING LTD - PART No LC 06 3HJ-12	2
007			6mm EARTH CABLE	1
008			RING TERMINAL EARTH TO FRAME M6 RS REF 373-279	4
009			RING TERMINAL EARTH TO PLUNGER M10 RS REF 224-9702	1
010			M10 LOCK NUT	1
011			M10 DOME NUT	1
012			M12 x 30 HEX HD SETSCREW	1
013			M12 FLAT WASHER	1
014	B04122		LEG EARTH PROD 18 DIA x 90 LG	1
015	B04123		HOUSING FABRICATION	1
016			M6 x 10 HEX HD SETSCREW	4
017			M5 x 10 HEX HD SETSCREW	2
018	B04134		CONTAINER EARTH PROD 18 DIA x 60 LG	1
019	B04135		HOUSING FABRICATION	1
020			COMPRESSION SPRING – LEE SPRINGS - PART No LC063HJ-9	1
021			M5 x 10 BUTTON HD SETSCREW	11

B18037 Thro-Wall Pedestal Base & Covers

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	B18134		BASEFRAME	1
002	B18137		TOP COVER	1
003	B18138-1		END COVER - 1892 x 1485 x 1.6 THK SHEET	1
004	B18138-2		SIDE COVER	1
005	B18138-3		SIDE COVER	1
006	B18138-4		END COVER BRACKET	2
007			M6 x 15 LONG BUTTON HD CAP SCREW	16
008	B16140		PEDESTAL GLAND PLATE - 230 x 70 x 2 THK SHEET	2
009			M5 x 15 LONG BUTTON HD CAP SCREW	8
010	B18192		BOTTOM WALL COVER	1
011	B18141		CIRCULAR WALL COVER BRACKET	2
012			M8 EXTRA LARGE DIA FLAT WASHER - FORM G	8
013			M8 x 25 LONG HEX HEAD SET SCREW	8
014	B18142		CIRCULAR WALL COVER WITHOUT SEAL	1

B18038 SP2000 Standard Direct Drive Assembly

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001			DANFOSS BAUER BEVEL GEARED MOTOR C/W BRAKE & SSV SHRINK DISC REF NO. BK70-15U/D13LA4-TF-S/E075B9HN POWER - 9.5 KW @ 50HZ, 18.5 rpm @ 60HZ- 22.5 rpm,11.5KW, 5100 Nm SERVICE FACTOR - 1.05; TERMINAL BOX POSITION - STANDARD II OUTPUT SHAFT BORE- 90mm DIA; MOUNTING POSITION - H3 ENCLOSURE - IP 65, INSULATION - ZONE SAFE AREA LUBRICANT - FDA APPROVED; SUPPLY - 400v 3ph 50Hz	1
002			SPHERICAL ROLLER BEARING - S.K.F. - 125 DIA PART No. 22228 CCK/W33 C/W SEAL - TSN 528A	1
003			BEARING HOUSING - S.K.F. - PART No. SNH 528 T.A.	1
004			ADAPTOR SLEEVE - S.K.F. PART No H3128	1
005			FITTING RINGS - S.K.F. - PART No 2 FRB 15/250	1
006			ALL THREAD M30 x 3.5P x 350 LONG	4
007			M30 x 3.5P HEX NUT	12
008			M30 WASHER	12
009			PROXIMITY SWITCH - TELEMECANIQUE - PART No XS4-P30PA340D	2
010			PROXIMITY SWITCH - TELEMECANIQUE - PART No. XS3-P12PA340D	1
011			CONNECTOR LEAD - TELEMECANIQUE - PART No. XZ-CP1241L5	3
012	B02122		HAZARD LABEL :- 170 x 100 WHITE/RED/WHITE GRAVOPLY	1
013	B18144		PNEUMATIC BACKPLATE 1470 x 500 x 3 THK SHEET	1
014	B18116		ROTARY COUPLING PEG :- 10 DIA BAR x 40 LONG	1
015	B18145		STOP BRACKET & SWITCH MOUNT COMPRISING :-	1
016	B18150		SWITCH BRACKET :- 80 x 215 x 5 THK PLATE	2

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
017			M6 x 12 LONG SOCKET BUTTON HD SET SCREW	4
018			M3 x 30 LONG SOCKET HD CAP SCREW	4
019			M6 x 12 LONG HEX. HD SETSCREW	13
020	B16110-7		FRANK'S FLAG PART No B16110-7	2
021	B02012		ROTARY COUPLING ASSEMBLY (SEE SEPARATE BILL OF MATERIALS)	1
022	B18146		COUPLING PLATE:- 135 DIA x 60 LONG BAR	1
023	B16120		30 TOOTH INDEXING WHEEL (LASER CUT PROFILE)	1
024	B08103		PROXIMITY SWITCH TARGET DISC : - 12 DIA x 2 LONG BAR	1
025			M3 x 6 LONG HEX SOCKET COUNTERSUNK HEAD SCREW	1
026	B18147		GEARBOX TORQUE BRACKET COMPRISING :-	1
027	B18148		TORQUE BRACKET COMPRISING :-	1
028	B02109		TORQUE BAR COMPRISING :-	1
029	B02110		SPRING MANDREL 50 DIA x 220L BAR , CASE HARDENED	1
030	B02111		CAP 60 DIA x 50 LONG BAR	1
031	B02112		LINCH PIN 25 DIA x 100L BRT BAR	1
032			BELLEVILLE SPRING WASHER PART No. D80415	30
033			M24 x 3 P HEX FULL NUT	4
034			SPLIT PIN 3 DIA x 35 LONG	2
035			M24 PLAIN WASHER - FORM A	2

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
036	B18149		SPEED SWITCH BRACKET	1
037			PROXIMITY SWITCH - TELEMECANIQUE - PART No. XS1-N08PA349	1
038	B18151		BEARING MOUNTING PLATE COMPRISING;-	1
039			SPHERICAL ROLLER BEARING - S.K.F. - 180 DIA PART No. 23040 CCK/W33	1
040			PLUMMER BLOCK BEARING HOUSING - S.K.F. - PART No. SN 3040	1
041			ADAPTER SLEEVE - S.K.F. - PART No. H 3040	1
042			LOCATING RING - S.K.F. - PART No. FRB 10/310	1
043			V-RING SEAL - S.K.F. - PART No. V-180 A	2
044			M20 x 70 LONG HEX HD BOLT	4
045			M20 PLAIN WASHER	8
046			M20 NYLOC NUT	4
047			M12 x 40 LONG STUD (TOTAL LENGTH = 57) FABROY REF 120.040	4
048			M12 PLAIN WASHER	4
049			M12 NYLOC NUT	4
050			M6 x 15 LONG SOCKET HEAD CAP SCREW	4
051			M12 x 50 LONG HEX HD SET SCREW	4
052			M8 HEX NUT	4

B18046 Leg Delay Cam Assembly

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	B18166		DELAY CAM :- 25 x 15 x 565 LONG	1
002	B18167		MOUNTING PLATE :- 45 x 45 x 5 THK PLATE	1
003	B18168		SPRING :- 127 x 25 x 22swg	1
004			M5 x 15 LONG SOCKET HEAD CAP SCREW	2
005			M4 x 20 LONG SOCKET HEAD CAP SCREW	2
006			M4 FLAT WASHER	2
007			M5 x 10 LONG BUTTON HD. SOCKET SCREW	2
008	B03151		COVER	1
009			M5 x 6 LONG BUTTON HD. SOCKET SCREW	4
010			M5 FLAT WASHER	6
011	B18169		30 DIA x 19 LONG BAR	2
012			M8 x 20 LONG SLOTTED PAN HEAD SETSCREW	2

B18047 Pneumatic Assembly (with Swinging Arms)

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	B18047		FRL + SHUT OFF VALVE ASSEMBLY : SMC PART REF AC5000 (U K000198)	1
002			¼" PRESSURE SWITCH : SMC PART REF IS3000-02	2
003			DOUBLE SOLENOID VALVE 5/3 OPEN CENTRE 24V DC : SMC PART REF VS7-8-FJG-D-3Z-Q	1
004			1½" BSP EXHAUST CLEANER : SMC PART REF AMC810-14	1
005			1/8" BSP 3/2 SOLENOID VALVE 24V DC : SMC PART REF VZ512-5MNZ-01	1
006			PLUG WITH 3 m LEAD : SMC PART REF DXT170-123-A-30	1
007			8 mm EQUAL TEE : SMC PART REF KQT08-00	2
008			3/8" BSP – 8 mm SPEED CONTROLLER : SMC PART REF AS3001F-08	1
009			¼" BSP REGULATOR : SMC PART REF AR20-F02	1
010			REGULATOR BRACKET : SMC PART REF AR20P-270AS	1
011			1/8" BSP PRESSURE GAUGE : SMC PART REF 4K8-10	1
012			1/8" BSP – 8 mm SOCKET HEAD MALE CONNECTOR : SMC PART REF KQS08-U01	4
013			1/8" BSP – 8 mm MALE CONNECTOR : SMC PART REF KQH08-U01	2
014			¼" BSP – 8 mm SOCKET HEAD MALE CONNECTOR : SMC PART REF KQS08-U02	2
015			¼" BSP – 8 mm MALE CONNECTOR : SMC PART REF KQH08-U02	6
016			¾" BSP 2/2 PILOT VALVE : SMC PART REF VNA301A-20A-B	1
017			1/8" BSP SHUTTLE VALVE : SMC PART REF VR1210-01	1
018			4 mm 3/2 NORMALLY CLOSED POPPET VALVE : SMC PART REF VM1000-4N-00	2

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
019			Ø12 COMPACT CYLINDER SINGLE ACTING SPRING EXTEND 10 mm STROKE : SMC PART REF CQ2B12-10T	1
020			1/8" BSP TIME DELAY VALVE : SMC PART REF VR2110-01	1
021			1/8" BSP 3/2 PILOT VALVE : SMC PART REF VTA301-01	1
022			M5 – 6 mm SOCKET HEAD MALE CONNECTOR : SMC PART REF KQS06-M5	5
023			M5 – 4 mm MALE CONNECTOR : SMC PART REF KQH04-M5	3
024			8 mm O/D TUBE : SMC PART REF TU0805B-20 – 20 m COIL	1
025			6mm O/D TUBE : SMC PART REF TU0604B-20 – 20 m COIL	1
026			4 mm O/D TUBE : SMC PART REF TU0425B-20 – 20 m COIL	1
027			4 mm EQUAL TEE : SMC PART REF KQT04-00	2
028			8 mm – 6 mm PLUG-IN REDUCER : SMC PART REF KQR06-08	2
029			1/8" BSP – 6 mm MALE CONNECTOR : SMC PART REF KQH06-U01	12
030			1/8" BSP – 4 mm MALE CONNECTOR : SMC PART REF KQH04-U01	3
031			6 mm EQUAL TEE : SMC PART REF KQT06-00	3
032			6 mm – 4 mm PLUG-IN REDUCER : SMC PART REF KQR04-06	2
033			ISO SINGLE SUB BASE ¾" PORTS : SMC PART REF VS7-2-A06	1
034			¾" BSP - ¾" O/D TUBE ST MALE ADAPTOR : NORGREN PART REF 34 0346 55	16
035			¾" O/D TUBE SLEEVE : NORGREN PART REF 34 0278 09	16
036			¾" O/D TUBE TUBING NUT : NORGREN PART REF 34 0279 09	16
037			¾" O/D NATURAL NYLON TUBE – 20 m	1

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
038			NOT REQUIRED	
039	B08102		EXHAUST CLEANER MOUNTING BRACKET	1
040	B08101		¾" BSP ADAPTER : - 38 DIA x 65 LONG BAR	2
041			50 DIAx125 STROKE. D'BLE ROD COMP'T CYL SMC REF CQ2WA50-125D-X439	1
042			1/8" BSP 3/2 VALVE WITH ROLLER PLUNGER : SMC PART REF VM130-01-06	1
043			EXHAUST RESTRICTOR WITH SILENCER : SMC PART REF ASN2-M5	2
044			M5 5/2 PILOT VALVE : SMC PART REF VZA3120-M5	1
045			1/8" BSP 3/2 VALVE WITH CROSS ROLLER PLUNGER : SMC PART REF VM130-01-07	1
046			QUICK EXHAUST VALVE : SMC PART REF AQ340F-06-00	1
047			¼" BSP – 6 mm MALE STUD ELBOW : SMC PART REF KQL06-02S	2
048			1/8" BSP – 6 mm MALE ELBOW : PART REF KQL06-U01	2
049	B18027		LAYOUT OF PNEUMATIC BACKPLATE	1

B02012 Rotary Coupling

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	B02136		BODY :- 110 DIA x 162 LONG BAR	1
002	B02137		SPOOL :- 135 DIA x 190 LONG BAR	1
003			DEEP GROOVE BALL BRG :- 85 O/D x 65 I/D x 10 THK PT No 61813-2RS1	1
004			DEEP GROOVE BALL BRG :- 90 O/D x 70 I/D x 10 THK PT No 61814-2RS1	1
005	B02139		THRUST WASHER	1
006			STD EXTERNAL CIRCLIP FOR 65mm DIA SHAFT TO DIN 471	1
007			'O' RING 60mm 1/D 5mmDIA TO DIN 3771 PIMSEAL PART No 0600-50	8

G1951-B01-600 Control Panels

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001			MAIN CONTROL PANEL G1951-B01/D01/M01 800x2000x500 +2000x500 (SIDE PANEL)	1
002			600x500x250	1
003			PEDESTAL MOUNTED JUNCTION BOX G1951-B01-640 (200x300x155)	1
004			HOIST MOUNTED JUNCTION BOX G1951-D01-640 (1000x600x210)	1
005			QUADRO MILL CONTROL PANEL G1951-M01 (600x600x210)	1
006			FANUC PANELPC 17" STANDARD UNITWITH SINDOWS XP PART No. IC5007TAX0030	1
007			iFIX PLUS SCADA PAK UNLIMITED RUNTIME VER 4.0 - M4 KEY PART No. 27003540001M	1
008			S17 SIEMENS SIMATIC PART No. 95113133400C	1
009			CP5613 PCI CARD WIN2K XP PRO PART No. 6GK15613AA01	1
010			SIMATIC NET PB DP5613 2005 SOFTWARE PART No. 6GK17135DB633AA0	1

PH600 POST HOIST (G1951-DO1)

G1951-D01-001 PH600 Post Hoist

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	D01169		BOTTOM LIFT COLUMN ASSEMBLY	1
002	D01170		BOTTOM LIFT ASSEMBLY	1
003	G1951-D01-002		FORK ASSEMBLY	1
004	D01131		POWERED SLEW BASE ASSEMBLY	1
005	D02132		SLEW BASE BOTTOM CABLE CHAIN ASSEMBLY	1
006	D99100		STD CARRIAGE CABLE CONNECTION	1
007	D99108		STD LIFT LIMIT SWITCH ASSEMBLY	2
008	D99116		LATCH END STOP C/W LIMIT SWITCH	1
009	D01153		SIZE 1 LOCAL TERMINAL BOX ASSEMBLY - SLEWING	1
010	D99109		STD IBC PROXIMITY SWITCH ASSEMBLY	1

G1951-D01-002 Fork Assembly

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	G1951-D01-021		FORK FABRICATION :-	1
002	D01244		STD FORK MOUNTING COVER:-	1
003			BUTTON HD CAPSCREW - M5 x 10	8
004			HEX HD SET SCREW - M16 x 50 GRADE 8.8	6
005			HEX 'NYLOC' NUT - M16 GRADE 8	6
006			FLAT WASHER - M16	12
007			NOT REQUIRED	
008	D99109		IBC IN POSITION SWITCH ASSEMBLY	1

D01131 Size 1 Powered Slew Base Assembly

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	D02230		SIZE 1&2 POWERED SLEW BASE PLATE	1
002	D02212		SIZE 1&2 SLEWING BASE SHROUD	1
003	D02213		SIZE 1&2 SLEWING BASE GLAND PLATE	1
004	D02233		SIZE 1 & 2 ENDSTOP STRIKER PLATE	1
005			INTERNALLY GEARED SLEWING RING - REF No. 32-0411-01-ZZ00	1
006			SOCKET HEAD SET SCREW (LOW HEAD) - M12 x 60	24
007			HEX HD BOLT - M12 x 90	2
008			FLAT WASHER - M12	24
009			FULL NUT - M12	24
010			HEX HD SET SCREW - M4 x 15 LONG	1
011			FULL NUT - M4	1
012			BUTTON HD CAPSCREW - M5 x 10	12
013			FLAT WASHER - M5	4
014			FULL NUT - M5	4
015			HEX HD BOLT - M12 x 80	22
016	D02231		SIZE 2 POWERED SLEW PINION : SPUR GEAR - MODULE 5, 12TEETH - CROSS & MORSE REF:- S5012B BORE AND KEYWAY	1
017			BRAKE MOTOR & GEARBOX (HELICAL) : 0.18 KW, 255:1, 5.4 rpm, 307Nm; SERVICE FACTOR - 1.1, FLANGE DIAMETER - 160mm BRAKE HAND RELEASE POSITION - 5, OIL FILLER/BREATHER POSITION – C; TERMINAL BOX POSITION - 4 ZONE - SAFE , PROTECTION IP54 TYPE - GST06-3M VCK 063C32; SUPPLY - 380/415V 50Hz	1
018			FLAT WASHER - M8	4
019			HEX HD SET SCREW BOLT - M8 x 30	4
020	D03216		SIZE 3 POWERED SLEW PINION RETAINER:- 50 DIA. x 6 THK	1
021			PARALLEL KEY - 8W x 7H x 45 LONG, RADIUS ENDS	1
022			M10 x 35 LONG HEX. HD SETSCREW	1
023			TAG - SEE CONTRACT TAG LIST	1

D01153 Size Local Terminal Box Assembly

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	D01213		SIZE 2 SLEWING BASE COVER	2
002	D01237		SIZE 2 SLEWING COLUMN REAR COVER DETAIL	1
003				
	D01239		SIZE 2 COVER LOWER BRACKET	1
004	D01238		SIZE 2 COVER UPPER BRACKET	1
005			SEALING STRIP HEAD CUSHION RS No. 823-572	1.4 M
006			BUTTON HD. CAP SCREW - M6 x 10	6
007			HEX HD SCREW - M8 x 15	4
008			WASHER - M8	2
009			BUTTON HD. SCREW - M5 x 10	4
010			SIDE CUSHION GASKET SPONGE RUBBER 'EMKA' 1011-20	2.0M

D01169 Size 1 Slewing Column Assembly

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	D01252 SHT 1&2		SIZE 1 SLEWING COLUMN FABRICATION:-	1
002	D01253		SLEWING COLUMN SHROUD - 970 x 16SWG SHEET x 5007	1
003	D01220		SIZE 1 COLUMN INSPECTION COVER	1
004			BUTTON HD SCREW- M6 x 10 LONG	4

D01170 Size 1 Slewing Bottom Lift Assembly

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	D01201		SIZE 1 LIFT CARRIAGE FABRICATION	1
002	D01205		SIZE 1 LIFT CAHIN ANCHOR	2
003	D01209		SIZE 1 COVER BELT CLAMP PLATE	2
004	D01210		SIZE 1 COVER BELT CLAMP BAR:-	2
005	D99200		STD LIFT CARRIAGE LIMIT SWITCH STRIKER PLATE:-	1
006			ISO SIMPLEX ROLLER CHAIN - 3/4" PITCH ISO 606 No 12b-1 INNER LINKS AT CHAIN ENDS, 485 PITCHES	2
007			ISO SIMPLEX ROLLER CHAIN CONNECT LINK - CROSS & MORSE - PART REF 76 TO SUIT 3/4" PITCH 12B-1 CHAIN (spring clip type)	4
008	D 01251		DRIVE SPROCKET - DOUBLE SIMPLEX - 0.75" PITCH -18T BORE & KEYWAY; CROSS & MORSE REF:- DS12B1-18	1
009			LOCKNUT - M55X2: FAG REF KM11	1
010			LOCK WASHER - M55: FAG REF KM11	1
011	D01258		CHAIN IDLER SHAFT	1
012	D01248		GEARBOX DRIVE SHAFT	1
013			PARALLEL KEY - 16W X 10H X 35 LONG , RADIUS ENDS	1
014			PARALLEL KEY - 14W X 9 H X 64 LONG, RADIUS ENDS	2
015			BEARING UNIT - 50 DIA: INA REF:- PME50	1
017	D01263		CHAIN IDLER BRACKET	1
018			SOCKET HD CAPSCREW - M6 X 10	2
019			SPLIT (COTTER) PIN - 4 DIA X 36	2
020			HEX LOCKNUT - M20	2

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
021			HEX NUT - M20	2
022			BUTTON HD CAPSCREW - M5 X 10	16
023			HEX NUT - M6	4
024			SOCKET HD CSK SCREW - M8 X 20	4
025			FLAT WASHER - M6	4
026			HEX HD SCREW - M10X35	6
027			HEX HD SCREW - M16X30	4
028			FLAT WASHER - M10	6
029			HEX NUT - M12	4
030			FLAT WASHER - M 12	4
031	D01221		SIZE 1 COVER BELT ROLLER BRACKET:-	2
032			CONVEYOR ROLLER - INTERROLL SERIES 1100, 30 DIA ROLLER LENGTH = 230; M6 THREADED FEMALE ENDS	2
033			COMPRESSION SPRING - 11.25 OD x 1.25 WIRE x 64 LG 1.99N/mm ASSOCIATED SPRING REF D12230	4
034			HEX HD SET SCREW - M6 x 10	4
035			CONVEYOR BELTING - CHIORINO 50 FDA BELTING-AGR21MB 230mm WIDE 4568 LONG	1
036			HEX HD BOLT - M8 x 70	4
037			LOCKNUT - M8	4
038	D01211		SIZE 1 CARRIAGE END COVER	2
039	D99222		BELT ROLLER EARTHING SPRING - 15 x 65 x 0.3 THICK	2
040			RING TERMINAL EARTH M8 - RS REF 224-9689	2
041			RING TERMINAL EARTH M4 - RS REF 437-3807	2
042			6 mm EARTH CABLE - LENGTH CUT TO SUIT ON ASSEMBLY	2

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
043			HEX HD SET SCREW - M4 x 8 LONG	4
044			HEX NUT - M4	4
045			PLAIN WASHER - M4	4
046			EXTERNAL CIRCLIP - 50 DIA - D1400-0500	1
047	D01257		SIZE 1 & 2 IDLER SHAFT KEY PLATE	1
048	D01259		IDLER SPROCKET - SIMPLEX - 0.75" PITCH - 18T CROSS & MORSE REF:- 12B1-18	2
049	D01260		IDLER SHAFT SPACER -INNER	1
050	D01261		IDLER SHAFT SPACER-OUTER	2
051			BALL BEARING WITH 2 SEALS - 55x72x9 - SKF - 61811-2RS	4
052			COLLAR EYE BOLT - M20	2
053			HEX HD SCREW - M12x25	2
054	D99262		SIZE 1&2&3 CARRIAGE GLAND PLATE	2
055			LENZE HELICAL WORM GEARED MOTOR c/w BRAKE . POWER - 1.5 KW, RATIO 113.67:1, SPEED 12 rpm, TORQUE 936 Nm, SERVICE FACTOR - 1.5; FLANGE DIA - 250mm, POSITION – 5; SHAFT DIA - 50mm, POSITION - NIL, MOUNTING POSITION - C TERMINAL BOX POSITION - 4 BRAKE HAND RELEASE POSITION - 4 SUPPLY - 380-415v 3ph 50Hz; ENCLOSURE - IP 54, INSULATION - CLASS F; SPECIAL FEATURE - BRAKE BFK458.10 180V DC FITTED WITH HALF WAVE RECTIFIER PART B5-77681 TYPE - B1.5 13 GSS07-2M HAK 090-C32	1

D02132 Size 2 Slew Base Bottom Cable Entry Assy

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	D02215		SIZE 1&2 SLEW BASE ENERGY CHAIN OUTER GUIDE-	1
002	D02216		SIZE 1&2 SLEW BASE ENERGY CHAIN INNER GUIDE:-	1
003			ENERGY CHAIN: Black - MURRPLASTIK TYPE MP 18050	1.3m
004			ENERGY CHAIN MOUNTING BRACKET SET - MURRPLASTIK TYPE KA 18050	1
005			FLAT WASHER - M6 (No OFF AS REQ'D)	
006			FULL NUT - M6	7
007			BUTTON HD CAPSCREW - M6 x 15	3
008			SOCKET HD CAPSCREW - M6 x 15	3

D99100 STD Carriage Cable Connection

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001			ENERGY CHAIN - IGUS SERIES 14 No 14.4.028.0 (BLACK) x 3225 LG	1
002			ENERGY CHAIN MOUNTING BRACKETS WITH TIEWRAP PLATE SET IGUS No.114.4.12PZ	1
003			SOCKET HD CAPSCREW - M6 x 15	4
004			FLAT WASHER - M6	4

D99108 STD Lift Limit Switch Assembly

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	D99201		STD LIFT LIMIT SWITCH BRACKET:-	1
002			LIMIT SWITCH - TELEMECHANIQUE XCK-J10511H29 (ROLLER LEVER TYPE)	1
003			SOCKET HD CAPSCREW - M6 x 20	2
004			PRESSED CHANNEL SPRING NUT - M6 SCN6 (SPECIFIED PRODUCTS)	2
005			SOCKET HD CAPSCREW - M5 x 40	2
006			TAG - SEE CONTRACT TAG LIST	1

D99109 STD IBC Proximity Switch

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	D99208		STD IBC IN POS'N SWITCH ACCESS COVER:-	1
002			INDUCTIVE PROXIMITY SWITCH - FLUSH MOUNTABLE, 5mm SENSING RANGE; TELEMECHANIQUE XS1-N18PA340D	1
003			PROXIMTY SWITCH CABLE - 90 DEG PLUG, 10m CABLE TELEMECHANIQUE XZ-CP1241L10	1
004			BUTTON HD SOCKET SCREW - M5 x 10 LONG	4
005			CABLE GLAND - (M10) ELKAY No 240-B	1
006			TAG - SEE CONTRACT TAG LIST	1

D99116 Size 1 & 2 Latch Endstop c/w Limit Switch

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	D99219		STD BASIC ENDSTOP:	
			ANTI - CLOCKWISE HANDED	1
			CLOCKWISE HANDED	1
002	D99220		LATCH LIMIT SWITCH BRACKET	2
003			INDUCTIVE PROXIMITY SWITCH : 2 mm SENSING RANGE EMBEDDABLE DC 3 WIRE; PEPERRL- FUCHS COMFORT SERIES NJ2-F1-E2-5MKA (PNP) - 5m LONG CABLE	2
004			HEX HD SET SCREW - M10 x 35 LG	4
005			WASHER - M10	4
006			HEX HD SET SCREW - M3 x10 LG	4
007			WASHER - M3	8
008			HEX HD SET SCREW - M3 x 20 LG	4
009			NUT - M3	4

MILL (G1951-M01)

G1951-M01-001 U5 Mill & Support Frame

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
001	G1951-M01-021		MILL SUPPORT FRAME	1
002	G1951-M01-022		MILL HOPPER	1
003	G1951-M01-023		MILL HOPPER LID	1
004	G1951-M01-042		MODIFICATIONS TO MILL	1
005	G1951-M01-025		PIVOT BUSH - SHEET 15 THK x 120 DIA	1
006	G1951-M01-026		PIVOT WASHER - SHEET 6 THK x 120 DIA	1
007	G1951-M01-027		PIVOT MOUNTING - PLATE 8 THK x 130 x 310	1
008	G1951-M01-028		PIVOT RETAINING PLATE - PLATE 6 THK x 120 DIA	
009	G1951-M01-029		VALVE SUPPORT PLATE	1
010	G1951-M01-024		TERMINAL BOX DRILLING DETAILS (SEE ITEM 076)	1
011	G1944-M06-048		SPOOL PIECE - BAR 167 DIA x 30 LONG	2
012	G1951-M01-030		DOCKING SWITCH ACTUATOR	1
013	G1951-M01-031		SHROUD MOUNTING PLATE - 6 THK x 400 x 300	1
014	G1951-M01-032		VACUUM OUTLET PIPE	1
015	G1951-M01-033		VACUUM OUTLET PIPE	1
016	G1951-M01-034		DETAIL OF SHROUD TOP COVER	1
017	G1951-M01-035		DETAIL OF SHROUD BOTTOM COVER	1
018	G1951-M01-036		SAFETY SWITCH BRACKET - PLATE 3 THK x 30 x 135	2

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
019	G1951-M01-037		VACUUM OUTLET PIPE	1
020	G1951-M01-038		PIAB EJECTOR MODIFICATIONS	1
021	G1951-M01-039		U BOLT - BAR 8 DIA x 202 LONG	2
022	G1944-C01-024		DOCKING SWITCH BRACKET - 3 THK x 30 x 120 LONG	1
023	G1951-M01-040		EXTRACT PIPE COMPRISING :-	2
024	G1951-M01-041		GUIDE PIN - BAR 48 DIA x 130 LONG	2
025			SPARE	
026			250 DIA BUCK 'C' VALVE (ACTIVE HALF); CONTACT PARTS - 316L, NON CONTACT PARTS – 304; WHITE EPDM SEAL AND COMPENSATOR VIBRAFLOW VIBRATOR	1
027			QUADRO U5 COMIL TO DRG U5-00-00159	1
028			125mm DIA FIXED CASTOR - ALWAYSE (LAG) REF No 17157 WHEEL MAT`L- POLYAMIDE 6, INOX, TOP PLATE-304 SS	2
029			125mm DIA SWIVEL CASTOR C/W BRAKE - ALWAYSE (LAG) REF No 17107FR WHEEL MAT`L- POLYAMIDE 6, INOX, TOP PLATE-304 SS	2
030			YTRON QUADRO 6" DIA Q-CONNECT FLEXIBLE JOINT c/w internal flanges	1
031			SPARE	
032			150 DIA TRI-CLAMP	4
033			150 DIA TRI-CLAMP SEAL	4
034			SPARE	
035			SPARE	

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
036			TELEMECHANIQUE LIMIT SWITCH -ROLLER PLUNGER (2N/C) XCS-M3902L1	2
037			TELEMECANIQUE PHOTO-ELECTRIC SENSOR - DIFFUSE XU5-P18PP340D	1
038			TELEMECANIQUE CONNECTOR LEAD XZ-CP1241L10	1
039			SMC VACUUM GENERATOR	1
040			SMC PRESSURE SWITCH REF ZSE1-01-55L-Q	2
041			SMC SILENCER REF AN200-02	1
042			1.5" CRYSTAFLEX HOSE	1m
043			1.5" DIPMOULDED ENDS -	3
044			HOSE CLAMP - HEYCO REF - 700.2360	6
045			1.5" TRI-CLAMP	4
046			1.5" TRI-CLAMP SEAL	4
049			KOPEX FLEXIBLE CONDUIT SIZE 32, REF EF171026 (CUT TO SUIT)	5M
050			KOPEX RHINO CONNECTOR SZE 32x1.5, REF EF942026	4
051			HEX HEAD SET SCREW M8 x 45 LONG	4
052			HEX HEAD SET SCREW M8 x 25 LONG	8
053			HEX HEAD SET SCREW M8 x 15 LONG	30
054			HEX HEAD SET SCREW M5 x 10 LONG	6
055			HEX HEAD SET SCREW M4 x 25 LONG	4
056			HEX HEAD SET SCREW M4 x 15 LONG	2
057			HEX HEAD SET SCREW M3 x 20 LONG	2
058			SOCKET HEAD CAP SCREW M6 x 50 LONG	8

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
059			HEX NUT M8	11
060			HEX NUT M4	4
061			HEX LOCKNUT M8	3
062			SMC TUBING 6mm BLACK REF TU0604B	20M
063			SMC TUBING 12mm BLACK REF TU1208B	2M
064			SMC ELBOW 1/4-6mm REF AS2201F-02-06S-X35	2
065			SMC STRAIGHT M5-6mm REF KQH06-M5-X2	1
066			SMC 6/8 STRAIGHT REDUCER REF KQR06-08	1
067			SMC 6/10 STRAIGHT REDUCER REF KQR06-10	1
068			SMC 6 mm EQUAL TEE REF KQT06-00	1
069			SMC ELBOW 3/8-12mm REF KQL12-03S-X2	1
070			SMC BULKHEAD 12mm REF KQE12-00-X2	1
071			SMC EQAL ELBOW 12mm REF KQL12-00	1
072			SMC BULKHEAD CONNECTOR 3/8-12 REF KQE12-03	1
073			ELKAY CABLE GLAND M20 REF 251	2
074			ELKAY LOCKNUT M20 REF 93	2
075			BRAIDED EARTH STRAP 12 WIDE X 150 LONG	1
076			ELECTRIX TERMINAL BOX 220 x 100 x 85 REF TEC6-S316 (SATIN FINISH)	1
077			HARTING HAN SOCKET - COMPRISING HOUSING - SIZE 24B - 09 30 024 0318 CRIMP TERMINAL - MALE- 12 CONTACTS - 09 14 012 3001 CRIMP CONTACT - MALE - 09 15 000 6104 (0.14-0.37) PNEUMATIC MODULE - MALE 09 14 003 4501 CONTACT - MALE - 09 14 000 6153 HINGED FRAME - 09 14 024 0313 DUMMY MODULE - 09 14 000 9950	1

ITEM	TAG/DRAWING No.	MTL No.	DESCRIPTION	QTY
078			HARTING HAN PLUG - COMPRISING HOOD - SIZE 24B - 09 30 024 0541 CRIMP TERMINAL - FEMALE - 12 CONTACTS - 09 14 012 3101 CRIMP CONTACT - FEMALE - 09 15 000 6204 PNEUMATIC MODULE - FEMALE 09 14 003 4501 CONTACT WITH SHUT OFF - FEMALE - 09 14 000 6258 HINGED FRAME - 09 14 024 0303 DUMMY MODULE - 09 14 000 9950	1
079			ELECTROFLEX CONNECTOR PG29 - REF EF944026	1
080			SOCKET HEAD BUTTON SCREW M5 x 10 LONG	4
081			HEX DOMENUT M5	4
082			ELKAY CABLE GLAND M10 REF 240	1
083			ELKAY LOCKNUT M10 REF 78	1

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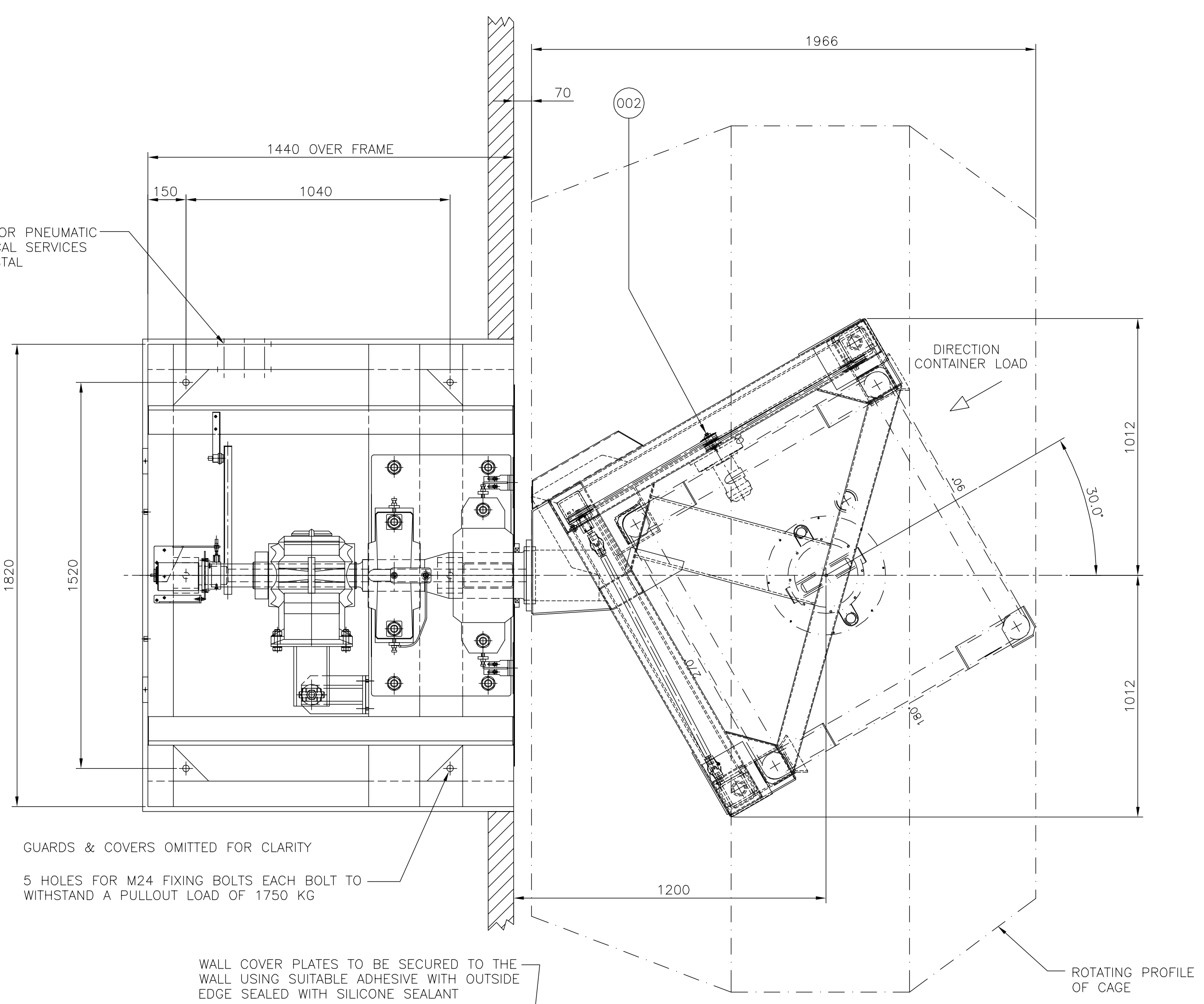
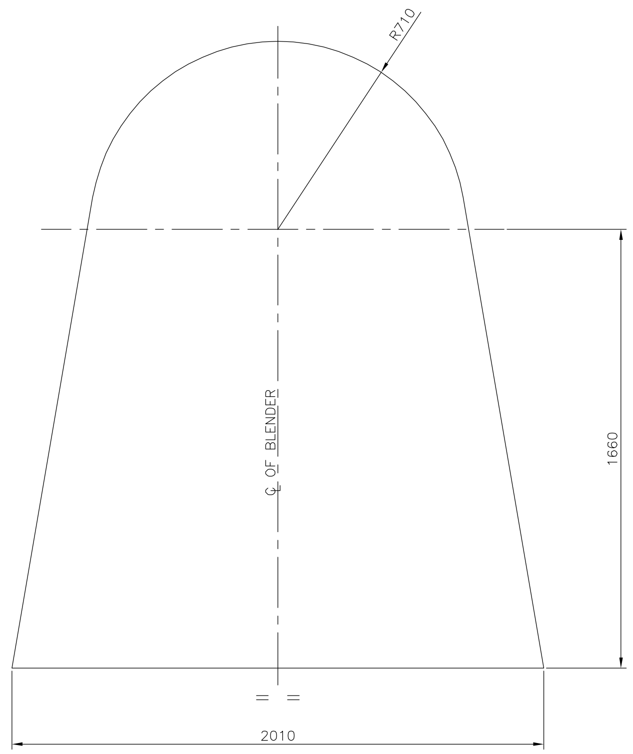




WALL CUTOUT DETAILS

UTILITIES:

ELECTRICAL DRIVE MOTOR: 9.5 KW
SUPPLY 380v – 3PH – 50HZ

SHAFT MOUNTED GEARBOX WITH INVERTER
VARIABLE SPEED DRIVE – RANGE 1-22.5 RPM
@5HZ – 1.8RPM, 3050Nm, 0.6KW
@50HZ – 18.5RPM, 5100Nm, 9.5KW
@60HZ – 22.5RPM, 5100Nm, 11.5KW

AIR CONSUMPTION MAXIMUM 60 L/S FREE
AIR OPERATING PRESSURE 5.5 BAR

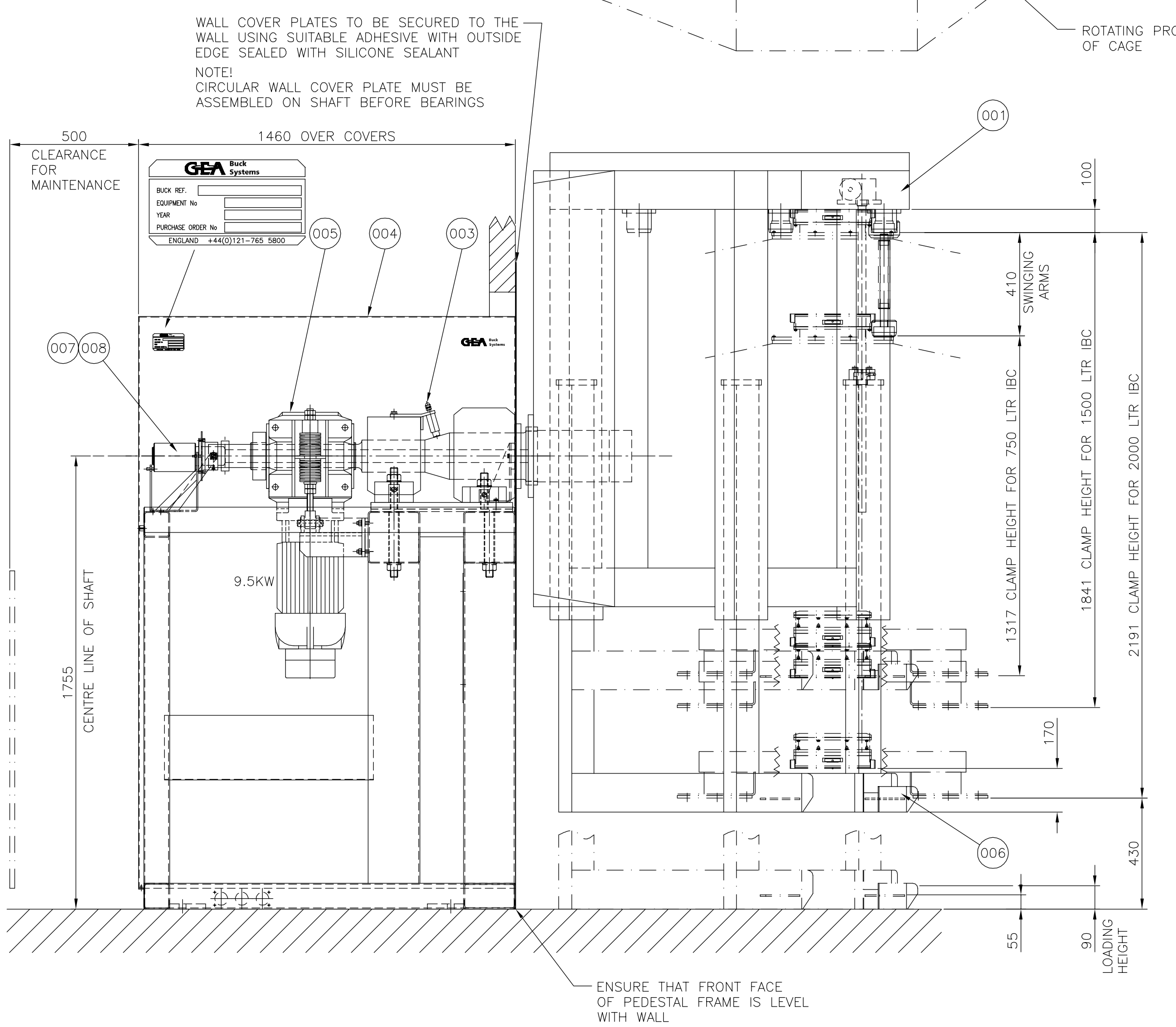
NOTES:

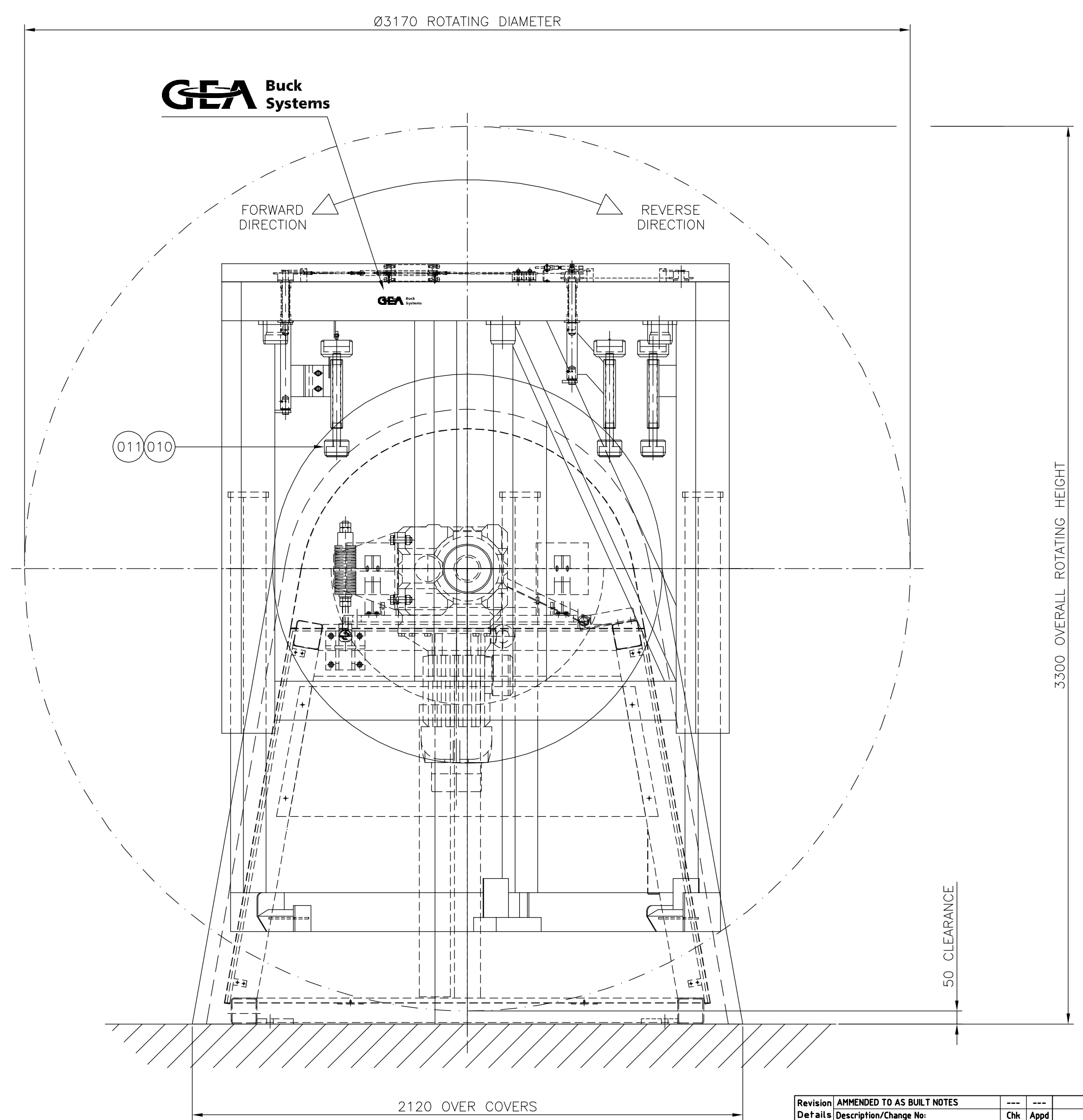
BLENDER DESIGNED FOR 1500 LTR & 2000 LTR CONTAINERS
SWINGING ARM ASSEMBLY IS USED FOR THE 750 LTR CONTAINER
CONTAINER FOOTPRINT 1200 x 1200
MAXIMUM PAYLOAD 1600 KG (CONTAINER WEIGHT PLUS CONTENTS).

ESTIMATED WEIGHT OF UNLOADED BLENDER = 2900 Kg

MATERIAL FINISH – 1.0μm R.A. MAX

MAT'L:– BSEN 10088-2-1.4301
EXTERNAL SURFACE FINISH
1.0μm RA MAX





Revision	AMMENDED TO AS BUILT NOTES	---	---	Drawing not complete
Details	Description/Change No:	Chk	Appd	or approved for manufacture

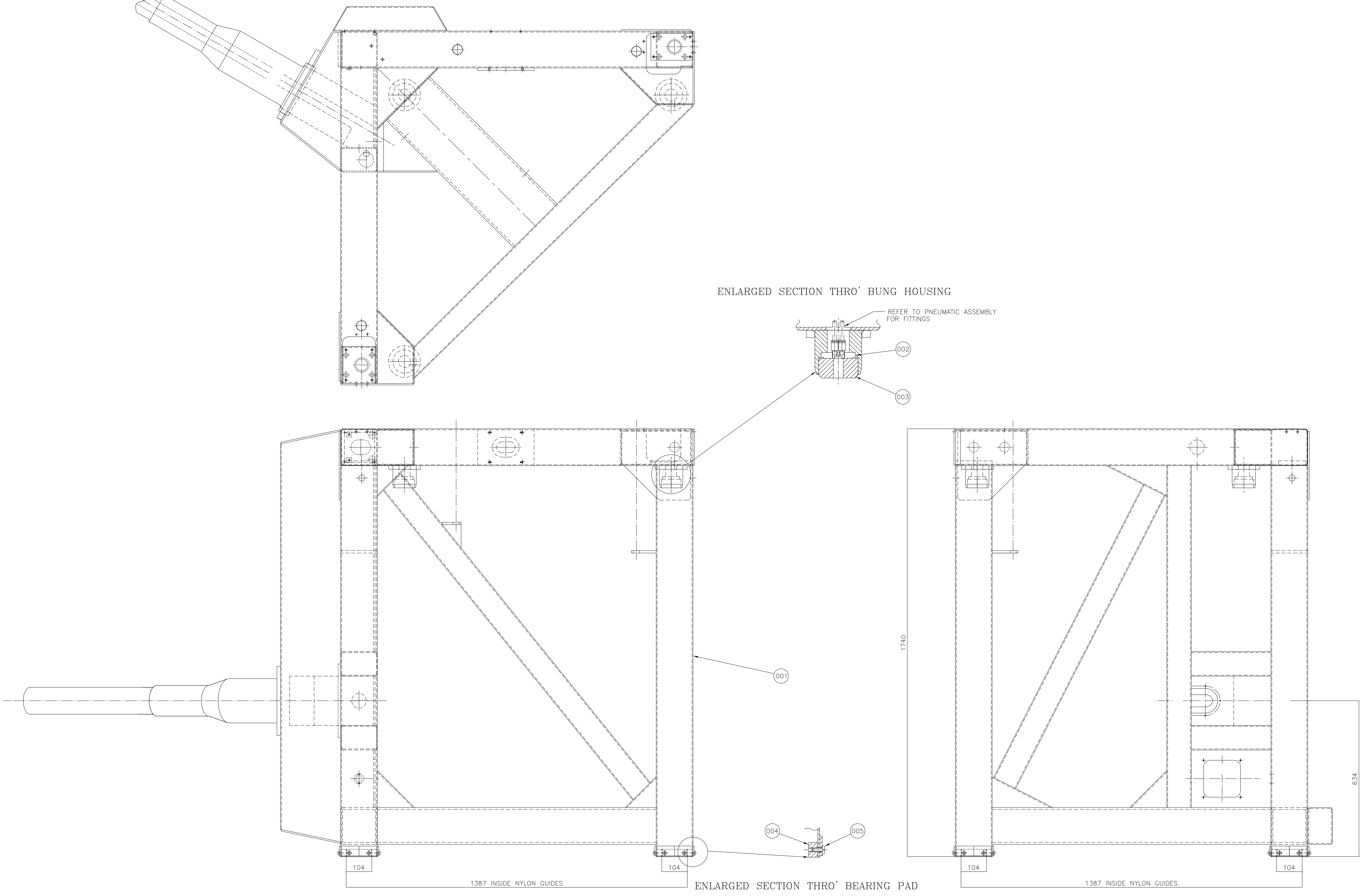
GEA Buck Systems

SP2000 SINGLE PEDESTAL BLENDER

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No.	Sht 1 of 1	Rev
	1:10	ISO 13920 -BF	ISO 2768 -mK	RMBA	3/Jan/07	RMBA	3/Jan/07	RE	G1951-B01-001		02

Plot-Datum :

CAD-BSL-G1951-B01-001-02.DWG



Revision Details	Original	---	---	Drawing not complete
	Description/Change No:	Chk	Appd	or approved for manufacture

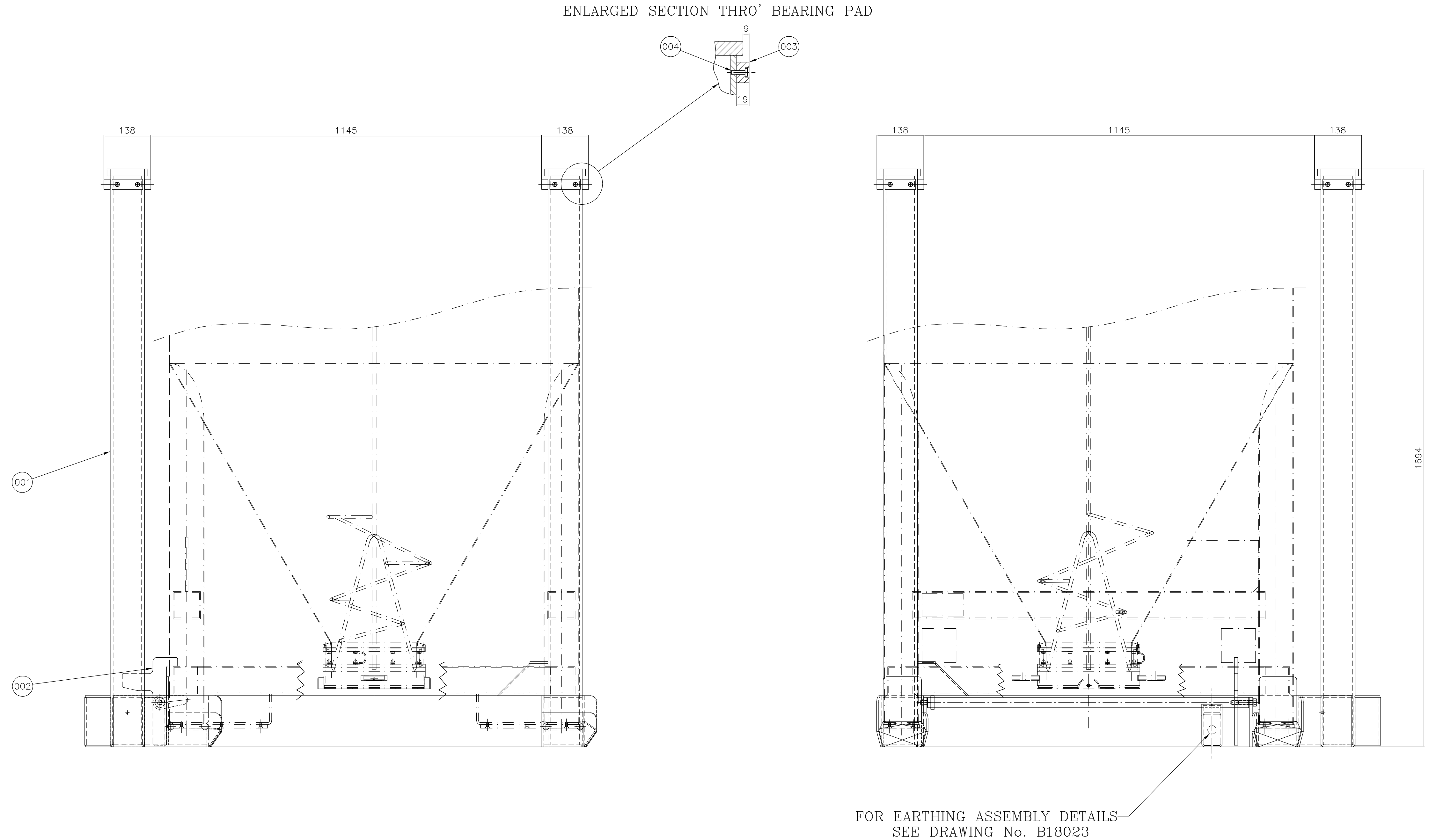
GEA Buck Systems

ROTATING CAGE ASSY WITH SWING ARMS

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No.	Sht 1 of 1	Rev
	1:5	ISO 13920 -BF	ISO 2768 -mK	ADS	23/May/06	ADS	23/May/06	RE	G1951-B01-002		01

Plot-Datum :

CAD-BSL-G1951-B01-002-01.DWG



Revision	Original	---	---	Drawing not complete
Details	Description/Change No:	Chk	Appd	or approved for manufacture

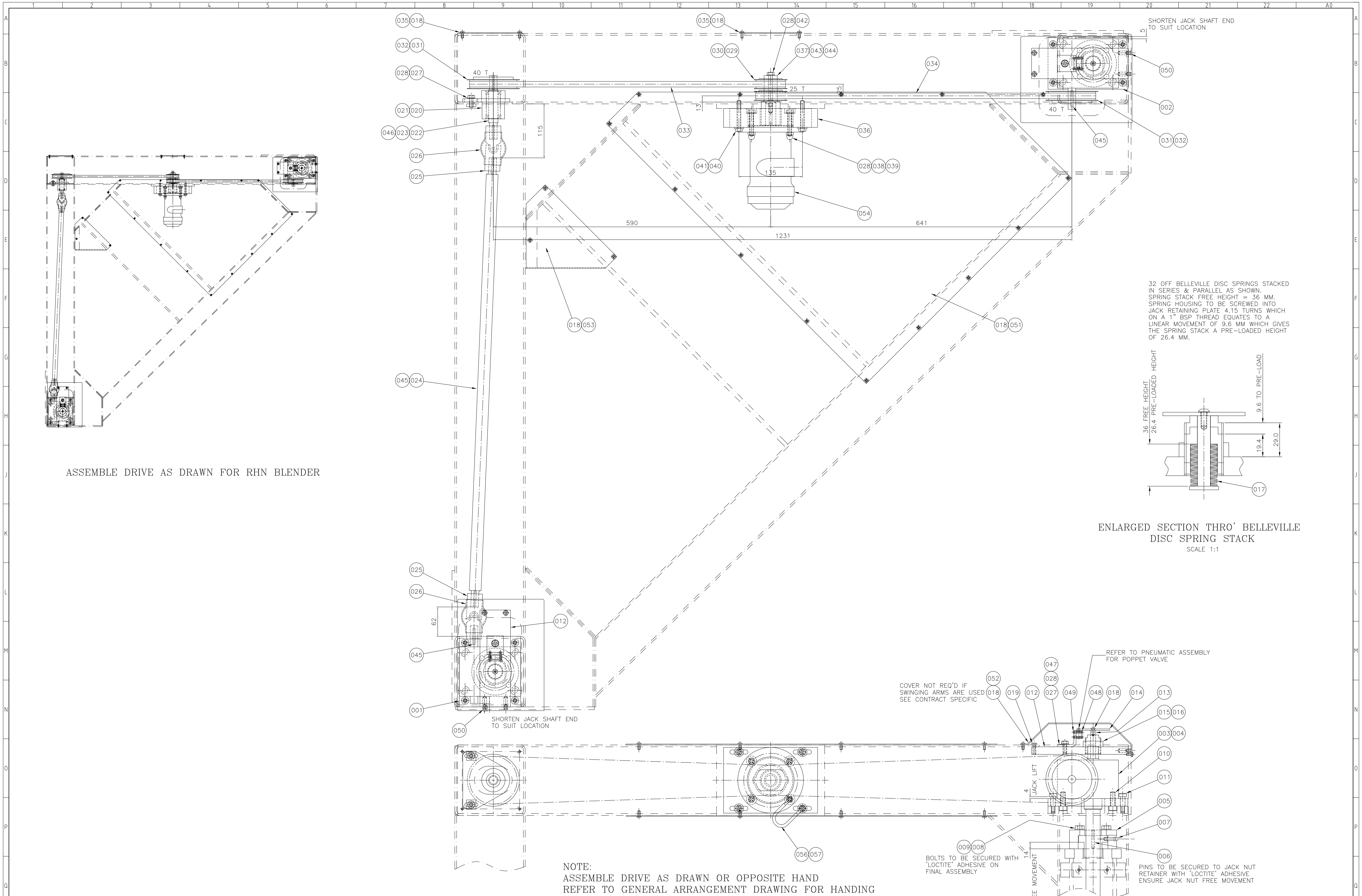
GEA Buck Systems

LIFTING FRAME ASSY

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No.	Sht 1 of 1	Rev
	1:5	ISO 13920 -BF	ISO 2768 -mK	ADS	23/May/06	ADS	23/May/06	RE	G1951-B01-003		01

Plot-Datum :

CAD-BSL-G1951-B01-003-01.DWG



Revision	Original	---	---	Drawing not complete
Details	Description/Change No:	Chk	Appd	or approved for manufacture

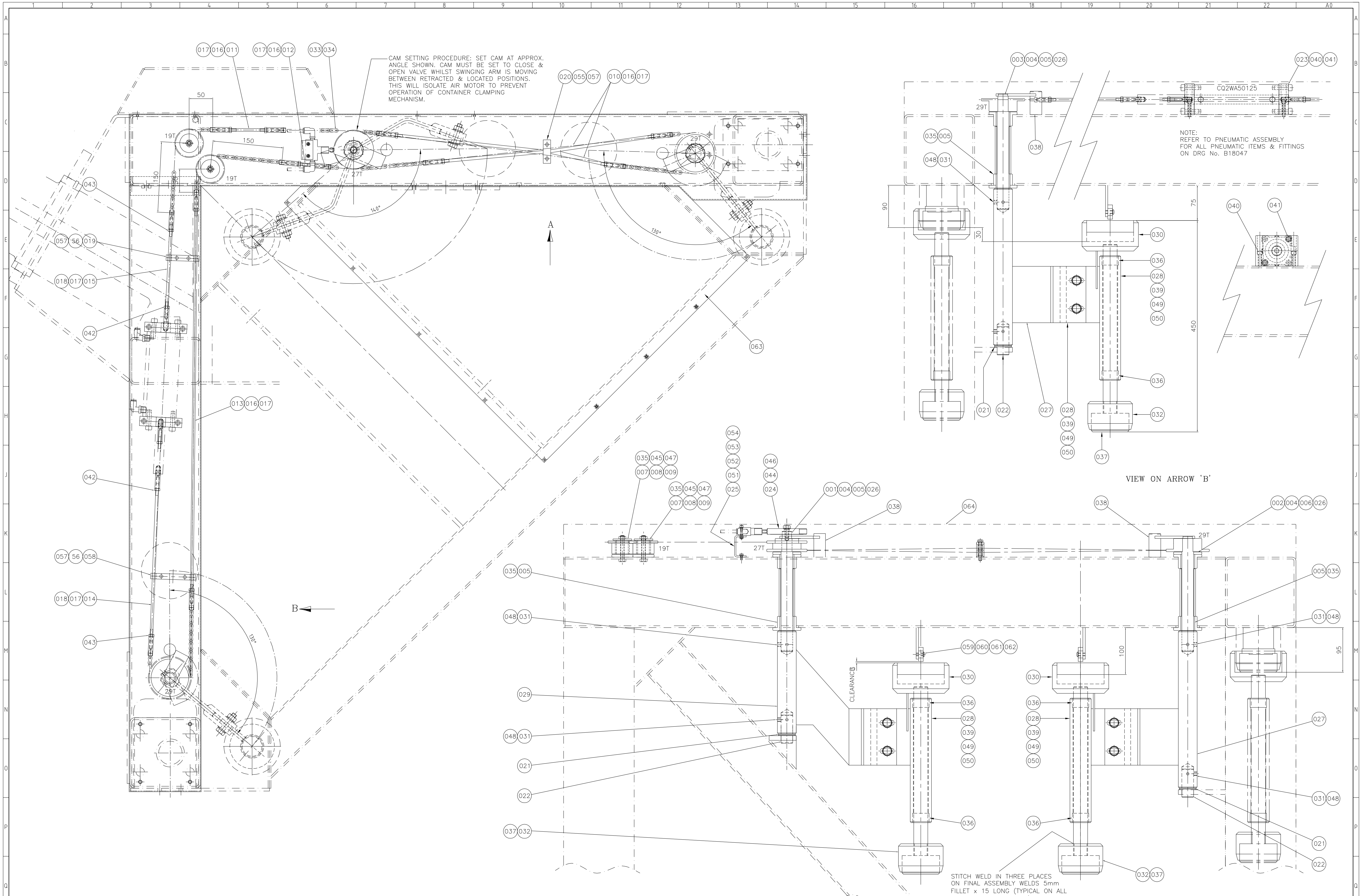
GEA Buck Systems

2 JACK DRIVE ASSY

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated	Drawn	Date	Modified	Date	Status	Drawing No.	Sht	Rev
	1:2.5	ISO 13920 -BF ISO 2768 -mK	ADS	23/May/06	ADS	23/May/06	RE	G1951-B01-004	1 of 1	01

Plot-Datum :

CAD-BSL-G1951-B01-004-01.DWG



CAM SETTING PROCEDURE: SET CAM AT APPROX. ANGLE SHOWN. CAM MUST BE SET TO CLOSE & OPEN VALVE WHILST SWINGING ARM IS MOVING BETWEEN RETRACTED & LOCATED POSITIONS. THIS WILL ISOLATE AIR MOTOR TO PREVENT OPERATION OF CONTAINER CLAMPING MECHANISM.
NOTE:
REFER TO PNEUMATIC ASSEMBLY FOR ALL PNEUMATIC ITEMS & FITTINGS ON DRG No. B18047
CQ2WA50125
VIEW ON ARROW 'B'
STITCH WELD IN THREE PLACES ON FINAL ASSEMBLY WELDS 5mm FILLET x 15 LONG (TYPICAL ON ALL THREE ARM ASSEMBLIES)
VIEW ON ARROW 'A'
CLEARANCE
19T
27T
29T
50
150
90
30
75
450
100
95
140°
130°
A
B

Revision	Original	---	---	Drawing not complete
Details	Description/Change No:	Chk	Appd	or approved for manufacture

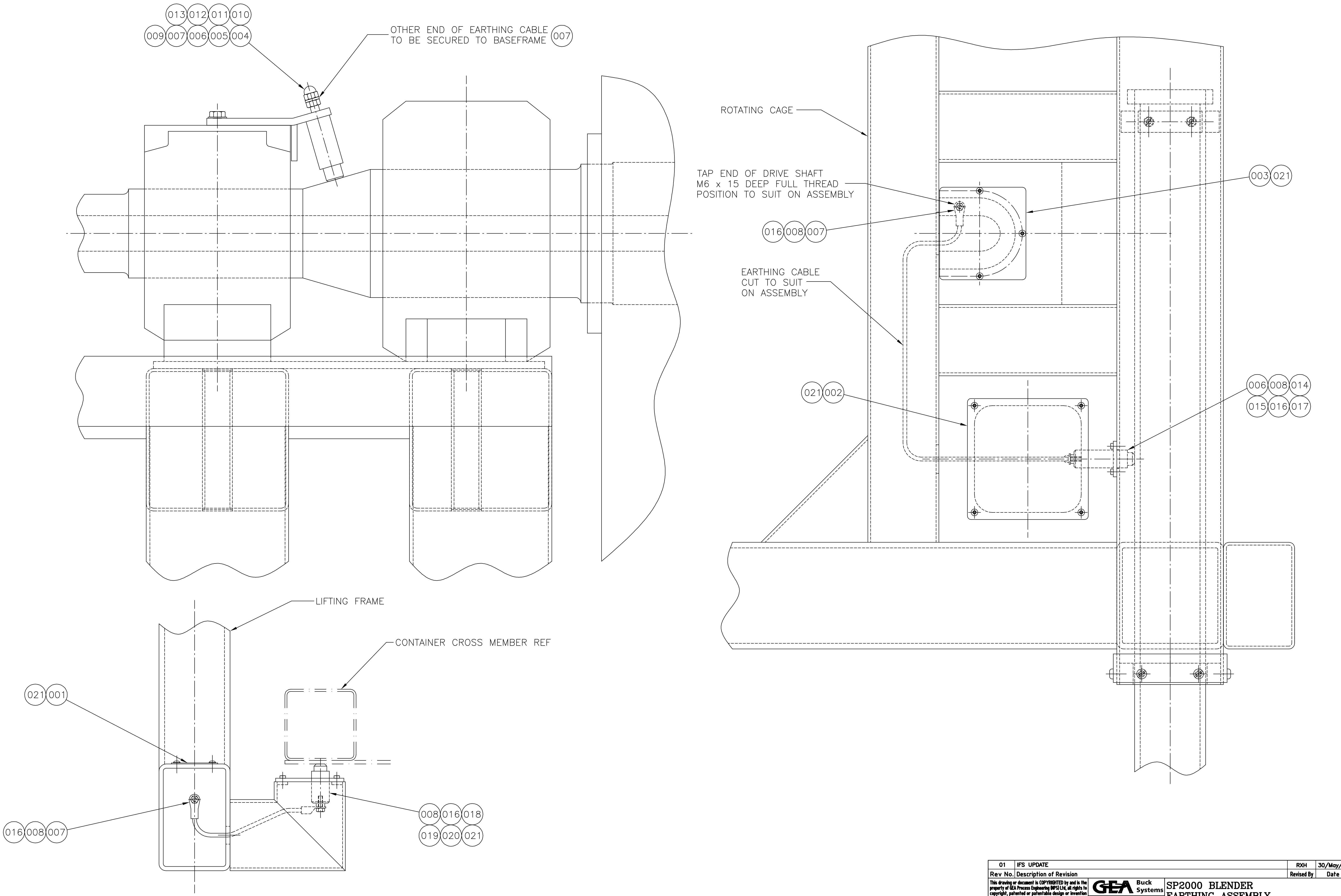
GEA Buck Systems

SWINGING ARM ASSY

THIRD ANGLE PROJECTION	Scale 1:2.5	Tolerances unless otherwise stated: ISO 13920 -BF, ISO 2768 -mK	Drawn ADS	Date 23/May/06	Modified ADS	Date 23/May/06	Status RE	Drawing No. G1951-B01-005	Sht 1 of 1	Rev 01

Plot-Datum :

CAD-BSL-G1951-B01-005-01.DWG



Rev No.	Description of Revision	Revised By	Date
01	IFS UPDATE	RXH	30/May/06

GEA Buck Systems

TOLERANCES UNLESS OTHERWISE STATED
MACHINING: 0 = ±0.50; 0.0 = ±0.10; ANG'DIM'S = ±0.50°
FABRICATION: 0 TO 500 = ±1.0; 500 TO 1M = ±2.0; 1M TO 2M = ±3.0
ALL OTHER GEOMETRY TO COMPLY TO THE TOLERANCE STANDARDS SPECIFIED BELOW
ISO 13920 -BF | ISO 2768 -mK

SP2000 BLENDER EARTHING ASSEMBLY OLD IBC

THIRD ANGLE PROJECTION	Scale	Drawn	Date	Drawing No.	Sht	Of
	1:2.5	RXH	30/05/06	1016870	1	1

CAD-BSL-1016870-01.DWG

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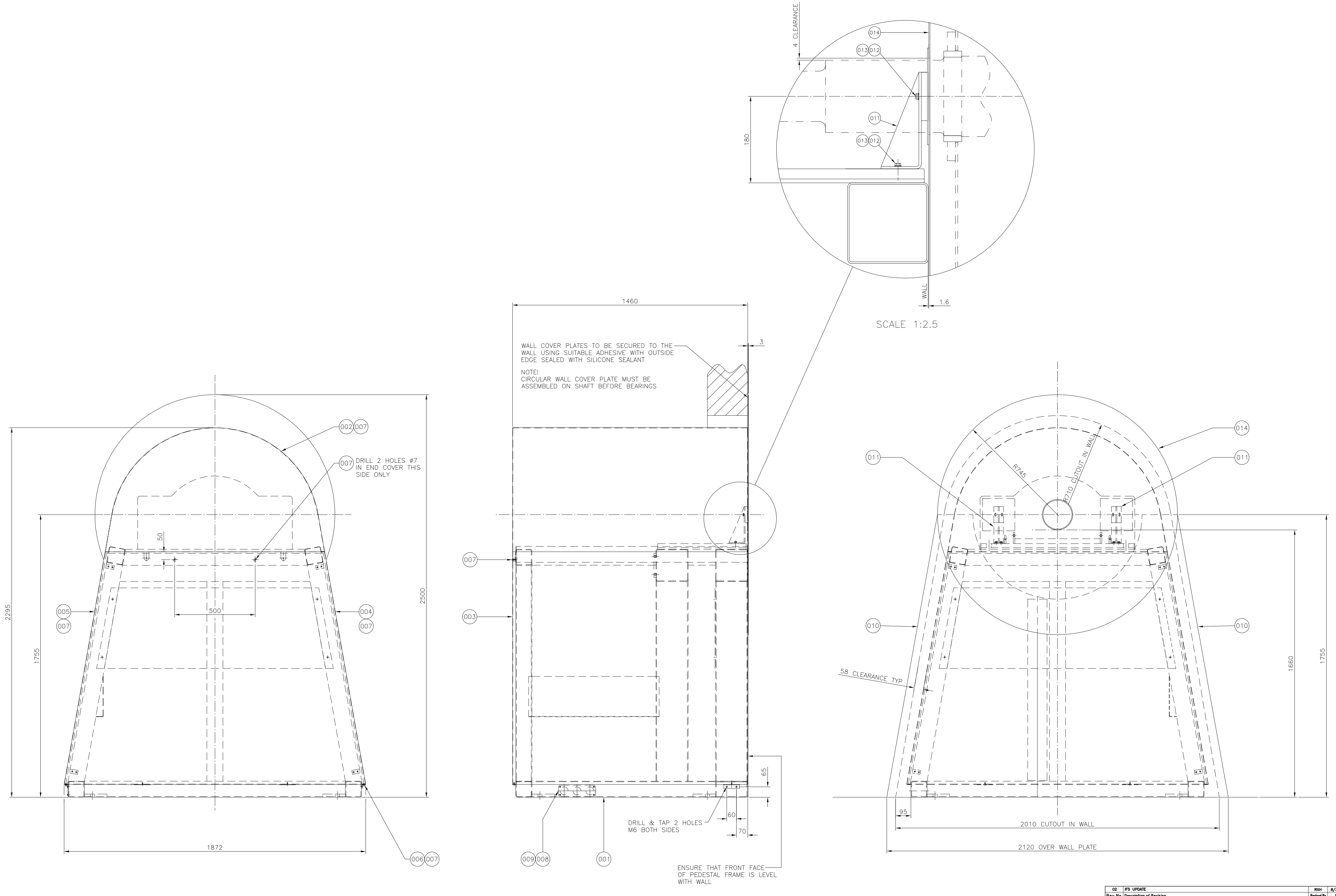


Rev No.	Description of Revision	Revised By	Date
02	IFS UPDATE	RXH	8/Jun/06

GEA Buck Systems

TOLERANCES UNLESS OTHERWISE STATED
MACHINING: 0 = ±0.50; 0.0 = ±0.10; ANG'DIM'S = ±0.50°
FABRICATION: 0 TO 500 = ±1.0; 500 TO 1M = ±2.0; 1M TO 2M = ±3.0
ALL OTHER GEOMETRY TO COMPLY TO THE TOLERANCE STANDARDS SPECIFIED BELOW
ISO 13920 -BF | ISO 2768 -mK

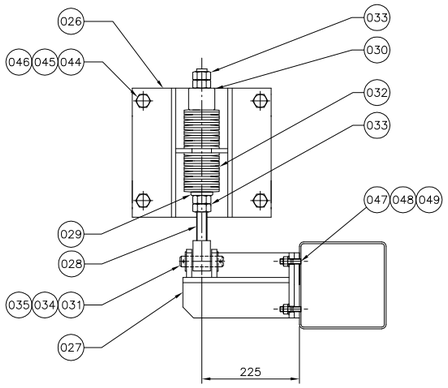
THIRD ANGLE PROJECTION | Scale 1:7.5

SP2000 BLENDER THRO WALL PEDESTAL BASE & COVERS WITHOUT SEAL

Drawn	Date	Drawing No.	Sht	Of
RXH	08/08/08	1016879	1	1

CAD-BSL-1016879-02.DWG

A0

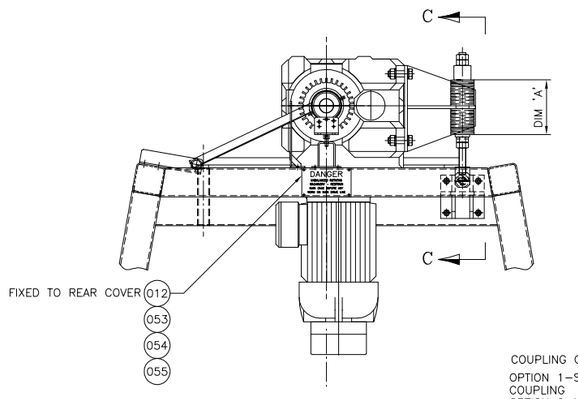


SECTION 'C–C'
SCALE 1:5

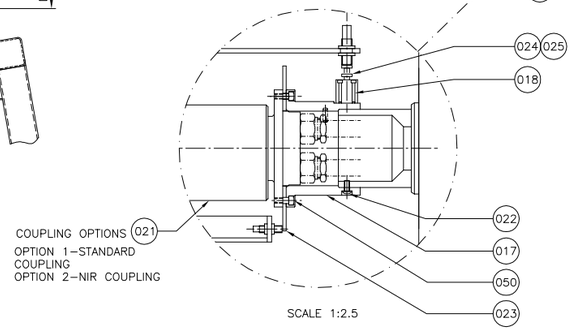
NOTE A : ASSEMBLE 'BELLEVILLE' SPRING WASHERS 'BACK–TO–BACK' AS SHOWN, 15 PER SIDE

NOTE B : GREASE ON ASSEMBLY

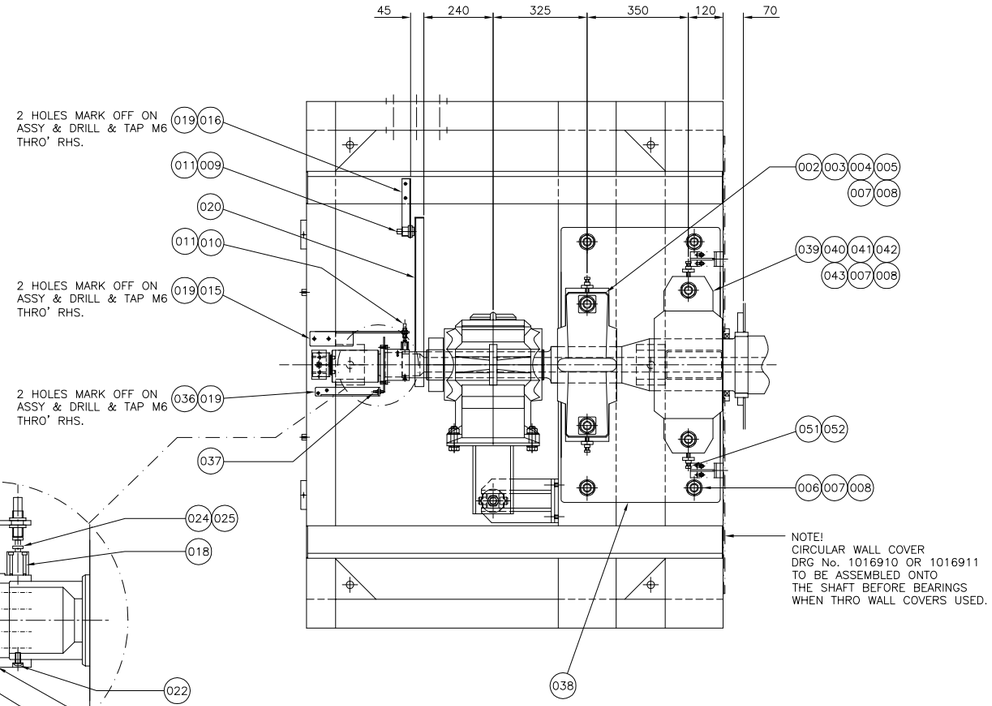
NOTE C : ADJUST DIMENSION 'A' TO ACHEIVE REQUIRED LOAD RESISTANCE BETWEEN :
193mm = 1700 Kg &
173mm = 3400 Kg



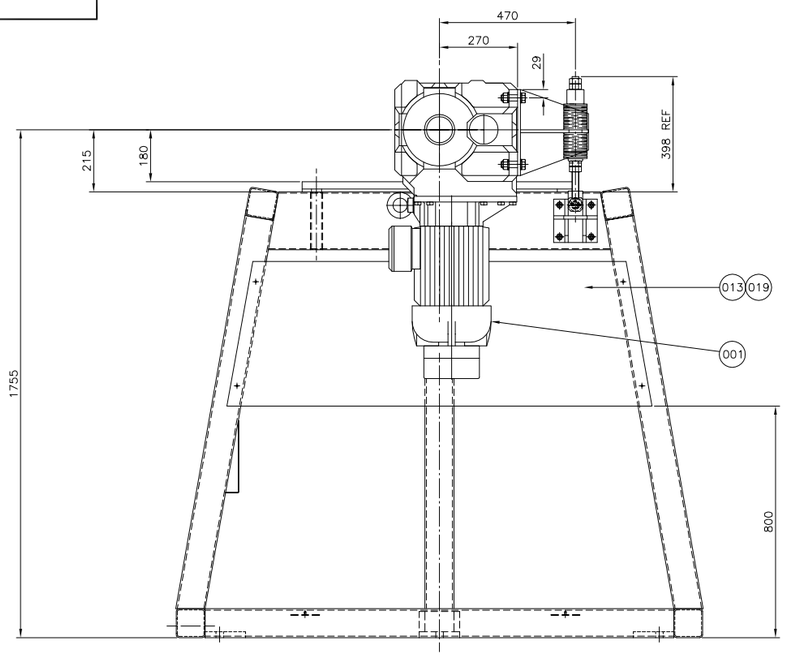
VIEW ON ARROW 'B'



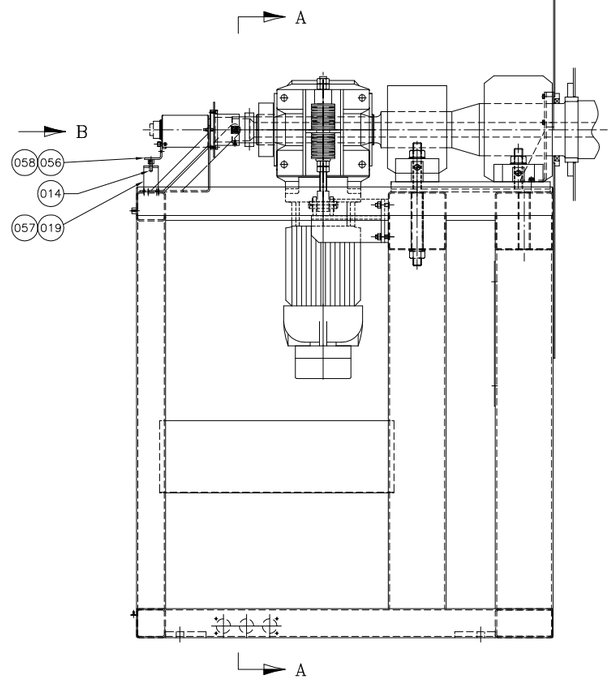
SCALE 1:2.5



NOTE!
BORE OF GEARBOX & SHAFT SURFACE TO BE COMPLETELY FREE OF GREASE BEFORE ASSEMBLY



SECTION 'A–A'



Rev No.	Description of Revision	Revised By	Date
03	IFS UPDATE	RXH	17/Jan/07

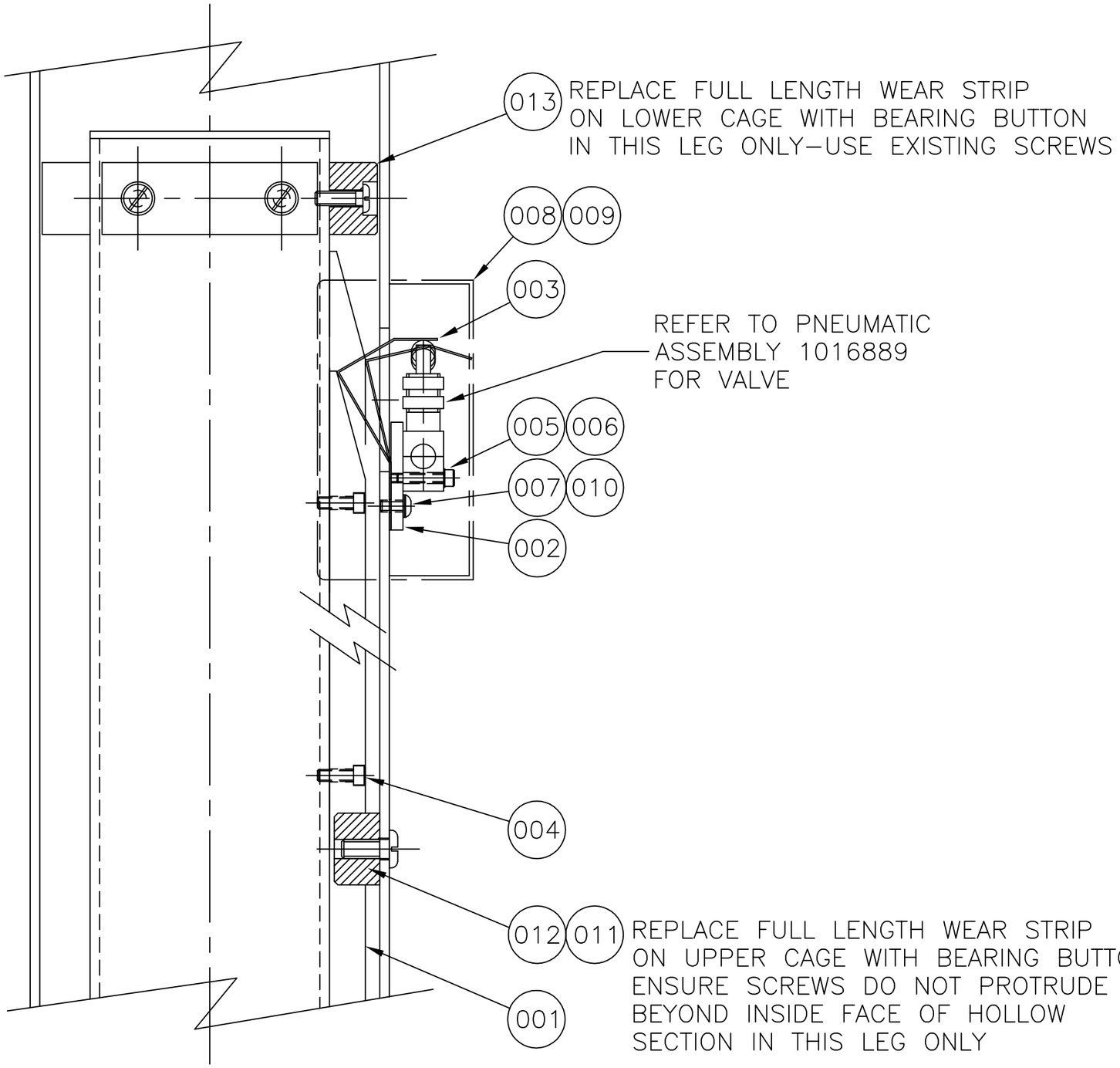
THIRD ANGLE PROJECTION

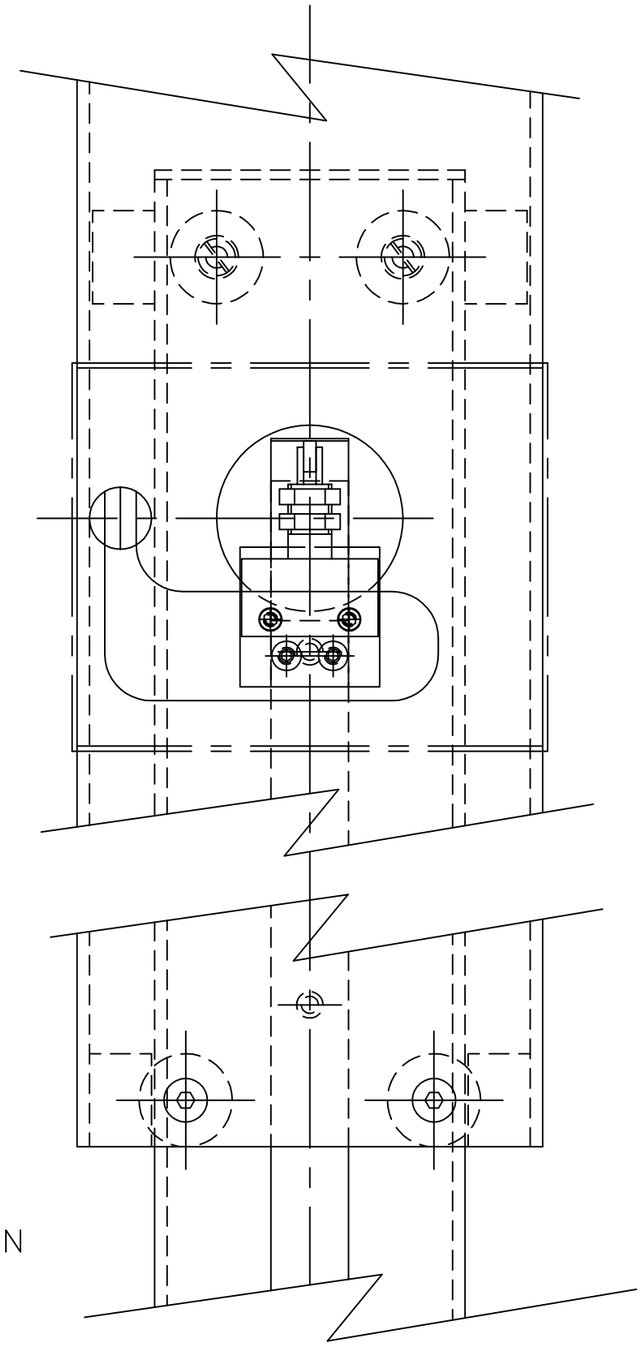
Scale 1:7.5

GEA Buck Systems

SP2000
BLENDER
STANDARD DIRECT DRIVE ASSY

Drawn RXH | Date 23/05/06 | Drawing No. 1016880 | Iss 1 of 1





Rev No.	Description of Revision	Revised By	Date
02	ITEM 013 ADDED	RXH	21/Aug/07

GEA Buck Systems

TOLERANCES UNLESS OTHERWISE STATED

MACHINING	FABRICATION
0 = ±0.50	0 TO 500 = ±1.0
0.0 = ±0.10	500 TO 1M = ±2.0
ANG'DM'S = ±0.50°	1M TO 2M = ±3.0

ALL OTHER GEOMETRY TO COMPLY TO THE TOLERANCE STANDARDS SPECIFIED BELOW

ISO 13920 -BF ISO 2768 -mK

BLENDER
LEG DELAY CAM ASSEMBLY

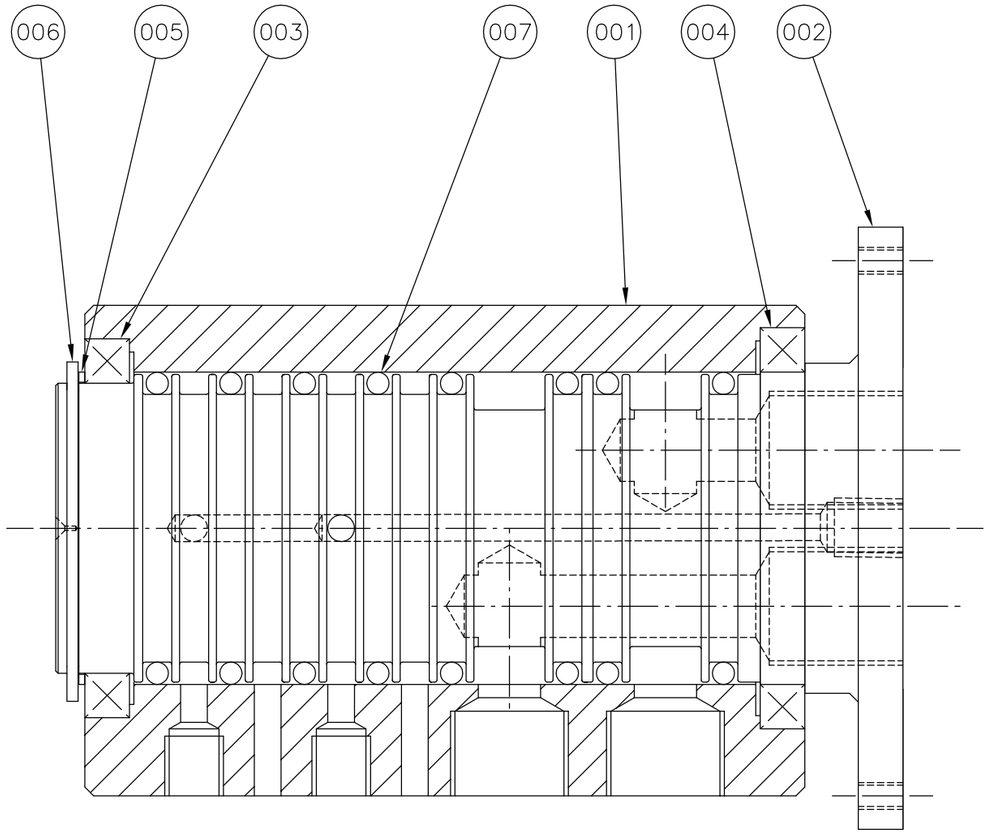
THIRD ANGLE PROJECTION

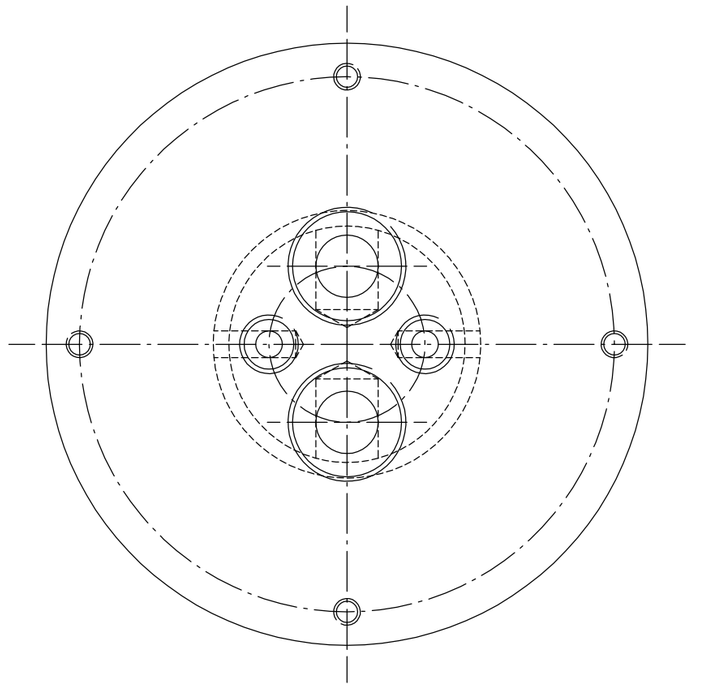
Scale 1:2

Drawn	Date	Drawing No.	Sht
RXH	24/05/06	1016888	1
			Of 1

CAD-BSL-1016888-02.DWG

A3





ASSEMBLY INSTRUCTIONS
CHECK INSIDE BORES OF BODY TO ENSURE ALL BURRS HAVE BEEN REMOVED
FIT BEARINGS TO BODY ITEM 001, USE LOCTITE 601 BEARING FIT IF REQ'D
ENSURE BEARINGS ARE FULLY SEATED, GREASE INSIDE BORE USING SOFT
GENERAL PURPOSE GREASE, ENSURE GOOD EVEN COVERAGE.
CHECK SPOOL ITEM 002 TO ENSURE ALL BURRS AND SHARP EDGES ARE REMOVED.
LIGHTLY GREASE EACH 'O' RING AND FIT IN GROOVES AS SHOWN ABOVE.
SLIDE BODY OVER SPOOL, TAKE CARE TO AVOID DAMAGE TO 'O' RINGS FROM EDGES
OF AIRWAY HOLES IN BORE. PRESS BEARINGS INTO PLACE, FIT THRUST
WASHER AND CIRCLIP, CHECK THAT ASSEMBLY ROTATES SMOOTHLY
PROCEDURE TO TEST FOR LEAKS
EACH AIRWAY MUST BE TESTED SEPARATELY, FIT A BLANKING PLUG TO SHAFT SIDE
OF COUPLING, CONNECT AN AIR LINE WITH AN ON/OFF VALVE AND A PRESSURE
GAUGE TO THE MATCHING BODY PORT, PRESSURISE TO 5.5 BAR, CHECK FOR LEAKS
AROUND FITTINGS WITH SOAPY WATER, RECTIFY IF LEAKING, SWITCH OFF AIR SUPPLY
SPOOL SHOULD NOW BE ROTATED INSIDE THE BODY AT APPROXIMATELY 20 R.P.M.
ENSURE PRESSURE WITHIN COUPLING IS MAINTAINED FOR 1 HOUR, BEFORE PROCEEDING
TO NEXT AIRWAY, WHEN ALL CHECKS ARE COMPLETED ASSEMBLY CAN BE FITTED TO MACHINE

Rev No.	Description of Revision	Revised By	Date
02	IFS UPDATE	RXH	24/May/06

GEA Buck Systems

TOLERANCES UNLESS OTHERWISE STATED
MACHINING: 0 = ±0.50, 6.0 = ±0.10, ANGULARITY = ±0.50°
FABRICATION: 0 TO 3M = ±1.0, 500 TO 1M = ±2.0, 1M TO 2M = ±3.0
ALL OTHER GEOMETRY TO COMPLY TO THE TOLERANCE STANDARDS SPECIFIED BELOW
ISO 13920 -BF ISO 2768 -mK

BLENDER
ROTARY COUPLING ASSY

THIRD ANGLE PROJECTION | Scale 1:1 | Drawn RXH | Date 24/05/06 | Drawing No. 1016595 | Sht 1 of 1

CAD-BSL-1016595-02.DWG

A2

TITLE:-

B01 BLENDER/D01 POST HOIST

DRAWING No.

G1951-B01-601

PCP DRG. No. C4341

Revision	AS TESTED			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST
TITLE SHEET

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	16/10/2006		18/10/2006		G1951-B01-601	1 / 2	2

Plot-Datum

PLA1

Date 03/01/2007 Report of drawingsC4341-B01 Page 1

B01 BLENDER/D01 POST HOIST

Without filter

Drawing	Description	Creation	Modification
1	TITLE SHEET	04/10/2006	18/10/2006
2	INDEX SHEET 1	04/10/2006	08/11/2006
3	INDEX SHEET 2	04/10/2006	08/11/2006
20	COMPONENT KEY AND IDENTIFICATION	04/10/2006	16/10/2006
21	CABLE SPECIFICATION FOR SCHEMATIC DIAGRAMS	23/03/2006	16/10/2006
22	COMPONENT SYMBOLS FOR SCHEMATIC DIAGRAMS	04/10/2006	16/10/2006
25	PANEL REFERENCES FOR SCHEMATIC DIAGRAMS	04/10/2006	16/10/2006
30	POWER CIRCUIT - 400V DISTRIBUTION MAIN PANEL	04/10/2006	03/01/2007
31	POWER CIRCUIT - 400V DISTRIBUTION MAIN PANEL	04/10/2006	03/01/2007
33	POWER CIRCUIT - 230V DISTRIBUTION MAIN PANEL	04/10/2006	03/01/2007
34	POWER CIRCUIT - 230V DISTRIBUTION MAIN PANEL	04/10/2006	03/01/2007
35	SPARE SHEET	04/10/2006	16/10/2006
38	POWER CIRCUIT-SLEW MOTOR STARTER MAIN PANEL	04/10/2006	07/11/2006
39	POWER CIRCUIT-SLEW MOTOR MAIN PANEL	04/10/2006	07/11/2006
48	POWER CIRCUIT-LIFT VARIABLE SPEED DRIVE M. PANEL	04/10/2006	03/01/2007
49	POWER CIRCUIT-HOIST MOTOR MAIN PANEL	04/10/2006	07/11/2006
50	POWER CIRCUIT-MILL MOTOR MAIN PANEL	04/10/2006	03/01/2007
51	POWER CIRCUIT-HOIST BLENDER SPEED DRIVE M. PANEL	04/10/2006	07/11/2006
52	POWER CIRCUIT-ROTATE MOTOR MAIN PANEL	04/10/2006	03/01/2007
53	POWER CIRCUIT-MILL VARIABLE SPEED DRIVE	04/10/2006	03/01/2007
54	POWER CIRCUIT-MILL MOTOR MAIN PANEL	04/10/2006	03/01/2007
80	SPARE SHEET	04/10/2006	07/11/2006
90	EMERGENCY STOP RELAY	04/10/2006	03/01/2007
91	EMERGENCY STOP-MOTOR AVAILABLE	04/10/2006	03/01/2007
92	EMERGENCY STOPS	04/10/2006	07/11/2006
95	CONTROL CIRCUIT - PLC RACK LAYOUT	04/10/2006	07/11/2006
98	CONTROL CIRCUIT - DIG I/P 0-7 RACK 1 SLOT 3	04/10/2006	23/11/2006
99	CONTROL CIRCUIT - DIG I/P 0-7 RACK 1 SLOT 3	04/10/2006	03/01/2007
100	CONTROL CIRCUIT - DIG I/P 8-15 RACK 1 SLOT 3	04/10/2006	08/11/2006
101	CONTROL CIRCUIT - DIG O/P 0-7 RACK 1 SLOT 3	04/10/2006	08/11/2006
102	CONTROL CIRCUIT - DIG O/P 8-15 RACK 1 SLOT 3	04/10/2006	03/01/2007
103	CONTROL CIRCUIT - DIG I/P 0-7 RACK 1 SLOT 4	04/10/2006	08/11/2006
104	CONTROL CIRCUIT - DIG I/P 8-15 RACK 1 SLOT 4	04/10/2006	03/01/2007
105	CONTROL CIRCUIT - DIG I/P 16-23 RACK 1 SLOT 4	04/10/2006	03/01/2007
106	CONTROL CIRCUIT - DIG I/P 24-32 RACK 1 SLOT 4	04/10/2006	16/10/2006
107	CONTROL CIRCUIT - DIG O/P 0-7 RACK 1 SLOT 5	04/10/2006	16/10/2006
108	CONTROL CIRCUIT - DIG O/P 8-15 RACK 1 SLOT 5	04/10/2006	03/01/2007
109	CONTROL CIRCUIT - DIG O/P 16-23 RACK 1 SLOT 5	04/10/2006	03/01/2007

Revision Details	MODIFIED TO COMMENTS / Description / Change No	Chk	Appd	Drawing not complete or approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST
INDEX SHEET 1

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	08/11/2006		08/11/2006		G1951-B01-601	Next Sht 3	2 / 4

Plot-Datum

PCP DRG. No. C4341

PLA1

Date 03/01/2007 Report of drawingsC4341-B01 Page 2

B01 BLENDER/D01 POST HOIST

Without filter

Drawing	Description	Creation	Modification
110	CONTROL CIRCUIT - DIG O/P 24-32 RACK 1 SLOT 5	04/10/2006	16/10/2006
111	SPARE SHEET	04/10/2006	08/11/2006
120	CONTROL CIRCUIT - ENCODER RACK 1 SLOT 6	04/10/2006	16/10/2006
121	Terminal strip drawing Number 1	03/01/2007	03/01/2007
122	Terminal strip drawing X3.1 Number 1	03/01/2007	03/01/2007
123	Terminal strip drawing X3.2 Number 1	03/01/2007	03/01/2007
124	Terminal strip drawing D3.1 Number 1	03/01/2007	03/01/2007
125	Terminal strip drawing X3.1 Number 1	03/01/2007	03/01/2007
126	Terminal strip drawing Number 1	03/01/2007	03/01/2007
127	Terminal strip drawing MJB Number 1	03/01/2007	03/01/2007
128	Terminal strip drawing X1.1 Number 1	03/01/2007	03/01/2007
129	Terminal strip drawing X3.1 Number 1	03/01/2007	03/01/2007
130	Terminal strip drawing X3.1 Number 2	03/01/2007	03/01/2007
131	Terminal strip drawing X3.1 Number 3	03/01/2007	03/01/2007
132	Terminal strip drawing X3.1 Number 4	03/01/2007	03/01/2007
133	Terminal strip drawing X3.2 Number 1	03/01/2007	03/01/2007
134	Terminal strip drawing X3.3 Number 1	03/01/2007	03/01/2007
135	Terminal strip drawing X3.4 Number 1	03/01/2007	03/01/2007
136	Terminal strip drawing X3.5 Number 1	03/01/2007	03/01/2007
137	Terminal strip drawing X3.6 Number 1	03/01/2007	03/01/2007
138	Terminal strip drawing X5.1 Number 1	03/01/2007	03/01/2007

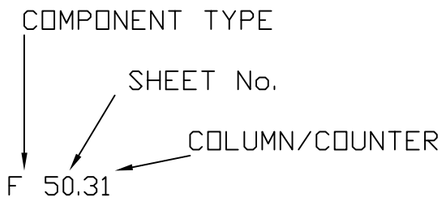
Revision Details	MODIFIED TO COMMENTS / Description / Change No		Chk	Appd	Drawing not complete or approved for manufacture
	GEA BUCK SYSTEMS	B01 BLENDER/D01 POST HOIST INDEX SHEET 2			
THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated ISO 13920 - BF ISO 2768 - mK	Drawn PM	Date 08/11/2006	Modified	Date 08/11/2006	Status	Drawing No G1951-B01-601	Sht No 3 Next Sht 20	Rev 3
Plot-Datum										

PCP DRG. No. C4341

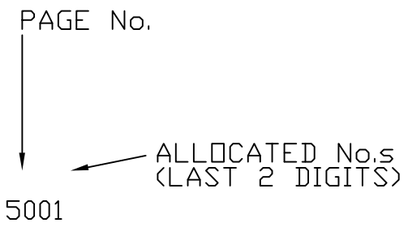
COMPONENT KEY

A – VARIABLE SPEED DRIVE/ASSEMBLY/PC. BOARD
B – RESOLVER/ENCODER
C – CAPACITOR
D – DIODE
E – CABINET ILLUMINATION
F – FUSE/FUSE SWITCH/OVERLOAD
G – POWER SUPPLY UNIT/GENERATOR
H – PILOT LAMP
K – CONTACTOR/RELAY/TIMER
L – CHOKE/REACTOR
M – MOTOR/FAN VENTILATOR
P – METER/HMI
Q – CIRCUIT BREAKER/ISOLATOR
R – RESISTOR/POTENTIOMETER
S – SWITCH/PUSHBUTTON/SENSOR
T – TRANSFORMER
X – TERMINAL/SOCKET
Y – SOLENOID VALVE
Z – RFI FILTER

COMPONENT IDENT. KEY



CABLE No. KEY



PCP DRG. No. C4341

Revision	AS TESTED			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST COMPONENT KEY AND IDENTIFICATION

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	16/10/2006		16/10/2006		G1951-B01-601	20 / Next Sht 21	2

Plot-Datum

CABLE SPECIFICATION

WIRING SPECIFICATION

WIRE COLOURS

PHASE R OF 3 PHASE CIRCUIT.....RED
PHASE Y OF 3 PHASE CIRCUIT.....YELLOW
PHASE B OF 3 PHASE CIRCUIT.....BLUE
PROTECTIVE EARTH.....MARKED GREEN/YELLOW
PHASE OF A.C. SINGLE PHASE CIRCUIT.....RED
NEUTRAL OF A.C. SINGLE PHASE OR 3 PHASE CIRCUIT.....BLACK
POSITIVE OF A DC CIRCUIT (+24V).....BROWN
NEGATIVE OF A DC CIRCUIT (0V).....GREY
NON IS SIGNALS.....ORANGE

BUSBAR COLOURS

POWER.....MARKED WITH PHASE COLOURS RD/YE/BU
PROTECTIVE EARTH.....MARKED GREEN/YELLOW
NEUTRAL.....ALL NEUTRAL'S SHOULD BE MARKED BLACK

MINIMUM WIRE SIZE

CONTROL WIRING.....1.5mm2
SIGNAL WIRING.....0.75mm2

WIRE COLOUR ABBREVIATIONS IN CIRCUIT DIAGRAMS

IEC 757	ENGLISH	DEUTSCH	FRANCAIS	ITALIANO	ESPANOL
GN	GREEN	GRUN	VERT	VERDE	VERDE
RD	RED	ROT	ROUGE	ROSSO	ROJO
YE	YELLOW	GELB	JAUNE	GIALLO	AMARILLO
BK	BLACK	SCHWARZ	NOIR	NERO	NEGRO
BU	BLUE	BLAU	BLEU	BLU	AZUL
BN	BROWN	BRAUN	BRUN	MARRONE	MARRON
OG	ORANGE	ORANGE	ORANGE	ARANCIONE	NARANJA
VT	VIOLET	VIOLETT	VIOLET	VIOLA	VIOLETA
GY	GREY	GRAU	GRIS	GRIGIO	GRIS
WH	WHITE	WEISS	BLANC	BLANCO	BLANCO
GN/YE	GREEN/ YELLOW	GRUN/ GELB	VERT/ JAUNE	VERDE/ GIALLO	VERDE/ AMARILLO
PK	PINK	ROSA			
CL	CLEAR	KLAR			

SPECIAL MANUFACTURING INSTRUCTIONS

ALL CABLE TO BE LOW SMOKE ZERO HALOGEN TYPE

PCP DRG. No. C4341

Revision Details	AS TESTED / Description / Change No	Chk	Appd	Drawing not complete or approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST
CABLE SPECIFICATION
FOR SCHEMATIC DIAGRAMS

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 -BF	ISO 2768 -mK	PM	16/10/2006		16/10/2006		G1951-B01-601	21 / Next Sht 22	2

Plot-Datum

FIELD TERMINAL

3 POLE ISOLATOR

3 WIRE PROXIMITY SWITCH

FUSE

CLOSED SOLENOID VALVE

AMMETER

FUSED TERMINAL

CLOSED PUSHBUTTON

CLOSED PROXIMITY SWITCH

THERMAL OVELOAD

OPEN SOLENOID VALVE

VOLTMETER

RELAY

OPEN PUSHBUTTON

OPEN PROXIMITY SWITCH

3 POLE THERMAL OVELOAD

ELECTROMAGNETIC BRAKE

TRANSFORMER

DELAY ON OPERATION RELAY

E-STOP DETENT PUSHBUTTON

CLOSED PRESSURE SWITCH

3 POLE THERMAL/MAGNETIC CIRCUIT BREAKER

ELECTROMAGNETIC CLUTCH

RESISTOR

DELAY ON RELEASE RELAY

E-STOP DETENT PUSHBUTTON KEY RELEASE

OPEN PRESSURE SWITCH

CLOSED CONTACT

SINGLE PHASE VENTILATOR FAN

CAPACITOR

LAMP

CLOSED LIMIT SWITCH

CLOSED TEMPERATURE SWITCH

OPEN CONTACT

PE

3 PHASE MOTOR

POWER SUPPLY

TRANSFORMER LAMP

OPEN LIMIT SWITCH

OPEN TEMPERATURE SWITCH

CHANGE OVER CONTACT

PE

SINGLE PHASE MOTOR

REVERSING CONTACTOR

PCP DRG. No. C4341

Revision	AS TESTED			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST COMPONENT SYMBOLS FOR SCHEMATIC DIAGRAMS

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 -BF	ISO 2768 -mK	PM	16/10/2006		16/10/2006		G1951-B01-601	22 / Next Sht 25	2

Plot-Datum

PANEL	REF	LOCATION	POWER TML	CONTROL TML	INTER CON SKT	DEVICE SKT
MAIN PANEL	B01	+610	X1.1	X3.1	N/A	N/A
OPERATOR PANEL	B01	+640	N/A	X3.2	N/A	N/A
PEDESTAL MOUNTED J/BOX	B01	+641	N/A	X3.4	N/A	N/A
HOIST MOUNTED J/BOX	D01	+640	N/A	X3.3	N/A	N/A
MILLING PLC PANEL	M01	+610	X1.2	X3.5	N/A	N/A
MACHINE MOUNTED E-STOP	B01		N/A	X3.6	N/A	N/A
AUDIO/VISUAL ALARM	B01	+610	N/A	X3.7	N/A	N/A

PCP DRG. No. C4341

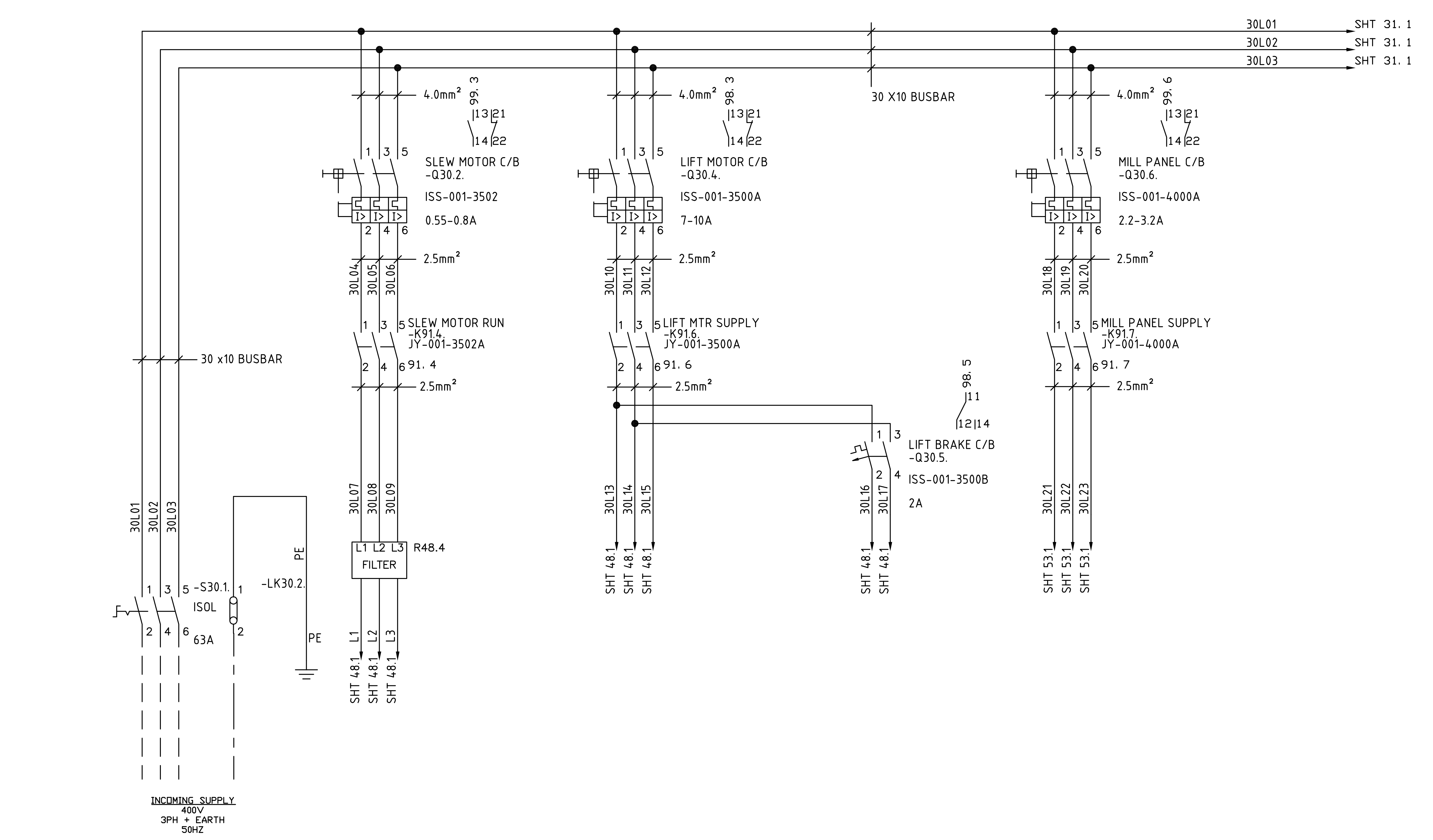
Revision	AS TESTED			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST PANEL REFERENCES FOR SCHEMATIC DIAGRAMS

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	16/10/2006		16/10/2006		G1951-B01-601	25 / Next Sht 30	2

Plot-Datum



Revision	MODIFIED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST POWER CIRCUIT 400V DISTRIBUTION

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated ISO 13920 -BF, ISO 2768 -mK	Drawn PM	Date 03/01/2007	Modified	Date 03/01/2007	Status	Drawing No G1951-B01-601	Sht No 30, Next Sht 31	Rev 4

Plot-Datum

PCP DRG. No. C4341

SHT 30. 8 30L01
SHT 30. 8 30L02
SHT 30. 8 30L03

30 X10 BUSBAR

30L01
30L02
30L03

100. 3
13 21
14 22

1 3 5
ROTATE MOTOR C/B
-Q31.2.
ISS-001-2000A
I> I> I>
40-50A
2 4 6

31L01 31L02 31L03

1 3 5 BLENDER RUN
-K91.2.
JY-001-2000A
2 4 6 91. 2

100. 5
11
12 14

1 3
ROTATE BRAKE C/B
-Q31.4.
2 4
ISS-001-2000B
2A

31L04 31L05 31L06
SHT 51.1 SHT 51.1 SHT 51.1

31L07 31L08
SHT 51.1 SHT 51.1

4.0mm²
1 3
-Q31.7.
400V PRI MCB
6A
2 4
2.5mm

31L09 31L10
11 COM 13400V
-T31.7.
CONTROL TRANS.
1 KVA
230V 0V
3101 3102

3102 SHT 33. 1
1.5mm²

-Q31.7.1
1
230V SEC MCB
2
4A

3103 SHT 33. 1
1.5mm

PCP DRG. No. C4341

Revision	MODIFIED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST POWER CIRCUIT 400V DISTRIBUTION

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No 31	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	07/11/2006		07/11/2006		G1951-B01-601	Next Sht 33	3

Plot-Datum

SHT 31. 8 3102
SHT 31. 8 3103
230V

3102 SHT 34. 1
3103 SHT 34. 1

3103 3102 -Q33.2. 1 3 2 4 PSU PRIM C/B 6A 1.5mm²

3301 3302 -G33.2. INT. CONTROL PSU AC AC 24V DC - + 10A

3304 3303 1.5mm² -Q33.2.1 1 2 PSU SEC C/B

3304 SHT 48.4
3313 SHT 49.3

3102 -Q33.3. 1 2 HEATER C/B

3306 5 -S33.3. HTR STAT T 4 6

5 -S33.4. HTR STAT T 4 6

33. 4

3103 33. 3

3305 X1 -HT33.3. HEATER 1 X2

3307 X1 -HT33.4. HEATER 2 X2

3102

3103 3102 -Q33.5. 1 3 2 4 PLC PSU C/B 6A 1.5mm²

3317 SHT 95.5
3318 SHT 95.5
230V

3102 1.5mm²

3103 -Q33.6. 1 2 INT LIGHTS C/B 2A

3309 3 -S33.6. DOOR SW 1 4

3311 X1 -PL33.6. MOTOR SECTION LIGHT X2

3102

3 -S33.7. DOOR SW 2 4

3312 X1 -PL33.7. PLC SECTION LIGHT X2

PCP DRG. No. C4341

Revision	AS TESTED			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST POWER CIRCUIT 230V DISTRIBUTION

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	16/10/2006		16/10/2006		G1951-B01-601 Sht No 33 Next Sht 34	2

Plot-Datum

SHT 33. 8 3102
SHT 33. 8 3103
230V

3102
3103

-Q34.3.
1
2
VENT FAN C/B
4A

3403

3
6
5
-S34.3.
VENT STAT

3102
3402

N
L
-M34.2.
VENT FAN

3103
3102

-Q34.5.
1
2
POWER SOCKET C/B
10A

1.5mm²

3404
3102

L
E
N
-X34.5.
SOCKET
13A 2 GANG 30mA RCD

3102
3103

-Q34.7.
1
3
2
4
PSU2 PRIM C/B
6A

3406
3407

L
N
AC
AC
E
24V DC
+
-
L+
N
-G34.7.
VSD SUPPLY

3408
3409

-Q34.7.1
1
2
PSU2 SEC C/B
2A

3409 SHT 53. 5

3410 SHT 53. 5

PCP DRG. No. C4341

Revision	AS TESTED			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST POWER CIRCUIT 230V DISTRIBUTION

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	16/10/2006		16/10/2006		G1951-B01-601	34 / Next Sht 35	2

Plot-Datum

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PCP DRG. No. C4341

Revision	REVISED TO COMMENTS		
Details	Description / Change No	Chk	Appd

Drawing not complete or
approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST
CONTROL CIRCUIT
SPARE SHEET

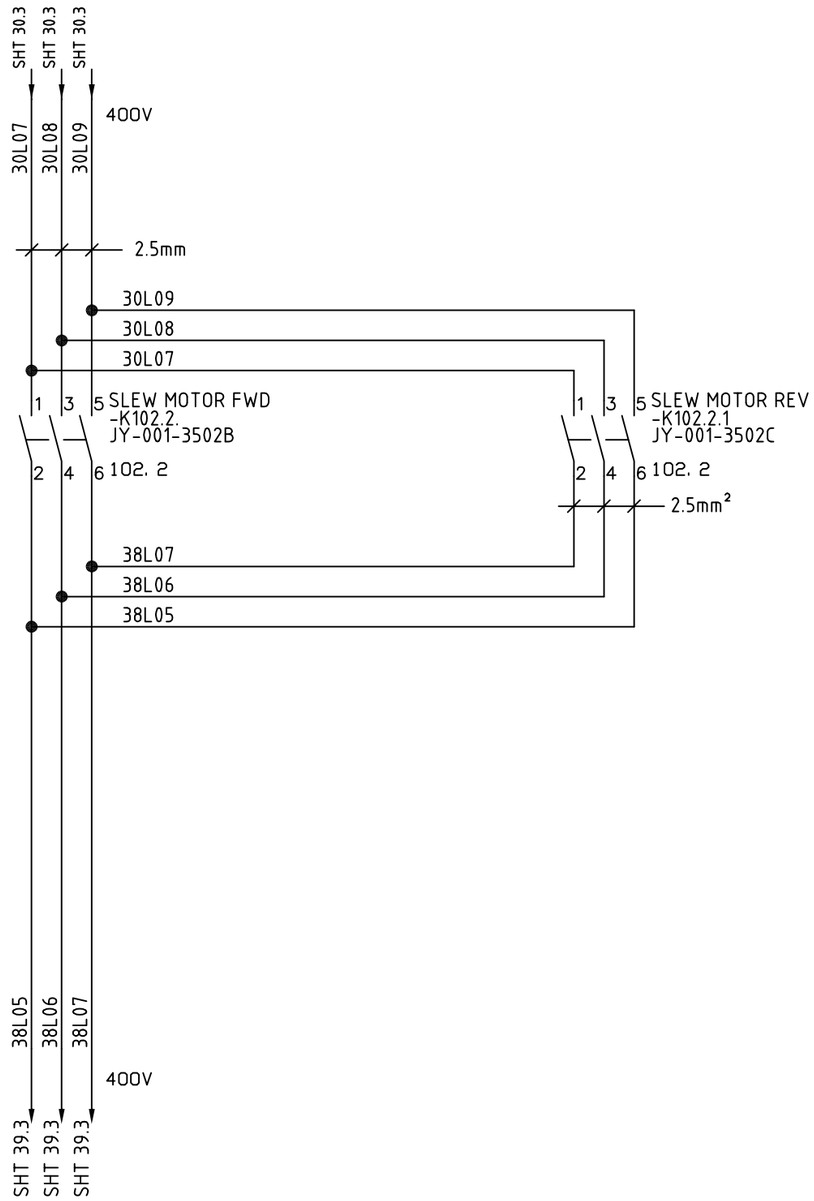
THIRD ANGLE
PROJECTION

Scale

Tolerances unless otherwise stated
ISO 13920 - BF
ISO 2768 - mK

Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
PM	07/11/2006		16/10/2006		G1951–B01–601	35 Next Sht 38	3

Plot–Datum



Revision	MODIFIED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

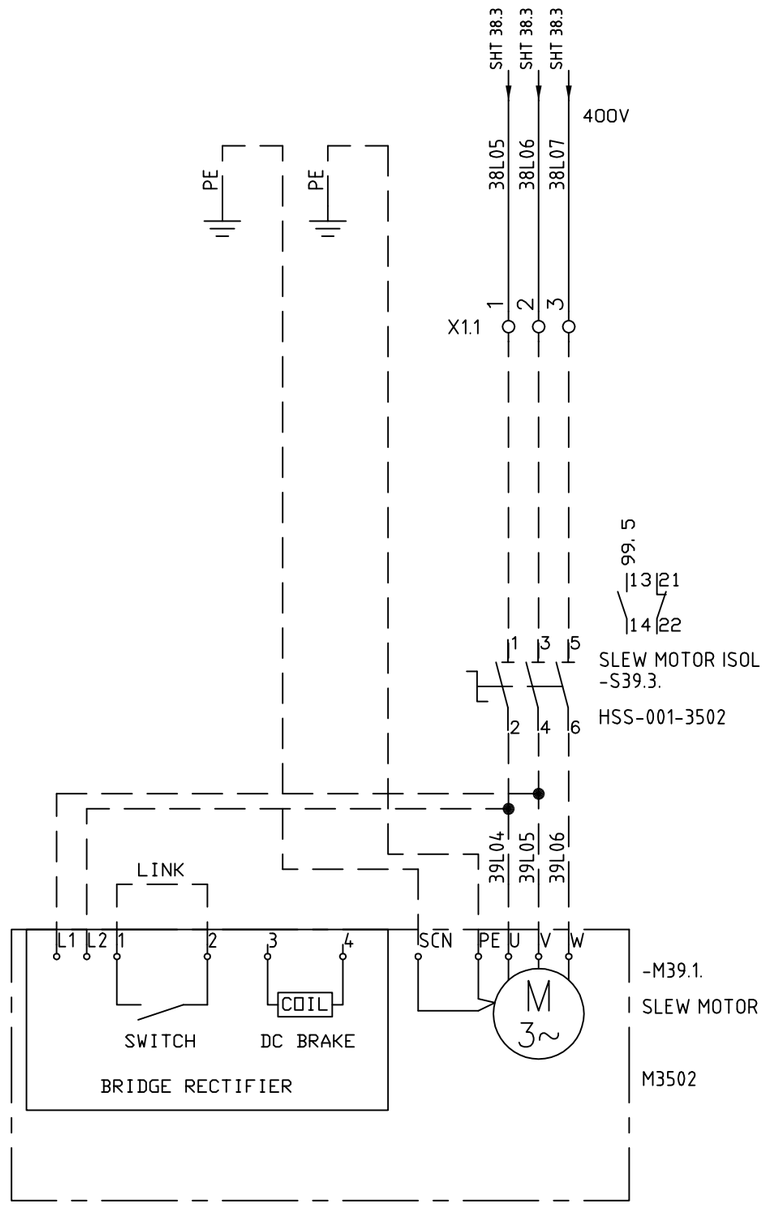
GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST POWER CIRCUIT SLEW MOTOR STARTER

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 -BF	ISO 2768 -mK	PM	07/11/2006		07/11/2006		G1951-B01-601	38 / Next Sht 39	3

Plot-Datum

PCP DRG. No. C4341



PCP DRG. No. C4341

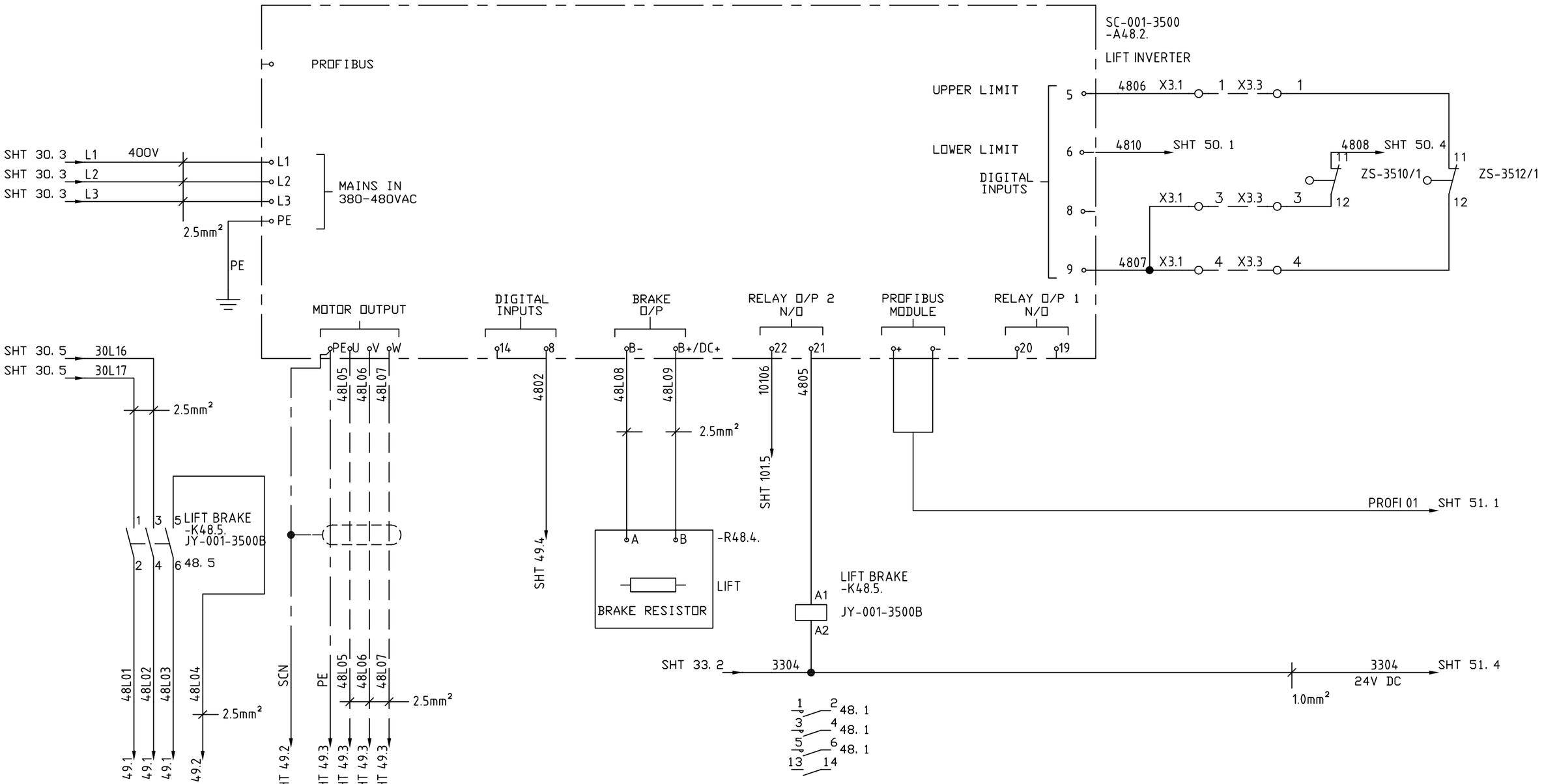
Revision	MODIFIED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST POWER CIRCUIT SLEW MOTOR

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No 39	Rev
		ISO 13920 -BF	ISO 2768 -mK	PM	07/11/2006		07/11/2006		G1951-B01-601	Next Sht 48	3

Plot-Datum



PCP DRG. No. C4341

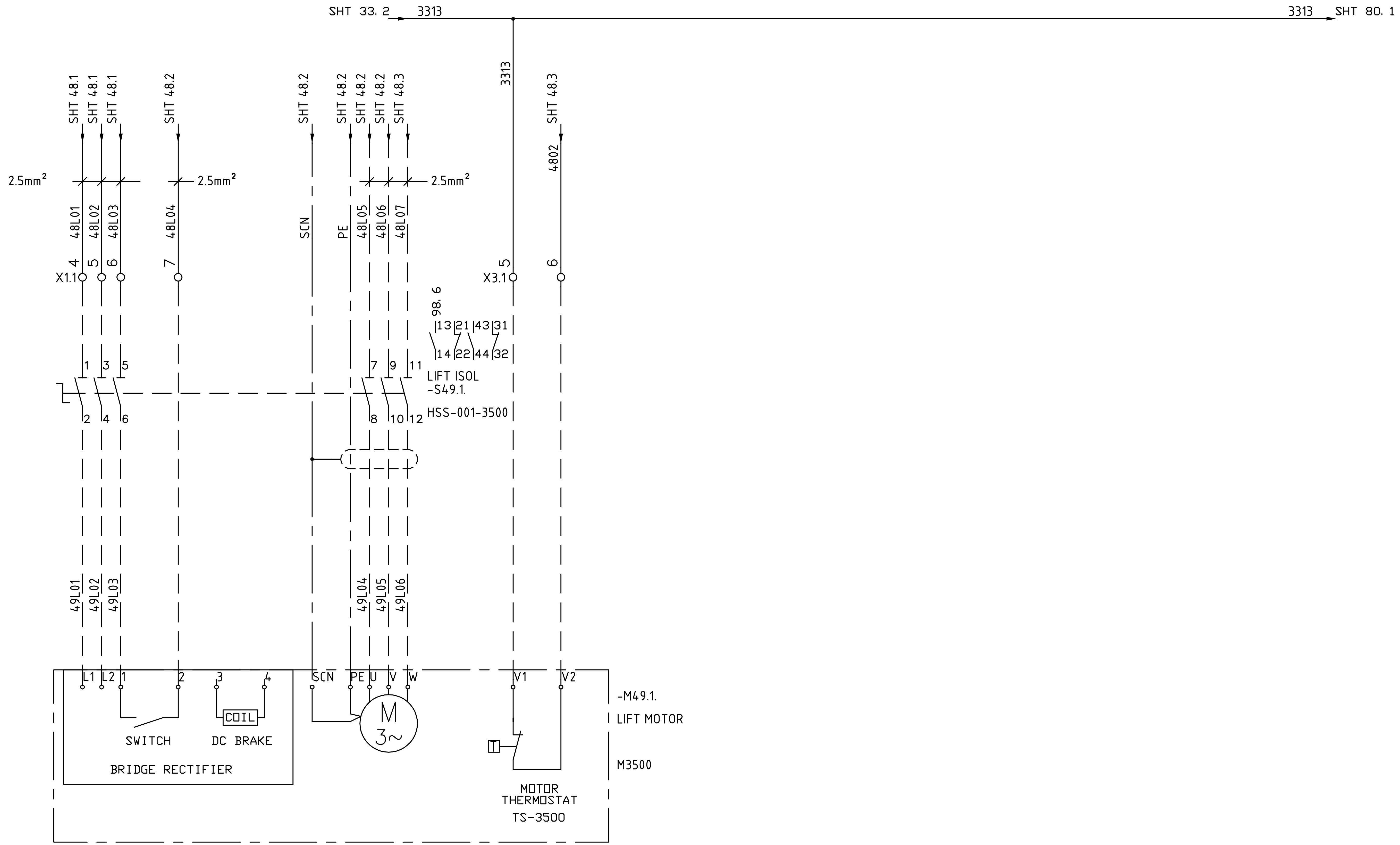
Revision	MODIFIED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST POWER CIRCUIT LIFT MOTOR VARIABLE SPEED DRIVE

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 -BF	ISO 2768 -mK	PM	03/01/2007		03/01/2007		G1951-B01-601	48 Next Sht 49	4

Plot-Datum



PCP DRG. No. C4341

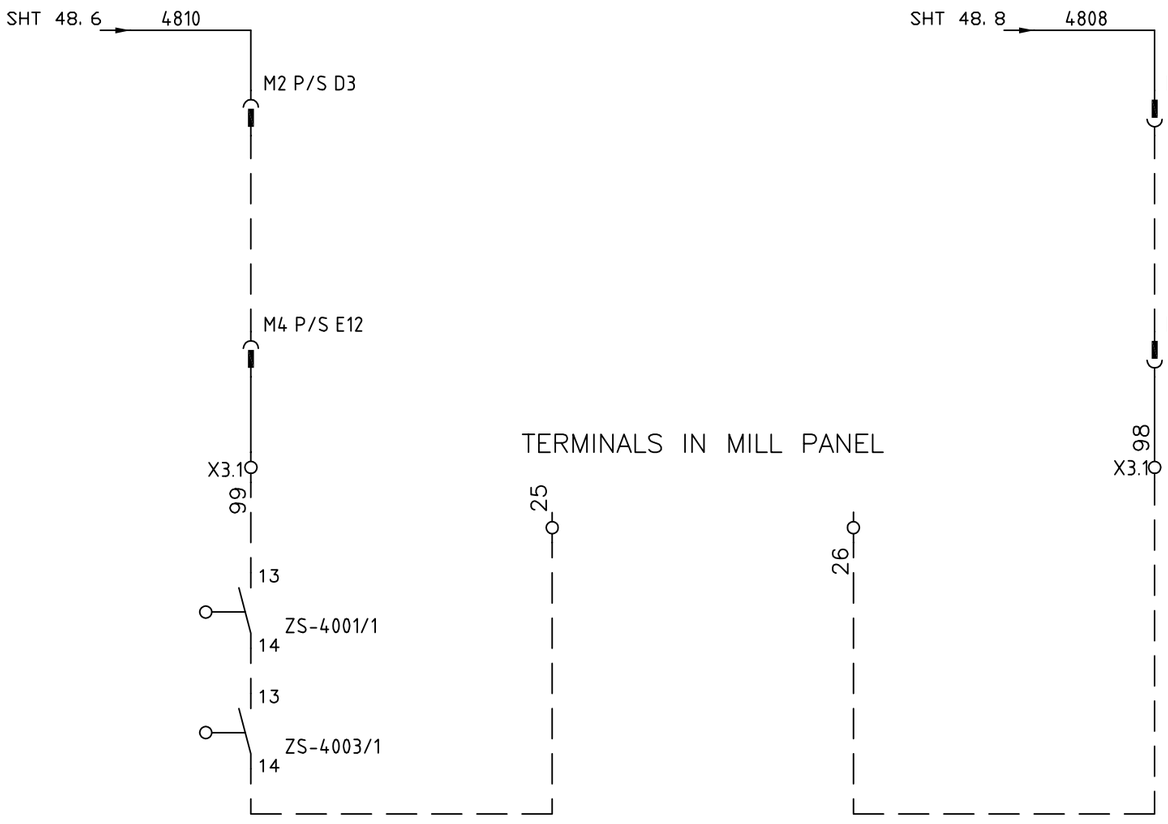
Revision	MODIFIED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

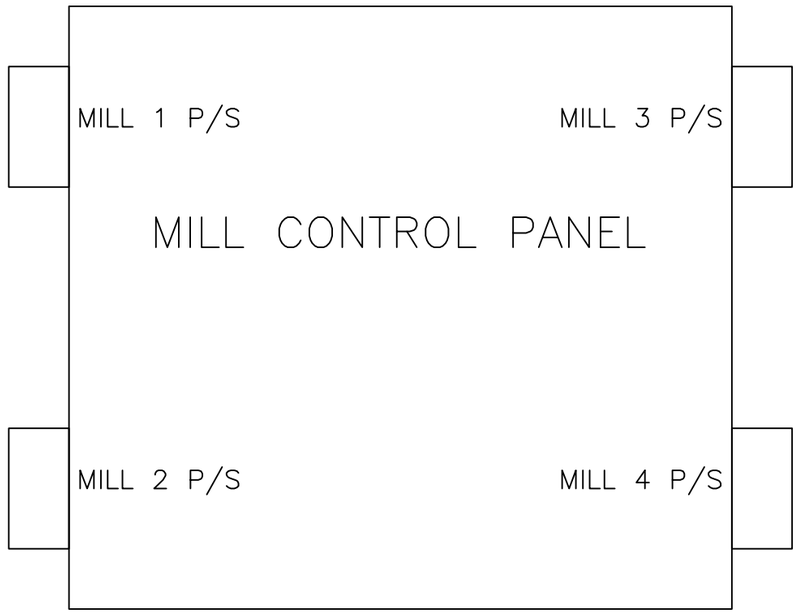
GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST
POWER CIRCUIT
HOIST MOTOR

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated: ISO 13920 - BF, ISO 2768 - mK	Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
			PM	07/11/2006		07/11/2006		G1951-B01-601	49 (Next Sht 50)	3

Plot-Datum





ARRANGEMENT DRAWING SHOWING PLUG & SOCKETS

PCP DRG. No. C4341

Revision	REVISED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST
PLUG AND SOCKET ARRANGEMENT

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	03/01/2007		03/01/2007		G1951-B01-601	50 / Next Sht 51	4

Plot-Datum

PROFI 01 SHT 53. 5

SHT 48. 8 PROFI 01

SHT 31. 2 31L04 400V
SHT 31. 2 31L05
SHT 31. 3 31L06
L1
L2
L3
PE
MAINS IN
380-480VAC
2.5mm²
PE -PE51.2.

DANFOSS VLT 5000
175Z4300 C/W PROFIBUS MODULE

18
19
27
29
32
33
DIGITAL
INPUTS

ROTATE INVERTER
-A51.2.
SC-001-2000

MOTOR OUTPUT
PE U V W
PTC
INPUTS
50 54
DIGITAL
INPUTS
16 17
BRAKE
O/P
B- B+/DC
RELAY O/P 2
N/O
4 5
RELAY O/P 1
N/O
1 2 3

SHT 31. 4 31L07
SHT 31. 4 31L08
2.5mm²
51L05
51L06
51L07
51L08
51L09
2.5mm²
10701
5106

1 3 5 JY-001-2000B
-K51.6.
ROTATE BRK
2 4 6 51. 6

SHT 52.4 5101
SHT 52.4 5102

A B -R51.4.
BRAKE RESISTOR

SHT 107.1
JY-001-2000B
-K51.6.
A1
ROTATE BRK
A2

51L01
51L02
51L03
51L04
2.5mm²
SCN
PE
51L05
51L06
51L07
2.5mm²

SHT 52.1
SHT 52.1
SHT 52.1
SHT 52.2
SHT 52.2
SHT 52.3
SHT 52.3
SHT 52.3
SHT 52.3

SHT 48. 8 3304
3304 SHT 80. 1

1 2 51. 1
3 4 51. 1
5 6 51. 1
13 14

PCP DRG. No. C4341

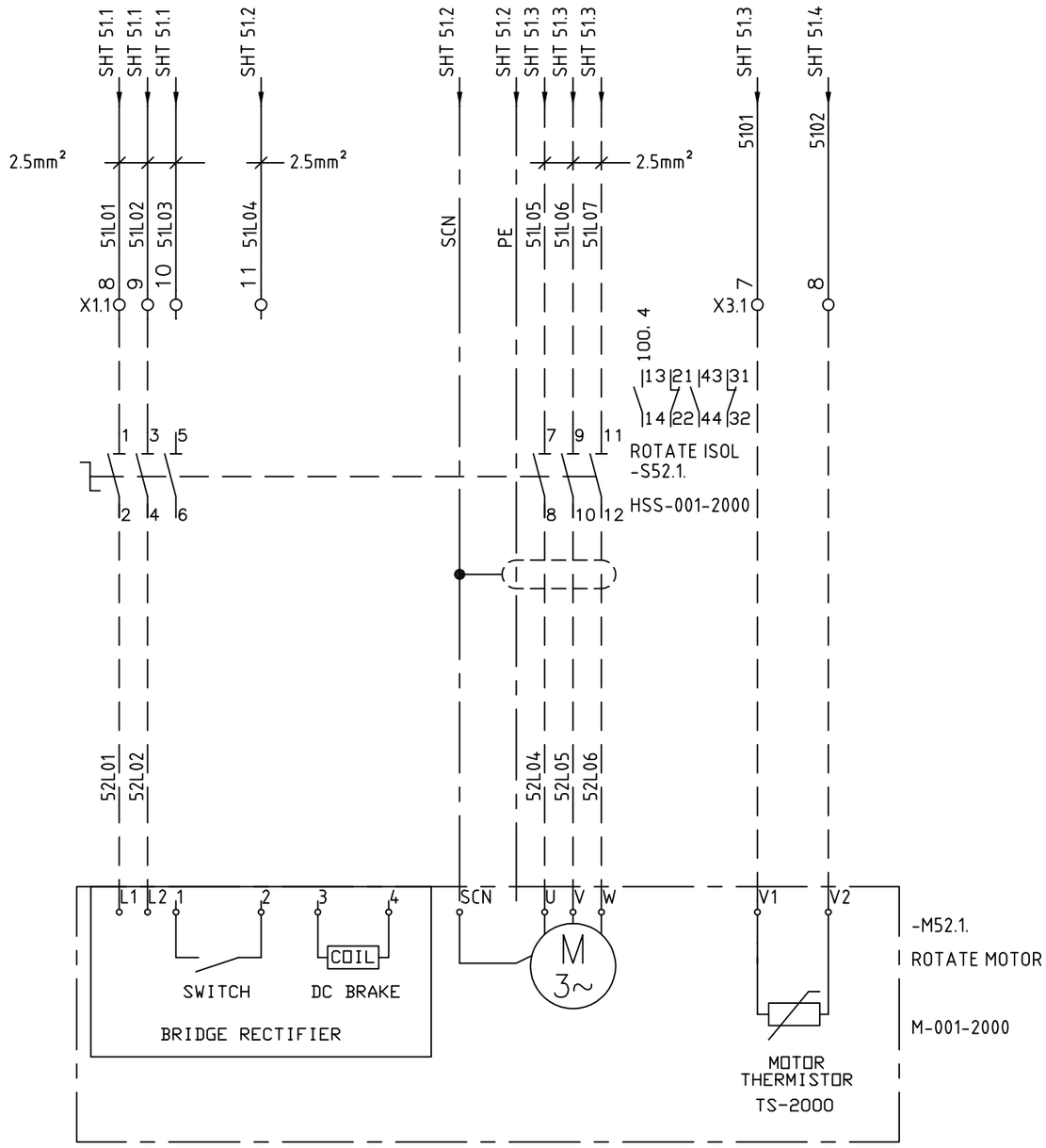
Revision	REVISED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST POWER CIRCUIT ROTATE VARIABLE SPEED DRIVE

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 -BF	ISO 2768 -mK	PM	07/11/2006		07/11/2006		G1951-B01-601	51 Next Sht 52	3

Plot-Datum



PCP DRG. No. C4341

Revision	REVISED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST
POWER CIRCUIT
ROTATE MOTOR

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No 52	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	07/11/2006		16/10/2006		G1951-B01-601	Next Sht 53	3

Plot-Datum

PROFI 01

PROFI 01

PROFIBUS

-A53.2.
SC-001-4000
MILL INVERTER

SHT 30. 6 30L21 400V
SHT 30. 6 30L22
SHT 30. 7 30L23

L1
L2
L3
PE

MAINS IN
380-480VAC

2.5mm²

PE PE53.2.

DIGITAL
INPUTS
5
6
8
9

MOTOR OUTPUT
PE U V W

THERMISTOR
INPUT
14 15

BRAKE
O/P
B- B+/DC+

RELAY O/P 2
N/O
22 21

PROFIBUS
MODULE
+ -

RELAY O/P 1
N/O
20 19

M2 P/S C3

M2 P/S C4

M2 P/S C4 [SCN]

53L01
53L02
53L03

5401
5402

3410
3409

SHT 54.5
SHT 54.5

SHT 34. 8
SHT 34. 8

2.5mm²

SCN
PE
53L01
53L02
53L03

SHT 54.4
SHT 54.4
SHT 54.3
SHT 54.3
SHT 54.3

SHT 51. 8 PROFI 01

PROFI 01 SHT 95. 1

PCP DRG. No. C4341

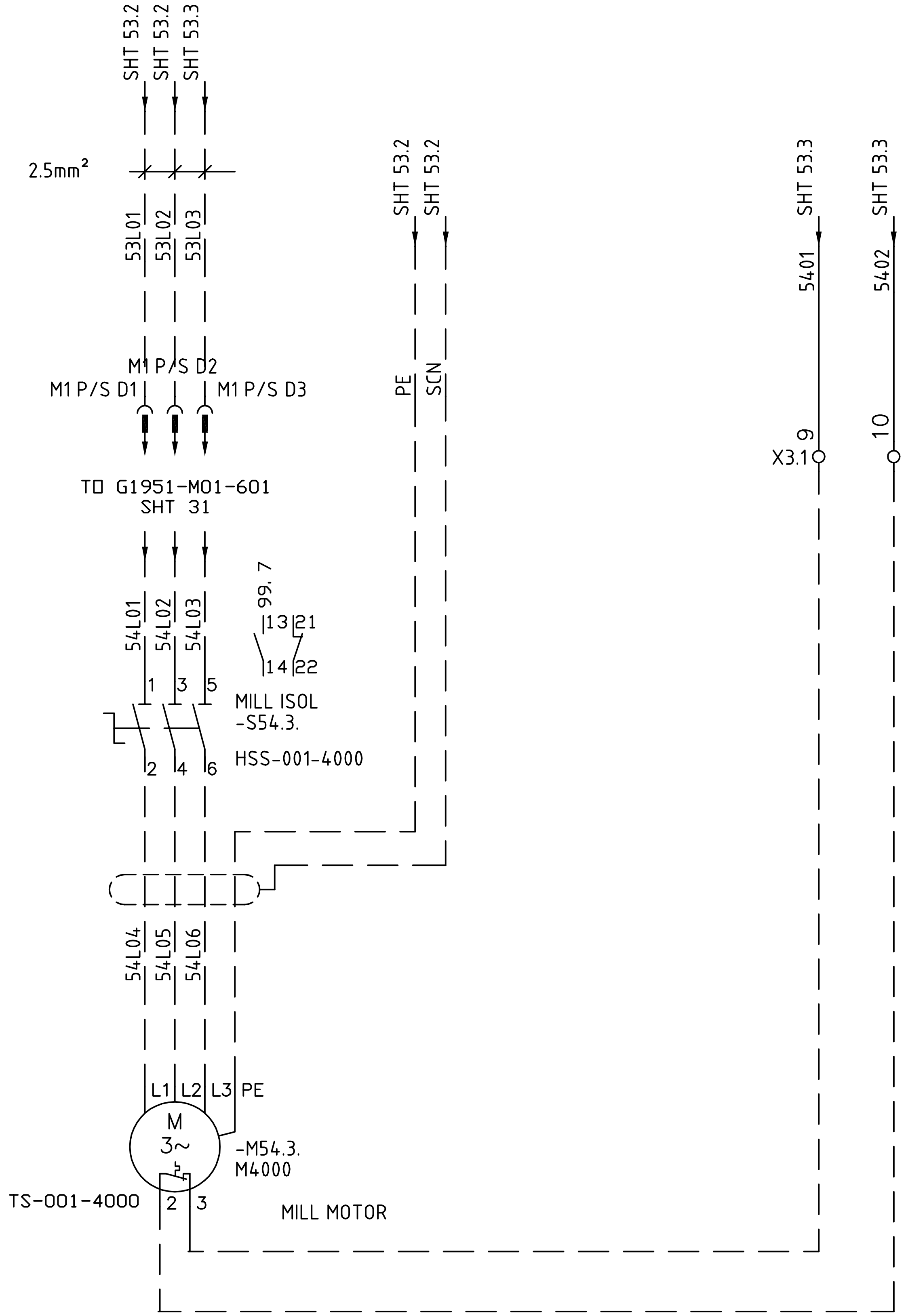
Revision	REVISED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST
POWER CIRCUIT
MILL MOTOR VARIABLE SPEED DRIVE

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	07/11/2006		07/11/2006		G1951-B01-601	53	3
										Next Sht 54	

Plot-Datum



Revision	REVISED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST
POWER CIRCUIT
MILL MOTOR

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated	Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF / ISO 2768 - mK	PM	07/11/2006		07/11/2006		G1951-B01-601	54 (Next Sht 80)	4

Plot-Datum

PCP DRG. No. C4341

SHT 33. 2 → 3313 24V DC

3313 24V DC → SHT 90. 1

1
-F80.2.
2

TO M01 MILL
PLC PANEL

SHT 51. 7 → 3304 OV DC

3304 OV DC → SHT 90. 1

PCP DRG. No. C4341

Revision	REVISED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST SPARE SHEET

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	07/11/2006		07/11/2006		G1951-B01-601	80 / Next Sht 90	3

Plot-Datum

SHT 80. 8 3313

SHT 91. 1

-F90.4. 2A

-F90.7. 2A

9005 9003

3313 SHT 98. 1

-S90.2. MAIN PNL E-STOP

HSS-001-8002

9801 SHT 98. 1

9013 9014

X3.1

9014 SHT 92. 2

9013 SHT 92. 2

9012 9001 9002 9003 9004 9005 9006

-U90.4.

A1	B1		S11	S12	S13	S14	S21	S22	S31	S32		13	23	33	41
A2	B2		Y1		Y2		S33		S34			14	24	34	42

PILZ PNOZ-X3

3304

9007 9008

203 204

X3.1 X3.1

X3.2 X3.2

24 25

103. 4

23 24

3

E STOP RESET

-S90.6. HS-001-9200

4

9009

9807 SHT 98. 6

9009

9009 SHT 91. 1

CONTROL CIRCUIT

M2 P/S C2 M2 P/S C1

MILL PANEL CONTROL CIRCUIT

9004 SHT 92. 2

9002 SHT 92. 2

X3.1

13 14

SHT 80. 8 3304

3304 SHT 91. 1

PCP DRG. No. C4341

Revision	MODIFIED TO COMMENTS	PM		Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST SCHEMATIC WIRING DIAGRAM FOR EMERGENCY STOP RELAY

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	03/01/2007	PM	03/01/2007		G1951-B01-601	90	5
										Next Sht 91	

Plot-Datum

SHT 90. 7 3313 → 3313 SHT 92. 1

SHT 90. 7 9009 → 9009 SHT 92. 1

9009	9009	9100	9009
BLENDER RUN	SLEW MOTOR RUN	LIFT MTR SUPPLY	MILL PANEL SUPPLY
-K91.2.	-K91.6	-K91.4	-K91..5
A1 JY-001-2000A A2	A1 JY-001-3502A A2	A1 JY-001-3500A A2	A1 JY-001-4000A A2
1 2 31. 2	1 2 30. 3	1 2 30. 4	1 2 30. 6
3 4 31. 2	3 4 30. 3	3 4 30. 4	3 4 30. 6
5 6 31. 2	5 6 30. 3	5 6 30. 4	5 6 30. 6
13 14 100. 3	13 14 99. 2	13 14	13 14
23 24	23 24	23 24	23 24

SHT 90. 7 3304 → 3304 SHT 92. 1

PCP DRG. No. C4341

Revision	REVISED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST EMERGENCY STOP MOTOR AVAILABLE CONTACTORS

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	07/11/2006		07/11/2006		G1951-B01-601	91 Next Sht 92	3

Plot-Datum

SHT 90. 7 3313 → 3313 SHT 92. 1

SHT 90. 7 9009 → 9009 SHT 92. 1

9009	9009	9100	9009
BLENDER RUN	SLEW MOTOR RUN	LIFT MTR SUPPLY	MILL PANEL SUPPLY
-K91.2.	-K91.6	-K91.4	-K91..5
A1 JY-001-2000A A2	A1 JY-001-3502A A2	A1 JY-001-3500A A2	A1 JY-001-4000A A2
1 2 31. 2	1 2 30. 3	1 2 30. 4	1 2 30. 6
3 4 31. 2	3 4 30. 3	3 4 30. 4	3 4 30. 6
5 6 31. 2	5 6 30. 3	5 6 30. 4	5 6 30. 6
13 14 100. 3	13 14 99. 2	13 14	13 14
23 24	23 24	23 24	23 24

SHT 90. 7 3304 → 3304 SHT 92. 1

PCP DRG. No. C4341

Revision	REVISED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST EMERGENCY STOP MOTOR AVAILABLE CONTACTORS

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	07/11/2006		07/11/2006		G1951-B01-601	91 Next Sht 92	3

Plot-Datum

SHT 91. 8 — 3313 — 3313 — SHT 95. 1

SHT 91. 8 — 9009 — 9009 — SHT 101. 1

SHT 90. 2 — 9014

SHT 90. 2 — 9013

X3.2 — 1 2 — 1 1 — 3 — -S92.3. OP PNL E-STOP — 3313 — SHT 103. 6

HSS-001-8000

2 2 — 4 — 10306 — SHT 103. 6

3 4 — X3.2

X3.1 — 15 16 — 9201 9202 — 17 18 — X3.1

X3.3 — 5 6 — 1 1 — 3 — 3313 — SHT 104. 1

-S92.3.1 HOIST JB E-STOP

HSS-001-3510

2 2 — 4 — 10401 — SHT 104. 1

7 8 — X3.3

X3.6 — 1 2 — 1 1 — 3 — -S92.6. M/C E-STOP — 3313 — SHT 103. 6

HSS-001-8001

2 2 — 4 — 10307 — SHT 103. 6

3 4 — X3.6

X3.1 — 19 20 — 9203 9204 — 21 22 — X3.1

X3.1 — 23 24 — 9205 9206 — 25 26 — X3.1

X3.2 — 5 6 — 1 3 — 5 — -S92.6.1 OP PNL FORTRESS — 3313 — SHT 103. 5

HSS-001-8260

2 4 — 6 — 10305 — SHT 103. 5

7 8 — X3.2

SHT 90. 2 — 9004

SHT 90. 2 — 9002

SHT 91. 8 — 3304 — 3304 — SHT 95. 1

PCP DRG. No. C4341

Revision	REVISED TO COMMENTS			Drawing not complete or									
Details	Description / Change No		Chk	Appd	approved for manufacture								
				B01 BLENDER/D01 POST HOIST EMERGENCY STOPS									
THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No 92	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	07/11/2006		07/11/2006		G1951-B01-601	Next Sht 95	3
Plot-Datum											

SHT 53. 8 PROFI 01

PROFI 01 PROFIBUS TO REMOTE I/O PANEL M01

SHT 92. 8 3313

SHT 92. 8 3304

REMOTE 230V SUPPLY

-Q95.2.

HMI C/B

1 3

2 4

9501

9502

1 (230V AC)

0V (N)

FANUC HMI

XXXXXXXXX

OIT-001-3003
P70.3.

RS422
485

PROFI 01

PROFI 01

RJ45

MODEM

TO MODEM

9 PIN PLUG 1

9 PIN PLUG 2

SHT 33. 5 3318 L+

SHT 33. 5 3317 M

SIEMENS CPU
CPU 314C-2 DP
6ES7 314 6CG03-0AB0 -CPU95.5.

CPU1

98. 2 RACK 1/SLOT 3
99. 2 RACK 1/SLOT 3
100. 2 RACK 1/SLOT 3
101. 2 RACK 1/SLOT 3
102. 2 RACK 1/SLOT 4
103. 2 RACK 1/SLOT 4
104. 2 RACK 1/SLOT 4
105. 2 RACK 1/SLOT 5
106. 2 RACK 1/SLOT 5
107. 1 RACK 1/SLOT 5
108. 1 RACK 1/SLOT 5
109. 1 RACK 1/SLOT 5
110. 1 RACK 1/SLOT 6
120. 2 RACK 1/SLOT

3304 3304 SHT 98. 1

3313 3313 SHT 98. 1

PCP DRG. No. C4341

Revision	REVISED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST CONTROL CIRCUIT HMI & PLC RACK LAYOUT

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 -BF	ISO 2768 -mK	PM	07/11/2006		07/11/2006		G1951-B01-601	95	3
										Next Sht 98	

Plot-Datum

SHT 95. 8 3313

3313 SHT 99. 1

X3.1 205

X3.1 27

X3.1 28

X3.1 29

X3.1 30

X3.1 31

X3.3 9

SHT 90. 2 3313

SHT 90. 2 9801

3 MAIN AIR PRESS. SW. -S98.3.

P

PS-001-9010

4

13 LIFT MOTOR C/B -Q30.4. ISS-001-3500A

14 30. 4

12 LIFT BRAKE C/B -Q30.5. ISS-001-3500B

14 11 30. 5

13 LIFT ISOL -S49.1. HSS-001-3500

14 49. 1

X3.3 10

SHT 90. 7

X3.1 206 9801

X3.1 33 9802

X3.1 9803

X3.1 34 9804

X3.1 9805

X3.1 35 9806

X3.1 36 9807

X3.1 37 9808

-CPU95.5. CPU1 95. 5 RACK 1 SLOT 3

30	22	23	24	25	26	27	28	29
	I2.0	I2.1	I2.2	I2.3	I2.4	I2.5	I2.6	I2.7
	HSS-001-8002 E-STOP MAIN PANEL	PS-001-9010 AIR PRESSURE SW MAIN PANEL	ISS-001-3500A LIFT MOTOR C/B	SPARE	ISS-001-3500B LIFT BRAKE C/B	HSS-001-3500 LIFT MOTOR LOCAL ISOLATOR	EMERGENCY STOP HEALTHY	SPARE

SHT 95. 8 3304

3304 SHT 99. 1

PCP DRG. No. C4341

Revision	REVISED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST CPU DIG INPUT TERM X11 DIG I/P 0-7 RACK 1 SLOT 3

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	07/11/2006		07/11/2006		G1951-B01-601	98 / Next Sht 99	3

Plot-Datum

SHT 98. 8 3313 — 3313 SHT 100. 1

X3.1 38 — M2 P/S D5 — 49 X5.1 — M4 P/S F1 — MJB — 28 BN — MILL ROT SPD SW -S99.2. ZS-001-4000 — BK — MJB — 29 X5.1 — 50 — M4 P/S F3 — M2 P/S D6 — X3.1 32 X3.1

X3.1 43 9901

13 SLEW MOTOR RUN -K91.4. JY-001-3502A — 14 91. 4 — 9902

13 SLEW MOTOR C/B -Q30.2. ISS-001-3502 — 14 30. 3 — 9903

X3.1 39 — X3.2 9 — BN BLENDER ROT SPD SW -S99.4. — BU BK ST-001-2102 — X3.2 10 11 X3.1 — 44 9904

X3.1 40 — 13 SLEW MOTOR ISOL -S39.3. HSS-001-3502 — 14 39. 3 — X3.1 45 9905

13 MILL PANEL C/B -Q30.6. ISS-001-4000A — 14 30. 6 — 9906

X3.1 41 — X3.1 46 9907

X3.1 42 — 13 MILL ISOL -S54.3. HSS-001-4000 — 14 54. 3 — X3.1 47 9908

-CPU95.5. CPU1 95. 5 RACK 1 SLOT 3

1	2	3	4	5	6	7	8	9
	I3.0	I3.1	I3.2	I3.3	I3.4	I3.5	I3.6	I3.7
	ZS-001-4000 MILL MOTOR ROTATIONAL SPEED SENSOR	JY-001-3502A SLEW MOTOR RUN CONTACTOR	ISS-001-3502 SLEW MOTOR CIRCUIT BREAKER	ST-001-2102 BLENDER ROTATIONAL SPEED SENSOR	HSS-001-3502 SLEW MOTOR LOCAL ISOLATOR	ISS-001-4000A MILL MOTOR CIRCUIT BREAKER	SPARE	HSS-001-4000 MILL MOTOR LOCAL ISOLATOR

SHT 98. 8 3304 — 3304 SHT 100. 1

PCP DRG. No. C4341

Revision	REVISED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST
CPU DIG INPUT TERM X12
DIG I/P 0-7 RACK 1 SLOT 3

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	07/11/2006		07/11/2006		G1951-B01-601	99 / Next Sht 100	3

Plot-Datum

SHT 99. 8 3313

3313 SHT 103. 1

48 X3.1

49 X3.1

50 X3.1

51 X3.1

52 X3.1

13 ROTATE MOTOR C/B
-Q31.2.
ISS-001-2000A
14 31. 2

13 BLENDER RUN
-K91.2.
JY-001-2000A
14 91. 2

13 ROTATE ISOL
-S52.1.
HSS-001-2000
14 52. 1

11 ROTATE BRAKE C/B
-Q31.4.
ISS-001-2000B
12 14 31. 4

X3.1 53 10001

X3.1 54 10004

X3.1 55 10006

X3.1 56 10007

X3.1 57 10008

-CPU95.5.
CPU1
95. 5
RACK 1
SLOT 3

12	13	14	15	16	17	18	19	20
I4.0	I4.1	I4.2	I4.3	I4.4	I4.5	I4.6	I4.7	
SPARE	ISS-001-2000A ROTATE MOTOR CIRCUIT BREAKER	JY-001-2000A ROTATE MOTOR SUPPLY CONTACTOR	HSS-001-2000 ROTATE MOTOR LOCAL ISOLATOR	ISS-001-2000B ROTATE MOTOR BRAKE CIRCUIT BREAKER	SPARE	SPARE	SPARE	3304

SHT 99. 8 3304

3304 SHT 101. 1

PCP DRG. No. C4341

Revision	REVISED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST
CPU DIG INPUT TERM X12
DIG I/P 8-15 RACK 1 SLOT 3

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	08/11/2006		08/11/2006		G1951-B01-601	100	3
										Next Sht 101	

Plot-Datum

SHT 92. 8 9009 — 9009 SHT 102. 1

9009

	SPARE	SPARE	SPARE	SPARE	JY-001-3500A LIFT MOTOR SUPPLY CONTACTOR	JY-001-3500B LIFT MOTOR BRAKE CONTACTOR	SPARE	SPARE
	Q5.0	Q5.1	Q5.2	Q5.3	Q5.4	Q5.5	Q5.6	Q5.7
21 2L+								
30 2M	22	23	24	25	26	27	28	29
	10101	10102	10103	10104	10105	10106	10107	10108
	58	59	60	61			62	63
	X3.1	X3.1	X3.1	X3.1			X3.1	X3.1

-CPU95.5.
CPU1
95. 5
RACK 1
SLOT 3

3304

SHT 48. 5

X3.1 64 — X3.1 65 — X3.1 66 — X3.1 67 — X3.1 68 — X3.1 69

LIFT MTR SUP RELAY
-K101.5.
A1
A2

SHT 100. 8 3304 — 3304 SHT 102. 1

PCP DRG. No. C4341

Revision	REVISED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST
CPU DIG OUTPUT TERM X12
DIG O/P 0-7 RACK 1 SLOT 3

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 -BF	ISO 2768 -mK	PM	08/11/2006		08/11/2006		G1951-B01-601	101 / Next Sht 102	3

Plot-Datum

SHT 101. 8 9009 — 9009 SHT 107. 1

JY-001-3502B SLEW MOTOR FORWARD CONTACTOR
JY-001-3502C SLEW MOTOR REVERSE CONTACTOR
SPARE
SPARE
YI-001-3001 HOIST J.B. 'POWER SUPPLY HEALTHY' LAMP
YI-001-9201 SAFE AREA ALARM
SPARE
YI-001-9200 OPERATOR PANEL 'CONTROLS ON' LAMP

-CPU95.5.
CPU1
95. 5
RACK 1
SLOT 3

31
40
Q6.0 32
Q6.1 33
Q6.2 34
Q6.3 35
Q6.4 35
Q6.5 37
Q6.6 38
Q6.7 39

10201
10202
10203
10204
10205
10206
10207
10208

X3.1 70
X3.1 71
X3.1 72
X3.1 73
X3.1 74
X3.1 75

X3.3 11
X3.2 12
X3.2 13

X1 POWER ON -H102.5. X2 YI-001-3001
X1 ALARM 01 -H102.6. X2 YI-001-9201
X1 CONTROLS ON -H102.7. X2 YI-001-9200

X3.1 76
X3.1 77
X3.1 78
X3.1 79
X3.1 80
X3.1 81

21 SLEW MOTOR REV -K102.2.1 JY-001-3502C
22 102. 2

21 SLEW MOTOR FWD -K102.2. JY-001-3502B
22 102. 2

SLEW MOTOR FWD -K102.2. A1 JY-001-3502B A2
SLEW MOTOR REV -K102.2.1 A1 JY-001-3502C A2

SHT 101. 8 3304 — 3304 SHT 103. 1

1 2 38. 3
3 4 38. 3
5 6 38. 3
13 14
21 22 102. 2

1 2 38. 5
3 4 38. 5
5 6 38. 5
13 14
21 22 102. 2

PCP DRG. No. C4341

Revision	REVISED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST CPU DIG OUTPUT TERM X12 DIG O/P 8–15 RACK 1 SLOT 3

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 -BF	ISO 2768 -mK	PM	08/11/2006		08/11/2006		G1951–B01–601	102 Next Sht 103	3

Plot–Datum

SHT 100. 8 3313

3313 SHT 104. 1

82 X3.1

83 X3.1

84 X3.1

85 X3.1

207 X3.1

208 X3.1

209 X3.1

86 X3.1

14 X3.2

15 X3.2

16 X3.2

X3.2 SHT 92. 6

X3.2 SHT 92. 4

X3.6 SHT 92. 6

13 IBC UPRIGHT -S103.2.

BU 14 XS-001-2200

13 IBC INVERTED -S103.3.

BU 14 XS-001-2201

23 E STOP RESET -S90.6. HS-001-9200 DFZ 90. 5

24

SHT 92. 6

SHT 92. 4

SHT 92. 6

17 X3.2

18

19 X3.2

20

21 X3.2

0 X3.2 SHT 92. 6

0 X3.2 SHT 92. 4

0 X3.6 SHT 92. 6

87 X3.1

88 X3.1

89 X3.1

90 X3.1

91 X3.1

210 X3.1

211 X3.1

212 X3.1

92 X3.1

10301

10302

10303

10304

10305

10306

10307

10308

-CPU95.5. CPU1 95. 5

RACK 1 SLOT 4

2	3	4	5	6	7	8	9
Q7.0	Q7.1	Q7.2	Q7.3	Q7.4	Q7.5	Q7.6	Q7.7
SPARE	XS-001-2200 BLENDER IBC UPRIGHT	XS-001-2201 BLENDER IBC INVERTED	HS-001-9200 OPERATOR PANEL RESET BUTTON	HSS-001-8260 FORTRESS KEY OPERATED	HSS-001-8000 OPERATOR PANEL E-STOP OPERATED	HSS-001-8001 MACHINE MOUNTED E-STOP OPERATED	SPARE

SHT 102. 8 3304

3304 SHT 104. 1

PCP DRG. No. C4341

Revision	REVISED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST DIGITAL INPUTS DIG I/P 0-7 RACK 1 SLOT 4

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	08/11/2006		08/11/2006		G1951-B01-601	103 / Next Sht 104	3

Plot-Datum

SHT 103. 8 3313

3313 SHT 105. 1

X3.1 213 — X3.3 0 — SHT 92. 4 3313

SHT 92. 4 10401 — X3.3 24 — X3.1 214 — 10401 — 12 — I8.0 — HSS-001-3510 HOIST JB E-STOP

X3.1 93 — X3.3 13 — ZS-001-3512/2 — X3.3 17 — X3.1 100 — 10402 — 13 — I8.1 — ZS-001-3512/2 OVERTRAVEL SWITCH

X3.1 94 — X3.3 14 — ZS-001-3510/2 — X3.3 18 — X3.1 101 — 10403 — 14 — I8.2 — ZS-001-3510/2 LOAD/UNLOAD O/TRAVEL SWITCH

X3.1 95 — X3.1 102 — 10404 — 15 — I8.3 — SPARE

X3.1 96 — X3.1 103 — 10405 — 16 — I8.4 — SPARE

X3.1 97 — X3.5 4 — X3.5 5 — X3.1 104 — 10406 — 17 — I8.5 — SPARE

X3.1 98 — X3.3 15 — -S104.6.1 XS-001-3521 — BU — X3.3 19 — X3.3 20 — X3.1 105 — 10407 — 18 — I8.6 — XS-001-3521 PROCESS POSITION SLEW

X3.1 99 — X3.3 16 — -S104.7. XS-001-3520 — BU — X3.3 21 — X3.3 22 — X3.1 106 — 10408 — 19 — I8.7 — XS-001-3520 LOAD/UNLOAD POSITION SLEW

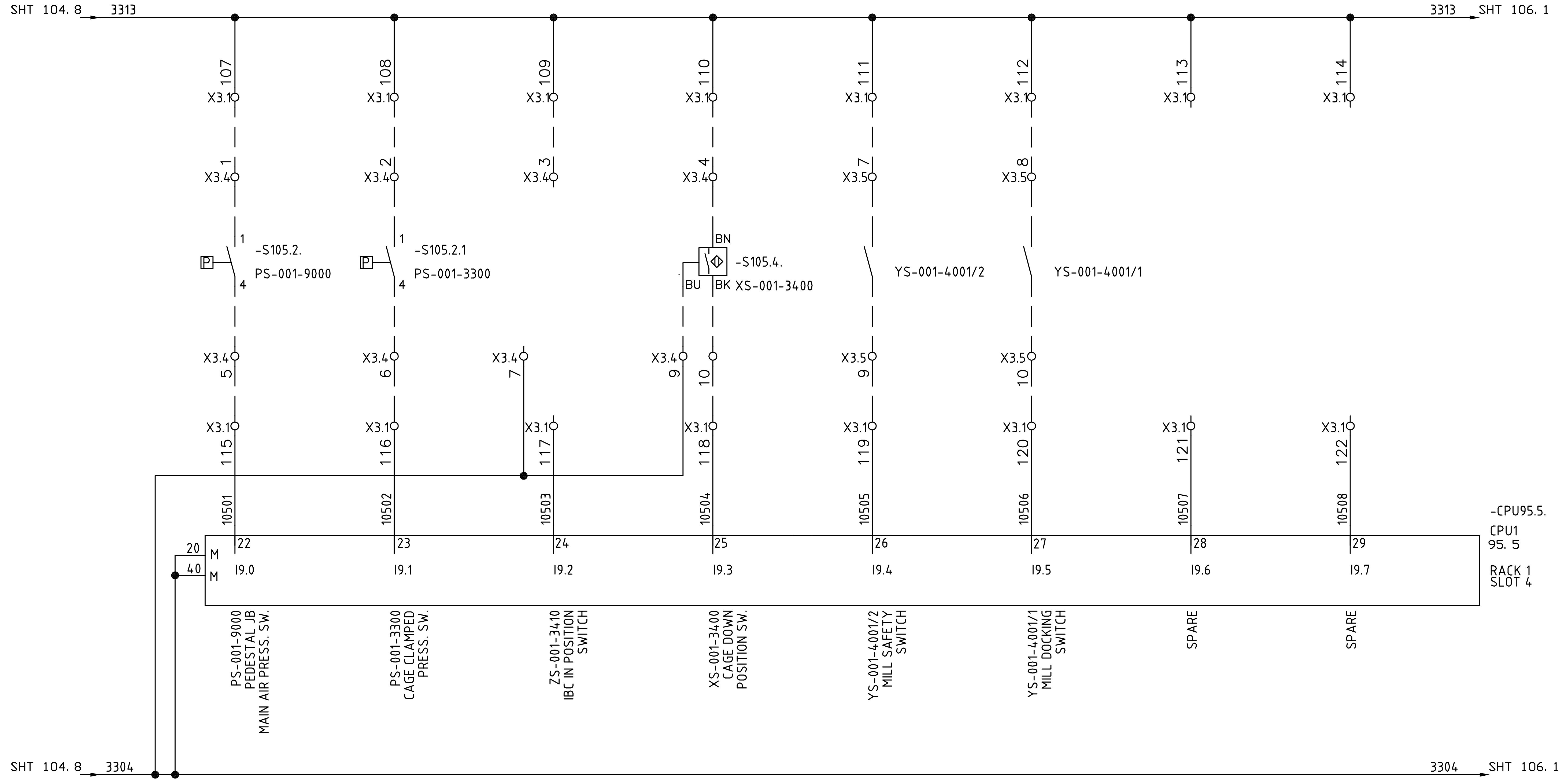
-CPU95.5.
CPU1
95. 5
RACK 1
SLOT 4

SHT 103. 8 3304

3304 SHT 105. 1

PCP DRG. No. C4341

Revision	REVISED TO COMMENTS			Drawing not complete or									
Details	Description / Change No		Chk	Appd	approved for manufacture								
				GEA BUCK SYSTEMS	B01 BLENDER/D01 POST HOIST DIGITAL INPUTS DIG I/P 8–15 RACK 1 SLOT 4								
THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated			Drawn	Date	Modified	Date	Status	Drawing No	Sht No 104	Rev
		ISO 13920 - BF	ISO 2768 - mK		PM	08/11/2006		08/11/2006		G1951–B01–601	Next Sht 105	3
Plot–Datum												



SHT 104. 8 3313
3313 SHT 106. 1
107 108 109 110 111 112 113 114
X3.1
X3.4
X3.5
-S105.2.
PS-001-9000
-S105.2.1
PS-001-3300
BN
-S105.4.
BU
BK
XS-001-3400
YS-001-4001/2
YS-001-4001/1
115 116 117 118 119 120 121 122
10501 10502 10503 10504 10505 10506 10507 10508
-CPU95.5.
CPU1
95. 5
RACK 1
SLOT 4
20 M
40 M
22 23 24 25 26 27 28 29
I9.0 I9.1 I9.2 I9.3 I9.4 I9.5 I9.6 I9.7
PS-001-9000 PEDESTAL JB MAIN AIR PRESS. SW.
PS-001-3300 CAGE CLAMPED PRESS. SW.
ZS-001-3410 IBC IN POSITION SWITCH
XS-001-3400 CAGE DOWN POSITION SW.
YS-001-4001/2 MILL SAFETY SWITCH
YS-001-4001/1 MILL DOCKING SWITCH
SPARE
SPARE
SHT 104. 8 3304
3304 SHT 106. 1

PCP DRG. No. C4341

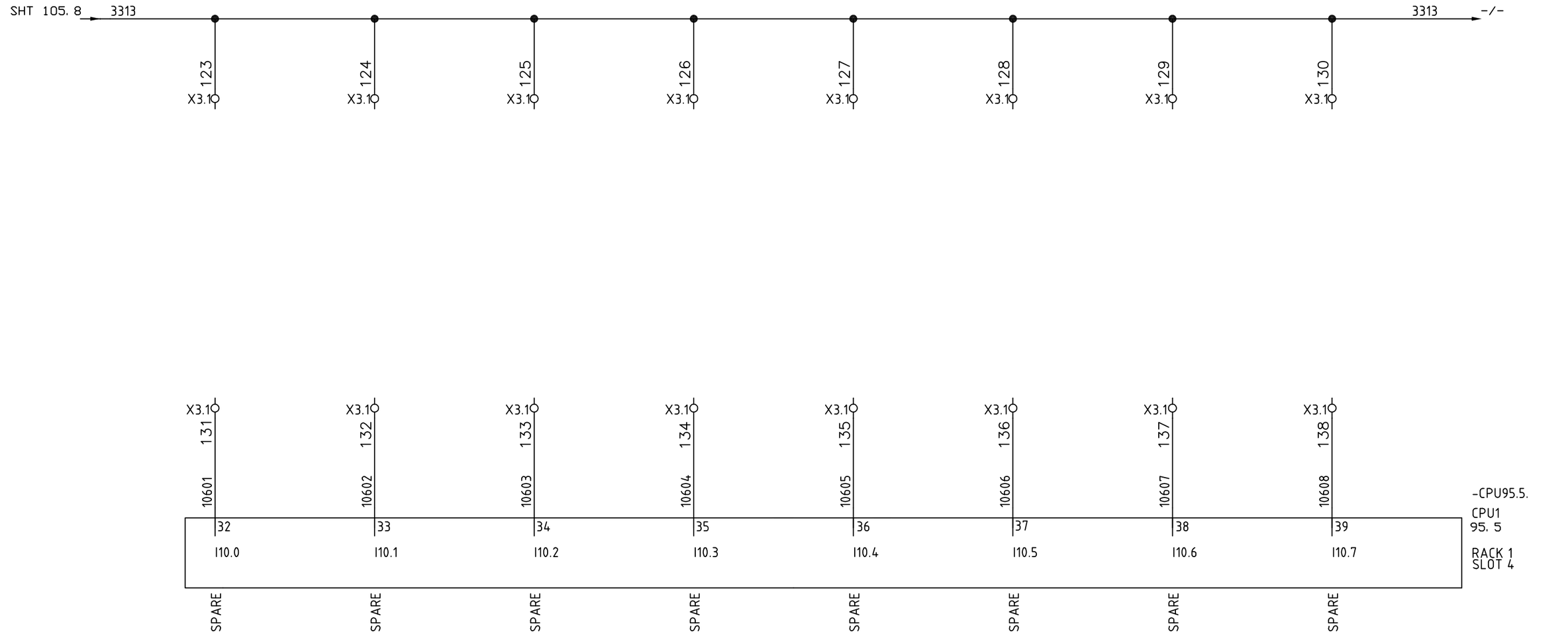
Revision	REVISED TO COMMENTS			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST
DIGITAL INPUTS
DIG I/P 16–23 RACK 1 SLOT 4

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated	Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF / ISO 2768 - mK	PM	08/11/2006		08/11/2006		G1951–B01–601	105 / Next Sht 106	3

Plot–Datum



Revision	AS TESTED			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST DIGITAL INPUTS DIG I/P 24-32 RACK 1 SLOT 4

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No 106	Rev
		ISO 13920 -BF	ISO 2768 -mK	PM	16/10/2006		16/10/2006		G1951-B01-601	Next Sht 107	2

Plot-Datum

PCP DRG. No. C4341

SHT 102. 8 9009

9009 SHT 108. 1

	JY-XXX-2000B ROTATE MOTOR BRAKE CONTACTOR	Q11.1 ENCODER SET SIGNAL	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
1	1L+							
10	1M	Q11.0	Q11.1	Q11.2	Q11.3	Q11.4	Q11.5	Q11.6	Q11.7
2		3	4	5	6	7	8	9
10701		10702	10703	10704	10705	10706	10707	10708
		139	140	141	142	143	144	145
		X3.1	X3.1	X3.1	X3.1	X3.1	X3.1	X3.1

-CPU95.5.
CPU1
95. 5

RACK 1
SLOT 5

SHT 51. 5

SHT 120.4

X3.1	X3.1	X3.1	X3.1	X3.1	X3.1	X3.1	X3.1
146	147	148	149	150	151	152	

SHT 106. 8 3304

3304 SHT 108. 1

PCP DRG. No. C4341

Revision	AS TESTED			Drawing not complete or					
Details	Description / Change No		Chk	Appd	approved for manufacture				

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST
CPU DIG OUTPUT
DIG O/P 0–7 RACK 1 SLOT 5

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 -BF	ISO 2768 -mK	PM	16/10/2006		16/10/2006		G1951–B01–601	107	2
										Next Sht 108	

Plot–Datum

SHT 107. 8 9009 — 9009 SHT 120. 1

SPARE | XV-XXX-3000A CLAMP SOLENOID | XV-XXX-3000B UNCLAMP SOLENOID | SPARE | SPARE | SPARE | SPARE | SPARE

-CPU95.5.
CPU1
95. 5

RACK 1
SLOT 5

11 2L+
20 2M

Q12.0 | Q12.1 | Q12.2 | Q12.3 | Q12.4 | Q12.5 | Q12.6 | Q12.7

12 | 13 | 14 | 15 | 16 | 17 | 18 | 19

10801 153 X3.1 | 10802 154 X3.1 | 10803 155 X3.1 | 10804 156 X3.1 | 10805 157 X3.1 | 10806 158 X3.1 | 10807 159 X3.1 | 10808 160 X3.1

X3.4 27 | X3.4 28

-Y108.2.1 XV-XXX-3000A (A1 / A2) CLAMP SOL

-Y108.3. XV-XXX-3000B (A1 / A2) UNCLAMP SOL

X3.4 24

X3.1 161 | X3.1 162 | X3.1 163 | X3.1 164 | X3.1 165 | X3.1 166 | X3.1 167 | X3.1 168

SHT 107. 8 3304 — 3304 SHT 109. 1

PCP DRG. No. C4341

Revision	AS TESTED			Drawing not complete or							
Details	Description / Change No		Chk	Appd	approved for manufacture						

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST
CPU DIG OUTPUT
DIG O/P 8-15 RACK 1 SLOT 5

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	16/10/2006		18/10/2006		G1951-B01-601	108	2
Plot-Datum										Next Sht 109	

SHT 106. 8 3313 — 3313 SHT 110. 1

XV-XXX-3000C AIR CHECK ENABLE SOLENOID | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE

-CPU95.5.
CPU1
95. 5

RACK 1
SLOT 5

21 3L+
30 3M

Q13.0 Q13.1 Q13.2 Q13.3 Q13.4 Q13.5 Q13.6 Q13.7

22 23 24 25 26 27 28 29

169 10901 — X3.1
170 10902 — X3.1
171 10903 — X3.1
172 10904 — X3.1
173 10905 — X3.1
174 10906 — X3.1
175 10907 — X3.1
176 10908 — X3.1

X3.4
26

A1 -Y108.2. XV-XXX-3000C A2

X3.4
25

177 — X3.1
178 — X3.1
179 — X3.1
180 — X3.1
181 — X3.1
182 — X3.1
183 — X3.1
184 — X3.1

SHT 108. 8 3304 — 3304 SHT 110. 1

PCP DRG. No. C4341

Revision	AS TESTED			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST CPU DIG OUTPUT DIG O/P 16–23 RACK 1 SLOT 5

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No 109	Rev
		ISO 13920 -BF	ISO 2768 -mK	PM	16/10/2006		16/10/2006		G1951–B01–601	Next Sht 110	2

Plot–Datum

SHT 109. 8 3313 — 3313

SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE

-CPU95.5.
CPU1
95. 5

RACK 1
SLOT 5

31
40
4L+
4M

Q14.0 | Q14.1 | Q14.2 | Q14.3 | Q14.4 | Q14.5 | Q14.6 | Q14.7

32 | 33 | 34 | 35 | 36 | 37 | 38 | 39

11001 185 X3.10
11002 186 X3.10
11003 187 X3.10
11004 188 X3.10
11005 189 X3.10
11006 190 X3.10
11007 191 X3.10
11008 192 X3.10

X3.10 193
X3.10 194
X3.10 195
X3.10 196
X3.10 197
X3.10 198
X3.10 199
X3.10 200

SHT 109. 8 3304 — 3304 SHT 120. 1

PCP DRG. No. C4341

Revision	AS TESTED			Drawing not complete or	
Details	Description / Change No		Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST
CPU DIG OUTPUT
DIG O/P 24-32 RACK 1 SLOT 5

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 -BF	ISO 2768 -mK	PM	16/10/2006		16/10/2006		G1951-B01-601	110 / Next Sht 111	2

Plot-Datum

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Revision	MODIFIED TO COMMENTS			Drawing not complete or	
Details	Description / Change No		Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST
SPARE SHEET

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	PM	08/11/2006		08/11/2006		G1951-B01-601	111 Next Sht 120	3

Plot-Datum

PCP DRG. No. C4341

SHT 108. 8 — 9009 — 9009

PE — 201 — X3.1

9009 — 1 — 2A — D3.1

3304 — 202 — X3.1

SHT 107. 2 — 10702

ENCODER

-B120. 2

SE-001-3511

WH, BR, YE, VT, RD, BL, OR/BK, OR

3, 4, 5, 6, 17, 19, 20

9009 — 1 L+

3304 — 2 M

-CPU95.5.

CPU1
95. 5

RACK 1
SLOT 6

POST HOIST

SHT 110. 8

PCP DRG. No. C4341

Revision	AS TESTED			Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST CONTROL CIRCUIT ENCODER RACK 1 SLOT 6

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	120	Rev
		ISO 13920 -BF	ISO 2768 -mK	PM	16/10/2006		16/10/2006		G1951-B01-601	Next Sht	121	2

Plot-Datum

ELEMENT FUNCTION		
SHEET	90/8	90/8
Cablemarking / Cabletype / Pin Number.		
Destination symbol – Connection no.		
Destination symbol – Designation		
Link / Terminal number		
Terminal type	○	○
Terminal strip – Destination symbol – Connection no.	A2	3
Terminal strip – Destination symbol – Designation	-K51.6.	-K48.5.
Cablemarking / Cabletype / Pin Number.	3304	9009
TERMINAL FUNCTION / ELEMENT FUNCTION	ROTATE BRM2 P/S C2	JY-001-3500B P/S C1

PCP DRG. No. C4341

Revision Details	Description / Change No	Chk	Appd

Drawing not complete or approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST

THIRD ANGLE PROJECTION

Scale

Tolerances unless otherwise stated

ISO 13920 - BF

ISO 2768 - mK

Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
			03/01/2007		G1951-B01-601	121 Next Sht 122	

Plot-Datum

ELEMENT FUNCTION								
SHEET			90/2	90/2	90/2	90/2	90/5	90/5
Cablemarking	Cabletype	Pin Number.						
X3.1	Destination symbol	Connection no.	2	2	2	2		
		Designation	X3.2 1	X3.2 2	X3.2 7	X3.2 8		
	Link							
	Terminal number		11	12	13	14	203	204
	Terminal type		○	○	○	○	○	○
Terminal strip	Destination symbol	Connection no.	2	2	S31	S21	S33	S34
		Designation	-S90.2.	-S90.2.	-U90.4.	-U90.4.	-U90.4.	-U90.4.
Cablemarking	Cabletype	Pin Number.	9013	9014	9004	9002	9007	9008
TERMINAL FUNCTION								
ELEMENT FUNCTION			HSS-001-8002	HSS-001-8002				

PCP DRG. No. C4341

Revision Details	Description / Change No	Chk	Appd

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GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST

THIRD ANGLE PROJECTION

Scale

Tolerances unless otherwise stated

ISO 13920 - BF

ISO 2768 - mK

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ELEMENT FUNCTION				
SHEET			90/5	90/5
Cablemarking	Cabletype	Pin Number.		
X3.2	Destination symbol	Connection no.		
		Designation		
	Link Terminal number			
	Terminal type		○	○
Terminal strip	Destination symbol	Connection no.	4	3
		Designation	-S90.6.	-S90.6.
Cablemarking	Cabletype	Pin Number.		
TERMINAL FUNCTION				
ELEMENT FUNCTION			HS-001-9200	HS-001-9200

Revision			
Details	Description / Change No	Chk	Appd

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BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST

THIRD ANGLE PROJECTION

Scale

Tolerances unless otherwise stated
ISO 13920 - BF
ISO 2768 - mK

Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
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		ELEMENT FUNCTION		
		SHEET	120/2	
Cablemarking	Cabletype	Pin Number.		
D3.1	Destination symbol	Connection no.		
		Designation		
	Link Terminal number		1	
	Terminal type		○	
Terminal strip	Destination symbol	Connection no.		
		Designation		
Cablemarking	Cabletype	Pin Number.		
		TERMINAL FUNCTION		
		ELEMENT FUNCTION		

Revision				Drawing not complete or
Details	Description / Change No		Chk	Appd approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No 124 / Next Sht 125 / Rev
		ISO 13920 - BF	ISO 2768 - mK				03/01/2007		G1951-B01-601	

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ELEMENT FUNCTION				
SHEET			120/2	120/2
Cablemarking	Cabletype	Pin Number.		
X3.1	Destination symbol	Connection no.		
		Designation		
	Link			
	Terminal number		201	202
	Terminal type		○	○
Terminal strip	Destination symbol	Connection no.		1
		Designation		-S30.1.
Cablemarking	Cabletype	Pin Number.	PE	3304
TERMINAL FUNCTION				
ELEMENT FUNCTION				ISOL

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GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST

THIRD ANGLE PROJECTION

Scale

Tolerances unless otherwise stated

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Terminal	ELEMENT FUNCTION	SHEET	Cablemarking / Cabletype / Pin Number.	Destination symbol: Connection no.	Destination symbol: Designation	Link / Terminal number	Terminal type	Terminal strip – Destination symbol: Connection no.	Terminal strip – Destination symbol: Designation	Cablemarking / Cabletype / Pin Number.	TERMINAL FUNCTION	ELEMENT FUNCTION
1	ZS-4003/1	50/2		14			○					
2		50/3					○	2	X3.1	4808		
3	M4 P/S F7	50/4		1			○	1	-Q31.4.	4808	MJB P/S D4	ISS-001-2002
4		50/4		1	X3.1		○	2		4808	M4 P/S F7	M2 P/S D4
5	M2 P/S C4	53/7		2			○	1	01	PROFI	M2 P/S C3	M2 P/S C4
6	M2 P/S C3	53/7		2			○	1	01	PROFI	M2 P/S C4	M2 P/S C3
7		54/3					○	U	-A53.2.	53L01	M2 P/S D1	MILL INVERTER
8		54/3					○	V	-A53.2.	53L02	M1 P/S D2	MILL INVERTER
9		54/3					○	W	-A53.2.	53L03	M1 P/S D3	MILL INVERTER
10		80/2					○	2	-F80.2.			
11		80/2					○	30	-CPU95.5.	3304		CPU1
12		95/2					○	3	-Q95.2.			HMI C/B
13		95/2					○	1	-Q95.2.			HMI C/B
14		99/1		2	X5.1		○	1	MJB 3	9901		
15		99/1		2	X3.1 43		○	1	X5.1	9901		
16		99/2		1	X5.11		○			3313	M2 P/S D5	
17		99/2		2	MJB		○	2	X5.11	3313	M4 P/S F1	
18							○					
19							○					
20							○					
21							○					
22							○					
23							○					
24							○					
25							○					
26							○					
27							○					
28							○					
29							○					
30							○					
31							○					
32							○					
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39							○					
40							○					
41							○					
42							○					
43							○					
44							○					
45							○					
46							○					
47							○					
48							○					
49							○					
50							○					
51							○					
52							○					
53							○					
54							○					
55							○					
56							○					
57							○					
58							○					
59							○					
60							○					

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GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST

THIRD ANGLE PROJECTION

Scale

Tolerances unless otherwise stated
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ELEMENT FUNCTION	M4 P/S F1	ZS-001-4000
SHEET	99/2	99/2
Cablemarking / Cabletype / Pin Number.		
MJB – Destination symbol – Connection no.	2	BK
MJB – Destination symbol – Designation		-S99.2.
MJB – Link		
MJB – Terminal number		3
MJB – Terminal type	○	○
Terminal strip – Destination symbol – Connection no.	BN	1
Terminal strip – Destination symbol – Designation	-S99.2.	
Cablemarking / Cabletype / Pin Number.	3313	9901
TERMINAL FUNCTION		
ELEMENT FUNCTION	ZS-001-4000	

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Revision Details	Description / Change No	Chk	Appd

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GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST

THIRD ANGLE PROJECTION

Scale

Tolerances unless otherwise stated ISO 13920 - BF ISO 2768 - mK

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ELEMENT FUNCTION	HSS-001-3502	HSS-001-3502	HSS-001-3502	HSS-001-3500	HSS-001-3500	HSS-001-3500	M3500	HSS-001-2000	HSS-001-2000		
SHEET	39/3	39/3	39/3	49/1	49/1	49/1	49/2	52/1	52/1	52/1	52/2
Cablemarking / Cabletype / Pin Number.											
X1.1 Destination symbol – Connection no.	1	3	5	1	3	5	2	1	3		
X1.1 Destination symbol – Designation	-S39.3.	-S39.3.	-S39.3.	-S49.1.	-S49.1.	-S49.1.	-M49.1.	-S52.1.	-S52.1.		
Link / Terminal number	1	2	3	4	5	6	7	8	9	10	11
Terminal type	○	○	○	○	○	○	○	○	○	○	○
Terminal strip Destination symbol – Connection no.	2	4	2	2	4	6	5	2	4	6	5
Terminal strip Destination symbol – Designation	-K102.2.	-K102.2.	-K102.2.1	-K48.5.	-K48.5.	-K48.5.	-K48.5.	-K51.6.	-K51.6.	-K51.6.	-K51.6.
Cablemarking / Cabletype / Pin Number.	38L05	38L06	38L07	48L01	48L02	48L03	48L04	51L01	51L02	51L03	51L04
TERMINAL FUNCTION / ELEMENT FUNCTION	JY-001-3502B	JY-001-3502B	JY-001-3502C	JY-001-3500B	JY-001-3500B	JY-001-3500B	JY-001-3500B	ROTATE BRK	ROTATE BRK	ROTATE BRK	ROTATE BRK

Revision			
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GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST

THIRD ANGLE PROJECTION
Scale
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PCP DRG. No. C4341

ELEMENT FUNCTION	M4 P/S E12					M3500	M3500	M-001-2000	M-001-2000	M4000	M4000				
SHEET	50/1	50/4	48/7	48/7	48/7	49/4	49/4	52/4	52/4	54/5	54/5	92/3	92/3	92/3	92/3
Cablemarking / Cabletype / Pin Number.															
X3.1 Destination symbol: Connection no.	2	1		2	2	V1	V2	V1	V2	3	2	2	2	2	2
X3.1 Destination symbol: Designation				X3.1 4	X3.1 3	-M49.1.	-M49.1.	-M52.1.	-M52.1.	-M54.3.	-M54.3.	X3.2 3	X3.2 4	X3.3 5	X3.3 6
Link / Terminal number			1	3	4	5	6	7	8	9	10	15	16	17	18
Terminal type	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Terminal strip Destination symbol: Connection no.	13	2	2	2	2	1	8	50	54	14	15	1	1	1	1
Terminal strip Destination symbol: Designation			X3.3 1	X3.3 3	X3.3 4	X3.1 29	-A48.2.	-A51.2.	-A51.2.	-A53.2.	-A53.2.	X3.1 17	X3.1 18	X3.1 15	X3.1 16
Cablemarking / Cabletype / Pin Number.		4808	4806	4807	4807	3313	4802	5101	5102	5401	5402	9201	9202	9201	9202
TERMINAL FUNCTION / ELEMENT FUNCTION	ZS-4001/1	M4 P/S F7				LIFT INVERTER	SC-001-2000	SC-001-2000	MILL INVERTER	MILL INVERTER					

ELEMENT FUNCTION									PS-001-9010						PS-001-9010
SHEET	92/4	92/4	92/4	92/4	92/6	92/6	92/6	92/6	98/3	98/4	98/6	98/7	98/7	99/1	98/3
Cablemarking / Cabletype / Pin Number.															
X3.1 Destination symbol: Connection no.	2	2	2	2	2	2	2	2	3		1			1	4
X3.1 Destination symbol: Designation	X3.6 2	X3.6 1	X3.3 8	X3.3 7	X3.6 3	X3.6 4	X3.2 5	X3.2 6	-S98.3.		X3.3 9			X3.1 64	-S98.3.
Link / Terminal number	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
Terminal type	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Terminal strip Destination symbol: Connection no.	1	1	1	1	1	1	1	1	1	1	1	1	1		23
Terminal strip Destination symbol: Designation	X3.1 21	X3.1 22	X3.1 19	X3.1 20	X3.1 25	X3.1 26	X3.1 23	X3.1 24	X3.1 29	X3.1 27	X3.1 5	X3.1 31	X3.1 30		-CPU95.5.
Cablemarking / Cabletype / Pin Number.	9203	9204	9203	9204	9205	9206	9205	9206	3313	3313	3313	3313	3313	3304	9802
TERMINAL FUNCTION / ELEMENT FUNCTION															CPU1

ELEMENT FUNCTION			MILL INVERTER				HSS-001-3502		HSS-001-4000			HSS-001-3502		HSS-001-4000	
SHEET	98/4	98/6	98/7	98/7	99/2	99/4	99/5	99/6	99/7	99/2	99/4	99/5	99/6	99/7	100/2
Cablemarking / Cabletype / Pin Number.															
X3.1 Destination symbol: Connection no.		1	L2			1	13		13	2	1	14		14	
X3.1 Destination symbol: Designation		X3.3 10	-A53.2.			X3.2 9	-S39.3.		-S54.3.		X3.2 11	-S39.3.		-S54.3.	
Link / Terminal number	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Terminal type	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Terminal strip Destination symbol: Connection no.	25	27	28	29	1	1	1	1	1	2	5	6	8	9	1
Terminal strip Destination symbol: Designation	-CPU95.5.	-CPU95.5.	-CPU95.5.	-CPU95.5.	X3.1 39	X3.1 38	X3.1 41	X3.1 40	X3.1 48	-CPU95.5.	-CPU95.5.	-CPU95.5.	-CPU95.5.	-CPU95.5.	X3.1 42
Cablemarking / Cabletype / Pin Number.	9804	9806	9807	9808	3313	3313	3313	3313	3313	9901	9904	9905	9907	9908	3313
TERMINAL FUNCTION / ELEMENT FUNCTION	CPU1	CPU1	CPU1	CPU1						CPU1	CPU1	CPU1	CPU1	CPU1	

ELEMENT FUNCTION	HSS-001-2000					HSS-001-2000									
SHEET	100/4	100/6	100/7	100/7	100/2	100/4	100/6	100/7	100/7	101/2	101/2	101/3	101/4	101/6	101/7
Cablemarking / Cabletype / Pin Number.															
X3.1 Destination symbol: Connection no.	13					14									
X3.1 Destination symbol: Designation	-S52.1.					-S52.1.									
Link / Terminal number	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
Terminal type	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Terminal strip Destination symbol: Connection no.	1	1	1	1	12	15	17	18	19	22	23	24	25	28	29
Terminal strip Destination symbol: Designation	X3.1 50	X3.1 49	X3.1 52	X3.1 51	-CPU95.5.	-CPU95.5.	-CPU95.5.	-CPU95.5.	-CPU95.5.	-CPU95.5.	-CPU95.5.	-CPU95.5.	-CPU95.5.	-CPU95.5.	-CPU95.5.
Cablemarking / Cabletype / Pin Number.	3313	3313	3313	3313	10001	10004	10006	10007	10008	10101	10102	10103	10104	10107	10108
TERMINAL FUNCTION / ELEMENT FUNCTION					CPU1	CPU1	CPU1	CPU1	CPU1	CPU1	CPU1	CPU1	CPU1	CPU1	CPU1

Revision Details	Description / Change No	Chk	Appd

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GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST

THIRD ANGLE PROJECTION

Scale

Tolerances unless otherwise stated

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SHEET	ELEMENT FUNCTION	X3.1 Destination symbol Designation	X3.1 Destination symbol Connection no.	Terminal number	Terminal type	Terminal strip Destination symbol Designation	Terminal strip Destination symbol Connection no.	Cablemarking	ELEMENT FUNCTION (TERMINAL FUNCTION)
101/2				64	○	X3.1 32	2	3304	
101/2				65	○	X3.1 66	1	3304	
101/3				66	○	X3.1 65	1	3304	
101/4				67	○	X3.1 68	1	3304	
101/6				68	○	X3.1 67	1	3304	
101/7				69	○	X3.1 76	1	3304	
102/3				70	○	-CPU95.5.	34	10203	CPU1
102/4				71	○	-CPU95.5.	35	10204	CPU1
102/5		X3.3 11	1	72	○	-CPU95.5.	35	10205	CPU1
102/6	YI-001-9201	-H102.6.	X1	73	○	-CPU95.5.	37	10206	CPU1
102/6				74	○	-CPU95.5.	38	10207	CPU1
102/7		X3.2 12	1	75	○	-CPU95.5.	39	10208	CPU1
102/3				76	○	X3.1 69	1	3304	
102/4				77	○	X3.1 78	1	3304	
102/5		X3.3 12	1	78	○	X3.1 77	1	3304	
102/6	YI-001-9201	-H102.6.	X2	79	○	X3.1 80	1	3304	
102/6				80	○	X3.1 79	1	3304	
102/7		X3.2 13	1	81	○	X3.1 87	1	3304	
103/2				82	○	X3.1 83	1	3313	
103/2		X3.2 14	1	83	○	X3.1 82	1	3313	
103/3		X3.2 15	1	84	○	X3.1 85	1	3313	
103/4		X3.2 16	1	85	○	X3.1 84	1	3313	
103/7				86	○	X3.1 93	1	3313	
103/1				87	○	X3.1 81	1	3304	
103/2				88	○	-CPU95.5.	2	10301	CPU1
103/2		X3.2 18	1	89	○	-CPU95.5.	3	10302	CPU1
103/3		X3.2 20	1	90	○	-CPU95.5.	4	10303	CPU1
103/4		X3.2 21	1	91	○	-CPU95.5.	5	10304	CPU1
103/7				92	○	-CPU95.5.	9	10308	CPU1
104/2		X3.3 13	1	93	○	X3.1 86	1	3313	
104/3		X3.3 14	1	94	○	X3.1 95	1	3313	
104/4				95	○	X3.1 94	1	3313	
104/5				96	○	X3.1 97	1	3313	
104/6		X3.5 4	1	97	○	X3.1 96	1	3313	
104/6		X3.3 15	1	98	○	X3.1 99	1	3313	
104/7		X3.3 16	1	99	○	X3.1 98	1	3313	
104/2		X3.3 17	1	100	○	-CPU95.5.	13	10402	CPU1
104/3		X3.3 18	1	101	○	-CPU95.5.	14	10403	CPU1
104/4				102	○	-CPU95.5.	15	10404	CPU1
104/5				103	○	-CPU95.5.	16	10405	CPU1
104/6				104	○	-CPU95.5.	17	10406	CPU1
104/6		X3.3 20	1	105	○	-CPU95.5.	18	10407	CPU1
104/7		X3.3 22	1	106	○	-CPU95.5.	19	10408	CPU1
105/2		X3.4 1	1	107	○	X3.1 108	1	3313	
105/3		X3.4 2	1	108	○	X3.1 107	1	3313	
105/3		X3.4 3	1	109	○	X3.1 110	1	3313	
105/4		X3.4 4	1	110	○	X3.1 109	1	3313	
105/5		X3.5 7	1	111	○	X3.1 112	1	3313	
105/6		X3.5 8	1	112	○	X3.1 111	1	3313	
105/7				113	○	X3.1 114	1	3313	
105/7				114	○	X3.1 113	1	3313	
105/2		X3.4 5	1	115	○	-CPU95.5.	22	10501	CPU1
105/3		X3.4 6	1	116	○	-CPU95.5.	23	10502	CPU1
105/3				117	○	-CPU95.5.	24	10503	CPU1
105/4		X3.4 10	1	118	○	-CPU95.5.	25	10504	CPU1
105/5		X3.5 9	1	119	○	-CPU95.5.	26	10505	CPU1
105/6		X3.5 10	1	120	○	-CPU95.5.	27	10506	CPU1
105/7				121	○	-CPU95.5.	28	10507	CPU1
105/7				122	○	-CPU95.5.	29	10508	CPU1
106/2				123	○	X3.1 124	1	3313	

Cablemarking | Cabletype | Pin Number.

Link

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B01 BLENDER/D01 POST HOIST

GEA BUCK SYSTEMS

THIRD ANGLE PROJECTION

Scale

Tolerances unless otherwise stated
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ELEMENT FUNCTION

X3.1

Terminal number	SHEET	Destination symbol Designation	Destination symbol Connection no.	Link	Terminal type	Terminal strip Destination symbol Designation	Terminal strip Destination symbol Connection no.	Cablemarking	ELEMENT FUNCTION
124	106/2				○	X3.1 123	1	3313	
125	106/3				○	X3.1 126	1	3313	
126	106/4				○	X3.1 125	1	3313	
127	106/5				○	X3.1 128	1	3313	
128	106/6				○	X3.1 127	1	3313	
129	106/6				○	X3.1 130	1	3313	
130	106/7				○	X3.1 129	1	3313	
131	106/2				○	-CPU95.5.	32	10601	CPU1
132	106/2				○	-CPU95.5.	33	10602	CPU1
133	106/3				○	-CPU95.5.	34	10603	CPU1
134	106/4				○	-CPU95.5.	35	10604	CPU1
135	106/5				○	-CPU95.5.	36	10605	CPU1
136	106/6				○	-CPU95.5.	37	10606	CPU1
137	106/6				○	-CPU95.5.	38	10607	CPU1
138	106/7				○	-CPU95.5.	39	10608	CPU1
139	107/2				○			10702	
140	107/3				○			10703	
141	107/4				○			10704	
142	107/5				○			10705	
143	107/6				○			10706	
144	107/6				○			10707	
145	107/7				○			10708	
146	107/2				○	X3.1 147	1	3304	
147	107/3				○	X3.1 146	1	3304	
148	107/4				○	X3.1 149	1	3304	
149	107/5				○	X3.1 148	1	3304	
150	107/6				○	X3.1 151	1	3304	
151	107/6				○	X3.1 150	1	3304	
152	107/7				○	X3.1 161	1	3304	
153	108/2				○			10801	
154	108/2	X3.4	2		○			10802	
155	108/3	X3.4	2		○			10803	
156	108/4				○			10804	
157	108/5				○			10805	
158	108/6				○			10806	
159	108/6				○			10807	
160	108/7				○			10808	
161	108/2				○	X3.1 152	1	3304	
162	108/2	X3.4	2		○	X3.1 163	1	3304	
163	108/3				○	X3.1 162	1	3304	
164	108/4				○	X3.1 165	1	3304	
165	108/5				○	X3.1 164	1	3304	
166	108/6				○	X3.1 167	1	3304	
167	108/6				○	X3.1 166	1	3304	
168	108/7				○	X3.1 177	1	3304	
169	109/2	X3.4	2		○			10901	
170	109/2				○			10902	
171	109/3				○			10903	
172	109/4				○			10904	
173	109/5				○			10905	
174	109/6				○			10906	
175	109/6				○			10907	
176	109/7				○			10908	
177	109/2	X3.4	2		○	X3.1 168	1	3304	
178	109/2				○	X3.1 179	1	3304	
179	109/3				○	X3.1 178	1	3304	
180	109/4				○	X3.1 181	1	3304	
181	109/5				○	X3.1 180	1	3304	
182	109/6				○	X3.1 183	1	3304	
183	109/6				○	X3.1 182	1	3304	

Cablemarking | Cabletype | Pin Number.

Terminal strip

TERMINAL FUNCTION

PCP DRG. No. C4341

Revision Details	Description / Change No	Chk	Appd	Drawing not complete or approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST

THIRD ANGLE PROJECTION

Scale

Tolerances unless otherwise stated
ISO 13920 - BF
ISO 2768 - mK

Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
			03/01/2007		G1951-B01-601	131 Next Sht 132	

Plot-Datum

X3.1

Terminal number	SHEET	ELEMENT FUNCTION	Destination symbol Designation	Connection no.	Link	Terminal type	Terminal strip Destination symbol Designation	Connection no.	Cablemarking	TERMINAL FUNCTION	ELEMENT FUNCTION
184	109/7					○	X3.1 193	1	3304		
185	110/2					○			11001		
186	110/2					○			11002		
187	110/3					○			11003		
188	110/4					○			11004		
189	110/5					○			11005		
190	110/6					○			11006		
191	110/6					○			11007		
192	110/7					○			11008		
193	110/2					○	X3.1 184	1	3304		
194	110/2					○	X3.1 195	1	3304		
195	110/3					○	X3.1 194	1	3304		
196	110/4					○	X3.1 197	1	3304		
197	110/5					○	X3.1 196	1	3304		
198	110/6					○	X3.1 199	1	3304		
199	110/6					○	X3.1 198	1	3304		
200	110/7					○	X3.3 19	1	3304		
205	98/2	HSS-001-8002	-S90.2.	3		○	X3.1 207	1	3313		
206	98/2	HSS-001-8002	-S90.2.	4		○			9801		
207	103/5		X3.2	2		○	X3.1 205	1	3313		
208	103/6		X3.2	2		○	X3.1 209	1	3313		
209	103/6		X3.6	2		○	X3.1 208	1	3313		
210	103/5		X3.2	2		○	-CPU95.5.	6	10305		CPU1
211	103/6		X3.2	2		○	-CPU95.5.	7	10306		CPU1
212	103/6		X3.6	2		○	-CPU95.5.	8	10307		CPU1
213	104/2		X3.3	2		○	-Q31.4.	11	3313		ISS-001-2000B
214	104/2		X3.3	2		○	-CPU95.5.	12	10401		CPU1
						○					
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Cablemarking | Cabletype | Pin Number.

Cablemarking | Cabletype | Pin Number.

PCP DRG. No. C4341

Revision Details	Description / Change No	Chk	Appd

Drawing not complete or
approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST

THIRD ANGLE PROJECTION | Scale | Tolerances unless otherwise stated ISO 13920 - BF | ISO 2768 - mK

Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
			03/01/2007		G1951-B01-601	132	
						Next Sht 133	

Plot-Datum

ELEMENT FUNCTION													ST-001-2102	ST-001-2102	ST-001-2102	YI-001-9200	YI-001-9200	XS-001-2200	XS-001-2201	HS-001-9200	XS-001-2200	XS-001-2200	XS-001-2201	XS-001-2201	HS-001-9200
SHEET	103/5	103/5	103/6	103/6	92/3	92/3	92/3	92/3	92/6	92/6	92/6	92/6	99/4	99/4	99/4	102/7	102/7	103/2	103/3	103/4	103/2	103/2	103/3	103/3	103/4
Cablemarking / Cabletype / Pin Number.																									
X3.2 Destination symbol: Connection no.	2	2	2	2	2	2	2	2	2	2	2	2	BN	BU	BK	X1	X2	13	13	23	BU	14	BU	14	24
X3.2 Destination symbol: Designation	X3.1 207	X3.1 210	X3.1 208	X3.1 211	X3.1 11	X3.1 12	X3.1 15	X3.1 16	X3.1 25	X3.1 26	X3.1 13	X3.1 14	-S99.4.	-S99.4.	-S99.4.	-H102.7.	-H102.7.	-S103.2.	-S103.3.	-S90.6.	-S103.2.	-S103.2.	-S103.3.	-S103.3.	-S90.6.
Link																									
Terminal number					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Terminal type	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Terminal strip Destination symbol: Connection no.	1	6	5	4	1	1	2	2	1	3	2	4	2	1	2	2	2	2	2	2	2	2	1	2	2
Terminal strip Destination symbol: Designation	X3.2	-S92.6.1	-S92.6.1	-S92.3.	-S92.3.	-S92.3.	-S92.3.	-S92.3.	-S92.6.1	-S92.6.1	-S92.6.1	-S92.6.1	X3.1 39	X3.1 32	X3.1 44	X3.1 75	X3.1 81	X3.1 83	X3.1 84	X3.1 85	X3.1 87	X3.1 89	X3.2 17	X3.1 90	X3.1 91
Cablemarking / Cabletype / Pin Number.	3313	10305	3313	10306	9013	9014	9201	9202	9205	9206	9004	9002	3313	3304	9904	10208	3304	3313	3313	3313	3304	10302	3304	10303	10304
TERMINAL FUNCTION / ELEMENT FUNCTION		HSS-001-8260	HSS-001-8260	HSS-001-8000	HSS-001-8000	HSS-001-8000	HSS-001-8000	HSS-001-8000	HSS-001-8260	HSS-001-8260	HSS-001-8260	HSS-001-8260													

PCP DRG. No. C4341

Revision Details	Description / Change No	Chk	Appd

Drawing not complete or approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST

THIRD ANGLE PROJECTION

Scale

Tolerances unless otherwise stated

ISO 13920 - BF

ISO 2768 - mK

Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
			03/01/2007		G1951–B01–601	133 Next Sht 134	

Plot–Datum

Terminal strip X3.3

Column	SHEET	ELEMENT FUNCTION	X3.3 Destination symbol: Designation	X3.3 Destination symbol: Connection no.	Link	Terminal number	Terminal type	Terminal strip Destination symbol: Designation	Terminal strip Destination symbol: Connection no.	Cablemarking	TERMINAL FUNCTION / ELEMENT FUNCTION
1	104/2		X3.1 213	2			○	-S92.3.1	3	3313	HSS-001-3510
2	104/2		X3.1 214	2			○	-S92.3.1	4	10401	HSS-001-3510
3	48/7		X3.1 1	1		1	○		11	4806	ZS-3512/1
4	48/7		X3.1 3	1		3	○		12	4807	ZS-3510/1
5	48/7		X3.1 4	1		4	○		12	4807	ZS-3512/1
6	92/3		X3.1 17	2		5	○	-S92.3.1	1	9201	HSS-001-3510
7	92/3		X3.1 18	2		6	○	-S92.3.1	1	9202	HSS-001-3510
8	92/3		X3.1 22	2		7	○	-S92.3.1	2	9204	HSS-001-3510
9	92/3		X3.1 21	2		8	○	-S92.3.1	2	9203	HSS-001-3510
10	98/6	HSS-001-3500	-S49.1.	13		9	○	X3.1 29	2	3313	
11	98/6	HSS-001-3500	-S49.1.	14		10	○	X3.1 35	2	9806	
12	102/5	YI-001-3001	-H102.5.	X1		11	○	X3.1 72	2	10205	
13	102/5	YI-001-3001	-H102.5.	X2		12	○	X3.1 78	2	3304	
14	104/2	ZS-001-3512/2				13	○	X3.1 93	2	3313	
15	104/3	ZS-001-3510/2				14	○	X3.1 94	2	3313	
16	104/6	XS-001-3521	-S104.6.1			15	○	X3.1 98	2	3313	
17	104/7	XS-001-3520	-S104.7.			16	○	X3.1 99	2	3313	
18	104/2	ZS-001-3512/2				17	○	X3.1 100	2	10402	
19	104/3	ZS-001-3510/2				18	○	X3.1 101	2	10403	
20	104/6	XS-001-3521	-S104.6.1	BU		19	○	X3.1 200	1	3304	
21	104/6	XS-001-3521	-S104.6.1			20	○	X3.1 105	2	10407	
22	104/7	XS-001-3520	-S104.7.	BU		21	○	X3.4 7	1	3304	
23	104/7	XS-001-3520	-S104.7.			22	○	X3.1 106	2	10408	
24							○				
25							○				
26							○				
27							○				
28							○				
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58							○				
59							○				
60							○				

Cablemarking | Cabletype | Pin Number.

PCP DRG. No. C4341

Revision Details	Description / Change No	Chk	Appd

Drawing not complete or
approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST

THIRD ANGLE PROJECTION | Scale | Tolerances unless otherwise stated | ISO 13920 - BF | ISO 2768 - mK

Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
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Sheet	Element function	X3.4 Destination symbol: Designation	Connection no.	Link / Terminal number	Terminal type	Terminal strip Destination symbol: Designation	Connection no.	Cablemarking / Cabletype / Pin Number.	Terminal function / Element function
108/2		X3.1 154	2		○	-Y108.2.1	A1	10802	XV-XXX-3000A
108/2		X3.1 162	2		○	-Y108.3.	A2	3304	XV-XXX-3000B
108/3		X3.1 155	2		○	-Y108.3.	A1	10803	XV-XXX-3000B
109/2		X3.1 169	2		○	-Y108.2.	A1	10901	XV-XXX-3000C
109/2		X3.1 177	2		○	-Y108.2.	A2	3304	XV-XXX-3000C
105/2	PS-001-9000	-S105.2.	1	1	○	X3.1 107	2	3313	
105/3	PS-001-3300	-S105.2.1	1	2	○	X3.1 108	2	3313	
105/3				3	○	X3.1 109	2	3313	
105/4	XS-001-3400	-S105.4.	BN	4	○	X3.1 110	2	3313	
105/2	PS-001-9000	-S105.2.	4	5	○	X3.1 115	2	10501	
105/3	PS-001-3300	-S105.2.1	4	6	○	X3.1 116	2	10502	
105/3				7	○	X3.3 21	1	3304	
105/4	XS-001-3400	-S105.4.	BU	9	○	X3.5 5	1	3304	
105/4	XS-001-3400	-S105.4.	BK	10	○	X3.1 118	2	10504	
					○				
					○				
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PCP DRG. No. C4341

Revision Details	Description / Change No	Chk	Appd

Drawing not complete or approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST

THIRD ANGLE PROJECTION

Scale

Tolerances unless otherwise stated
ISO 13920 - BF
ISO 2768 - mK

Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
			03/01/2007		G1951-B01-601	135	
						Next Sht 136	

Plot-Datum

ELEMENT FUNCTION			YS-001-4001/2	YS-001-4001/1	YS-001-4001/2	YS-001-4001/1
SHEET	104/6	104/5	105/5	105/6	105/5	105/6
Cablemarking / Cabletype / Pin Number.						
X3.5 – Destination symbol – Connection no.						
X3.5 – Destination symbol – Designation						
X3.5 – Link						
X3.5 – Terminal number	4	5	7	8	9	10
X3.5 – Terminal type	○	○	○	○	○	○
Terminal strip – Destination symbol – Connection no.	2	1	2	2	2	2
Terminal strip – Destination symbol – Designation	X3.1 97	X3.4 9	X3.1 111	X3.1 112	X3.1 119	X3.1 120
Cablemarking / Cabletype / Pin Number.	3313	3304	3313	3313	10505	10506
TERMINAL FUNCTION						
ELEMENT FUNCTION						

Revision Details	Description / Change No	Chk	Appd

Drawing not complete or approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST

THIRD ANGLE PROJECTION

Scale

Tolerances unless otherwise stated

ISO 13920 - BF

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Drawn

Date

Modified

Date 03/01/2007

Status

Drawing No G1951–B01–601

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Plot–Datum

PCP DRG. No. C4341

ELEMENT FUNCTION								
SHEET			103/6	103/6	92/6	92/6	92/6	92/6
Cablemarking	Cabletype	Pin Number.						
X3.6	Destination symbol	Connection no.	2	2	2	2	2	2
		Designation	X3.1 209	X3.1 212	X3.1 20	X3.1 19	X3.1 23	X3.1 24
	Link							
	Terminal number				1	2	3	4
	Terminal type		○	○	○	○	○	○
Terminal strip	Destination symbol	Connection no.	1	4	1	1	2	2
		Designation	X3.2	-S92.6.	-S92.6.	-S92.6.	-S92.6.	-S92.6.
Cablemarking	Cabletype	Pin Number.	3313	10307	9204	9203	9205	9206
TERMINAL FUNCTION								
ELEMENT FUNCTION				HSS-001-8001	HSS-001-8001	HSS-001-8001	HSS-001-8001	HSS-001-8001

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Revision Details | Description / Change No | Chk | Appd

Drawing not complete or approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST

THIRD ANGLE PROJECTION

Scale

Tolerances unless otherwise stated
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Drawn | Date | Modified | Date 03/01/2007 | Status | Drawing No G1951-B01-601 | Sht No 137 | Next Sht 138 | Rev

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		ELEMENT FUNCTION		99/1	M4 P/S F1
		SHEET		99/2	
Cablemarking	Cabletype	Pin Number.			
X5.1	Destination symbol	Connection no.	2	1	
		Designation			
	Link Terminal number			1	
	Terminal type		O	O	
Terminal strip	Destination symbol	Connection no.	1	2	
		Designation			
Cablemarking	Cabletype	Pin Number.	9901	3313	
		TERMINAL FUNCTION			
		ELEMENT FUNCTION		M2 P/S D5	

Revision				Drawing not complete or
Details	Description / Change No	Chk	Appd	approved for manufacture

GEA BUCK SYSTEMS

B01 BLENDER/D01 POST HOIST

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No 138 / Rev
		ISO 13920 - BF	ISO 2768 - mK				03/01/2007		G1951-B01-601	Next Sht

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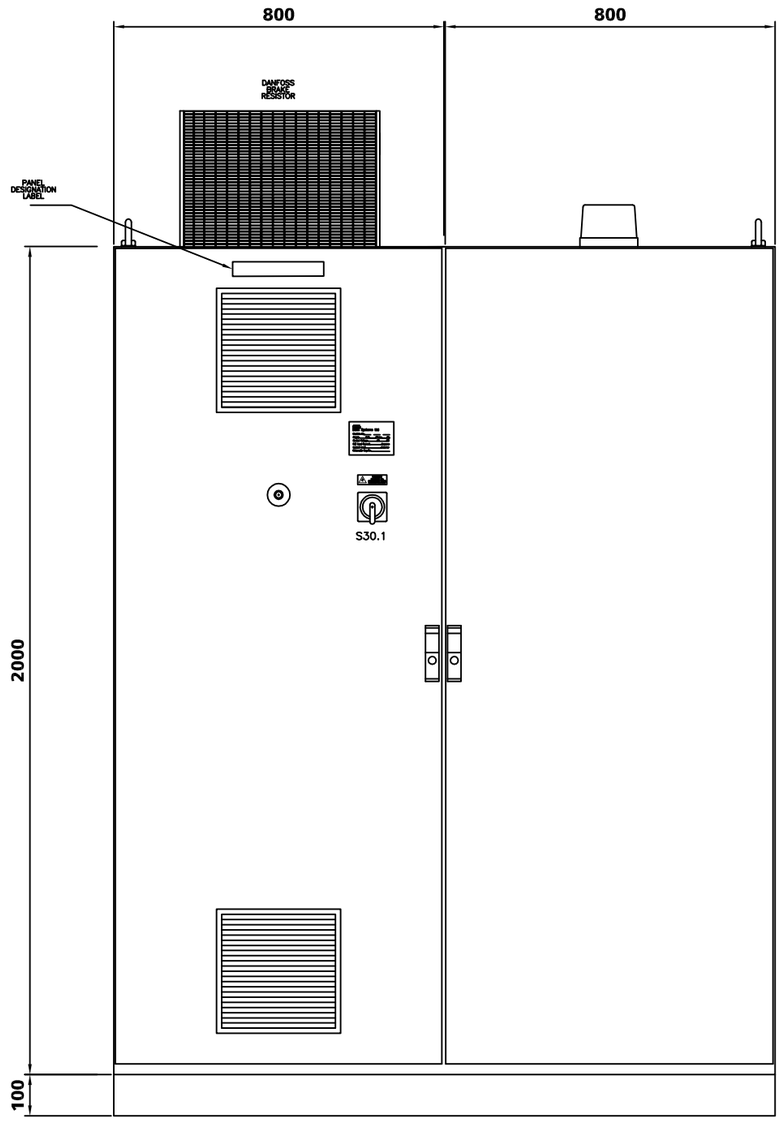
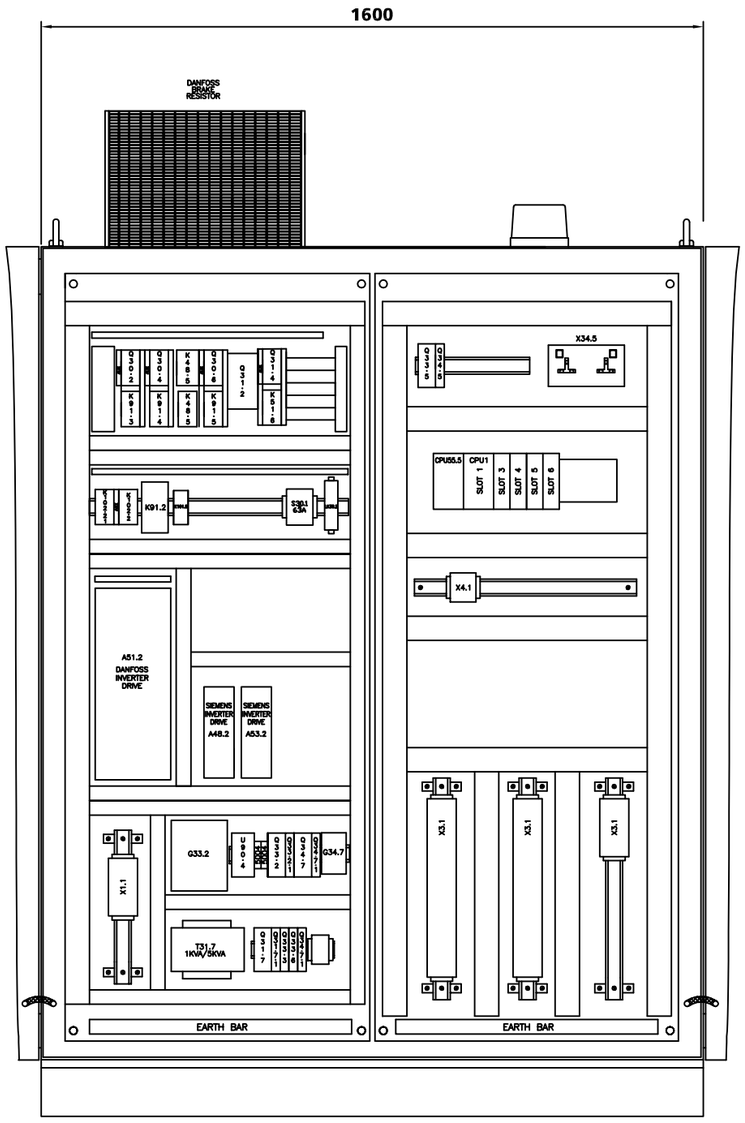
PCP DRG. No. C4341



ENCLOSURE DEPTH 500MM



Revision Details	AS TESTED	---	---	Drawing not complete or approved for manufacture
	Description/Change No:	Chk	Appd	

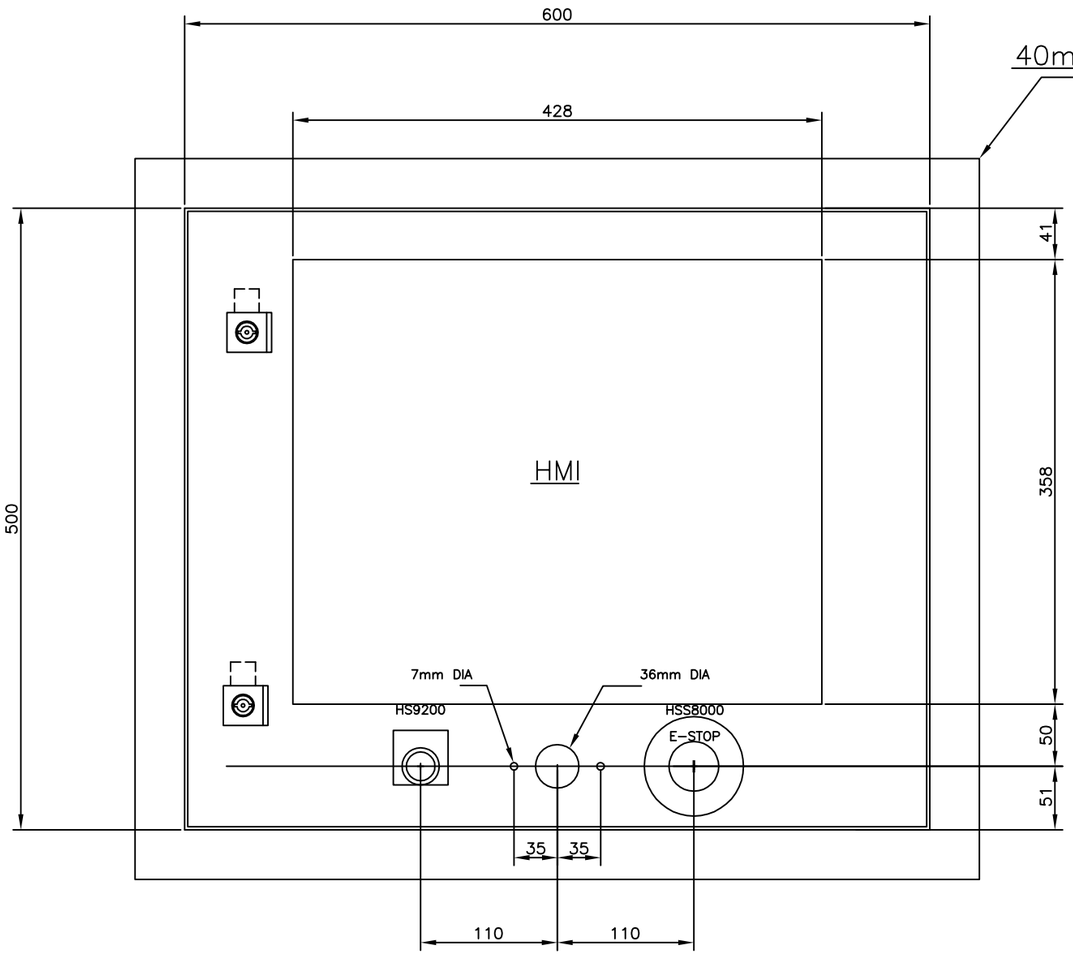
GEA Buck Systems

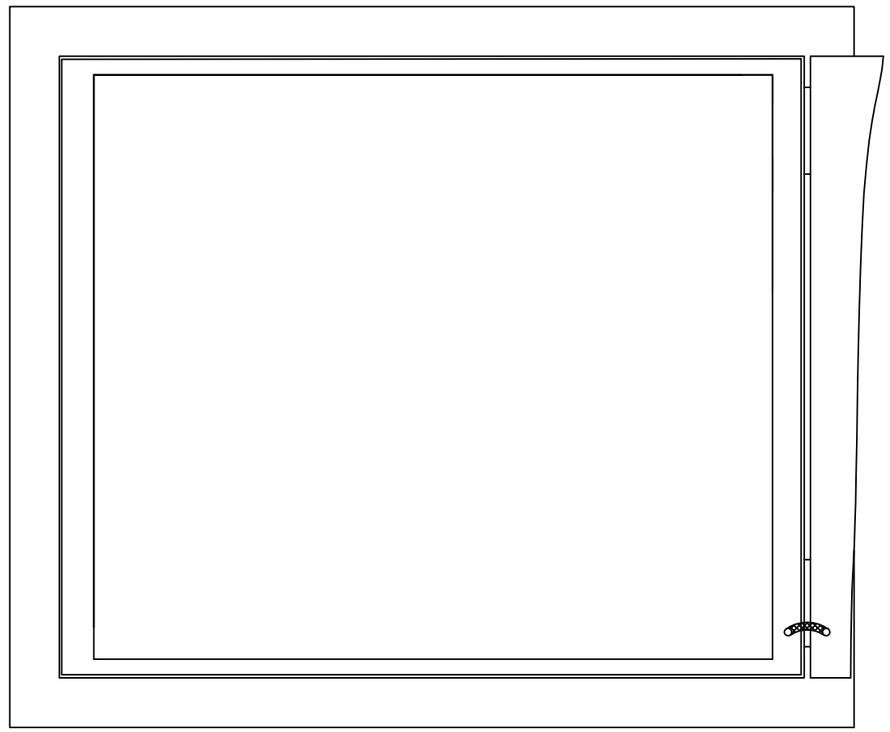
G1951-B01 BLENDER/D01 POST HOIST MAIN PANEL GENERAL ARRANGEMENT

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No.	Sht	Rev
	---	ISO 13920 -BF	ISO 2768 -mK	PM	20/09/06	PM	21/12/06		G1951-B01-610	1 of 1	1

Plot-Datum :

A3





DOOR TO BE FITTED WITH EARTH BRAID

ENCLOSURE 250MM DEEP

STAINLESS STEEL CONSTRUCTION

P.C.P. DRG. No C4341

Revision Details	AS TESTED Description/Change No:		Chk	Appd
Drawing not complete or approved for manufacture				

GEA Buck Systems

OPERATOR STATION
PANEL LAYOUT

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No.	Sht	Rev
		ISO 13920	ISO 2768	PM	26/09/06	PM	21/12/06		G1951-B01-620	1 of 1	1

Plot-Datum :

G1951-Cable Layout

SIZE mm2	CABLE TYPE	CIRCUIT CLASS	SOURCE	DESTINATION	HARTING CONNECTOR REFERENCE	TERMINAL BLOCK	TERMINAL No	P&ID REF.	CORE NUMBER	DESCRIPTION
			B01 MAIN		N/A					
			B01 MAIN		N/A					
			B01 MAIN		N/A					
			B01 MAIN		N/A					
			SLEW MOT.ISOL.	BRIDGE RECITIFIER	N/A	L1	L1		L1	SLEW MOTOR BRIDGE RECTIFIER
			SLEW MOT.ISOL.	BRIDGE RECTIFIER	N/A	L2	L2		L2	SLEW MOTOR BRIDGE RECTIFIER
			SLEW MOT.ISOL.	SLEW MOTOR	N/A	39L04	39L04	M-XXX-3502	1	SLEW MOTOR
			SLEW MOT.ISOL.	SLEW MOTOR	N/A	39L05	39L05	M-XXX-3502	2	SLEW MOTOR
			SLEW MOT.ISOL.	SLEW MOTOR	N/A	39L06	39L06	M-XXX-3502	3	SLEW MOTOR
			SLEW MOT.ISOL.	SLEW MOTOR	N/A	E	E	M-XXX-3502	E	SLEW MOTOR
			SLEW MOT.ISOL.	SLEW MOTOR	N/A	E	E	M-XXX-3502	SCN	SLEW MOTOR
			B01 MAIN	D01 HOIST MOUNT JB	N/A	L1	L1			LIFT MOT. BRIDGE RECT.
			B01 MAIN	D01 HOIST MOUNT JB	N/A	L2	L2			LIFT MOT. BRIDGE RECT.
			B01 MAIN	D01 HOIST MOUNT JB	N/A	1	1			LIFT MOT. BRIDGE RECT.
			B01 MAIN	D01 HOIST MOUNT JB	N/A	2	2			LIFT MOT. BRIDGE RECT.
			B01 MAIN	D01 HOIST MOUNT JB	N/A	U	U	M-XXX-3500		LIFT MOTOR
			B01 MAIN	D01 HOIST MOUNT JB	N/A	V	V	M-XXX-3500		LIFT MOTOR
			B01 MAIN	D01 HOIST MOUNT JB	N/A	W	W	M-XXX-3500		LIFT MOTOR
			B01 MAIN	D01 HOIST MOUNT JB	N/A	E	E	M-XXX-3500	SCN	LIFT MOTOR
			B01 MAIN	B01 PED. BLE. JB	N/A	L1	L1		L1	ROT. ISOL. BRIDGE RECT.
			B01 MAIN	B01 PED. BLE. JB	N/A	L2	L2		L2	ROT. ISOL. BRIDGE RECT.
			B01 MAIN	B01 PED. BLE. JB	N/A	1	1		1	ROT. ISOL. BRIDGE RECT.
			B01 MAIN	B01 PED. BLE. JB	N/A	2	2		2	ROT. ISOL. BRIDGE RECT.
			B01 MAIN	B01 ROTATE MOTOR	N/A	U	U	M-XXX-2000	U	ROTATE MOTOR
			B01 MAIN	B01 ROTATE MOTOR	N/A	V	V	M-XXX-2000	V	ROTATE MOTOR
			B01 MAIN	B01 ROTATE MOTOR	N/A	W	W	M-XXX-2000	W	ROTATE MOTOR
			B01 MAIN	B01 ROTATE MOTOR	N/A	E	E	M-XXX-2000	SCN	ROTATE MOTOR
			B01 MAIN	M01 QUADRO MILL MOT.	N/A	L1	L1	M-XXX-4000	1	MILL MOTOR
			B01 MAIN	M01 QUADRO MILL MOT.	N/A	L2	L2	M-XXX-4000	2	MILL MOTOR
			B01 MAIN	M01 QUADRO MILL MOT.	N/A	L3	L3	M-XXX-4000	3	MILL MOTOR
			B01 MAIN	M01 QUADRO MILL MOT.	N/A	E	E	M-XXX-4000	E	MILL MOTOR
			B01 MAIN	M01 QUADRO MILL MOT.	N/A	SCN	SCN	M-XXX-4000	SCN	MILL MOTOR
			B01 MAIN	D01 HOIST MOUNT JB	N/A	X1.1	1	HSS-XXX-3502		SLEW MOTOR ISOLATOR
			B01 MAIN	D01 HOIST MOUNT JB	N/A	X1.1	2	HSS-XXX-3502		SLEW MOTOR ISOLATOR
			B01 MAIN	D01 HOIST MOUNT JB	N/A	X1.1	3	HSS-XXX-3502		SLEW MOTOR ISOLATOR
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	1	ZS-3512/2	1	OVERTRAVEL SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	2	ZS-3510/B	2	LOAD/UNLOAD OVERTRAVEL SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	3	ZS-3510/B	3	LOAD/UNLOAD OVERTRAVEL SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	4	ZS-3512/2	4	OVERTRAVEL SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	5	TS-3500	5	LIFT MOTOR THERMISTOR
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	6	TS-3500	6	LIFT MOTOR THERMISTOR
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	17	HSS-XXX-3510	7	HOIST JB E-STOP P/B
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	18	HSS-XXX-3510	8	HOIST JB E-STOP P/B
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	21	HSS-XXX-3510	9	HOIST JB E-STOP P/B
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	22	HSS-XXX-3510	10	HOIST JB E-STOP P/B
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	29	HSS-XXX-3500	11	LIFT MOTOR ISOLATOR +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	35	HSS-XXX-3500	12	LIFT MOTOR ISOLATOR
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	40	HSS-XXX-3502	11	SLEW MOTOR ISOLATOR +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	45	HSS-XXX-3502	13	SLEW MOTOR ISOLATOR
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	72	YI-XXX-3001	14	POWER SUPPLY HEALTHY
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	93	ZS-XXX-3512/2	11	OVERTRAVEL SW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	94	ZS-XXX-3510A	11	LOAD/UNLOAD OVERTRAVEL SW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	97	XS-XXX-4701	11	MILL IN POSITION +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	98	XS-XXX-3521	11	PROCESS POSITION SLEW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	99	XS-XXX-3520	11	LOAD/UNLOAD POSITION SLEW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	100	ZS-XXX-3512/2	15	OVERTRAVEL SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	101	ZS-XXX-3510A	16	LOAD/UNLOAD OVERTRAVEL SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	104	XS-XXX-4701	17	MILL IN POSITION
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	105	XS-XXX-3521	18	PROCESS POSITION SLEW
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	106	XS-XXX-3520	19	LOAD/UNLOAD POSITION SLEW
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	78	YI-XXX-3001	20	POWER SUPPLY HEALTHY 0V
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	139		21	ENCODER SET SIGNAL
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	213	HSS-XXX-3510	22	HOIST JB E-STOP
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.1	E	EARTH	E	EARTH
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	7	TS-3501	1	ROTATE MOTOR THERMISTOR
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	8	TS-3501	2	ROTATE MOTOR THERMISTOR
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	19	HSS-XXX-8001	3	M/C EMERGENCY STOP P/B

G1951-Cable Layout

SIZE mm2	CABLE TYPE	CIRCUIT CLASS	SOURCE	DESTINATION	HARTING CONNECTOR REFERENCE	TERMINAL BLOCK	TERMINAL No	P&ID REF.	CORE NUMBER	DESCRIPTION
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	20	HSS-XXX-8001	4	M/C EMERGENCY STOP P/B
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	23	HSS-XXX-8001	5	M/C EMERGENCY STOP P/B
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	24	HSS-XXX-8001	6	M/C EMERGENCY STOP P/B
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	39	ST-XXX-2102	7	BLENDER ROTATIONAL SPEED SENSOR +24V DC
1	MULTICORE	CONTROLS<65V	B01. MAIN	B01 PED. BLE. JB	N/A	X3.1	44	ST-XXX-2102	8	BLENDER ROTATIONAL SPEED SENSOR
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	49	HSS-XXX-2000	7	ROTATE MOTOR ISOLATOR +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	54	HSS-XXX-2000	9	ROTATE MOTOR ISOLATOR
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	73	YI-XXX-9201	10	SAFE AREA VISUAL ALARM
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	74	HS-XXX-9201	11	SAFE AREA AUDIBLE ALARM
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	79	YI-XXX-9201	12	SAFE AREA VISUAL ALARM 0V
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	80	HS-XXX-9201	12	SAFE AREA AUDIBLE ALARM 0V
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	107	PS-XXX-9000	7	PEDESTAL JB MAIN AIR PRE SW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	108	PS-XXX-3300	7	CAGE CLAMPED PRESS SW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	109	ZS-XXX-3410	7	IBC IN POSITION SW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	110	XS-XXX-3400	7	CAGE DOWN POSITION SW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	161	XV-XXX-3000C	12	AIR CHECK ENABLE SOLENOID 0V
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	162	XV-XXX-3000A	12	CLAMP SOLENOID 0V
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	163	XV-XXX-3000B	12	UNCLAMP SOLENOID 0V
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	115	PS-XXX-9000	13	PEDESTAL JB MAIN AIR PRE SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	116	PS-XXX-3300	14	CAGE CLAMPED PRESS SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	117	ZS-XXX-3410	15	IBC IN POSITION SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	118	XS-XXX-3400	16	CAGE DOWN POSITION SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	153	XV-XXX-3000C	17	AIR CHECK ENABLE SOLENOID
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	154	XV-XXX-3000A	18	CLAMP SOLENOID
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	155	XV-XXX-3000B	19	UNCLAMP SOLENOID
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.1	E		E	EARTH
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.1	9	M-XXX-4000	1	MILL MOTOR THERMISTOR INPUT
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.1	10	M-XXX-4000	2	MILL MOTOR THERMISTOR INPUT
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.1	30	ZS-XXX-4000	3	MILL MOT. ROT. SPD. SENSOR +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.1	36	ZS-XXX-4000	4	MILL MOT. ROT. SPD. SENSOR
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.1	38	ZS-XXX-4000	5	MILL MOTOR ROTATIONAL SPEED SENSOR
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.1	42	HSS-XXX-4000	3	MILL MOTOR ISOLATOR +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.1	43	ZS-XXX-4000	6	MILL MOTOR ROTATIONAL SPEED SENSOR
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.1	47	HSS-XXX-4000	7	MILL MOTOR ISOLATOR
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.1	111	YS-XXX-4001/2	3	MILL SAFETY SW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.1	112	YS-XXX-4001/1	3	MILL DOCKING SW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.1	119	YS-XXX-4001/2	8	MILL SAFETY SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.1	120	YS-XXX-4001/1	9	MILL DOCKING SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.1	E		E	EARTH
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 MAIN CNT. PNL.	N/A	X3.1	11	HSS-XXX-8002	1	B01 PED. BLENDER OP E-STOP N/C
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 MAIN CNT. PNL.	N/A	X3.1	12	HSS-XXX-8002	2	B01 PED. BLENDER OP E-STOP N/C
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 MAIN CNT. PNL.	N/A	X3.1	13	HSS-XXX-8260	3	OP. PNL. FORTRESS KEY
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 MAIN CNT. PNL.	N/A	X3.1	14	HSS-XXX-8260	4	OP. PNL. FORTRESS KEY
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 MAIN CNT. PNL.	N/A	X3.1	27	PS-XXX-9010	5	AIR PRESSURE SWITCH MAIN PANEL +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 MAIN CNT. PNL.	N/A	X3.1	0V		6	0V
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 MAIN CNT. PNL.	N/A	X3.1	33	PS-XXX-9010	7	AIR PRESSURE SWITCH MAIN PANEL
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 MAIN CNT. PNL.	N/A	X3.1	205	HSS-XXX-8002	8	MAIN PANEL E-STOP N/O
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 MAIN CNT. PNL.	N/A	X3.1	206	HSS-XXX-8002	9	MAIN PANEL E-STOP N/O
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 MAIN CNT. PNL.	N/A	X3.1	E		E	EARTH
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	15	HSS-XXX-8000	1	OP. PNL. E-STOP PED. BLE.
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	16	HSS-XXX-8000	2	OP. PNL. E-STOP PED. BLE.
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	25	HSS-XXX-8260	3	OP. PNL. FORTRESS KEY
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	26	HSS-XXX-8260	4	OP. PNL. FORTRESS KEY
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	31	ST-XXX-2102	5	BLENDER ROT SPD SENSOR +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	37	ST-XXX-2102	6	BLENDER ROT SPD SENSOR
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	75	YI-XXX-9200	7	OP CONTROLS ON
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	81	YI-XXX-9200	8	OP CONTROLS ON 0V
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	83	XS-XXX-2200	5	BLENDER IBC UPRIGHT +24VDC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	84	XS-XXX-2201	5	BLENDER IBC INVERTED +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	85	HS-XXX-9200	5	OPERATOR PANEL E-STOP RESET +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	87	X3.2 17, X3.2 19	8	0V
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	89	XS-XXX-2200	9	BLENDER IBC UPRIGHT
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	90	XS-XXX-2201	10	BLENDER IBC INVERTED
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	91	HS-XXX-9200	11	OPERATOR PANEL E-STOP RESET
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	203	HS-XXX-9200	12	E-STOP RESET
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	204	HS-XXX-9200	13	E-STOP RESET
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	207	HSS-XXX-8260	14	FORTRESS KEY OPERATED

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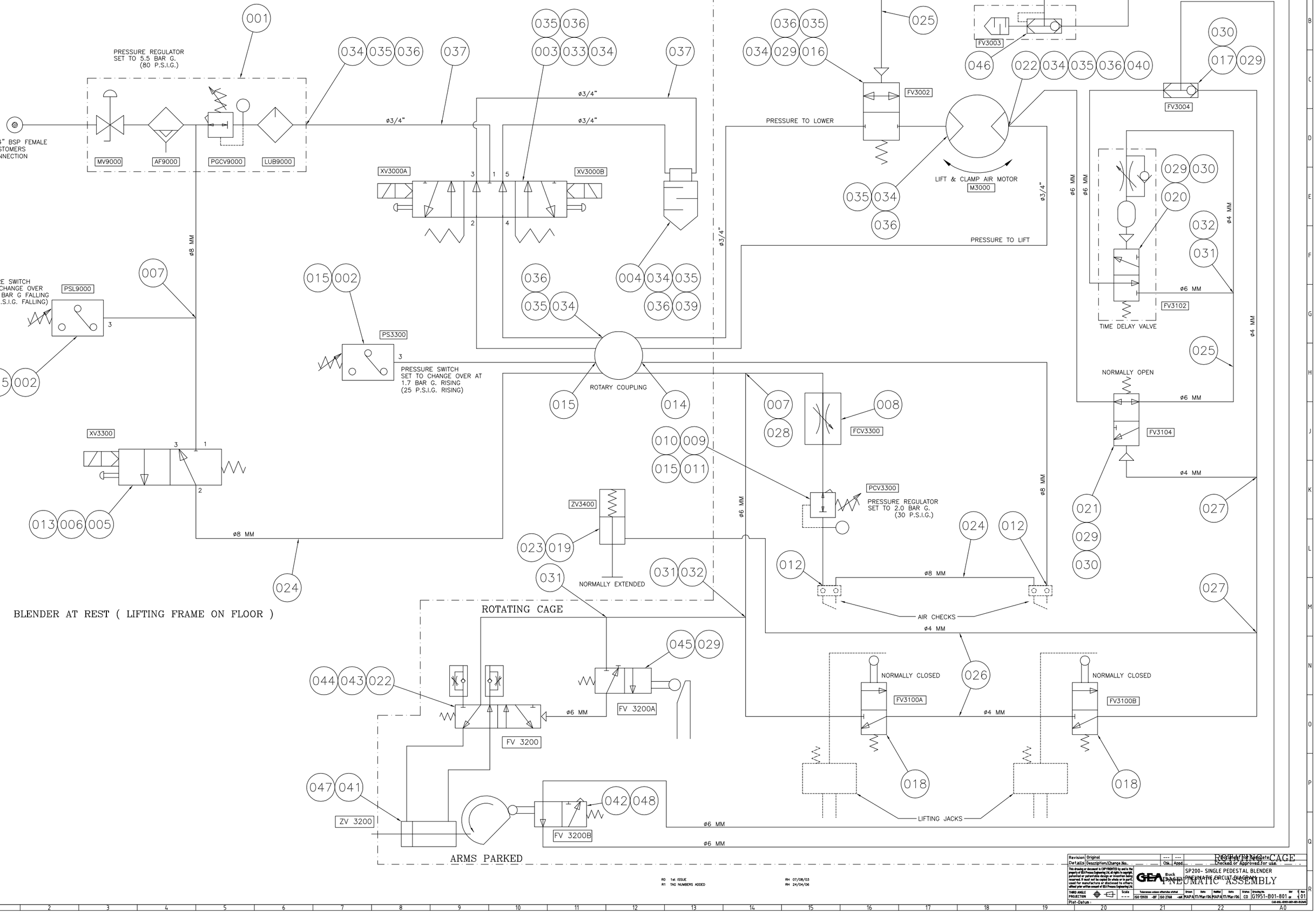
SIZE mm2	CABLE TYPE	CIRCUIT CLASS	SOURCE	DESTINATION	HARTING CONNECTOR REFERENCE	TERMINAL BLOCK	TERMINAL No	P&ID REF.	CORE NUMBER	DESCRIPTION
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	208	HSS-XXX-8000	5	OPERATOR PANEL E-STOP OPERATED +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	209	HSS-XXX-8001	5	MACHINE MOUNTED E-STOP OPERATED +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	210	HSS-XXX-8260	15	FORTRESS KEY OPERATED
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	211	HSS-XXX-8000	16	OPERATOR PANEL E-STOP OPERATED
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	212	HSS-XXX-8001	17	MACHINE MOUNTED E-STOP OPERATED
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.1	E		E	EARTH
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	1	HSS-XXX-8000		OP. PNL. E-STOP PED. BLE.
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	2	HSS-XXX-8000		OP. PNL. E-STOP PED. BLE.
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	3	HSS-XXX-8000		OP. PNL. E-STOP PED. BLE.
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	4	HSS-XXX-8000		OP. PNL. E-STOP PED. BLE.
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	5	HSS-XXX-8260		OP. PNL. FORTRESS KEY
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	6	HSS-XXX-8260		OP. PNL. FORTRESS KEY
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	7	HSS-XXX-8260		OP. PNL. FORTRESS KEY
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	8	HSS-XXX-8260		OP. PNL. FORTRESS KEY
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	9	ST-XXX-2102		BLENDER ROTATIONAL SPEED SENSOR +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	10	ST-XXX-2102		BLENDER ROTATIONAL SPEED SENSOR 0V
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	11	ST-XXX-2102		BLENDER ROTATIONAL SPEED SENSOR
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	12	YI-XXX-9200		OP CONTROLS ON
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	13	YI-XXX-9200		OP CONTROLS ON 0V
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	14	XS-XXX-2200		BLENDER IBC UPRIGHT +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	15	XS-XXX-2201		BLENDER IBC INVERTED +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	16	HS-XXX-9200		OPERATOR PANEL E-STOP RESET +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	17	XS-XXX-2200		BLENDER IBC UPRIGHT OV
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	18	XS-XXX-2200		BLENDER IBC UPRIGHT
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	19	XS-XXX-2201		BLENDER IBC INVERTED OV
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	20	XS-XXX-2201		BLENDER IBC INVERTED
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLENDER OP	N/A	X3.2	21	HS-XXX-9200		OPERATOR PANEL E-STOP RESET
1	MULTICORE									
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	1	ZS-3512/2		OVERTRAVEL SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	2	ZS-3510/B		LOAD/UNLOAD OVERTRAVEL SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	3	ZS-3510/B		LOAD/UNLOAD OVERTRAVEL SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	4	ZS-3512/2		OVERTRAVEL SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	5	HSS-XXX-3510		HOIST JB E-STOP P/B
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	6	HSS-XXX-3510		HOIST JB E-STOP P/B
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	7	HSS-XXX-3510		HOIST JB E-STOP P/B
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	8	HSS-XXX-3510		HOIST JB E-STOP P/B
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	9	HSS-XXX-3500		LIFT MOTOR ISOLATOR
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	10	HSS-XXX-3500		LIFT MOTOR ISOLATOR OV
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	11	YI-XXX-3001		POWER SUPPLY HEALTHY
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	12	YI-XXX-3001		POWER SUPPLY HEALTHY 0V
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	13	ZS-XXX-3512/2		OVERTRAVEL SW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	14	ZS-XXX-3510A		LOAD/UNLOAD OVERTRAVEL SW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	15	XS-XXX-3521		PROCESS POSITION SLEW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	16	XS-XXX-3520		LOAD/UNLOAD POSITION SLEW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	17	ZS-XXX-3512/2		OVERTRAVEL SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	18	ZS-XXX-3510A		LOAD/UNLOAD OVERTRAVEL SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	19	ZS-XXX-3521		PROCESS POSITION SLEW OV
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	20	XS-XXX-3521		PROCESS POSITION SLEW
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	21	XS-XXX-3520		LOAD/UNLOAD POSITION SLEW OV
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.3	22	XS-XXX-3520		LOAD/UNLOAD POSITION SLEW
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.4	1	PS-XXX-9000		PEDESTAL JB MAIN AIR PRE SW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.4	2	PS-XXX-3300		CAGE CLAMPED PRESS SW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.4	3	ZS-XXX-3410		IBC IN POSITION SW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.4	4	XS-XXX-3400		CAGE DOWN POSITION SW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.4	5	PS-XXX-9000		PEDESTAL JB MAIN AIR PRE SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.4	6	PS-XXX-3300		CAGE CLAMPED PRESS SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.4	7	ZS-XXX-3410		IBC IN POSITION SW OV
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.4	8	ZS-XXX-3410		IBC IN POSITION SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.4	9	XS-XXX-3400		CAGE DOWN POSITION SW OV
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.4	10	XS-XXX-3400		CAGE DOWN POSITION SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.5	1	ZS-XXX-4000		MILL MOTOR ROTATIONAL SPEED SENSOR +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.5	2	ZS-XXX-4000		MILL MOTOR ROTATIONAL SPEED SENSOR OV
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.5	3	ZS-XXX-4000		MILL MOTOR ROTATIONAL SPEED SENSOR

G1951-Cable Layout

SIZE mm2	CABLE TYPE	CIRCUIT CLASS	SOURCE	DESTINATION	HARTING CONNECTOR REFERENCE	TERMINAL BLOCK	TERMINAL No	P&ID REF.	CORE NUMBER	DESCRIPTION
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.5	4	XS-XXX-4701		MILL IN POSITION SW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.5	5	XS-XXX-4701		MILL IN POSITION SW 0V
1	MULTICORE	CONTROLS<65V	B01 MAIN	D01 HOIST MOUNT JB	N/A	X3.5	6	XS-XXX-4701		MILL IN POSITION SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.5	7	YS-XXX-4001/2		MILL SAFETY SW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.5	8	YS-XXX-4001/1		MILL DOCKING SW +24V DC
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.5	9	YS-XXX-4001/2		MILL SAFETY SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	M01 QUADRO MILL	N/A	X3.5	10	YS-XXX-4001/1		MILL DOCKING SW
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.6	1	HSS-XXX-8001		M/C EMERGENCY STOP P/B
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.6	2	HSS-XXX-8001		M/C EMERGENCY STOP P/B
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.6	3	HSS-XXX-8001		M/C EMERGENCY STOP P/B
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.6	4	HSS-XXX-8001		M/C EMERGENCY STOP P/B
	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.6	5	XV-XXX-3000C		AIR CHECK ENABLE SOLENOID +24V DC
	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.6	6	XV-XXX-3000A		CLAMP SOLENOID +24V DC
	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.6	7	XV-XXX-3000B		UNCLAMP SOLENOID +24V DC
	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.6	8	XV-XXX-3000C		AIR CHECK ENABLE SOLENOID
	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.6	9	XV-XXX-3000A		CLAMP SOLENOID
	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.6	10	XV-XXX-3000B		UNCLAMP SOLENOID
		CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.6	11	HSS-XXX-8260		FORTRESS KEY OPERATED +24V DC
		CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.6	12	HSS-XXX-8000		OPERATOR PANEL E-STOP OPERATED +24V DC
		CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.6	13	HSS-XXX-8001		MACHINE MOUNTED E-STOP OPERATED +24V DC
		CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.6	14	HSS-XXX-8260		FORTRESS KEY OPERATED
		CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.6	15	HSS-XXX-8000		OPERATOR PANEL E-STOP OPERATED
		CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.6	16	HSS-XXX-8001		MACHINE MOUNTED E-STOP OPERATED
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.7	1	YI-XXX-9201		SAFE AREA VISUAL ALARM
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.7	3	YI-XXX-9201		SAFE AREA VISUAL ALARM
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.7	2	HS-XXX-9201		SAFE AREA AUDIBLE ALARM
1	MULTICORE	CONTROLS<65V	B01 MAIN	B01 PED. BLE. JB	N/A	X3.7	4	HS-XXX-9201		SAFE AREA AUDIBLE ALARM



RO 1st. ISSUE
R1 TAG NUMBERS ADDED

RH 07/08/03
RH 24/04/06

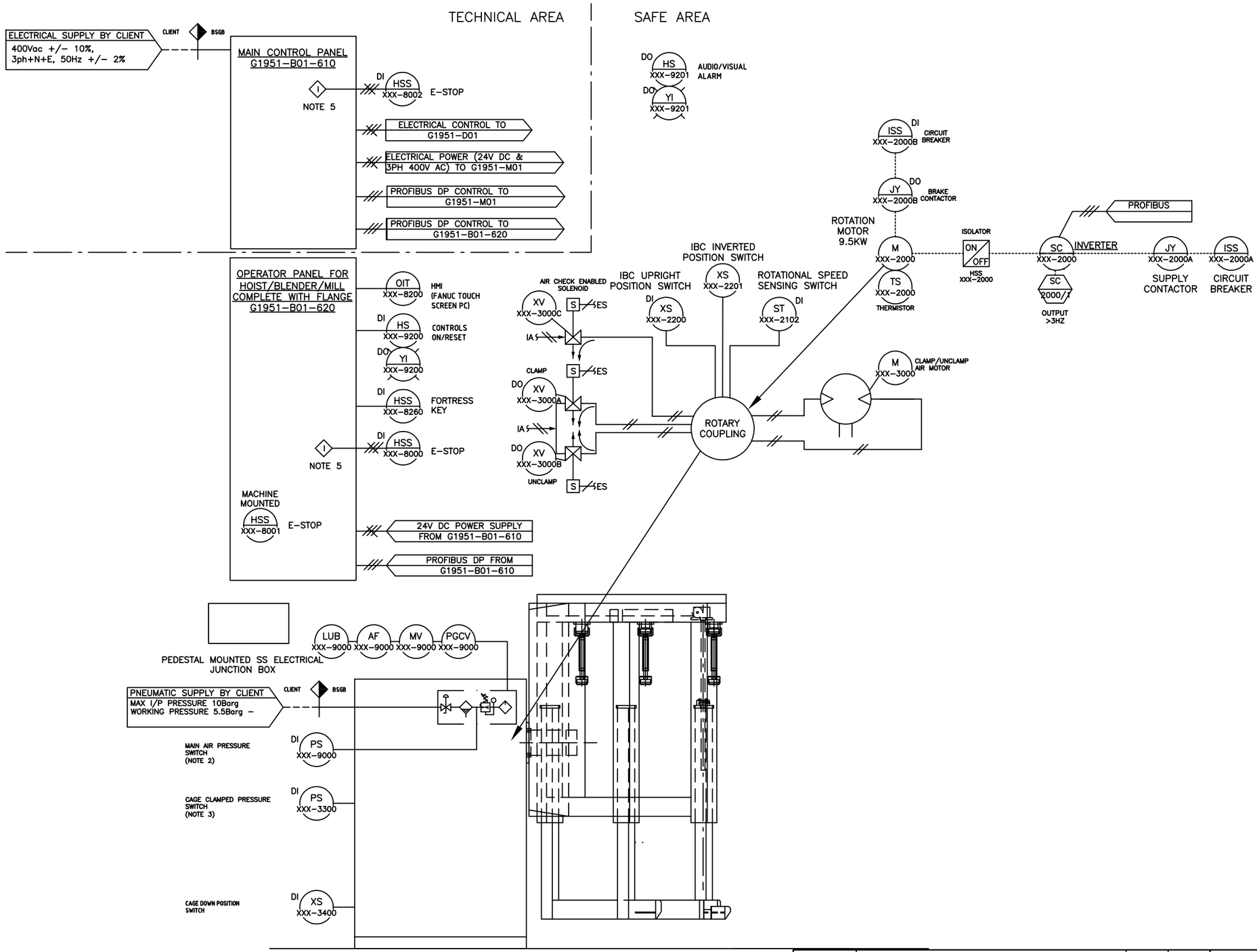
Revision	Original	---	---	Not to be released,	
Details	Description/Change No.	Chk	Appd	Checked or Approved for use.	

GEA Buck

SP200- SINGLE PEDESTAL BLENDER
PNEUMATIC CIRCUIT DIAGRAM

THIRD ANGLE PROJECTION	Scale ---	Tolerances unless otherwise stated ISO 13920 -BF ISO 2768 -mK	Drawn MAP	Date 11/Mar/06	Verified MAP	Date 11/Mar/06	Status CO	Drawing No. G1951-B01-801	Iss 01

Plot-Datum



NOTES

1. REFER TO PNEUMATIC CIRCUIT DIAGRAM G1951−B01−801.
2. MAIN AIR PRESSURE SWITCH SET TO CHANGE OVER AT 3.75Barg FALLING
3. CAGE CLAMPED PRESSURE SWITCH SET TO CHANGE OVER AT 1.4BarG RISING
4. NOT USED
5. HARD WIRED INTERLOCK
6. REFER TO CONNECTION DIAGRAM G1951−M01−630 FOR SERVICES AND TERMINATION DETAILS.

NB: CONTROL SYSTEMS SUPPLIER TO PROVIDE TERMINATION DIAGRAM, MACHINE AND SITE CABLE SCHEDULE, ELECTRICAL TERMINATION AND HOOK UP DIAGRAMS

7. MMM = MACHINE (ID) NUMBER
   **(PS) = INSTRUMENT PREFIX
   XXX = NOVARTIS TAG NUMBERS
   ZZZ(5100) = SEQUENTIAL LOOP TAG NUMBER

FOR ALL P&IDS WITHIN A SYSTEM.

8. CONTROL OPERATIONS ARE INITATED VIA THE MAIN CONTROL SYSTEM (SUPPLIED BY GEA BUCK SYSTEMS).
9. SOLENOID VALVES, REMOTE I/O, TERMINALS AND CONNECTORS ARE CONTAINED WITHIN THE CONTROL PANEL.
   1. ROTATION MOTOR WILL NOT START OR CONTINUE TO RUN AT ANY SPEED OR IN EITHER DIRECTION UNLESS IBC IS CONFIRMED AS CLAMPED.
   2. CLAMP/UNCLAMP AIR MOTOR WILL NOT RUN IN EITHER DIRECTION UNLESS IBC IS CONFIRMED AS UPRIGHT.

MOTOR DETAILS					
TAG	kW	AMPS	RPM	GEARBOX O/P RPM	COMMENTS
M2000	9.5	20.5A	1410	18.5	TBC
–	–	–	–	–	–

INSTRUMENT LINE SYMBOLS

INSTRUMENT TAG	DESCRIPTION
? ????	INSTRUMENTS WHICH ARE FIELD MOUNTED
? ????	INSTRUMENTS WHICH ARE MOUNTED ON A PANEL
? ????	INSTRUMENTS WHICH ARE MOUNTED WITHIN A PANEL

INSTRUMENT LINE SYMBOLS

INSTRUMENT LINE	DESCRIPTION
	PNEUMATIC SIGNAL
	ELECTRICAL SIGNAL
	ELECTRICAL BINARY SIGNAL

MACHINE MATRIX (NOTE 7)					
MACHINE NUMBER	SYSTEM TAG No.	AREA	NOVARTIS TAG No.	ROOM No	COMMENTS
G1951−B01	001	BLENDING	202.M.0311	306B	

Revision Details				
	UPDATED TO CUSTOMER COMMENTS	---	---	Approval Withdrawn,
	Description/Change No:	Chk	Appd	Old revision of document

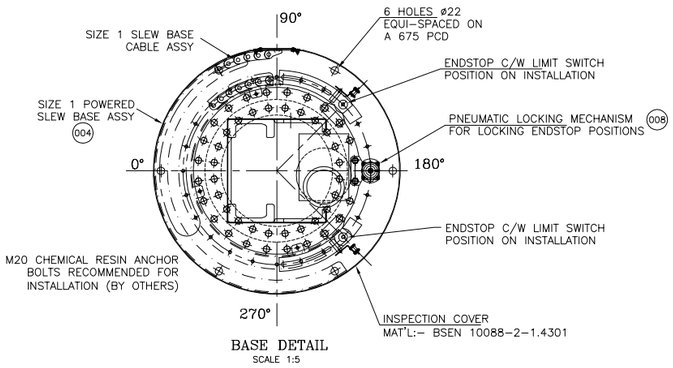
GEA Buck Systems

SP2000 SINGLE PEDESTAL BLENDER P&ID

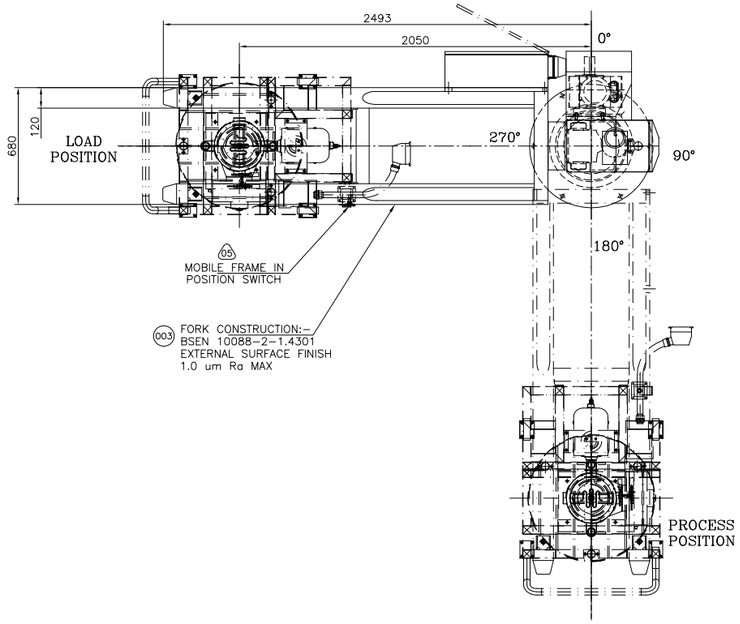
THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No.	Sht	Rev
	---	ISO 13920 −BF	ISO 2768 −mK	MAPA	4/Dec/06	MAPA	4/Dec/06	BK	G1951−B01−901	1 of 1	05

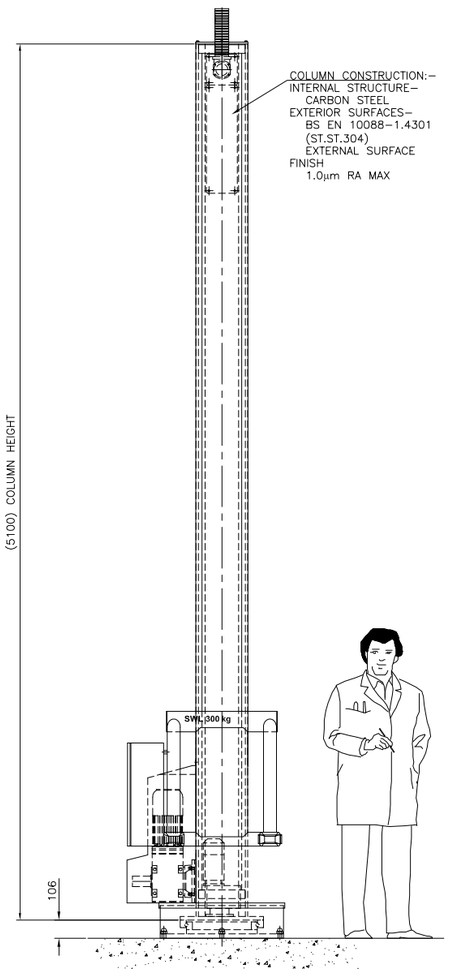
Plot−Datum :

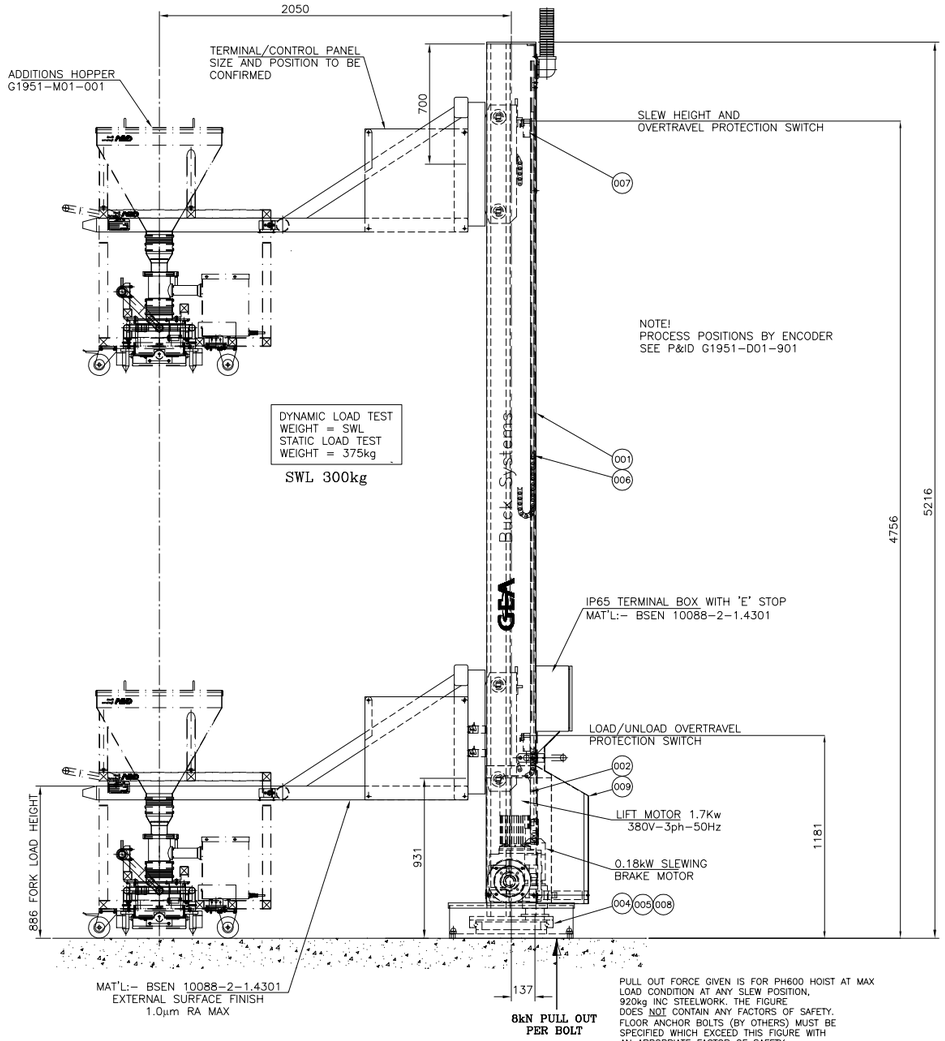
CAD−BSL−G1951−B01−901−05.DWG



BASE DETAIL
SCALE 1:5

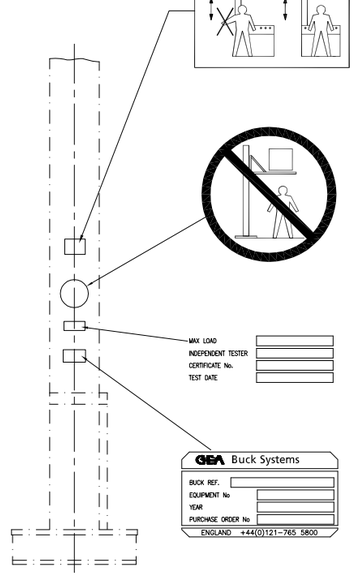






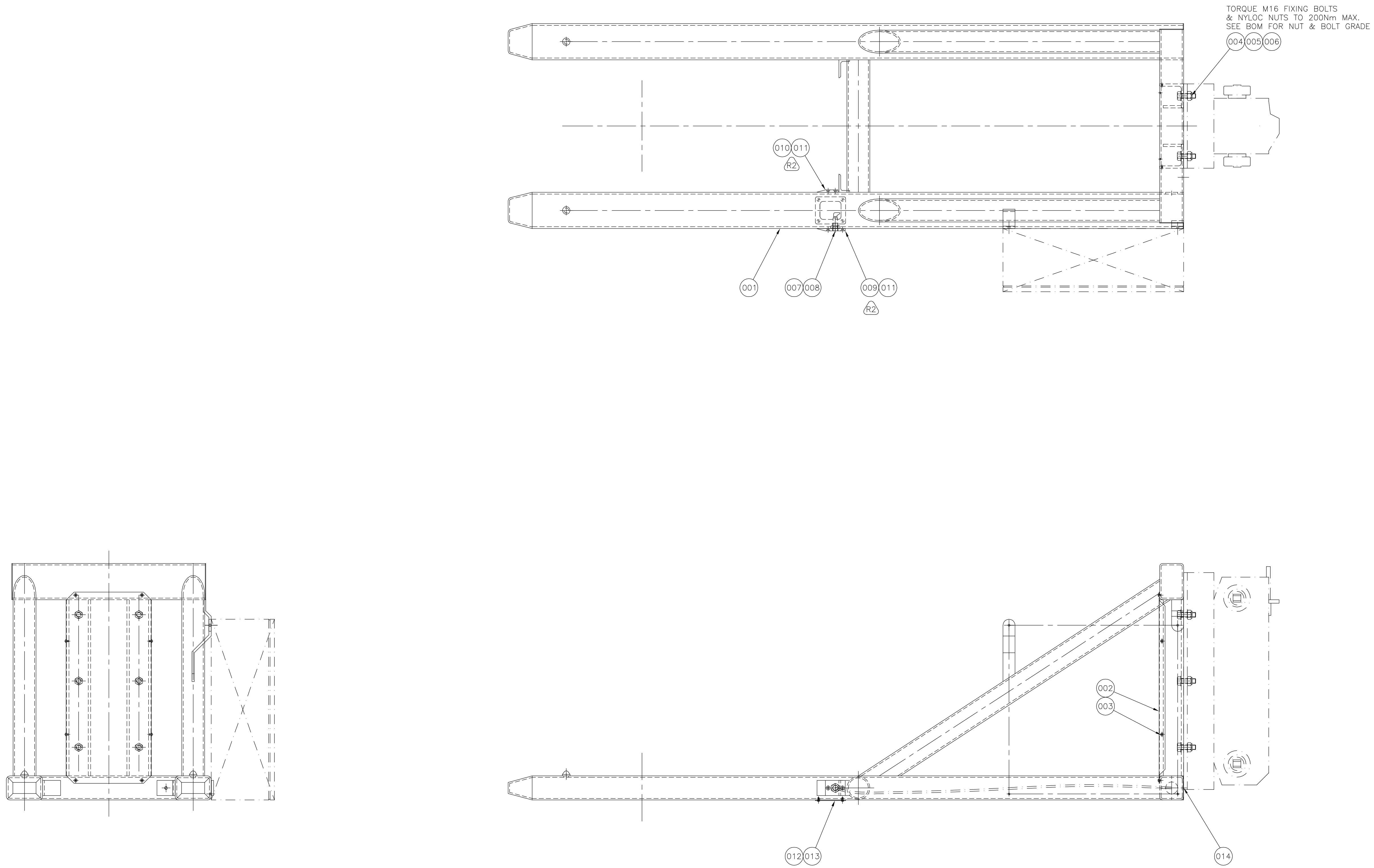
SWL 300 kg

NOTE:-
THE 'SAFE WORKING LOAD' ETCHED LABEL MUST BE SHOWN ON A VISIBLE PART OF THE LIFT ATTACHMENT WHICH IS NOT REMOVABLE ie. COVER OR GUARD.



ETCHED LABEL DETAILS

Revision	AMMENDED TO AS BUILT NOTES		---	---	Drawing not complete or approved for manufacture						
Details	Description/Change No		Chk	Appd							
This drawing or document is COPYRIGHTED by and is the property of GEA Process Engineering Ltd. all rights to copyright, patented or patentable design or invention hereby reserved. It must not be copied in whole or in part, used for manufacture or disclosed to others without prior written consent of GEA Process Engineering Ltd.	GEA Buck Systems				PH600 POST HOIST						
THIRD ANGLE PROJECTION	Scale 1:12.5	Tolerances unless otherwise stated ISO 13920 -BF ISO 2768 -mK	Drawn RMBA	Date 4/Jan/07	Modified RMBA	Date 4/Jan/07	Status RE	Drawing No. G1951-D01-001		SW sf	Rev 06
Plot-Datum :								CAD-001-G1951-D01-001.DWG			



02	SENSOR REPOSITIONED. GUIDES ADDED	RMBA	18/Dec/06
Rev No.	Description of Revision	Revised By	Date

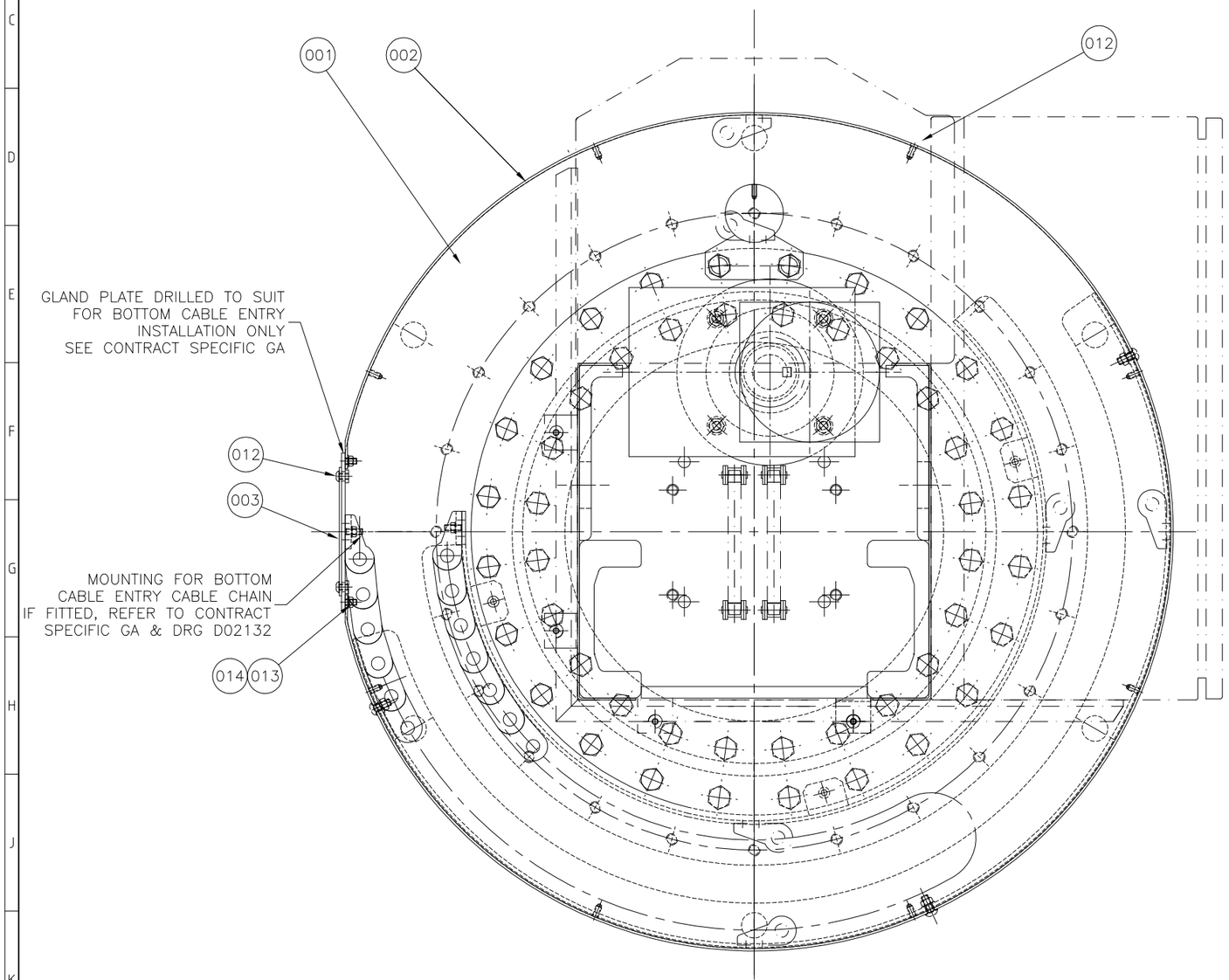
GEA Buck Systems

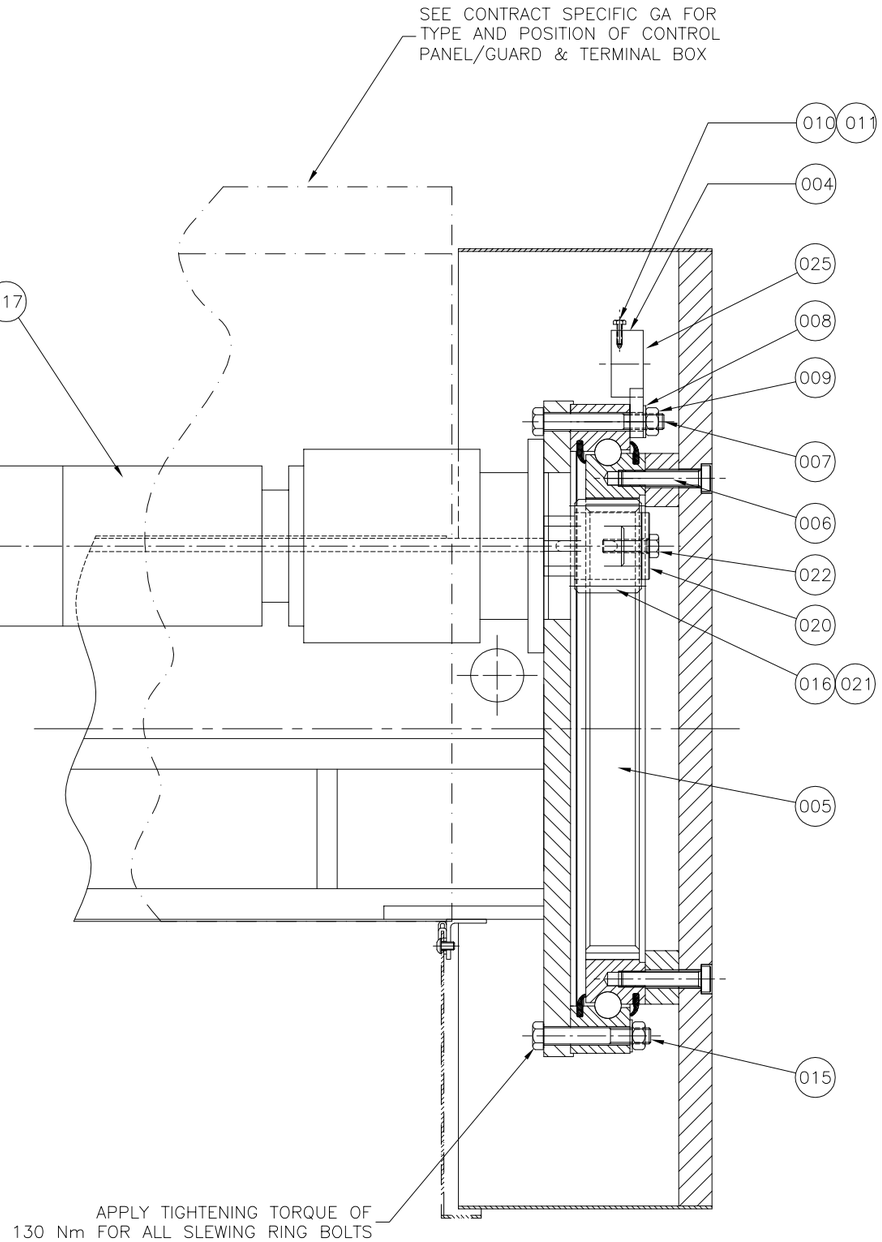
TOLERANCES UNLESS OTHERWISE STATED
MACHINING: 0 = ±0.50; 0.0 = ±0.10; ANG'DIM'S = ±0.50°
FABRICATION: 0 TO 500 = ±1.0; 500 TO 1M = ±2.0; 1M TO 2M = ±3.0
ALL OTHER GEOMETRY TO COMPLY TO THE TOLERANCE STANDARDS SPECIFIED BELOW
ISO 13920 -BF | ISO 2768 -mK

LOADING FORK ASSEMBLY

THIRD ANGLE PROJECTION	Scale 1 : 5	Drawn MIXD	Date 10/07/06	Drawing No. G1951–D01–002	Sht 1 Of 1

CAD-BSL-G1951-D01-002-02.DWG





01	Original		SWI	31/May/06
Rev No.	Description of Revision		Revised By	Date

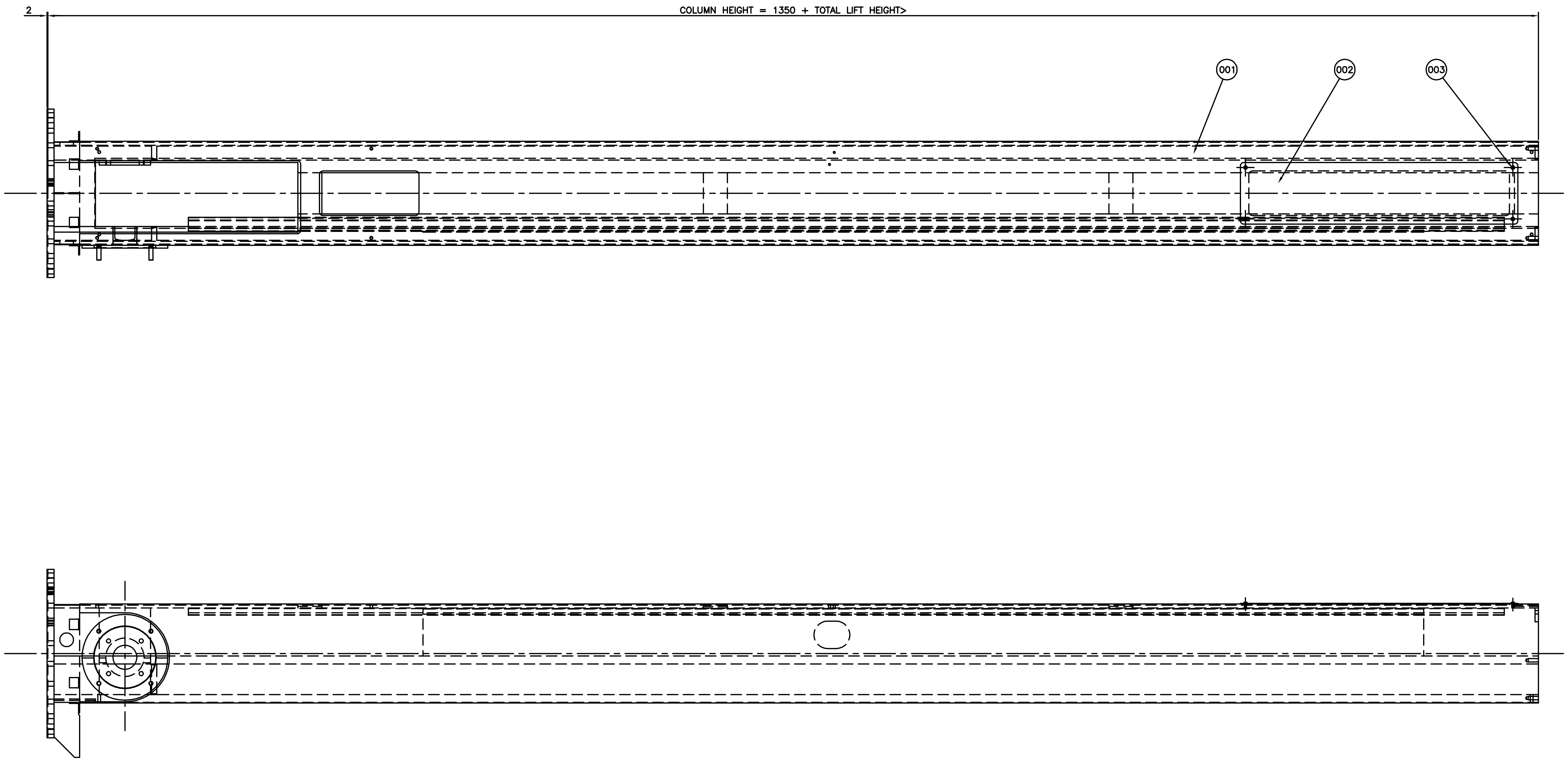
GEA Buck Systems

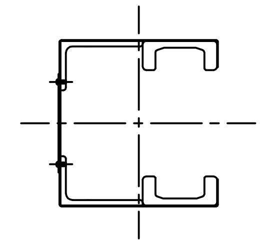
TOLERANCES UNLESS OTHERWISE STATED
MACHINING: X = ±0.05, .X = ±0.1, .XX = ±0.02, ANGULAR = ±0.58°
FABRICATION: UP TO 1M = ±1.0, 1M TO 2M = ±2.0, 2M TO 3M = ±3.0
ALL OTHER GEOMETRY TO CONFORM TO THE TOLERANCE STANDARDS SPECIFIED BELOW
ISO 13920 -BF ISO 2768 -mK

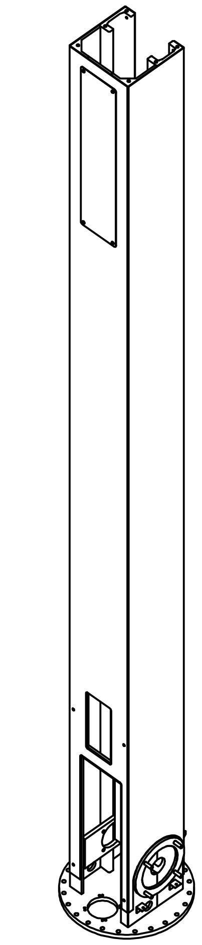
PH600
POWERED SLEW BASE ASSY

THIRD ANGLE PROJECTION	Scale 1:2.5	Drawn SWI	Date 31/05/06	Drawing No. 1019581	Sht 1 of 1

BK-ASSY-1019581-01.DWG







ISOMETRIC VIEW

MINIMUM COLUMN TOTAL LIFT = 1000mm
DRAWING SHOWS 3m TOTAL LIFT <u>AS EXAMPLE ONLY!</u>

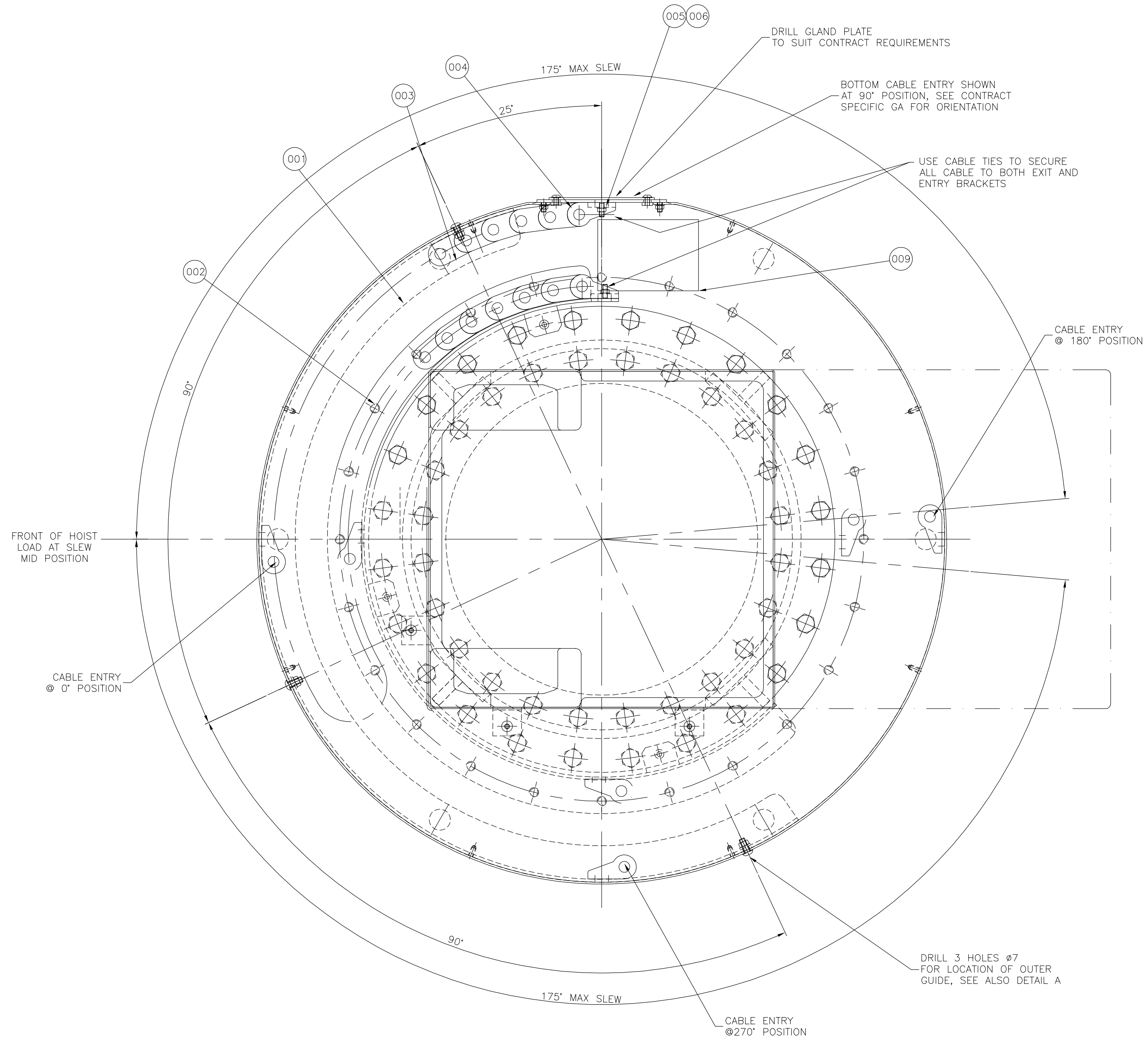
REFER TO CONTRACT SPECIFIC
GA FOR LIFT & COLUMN HEIGHTS

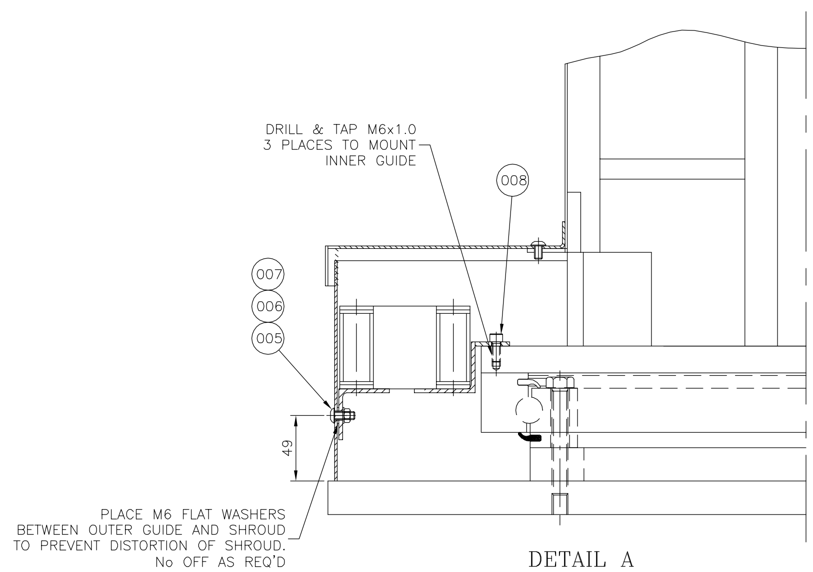
Rev No.	Description of Revision	Revised By	Date
02	BALLOON No CORRECTED	JSP	

GEA Buck Systems

PH600
SLEWING COLUMN ASSY
BOTTOM LIFT

Drawing No. 1019510





DETAIL A

Rev No.	Description of Revision	Revised By	Date
02	CABLE CHAIN SLEW LIMIT LABEL ADDED	RNE	20/Dec/07

GEA Buck Systems

TOLERANCES UNLESS OTHERWISE STATED
MACHINING: 0 = ±0.50, 0.0 = ±0.10, ANG'DIM'S = ±0.50°
FABRICATION: 0 TO 500 = ±1.0, 500 TO 1M = ±2.0, 1M TO 2M = ±3.0
ALL OTHER GEOMETRY TO COMPLY TO THE TOLERANCE STANDARDS SPECIFIED BELOW
ISO 13920 -BF | ISO 2768 -mK

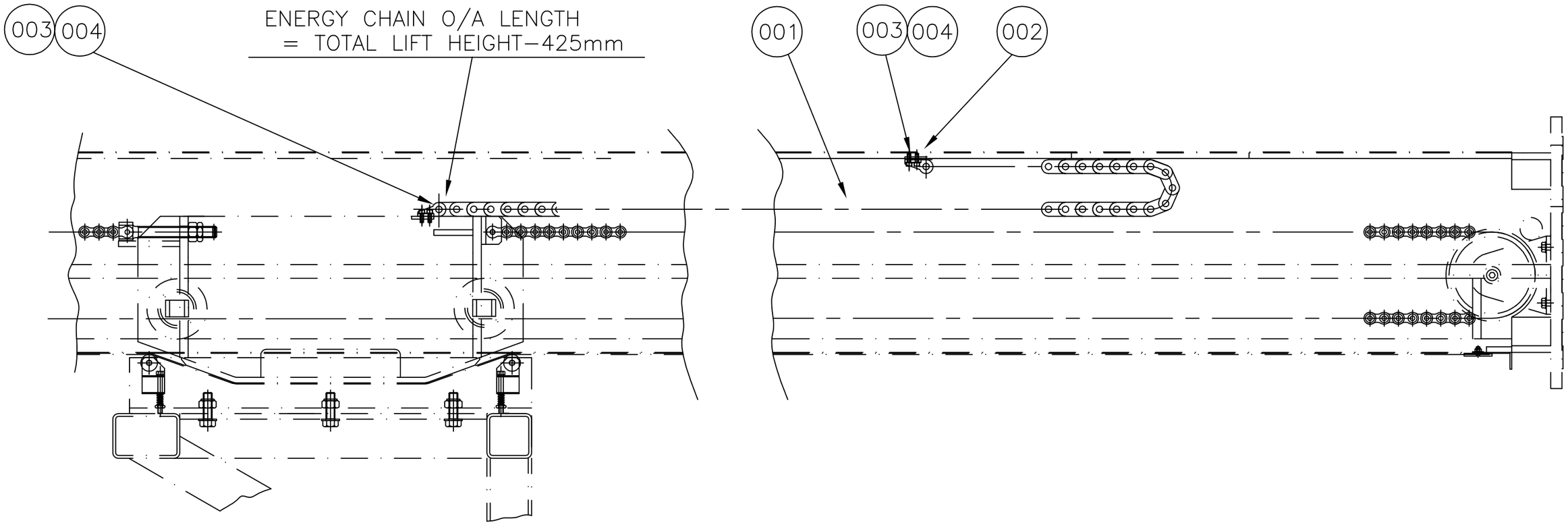
THIRD ANGLE PROJECTION | Scale 1:2

PH600 & PH1000 & PH1500 SLEW BASE BOTTOM CABLE ENTRY ASSY

Drawn	Date	Drawing No.	Sht	Of
SWI	26/05/06	1019464	1	1

BK-ASSY-1019464-02.DWG

SEE ALSO RELEVANT LIFT ASSEMBLY & CONTRACT SPECIFIC GA



01	Original	SWI	6/Jun/06
Rev No.	Description of Revision	Revised By	Date

GEA Buck Systems

TOLERANCES UNLESS OTHERWISE STATED

MACHINING	FABRICATION
0 = ±0.50	0 TO 500 = ±1.0
0.0 = ±0.10	500 TO 1M = ±2.0
ANG'DIM'S = ±0.50°	1M TO 2M = ±3.0

ALL OTHER GEOMETRY TO COMPLY TO THE TOLERANCE STANDARDS SPECIFIED BELOW

ISO 13920 -BF | ISO 2768 -mK

THIRD ANGLE PROJECTION

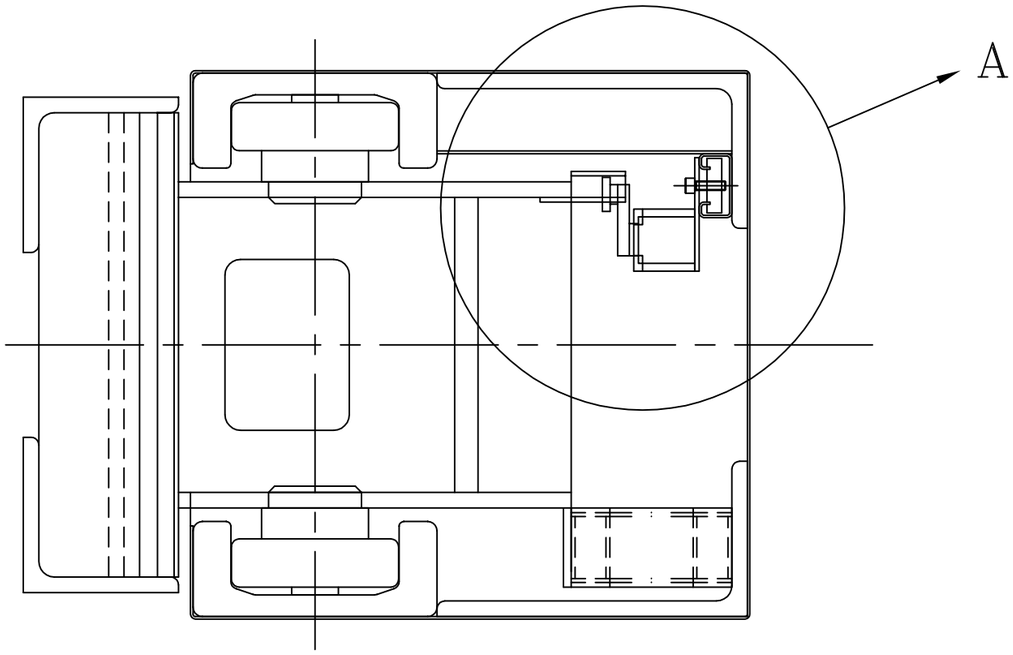
Scale 1:7.5

PH600 & PH1000
PH1500 & PH2000
CARRIAGE CABLE CONNECTION

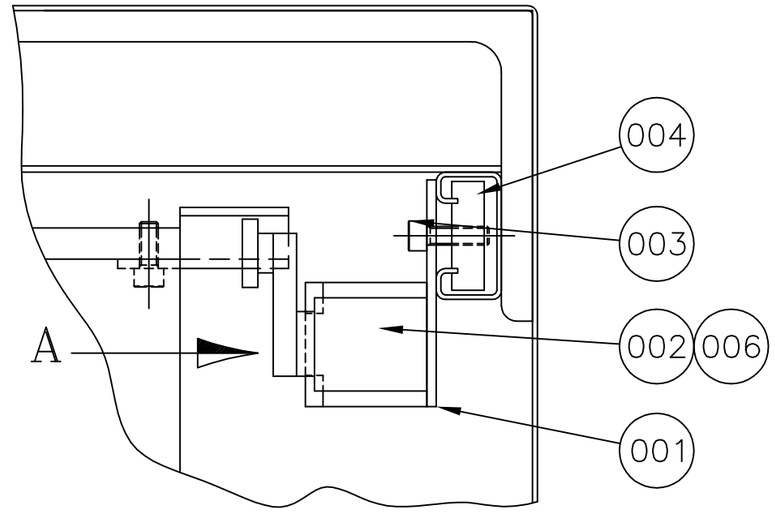
Drawn	Date	Drawing No.	Sht / Of
SWI	06/06/06	1019858	1 / 1

BK-FAB-1019858-01.DWG

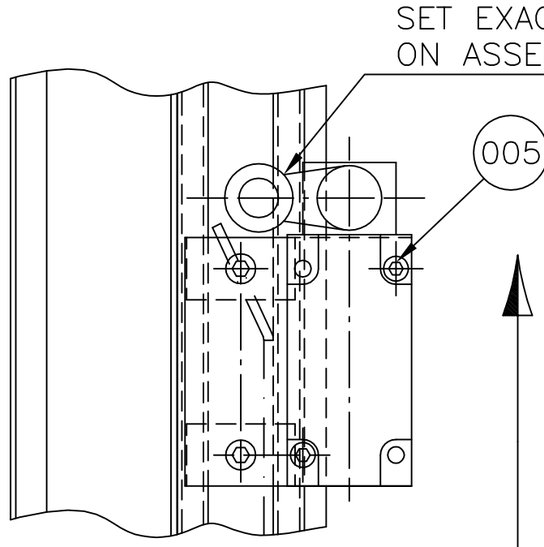
A3



LOCATION OF LIFT LIMIT SWITCH ASSEMBLY
ASSEMBLY COMMON TO ALL COLUMN SIZES
SIZE 2 HOIST COLUMN SHOWN (PLAN)



DETAIL A



DETAIL ON ARROW B

SWITCH POSITION MAY BE ADJUSTED
UP AND DOWN LENGTH OF PRESSED CHANNEL
SEE CONTRACT SPECIFIC GA FOR No OFF & POS'N

THIS DRAWING SUPER SEEDS D99108

Revision Details	Original	STDS Chk	STDS Appd	Document Complete and Approved for use
	Description/Change No:			

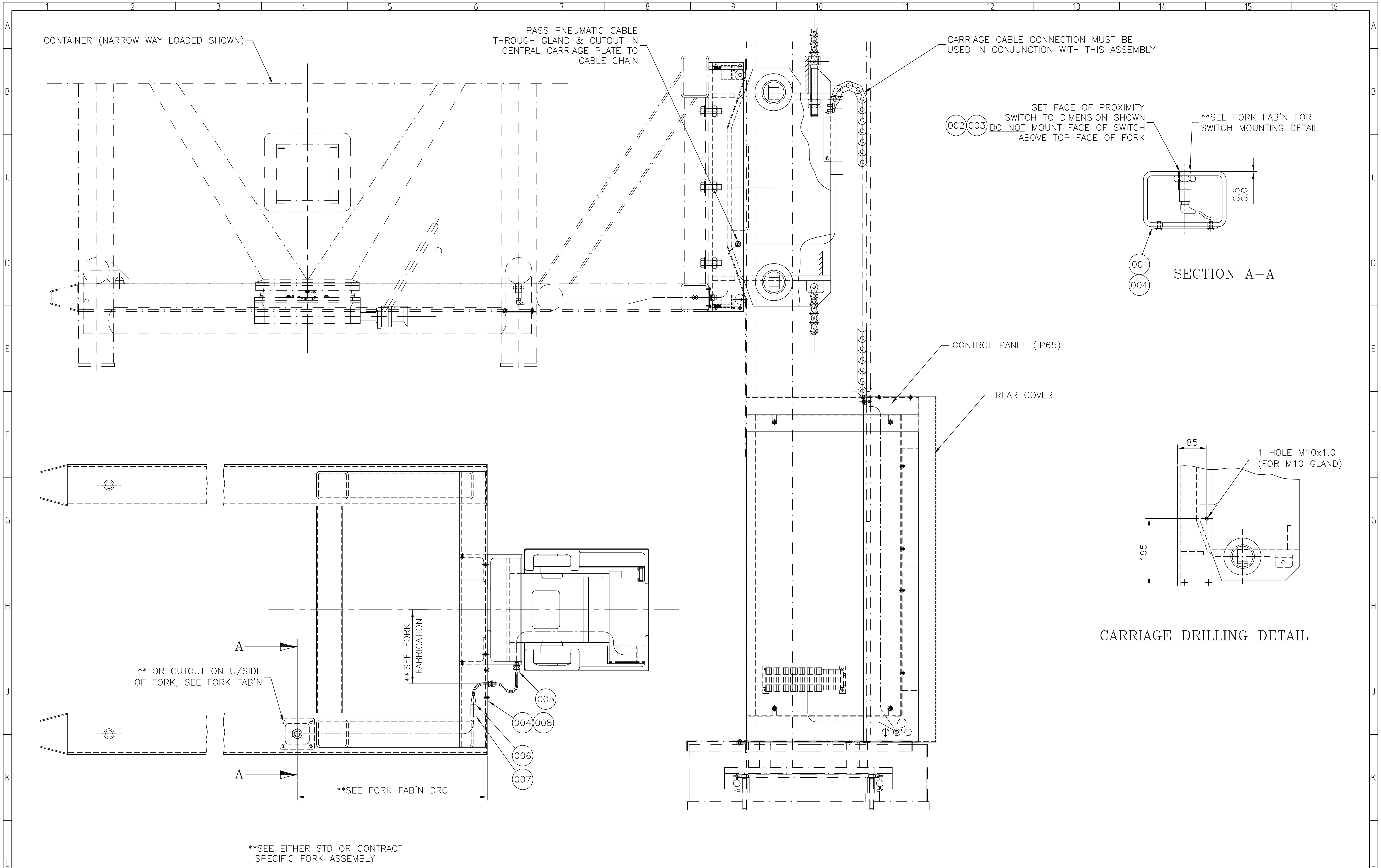
GEA Buck Systems

POST HOIST
STD LIFT SWITCH ASSY

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated	Drawn	Date	Modified	Date	Status	Drawing No.	Sht	Rev
	1:1	ISO 13920 -BF ISO 2768 -mK	CKP	20/Oct/05	CKP	20/Oct/05	DC	1017187	1 of 1	00

Plot-Datum :

CAD-BSL-1017187-00.DWG


CONTAINER (NARROW WAY LOADED SHOWN)
PASS PNEUMATIC CABLE THROUGH GLAND & CUTOUT IN CENTRAL CARRIAGE PLATE TO CABLE CHAIN
CARRIAGE CABLE CONNECTION MUST BE USED IN CONJUNCTION WITH THIS ASSEMBLY
SET FACE OF PROXIMITY SWITCH TO DIMENSION SHOWN DO NOT MOUNT FACE OF SWITCH ABOVE TOP FACE OF FORK
002
003
**SEE FORK FAB'N FOR SWITCH MOUNTING DETAIL
0.5
0.0
001
004
SECTION A–A
CONTROL PANEL (IP65)
REAR COVER
85
1 HOLE M10x1.0 (FOR M10 GLAND)
195
CARRIAGE DRILLING DETAIL
** SEE FORK FABRICATION
A
A
**FOR CUTOUT ON U/SIDE OF FORK, SEE FORK FAB'N
005
004
008
006
007
**SEE FORK FAB'N DRG
**SEE EITHER STD OR CONTRACT SPECIFIC FORK ASSEMBLY

01	Original	SWI	7/Jun/06
Rev No.	Description of Revision	Revised By	Date

GEA Buck Systems

TOLERANCES UNLESS OTHERWISE STATED
MACHINING: 0 = ±0.50; 0.0 = ±0.10; ANG'DIM'S = ±0.50°
FABRICATION: 0 TO 500 = ±1.0; 500 TO 1M = ±2.0; 1M TO 2M = ±3.0
ALL OTHER GEOMETRY TO COMPLY TO THE TOLERANCE STANDARDS SPECIFIED BELOW
ISO 13920 -BF | ISO 2768 -mK

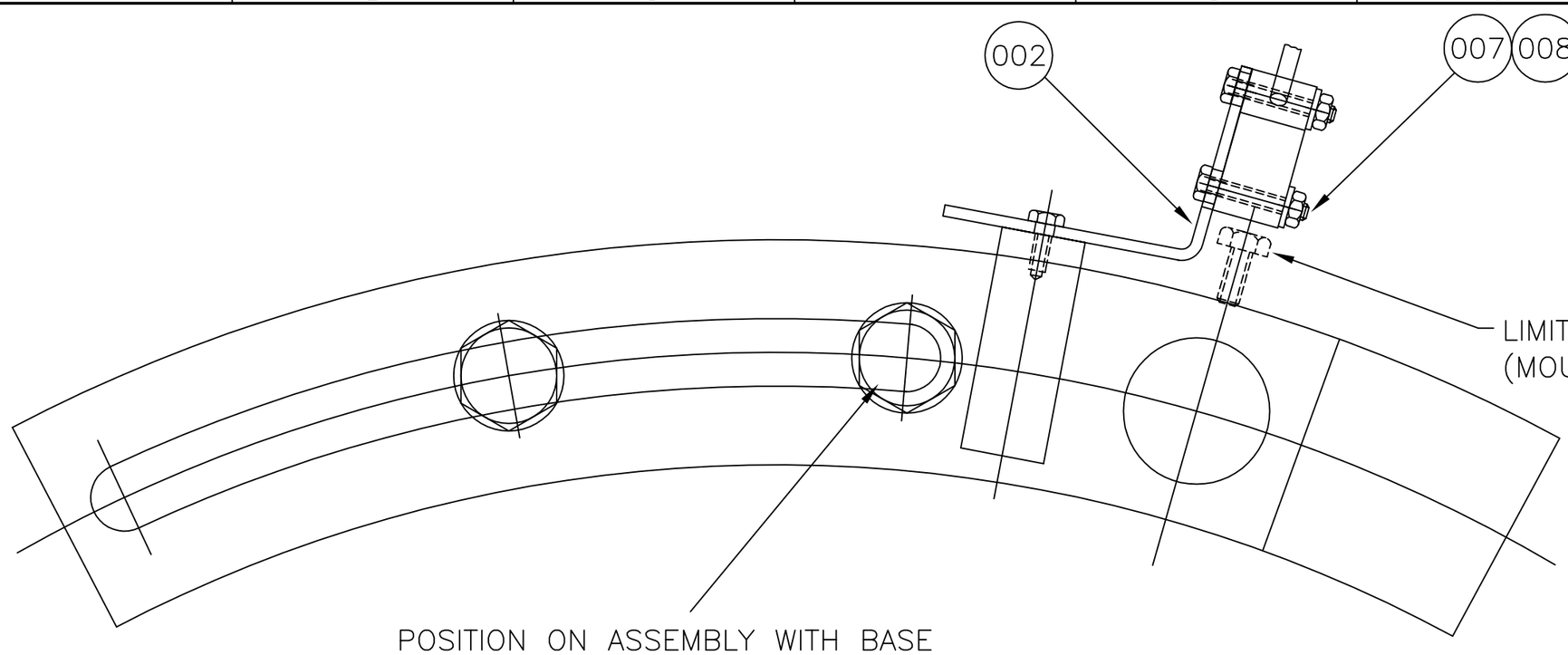
THIRD ANGLE PROJECTION | Scale 1:5

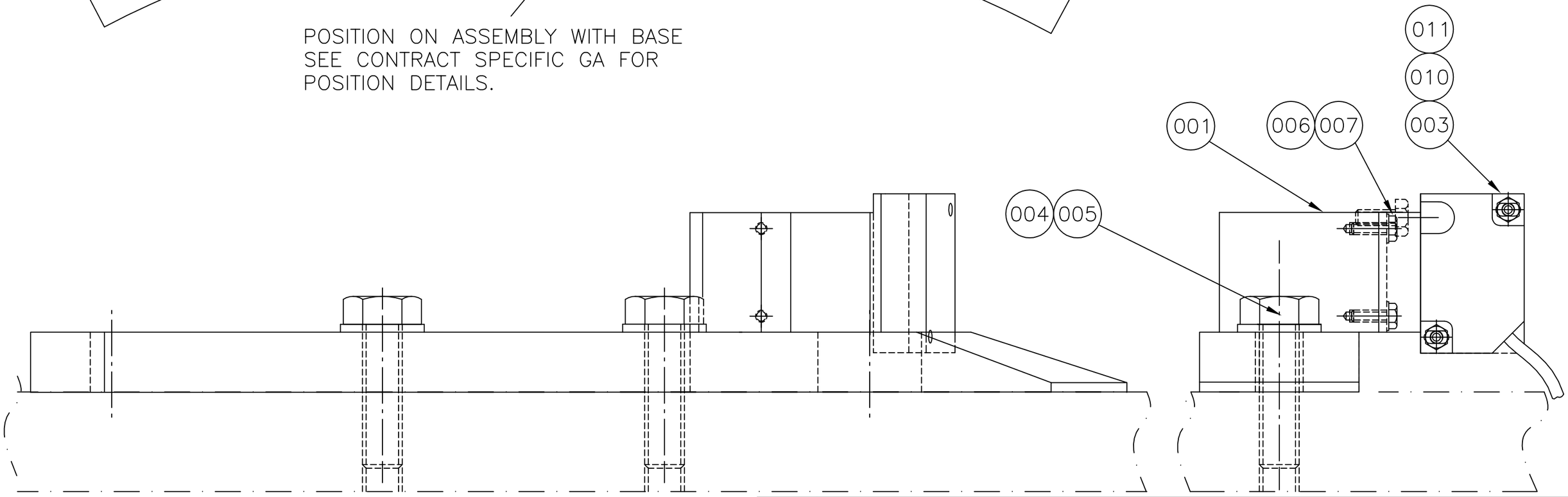
PH600 & PH1000
PH1500 & PH2000
STD IBC IN POSITION SWITCH ASSY

Drawn	Date	Drawing No.	Sht	Of
SWI	07/06/06	1019875	1	1

BK-ASSY-1019875-01.DWG

A1





Rev No.	Description of Revision	Revised By	Date
02	ITEMS 010 AND 011 ADDED	RXH	5/Jan/07

GEA Buck Systems

TOLERANCES UNLESS OTHERWISE STATED

MACHINING	FABRICATION
0 = ±0.50	0 TO 500 = ±1.0
0.0 = ±0.10	500 TO 1M = ±2.0
ANG'DIM'S = ±0.50°	1M TO 2M = ±3.0

ALL OTHER GEOMETRY TO COMPLY TO THE TOLERANCE STANDARDS SPECIFIED BELOW

ISO 13920 -BF ISO 2768 -mK

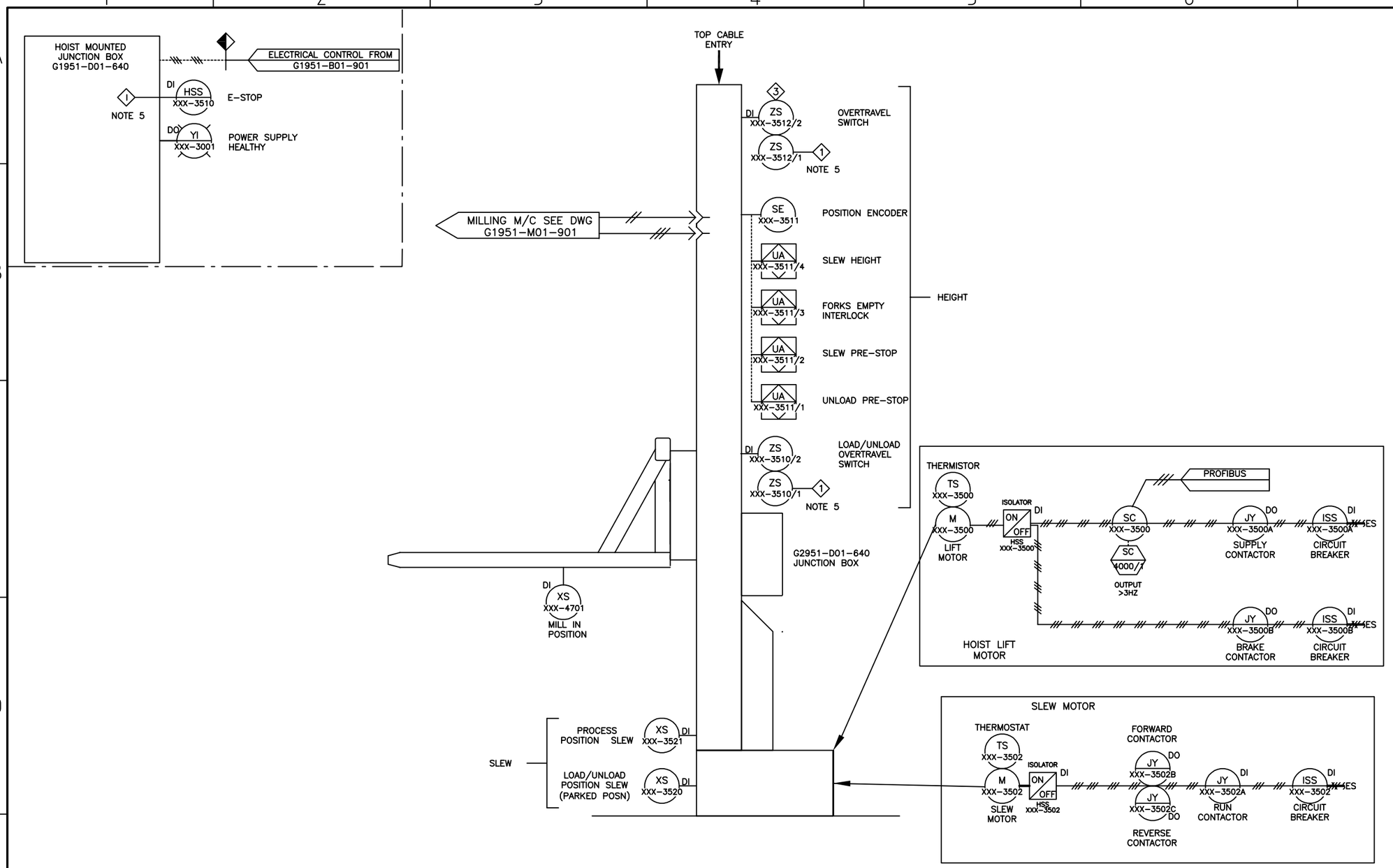
THIRD ANGLE PROJECTION

Scale 1:1

PH600 & PH1000 & PH1500 SLEW ENDSTOP ASSY ANTICLOCKWISE HANDING ZONE SAFE

Drawn	Date	Drawing No.	Sht / Of
SWI	07/06/06	1019907	1 / 1

BK-ASSY-1019907-02.DWG



NOTES

1. REFER TO PNEUMATIC CIRCUIT DIAGRAM G1951–D01–801.
2. NOT USED
3. NOT USED
4. NOT USED
5. HARD WIRED INTERLOCK
6. REFER TO CONNECTION DIAGRAM G1951–D01–630 FOR SERVICES AND TERMINATION DETAILS.

NB: CONTROL SYSTEMS SUPPLIER TO PROVIDE TERMINATION DIAGRAM, MACHINE AND SITE CABLE SCHEDULE, ELECTRICAL TERMINATION AND HOOK UP DIAGRAMS

7. MMM = MACHINE (ID) NUMBER
   **(PS) = INSTRUMENT PREFIX
   XXX = SYSTEM TAG NUMBERS
   ZZZ(5100) = SEQUENTIAL LOOP TAG NUMBER

FOR ALL P&IDS WITHIN A SYSTEM.

8. CONTROL OPERATIONS ARE INITATED VIA THE HOIST CONTROL SYSTEM.
9. VALVE JUNCTION BOXES CONTAIN SOLENOIDS, REMOTE I/O, TERMINALS AND CONNECTORS.

MOTOR DETAILS					
TAG	kW	AMPS	RPM	GEARBOX O/P RPM	COMMENTS
M3500	1.5KW	5.3	1440	12	TBC
M3502	0.18	0.58	1365	5.4	TBC

INSTRUMENT LINE SYMBOLS

INSTRUMENT TAG	DESCRIPTION
? ????	INSTRUMENTS WHICH ARE FIELD MOUNTED
? ????	INSTRUMENTS WHICH ARE MOUNTED ON A PANEL
? ????	INSTRUMENTS WHICH ARE MOUNTED WITHIN A PANEL

INSTRUMENT LINE SYMBOLS

INSTRUMENT LINE	DESCRIPTION
	PNEUMATIC SIGNAL
	ELECTRICAL SIGNAL
	ELECTRICAL BINARY SIGNAL

MACHINE MATRIX (NOTE 7)					
MACHINE NUMBER	SYSTEM TAG No.	AREA	NOVARTIS TAG No.	ROOM No	COMMENTS
G1951–D01	001	BLENDING	202.M.0311/C001	306B	

Revision Details	UPDATED TO COMMENTS	---	---
	Description/Change No:	Chk	Appd

Drawing not complete or approved for manufacture

GEA Buck Systems

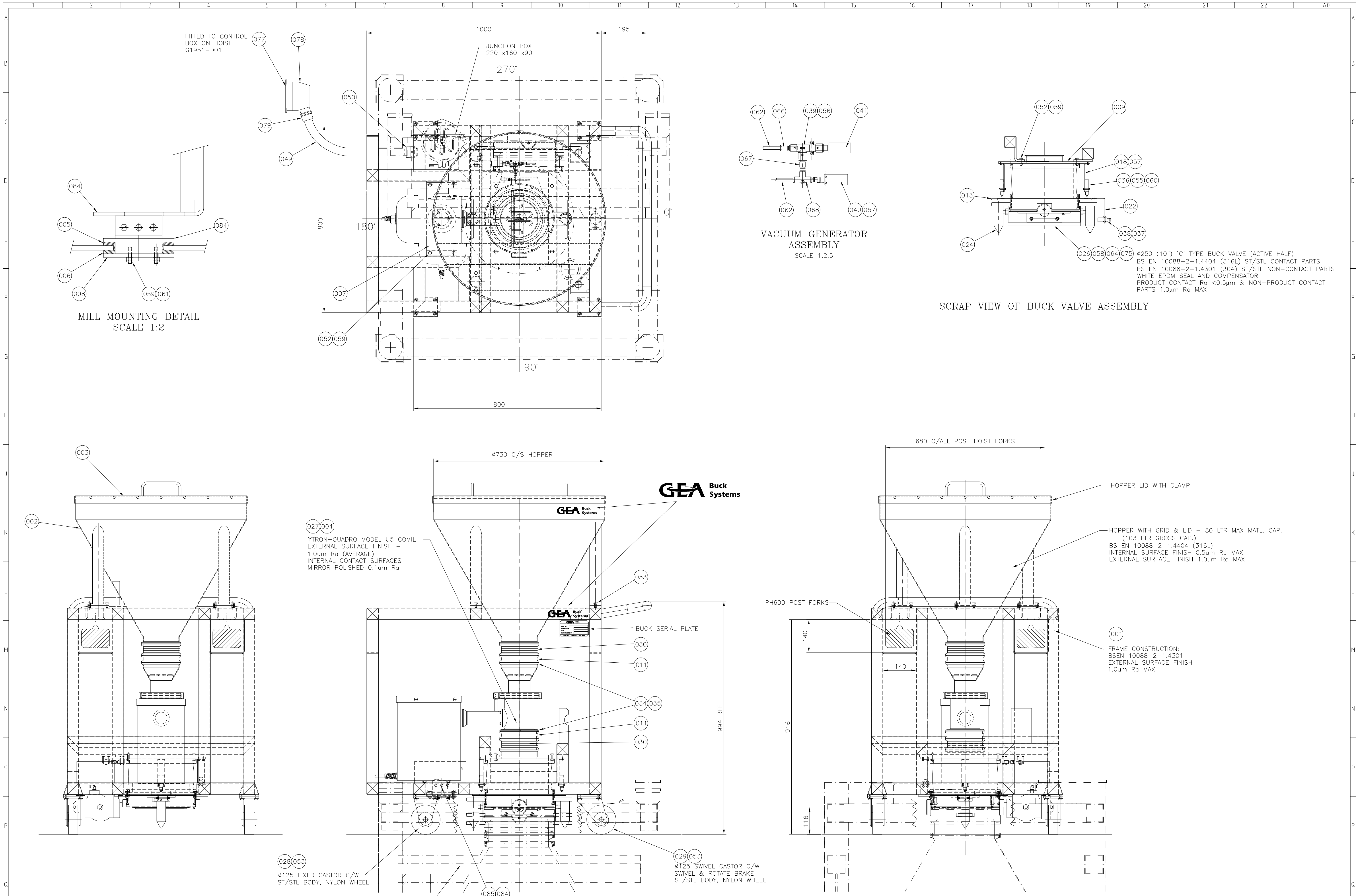
PH600 BLENDING ROOM POST HOIST P&ID

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No.	Sht	Rev
	---	ISO 13920 -BF	ISO 2768 -mK	MAPA	13/Sep/06	MAPA	13/Sep/06	RE	G1951–D01–901	of 1	03

Plot–Datum :

CAD–BSL–G1951–D01–901–03.DWG

A3



Revision Details	DEVELOPMENT UPDATES	---	---	Drawing not complete or approved for manufacture
	Description/Change No:	Chk	Appd	

GEA Buck Systems

TYPE U5 QUADRO MILL AND SUPPORT FRAME

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No.	Sht 1 of 1	Rev
	1:5	ISO 13920 -BF	ISO 2768 -mK	AJP	5/Jan/07	AJP	5/Jan/07	RE	G1951-M01-001		05

Plot-Datum :

CAD-BSL-G1951-M01-001-05.DWG

TITLE:-

M01 MILL PLC PANEL

DRAWING No.

G1951-M01-601

PCP DRG. No. C4341

Revision	REVISED TO CUSTOMER COMMENTS			DRAWING COMPLETE AND
Details	Description / Change No	Chk	Appd	APPROVED FOR USE

GEA BUCK SYSTEMS

M01 MILL PLC PANEL
TITLE SHEET

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	RS	07/02/2008				G1951-M01-601	1 / Next Sht 2	3

Plot-Datum

PLA1

Date 06/02/2008 Report of drawingsC4341-M01 Page 1

M01 MILL PLC PANEL

Without filter

Drawing	Description	Creation	Modification
1	TITLE SHEET	12/09/2006	07/02/2008
2	INDEX SHEET	12/09/2006	07/02/2008
20	COMPONENT KEY AND IDENTIFICATION	12/09/2006	07/02/2008
21	CABLE SPECIFICATION FOR SCHEMATIC DIAGRAMS	12/09/2006	07/02/2008
22	COMPONENT SYMBOLS FOR SCHEMATIC DIAGRAMS	12/09/2006	07/02/2008
25	PANEL REFERENCES FOR SCHEMATIC DIAGRAMS	12/09/2006	07/02/2008
30	MILL PANEL I/O RACK	12/09/2006	07/02/2008
31	MILL MOTOR SUPPLY	12/09/2006	07/02/2008
32	MILL PANEL SLOT 4	12/09/2006	07/02/2008
33	MILL PANEL SLOT 4	12/09/2006	07/02/2008
34	MILL PANEL SLOT 5	12/09/2006	07/02/2008
35	SAFETY SWITCH	12/09/2006	07/02/2008
36	MILL PANEL SLOT 6	12/09/2006	07/02/2008
37	MILL PANEL SLOT 6	12/09/2006	07/02/2008
38	Terminal strip drawing X1.1 Number 1	20/11/2006	07/02/2008
39	Terminal strip drawing X3.5 Number 1	20/11/2006	07/02/2008

Revision Details	REVISED TO CUSTOMER COMMENTS / Description / Change No	Chk	Appd	DRAWING COMPLETE AND APPROVED FOR USE

GEA BUCK SYSTEMS

M01 MILL PLC PANEL
INDEX SHEET

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated ISO 13920 - BF ISO 2768 - mK	Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
			RS	07/02/2008		06/02/2008		G1951-M01-601	2 Next Sht 20	3

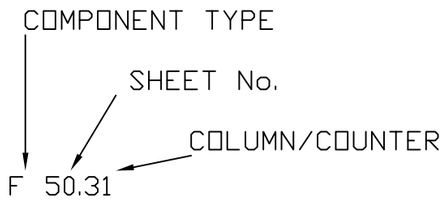
Plot-Datum

PCP DRG. No. C4341

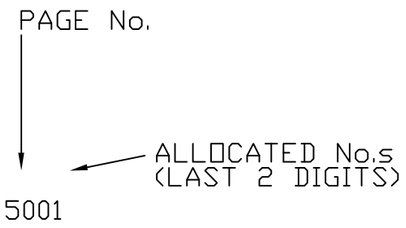
COMPONENT KEY

A - VARIABLE SPEED DRIVE/ASSEMBLY/PC. BOARD
B - RESOLVER/ENCODER
C - CAPACITOR
D - DIODE
E - CABINET ILLUMINATION
F - FUSE/FUSE SWITCH/OVERLOAD
G - POWER SUPPLY UNIT/GENERATOR
H - PILOT LAMP
K - CONTACTOR/RELAY/TIMER
L - CHOKE/REACTOR
M - MOTOR/FAN VENTILATOR
P - METER/HMI
Q - CIRCUIT BREAKER/ISOLATOR
R - RESISTOR/POTENTIOMETER
S - SWITCH/PUSHBUTTON/SENSOR
T - TRANSFORMER
X - TERMINAL/SOCKET
Y - SOLENOID VALVE
Z - RFI FILTER

COMPONENT IDENT. KEY



CABLE No. KEY



PCP DRG. No. C4341

Revision	REVISED TO CUSTOMER COMMENTS			DRAWING COMPLETE AND	
Details	Description / Change No	Chk	Appd	APPROVED FOR USE	

GEA BUCK SYSTEMS

M01 MILL PLC PANEL
COMPONENT KEY
AND IDENTIFICATION

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	RS	07/02/2008				G1951-M01-601	20 Next Sht 21	3

Plot-Datum

CABLE SPECIFICATION

WIRING SPECIFICATION

WIRE COLOURS

PHASE R OF 3 PHASE CIRCUIT.....RED
PHASE Y OF 3 PHASE CIRCUIT.....YELLOW
PHASE B OF 3 PHASE CIRCUIT.....BLUE
PROTECTIVE EARTH.....MARKED GREEN/YELLOW
PHASE OF A.C. SINGLE PHASE CIRCUIT.....RED
NEUTRAL OF A.C. SINGLE PHASE OR 3 PHASE CIRCUIT.....BLACK
POSITIVE OF A DC CIRCUIT (+24V).....BROWN
NEGATIVE OF A DC CIRCUIT (0V).....GREY
NON IS SIGNALS.....ORANGE

BUSBAR COLOURS

POWER.....MARKED WITH PHASE COLOURS RD/YE/BU
PROTECTIVE EARTH.....MARKED GREEN/YELLOW
NEUTRAL.....ALL NEUTRAL'S SHOULD BE MARKED BLACK

MINIMUM WIRE SIZE

CONTROL WIRING.....1.5mm2
SIGNAL WIRING.....0.75mm2

WIRE COLOUR ABBREVIATIONS IN CIRCUIT DIAGRAMS

IEC 757	ENGLISH	DEUTSCH	FRANCAIS	ITALIANO	ESPANOL
GN	GREEN	GRUN	VERT	VERDE	VERDE
RD	RED	ROT	ROUGE	ROSSO	ROJO
YE	YELLOW	GELB	JAUNE	GIALLO	AMARILLO
BK	BLACK	SCHWARZ	NOIR	NERO	NEGRO
BU	BLUE	BLAU	BLEU	BLU	AZUL
BN	BROWN	BRAUN	BRUN	MARRONE	MARRON
OG	ORANGE	ORANGE	ORANGE	ARANCIONE	NARANJA
VT	VIOLET	VIOLETT	VIOLET	VIOLA	VIOLETA
GY	GREY	GRAU	GRIS	GRIGIO	GRIS
WH	WHITE	WEISS	BLANC	BLANCO	BLANCO
GN/YE	GREEN/ YELLOW	GRUN/ GELB	VERT/ JAUNE	VERDE/ GIALLO	VERDE/ AMARILLO
PK	PINK	ROSA			
CL	CLEAR	KLAR			

SPECIAL MANUFACTURING INSTRUCTIONS

ALL CABLE TO BE LOW SMOKE ZERO HALOGEN TYPE

PCP DRG. No. C4341

Revision	REVISED TO CUSTOMER COMMENTS			DRAWING COMPLETE AND
Details	Description / Change No	Chk	Appd	APPROVED FOR USE

GEA BUCK SYSTEMS

M01 MILL PLC PANEL
CABLE SPECIFICATION
FOR SCHEMATIC DIAGRAMS

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 -BF	ISO 2768 -mK	RS	07/02/2008		16/10/2006		G1951-M01-601	21 / Next Sht 22	3

Plot-Datum

FIELD TERMINAL

3 POLE ISOLATOR

3 WIRE PROXIMITY SWITCH

FUSE

CLOSED SOLENOID VALVE

AMMETER

FUSED TERMINAL

CLOSED PUSHBUTTON

CLOSED PROXIMITY SWITCH

THERMAL OVELOAD

OPEN SOLENOID VALVE

VOLTMETER

RELAY

OPEN PUSHBUTTON

OPEN PROXIMITY SWITCH

3 POLE THERMAL OVELOAD

ELECTROMAGNETIC BRAKE

TRANSFORMER

DELAY ON OPERATION RELAY

E-STOP DETENT PUSHBUTTON

CLOSED PRESSURE SWITCH

3 POLE THERMAL/MAGNETIC CIRCUIT BREAKER

ELECTROMAGNETIC CLUTCH

RESISTOR

DELAY ON RELEASE RELAY

E-STOP DETENT PUSHBUTTON KEY RELEASE

OPEN PRESSURE SWITCH

CLOSED CONTACT

SINGLE PHASE VENTILATOR FAN

CAPACITOR

LAMP

CLOSED LIMIT SWITCH

CLOSED TEMPERATURE SWITCH

OPEN CONTACT

PE

3 PHASE MOTOR

POWER SUPPLY

TRANSFORMER LAMP

OPEN LIMIT SWITCH

OPEN TEMPERATURE SWITCH

CHANGE OVER CONTACT

PE

SINGLE PHASE MOTOR

PCP DRG. No. C4341

Revision	REVISED TO CUSTOMER COMMENTS			DRAWING COMPLETE AND	
Details	Description / Change No		Chk	Appd	APPROVED FOR USE

GEA BUCK SYSTEMS

M01 MILL PLC PANEL COMPONENT SYMBOLS FOR SCHEMATIC DIAGRAMS

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No 22	Rev
		ISO 13920 - BF	ISO 2768 - mK	RS	07/02/2008				G1951-M01-601	Next Sht 25	3

Plot-Datum

Revision	REVISED TO CUSTOMER COMMENTS			DRAWING COMPLETE AND
Details	Description / Change No	Chk	Appd	APPROVED FOR USE

GEA BUCK SYSTEMS

M01 MILL PLC PANEL
PANEL REFERENCES
FOR SCHEMATIC DIAGRAMS

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	RS	07/02/2008		20/11/2006		G1951-M01-601	25 / Next Sht 30	3

Plot-Datum

PCP DRG. No. C4341

24V DC
FROM
MAIN BO1/DO1
PANEL

DROP 1

X3.5 1 9009

X3.5 2 3304

3001 SHT 32. 1

3002 SHT 32. 1

BROWN

GREY

BROWN

GREY

1 3 -Q30.1.

CONTROL C/B

2 4

3001

3002

3001

3002

750-333

D-SUB

RUN
BF
DIA
RUN

I/O RUN

8 D O/P BURKERT 8644 MONO ST 2 DO

8 D O/P BURKERT 8644 MONO ST 2 DO

DI | DO | DI

	24V	0V
1	1	5
2	L+	L+
3	L-	L-
4	PE	PE

	1	2	1	5	1	2
	3	4	24V 2	24V 6	3	4
	5	6	0V 3	0V 7	5	6
	7	8	4	8	7	8

D-SUB

ADDRESS
8

Wago I/O SYSTEM 750-333 — SLOT 1 | SLOT 2 | SLOT 3 | SLOT 4 (Wago 750-430) | SLOT 5 (Wago 750-504) | SLOT 6 (Wago 750-430)

PCP DRG. No. C4341

Revision	REVISED TO CUSTOMER COMMENTS			DRAWING COMPLETE AND	
Details	Description / Change No	Chk	Appd	APPROVED FOR USE	

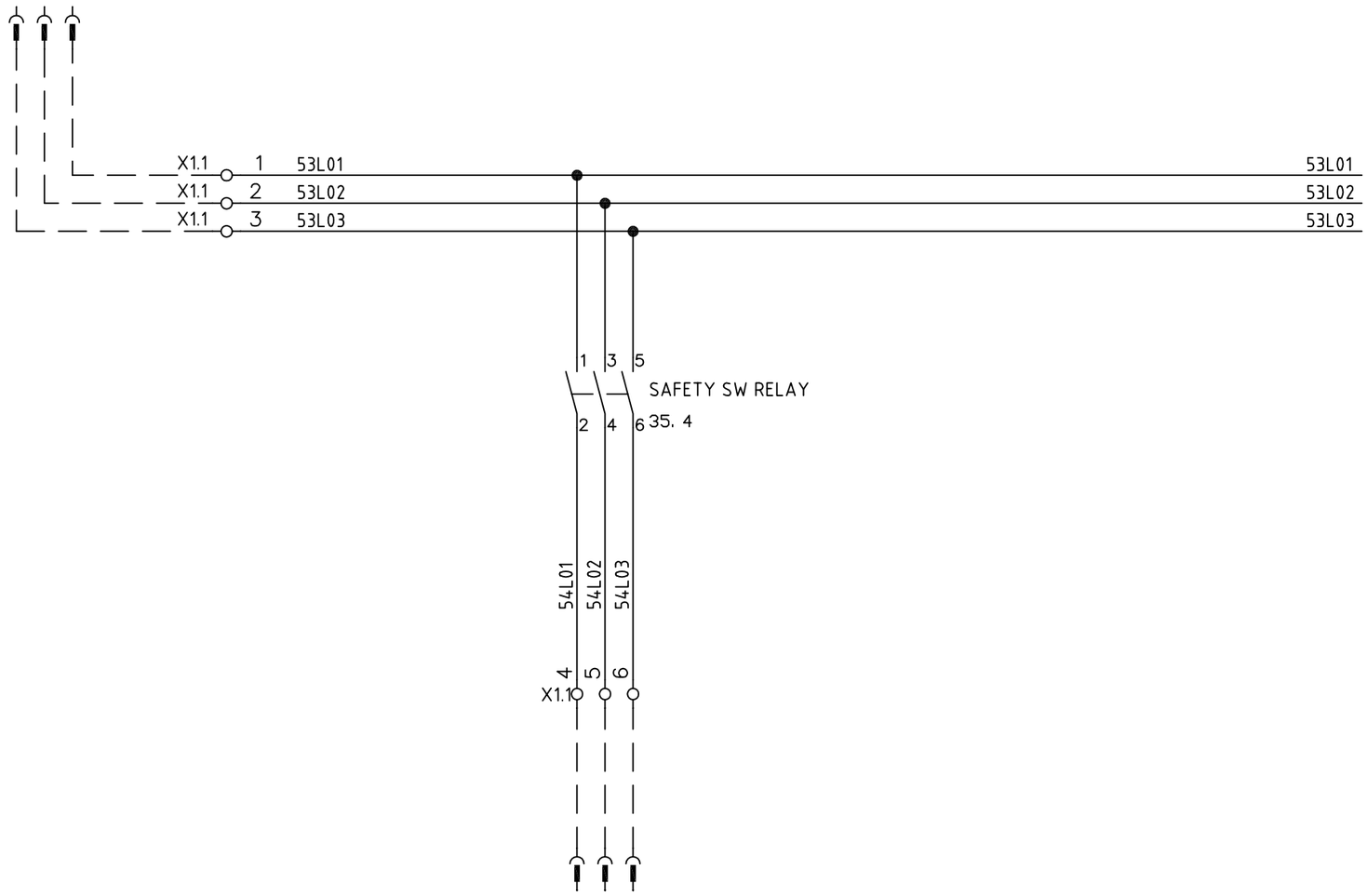
GEA BUCK SYSTEMS

M01 MILL PLC PANEL
MILL PANEL I/O RACK CONFIGURATION

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 -BF	ISO 2768 -mK	RS	07/02/2008		06/02/2008		G1951-M01-601	30 / Next Sht 31	3

Plot-Datum

FROM
G1951-B01-601
SHT 54



TO
G1951-B01-601
SHT 54

PCP DRG. No. C4341

Revision	REVISED TO CUSTOMER COMMENTS			DRAWING COMPLETE AND	
Details	Description / Change No	Chk	Appd	APPROVED FOR USE	

GEA BUCK SYSTEMS

M01 MILL PLC PANEL
SCHEMATIC WIRING DIAGRAM FOR MILL MOTOR SUPPLY

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF	ISO 2768 - mK	RS	07/02/2008		20/11/2006		G1951-M01-601	31 / Next Sht 32	3

Plot-Datum

DROP 1

SLOT 4

PS-XXX-5203
I8.0

ZSO-XXX-5100
I8.1

ZSC-XXX-5100
I8.2

SPARE
I8.3

CONT. ON
SHT. 33

1 5 2 6

3201 3 X3.5 — E9 — 1 — PH — 4

3203 4 X3.5 — E2

3205 5 X3.5 — E3

A1 A2

BU BK BN WH

3 4 1 2

3002 SHT 35.1
3001 SHT 33.1

D4 D1

X3.5 0 X3.5 11 X3.5 12 X3.5 13 X3.5 14

SHT 30.2 3001 ... 3001 SHT 33.1
SHT 30.2 3002 ... 3002 SHT 33.1

BUCK VALVE
VACUUM GENERATOR
PRESSURE SWITCH
PS-XXX-5203

BUCK VALVE
OPEN
LIMIT SWITCH
ZSO-XXX-5100

BUCK VALVE
CLOSED
LIMIT SWITCH
ZSC-XXX-5100

SPARE

PCP DRG. No. C4341

Revision	REVISED TO CUSTOMER COMMENTS			DRAWING COMPLETE AND
Details	Description / Change No	Chk	Appd	APPROVED FOR USE

GEA BUCK SYSTEMS

M01 MILL PLC PANEL
DIGITAL INPUT SIGNALS
SLOT 4

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 -BF	ISO 2768 -mK	RS	07/02/2008		06/02/2008		G1951-M01-601	32 / Next Sht 33	3

Plot-Datum

DROP 1

SLOT 4

CONT. ON SHT. 33

ZS-XXX-4000

I8.4 — 3 — 3301 — 7 — X3.5 — E5

ZS-XXX-4004

13 DOCKING SWITCH 14

SHT 32.8 3001 — 3001 SHT 35.1

X3.5 15 — SHT 32.8 3001 — 3001 SHT 35.1

X3.5 15 — SHT 32.8 3002 — 3002 SHT 34.1

DOCKING SWITCH ZS-XXX-4000

I8.5 — 7 — 3303 — 8 — X3.5 — 16

SPARE

YS-XXX-4001/1

I8.6 — 4 — 3305 — 9 — X3.5 — 17

13 -K35.4. SAFETY SW RELAY 14 35.4

SAFETY SWITCH YS-XXX-4001/1

I8.7 — 8 — 3307 — 10 — X3.5 — 18

???

MILL MTR ISOL

MILL MOTOR DISCONNECT SWITCH HSS-XXX-4000

PCP DRG. No. C4341

Revision	REVISED TO CUSTOMER COMMENTS			DRAWING COMPLETE AND
Details	Description / Change No	Chk	Appd	APPROVED FOR USE

GEA BUCK SYSTEMS

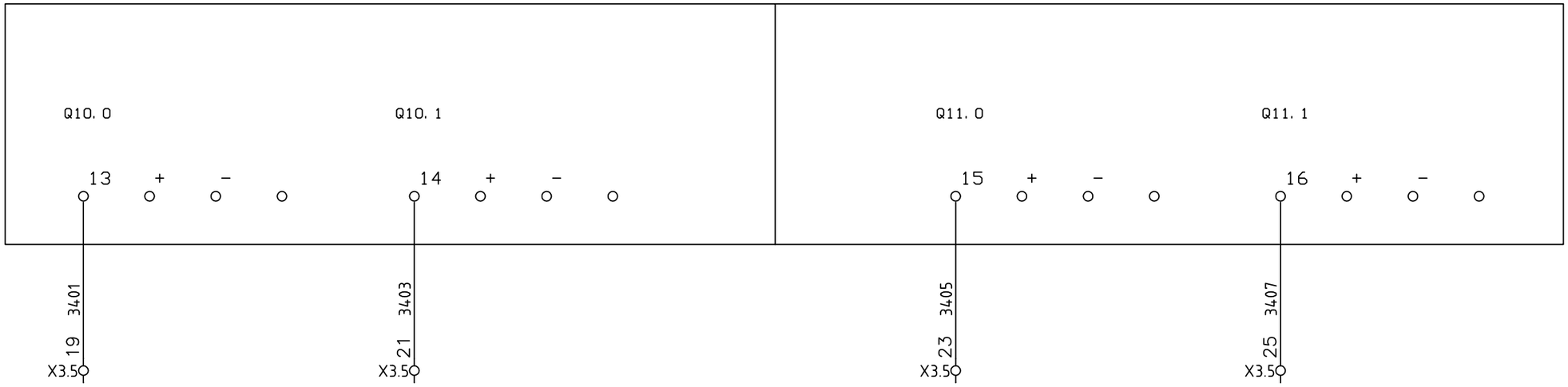
M01 MILL PLC PANEL
DIGITAL INPUT SIGNALS
SLOT 4

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 -BF	ISO 2768 -mK	RS	07/02/2008		06/02/2008		G1951-M01-601	33 / Next Sht 34	3

Plot-Datum

DROP 1

SLOT 5



PCP DRG. No. C4341

Revision	REVISED TO CUSTOMER COMMENTS			DRAWING COMPLETE AND
Details	Description / Change No	Chk	Appd	APPROVED FOR USE

GEA BUCK SYSTEMS

M01 MILL PLC PANEL
DIGITAL OUTPUT SIGNALS
SLOT 5

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 -BF	ISO 2768 -mK	RS	07/02/2008		06/02/2008		G1951-M01-601	34 / Next Sht 35	3

Plot-Datum

SHT 34. 8 3002

SHT 33. 8 3001 — SHT 36. 1

X3.5 27

SHT 33. 8 3001 — 3001 SHT 36. 1

BN(+VE)
1
3
2
SAFETY SWITCH
BLU(-VE)
BLK(SIG)
YS-XXX-4001/2

SHT 32. 8 3002 — 3002 SHT 37. 1

D1

X3.5 0

X3.5 9

3501

-K35.4.
A1
SAFETY SW RELAY
A2

1 2 31. 4
3 4 31. 4
5 6 31. 4
13 14 33. 5
23 24

PCP DRG. No. C4341

Revision	REVISED TO CUSTOMER COMMENTS			DRAWING COMPLETE AND
Details	Description / Change No	Chk	Appd	APPROVED FOR USE

GEA BUCK SYSTEMS

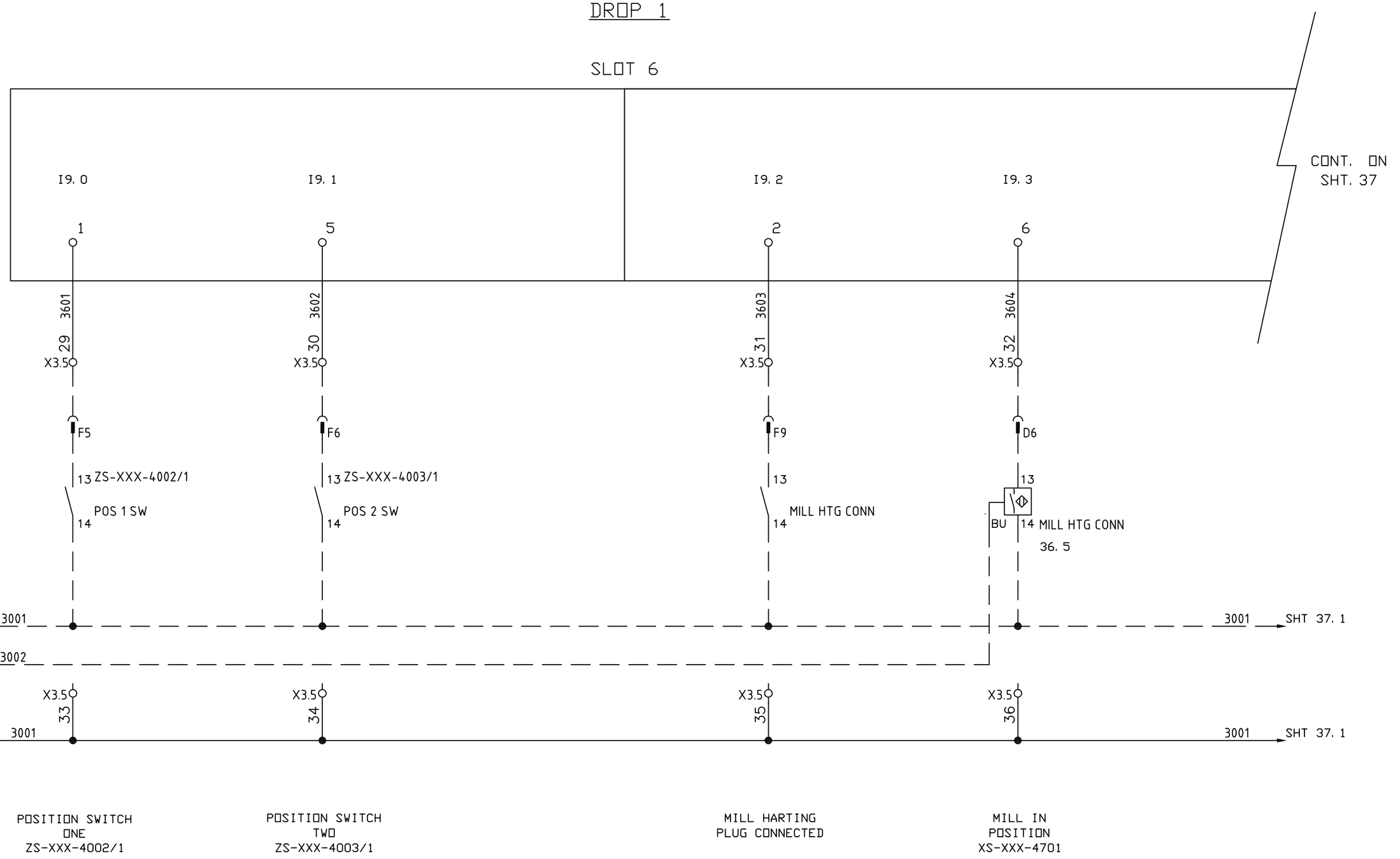
M01 MILL PLC PANEL SCHEMATIC WIRING DIAGRAM FOR SAFETY SWITCH

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 -BF	ISO 2768 -mK	RS	07/02/2008		06/02/2008		G1951-M01-601	35 / Next Sht 36	3

Plot-Datum

DROP 1

SLOT 6



POSITION SWITCH
ONE
ZS-XXX-4002/1

POSITION SWITCH
TWO
ZS-XXX-4003/1

MILL HARTING
PLUG CONNECTED

MILL IN
POSITION
XS-XXX-4701

PCP DRG. No. C4341

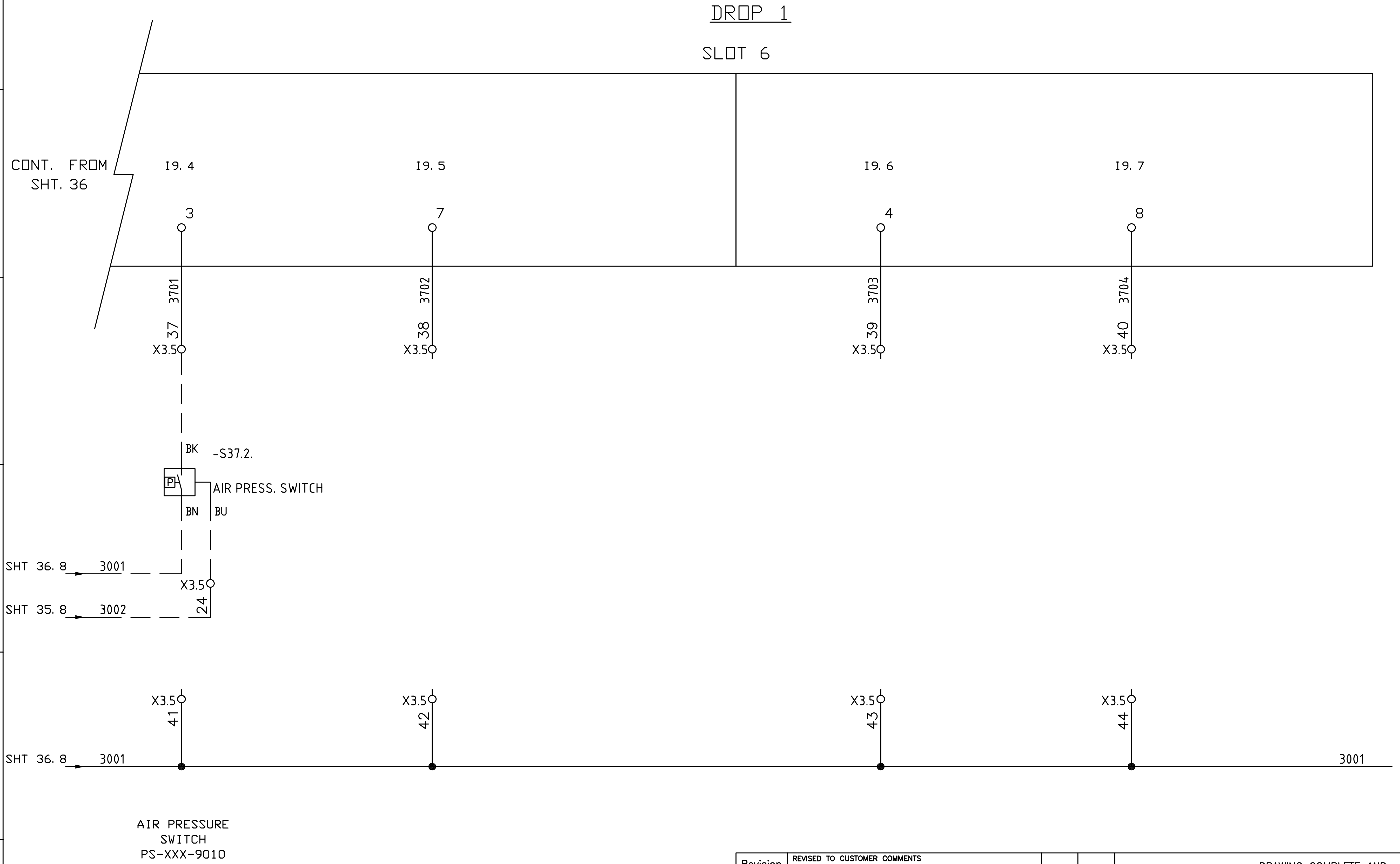
Revision	REVISED TO CUSTOMER COMMENTS			DRAWING COMPLETE AND
Details	Description / Change No	Chk	Appd	APPROVED FOR USE

GEA BUCK SYSTEMS

M01 MILL PLC PANEL
DIGITAL INPUT SIGNALS
SLOT 6

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 -BF	ISO 2768 -mK	RS	07/02/2008		06/02/2008		G1951-M01-601	36 / Next Sht 37	3

Plot-Datum



Revision	REVISED TO CUSTOMER COMMENTS			DRAWING COMPLETE AND
Details	Description / Change No	Chk	Appd	APPROVED FOR USE

GEA BUCK SYSTEMS

M01 MILL PLC PANEL
DIGITAL INPUT SIGNALS
SLOT 6

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated	Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF / ISO 2768 - mK	RS	07/02/2008		06/02/2008		G1951-M01-601	37 / Next Sht 38	3

Plot-Datum

PCP DRG. No. C4341

X1.1 / Terminal strip

SHEET	Terminal number	Terminal type	Connection no.	Designation	Cablemarking	TERMINAL FUNCTION / ELEMENT FUNCTION
31/3		○	2	-K35.4.	54L01	SAFETY SW RELAY
31/3		○	4	-K35.4.	54L02	SAFETY SW RELAY
31/3		○	6	-K35.4.	54L03	SAFETY SW RELAY
31/1	1	○	1	-K35.4.	53L01	SAFETY SW RELAY
31/1	2	○	3	-K35.4.	53L02	SAFETY SW RELAY
31/1	3	○	5	-K35.4.	53L03	SAFETY SW RELAY
		○				
		○				
		○				
		○				
		○				
		○				
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ELEMENT FUNCTION

Cablemarking | Cabletype | Pin Number.

Destination symbol: Connection no. / Designation

Link

PCP DRG. No. C4341

Revision Details	REVISED TO CUSTOMER COMMENTS Description / Change No	Chk	Appd	DRAWING COMPLETE AND APPROVED FOR USE

M01 MILL PLC PANEL

GEA BUCK SYSTEMS

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated	Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
		ISO 13920 - BF ISO 2768 - mK	RS	07/02/2008		20/11/2006		G1951–M01–601	38 Next Sht 39	3

Plot–Datum

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ELEMENT FUNCTION						DOCKING SWITCH		SAFETY SW RELAY	MILL MTR ISOL		POS 1 SW	POS 2 SW	MILL HTG CONN	MILL HTG CONN	
SHEET	32/1	32/2	32/4	32/5	32/6	33/2	33/3	33/5	33/6	35/3	36/2	36/3	36/5	36/6	37/2
Cablemarking Cabletype Pin Number.															
X3.5 Destination symbol Connection no.	3	4	1		4	14		14		BU	14	14	14	14	
Designation								-K35.4.							
Link Terminal number															
Terminal type	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Terminal strip Destination symbol Connection no.		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Designation		X3.5	X3.5	X3.5	X3.5	X3.5	X3.5	X3.5	X3.5	X3.5	X3.5	X3.5	X3.5	X3.5	X3.5
Cablemarking Cabletype Pin Number.	3002	3001	3001	3001	3001	3001	3001	3001	3001	3002	3001	3001	3001	3001	3001
TERMINAL FUNCTION ELEMENT FUNCTION															

	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
ELEMENT FUNCTION							POS 1 SW		POS 2 SW		MILL HTG CONN		MILL HTG CONN	DOCKING SWITCH	
SHEET	37/3	37/5	37/6	30/1	30/1	32/2	36/2	32/3	36/3	32/5	36/5	32/6	36/6	33/2	37/2
Cablemarking Cabletype Pin Number.															
X3.5 Destination symbol Connection no.						1	13	4	13	2	13	1	13	13	
Designation															
Link Terminal number				1	2	3	3	5	5	7	7	9	9	11	11
Terminal type	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Terminal strip Destination symbol Connection no.	1	1	1	3	1										
Designation	X3.5	X3.5	X3.5 27	-Q30.1.	-Q30.1.										
Cablemarking Cabletype Pin Number.	3001	3001	3001	9009	3304	3201	3601	3203	3602	3205	3603	3207	3604	3301	3701
TERMINAL FUNCTION ELEMENT FUNCTION				CONTROL C/B	CONTROL C/B										

	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
ELEMENT FUNCTION			SAFETY SW RELAY		MILL MTR ISOL									SAFETY SW RELAY	
SHEET	33/3	37/3	33/5	37/5	33/6	37/6	34/2	34/2	34/3	34/3	34/5	34/5	34/6	34/6	35/4
Cablemarking Cabletype Pin Number.															
X3.5 Destination symbol Connection no.			13					2		2		2		A2	13
Designation			-K35.4.					X3.5 24		X3.5 20		X3.5 20		-K35.4.	
Link Terminal number	13	13	15	15	17	17	19	20	21	22	23	24	25	26	27
Terminal type	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Terminal strip Destination symbol Connection no.												BU			4
Designation															-Q30.1.
Cablemarking Cabletype Pin Number.	3303	3702	3305	3703	3307	3704	3401	3002	3403	3002	3405	3002	3407	3002	3001
TERMINAL FUNCTION ELEMENT FUNCTION												MILL HTG CONN			CONTROL C/B

	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
ELEMENT FUNCTION															
SHEET	35/4														
Cablemarking Cabletype Pin Number.															
X3.5 Destination symbol Connection no.	14														
Designation															
Link Terminal number	9														
Terminal type	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Terminal strip Destination symbol Connection no.	A1														
Designation	-K35.4.														
Cablemarking Cabletype Pin Number.	3501														
TERMINAL FUNCTION ELEMENT FUNCTION	SAFETY SW RELAY														

Revision Details	Description / Change No	Chk	Appd
	REVISED TO CUSTOMER COMMENTS		

DRAWING COMPLETE AND APPROVED FOR USE

GEA BUCK SYSTEMS

M01 MILL PLC PANEL

THIRD ANGLE PROJECTION

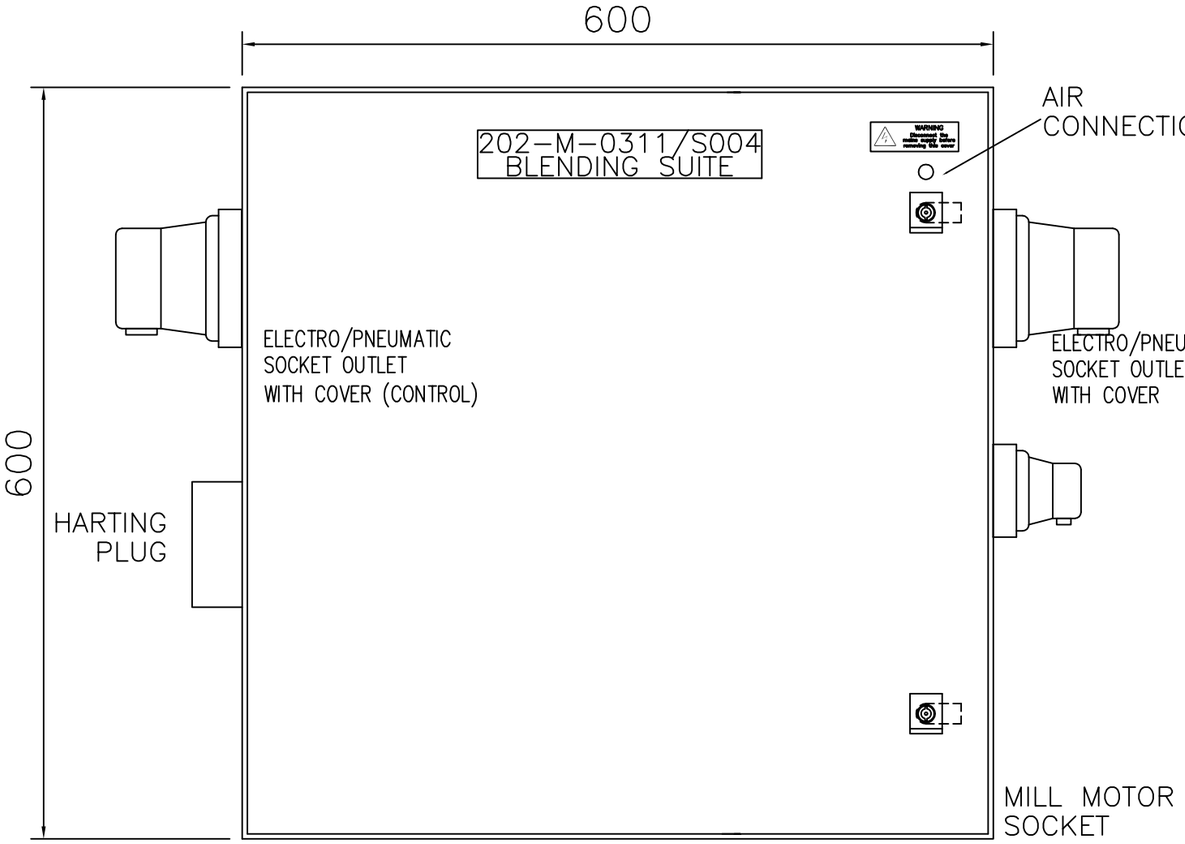
Scale

Tolerances unless otherwise stated: ISO 13920 - BF, ISO 2768 - mK

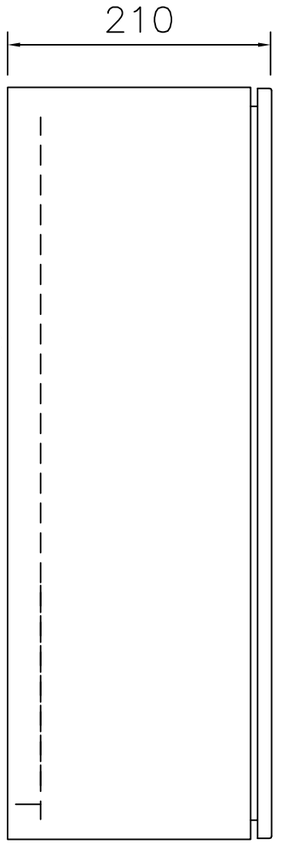
Drawn	Date	Modified	Date	Status	Drawing No	Sht No	Rev
RS	07/02/2008		06/02/2008		G1951-M01-601	39 Next Sht	3

Plot-Datum

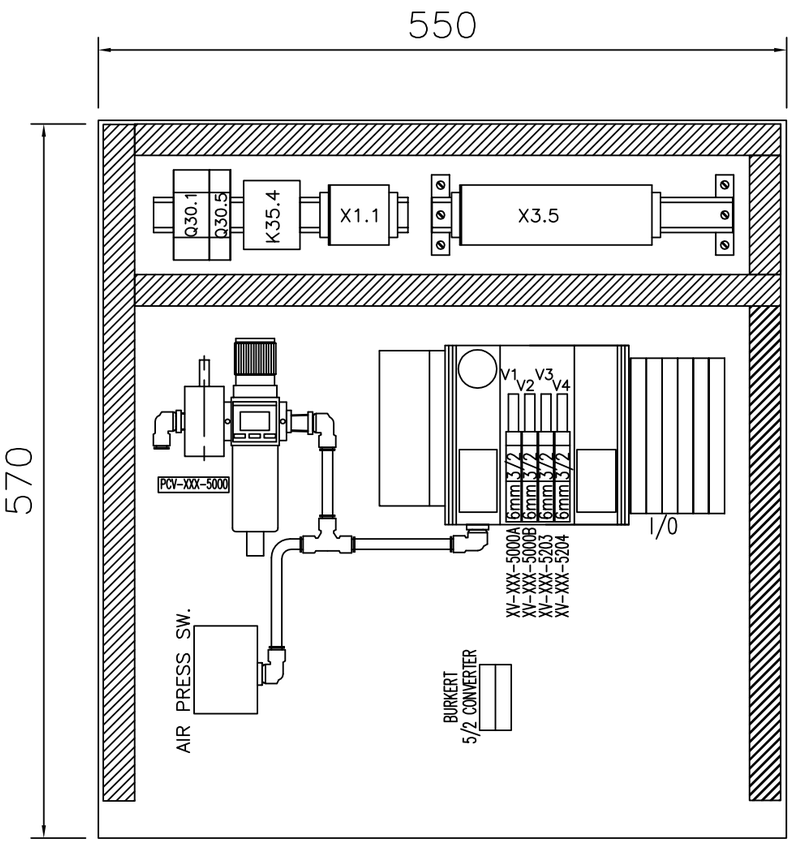
PCP DRG. No. C4341



FRONT VIEW



SIDE VIEW



P.C.P. DRG. No. C4341

Revision	DOCUMENTATION CORRECTIONS	BJO	BJO	Drawing not complete or
Details	Description/Change No:	Chk	Appd	approved for manufacture

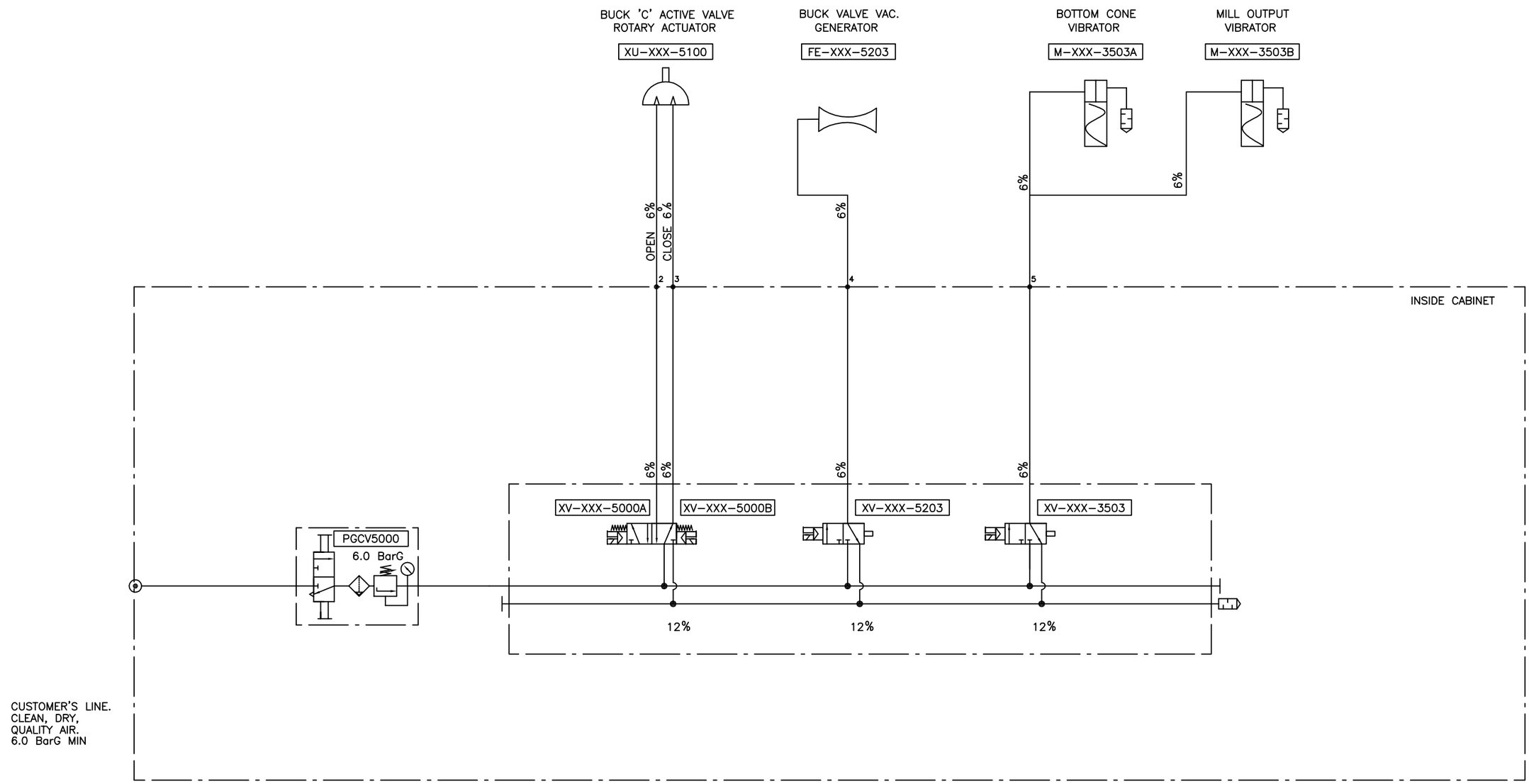
GEA Buck Systems

U5 QUADRO MILL
CONTROL PANEL
ARRANGEMENT DRAWING

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No.	Sht	Rev
	NTS	ISO 13920 -BF	ISO 2768 -mK	PM	20/09/06	BJO	06/03/08		G1951-M01-610	1 of 1	3

Plot-Datum :

A3



P.C.P. DRG No. C4341

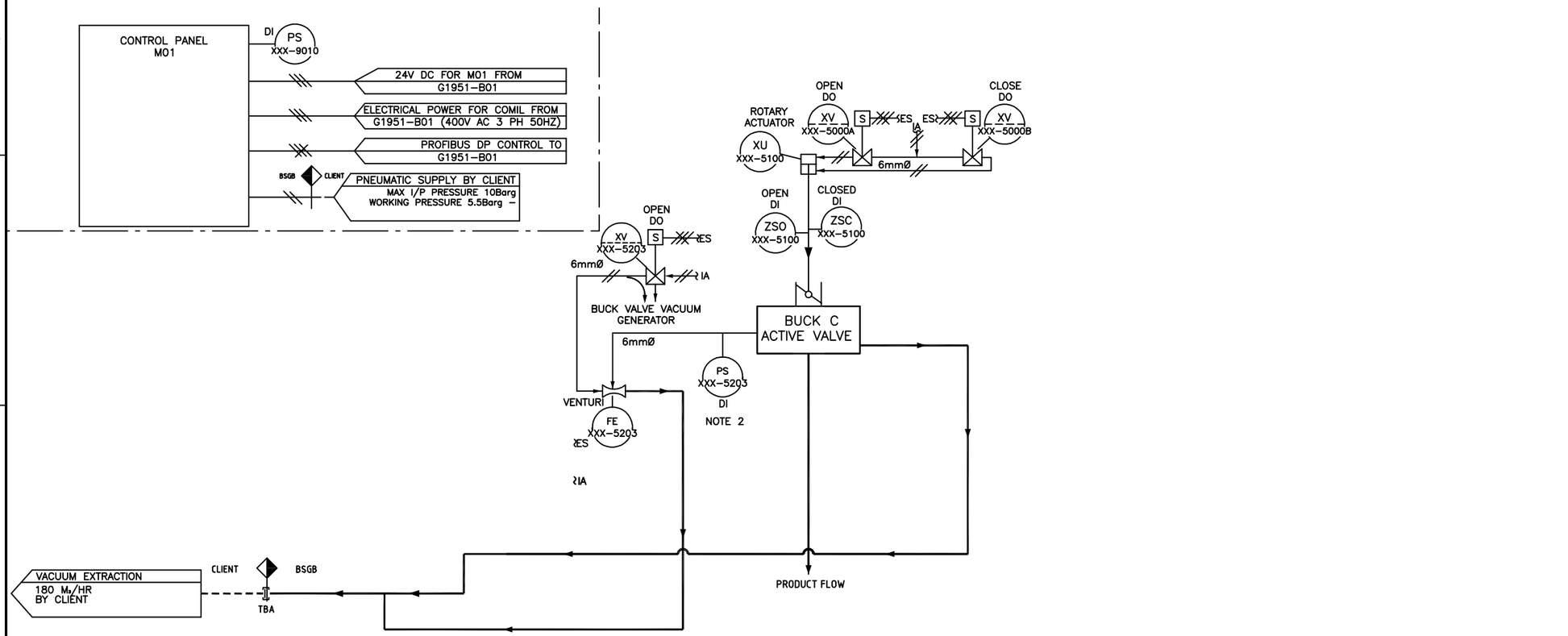
Revision Details	UPDATED TO SAT	PM	---	Drawing complete and approved for use
	Description/Change No:	Chk	Appd	

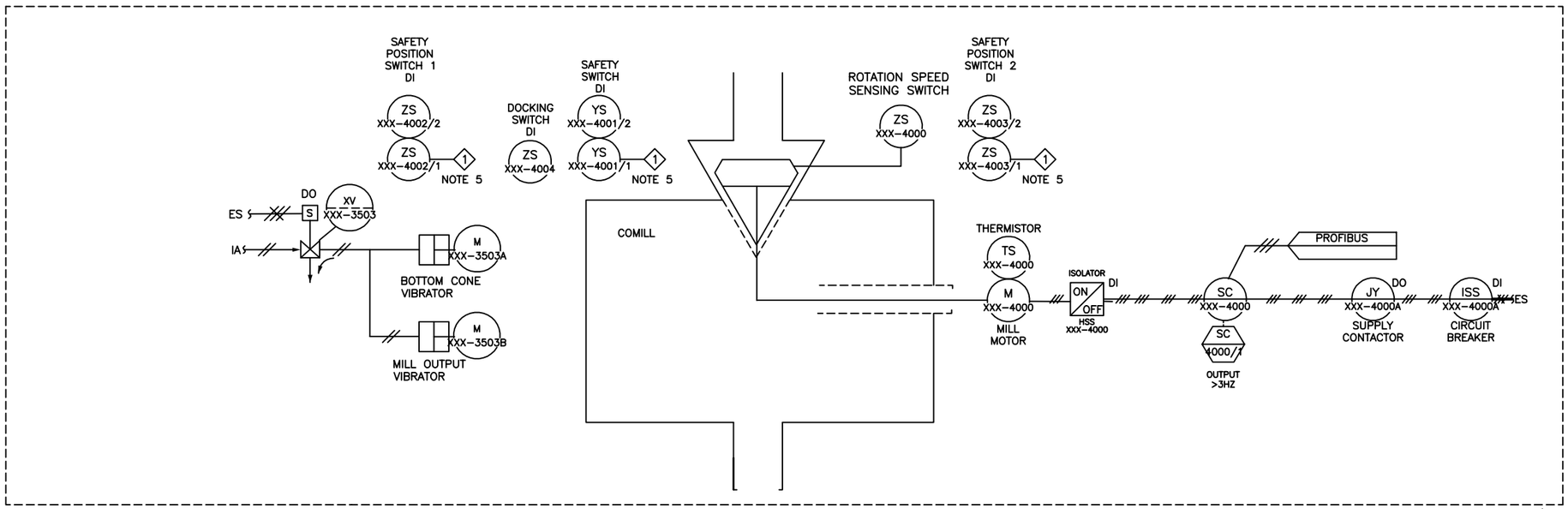
GEA Buck Systems

PNEUMATIC CIRCUIT FOR MILL MOTOR PANEL

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No.	Sht	Rev
	NTS	ISO 13920	ISO 2768	PM	30/10/06	PM	06/02/08		G1951-M01-801	1 of 1	2

Plot-Datum :





NOTES

1. REFER TO PNEUMATIC CIRCUIT DIAGRAM G1951–M01–801.
2. VACUUM SWITCH SET POINT –650mBAR UNDERPRESSURE RISING
3. NOT USED
4. VACUUM SWITCH SET POINT –650mBAR UNDERPRESSURE RISING
5. HARD WIRED INTERLOCK
6. N/A
7. MMM = MACHINE (ID) NUMBER
   **(PS) = INSTRUMENT PREFIX
   XXX = SYSTEM TAG NUMBERS
   ZZZ(5100) = SEQUENTIAL LOOP TAG NUMBER

   FOR ALL P&IDS WITHIN A SYSTEM.
8. CONTROL OPERATIONS ARE INITATED VIA THE HOIST CONTROL SYSTEM.
9. VALVE JUNCTION BOXES CONTAIN SOLENOIDS, REMOTE I/O, TERMINALS AND CONNECTORS.

MOTOR DETAILS					
TAG	kW	AMPS	RPM	GEARBOX O/P RPM	COMMENTS
M4000	0.375	0.95	1365	5.4	TBC
–	–	–	–	–	–

INSTRUMENT LINE SYMBOLS

INSTRUMENT TAG	DESCRIPTION
? ????	INSTRUMENTS WHICH ARE FIELD MOUNTED
? ????	INSTRUMENTS WHICH ARE MOUNTED ON A PANEL
? ????	INSTRUMENTS WHICH ARE MOUNTED WITHIN A PANEL

INSTRUMENT LINE SYMBOLS

INSTRUMENT LINE	DESCRIPTION
//	PNEUMATIC SIGNAL
///	ELECTRICAL SIGNAL
///	ELECTRICAL BINARY SIGNAL

MACHINE MATRIX (NOTE 7)					
MACHINE NUMBER	SYSTEM TAG No.	AREA	NOVARTIS TAG No.	ROOM No	COMMENTS
G1951–M01	001	BLENDING ROOM	202.M.0311/C001	306B	

Revision Details	Description/Change No:	Chk	Appd
	DUST EXTRACT VAC GEN DELETED.	---	---

Document Complete and Approved for use

GEA Buck Systems

U5 QUADRO MILL & SUPPORT FRAME P&ID

THIRD ANGLE PROJECTION	Scale	Tolerances unless otherwise stated		Drawn	Date	Modified	Date	Status	Drawing No.	Sht	Rev
	---	ISO 13920 -BF	ISO 2768 -mK	MAPA	24/Oct/06	MAPA	2/Nov/06	CO	G1951-M01-901	of 1	06

Plot-Datum :

CAD-BSL-G1951-M01-901-05.DWG

SECTION 6

INSTALLATION GUIDELINES

CONTENTS

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Section 6

INSTALLATION GUIDELINES

6.0 Safety

All installation actions must be carried out by, alert qualified personnel capable of recognising risks and dangers associated with installation.

HEAVY WEIGHTS - EQUIPMENT WEIGHING MORE THAN 20KG MUST BE LIFTED USING SUITABLE MECHANICAL LIFTING APPARATUS.

LIFTING APPARATUS – LIFTING APPARATUS MUST ONLY BE USED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS AND LOCAL HEALTH AND SAFETY REGULATIONS. ALL LIFTING APPARATUS AND SLINGS MUST BE APPROVED.

BLENDER: DANGER TO LIFE & LIMB – ROTATING MACHINERY; THE BLENDER MUST BE INSTALLED IN AN ENCLOSED AREA WITH RESTICTED ACCESS. INTERLOCK SYSTEMS AND LOCAL OPERATING PROCEDURES MUST ENSURE THAT NO PERSONNEL ARE WITHIN THE DANGER AREA WHEN THE MACHINE IS OPERATING

Do not climb on the machine, use approved climbing/access equipment.

NOTE…

All electrical connections are to be made with reference to drawings in Section 5.

6.1 PH600 Post Hoist - Installation

PH600 Post Hoist is to be installed in the Blending Room. The procedure detailed below is to be applied to the hoist supplied.

6.1.1 Preparation

Before proceeding, please check the following:

1. All the components of the hoist are present and undamaged.
2. Down stream equipment is in position (or its proposed position and orientation is clearly marked), if it has a direct bearing on the installation of the hoist.
3. Proposed location has enough room for the hoist to perform its intended range of motion.
3. Hoist will have adequate maintenance access.

The hoist is provided with mounting holes in the base for fixing the unit to the floor. Some hoists are supplied with an additional ceiling unit to support the hoist at the ceiling (depending on model supplied); mounting holes are provided to fix this unit to the (structural) ceiling. (See section 5 for drawings showing installation dimensions).

Fixing bolts are not supplied as part of the equipment. The fixing of the unit is dependent on site conditions such as the type of structure being fixed to, the material and grade and the intended use. It is recommended that for fixing into concrete, chemical resin anchors of the correct specification for the loading conditions are used

Specification of the fixing fasteners should always be defined by a qualified structural engineer, based on the calculations for floor and ceiling loadings.

6.1.2 Mounting and alignment

General installation procedures are as follows:

1. Refer to the mechanical general assembly (GA) drawing (see Section 5). In particular, refer to the plan view and note the orientation of the 'Load' and 'Unload' positions, and the 'Reach' radius of slew.
2. Mark the position for the hoist on the floor. Use the centre line of the down stream equipment, in conjunction with the 'Reach' radius of the hoist, to locate, accurately, the hoist base plate and anchor points.

   Important: Where a ceiling mount is to be fitted, (depending on model) the location of the ceiling mount must be exactly vertically above the centre of the base plate.
3. Mark the location of the base plate's fixing holes on the plant floor, and ceiling support mounting bolts where applicable.
4. Drill the floor (and ceiling) at the appropriate points. Follow the instructions of supervising structural engineer. Follow the instructions for the use of the chemical resin anchors (if used) and observe the required curing period.
5. Using appropriate lifting gear, raise the Column to the vertical position and position the base plate over the fixing bolts. The ceiling support (if fitted) can be fitted to the top of the column at this stage.
6. Secure the base plate to the floor. Where a ceiling support is to be fitted, the lifting gear should continue to support the Column until the ceiling support has been fixed to the ceiling.
7. Check/ensure hoist is vertical. Remove the lifting gear.
8. The hoist will have been shipped with the forks or attachment separate from the column. This should now be fitted and the mounting bolts are to be tightened to the torque values listed in Section 3.
9. Final alignments should be checked at this stage. The mounting bolts should then be tightened to appropriate torque for the type of fasteners used.

IMPORTANT…

DO NOT TIGHTEN THE FIXING BOLTS BEFORE LEVELLING & VERTICAL ALIGNMENT HAS BEEN CARRIED OUT.

6.1.3 Electrical/Pneumatic Installation

Refer to electrical and pneumatic drawings (See Section 5) and make the connections between the Hoist and any remote panels (where applicable).

HIGH VOLTAGE – ENSURE MAINS SUPPLY IS ISOLATED BEFORE CONNECTING TO THE MAIN CONTROL PANEL

1. Connect the mains supply to the main control panel in accordance with electrical diagrams. (Section 5) In particular, ensure that the hoist is grounded.
2. Connect compressed air supply (where applicable). (See Section 1 for capacity).

6.1.4 Adjustments - Slew & Carriage Position Switches

End stops with limit switches are installed to set the permitted angle of slew between Load and Process positions. Similarly, limit switches are fitted to the hoist column to set the Hoist 'Load/lower overtravel' position and the Upper Stop/Slew Position. The position of each limit switch is set, when the machine is commissioned, to enable the machine achieve the design parameters. If it is necessary to adjust (fine tune) the positions set at commissioning proceed as directed in the following paragraphs.

Slew Position

To adjust a Slew position (load or process):

1. Determine the direction of movement, and estimate the amount of adjustment require. It will help if the desired position of the forks (centre line) is marked on the floor.
2. Slew the hoist until it is mid-way between Process and Load positions.
3. Ensure the machine is made safe.
4. Remove the covers from the powered slew base assembly, and identify the Process Slew and Load Slew stops.
5. Using a scribe or paint & brush, clearly mark the existing positions of both slew switches (default positions).
6. If the 'Process' Slew position is to be adjusted:
   - 6.1 Using M10 socket spanner, slacken both set screws on the stop plate. Do NOT loosen the set screws – they should be just slack enough to enable them to be moved by gentle tapping with hammer.
   - 6.2 Using hammer gently move the stop plate until the limit switch is the desired position (estimated).
   - 6.3 Connect mains power and slew the hoist to the 'Process' position.
   - 6.4 Check the accuracy of slew against the external marker.
   - 6.5 With the machine made safe - repeat actions at Step 6.2 – 6.4 above until centre line of forks is in desired position.

   CAUTION: When adjusting the stop plate, take care and ensure that any movement does not cause the 'Flag' on the slewing base to collide with the face plate of the limit switch.

   - 6.6 When desired position is achieved, tighten set screws on stop plate.
7. If the 'Load' Position is to be adjusted, carry out the sets detailed at 6.1 - 6.6 above.

Carriage Height Position

There are two limit switches installed on the Hoist Column to set the Load/Lower Overtravel position and the Upper Stop/Slew position. The position of the 'Load/Unload Overtravel switch is the 'O' datum for the encoder & counter.

The encoder uses this datum, to determine the heights (above datum) of the following positions (See G1951-D01-901 P&I Drawing in Section 5):

Unload Pre-Stop
Slew Pre-Stop
Forks Empty Interlock
Slew Height

The distance (in millimetres) of each position in relation to the 'O' datum is represented by encoder pulses, on the basis of 1 pulse = 1 millimetre.

Therefore, if the 'O' datum is moved UP or DOWN, the relative stop positions of the hoist carriage will change accordingly, unless the encoder values for the respective positions are changed by the same value as the Datum.

The Upper Limit switch on the hoist column is set at commissioning to protect the hoist and should NOT be adjusted.

To adjust the Load/Lower Overtravel Limit switch, proceed as follows:

1. Determine the distance and direction of change for the datum.
2. Lower the hoist to fully down position.
3. Ensure the hoist is made safe.
4. Remove the left side of the Hoist Front cover.
5. Locate the lower limit switch and remove the cable ties to reveal Qty 2 Allen Head bolts.
6. Using scribe, or paint & brush, mark the Mark the existing position of the limit switch (default).
7. Slacken the Allen head bolts sufficient to allow the switch assembly to be raised or lowered, as required.
8. Connect power to the hoist and raise/lower to test accuracy of new position.
9. With the machine made safe, repeat the actions at Steps 7 & 8 until the desired accuracy is achieved.
10. Tighten the Allen Head bolts and re-fit the front cover.
11. The height of the 'O' datum has now changed (Up or Down) by a specific amount. This amount is to be recorded, because it is the basis for any changes to the interim positions of the hoist. If the interim carriage height positions are to be adjusted, this must be done through software in conjunction with the encoder and counter using the formulae 1pulse = 1 mm

6.2 Blender (B01) – Installation

6.2.1 General

All standard motors incorporate breather holes in the frame between the mounting feet, to allow an exchange of air within the motor under varying temperature conditions. The breather holes are fitted with plastic plugs before the motor is dispatched to maintain environmental protection. The plugs may be permanently removed after installation in clean, dry-air operating conditions.

To prevent movement and to allow efficient operation, the user should ensure that the equipment is properly fixed. There are bolt-holes in the frame base for this purpose.

Holding-down bolts are not supplied with this equipment. The correct type of fixing is dependent on the type and individual characteristics of the plant flooring and cannot be specified by Buck Systems without full information and instructions from the customer. *EACH* fixing bolt must be able to withstand a pullout load of 1750 Kg.

6.2.2 Blender Main Frame and Cage.

The blender must be installed on a horizontal flat surface and fixed to prevent movement due to dynamic loads when operating. Refer to drawing G1903-B01-001 (Sheet 1) for details of the loading/space requirements.

Position the blender, making sure that enough free space is left to allow for the cage rotation. Clearance for maintenance is required to the rear of the frame.

Mark the site floor with the position of the base frame boltholes.

Ensure that the frame will not be twisted, when the holding down bolts are tightened, by fitting packing pieces beneath the frame. Secure the frame to floor (following procedures outlined by supplier of the chosen fixing device).

6.2.3 Control System

There are two control cabinets/panels to be installed, see Drawing G1951-B01-001:

Main Control Panel - Floor-mounted against the wall in the Technical Area.

Operator Control Panel – Mounted flush with wall in safe area, outside Blending Room.

Electrical Connections

For details of electrical connections refer to the drawings G1951-B01-601 in Section 5.l.

The terminal blocks inside the electrical panels and junction box are clearly numbered to aid installation. Make electrical connections as follows:

Control Circuits:

Main Control Panel to machine junction box on the blender frame.

Main Control Panel Operator Interface Control Panel.

Power:

Motor power and motor brake connections between Main Control panel and the Machine Junction Box.

Mains three-phase supply to control panel.

Note: Ensure control circuit wiring is routed separately from power supply and three-phase wiring to the motor. Where this is not possible a separation of at least 300 mm is to be maintained between control and power wiring.

Earth Connections

Make earth connections in accordance with drawing Nos. G1959-B01-601and B18023.

Pneumatic Connections

Make the pneumatic connections; refer to drawings G1903-B01-801 & G1903-B01-901 in Section 5:

Main air supply to filter/regulator/ lubricator unit in the pneumatic panel.

Set Up Switches and Sensors

See circuit diagram G1951-B01-601, pneumatic circuit diagram G1951-B01-801 and process diagram G1951-B01-901 in Section 5 of this manual..

The blender requires an air supply of 5.5 BarG (80 psi) at a flow rate of 60 Litres/Second. This pressure is set by the main regulator. Minimum pressure to ensure adequate clamping is 3.75 BarG (49 psi). Pressure Switch PSl-9000 is set to activate as the supply falls below this value.

6.2.4 Adjust Clamping Pressure

Refer to the pneumatic circuit diagram G1951-B01-801 and 901 in Section 5 and *Supplier's Information* in Section 4.

Method.

1. Unscrew the main relieving pressure regulator knob on the Filter/Regulator.
2. Turn on the compressed air supply but not the electric supply.
3. Clip a test meter, range ohms x 1 across the terminals on the pressure switch,PS3300, to detect operation (close on rise).
4. Gradually screw down the main pressure regulator, observing its gauge, until 3.75 BarG is registered. Now adjust setting of pressure switch PSL-9000 (this increases the pressure at which the switch changes over) until it operates. See *Supplier's Information* in Section 4 for adjustment settings.
5. Reverse the adjuster, finding the mid-point. Now gently unscrew the main pressure regulator, observing the pressure at which PSL-9000 operates. As pressure falls through 3.75 BarG, change over should occur. Adjust until this condition is met, and then reset the pressure regulator up to 5.5barG.
6. Remove the test meter leads.

6.2.5 Set "Container Clamped" Sensor

The purpose of this unit is to monitor the clamping pressure holding the container in the machine. It is, in effect, a supply to pressure switch PS3300, consisting of three elements:

A flow control regulator

A pressure regulator

Breaks in the line produced by the sensing pads on the diagonal air check bungs, sited in the top of the cage.

As the container rises to the air check sensing pads, their holes are sealed off by the container framework. The clamping pressure therefore increases. Pressure switch PS3300 trips when 1.7barG is reached. The flow regulator limits the air loss during the lift cycle before the top of the container framework makes contact with the sensing pads.

Method

1. Connect the output from pressure regulator direct to the input PS3300.
2. Fully unwind the pressure regulator setting knob on pressure regulator to stop (min. pressure setting).
3. Open the flow control valve fully.
4. Adjust the setting on pressure switch PS3300 (This increases the pressure at which the switch changes over).
5. Clip a test meter, range ohms x 1 across the terminals on the pressure switch, PS3300, to detect operation (close on rise).
6. Turn on the compressed air supply if not already, and ensure the pressure as displayed on the meter is 5.5 BarG.
7. Manually override solenoid valve XV3300.
8. Screw down the pressure regulator setting knob on pressure regulator observing its pressure gauge, until 2barG is reached. Once reached, lock-off the knob.
9. Turn off the compressed air supply, wait for the pressure to fall, and then reapply.
10. If the main air pressure does not go back up to 2barG, readjust pressure regulator knob setting.
11. Using the test meter, adjust the setting on pressure switch PSL3300 until the contacts close.
12. Turn off the compressed air. As the pressure falls, at approximately 1.4 barG the switch contacts open.
13. Fully close the flow control needle valve.
14. Apply the compressed air again.
15. Observing the test meter and gauge, gradually open the flow control needle valve – ensuring that the gauge rises and the switch contacts close at approximately 1.4 to 1.75 barG.

16. Turn off the compressed air.
17. Manually reset solenoid valve XV3300 to closed.
18. Disconnect the direct pipe link between pressure regulator output and switch PS3300 input.
19. Remove the test meter leads.
20. The flow regulator is initially set at four full turns open from closed, this flow setting can be increased when the machine is run automatically if the observed time between the final stroke with bin and the input signal indicating 'bin clamped' exceeds four seconds.
21. The 'container clamped' sensor is now set.

6.2.6 Set "Lifting Frame" Proximity Switch.

IMPORTANT - The underside of the bin lifting platen must be adjusted to be parallel to the floor across its diagonally opposite corners. Failure to do this will cause loading difficulties and in extreme cases damage to the screw jacks.

Method

1. Because the machine protocol does not allow manual or automatic rotation unless PS3300 gives a 'clamped' signal, setting the lifting platen involves shorting out this switch.
2. Any links installed must be removed after setting.
3. Turn on the compressed air supply and mains power.
4. Manually operate solenoid valve XV3000A to drive lifting frame fully up in to the cage until stalled in top position. Do not reset control valve to centre position.
5. Press the "Controls On" push button.
6. Put the blender into manual mode, and hold down the jog forwards key on the operator interface unit to slowly rotate the cage until the 'cage vertical' switch flag arm, bolted to the main-shaft between the gearbox & bearing, has past XS2200. Once past, release the jog forwards key to bring the cage to a stop, and then press the hold down the reverse key. This action will then cause the cage to slowly reverse until XSS2200 detects the presence of the flag whereon the cage will automatically stop in its correct automated positioning mode.
7. Again using the air motor control solenoid valve XV300B, manually operate the drive lifting frame down out of the cage to within 100mm of the floor.
8. Measure the vertical distance from the floor to the underside of the diagonally opposing jacking legs.
9. This dimension should be within 3mm for all.
10. If not it must be corrected by adjusting the 'cage vertical' switch flag arm. Advancing the flag in the direction of final rotation stops the cage sooner and retarding stops the cage later.
11. Re run this procedure from the beginning until the frame is parallel to the floor.
12. The height of the frame must now be set.

13. It is important that the frame rests on the floor to absorb the impact loading caused by carelessly loading bins dropped too quickly into the cage frame pockets.
14. Turn off the motor isolator and turn on mains power to power up proximity switches XS2200 and XS2201.
15. Manually override the air motor control valve to drive the frame down until it touches the floor – observe the input indicator and adjust the 'frame down' flag until it shows 'operated'.
16. Return machine to operational by first ensuring any links used are removed.

Proving Settings

1. Clear the area.
2. Switch on the local motor isolator.
3. Set the timer to 20 seconds and the RPM to 3.
4. Load a container into the cage.
5. Close the Blender Room Gate and transfer Key A to the Operator Control Panel (Panel now enabled).
6. Press "Controls On" push button, the "Controls On " lamp will illuminate.
7. Select automatic operation and a blend cycle. This starts a complete blending cycle.
8. Allow the machine to clamp the bin, rotate, time out, continue past the vertical position, reverse, come to a stop at the vertical and unclamp.
9. Using the interlock key, re-enter the compound and observe if the cage is vertical.
10. If the diagonally opposite frame corners are not resting on the floor, the 'down flag' must be lifted by the appropriate amount. The ideal setting leaves the frame firmly resting on the floor when the jack drive stops – beware that too much over-run may bend the jacks.

6.3 U5 Mill (M01)

The U5 Mill is mounted on a Frame/Trolley Assembly prior to despatch by Buck systems and includes the following principle attachments

Hopper Assembly

250 mm Dia. Buck 'C' Valve (Active Half) assembly with vacuum generators

Before bring the Mill into service, check and ensure the Harting (plug & socket) electrical and pneumatic connections are secure and undamaged.

SECTION 7

Certification

See Volume 3

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