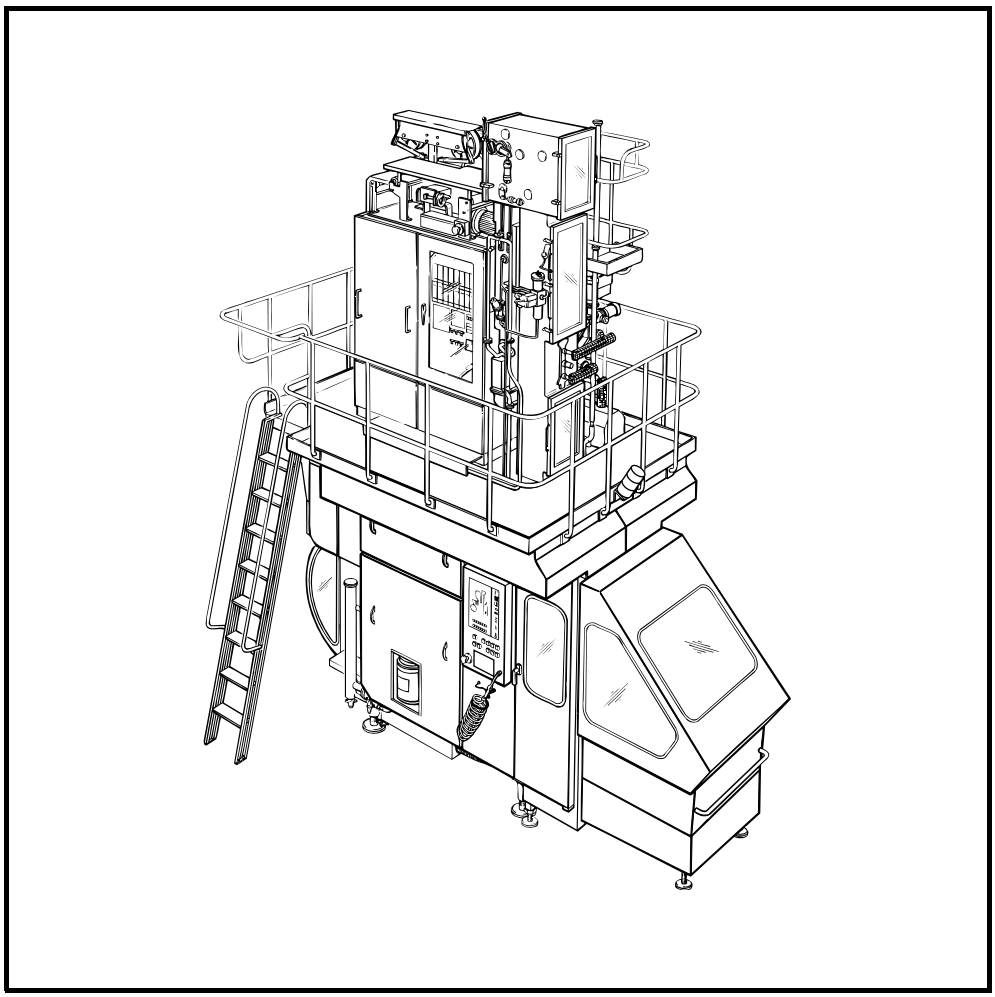
IM

Installation Manual

Tetra Brik Aseptic TBA/8

648022-1100



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Tetra Pak

Doc. No. IM-80294-0102

This document is valid for:

Series No/ Machine No Sign.

Tetra Brik Aseptic TBA/8
648022-1100

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Issue 9907

Doc. No. IM-80294-0102

Tetra Pak

Tetra Brik Packaging Systems

Introduction

Safety precautions

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5 Crate handling

6 Positioning, assembly, and connections

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Introduction

To ensure maximum safety, always read the *Safety precautions* section before doing any work on the equipment or making any adjustments.

Equipment information

Purpose

This Tetra Pak equipment is designed to package liquid food products.

Manufacturer

This Tetra Pak equipment has been manufactured by:

Tetra Brik Packaging Systems AB
Ruben Rausings gata
221 86 LUND
Sweden

or by:

Tetra Brik Packaging Systems S.p.A.
Via Delfini 1
411 00 MODENA
Italy

Service

Contact the nearest Tetra Pak service station.

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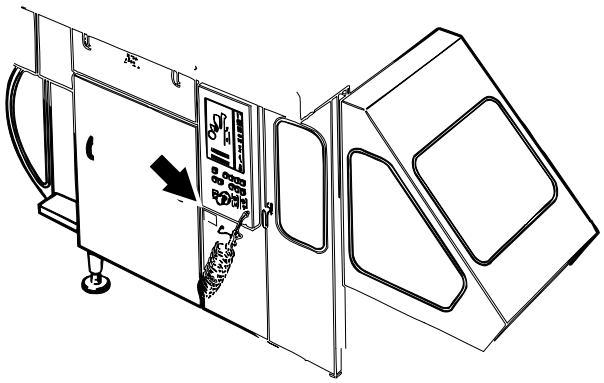
Identification

The figure below shows an example of the equipment data plate. The plate carries data needed when contacting Tetra Pak concerning this specific equipment.

CE marking

This equipment complies with the basic health and safety regulations of the European Economic Area (EEA).



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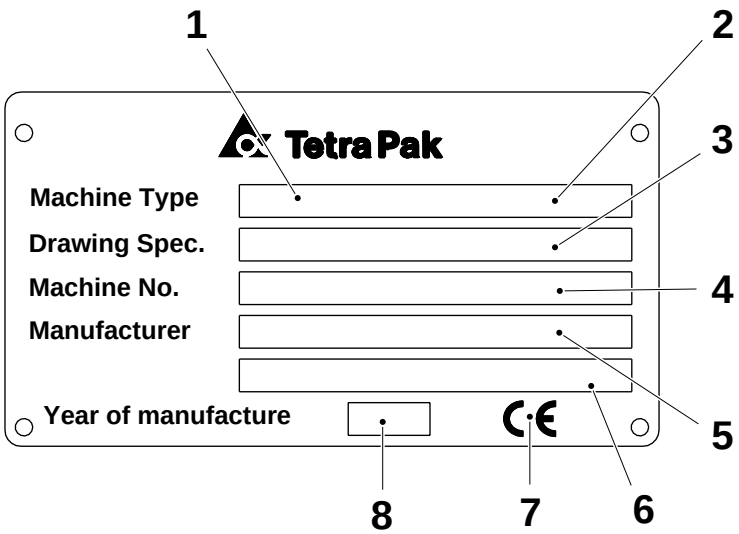

1 Machine type
2 Volume
3 Drawing specifications
4 Machine serial number
5 Manufacturer
6 (Designed by)
7 CE mark
8 Year of manufacture

Document information

Purpose of Installation Manual (IM)

The purpose of this Installation Manual is to provide service technicians with information on how to safely install this Tetra Pak equipment.

It is important to:

- keep the manual for the life of the equipment
- pass the manual on to any subsequent holder or user of the equipment.

Design modifications

The instructions in this document are in accordance with the design and construction of the equipment at the time it was delivered from the Tetra Pak production plant.

Number of pages

This document contains a total of *176* pages.

Technical publications

The technical publications for this equipment are:

- Electrical Manual (EM)
- Installation Manual (IM)
- Maintenance Manual (MM)
- Operation Manual (OM)
- Spare Parts Catalogue (SPC)

Additional copies can be ordered from the nearest Tetra Pak service station.

When ordering technical publications, always quote the **document number** that can be found in the machine specification document.

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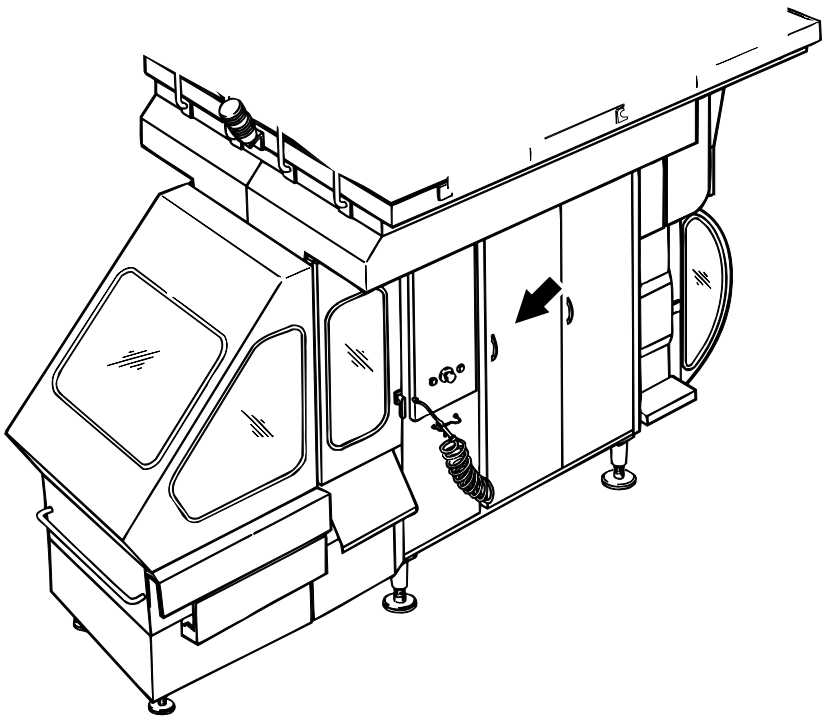
Other documents

The following documents are attached to the main crate:

- Packing List
- Declaration of EC conformity (for equipment delivered in the EEA only)
- Installation Manual (this manual)

The following documents are located on the machine itself, behind the rear RH door:



- Machine Specification Document
- Final Inspection Report
- Machine Deviation Report (if relevant)
- Start-up Machine Quality Report (including Transport Damage Report)
- Feedback from MC form
- System drawings

The following manuals are located in a box inside the main crate:

- EM (Electric Manual)
- MM (Maintenance Manual)
- OM (Operation Manual)
- SPC (Spare Parts Catalogue)

Abbreviations

The following abbreviations are used in this Installation Manual.

Abbreviation	Meaning
Approx.	Approximately
ASU	Automatic Splicing Unit
CIP	Cleaning In Place
h	Hour, Hours, Height
IS	Inner Strip
L	Length
LH	Left Hand
LS	Longitudinal Seal(ing)
LSC	Large Size Container
min	Minimum
max	Maximum
p/h	Packages per Hour
PT	PullTab
Recap	Reclosable Cap
Recirc	Recirculation, Recirculated
RH	Right Hand
SA	Strip Applicator
TMCC	Tetra Pak Multi-purpose Compact Controller
TPIH	Tetra Pak Induction Heating
TPMC	Tetra Pak Machine Control
TS	Transversal Seal(ing)

Standard International System abbreviations are used for all measurements.

Safety precautions

To ensure maximum safety, always read this section carefully before doing any work on the equipment or making any adjustments.

Hazard information

General

Failure to observe information marked “DANGER!” **puts your life in danger**.

Failure to observe information marked “WARNING!” can result in **personal injury and/or serious damage to or destruction of equipment**.

Caution! Failure to observe information marked “Caution!” can result in **damage to equipment**.

Mandatory signs

 **Wear eye protection**	 **Wear hearing protection**
 **Wear head protection**	 **Wear protective gloves**
 **Disinfect hands/gloves**	

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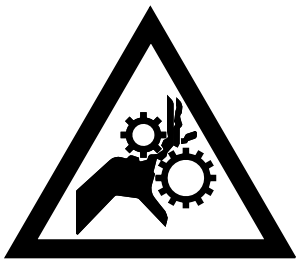
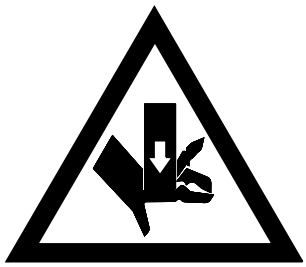
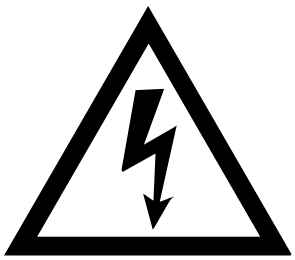
Warning signs

 **Risk of entanglement!**	 **Risk of corrosion and chemical burns!**
 **Risk of crushing!**	 **Risk of cutting/amputation!**
 **Risk of burns!**	 **Risk of electrocution!**

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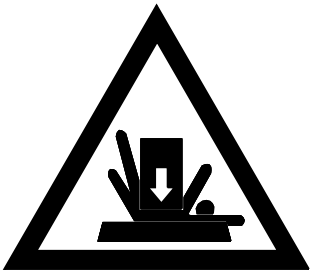
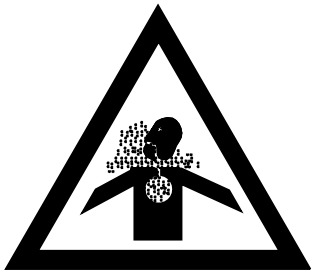
 **Risk of crushing!**	 **Risk of intoxication!**
 **Risk of falling!**	

Personnel

Only skilled or instructed persons are allowed to work on the equipment.

The manufacturer declines all responsibility for injury or damage if the instructions in this manual are not followed.

Personnel are responsible for:

- the equipment and the work area around the equipment
- all personnel in the vicinity of the equipment
- making sure that all safety devices are fully operational

Personnel must regard all electrical equipment as live. In general switch the equipment off at the mains power and padlock the switch before carrying out maintenance or repair work.

Electricians should be certified according to local regulations and have experience of similar types of installations, proven skills in reading and working from drawings and cable lists, and knowledge of local safety regulations regarding power and automation. Work with the electrical equipment must be performed only by skilled or instructed technicians.

According to EN 60204-1, 3.30 an instructed person is:

– *An individual adequately advised or supervised by a skilled person to enable that individual to avoid hazards which electricity can create (e.g. operating and maintenance staff).*

According to EN 60204-1, 3.55 a skilled person is:

– *An individual with technical knowledge or sufficient experience to enable that individual to avoid hazards which electricity can create.*

General safety precautions

Wear hearing protection while the equipment is running.

Hygiene

It is important to keep hands and/or gloves clean.

Disinfect hands and/or gloves before touching the packaging material, the strip(s) or any other equipment part that may come into contact with the product.

Clean the platforms, the ladder and the area around the equipment.

To avoid production faults, it is important that the packaging material and the strip(s) never touch the floor, the platform or the area around the equipment.

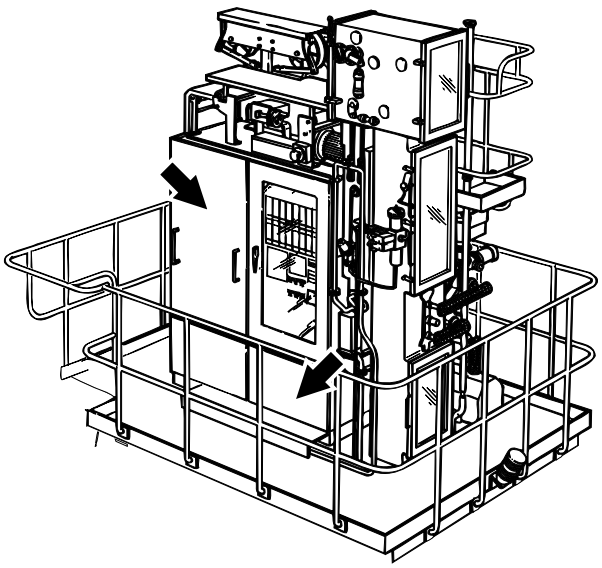
Electrical cabinets

There is high voltage in the electrical cabinets (up to 400 V). In case of accident call for medical attention immediately.

Work inside the electrical cabinets must be performed by skilled or instructed persons only.

Electrical cabinet doors locked with screws may be opened only by skilled or instructed persons.

Electrical cabinet, LH side



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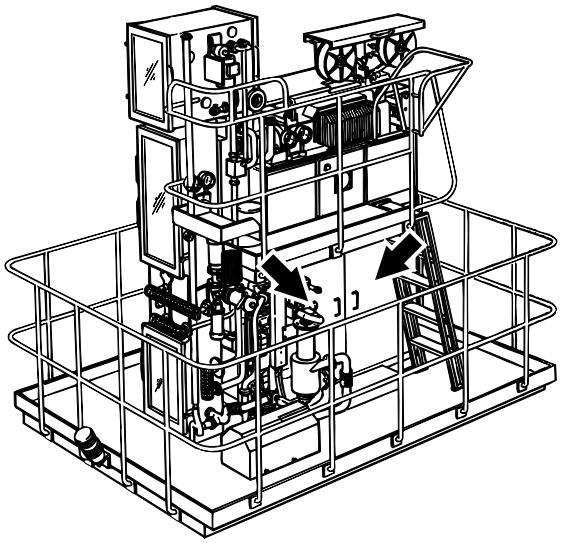
Electrical cabinet, RH side



TPIH generator

There is high voltage in the TPIH generator (up to 2000 V). In case of accident call for medical attention immediately.

Never open the TPIH generator. Remove and return the unit to an authorised service centre for servicing and repair.

Machine safety devices

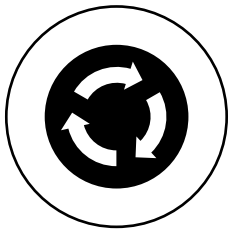
Emergency stop buttons

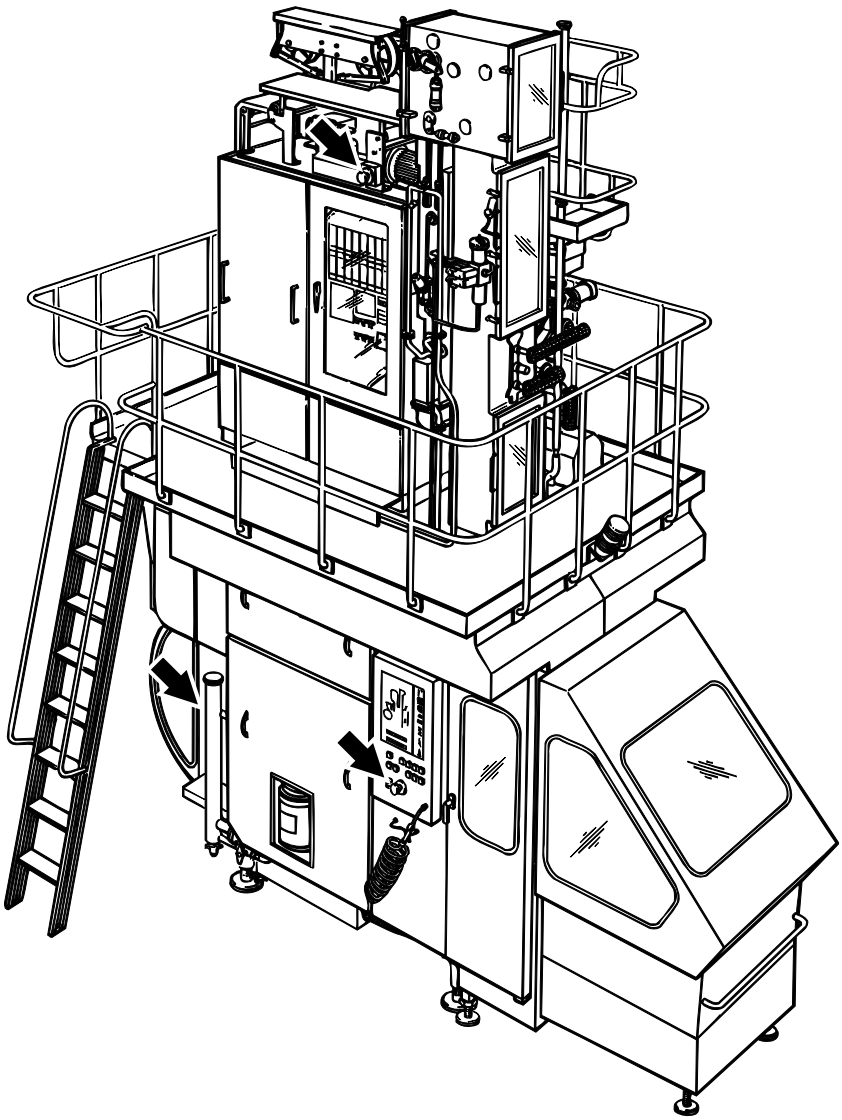
Learn the position of the **Emergency stop** buttons in order to stop the equipment immediately in case of danger to people or damage to the equipment.

The **Emergency stop** buttons do not switch off the power at the mains power switch.

Pushing the **Emergency stop** buttons will reset the equipment program to **Zero** position and deactivate all pneumatic cylinders.

Emergency stop buttons, LH side





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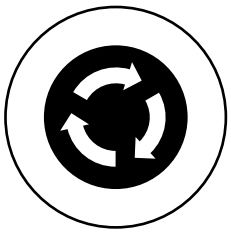
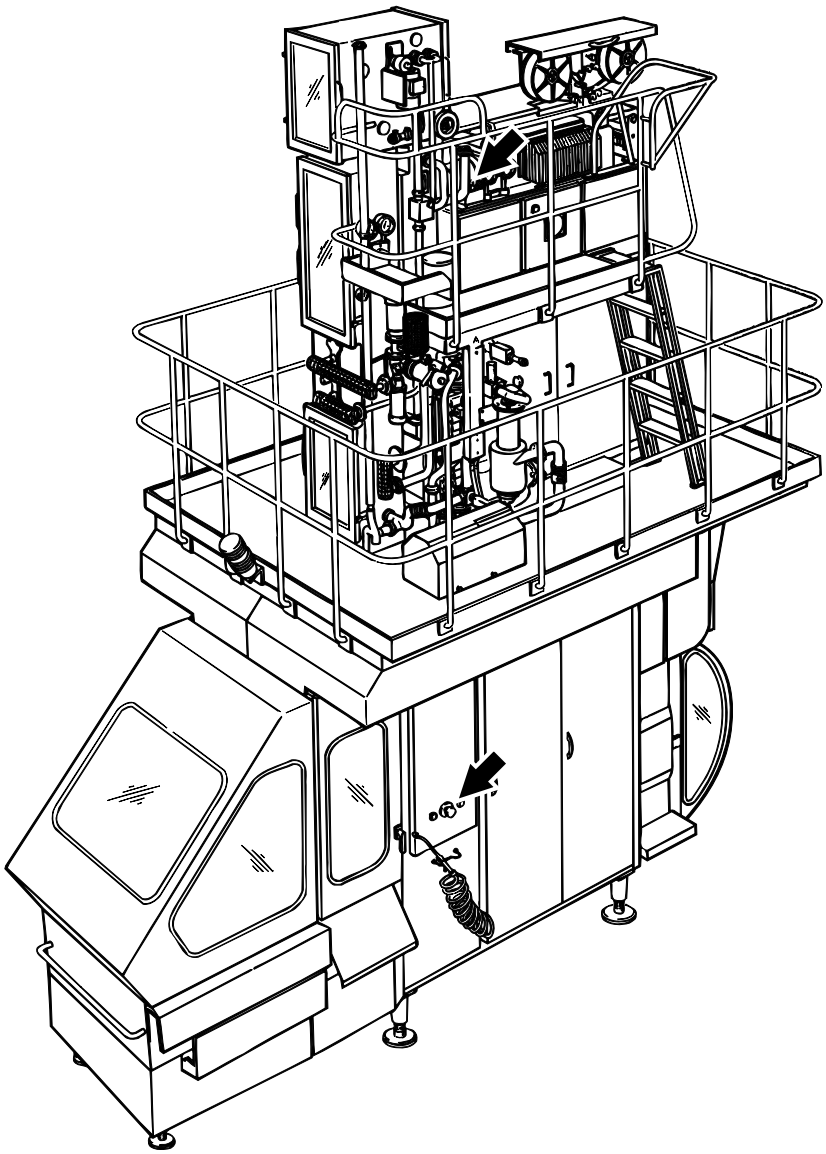
Emergency stop buttons, RH side





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Doors, covers and guards

WARNING!

WARNING!

Make sure that all doors, covers and guards are in place and functioning.

Never remove covers or guards while the equipment is operating.

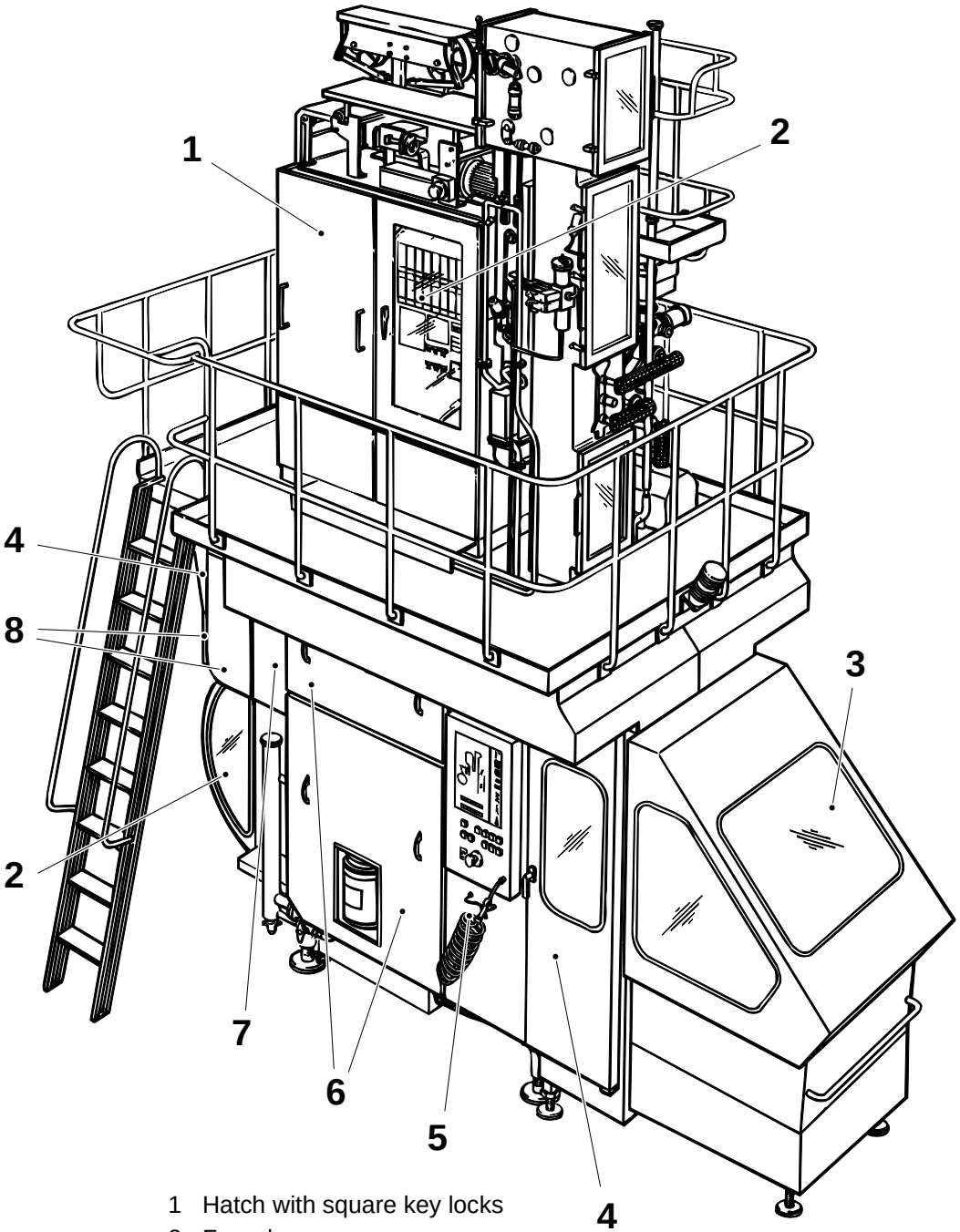
Certain doors, covers and guards are fitted with safety switches. These switches are part of the safety system and must **never** be bridged, by-passed or otherwise made non-operational.

Never stop the equipment by opening a door or cover with a safety switch.

Some equipment parts protected by doors, covers and guards may be hot.

In case of accident, call for medical attention.

Doors, covers, and guards, LH side, filling machine



1 Hatch with square key locks
2 Free door
3 Hood with safety interlock
4 Door with safety switch
5 Door with safety interlock
6 Hatch with screws
7 Door with screw lock
8 Door with timed switch

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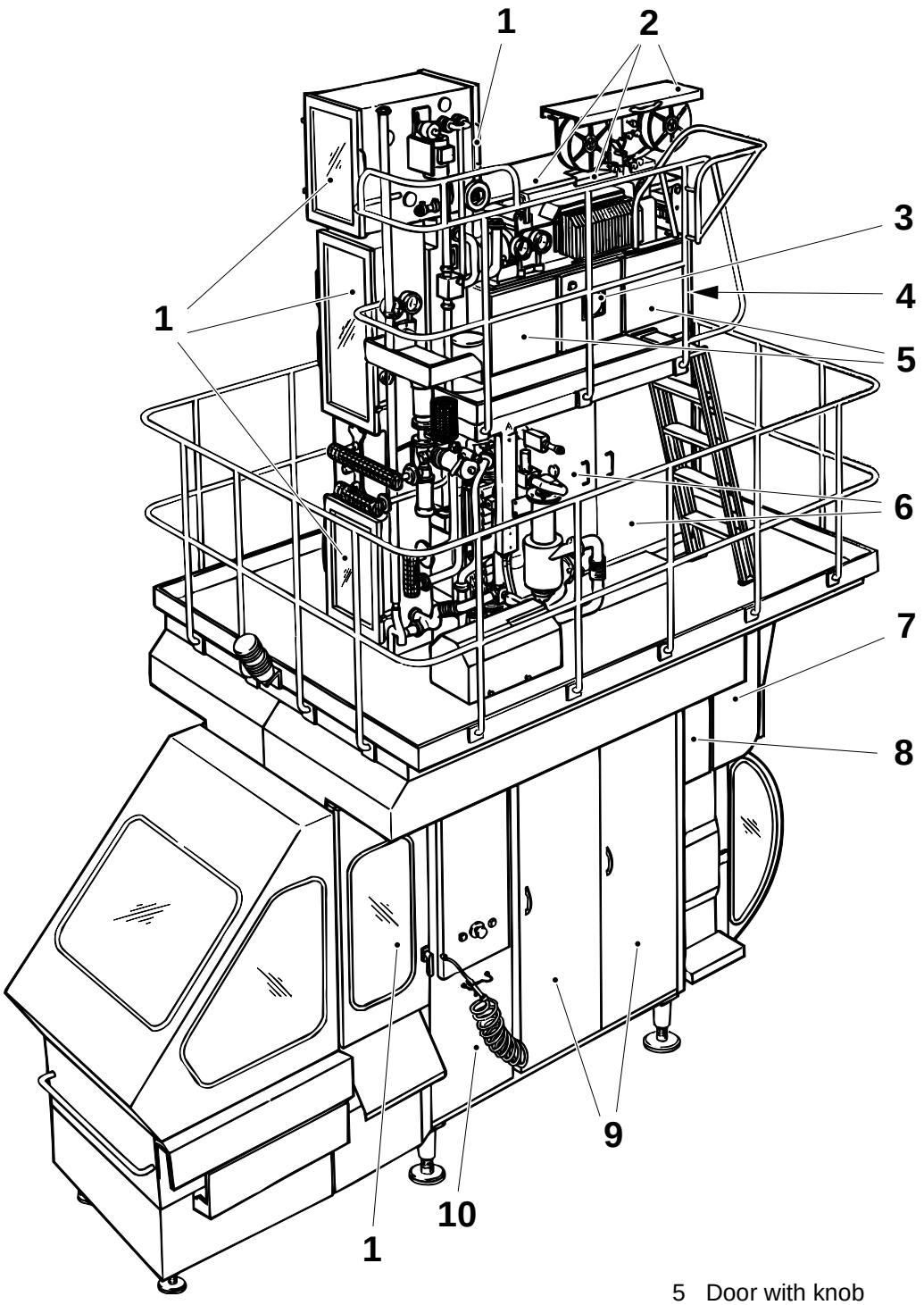
Doors, covers, and guards, RH side, filling machine



1 Door with safety switch
2 Hinged cover
3 Door with safety interlock and square key lock
4 Removable cover
5 Door with knob
6 Hatch with square key locks
7 Door with timed switch
8 Door with screw lock
9 Free door
10 Door with safety interlock

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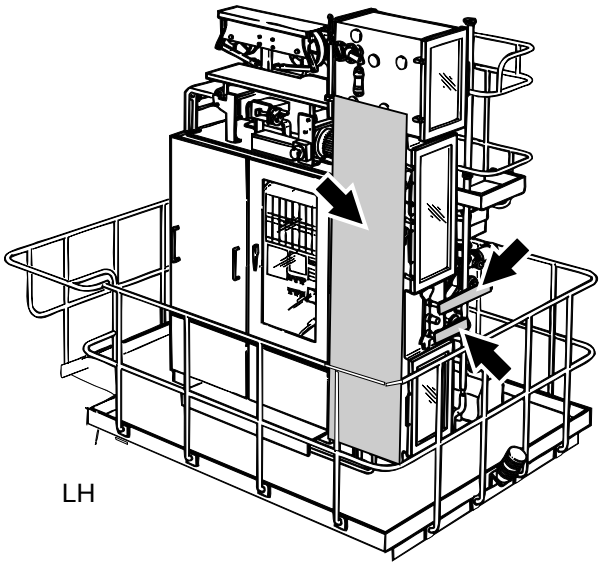
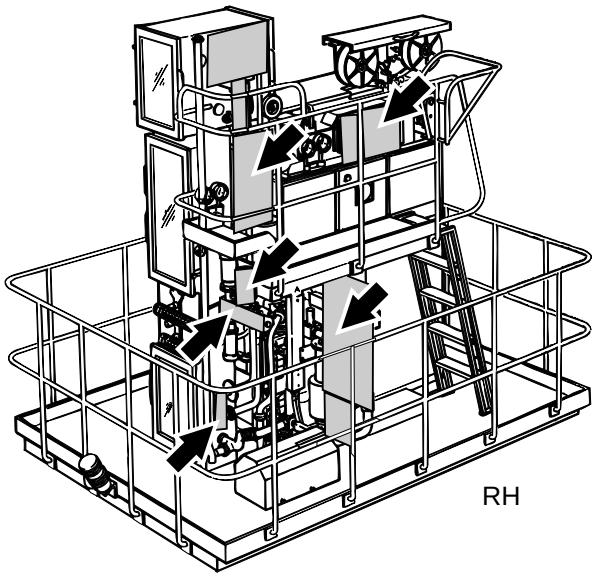
Protective guards



LH



RH

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Chemical products

Risk of personal injury!
Certain chemical products are toxic and/or inflammable. Carefully follow the instructions on the container label.

Follow the supplier's instructions for handling and disposal of the chemical products.

Personal protective equipment

- **Protective goggles**, TP No. 90303-0011
- **Apron**, TP No. 90303-0013
- **Shoes** made of PVC, PE plastic or rubber
- **Protective gloves** made of neoprene, TP No. 90303-0012

Before starting work with any chemical products, make sure that:

- the showers work
- a portable, TP No. 90303-6, or wall-mounted eyewash device is available at or near each machine site
- there are additional washing facilities

General emergency procedures

If you accidentally **swallow** chemical products, drink large amounts of lukewarm water.

If you get splashes or vapour from chemical products in your **eyes**, wash your eyes thoroughly with lukewarm water for 15 minutes (keeping eyelids wide apart).

If chemical products come into contact with **skin** or **clothes**:

- rinse immediately with plenty of water
- if skin burns appear, call for medical attention immediately
- thoroughly wash clothes before wearing them again

If you experience irritation or pain due to having **inhaled** chemical products vapour:

- leave the affected area and get some fresh air
- if the symptoms get worse, call for medical attention

Hydrogen peroxide

The liquid used for sterilising the packaging material consist of 35% hydrogen peroxide (H_2O_2).

WARNING!

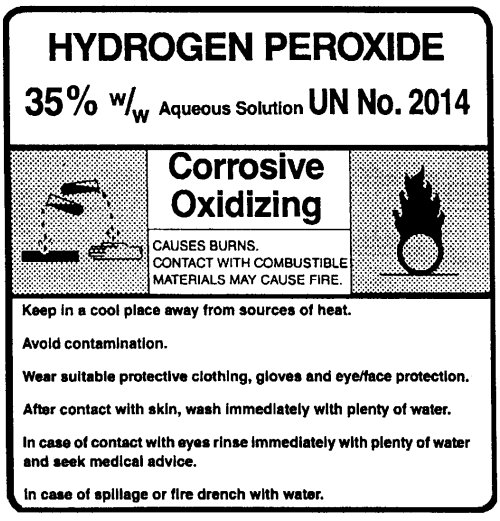
Hydrogen peroxide in liquid and gas form can cause irritation and injury if it comes into contact with the skin, mucous membranes, the eyes or clothes. Carefully follow the instructions on the can label.

Hydrogen peroxide can

HYDROGEN PEROXIDE:

- 35% w/w Aqueous Solution UN No. 2014
- Corrosive
- Oxidizing
- Causes burns. Contact with combustible materials may cause fire
- Keep in a cool place away from sources of heat
- Avoid contamination
- Wear suitable protective clothing, gloves, and eye/face protection
- After contact with skin, wash immediately with plenty of water and call for medical attention
- In case of contact with eyes, rinse immediately with plenty of water and call for medical attention
- In case of spillage or fire, drench with water

Reference: TP document No. M 1751.80



Example of can label

(Cont'd)

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Storage of hydrogen peroxide

Make sure that the area or room used for storage is:

- cool, clean and well ventilated
- shielded from direct sunlight
- free from combustible materials

Hydrogen peroxide must be stored only in its **original container** as delivered by the suppliers.

Keep the container upright and closed with a **proper ventilation cap** which allows oxygen to escape.

Pumps and other equipment used for hydrogen peroxide must be used **for this purpose only**.

Never put used hydrogen peroxide back into storage.

Disposal of hydrogen peroxide

Hydrogen peroxide should be sent for destruction by waste disposal specialists.

WARNING!

Risk of explosion!
Do not pour surplus hydrogen peroxide back into its original container. Hydrogen peroxide may decompose. In case of accident, call for medical attention immediately.

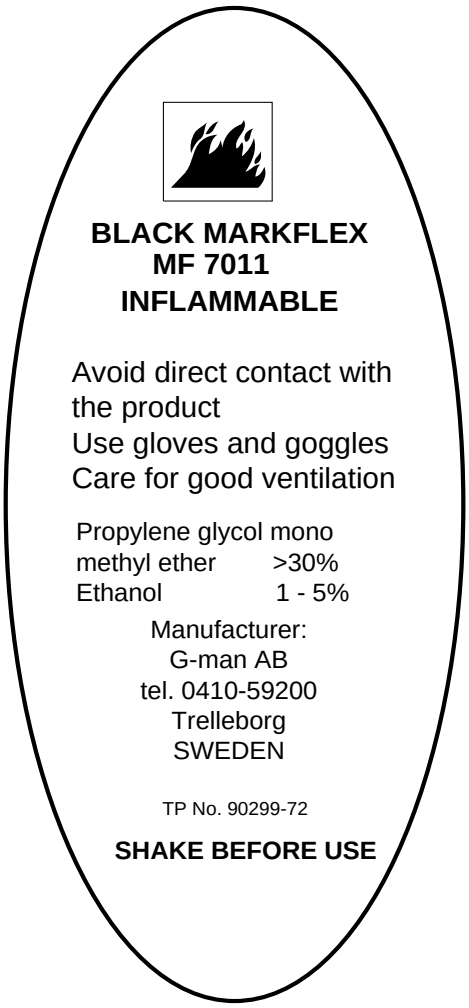
In some countries it is permitted to dilute hydrogen peroxide with water to a concentration below 1% and to dispose of it in the normal waste water drain. Hydrogen peroxide with a concentration below 1% is considered harmless.

Ink

Risk of personal injury!
Ink is inflammable and can be harmful if it comes into contact with the eyes or skin. Carefully follow the instructions on the container label.

Ink container

- INFLAMMABLE
- Avoid direct contact with the product
- Use gloves and goggles
- Care for good ventilation
- Propylene glycol mono methyl ether >30%
- Ethanol 1-5%
- SHAKE BEFORE USE



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Equipment for lifting and moving loads

WARNING!

Make sure that the capacity of the lifting equipment is adequate and that the equipment itself is in good working order.

If lifting tackle has to be joined to make up the necessary lengths, make sure that the joins are secure and have the same lifting capacity as the rest of the tackle.

Always engage the safety clip on lifting hooks to prevent the tackle from slipping off.

Use ropes or poles to steady and manoeuvre loads. Do **not** use hands or feet.

Make sure that the route and the destination are free from obstacles before moving a suspended load. It must be possible to lower the load to the floor quickly and safely in an emergency.

When depositing loads, keep the lifting equipment in place until the stability of the load has been checked.

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3 Drawings and Technical Data

3.1 Installation drawings

The following drawings provide machine dimensions, connection positions and dimensions, and access dimensions. All dimensions must be respected. All dimensions are in millimetres unless otherwise stated.

The following drawings are provided:

- Top view
- Front view
- Other plan views
- LH side view

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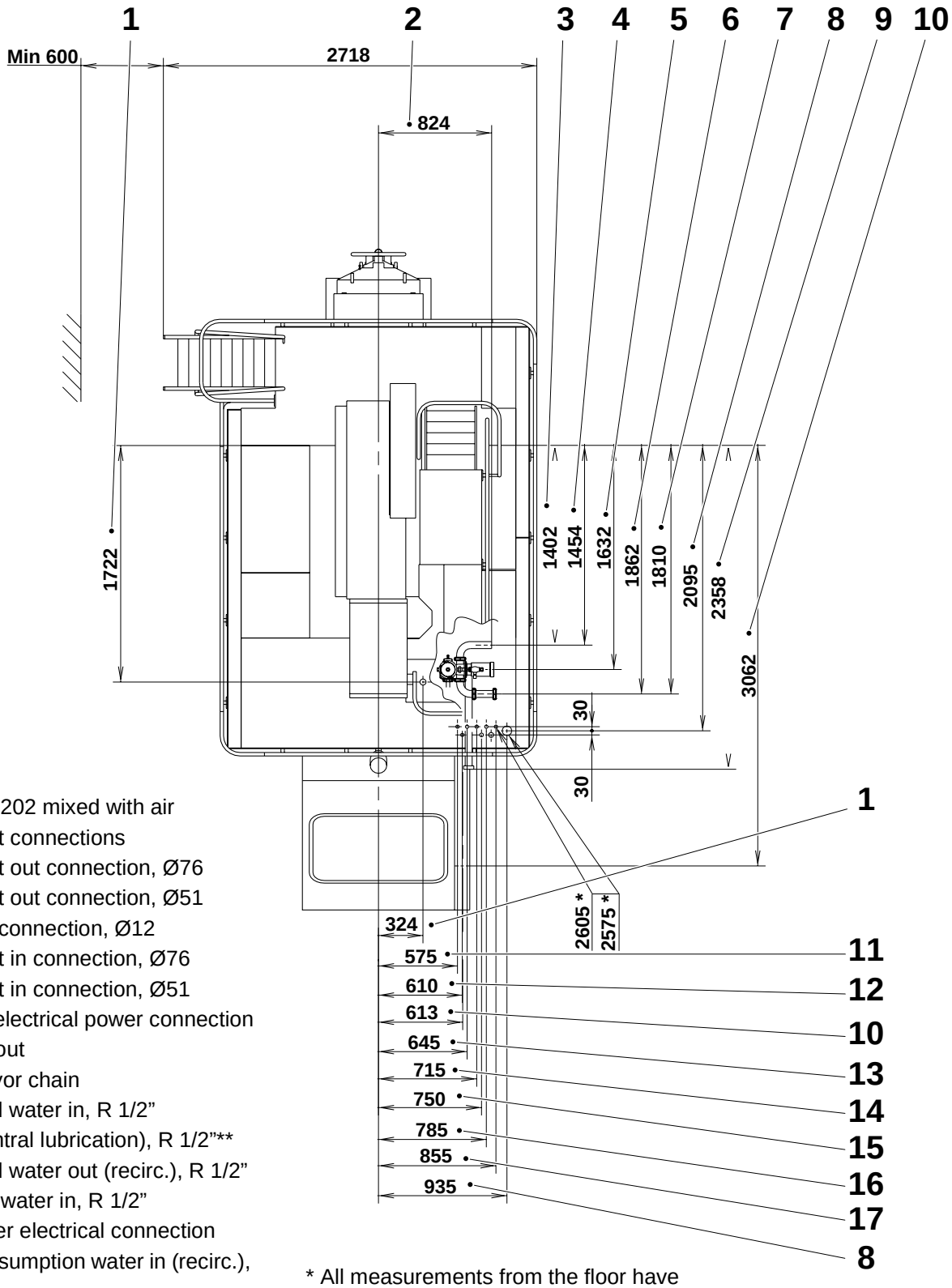
Top view



1 Vent, H202 mixed with air
2 Product connections
3 Product out connection, Ø76
4 Product out connection, Ø51
5 Steam connection, Ø12
6 Product in connection, Ø76
7 Product in connection, Ø51
8 Mains electrical power connection
9 CIP in/out
10 Conveyor chain
11 A - cold water in, R 1/2"
12 Oil (central lubrication), R 1/2"**
13 B - cold water out (recirc.), R 1/2"
14 C - hot water in, R 1/2"
15 Sterilizer electrical connection
16 D - consumption water in (recirc.), R 1/2"
17 E - compressed air in, R 1/2"

* All measurements from the floor have a tolerance of ±40 mm.

** Not used on standard machine.

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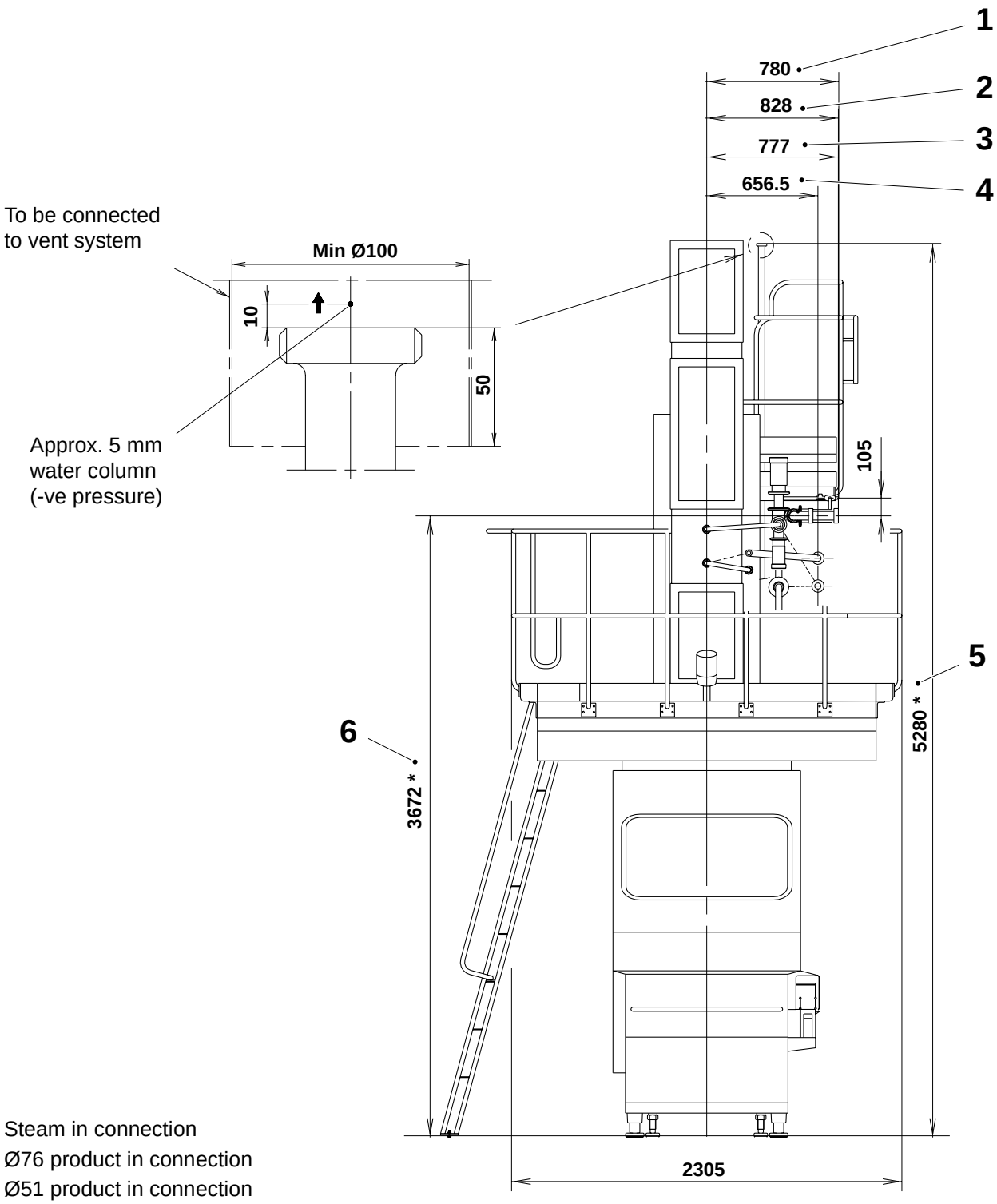
Front view



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1 Steam in connection
2 Ø76 product in connection
3 Ø51 product in connection
4 CIP in/out connection
5 Vent, H2O2 mixed with air
6 Product connections

* All measurements from the floor have a tolerance of ±40 mm.

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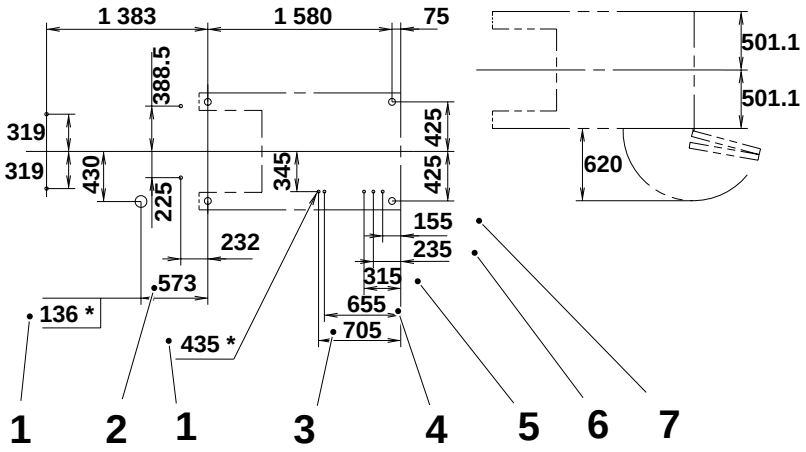
Other plan views



* All measurements from the floor have a tolerance of ±40 mm.

1 Height above floor
2 Cleaning tank outlet, R 2"
3 A - cold water in, R 1/2"
4 B cold water out (recirc.), R 1/2"
5 C - hot water in, R 1/2"
6 D - consumption water in (recirc.), R 1/2"
7 E - compressed air in, R 1/2"

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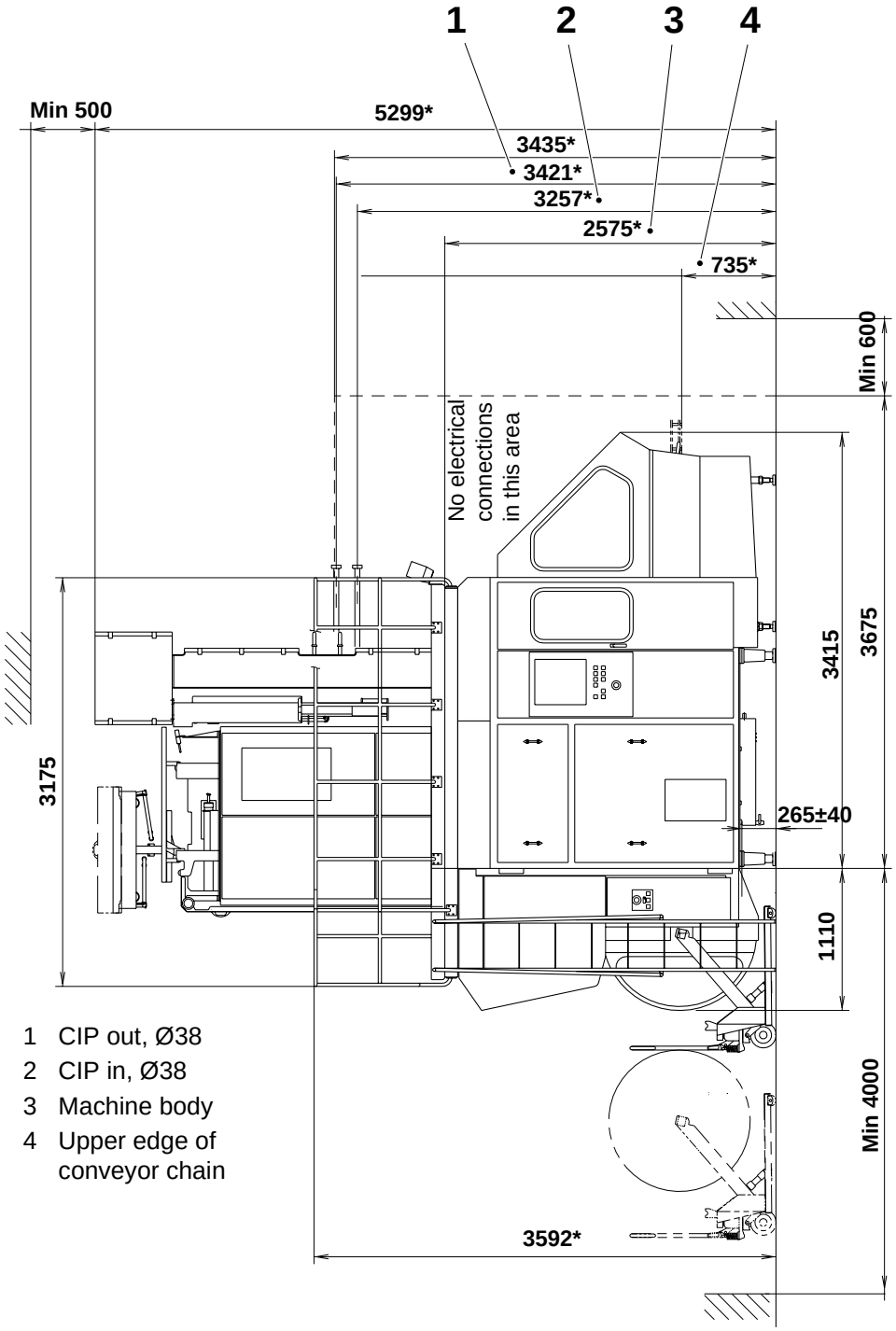
LH side view



1 CIP out, Ø38
2 CIP in, Ø38
3 Machine body
4 Upper edge of conveyor chain

* All measurements from the floor have a tolerance of ±40 mm.

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3.2 Basic machine data

Characteristic	Value	Notes
Machine type	TBA/8 1100	
Production capacity	6000 p/h +4%, -0%	

3.3 Mass (weight)

Characteristic	Value	Notes
Weight	Approx. 6750 kg (14900 lbs)	Includes packaging material trolley (approx. 100 kg [220 lbs]).

3.4 Noise

The table below gives the noise level measurements for the machine under the following conditions:

- measurement in accordance with ISO standard 3744
- machine on a concrete floor supported by standard feet
- production at 6000 p/h
- normal operation at 12.5% preheating + filling, 87.5% production.

Characteristic	Symbol	Value	Rounded	Notes
Equivalent sound pressure level, operator position	Leq	77.0 dB(A)	0.5 dB	Measured near operator panel, 1 m from machine, 1.6 m from floor.
Maximum equivalent sound pressure level	Leq	75.0 dB(A)	0.5 dB	Highest value measured within the parallelepiped area.
Peak C-weighted instantaneous sound pressure	S.P.L. peak	99 dB(C)	1 dB	Measured near operator panel, 1 m from machine, 1.6 m from floor.
Sound power level	Lw	93.5 dB(A)	0.5 dB	
Environmental acoustic factor	K	1.9 dB	0.1 dB	Measured at positions 1 - 19. See figures below.
Surface sound pressure level (Log average)	Lpf	71.1 dB(A)	0.1 dB	Measured at positions 1 - 19. See figures below.

3.5 Emissions and thermal load

Emissions

Characteristic	Value	Notes
Hydrogen peroxide fumes in operator's environment	<1 ppm	TLV - Time Weighted Average value
Hydrogen peroxide outlet to drain	≤1%	
Oil fumes in operator's environment	None	
Oil spillages	None	
Detergent spillages	None	Except during external cleaning.
Water spillages	None	Except during startup and external cleaning.
Product spillages	None	

Thermal load

Characteristic	Value	Notes
Thermal load	Approx 20 kW	

3.6 Product connection data

Characteristic	Value	Notes
Supply pressure	50 - 250 kPa (0.5 - 2.5 bar) [7.2 - 36.2 psi]	
Max pressure fluctuation	±10 kPa (±0.1 bar) [±1.4 psi]	
Max calculated pressure drop	150 kPa (1.5 bar) [22 psi]	Calculated between product inlet and product outlet.
Inlet temperature	5 - 50°C (41 - 122°F)	
Filling temperature	5 - 50°C (41 - 122°F)	Varies from inlet temperature by +1-2°C (2-4°F)
Max particle size	600 µm	

3.7 Utilities

Electrical power specifications

Characteristic	Value	Notes
Supply voltage to machine	400/230 VAC, 3 phase +N + earth	Other voltages available to order with transformer.
Max voltage fluctuation	±10%	
Frequency	50/60 Hz	To be specified on order.
Recommended main fuse	100 A	Value for optimum selectivity at 400/230 VAC.
Control circuits voltage	24 VDC	

Electrical power consumption

Characteristic	Value	Notes
Consumption during preheating	39 kW	
Consumption during sterilisation	23 kW	
Consumption during external cleaning	5 kW	
Consumption during production	25 kW	
Control circuits voltage	24 VDC	

(Cont'd)

(Cont'd)

Compressed air specifications

Characteristic	Value	Notes
Supply pressure	600 - 700 kPa (6 - 7 bar) [87 - 102 psi]	
Max particle size	20 µm	
Max particle content	25 mg/m^3	
Dew point	2°C (35.6°F)	
Oil content	0.01 mg/m^3	

Compressed air consumption

Characteristic	Value	Notes
Consumption	Approx. 450 Nl/min (approx. 15.75 cu.ft/min)	

(Cont'd)

(Cont'd)

Cooling water specifications

Characteristic	Value	Notes
Supply pressure	300 - 450 kPa (3 - 4.5 bar) [43.5 - 65.2 psi]	
Max inlet temperature, industrial cooling water	20°C (68°F)	
pH	5 - 8	

Cooling water consumption

Characteristic	Value	Notes
Consumption, cooling water	Approx. 5 l/min (1.1 imp.galls/min)	Can be recirculated.
Consumption, flushing & sterile system water (lost to drain)	Approx. 4.5 l/min (1 imp.gall/min)	

Steam specifications

Characteristic	Value	Notes
Water quality	Drinking water	Boiler additives must be suitable for use with drinking water.
Supply pressure	170 kPa (1.7 bar) [25 psi]	
Max pressure fluctuation	±30 kPa (±0.3 bar) [±4.5 psi]	
Inlet temperature	133 ±4°C (271±7°F)	Measured after APV.

Steam consumption

Characteristic	Value	Notes
Inlet temperature	133 ±4°C (271±7°F)	Measured after APV.
Consumption	2.4 kg/h (5.3 lbs/h)	

(Cont'd)

(Cont'd)

Hydrogen peroxide specifications

Characteristic	Value	Notes
Type	Aseptic grade	
Concentration	35%	

Hydrogen peroxide consuption

Characteristic	Value	Notes
Consumption	1.5 - 2.0 l/h	

3.8 Cleaning data

Cleaning in place (CIP)

Characteristic	Value	Notes
Max inlet pressure	350 kPa (3.5 bar) [50.7 psi]	
Min flow	8000 l/h (1760 imp.galls/h)	At 220 kPa.

External cleaning (hot water) specifications

Characteristic	Value	Notes
Supply pressure	300 - 450 kPa (3 - 4.5 bar) [43.5 - 65.2 psi]	
Inlet temperature	50 - 70°C (122 - 158°F)	
Detergent pH	8 - 12	

External cleaning (hot water) consumption

Characteristic	Value	Notes
Hot water consumption	500 l/cycle (110 imp.galls/cycle)	Per complete cleaning cycle
Detergent consumption	2 l/cycle (0.4 imp.galls/cycle)	Per complete cleaning cycle

3.9 Other consumptions

Characteristic	Value	Notes
Lubricant consumption	0.03 l/h (0.006 imp.galls/h)	See OM for further details.
Ink consumption	Average 100 ml per 8 h shift	

3.10 Ambient temperature

Characteristic	Value	Notes
Minimum ambient temperature	5 °C (41 °F)	
Maximum ambient temperature	50 °C (122 °F)	
Recommended ambient operating temperature	15 to 30 °C (59 to 86 °F)	

4 Site preparation

Check that the dimensions of the installation site and the positions of the connections comply with the values given in the drawings. See section *3 Drawings and Technical Data* and the Installation Drawings.

Check that the specifications of the product, utility, and cleaning supplies comply with Tetra Pak requirements. In case of doubt, ask the customer's technical personnel. See section *3 Drawings and Technical Data*.

If any values do not comply, inform the local Service Organisation.

5 Crate handling

5.1 Crate data

The standard machine is shipped in three crates.

Weight and dimensions

Crate Identifier	Gross weight kg (lbs)	Net weight kg (lbs)	Length mm (ft-in)	Width mm (ft-in)	Height mm (ft-in)
1/3	6200 (13700)	5100 (11300)	5100 (16’8’’)	2370 (7’9’’)	2900 (9’6’’)
2/3	1500 (3300)	1100 (2500)	3300 (10’9’’)	1800 (5’10’’)	1500 (4’11’’)
3/3	1000 (2200)	750 (1700)	2100 6’10’’	1400 4’7’’	1650 5’5’’

Contents

Crate identifier	Contents
1/3	Machine body Packaging material reel and trolley Ladder Electrical cabinet and lifting bars SA Railings Machine Documents box
2/3	Superstructure and lifting unit Upper platform and ladder Upper railings Pipes Machine body panels Compressor Protective guards Strip reels H_2O_2 and detergent containers Packaging material reel holder shaft Spare parts and accessories
3/3	Final folder

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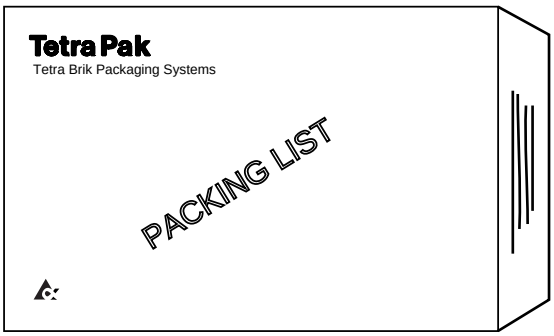
See the Packing List for further details.



Note! One copy of the Packing List is located near the customs inspection panel on the crates. The local Service Organisation has a second copy.

5.2 Lifting equipment

Types of lifting equipment

The following types of equipment can be used to lift and move the crates:

- overhead gantry
- mobile crane
- fork lift

The most practical equipment is an overhead gantry.

Equipment specifications

Make sure that the lifting capacities of the equipment and tackle comply with the minimum values given in the following table.

Equipment or tackle	Lifting capacity kg (lbs)	Notes
Overhead gantry	7000 (15500)	9000 kg (20000 lbs) required if gantry does not have gradual acceleration/ deceleration ramps.
Mobile crane	7000 (15500)	9000 kg (20000 lbs) required if crane does not have gradual acceleration/deceleration ramps.
Lifting chains, cables, ropes or slings	7000 (15500)	9000 kg (20000 lbs) required if lifting equipment does not have gradual acceleration/deceleration ramps. **Min length hook to hook:** Crate 1/4: 13 m (43’) Crate 2/4: 9 m (30’) Crate 3/4: 8.5m (28’) Crate 4/4: 12m (40’)
Fork lift	9000 (20000)	Higher capacity required to allow for reach to centre of gravity of 1000 - 1500 mm (3’3’’ to 4’11’’).
Lifting forks	9000 (20000)	**Min length:** Crate 1/4: 2000 mm (6’6’’) Crate 2/4: 1500 mm (5’) Crate 3/4: 1200 mm (4’) Crate 4/4: 2000 mm (6’6’’) **Min setting width:** Crate 1/4: 2000 mm (6’6’’). Crate 2/4: 1800 mm (6’) Crate 3/4: 1000 mm (3’ 3”) Crate 4/4: 1800 mm (6’)

5.3 Unloading the crates

Make sure everybody understands the symbols and warnings.

Symbol	Meaning
	Centre of gravity
	Lifting points for chains, cables, ropes, or slings
	This way up
	Fragile
	Keep dry
↑TOP↑	Top of crate
FRAGILE	‘Fragile’ warning
HANDLE WITH CARE	‘Handle with care’ warning
NOT TO BE DROPPED	‘Not to be dropped’ warning
GROSS KG.	‘Gross weight’ value
NET KG.	‘Net weight’ value

5.3.1 Inspection

a) Examine the outside of the crates before starting to unload, and record any damage on the **Transport Damage Report** (a section of the startup machine quality report).

b) Record the readings of the humidity indicator and tipping indicator attached to the outside of the crates (if present).

5.3.2 Using an overhead gantry or mobile crane

Risk of crushing!
Keep clear of suspended loads. See the *Safety precautions* section. Check the gross weight of the crate and make sure that the lifting equipment is suitable.

If using a fork lift, see section *5.3.3 Using a fork lift*.

The following instructions apply to all crates.

a) Make sure that the tackle has the correct length and lifting capacity for the crate being lifted. See section *5.2 Lifting equipment*.

Caution! The length shown in the figure below is the hook to hook length. If lifting tackle has to be joined to make up the necessary lengths, make sure that the joins are secure and have the same lifting capacity as the rest of the tackle.

b) Manoeuvre the hook to one side of the crate.

c) Pass the lifting tackle under the crate at the points shown in the figure below.

d) Secure the tackle to the lifting hook and fit the safety clip on the hook.

e) Manoeuvre the hook over the centre of the crate.

f) Slowly take up the slack in the lifting tackle. Make sure that the tackle is secure at the crate and hook. If necessary, adjust the tackle to distribute the load evenly.

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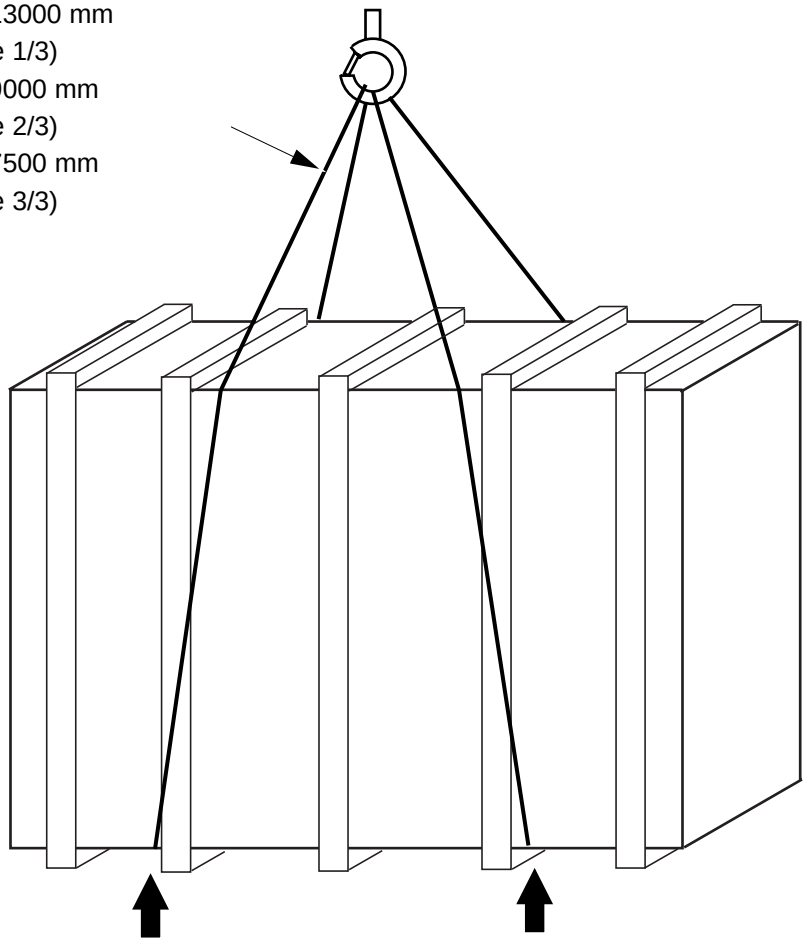
L = min 13000 mm
(crate 1/3)
L = min 9000 mm
(crate 2/3)
L = min 7500 mm
(crate 3/3)



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g) Prepare ropes or poles to steady and manoeuvre the load. Do **not** use hands or feet.

h) Lift the crate **only enough to clear the platform of the vehicle**.

i) Have the vehicle driven away from under the crate.

j) Lower the crate gently to the floor.

k) Make sure that the crate is firmly supported. Place blocks or plates under it if necessary.

l) Lower the lifting hook and remove the lifting tackle.

5.3.3 Using a fork lift

Risk of crushing!
Keep clear of suspended loads. See the *Safety precautions* section. Check the gross weight of the crate and make sure that the lifting equipment is suitable.

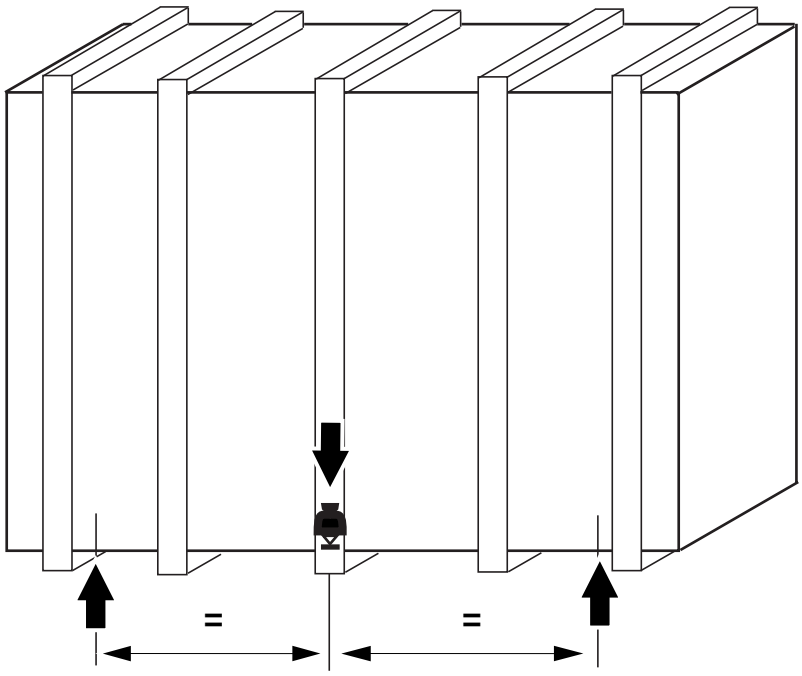
If using an overhead gantry or mobile crane, see section *5.3.2 Using an overhead gantry or mobile crane.*

The following instructions apply to all crates.

a) Make sure that the forks are of the correct length and lifting capacity for the crate being lifted. See section *5.2 Lifting equipment*.

b) Set the lifting forks to the correct width. See section *5.2 Lifting equipment*.

c) Manoeuvre the fork lift so that the forks engage the crate no further apart than the points shown in the figure below, and at equal distances from the centre of gravity symbol. If the crate is fitted with fork tubes, manoeuvre the forks inside these to lift the crate.



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d) Lift the crate **only enough to clear the platform of the vehicle**.

e) Have the vehicle driven away from under the crate.

f) Lower the crate gently to the floor.

g) Make sure that the crate is firmly supported. Place blocks or plates under it if necessary.

h) Remove the forks from under the crate.

5.4 Moving and storage

Important notes

If the crates have to be stored before the machine can be installed, make sure that the storage area complies with specifications before taking the crates there. See *Storage*, below.

If installation is to start immediately, check whether it is possible to move the crates to the installation site. Uncrating and installation can then be performed together.

When moving the crates to the installation site, deposit them so that the machine can be lifted out and positioned without being turned around. Open the customs inspection panels to see inside the crates.

Wait until installation can start before unpacking the crates.

Moving

The following instructions apply to all crates.

a) Lift the crate as instructed above, **only enough to clear the floor**. See section *5.3 Unloading the crates*.

b) Make sure that the crate remains stable on the lifting equipment.

Caution! Move the crate slowly and gently.

c) Move the crate to its destination.

d) Lower the crate gently to the floor, leaving enough room around it for easy access to all sides.

e) Make sure that the crate is firmly supported. Place blocks or plates under it if necessary.

f) Remove the lifting equipment.

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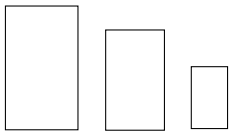
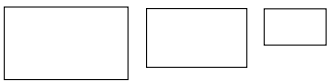
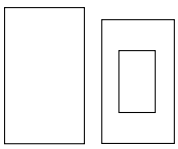
Storage

Caution! Store the crates indoors. Exposure to damp or to high or low temperatures may damage the machine and its equipment.

a) Make sure that the storage area has the approximate dimensions given in the following table.

Storage method	Area required mm (ft)
By width 	9500 x 7000 x 4000 h (31' x 23' x 13' h)
By length 	14500 x 4500 x 4000 h (47' x 15' x 13' h)
Stacked 	7000 x 7000 x 4500 h (23' x 23' x 14' h)

Note! These dimensions allow about 1000 mm (3 ft) of free space around and above the crates for access and ventilation.

b) Make sure that the storage environment respects the conditions given in the following table.

Characteristic	Value	Notes
Min - max temperatures °C (°F)	5 - 40 (40 - 105)	
Max relative humidity %	80	Non-condensing.

c) Manoeuvre crate 1/3 into position, leaving at least 1000 mm (3 ft) of free access space around it.

d) If the floor under the crate is uneven, place blocks or plates under the crate to provide a steady support.

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e) Make sure that the crate is stable and remove the lifting equipment.

f) Manoeuvre crate 2/3 into position, leaving at least 1000 mm (3 ft) of free access space around it.

g) If the floor under the crate is uneven, place blocks or plates under the crate to provide a steady support.

h) Make sure that the crate is stable and remove the lifting equipment.

i) If crate 3/3 is to be stacked on top of crate 2/3, place wooden beams lengthways on top of crate 2/3 to distribute the weight of crate 3/3 evenly.

Caution! When stacking crates, only stack crate 3/3 on top of crate 2/3.

j) Manoeuvre crate 3/3 into position, leaving at least 1000 mm (3 ft) of free access space around it.

k) If the surface under the crate is uneven, place blocks or plates under the crate to provide a steady support.

l) Make sure that the crate is stable and remove the lifting equipment.

6 Positioning, assembly, and connections

6.1 General requirements

Personnel

Only qualified Tetra Pak installation personnel are authorised to assemble the machine. See section *Personnel*.

The area

a) Clear all obstacles away from the installation site and if necessary clean the floor of the site before starting to install the machine.

b) Make sure that there is sufficient room to move safely around the installation site. See section *3.1 Installation drawings*. If machines around the site cannot be stopped, place guards around them to prevent accidental contact.

c) Make sure that lighting is adequate and arrange additional portable lights if necessary.

Lifting equipment, tools and materials

The equipment used for lifting and moving the crates can also be used for unpacking the crates and installing the machine. See section *5.2 Lifting equipment*.

The following tools and materials are needed to install the machine:

- electrical cabinet lifting bars, TP No. 551997 (in crate 1/3)
- superstructure lifting unit, TP No. 292445 (on superstructure)
- spirit level, TP No. 90243-163
- cable ties
- insulating tape
- hydraulic sealing tape

If PLC program parameters have to be read, modified, or downloaded, the following equipment will also be needed:

- portable PC running LM90 software
- GE-Fanuc PLC serial cable, TP No. 90031-300
- TMCC serial cable (9-pin M-F, pinned F2-M3, F3-M2, F5-M5).

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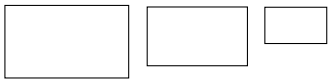
Unpacking area

The unpacking area should ideally have the approximate dimensions given in the following table.

Unpacking method	Area required mm (ft)
One crate at a time 	7000 x 7000 x 4000 h (23' x 23' x 13' h)
Two crates at a time 	7500 x 7000 x 4000 h (24' x 23' x 13' h)
All crates together (alongside) 	14500 x 7000 x 4000 h (47' x 23' x 13' h)

Note! These dimensions allow about 1000 mm (3 ft) of free space around and above the crates and contents, with the contents removed and placed on the floor outside the crates.

Installation area

a) Clear all obstacles away from the installation site and if necessary clean the floor of the site before starting to install the machine.

WARNING!

Risk of entanglement!
Guard against contact with moving machinery.

b) Make sure that there is sufficient room to move safely around the installation site. If machines around the site cannot be stopped, place guards around them to prevent accidental contact.

c) Make sure that lighting is adequate. Arrange additional portable lights if necessary.

6.2 Opening the crates

Note! The following instructions apply to all crates.
Do not unpack the crates until you are ready to start installation.

WARNING!

Risk of crushing!
Keep clear of suspended loads. See the *Safety precautions* section.

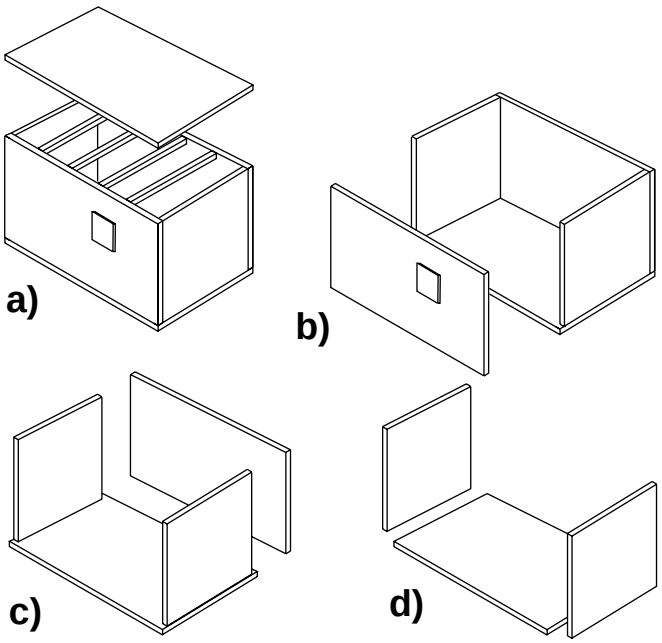
a) Remove the top of the crate and the reinforcement cross-beams.

Caution! Make sure that nothing is fixed to the part of the crate to be removed. Check for screws and wire which could hold equipment to the crate.

b) Unscrew any screws fixing the contents to the front of the crate and remove the front of the crate.

c) Unscrew any screws fixing the contents to the back of the crate and remove the back of the crate.

d) Unscrew any screws fixing the contents to the sides of the crate and remove the sides of the crate.



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6.3 Unpacking crate 1/3

Caution! Failure to perform the following instructions in the order in which they are given can result in damage to the crate or the machine.

a) Remove all loose boxes and packages.

b) Remove the screws and blocks fixing the ladder and handrail sections to the floor of the crate. Remove any securing ropes and ties, and remove the ladder and handrail sections.

c) Remove the screws and blocks fixing the LS strip magazine to the floor of the crate. Remove the LS strip magazine.

d) Unscrew the screws fixing the electrical cabinet lifting bars to the floor of the crate. Remove the lifting bars.

e) Remove the screws and blocks fixing the packaging material reel trolley to the floor of the crate. Remove the trolley.

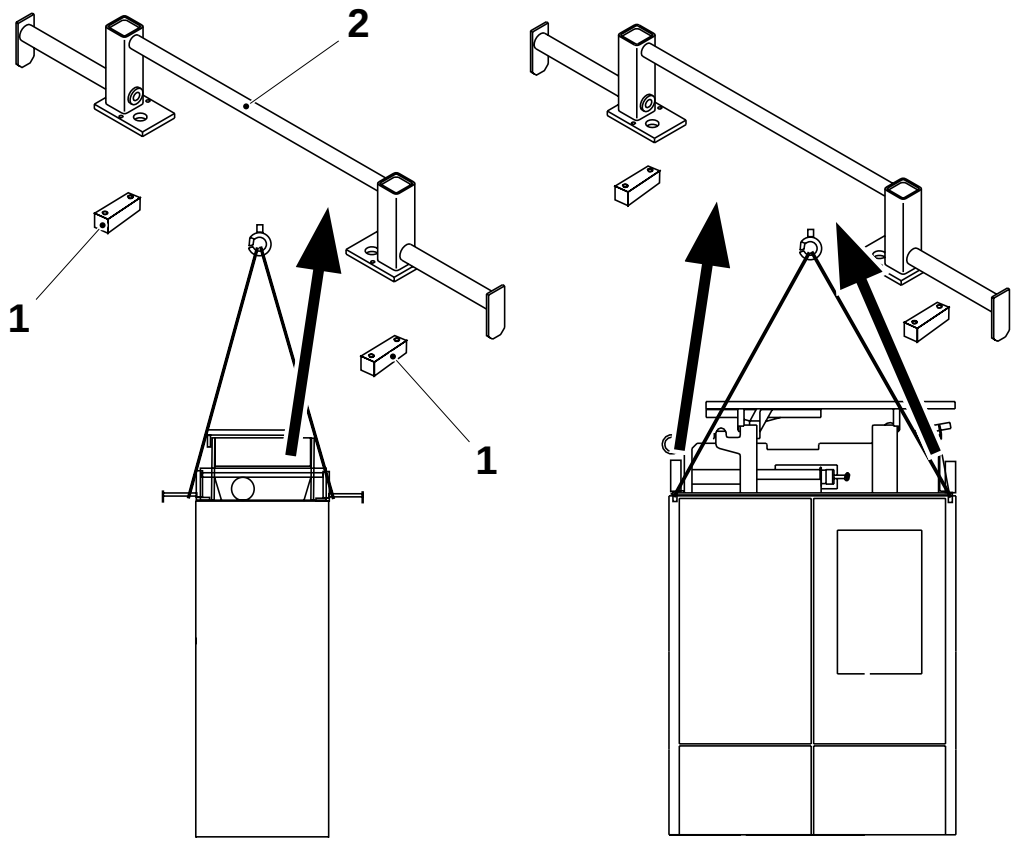
f) Remove the screws and blocks holding the valve panel doors closed (if present).

6.3.1 Using an overhead gantry or mobile crane

If using a fork lift, see section *6.3.2 Using a fork lift*, below.

Risk of crushing!
Keep clear of suspended loads. See the *Safety precautions* section. The electrical cabinet and strip applicator weigh approximately 700 kg. Make sure that the lifting equipment is suitable.

a) Fit the spacers (1) to the lifting bars (2) and fit the lifting bars to both ends of the electrical cabinet. Fit the lifting tackle to the arms of the lifting unit as shown in the figure below.



1 Spacer
2 Lifting bar

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b) Unscrew the screws fixing the electrical cabinet to the floor of the crate. Lift the electrical cabinet out of the crate. Rest it on suitable wooden blocks.

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c) Make sure that the lifting capacities of the lifting equipment and tackle used to lift the machine body comply with the following minimum value:
5000 kg (11000 lbs)

! A minimum value of 7000 kg (15500 lbs) is required if the gantry or crane does not have gradual acceleration/deceleration ramps.

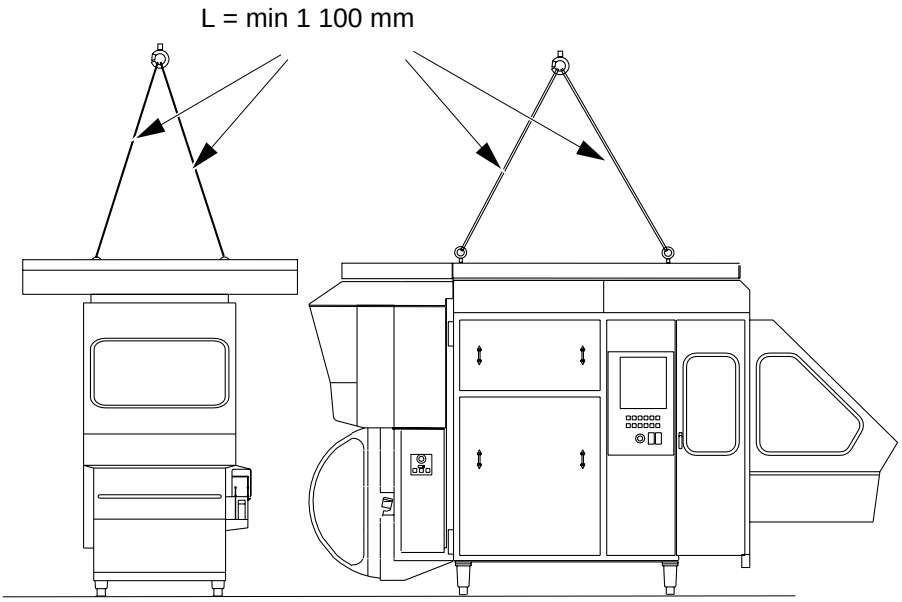
Risk of falling!
Take care when working on machine platforms without railings.

d) Make sure that the lifting eyebolts on the machine are secure and are not damaged or cracked.

e) Fit four lines to the four eyebolts on the platform as shown in the figure below.

Risk of crushing!
Keep clear of suspended loads. See the *Safety precautions* section. The filling machine body weighs approximately 4000 kg. Make sure that the lifting equipment is suitable. Use four separate lifting lines. Respect minimum lengths.

f) Slowly take up the slack in the lifting tackle.
Make sure that the tackle is secure at the lifting eyebolts and hook. If necessary, adjust the tackle to distribute load evenly.



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g) Lift the machine **only enough to clear the legs from the crate**.

h) Manoeuvre the machine out of the crate.

i) Lower the machine gently to the floor.

j) Make sure that the machine is stable and remove the lifting equipment.

k) Unscrew the screws and blocks fixing the packaging material reel. Remove the packaging material reel.

l) Unscrew the screws fixing the platform edge(s) to the floor of the crate. Remove the platform edge(s).

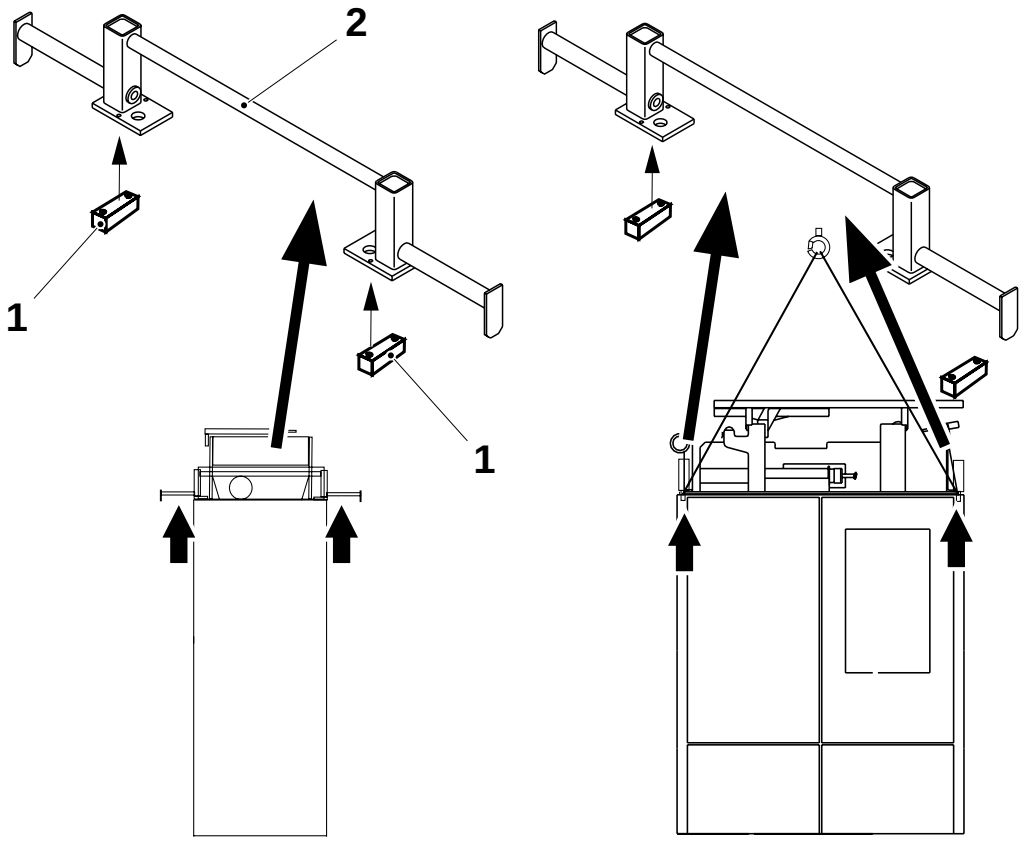
Note! Machines shipped together with Pull Tab opening devices have both the LH and RH platform edges removed. Machines shipped without Pull Tab opening devices have only the LH platform edge removed.

6.3.2 Using a fork lift

If using an overhead gantry or mobile crane, see section *6.3.1 Using an overhead gantry or mobile crane*, above.

Risk of crushing!
Keep clear of suspended loads. See the *Safety precautions* section. The electrical cabinet and strip applicator weigh approximately 700 kg. Make sure that the lifting equipment is suitable.

a) Fit the spacers (1) to the lifting bars (2) and fit the lifting bars to both ends of the electrical cabinet. Engage the forks under the arms of the lifting unit at the points shown in the figure below.



1 Spacer
2 Lifting bar

b) Unscrew the screws fixing the electrical cabinet to the floor of the crate. Lift the electrical cabinet out of the crate. Rest it on suitable wooden blocks.

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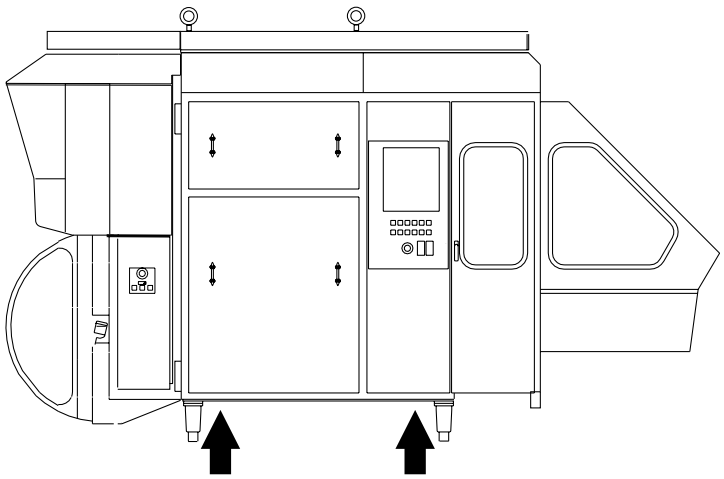
Risk of crushing!
Keep clear of suspended loads. See the *Safety precautions* section. The filling machine body weighs approximately 4000 kg. Make sure that the lifting equipment is suitable.

c) Make sure that the lifting capacities of the fork lift and the fork settings used to lift the machine body comply with the minimum value given in the following table:

Equipment or tackle	Lifting capacity kg (lbs)	Notes
Fork lift	6000 (13300)	Higher capacity required to allow for reach to centre of gravity of 1000 (3'3'').
Lifting forks	6000 (13300)	Min length 1500 mm (4'11''). Min setting width 1500 mm 4'11'').

d) Lift the machine gently while manoeuvring the forks under it at the points shown in the figure below.



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Caution! Make sure that the forks support the frame members on both sides of the machine body before starting to lift.

e) Lift the machine **only enough to clear the legs from the crate**.

f) Manoeuvre the machine out of the crate.

g) Lower the machine gently to the floor.

Caution! If the filling machine is not supported evenly, the frame could be subjected to damaging torsional forces.

h) Make sure that the machine is stable and remove the lifting equipment.

i) Unscrew the screws and blocks fixing the packaging material reel. Remove the packaging material reel.

j) Unscrew the screws fixing the platform edge(s) to the floor of the crate. Remove the platform edge(s).

Note! Machines shipped together with Pull Tab opening devices have both the LH and RH platform edges removed. Machines shipped without Pull Tab opening devices have only the LH platform edge removed.

6.4 Unpacking crate 2/3

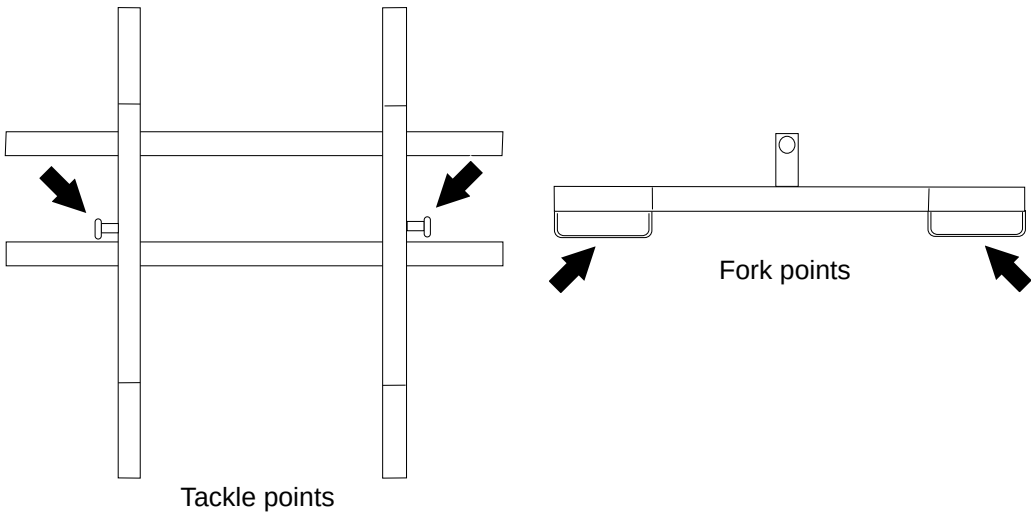
Caution! If the following screws are not removed it will not be possible to remove the wooden superstructure frame from the crate.

a) Unscrew the screws fixing the wooden base frame of the superstructure to the remaining end of the crate. Also unscrew the screws fixing the end of the crate to the crate floor. Remove the remaining crate end.

Risk of crushing!
Keep clear of suspended loads. See the *Safety precautions* section. The superstructure weighs approximately 800 kg. Make sure that the lifting equipment is suitable.

b) Attach suitable lifting tackle to the superstructure lifting unit at the points shown.

Note! Once the superstructure is in vertical position it also can be lifted by forks at the fork points shown.



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c) Unscrew the screws fixing the superstructure lifting unit to the floor of the crate. Make sure that there are no more screws fixing the wooden superstructure base frame to the floor of the crate. Do **not** remove the wooden base frame from the superstructure yet.

d) Lift the superstructure into vertical position. Stand the superstructure upright on the wooden base frame.

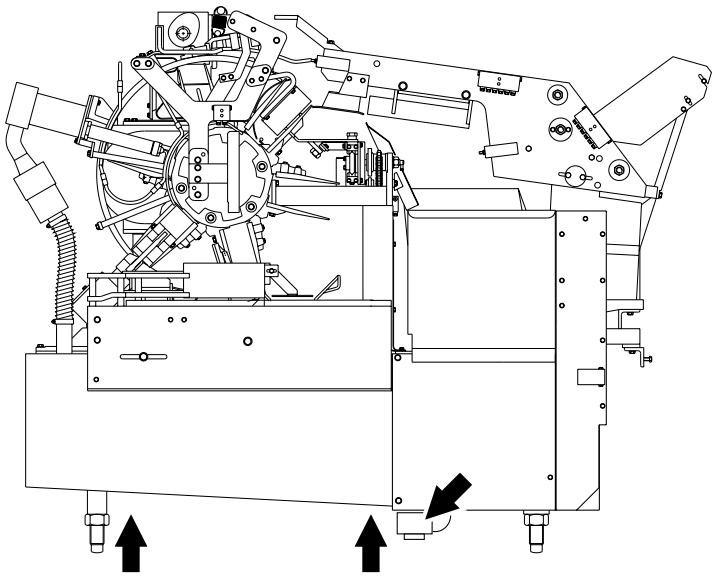
e) **Only when ready to install the column**, unscrew the screws fixing the base of the superstructure column to the wooden base frame and lift the superstructure off the frame.

6.5 Unpacking crate 3/3

Risk of crushing!
Keep clear of suspended loads. See the *Safety precautions* section. The final folder weighs approximately 850 kg. Make sure that the lifting equipment is suitable.

Caution! Only lift the final folder with a fork lift or pallet trolley. Do not use lifting tackle. Take great care not to damage the drain connection under the cleaning pump.

a) Insert the forks of a fork lift (or pallet trolley) under the final folder at the points shown in the figure below.

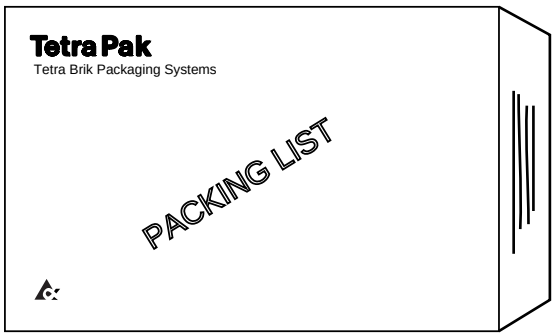


b) In order to lift the final folder steadily, place blocks between the forks and the bottom of the final folder where the forks do not touch.

c) Carefully lift out the final folder.

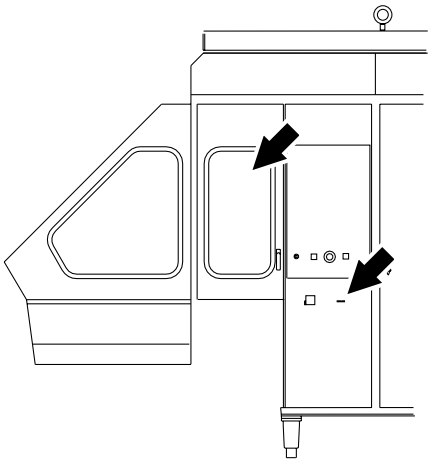
6.6 Inspection

a) Use the Packing List to check that nothing is missing from the crates.



Note! One copy of the Packing List is located near the customs inspection panel on the crates. The local Service Organisation has a second copy.

b) Record the readings of the humidity indicator and tipping indicator fixed to the RH side of the machine body (if present).



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c) Inspect the machine and its main groups for damage.

d) Inspect the SA, electrical cabinet, and final folder for damage.

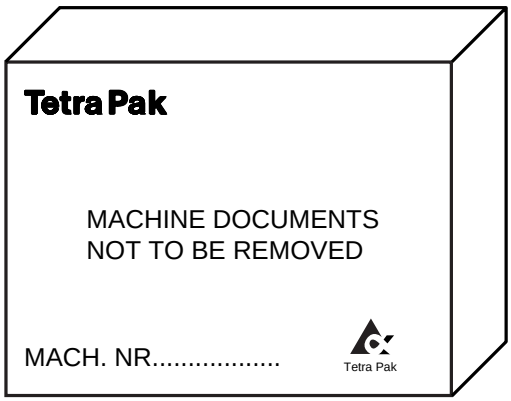
e) Open the boxes containing the smaller machine components and inspect these for damage.

f) Check that the data on the machine plate corresponds with the specifications in the Machine Specification Document.

(Cont'd)

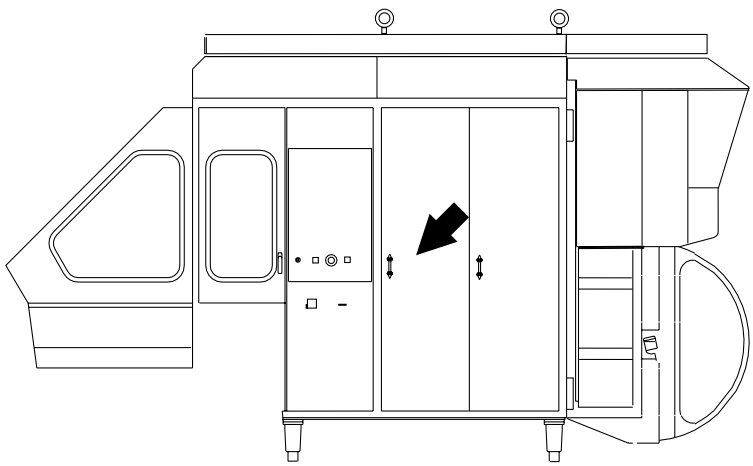
(Cont'd)

g) Open the Machine Documents box and remove the documentation.



h) Open the doors at the rear of the RH side of the machine and locate the following documents:

- Machine Specification Document
- Final Inspection Report
- Machine Deviation Report (if relevant)
- Start-up Machine Quality Report (including the Transport Damage Report)
- Feedback from MC form
- System drawings



i) Take the spare parts to the spare parts stores.

j) Fill in the **Transport Damage Report** (a section of the Startup Machine Quality Report).

(Cont'd)

(Cont'd)

Compiling the documentation

a) Procure the **Transport Damage Report** form from the local Service Organisation.

b) Fill in the Transport Damage Report and deliver it to the local Service Organisation for return to the manufacturer.

6.7 Disposal/return of packing

Note! Packing (including the crate, wrapping, and boxes) is not normally returned to the manufacturer.

a) Check with the customer if there is a special agreement for the return of packing to the manufacturer.

b) If packing must be returned to the manufacturer, prepare an area the size of crate 1/3 in which to store the crate and any other returnable packing.

c) Check with the customer if there is a special arrangement for recycling packing.

d) If packing is not to be returned or recycled, check with the customer how to separate and dispose of packing (wood, plastic, paper, etc.).

e) Dispose of pollutant waste (bubble wrapping, plastic bags, expanded polystyrene, etc.) in accordance with local regulations.

6.8 Positioning

WARNING!

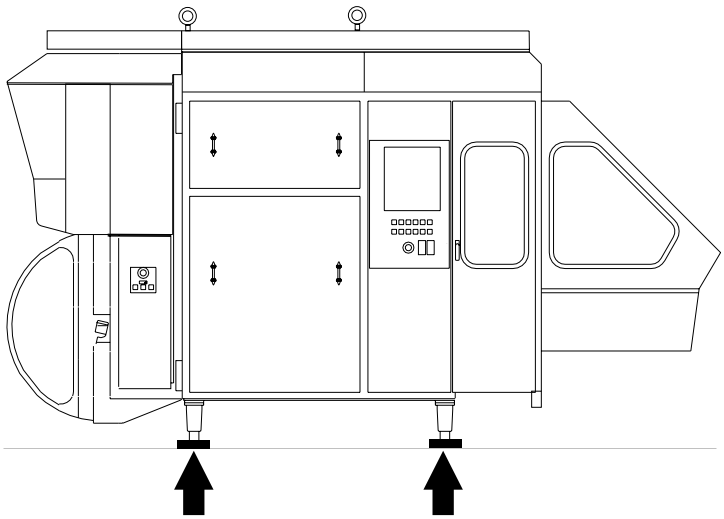
Risk of falling!
Take care when working on machine platforms without railings.

a) Lift the machine as instructed above. See section *6.3 Unpacking crate 1/3*.

b) Slowly manoeuvre the machine to the installation position.

c) Lower the machine gently into position. Do **not** remove the lifting equipment yet.

d) Position four feet under the four legs as shown in the figure below.



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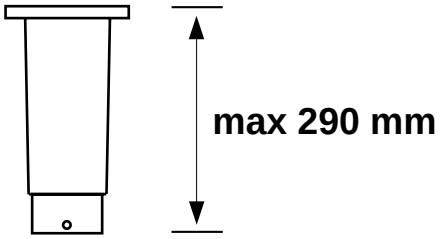
e) Check that the machine is correctly positioned with respect to the customer's plant. See section *3.1 Installation drawings*.

(Cont'd)

(Cont'd)

Risk of crushing!
Do not unscrew the legs for more than 290 mm. They can come out completely.



f) Screw down the four legs to distribute the weight of the machine evenly.

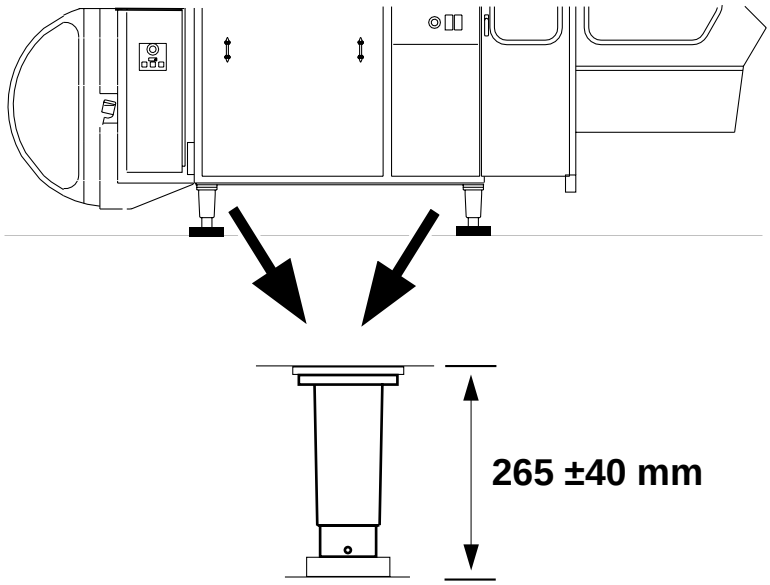
g) Make sure that the machine is supported and stable on all four legs and feet and remove the lifting equipment.

6.9 Levelling

Caution! Do not raise the machine more than 305 mm from the floor when levelling, or it may be impossible to connect the product supply pipes later. See section *3.1 Installation drawings*.

Note! If you encounter problems in levelling the machine due to an uneven or sloping floor, place plates under the feet to assist in levelling.

a) Adjust all legs until the machine body is 265 mm ±40 mm from the floor at the bottom edge of each leg fixing plate.



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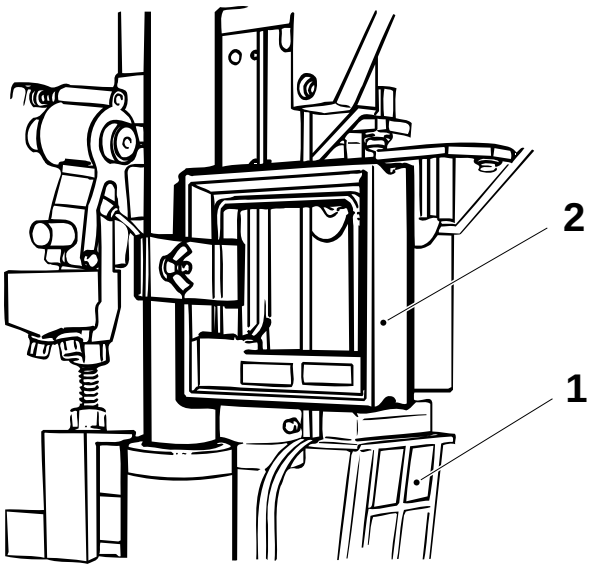
(Cont'd)

(Cont'd)

b) Crank the machine to lower the LH jaw (1) fully down. Fit the spirit level (2) to the guide above the jaw. Align the spirit level along the longitudinal axis of the machine.



1 LH jaw system guide
2 Spirit level, TP No. 90243-163

c) Adjust the legs until the machine is level longitudinally ± 0.2 mm/m.

d) Align the spirit level along the transverse axis of the machine, and adjust the legs until the machine is level transversely ± 0.2 mm/m.

e) Align the spirit level along the longitudinal axis of the machine again and make sure that the longitudinal levelling has not changed.

6.10 Assembly

Packing

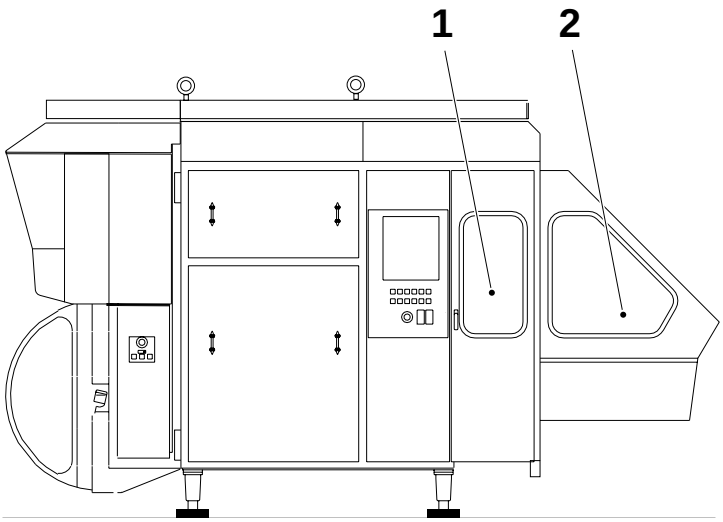
Leave the bubble wrapping on parts until they are ready for use.

Leave the plastic plugs in the pipes until they are ready to be connected, but do **not** forget to remove them before connecting the pipes.

Leave ties in place until tied parts are ready to be used or connected.

6.10.1 Final folder

a) Open the LH conveyor access door (1) and push up the hood (2).



1 Door
2 Hood

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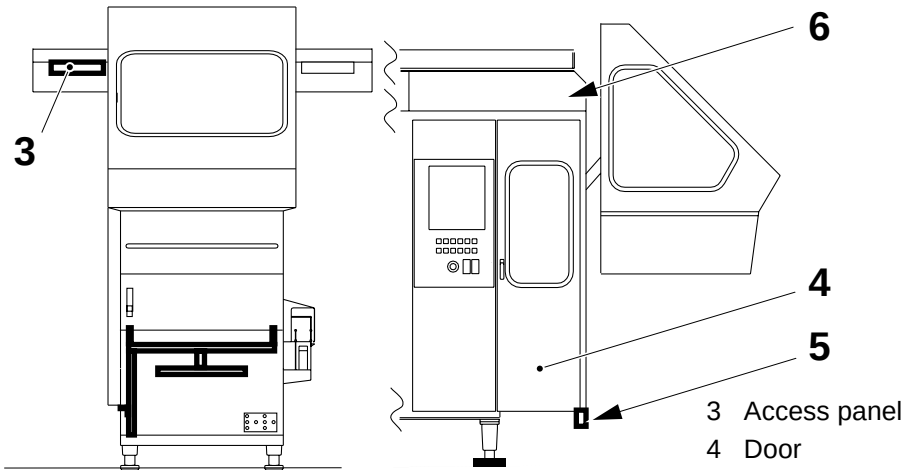
(Cont'd)

(Cont'd)

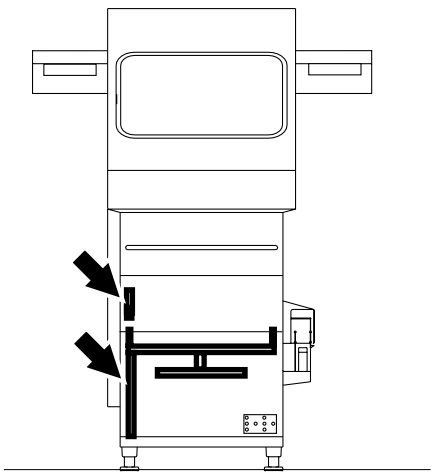
b) Remove the LH access panel (3) from the platform.

c) Support the LH conveyor access door (4) from underneath and remove the door fixing bracket (5) from the hood transport frame.
Move the microswitch (6) away from the door shaft (or remove it) and remove the LH conveyor access door.



3 Access panel
4 Door
5 Bracket
6 Microswitch

d) Remove the two pieces of the hood transport frame.

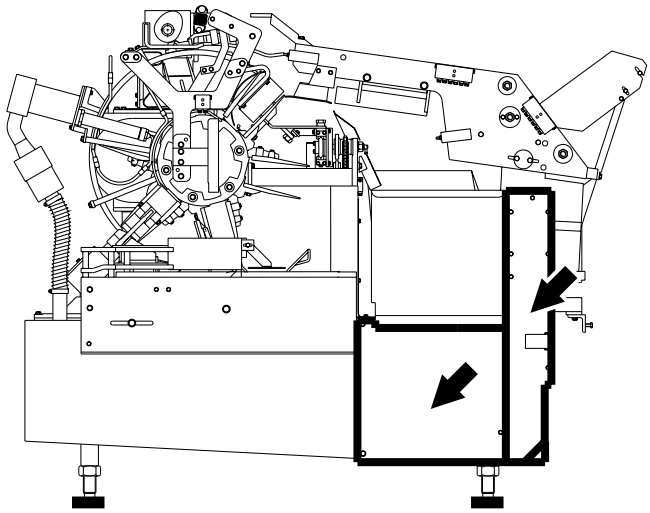


Note! The transport frame is a machine accessory. Keep it safe for future use.

(Cont'd)

(Cont'd)

e) Remove the access panels on the RH side of the final folder (if fitted).



f) Remove the cable ties from the final folder cables and air lines.

(Cont'd)

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(Cont'd)

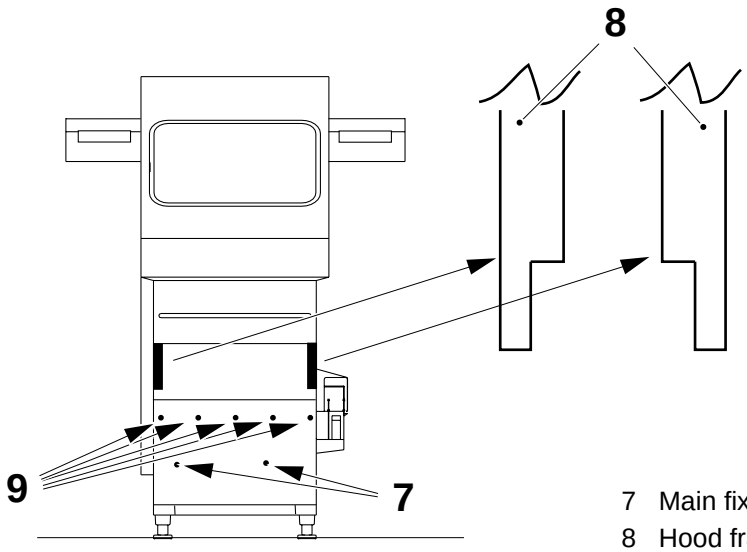
Docking

Caution! Only lift the final folder with a fork lift or pallet trolley. Do not use lifting tackle. Take great care not to damage the drain connection under the external cleaning pump.

a) Lift the final folder with a fork lift or pallet trolley. See section *6.5 Unpacking crate 3/3*. Angle the forks so that the final folder is as horizontal as possible.
Move the final folder up to the machine body. Align the two main fixing screw holes (7). Align the hood frame uprights (8) with the uprights on the final folder.

Note! Insert the main fixing screws from the front and tighten behind the front panel of the machine body.

b) Fix the final folder to the machine body with the two main fixing screws (7).
Fix the final folder uprights to those of the hood frame (8) (two screws per upright).
Fix the cover plate to the machine body with its five fixing screws (9).



View of machine body without final folder

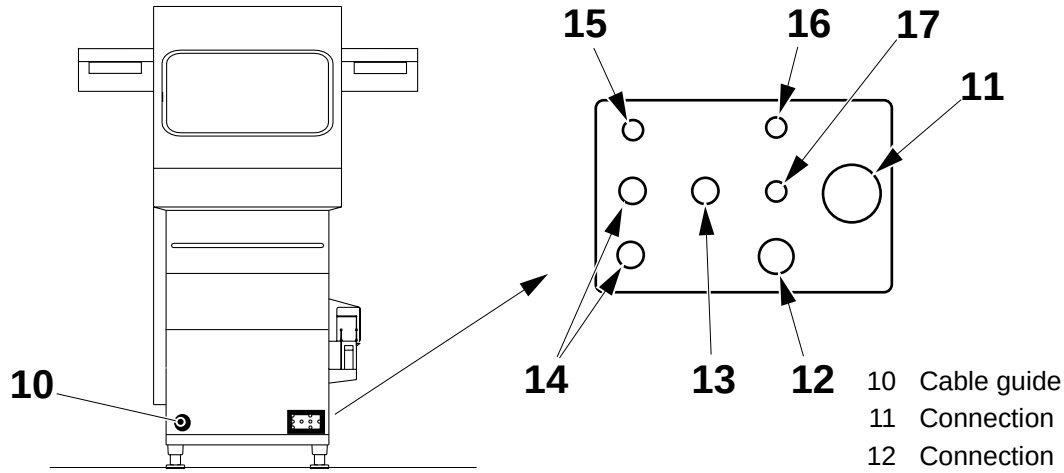
7 Main fixing screw
8 Hood frame upright
9 Cover plate fixing screw

(Cont'd)

(Cont'd)

c) Pass the electrical cables through the cable guide (10) at the bottom LH side of the machine body.

d) Connect the cleaning tank filler pipe (large diameter hose) to connection (11) at the bottom RH side of the machine body.
Connect the cleaning tank overflow pipe (small diameter hose) to connection (12).
Connect the final folder lubrication line to connection (13).
Connect the conveyor cooling circuit hoses to connections (14).
Connect air line No. 550 to connection (15).
Connect air line No. 11 to connection (16).
Connect air line No. 21 to connection (17).



View of machine body without final folder

10 Cable guide
11 Connection
12 Connection
13 Connection
14 Cable guide
15 Connection
16 Connection
17 Connection

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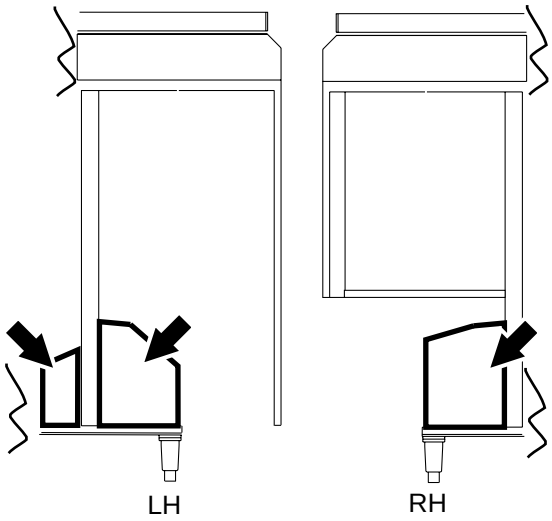
(Cont'd)

(Cont'd)

Caution! Do not lift the final folder after it is fixed to the filling machine body! If necessary, screw the legs up to place the feet in position.

e) Remove the LH and RH side machine body panels. Make the final folder electrical connections at the corresponding terminals. See the EM for further details.



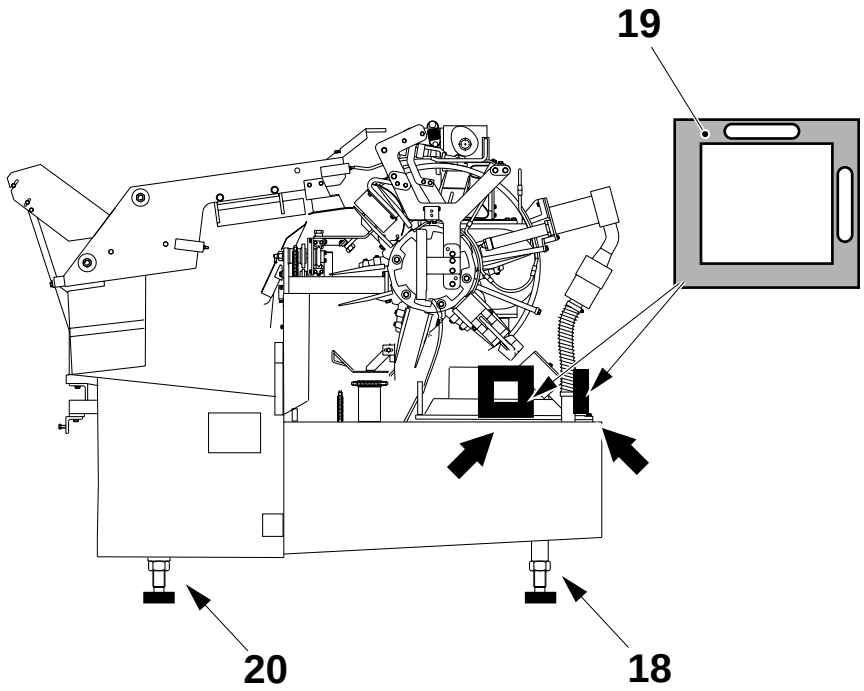
(Cont'd)

(Cont'd)

f) Place four feet under the four legs of the final folder. Screw down the two front legs (18) until they support the weight of the final folder evenly.

g) Lower the forks and remove the fork lift or pallet trolley.

h) Place the spirit level (19) along and across the base of the final folder at the points shown in the figure below.
Adjust the two front legs (18) of the final folder so that it is level transversely and longitudinally ± 0.2 mm/m. (Slacken off the fixing screws if necessary.)
Screw down the two rear legs (20) of the final folder until they start to support its weight without affecting the levelling.



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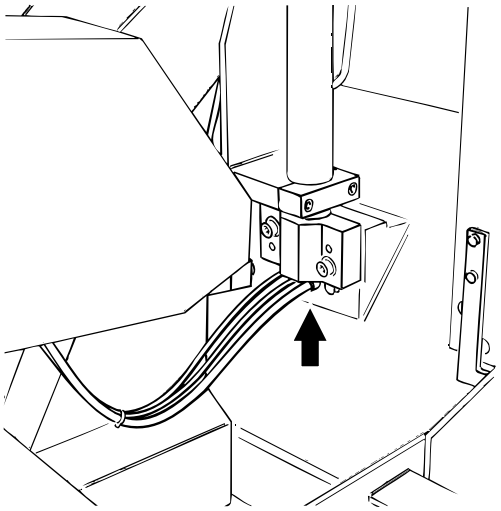
18 Front legs
19 Spirit level,
TP No. 90243-163
20 Rear legs

(Cont'd)

(Cont'd)

i) Connect the air lines from the conveyor to the connectors at the bottom of the RH jaw system guide.



j) Fit the pipe (21) for the external cleaning system between the connection at the RH rear of the final folder and the filter under the RH top of the hood.

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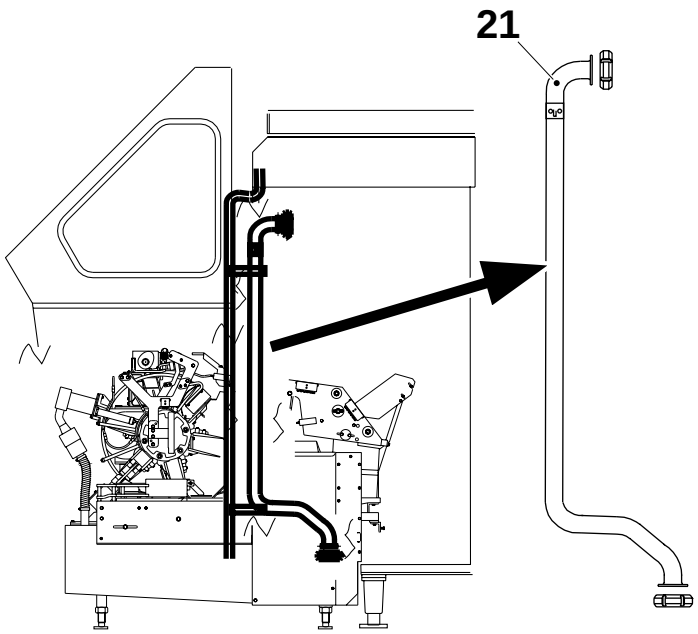
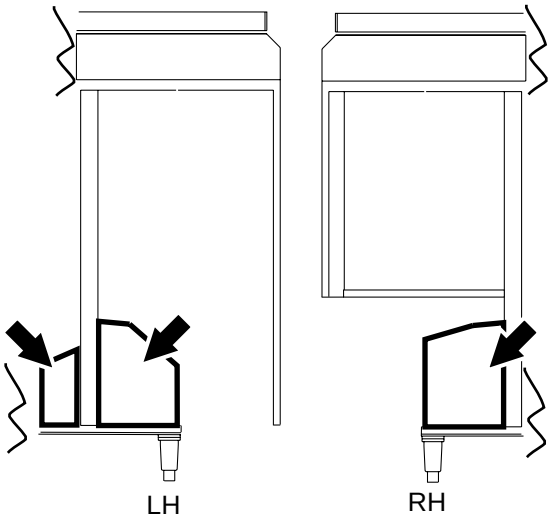


21 Pipe

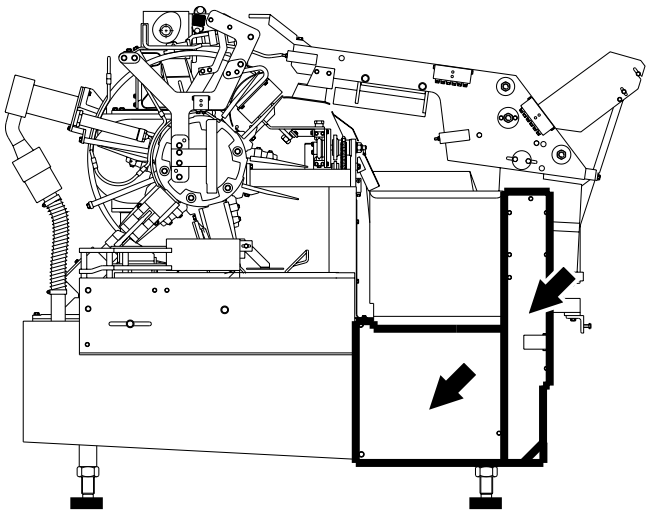
(Cont'd)

(Cont'd)

k) Fit the LH and RH machine body access plates.



l) Fit the panel(s) on the RH side of the final folder.



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(Cont'd)

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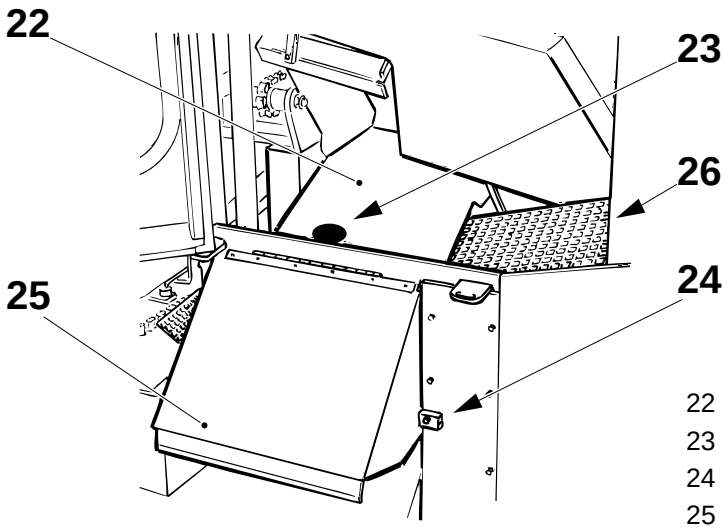
m) Fit the eject chute (22) inside the final folder. Tighten the knob (23) on to the final folder frame member to secure the chute in position.
Pull back the spring loaded pin (24) at the rear of the eject chute cover (25) and pull out the cover to operating position. Release the pin to lock the chute cover in position.
Fit the grille (26) between the eject chute and the rear panel of the final folder (no screws required).



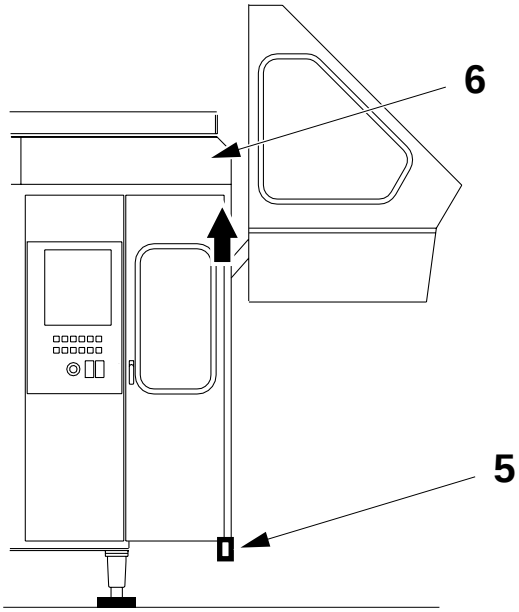
22 Eject chute
23 Knob
24 Pin
25 Chute cover
26 Grille

(Cont'd)

(Cont'd)

Caution! Do not push the door shaft into its hole without moving the microswitch away (or removing it) first. Failure to do so can damage the microswitch.

n) Hold the LH conveyor access door microswitch (6) away from the door shaft hole (or remove it) and push the door shaft up into the hole. Fit the bottom door fixing bracket (5) to the door pin and fix it to the final folder (two screws). Release the microswitch (or fit it again). Make sure that it engages the groove on the shaft correctly.



5 Bracket
6 Microswitch

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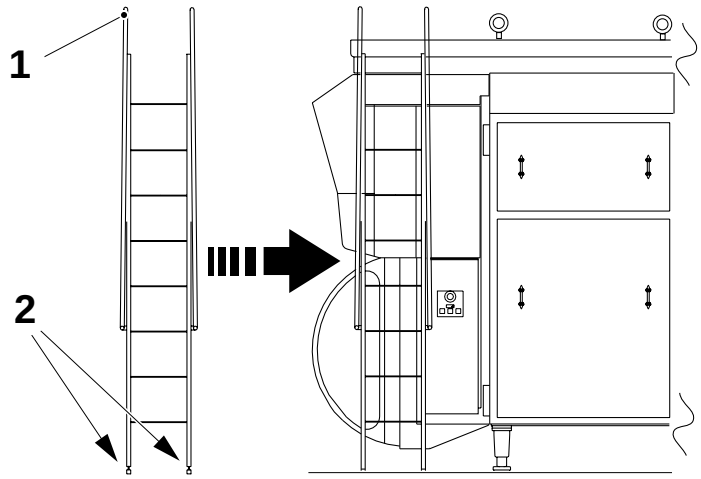
6.10.2 Ladder, platform, handrail, and machine body

Risk of falling!
Take care when working on machine platforms without railings.

a) Fit the top of the ladder (1) to the platform.

b) Adjust the feet (2) so that the ladder is firmly supported by both feet.



1 Ladder
2 Foot

Note! If you encounter problems in adjusting the feet of the ladder due to an uneven or sloping floor, place plates under them to assist in levelling.

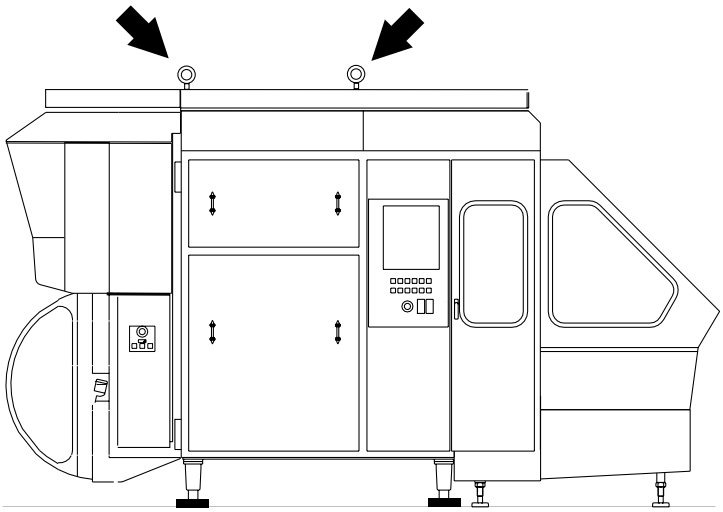
c) Tighten the foot lock nuts on completion of adjustment.

(Cont'd)

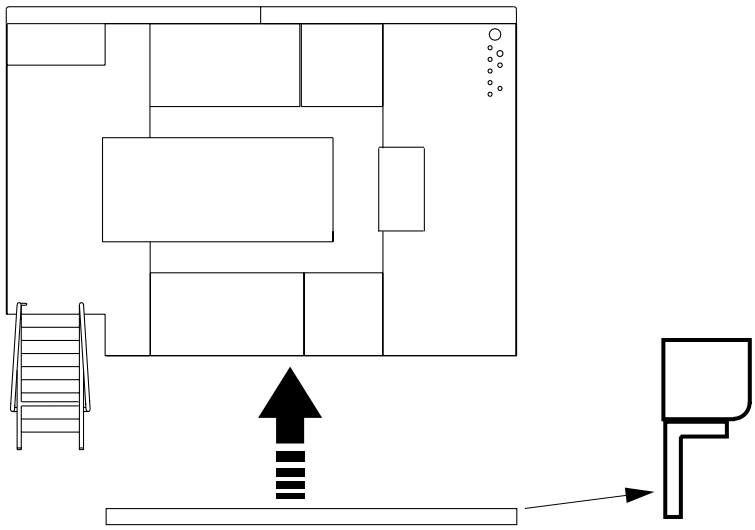
(Cont'd)

d) Remove the four lifting eyes from the top of the platform. Plug the eyebolt holes to prevent dirt from entering them.

Note! The eyebolts are machine accessories. Keep them safe for future use.



e) Fit the LH platform foot plate and 'L' profile to the platform (six screws).



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Note! If the machine is shipped together with a PullTab opening device, the RH platform foot plate and 'L' profile must also be fitted. The RH platform foot plate and 'L' profile are longer than those for the LH side.

(Cont'd)

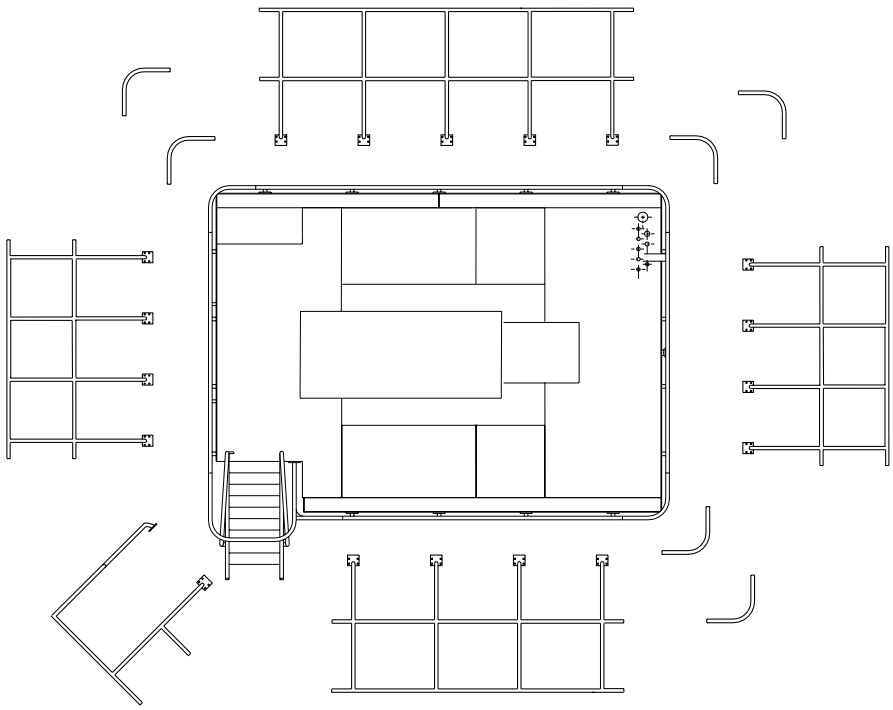
(Cont'd)

f) Ascertain from which side of the machine the electrical cabinet must be lifted into place. If headroom is limited, do not fit the railings on this side until the electrical cabinet and column (pillar) have been fixed in place.

g) Fit the railings and fix with the screws provided (four per fixing plate).

Note! The front and rear railing sections are taller than the side sections since they are fixed to the L section plates under the platform.

Note! Wait until the corner sections have been fitted before fully tightening the fixing screws.



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(Cont'd)

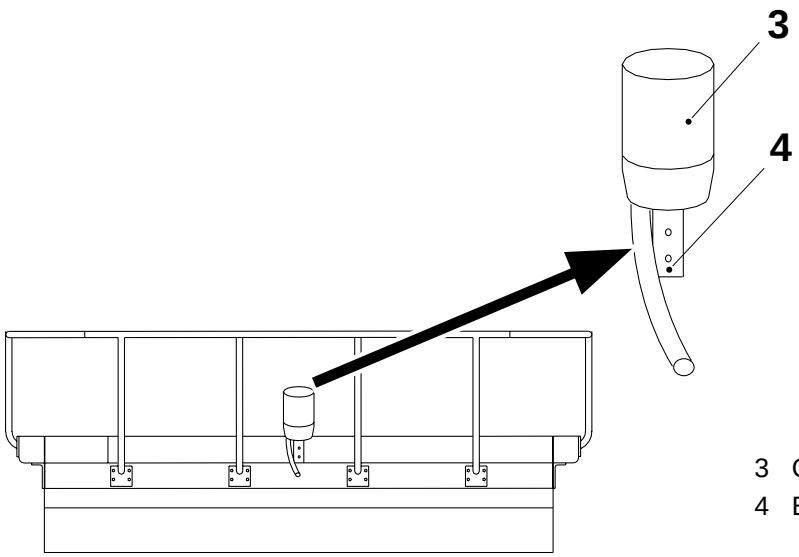
(Cont'd)

h) Remove the glass (3) of the warning beacon.

i) Fit the warning beacon bracket (4) to the front of the platform (two screws).

j) Push the electrical cables through the hole in the bottom of the beacon body and screw the cable guide firmly on.

k) Connect the cables to the bulb holder. Fit the warning beacon glass (3).



3 Glass
4 Bracket

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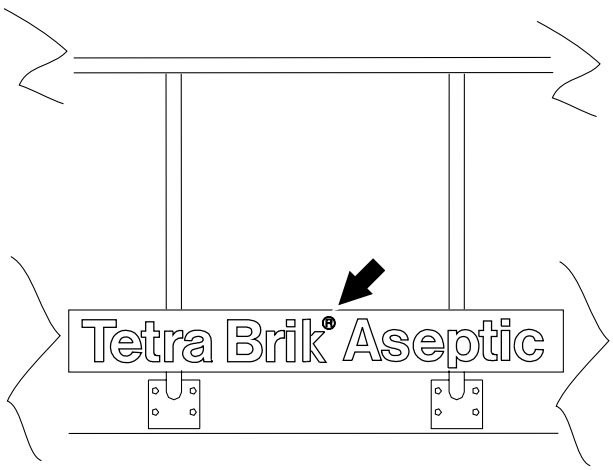
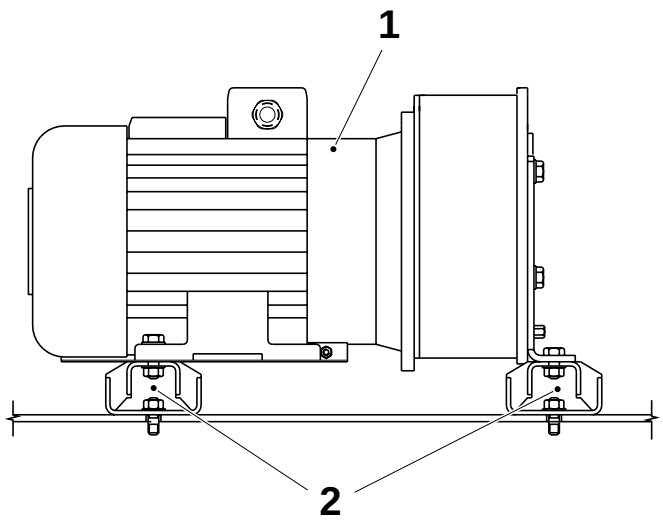
l) Fit the Tetra Brik Aseptic sign to the plastic brackets on the railings at the rear of the platform.



6.10.3 Superstructure

Risk of crushing!
Keep clear of suspended loads. See the *Safety precautions* section.

a) Lift the compressor (1) on to the platform. Fix the compressor to the rubber mounting blocks (2) on the RH side of the platform, with the inlet and outlet facing to the rear of the machine (four screws).



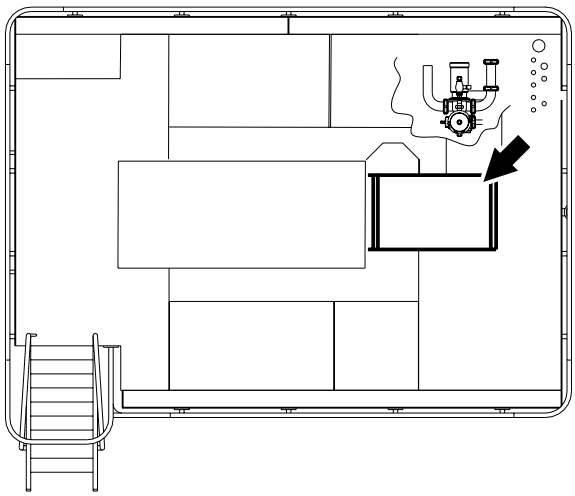
1 Compressor
2 Mounting block

Caution! Make sure that you do not damage the compressor or jam any electrical cables when positioning the superstructure on the platform.

(Cont'd)

(Cont'd)

b) Remove the wooden frame from the bottom of the superstructure column (if not already done).
Lift the superstructure into place on the platform. See section *6.5 Unpacking crate 3/3* for details on how to lift the superstructure.



c) Fit the shims (if necessary) under the base of the column.

Note! The shim sizes are punched near the screw holes on the base of the column.

(Cont'd)

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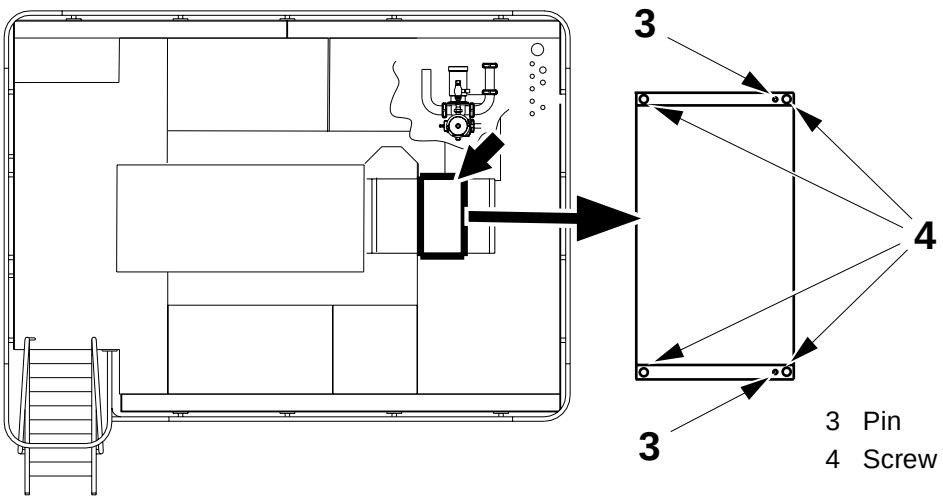
(Cont'd)

Caution! Make sure that alignment pins are correctly aligned before hammering them in. Otherwise the alignment holes can be damaged and correct alignment lost.

d) Adjust the position of the superstructure until the alignment pins (3) at the bottom of the column align perfectly with their holes, at the positions shown in the figure below. Fit the alignment pins by hand first, then hammer them in.

e) Secure the superstructure to the platform with the four screws (4) at the bottom of the column.



f) Remove the superstructure lifting unit (four screws).

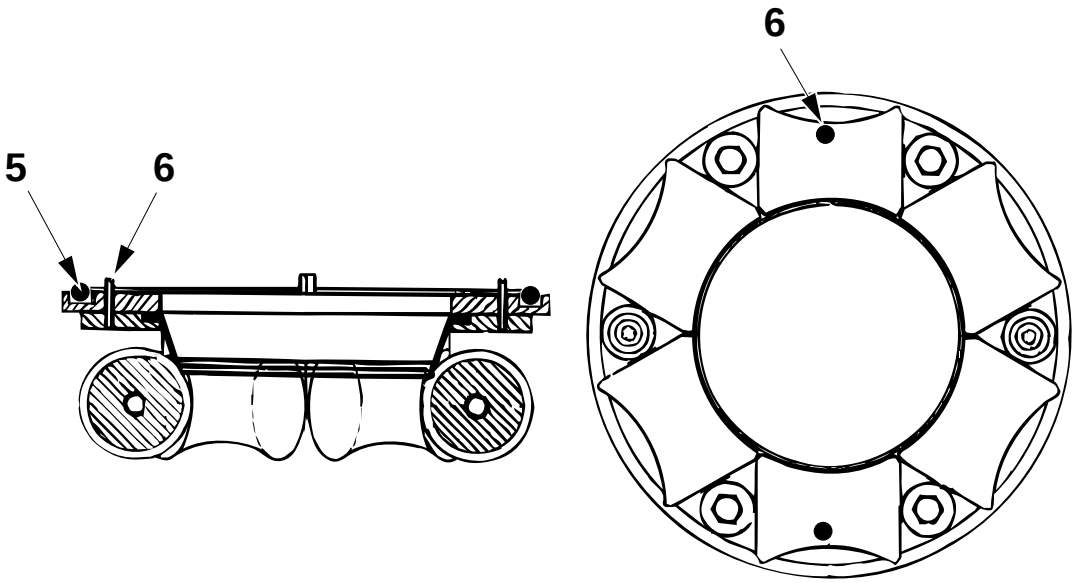
Note! The lifting unit is a machine accessory. Keep it safe for future use.

(Cont'd)

(Cont'd)

Caution! Make sure that the O-ring is correctly seated.
Make sure that the alignment pins are correctly aligned before hammering them in.

g) Fit the seal and roller unit in place underneath the column. Make sure that the O-ring (5) is correctly seated. Fit the alignment pins (6) by hand first, then hammer them in.



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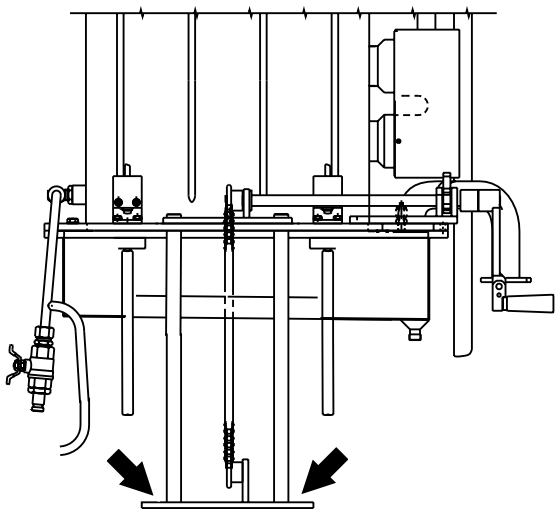
5 O-ring
6 Pin

(Cont'd)

(Cont'd)

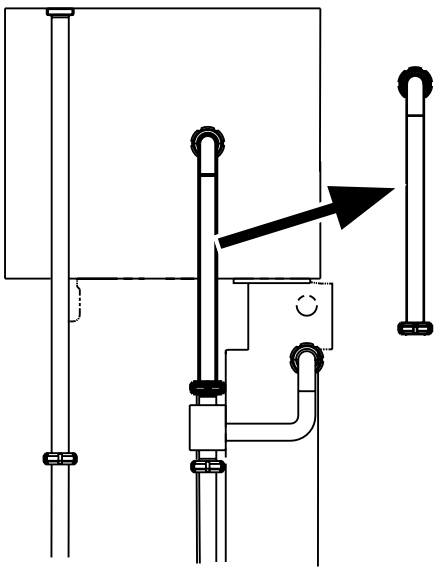
h) Fix the cranking chain bracket at the rear of the superstructure to the platform (two screws).
Remove all ties from the chain and crank.



Caution! Remove all sealing plugs before fitting components and pipes.

Caution! Make sure that the correct gaskets are fitted.

i) Connect the sterile air pipe between the drying chamber and the change-over valve.
Make sure that gasket TP No. 12242-0003 is fitted at the valve end of the pipe.

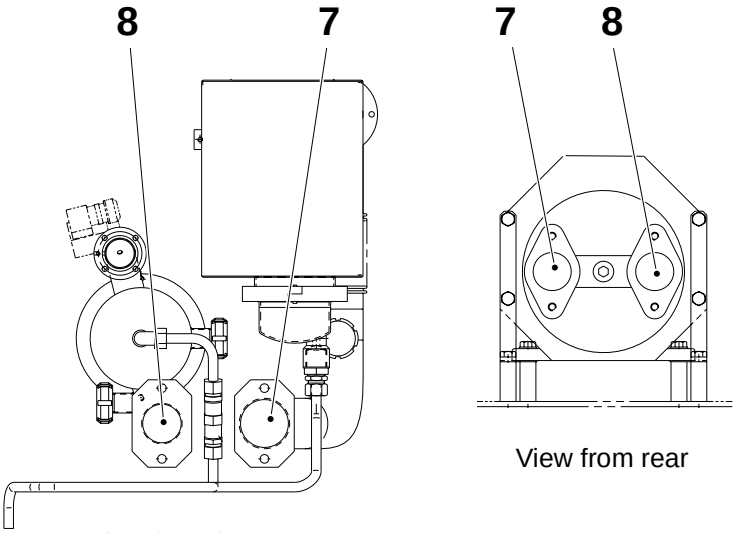


(Cont'd)

(Cont'd)

j) Connect the pipe (7) between the compressor and the separator. Fit gasket TP No. 230551 at the compressor flange.

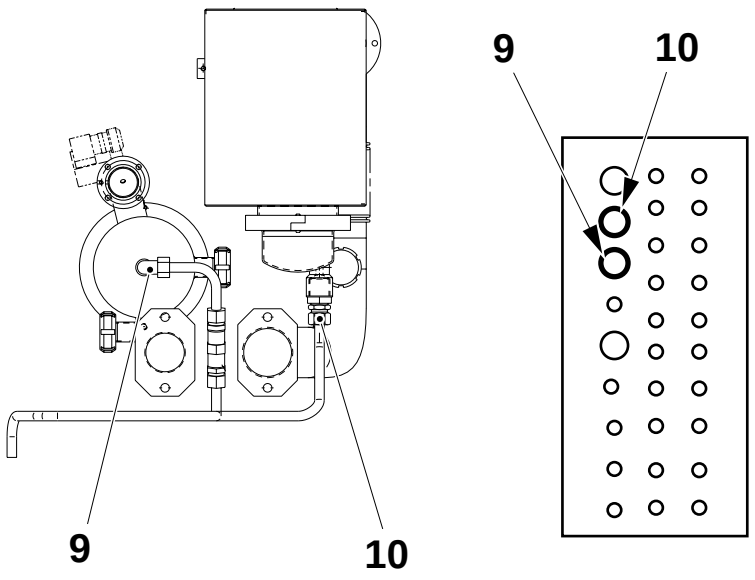
k) Connect the pipe (8) between the compressor and the scrubber. Fit gasket TP No. 230551 at the compressor flange.



7 Pipe
8 Pipe

l) Fit the pipe (9) between the front of the scrubber and the connection on the platform behind the column.

m) Fit the pipe (10) between the bottom of the separator and the connection on the platform behind the column.

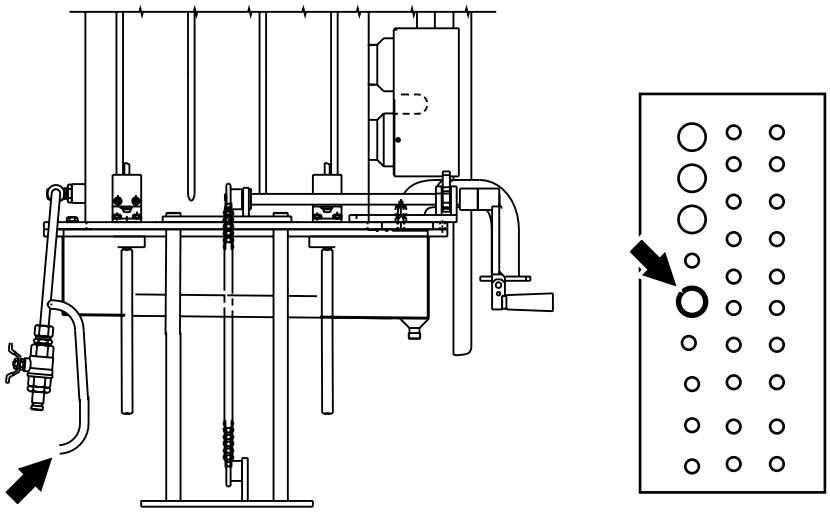


9 Pipe
10 Pipe

(Cont'd)

(Cont'd)

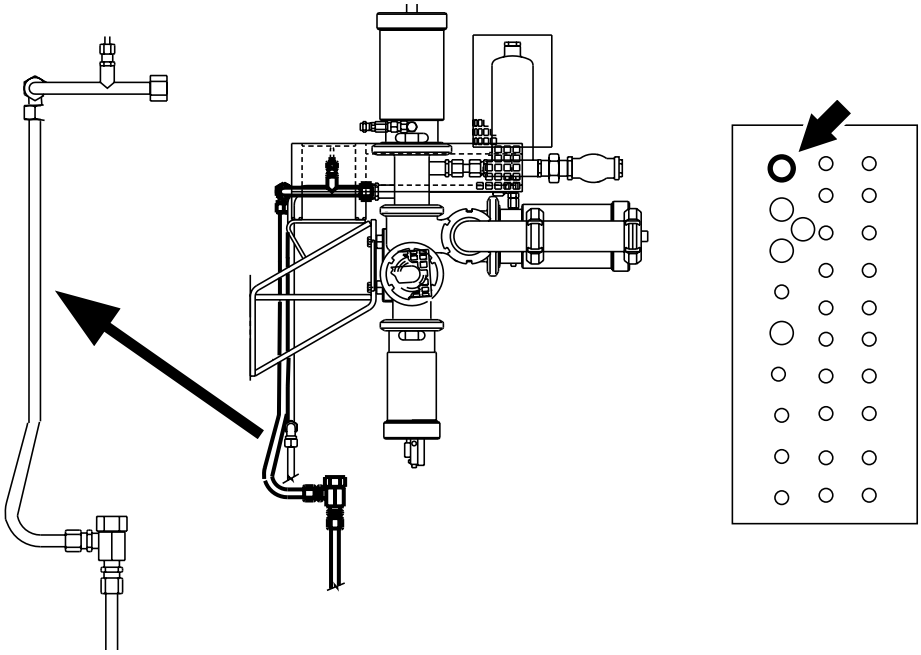
n) Connect the pipe between the sterilisation bath and the connection on the platform.



o) Connect all the pneumatic pipes from the superstructure to the corresponding connectors on the connection panel on the platform.

Note! The number of each connection is punched on the connection plate. See the Installation Drawings for further details.

p) Fit the steam pipe A3 between the LH side of the AP valve body and the connection on the platform behind the column.



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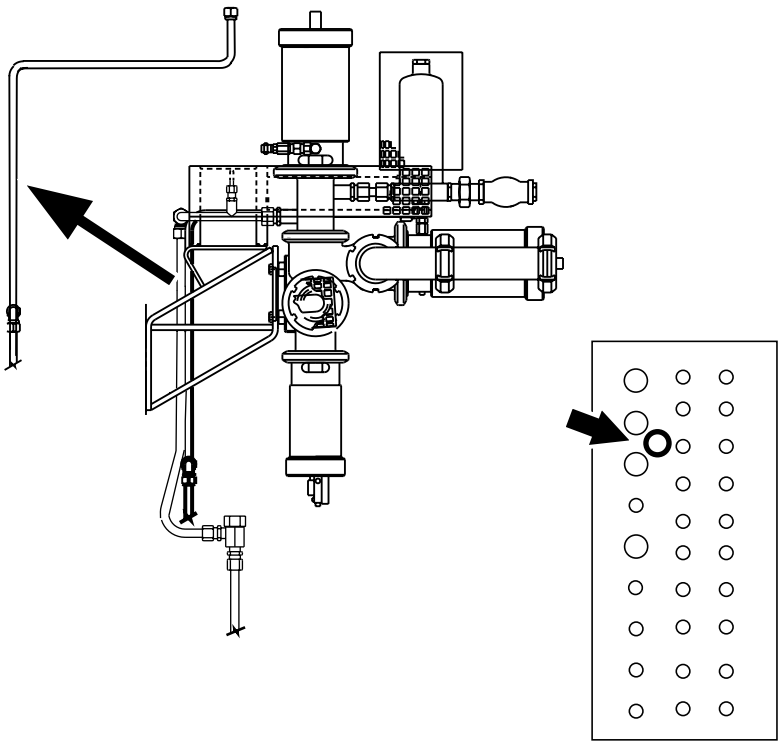
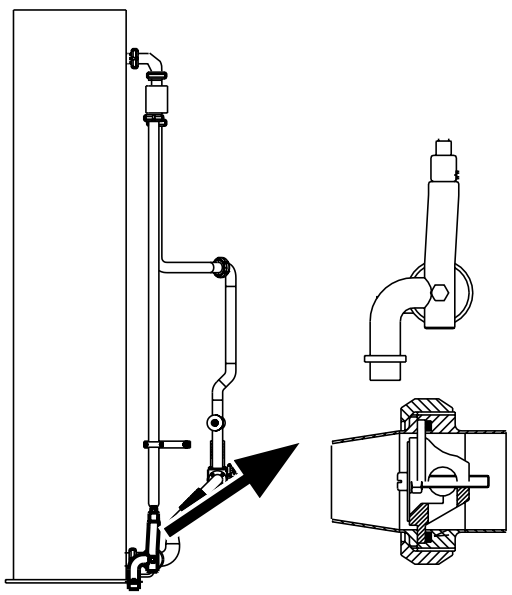
q) Fit the condensate drain pipe from the bottom of the steam filter to the connection on the platform in front of the column, on the RH side.



r) Fit the vent valve group between the forward facing connection at the RH base of the column and the hole in the platform. Make sure that the valve sits correctly in its seat. Fit gasket TP No. 12242-0005 at the valve and gasket TP No. 499825 in the platform hole.

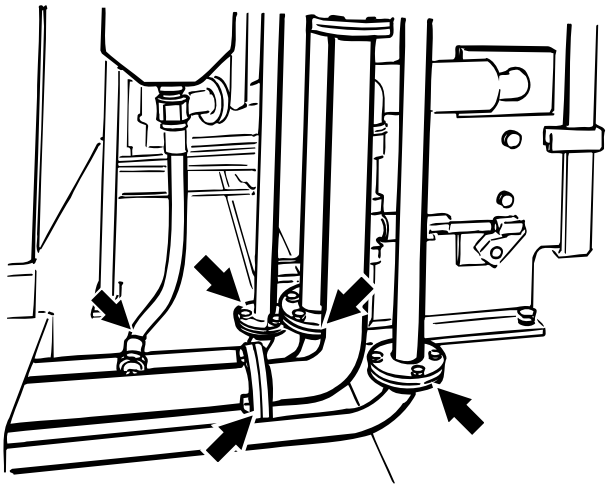


(Cont'd)

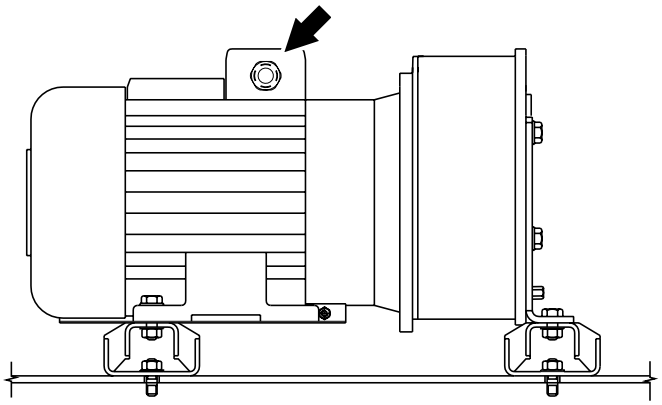
(Cont'd)

s) Connect pneumatic pipe 540 between the vent valve and the corresponding connector on the connections plate on the platform behind the column.

t) Connect the four vertical pipes at the LH base of the column to the corresponding horizontal pipes on the platform.
Connect the metal braided flexible hose from the bottom of the sterilisation bath to the connector on the pipe on the platform.



u) Connect the cables from the superstructure cable harness to the terminals in the junction box on the top of the compressor. See the EM for further details.

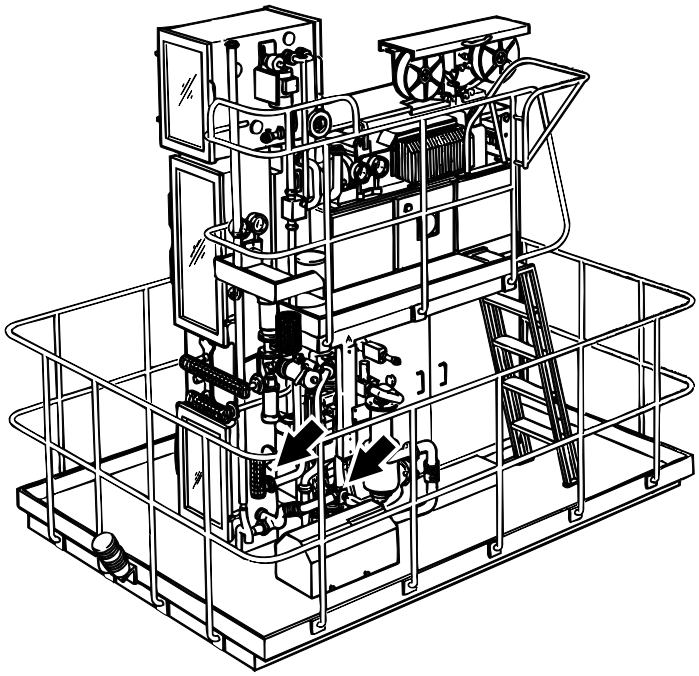


(Cont'd)

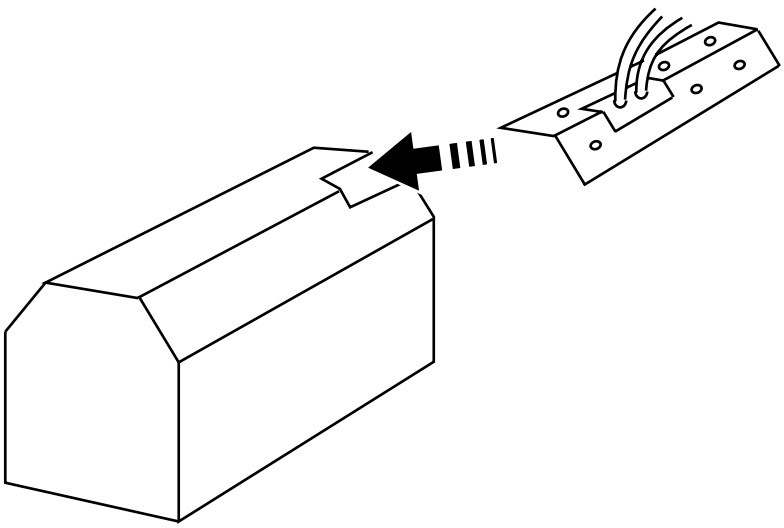
(Cont'd)

v) Connect the superheater thermocouple at the bottom of the superheater, cable No. 453.

w) Connect the LS nozzle thermocouple at the RH side of the column, cable No. 450.



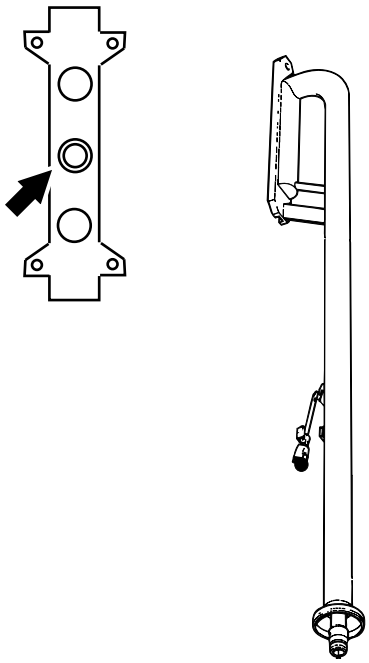
x) Fit the compressor cover (four screws). Fit the cable guide plate to the cover (six screws).



6.10.4 Product and CIP pipes

Caution! Remove all sealing plugs before fitting components and pipes. Make sure that the correct gaskets are fitted.

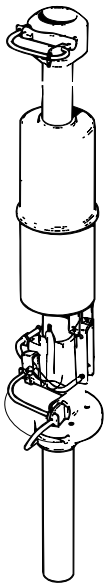
a) Fit the upper filling pipe inside the column. Fix in place with the knurled knob on the front of the pipe holder. Fit gaskets TP No. 12242-0001 at the product and air connections at the top of the pipe. Make sure that the O-ring (TP No. 315204-0217) is fitted at the bottom of the pipe.



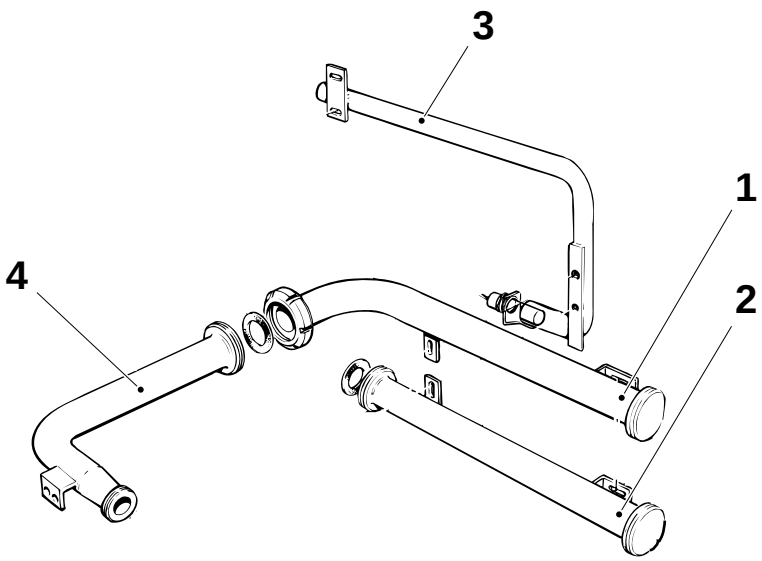
(Cont'd)

(Cont'd)

b) Fit the lower filling pipe.



c) Fix the CIP in and out pipes (1) and (2) to the bracket (3) at the RH side of the superstructure (one screw per bracket). Fix the front ends of the pipes to the brackets on the front railings (one screw per bracket). Connect the CIP out pipe (1) to the connecting pipe (4) on the side of the column. Fit gasket TP No. 315250-0103 between the two pipes.



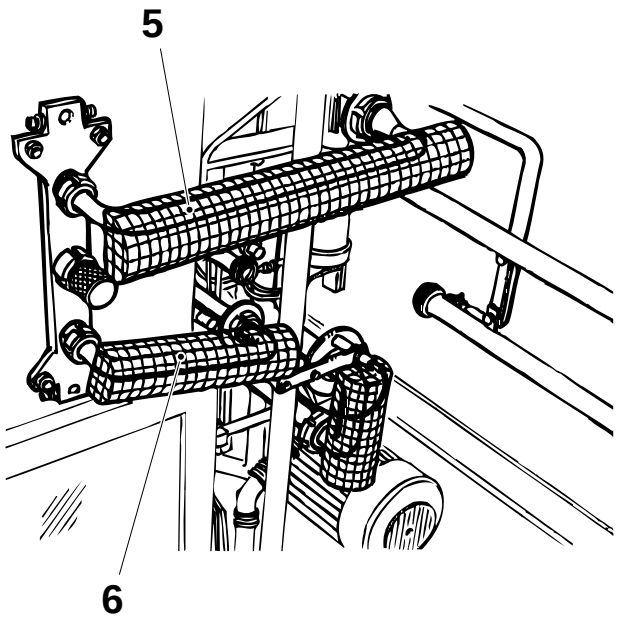
1 CIP out pipe
2 CIP in pipe
3 Bracket
4 Connecting pipe

(Cont'd)

(Cont'd)

d) Fit the product pipe (5) between the AP valve body and the top inlet on the upper filling pipe holder. Fit gasket TP No. 12242-0003 at the AP valve. Make sure that gasket TP No. 12242-0001 is fitted at the pipe holder.

e) Fit the sterile air pipe (6) between the pipe at the side of the column and the bottom inlet on the upper filling pipe holder. Fit gasket TP No. 12242-0001 at the RH end of the pipe. Make sure that gasket TP No.12242-0003 is fitted at the pipe holder.



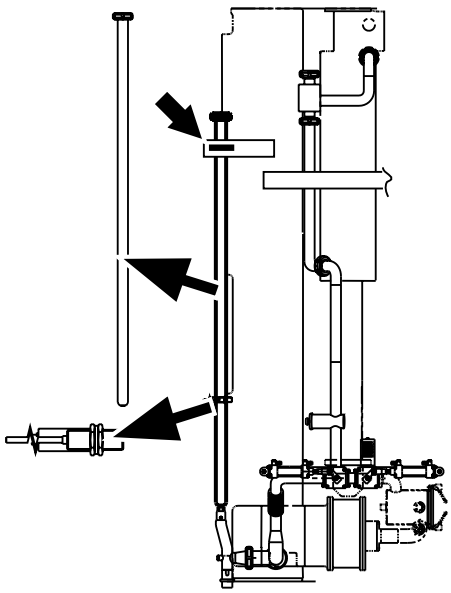
5 Product pipe
6 Sterile air pipe

(Cont'd)

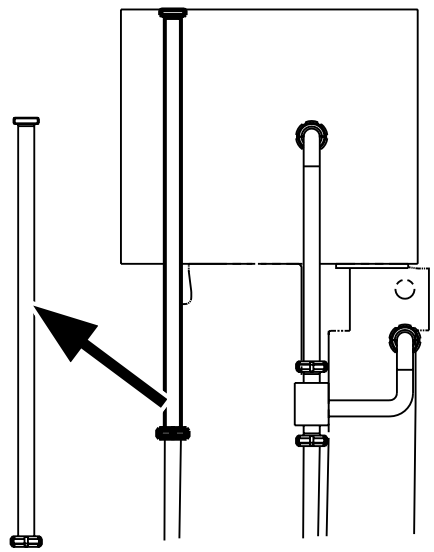
(Cont'd)

f) Fit the bottom section of the vent pipe to the top of the vent valve. Fix the pipe at the bracket on the front section of the upper platform.

g) Fit the bracket with the sterile air pipe detection proximity switch (cable No. 491) to the bottom section of the vent pipe. Adjust the position of the bracket so that the proximity switch will be able to detect the sterile air pipe.



h) Fix the top section of the venting pipe to the bottom section. Fit gasket TP No. 315250-0103 between the two pipe sections.



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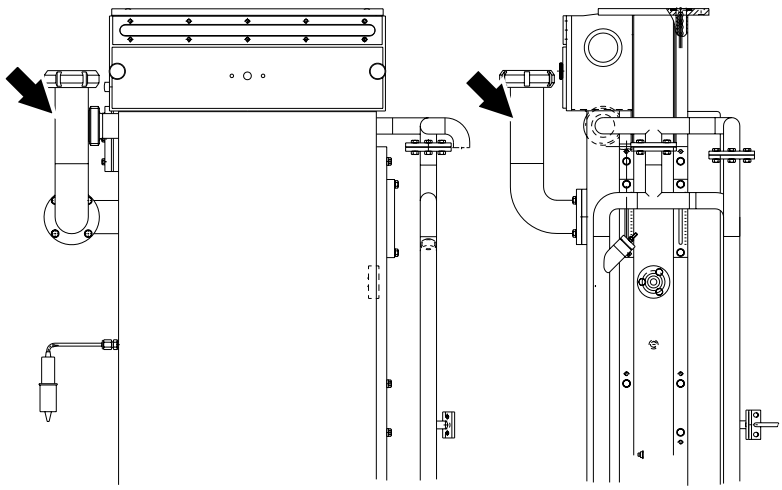
6.10.5 Electrical cabinet

Risk of crushing!
Keep clear of suspended loads. See the *Safety precautions* section.

Caution! Make sure that you do not jam any electrical cables when positioning the electrical cabinet on the platform.

a) Remove the water filling pipe from the rear of the RH side of the superstructure.



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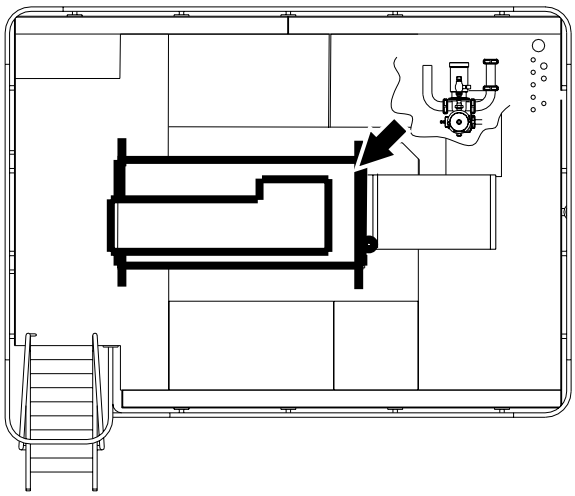
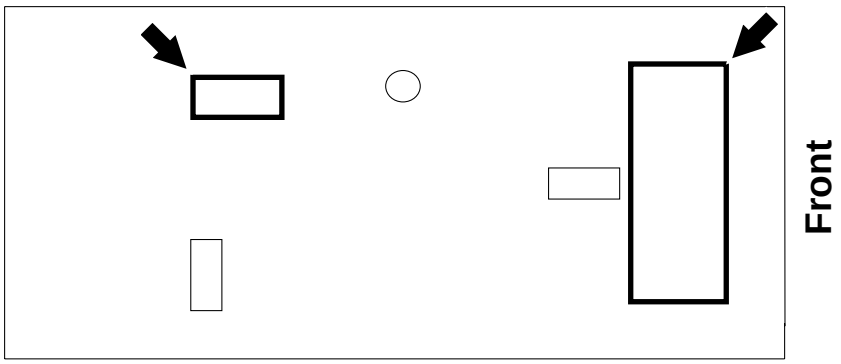
(Cont'd)

(Cont'd)

b) Lift the electrical cabinet into position just above the platform. See section *6.3 Unpacking crate 1/3* for further details.



c) Push the cables from the machine body through the holes in the electrical cabinet bottom plate. Lower the electrical cabinet to the platform.



Top view

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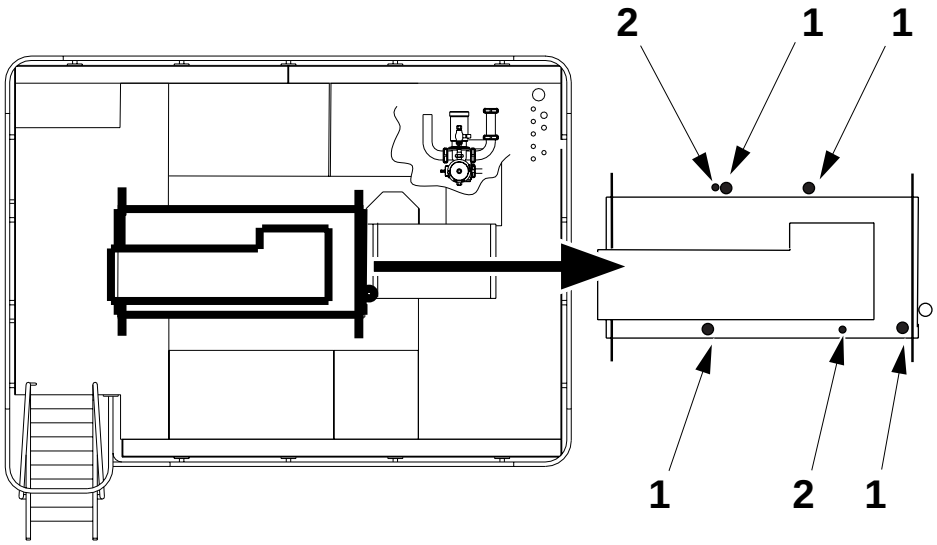
(Cont'd)

(Cont'd)

Caution! Make sure that alignment pins are correctly aligned before hammering them in. Otherwise the alignment holes can be damaged and correct alignment lost.

d) Loosely fit the four fixing screws (1). Adjust the position of the electrical cabinet until the alignment pins (2) align perfectly with their holes. Fit the pins by hand first, then hammer them in. Tighten the four fixing screws.



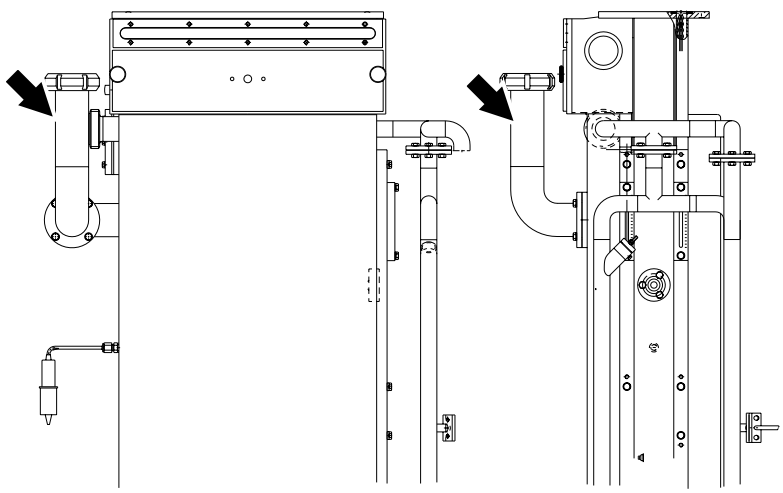
1 Screw
2 Pin

2.2TB062942en.fm

e) Remove the lifting tackle and remove the two lifting bars from the electrical cabinet.

Note! The lifting bars are machine accessories. Keep them safe for future use.

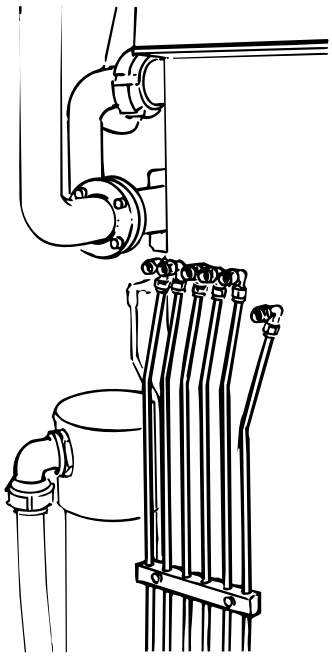
f) Fit the water filling pipe back on the rear of the RH side of the superstructure.



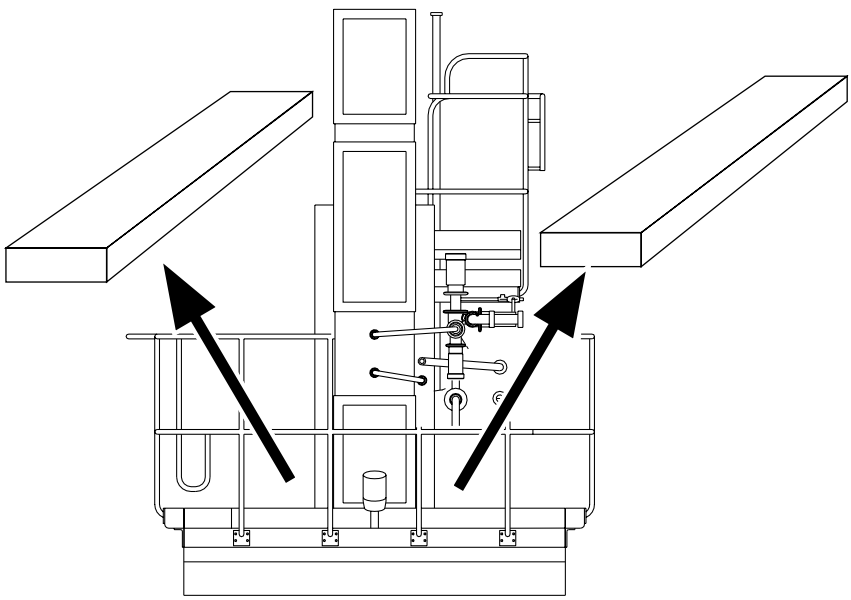
(Cont'd)

(Cont'd)

g) Connect the pneumatic pipes at the top front RH side of the electrical cabinet (200/201, 240/241, J8/J9).



h) Fit the cover plates over the pipes on both sides of the electrical cabinet (three screws for RH side cover plate, two screws for LH side cover plate).



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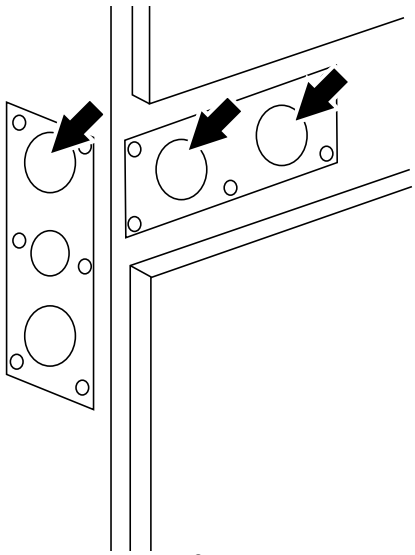
6.10.6 Superstructure electrical connections

Note! See the EM for further details on the following operation.

a) Push the cable harnesses from the superstructure through the holes in the front RH side of the electrical cabinet. Fix the harnesses in place with the cable guides and mounting plates (six screws for the plate with two harnesses, four screws for the plate with one harness).



b) Connect the cables from the superstructure to the corresponding terminals inside the electrical cabinet.

6.10.7 Upper platform and LS

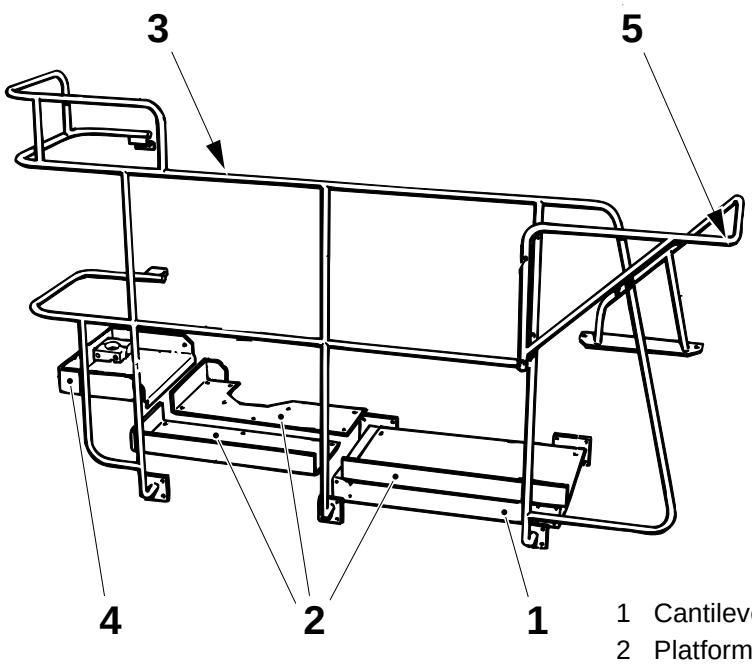
a) Fix the cantilever support (1) for the upper platform to the RH side of the electrical cabinet (two brackets, four screws each).

b) Fit the platform panels (2) to the cantilever support and electrical cable box (four screws for the large panel, eight screws for the two small panels).

c) Fix the upper railings (3) to the side of the upper platform (three fixing plates, four screws each). Fix the upper railings to the superstructure at the two fixing points (one on the drying chamber, one on the column; two screws each).

d) Fix the front platform section (4) to the two brackets on the side of the column (one screw each) and to the two fixing points on the upper railings (one screw each).

e) Fix the upper platform safety hoop (5) to the upper railings (two screws) and to the top of the electrical cabinet (two screws).



1 Cantilever support
2 Platform panel
3 Railing
4 Front platform section
5 Safety hoop

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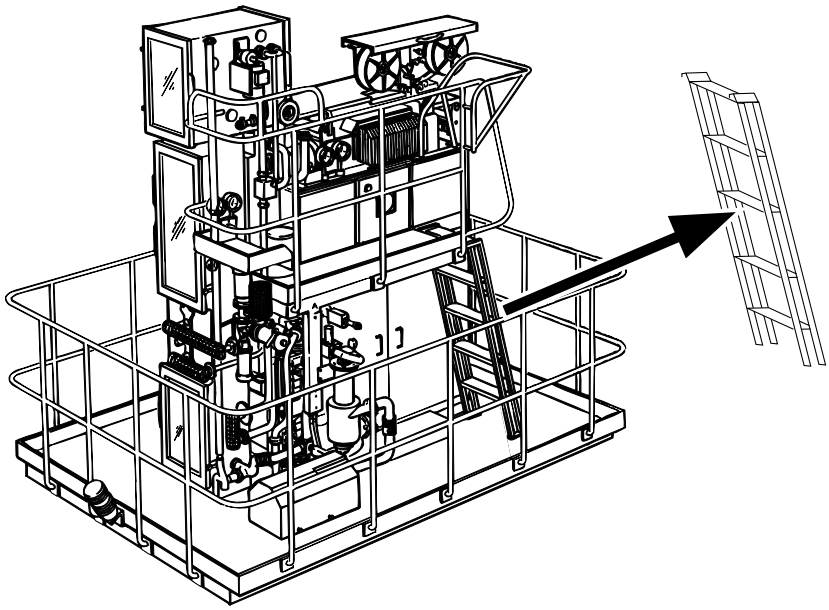
(Cont'd)

(Cont'd)

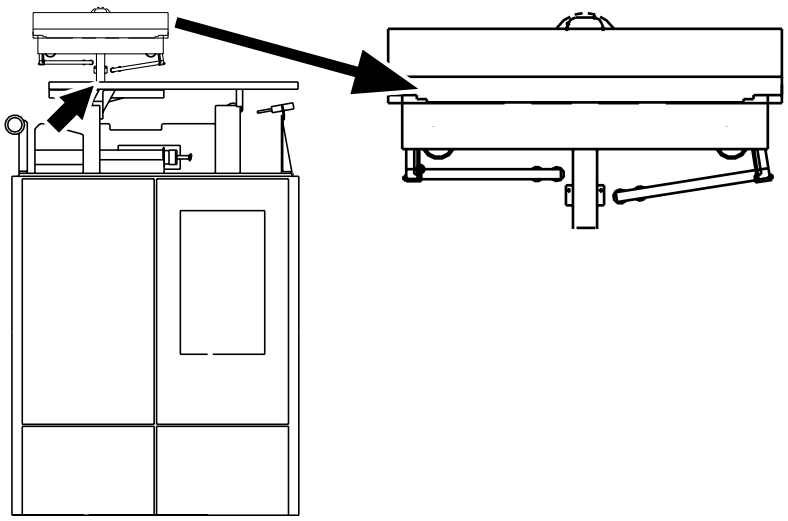
f) Fit the hook in the top of the upper platform ladder in the slots in the cantilever support. Rest the bottom of the ladder on the main platform.



6.10.8 LS strip magazine

Note! If the machine is fitted with an ASSU go to section *6.10.9 ASSU*.

a) Fix the LS strip magazine to the SA on the electrical cabinet (four screws).



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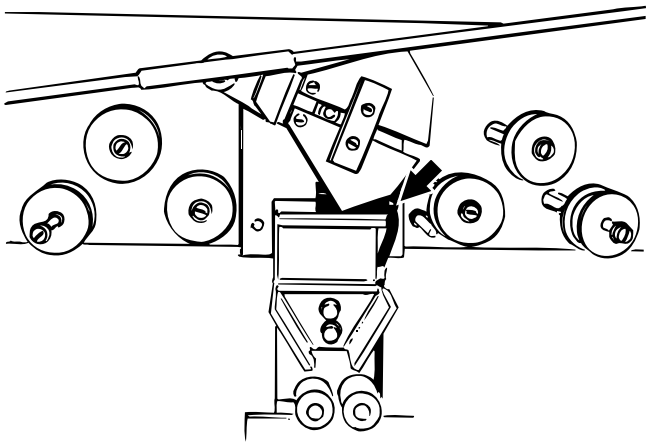
(Cont'd)

b) Fit the LS reel detection sensor (cable No. 552) to the LS strip magazine. Secure the cable to the upright (two cable clamps).

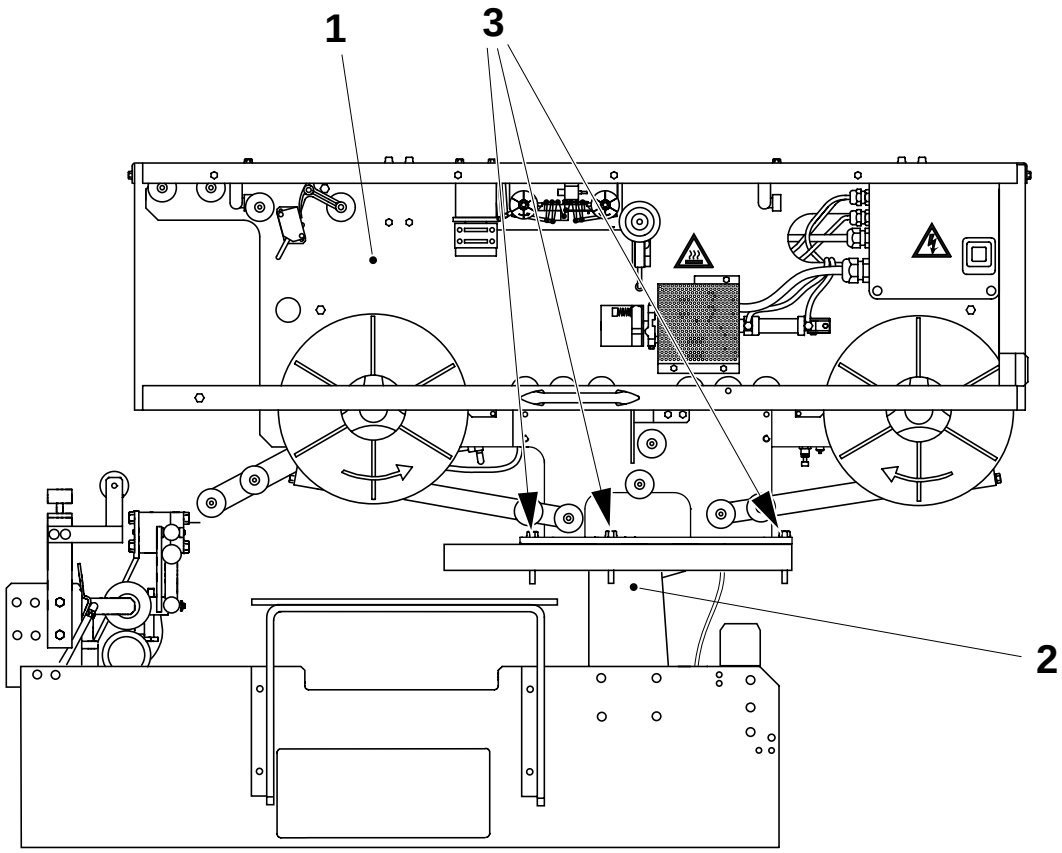


6.10.9 ASSU

Note! If the machine is equipped with an LS strip magazine, go to section *6.10.8 LS strip magazine*.

Caution! Make sure that the alignment pins are correctly aligned before hammering them in.

a) Fit the ASSU (1) to the pillar (2). Fit the alignment pins by hand first, then hammer them in. Fix the ASSU in place with the screws (3).

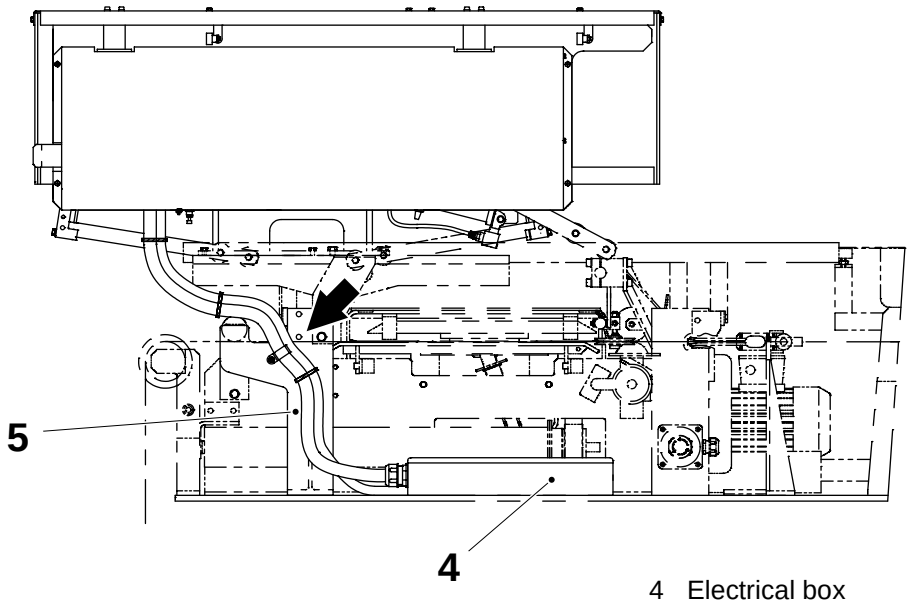


1 ASSU
2 Pillar
3 Screw

(Cont'd)

(Cont'd)

b) Open the electrical box (4) on the top of the electrical cabinet. Connect the cables from the ASSU to the terminals in the electrical box. See the EM. Fix the cables to the bracket (5) with the cable clamp (arrow). Close the electrical box.



4 Electrical box
5 Bracket

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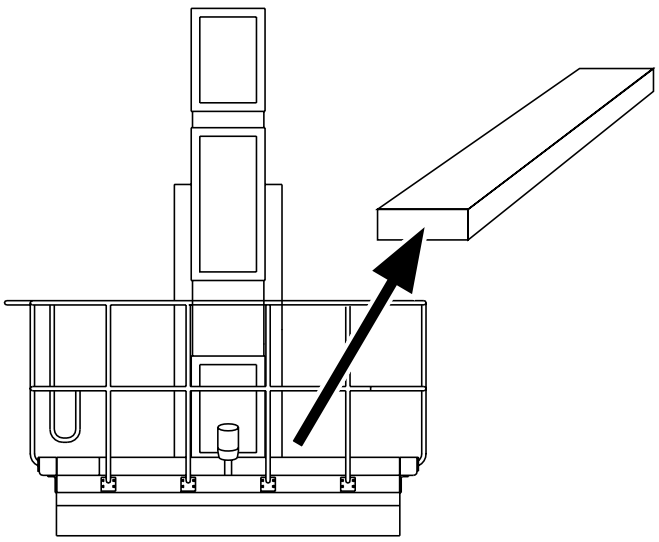
c) Remove the cover plate from the RH side of the platform.



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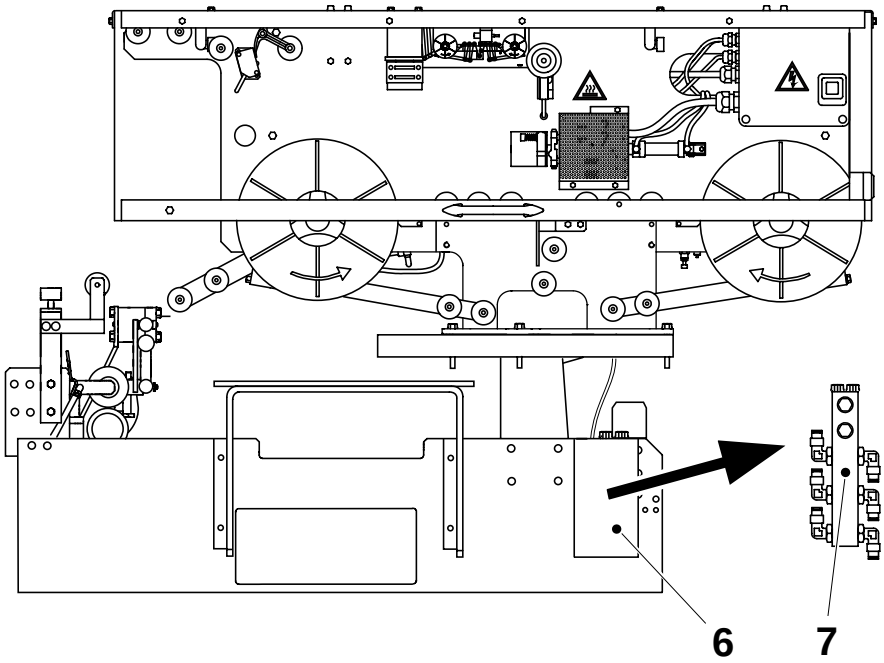
(Cont'd)

d) Remove the cover (6). Connect the pneumatic hoses from the ASSU to the connectors (7).



6 Cover
7 Connectors

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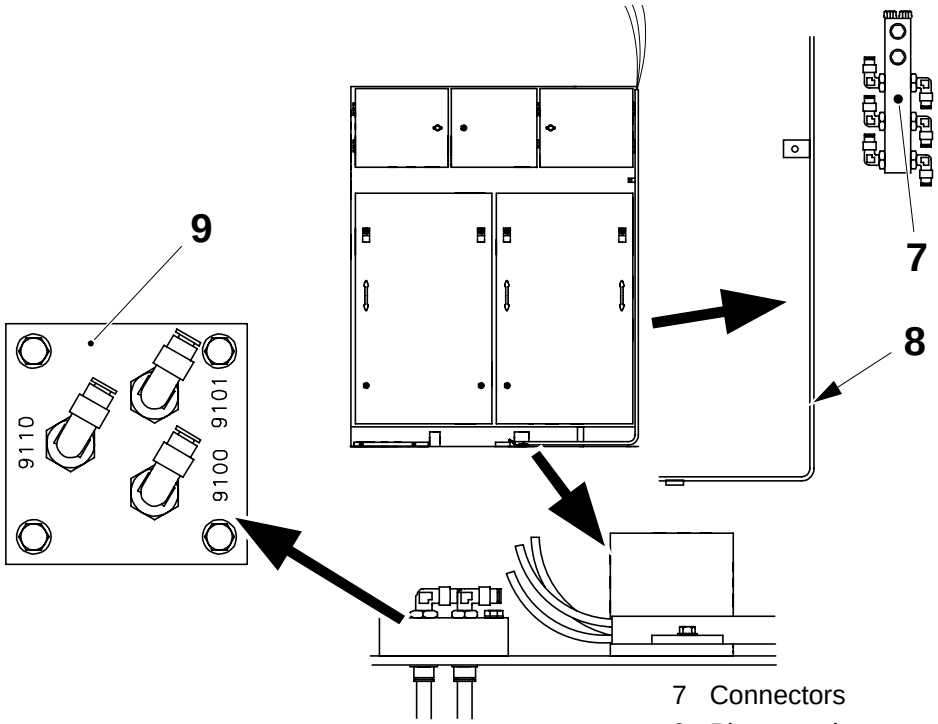
(Cont'd)

e) Push the pneumatic hoses from the connectors (7) through the pipe guard (8). Fix the top of the pipe guard (8) to the side of the electrical cabinet. Also fix the bottom of the pipe guard to the foot of the electrical cabinet using the electrical cabinet fixing screw.

f) Connect the pneumatic hoses to the connections plate (9) on the platform.



7 Connectors
8 Pipe guard
9 Connections plate

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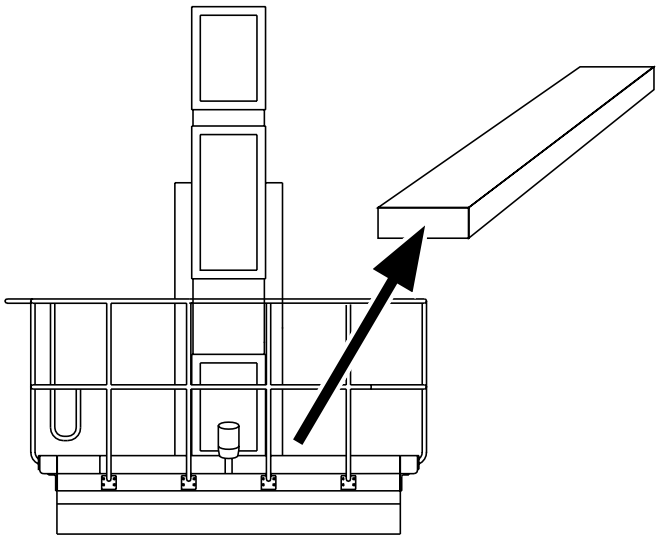
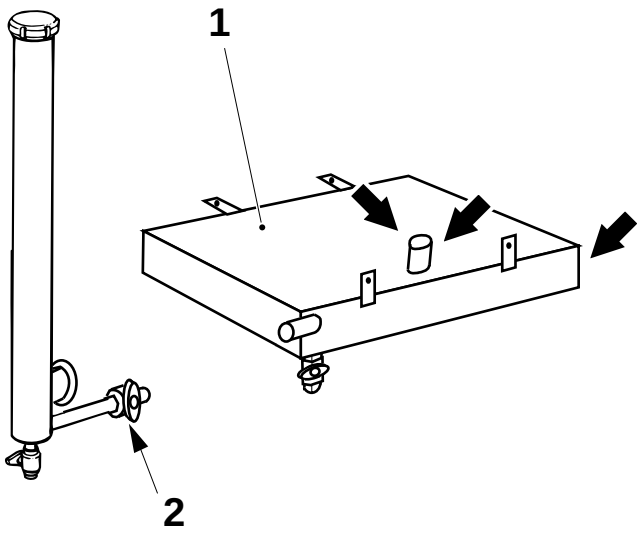
g) Fit the cover plate over the pipes on the RH side of the platform.



6.10.10 Hydrogen peroxide dilution tank

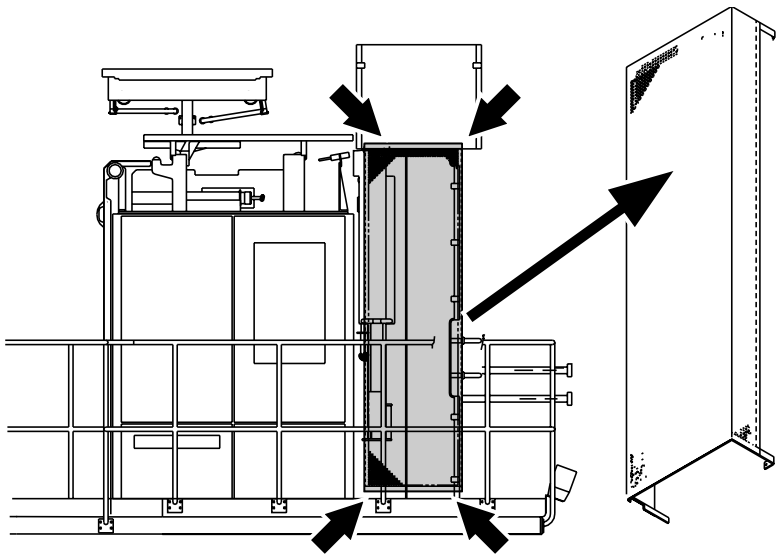
a) Fit the hydrogen peroxide dilution tank (1) under the rear of the machine body (four screws). Connect it to the hydrogen peroxide filter drain valve (2) with the flexible hose provided. Connect the two flexible hoses inside the machine body to the tank cap (the hoses and connections are of different diameter). Connect the outlet on the front of the tank to the drain if required. (Otherwise the diluted hydrogen peroxide will drain on the floor.) Make sure that all the hose clamps are tight. Make sure that the three valves are closed.



1 Dilution tank
2 Drain valve

6.10.11 Covers and guards

a) Fit the protective guard on the LH side of the superstructure. Hook the two top hooks in the two support blocks at the positions shown in the figure below. Fix the bottom of the guard with the two fixing screws at the points shown in the figure below.



(Cont'd)

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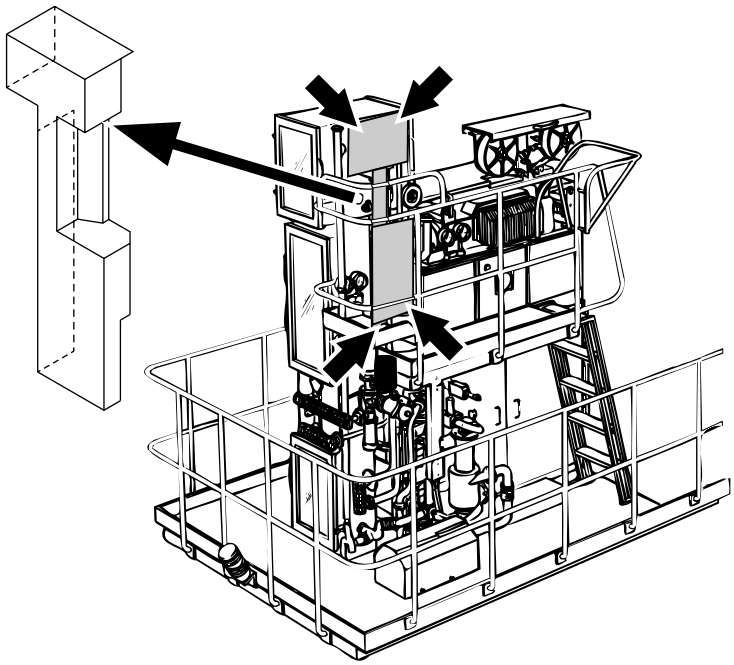
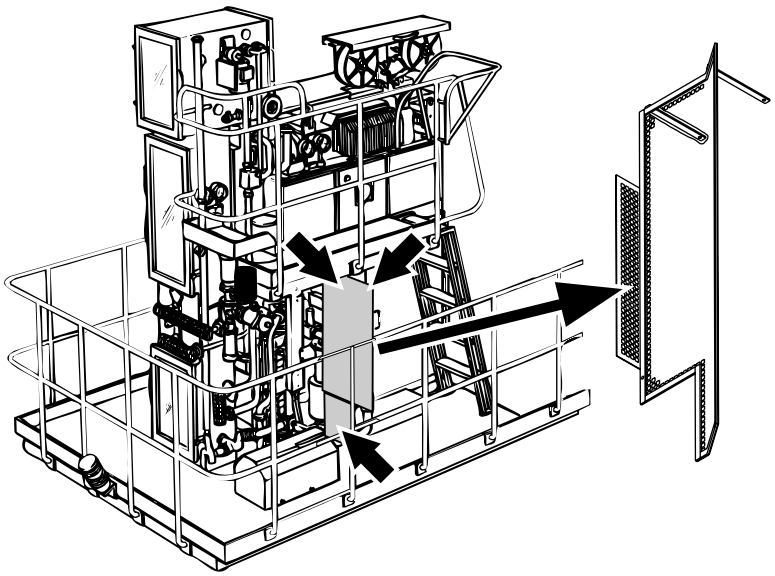
b) Fit the upper platform protective guard on the RH side of the superstructure. Fix at the top with two screws to the support rods on the side of the drying chamber. Fix at the bottom with two screws at the brackets on the upper platform.



c) Fit the main platform protective guard for the pipes on the RH side of the superstructure. Fix at the top with two screws to the cantilever support of the upper platform. Fix at the bottom with one screw at the bracket on the separator.



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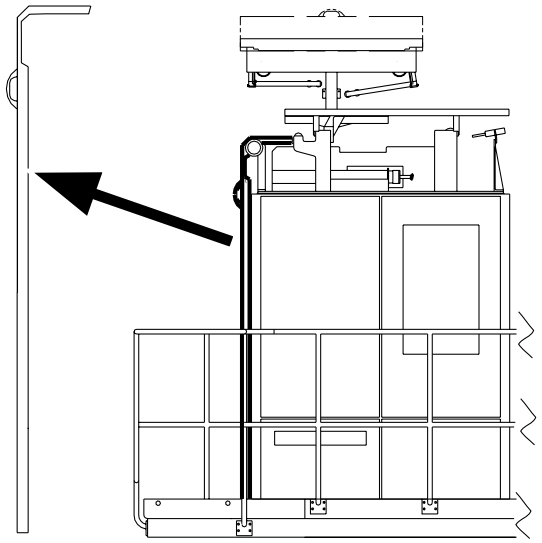
Note! Not relevant for machines with Pull Tab.

d) Fit the rear packaging material cover behind the electrical cabinet.



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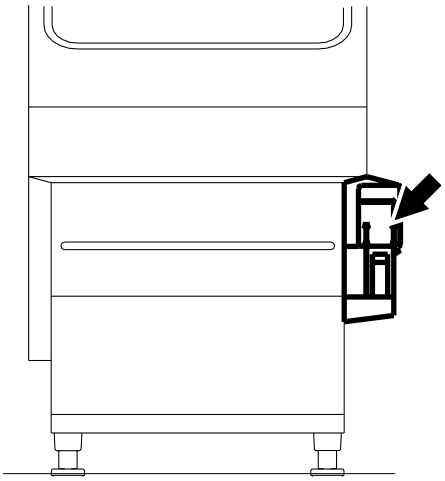
6.11 Conveyor connections

Risk of electrocution!
High voltage. Follow the *Safety precautions*. Make sure that power is switched off upstream.

a) Connect the package outfeed conveyor in accordance with the plant installation and connection drawings.

Note! See the package outfeed conveyor's own installation manual for instructions.



b) If the installation has an eject conveyor, connect it in accordance with the plant installation and connection drawings.

Note! See the eject conveyor's own installation manual for instructions.

c) If an eject bin is to be used, position it under the eject chute where it will catch all ejected packages.

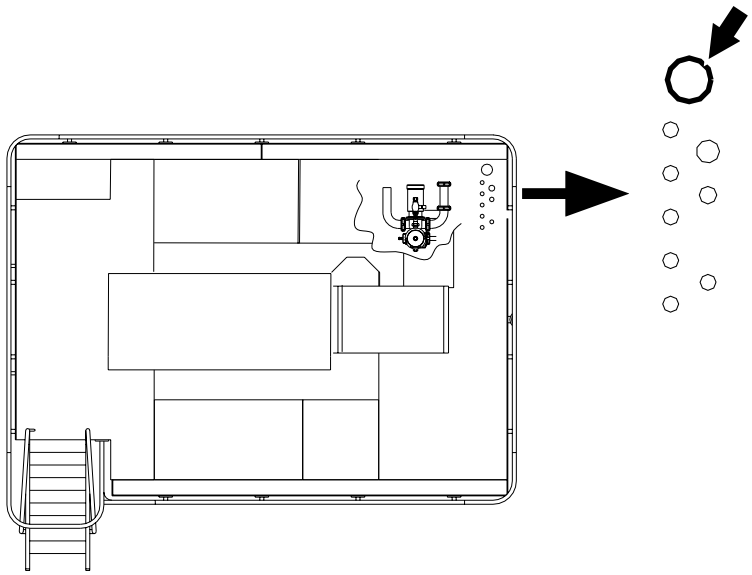
6.12 Utility, product, and drain connections

Electrical power connections

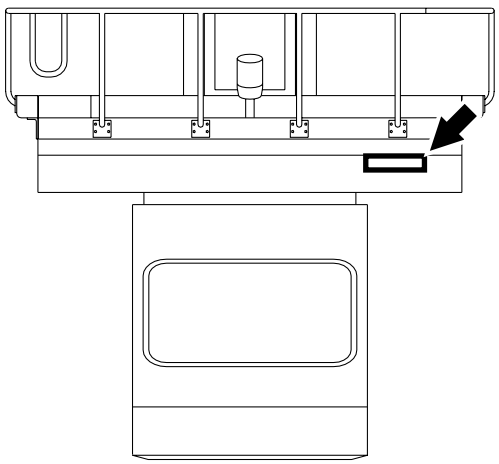
Risk of electrocution!
High voltage. Follow the *Safety precautions*. Make sure that power is switched off upstream.

a) Make sure that power is switched off upstream.

b) Pass the main power cable down through the cable guide.



c) Remove the RH access panel from the under the platform.



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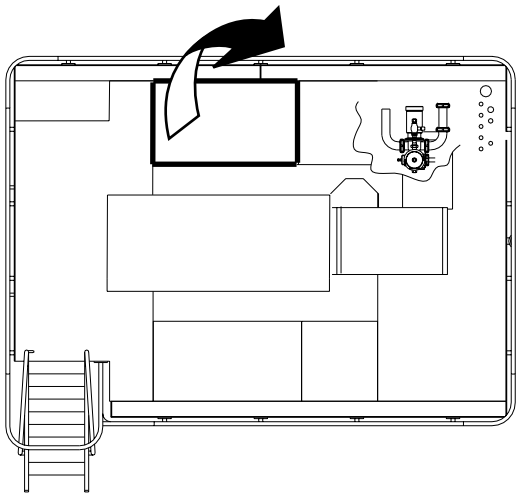
(Cont'd)

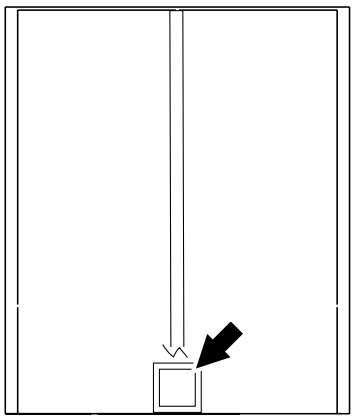
d) Open the access panel on the RH side of the platform.



e) From the front of the machine body, push the cable under the platform until it reaches the access panel. Close the access panel.

f) From the platform access panel, push the cable underneath the electrical cabinet.

g) Remove the cable guide cover plate (if fitted) from the box at the bottom of the electrical cabinet (located on the RH side of the electrical cabinet but accessible from the LH side).

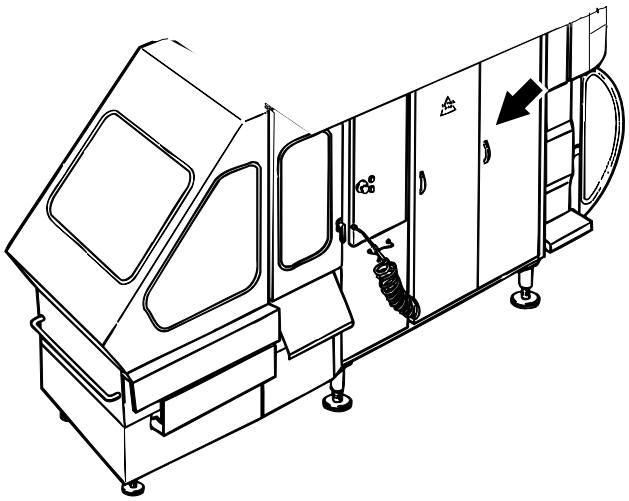


View from LH side

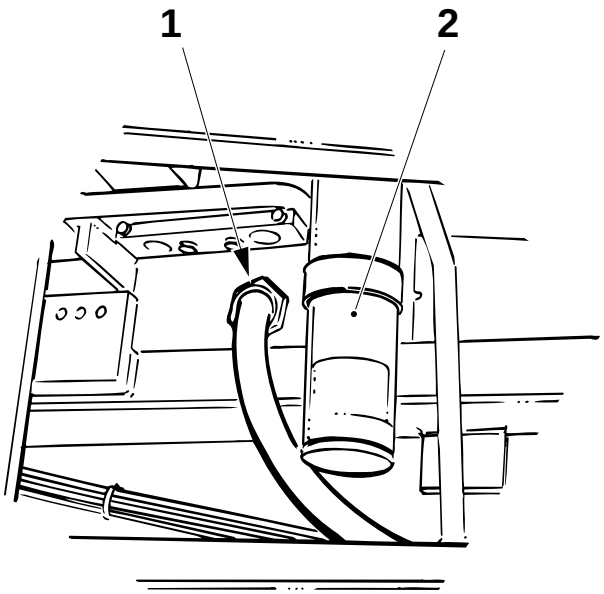
(Cont'd)

(Cont'd)

h) Open the rear RH doors of the machine body. Remove the protective grille and document holder if necessary.



i) Push the cable up through the cable guide (1) in the floor of the electrical cabinet, near the internal light (2).



View from below

1 Cable guide
2 Light

(Cont'd)

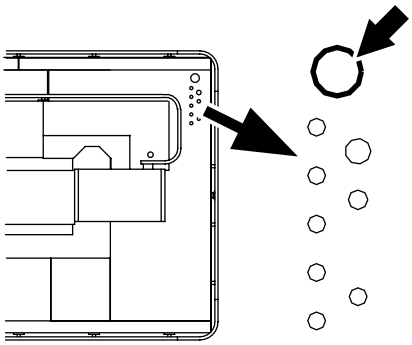
(Cont'd)

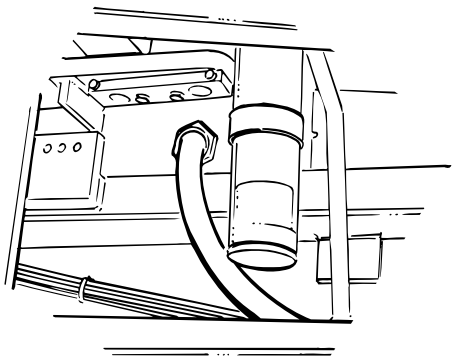
j) Push the cable up through the cable duct at the top of the box as far as the power terminals behind the mains power switch.

k) Connect the wires of the power cable to the power terminals. See the EM for further details. Fit the cable guide cover plate to protect the cable.

Caution! Make sure that there is a length of slack cable inside the electrical cabinet. There must be no pull on the cable terminals. A length of slack cable inside the electrical cabinet avoids dangerous disconnections if the cable is accidentally pulled.

l) Tighten the cable guides at the electrical cabinet floor and at the front of the platform to lock the cable in position.





View from below

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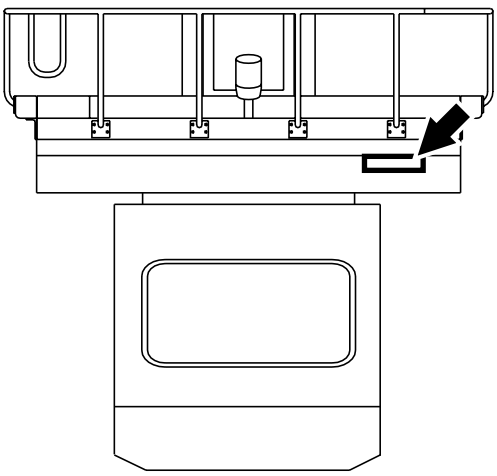
m) Fit the RH access panel under the platform.

n) Fit the protective grille and document holder at the rear RH doors of the machine body if it has been removed.



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Compressed air, water and steam connections

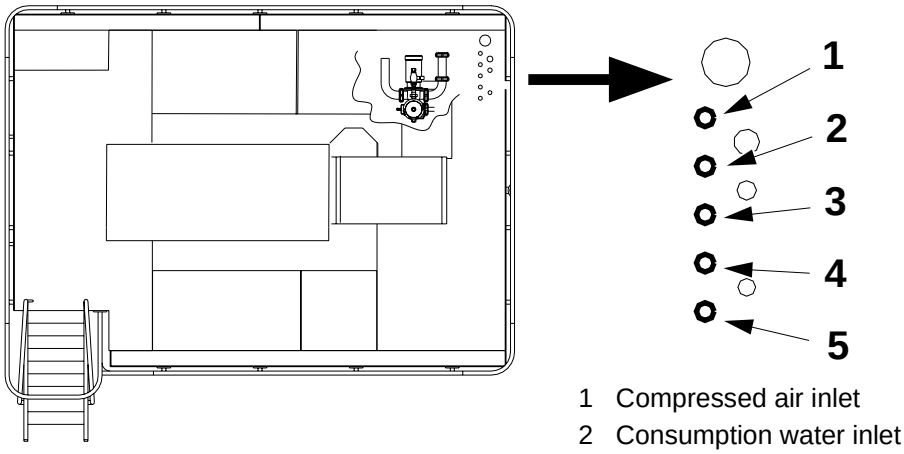
a) Connect the compressed air hose to the compressed air inlet (1).

b) Connect the consumption (flushing) water supply to the consumption water inlet (2) (only on machines with recirculating cooling water).

c) Connect the hot water supply to the hot water inlet (3).

d) Connect the cold water return line to the cold water outlet (4) (only on machines with recirculating cooling water).

e) Connect the cold water supply to the cold water inlet (5).

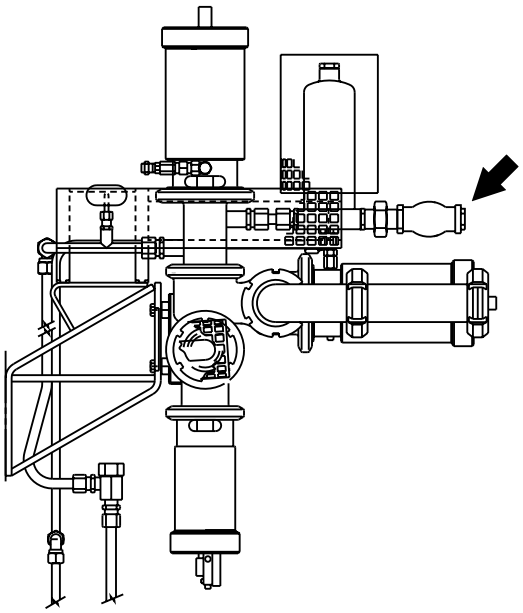


1 Compressed air inlet
2 Consumption water inlet
3 Hot water inlet
4 Cold water outlet
5 Cold water inlet

(Cont'd)

(Cont'd)

f) Connect the steam supply to the steam inlet.



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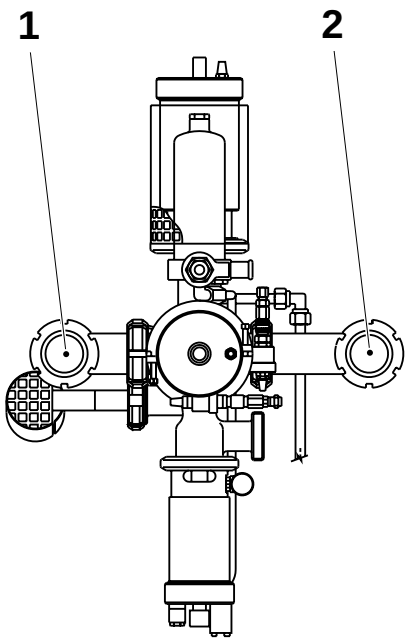
Product connections

Caution! Make sure that the product supply and forwarding lines are connected to the correct connections.

Caution! Make sure that the correct gaskets are fitted.

a) Connect the product supply pipe to the product inlet pipe (1). Fit gasket TP No. 12242-0005 (2" product valve) or TP No. 436781 (3" product valve).

b) Connect the product return pipe to the product outlet pipe (2). Fit gasket TP No. 12242-0005 (2" product valve) or TP No. 436781 (3" product valve).



1 Product inlet pipe
2 Product outlet pipe

(Cont'd)

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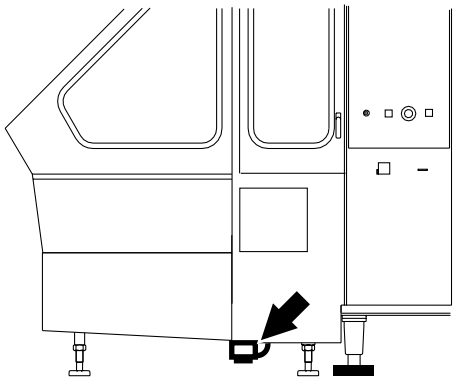
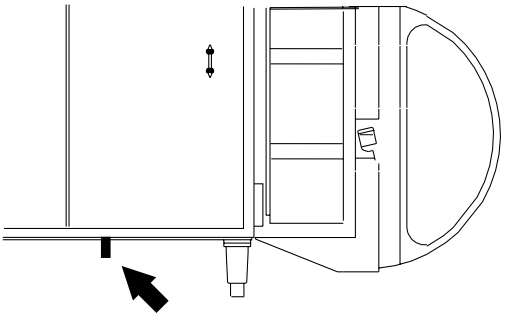
Drain connections

a) Connect the external cleaning pump outlet on the RH side of the final folder to the waste water drain.



b) Connect the cooling water drain to the waste water drain.

Note! This pipe is normally plugged and not connected on machines with recirculating cooling water.



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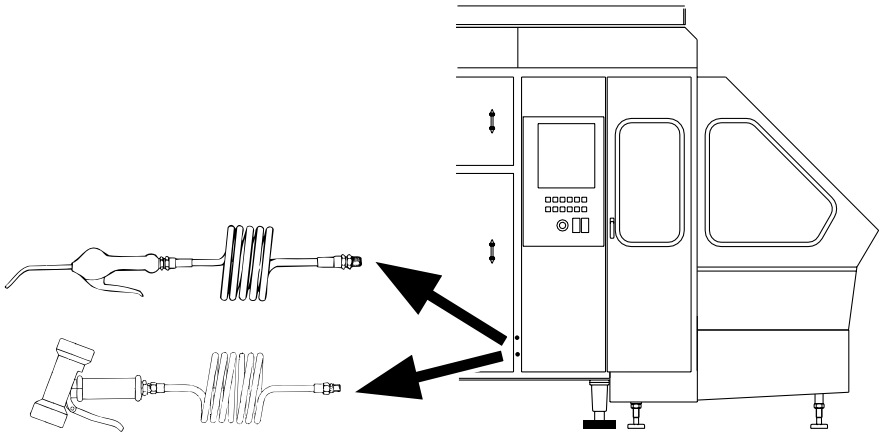
6.13 Other operations

a) Make sure that all ties have been removed from moving parts all around the machine.

b) Fit the air and water guns to the corresponding connections on the LH side of the machine (air at the top, water at the bottom).



Note! Air and water connection points are also present on the RH side. These are plugged on the standard machine.

c) Fill the detergent bottle with detergent of the correct pH. See section *3.8 Cleaning data*. Also see the OM for further details.

d) Fit the ink bottle in the dating unit. See the OM for further details.

e) Fit and connect up the hydrogen peroxide container. See the OM for further details.

f) Thread the packaging material and strip and prepare the machine for start-up. See the OM for further details.

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7 Final installation checks

7.1 Installation and connection checks

See section ***6 Positioning, assembly, and connections*** for further details on the following checks.

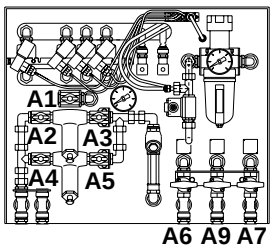
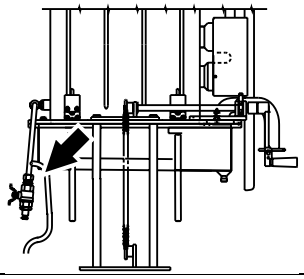
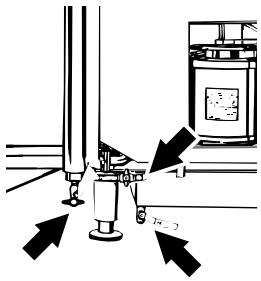
No.	Check	Done
1	The machine and the final folder are level transversely and longitudinally $\pm$ 0.2 mm/m.	
2	The eject conveyor/bin is connected/positioned.	
3	The drain connections are secure: – external cleaning pump – cooling water drain – dilution tank	
4	The utility connections are secure: – cooling water inlet – hot water inlet – consumption water inlet (plugged if not used) – recirculating cold water outlet (plugged if not used) – compressed air inlet – steam inlet	
5	The product inlet and outlet connections are secure.	
6	The electrical power cable is correctly connected: – cable guides secure – length of slack cable under terminals – terminals correct and secure	
7	The hydrogen peroxide container is fitted.	
8	The detergent bottle is fitted and filled.	
9	The tool locker and tools are in position (if relevant).	
10	Upstream valves/switches are open/on: – electrical power – cold water – hot water – recirculating cooling water supply and return (if relevant) – compressed air – steam	
11	All moving parts are free to move.	

7.2 Lubricant level checks

See the OM and MM for further details on the following checks.

No.	Check	Done
1	Hydraulic system	
2	Central lubrication	
3	Final folder drive gear	
4	Final folder flap folder gear	
5	Final folder indexing gear	
6	Jaw lubrication tanks	

7.3 Valve checks

No.	Check		Done
1	The valves on the valve panel are set correctly: • standard cooling water: – compressed air open – A1, A2, A3, A4, A5, and A7 open – A6 closed (open for cleaning only) and A9 closed • recirculated cooling water: – compressed air open – A1, A2, A3, A4, A5, A7, and A9 open A6 closed (open for cleaning only)		
2	The sterilisation bath drain valve is closed		
3	The hydrogen peroxide sampling and drain valves and the dilution tank drain valve are closed.		

Note! After checking the correct setting, remove the handle of valve A9 to prevent accidental operation. Keep the handle safe for future use.

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7.4 Safety checks

No.	Check	Done
1	Make sure that all the machine doors open and close correctly.	
2	Make sure that all door switches are correctly operated by the blades on the doors.	
3	Make sure that all removable covers and hatches are secure.	
4	Make sure that all the **Emergency stop** buttons engage and release correctly.	
5	Make sure that all protective guards are in place and secure.	

7.5 CIP and start-up

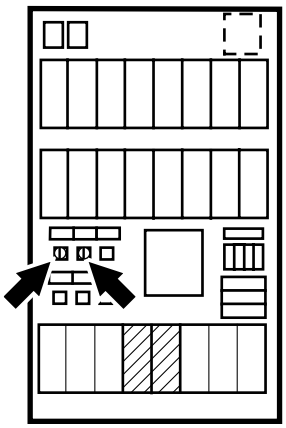
No.	Action	Done
1	Perform CIP. See the OM for further details.	
2	Prepare the machine for production. See the OM for further details.	

8 Preparation for commissioning

Perform the following checks even if an actual commissioning test is not required.

Note! Commissioning covers only the functioning of the individual machine. A line performance test is required to check the functioning of the machine as part of a complete line. Check with the local Service Organisation what arrangements have been made for a line performance test.

8.1 Presence and correctness checks

No.	Check	Done
1	The data on the B-group plates corresponds with the specifications in the Machine Specification Document.	
2	The TP No. on the program diskette corresponds with the TP No. in the EM.	
3	The required spare parts have been delivered and have been deposited in the spare parts stores.	
4	The required accessories are available to the operator: – apron – gloves – goggles	
5	All the documents correspond to the specific machine: – OM – EM – MM – SPC – Installation drawings – Final Inspection Report – Machine Specification Document – Final inspection report – Machine Deviation Report (if relevant)	
6	The tool locker is conveniently positioned and the tools are all in place.	
7	The packaging material reel trolley is conveniently positioned and functioning correctly.	
8	The supply and quality of product is sufficient for the purposes of commissioning.	
9	Packaging material, strip, hydrogen peroxide, ink, and detergent are all of the correct type and are available in sufficient quantities for the purpose of commissioning.	
10	The keys for the electrical cabinet switches and time recorder are present. 	

8.2 Product and utility value checks

Make sure that the product and utility values are correct. Ask for the assistance of the customer's technical personnel if necessary. If values are incorrect, inform the customer's technical personnel and the local Service Organisation. See section ***3 Drawings and Technical Data***.

No.	Check	Done
1	Product supply: – pressure – max pressure fluctuation – inlet temperature – max particle size	
2	Electrical power supply: – voltage – max voltage fluctuation – frequency – fuse rating	
3	Cold water supply: – pressure – max inlet temperature – pH	
4	Hot water supply: – pressure – inlet temperature	
5	Detergent supply: – pH	
6	Compressed air supply: – pressure – max particle size – max particle content – dew point – oil content	
7	Steam supply: – water quality – pressure – max pressure fluctuation – inlet temperature	
8	Hydrogen peroxide: – food grade – concentration (35%)	

8.3 Function checks

8.3.1 Preparation

a) Make sure that the PLC program on the diskette corresponds with that in the machine PLC. See the EM for further details.

Note! If program parameters need to be changed, make a backup copy of the original parameters before making any changes. Also keep a copy of the new parameter settings for future reference.

b) Connect a cold water supply to the product inlet connection.

c) Prepare the machine for production. See the OM for further details.

d) Make sure that the start-up from cold takes approximately 45 minutes at an ambient temperature of no less than 20°C (68°F).

e) Start up the package outfeed conveyor (and eject conveyor if present).

f) Step up the machine to **Production**.

8.3.2 Normal operating checks

No.	Check	Done
1	The package outfeed conveyor (and eject conveyor if present) remove the packages correctly.	
2	Defective packages are ejected (start-up, short stop, material splice, strip splice, production stop). See the OM for further details.	
3	Finished packages are correct in terms of: – size and shape – longitudinal and transversal sealing – date code printing – filled package weight/volume See the OM for further details.	
4	Production capacity is as specified. (Count the packages produced in ten minutes and multiply by six.)	
5	All pressures remain within tolerance. See OM.	
6	There are no fluid leaks.	
7	There are no unusual noises which could indicate loose or misaligned parts.	
8	There are no unusual smells which could indicate internal leaks or burning of electrical circuits.	
9	When in production, the machine stops if major changes are made suddenly to the following parameters: – pre-sterilisation temperature (sterilisation cycle) – sterilisation bath (hydrogen peroxide) – air knife See the OM for further details.	
10	The machine stops if sterile air pressure is reduced.	

8.4 Health and safety checks

No.	Check	Done
1	The door switches activate the correct alarms and stop the machine. See section *Machine safety devices* for details on switches.	
2	All the **Emergency stop** buttons stop the machine immediately and activate the alarm. See section *Machine safety devices* for further details.	
3	Filled packages and outlet water samples have the correct hydrogen peroxide residue/content as measured using: – Test kit 90298-31 for packages – Test kit 90298-30 for outlet water	

8.5 Documentation

Note! No claims will be accepted for equipment in commercial production if the **Startup Machine Quality Report** has not been returned to the manufacturer.

a) Compile the **Transport Damage Report** (a section of the Startup Machine Quality report).
If no damage has occurred during transport, state “NO TRANSPORT DAMAGE”.

b) Compile the **Feedback from MC** form **only in case of claims on the equipment**.
For further information about claims see the **Claim and Complaint Handling** procedure, available from the local Service Organisation.

c) Compile the **Start-up Machine Quality Report**.
List all work, besides the installation work, performed to ensure correct functioning.

The installation work covered by this manual is now complete.

9 Disassembly and removal

Important!

Caution! If the equipment is going to stand or travel in cold conditions, the water circuits must be drained to avoid damage by freezing.

The equipment can be moved **for short distances** without being drained or completely disassembled, but **only if no freezing conditions will be encountered**. The equipment must be drained before long distance moves or long term storage. If draining is necessary, drain the equipment before disassembling it since the equipment must be fully operational during the draining procedure.

Only skilled or instructed Tetra Pak installation personnel are allowed to disassemble the equipment for moving to other installation positions.

9.1 Draining

Caution! If the machine is going to stand or travel in cold conditions, the water circuits must be drained to avoid damage by freezing.

9.1.1 Draining methods

To drain certain circuits, the solenoid valves controlling them must be energised. This can be done in three ways:

- by inter-connecting solenoid valves at the valve panel
- electronically (using a portable PC to force PLC outputs)
- by manually bridging terminals in the electrical cabinet

The following is needed for the inter-connecting procedure:

- cable for inter-connecting solenoid valves
- EM

The following is needed for the electronic procedure:

- portable PC running LM90 software
- TPMC PLC serial cable, TP No. 90031-300
- EM

The following is needed for the manual bridging procedure:

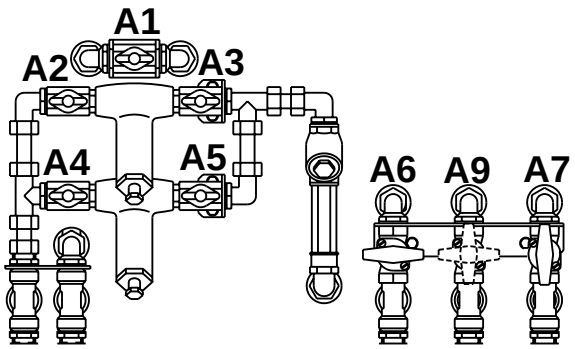
- piece of cable, approx. 1 metre in length
- EM

9.1.2 Preparations

WARNING!

Risk of injury and damage!
Make sure that water expelled under pressure cannot cause injury or damage.

a) Check that the valves on the valve panel are set for normal operating.



Standard cooling system	Recirculating cooling water
A1 open	A1 open
A2 open	A2 open
A3 open	A3 open
A4 open	A4 open
A5 open	A5 open
A6 closed (open for cleaning only)	A6 closed (open for cleaning only)
A7 open	A7 open
A9 closed	A9 open

b) Turn on the mains power switch. Make sure that no **Emergency stops** are engaged, all doors with switches are closed, and no error conditions are present. Step up to **Preheating**.

c) Shut off the cold and hot water supplies upstream from the machine. Operate the water gun for a few seconds to release residual pressure from the circuit.

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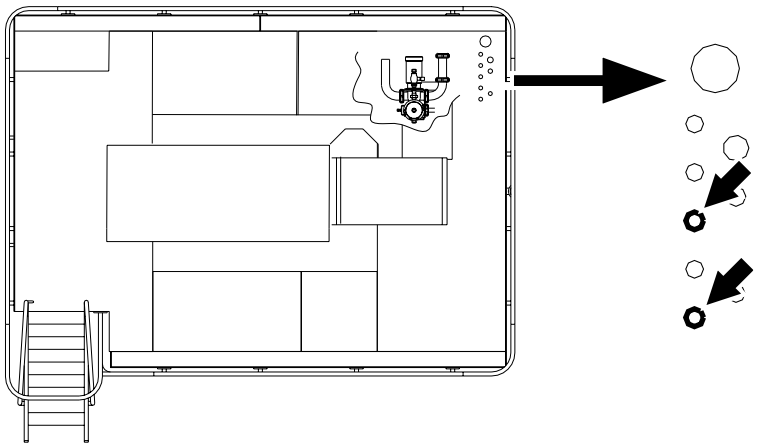
d) **Machines with standard cooling circuit only:**

– Disconnect the cold water and hot water supplies at the connections panel on the platform.

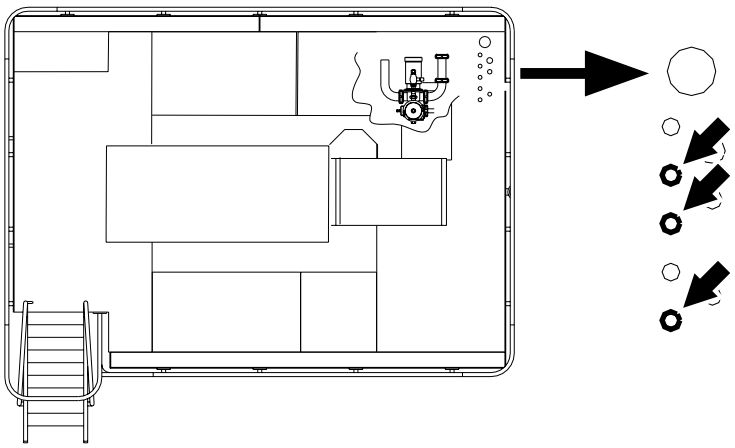
– Connect compressed air lines to the cold water inlet and hot water inlet.



e) **Machines with recirculating cooling water only:**

– Disconnect the cold water, hot water, and consumption (flushing) water supplies and the cold water return line at the connections panel on the platform.

– Connect compressed air lines to the cold water, hot water, and flushing water inlets on the connection panel.



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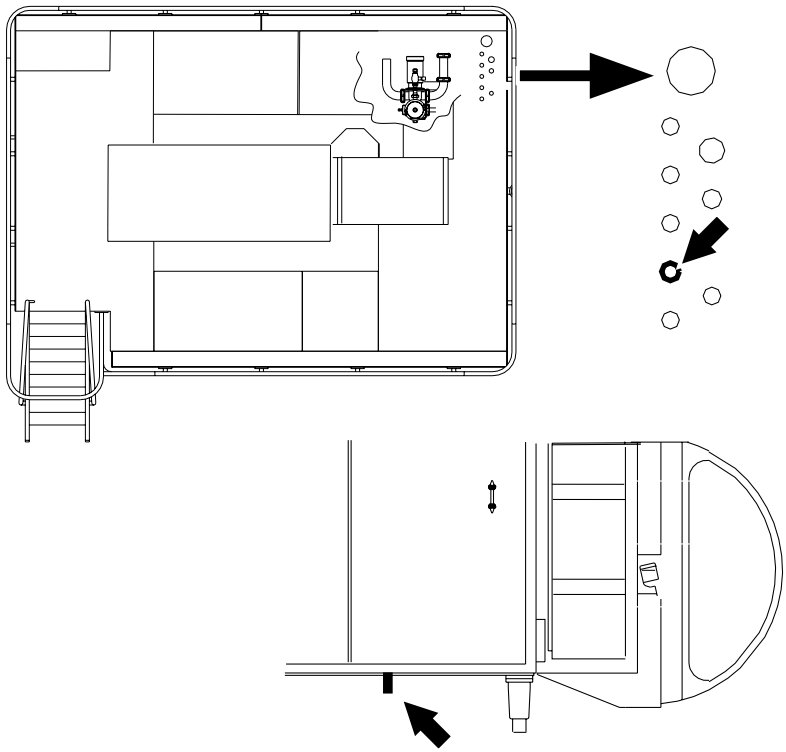
– **Either**:
Connect a drain line to the cold water return outlet on the connections panel.
or:
Connect a fourth compressed air line to the cold water return outlet on the connections panel and unplug the cooling water drain pipe.



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Caution! Open the compressed air supply valve **very gradually** to avoid damaging the pressure gauges on the water circuits.

f) Open the compressed air supply valve to the machine.

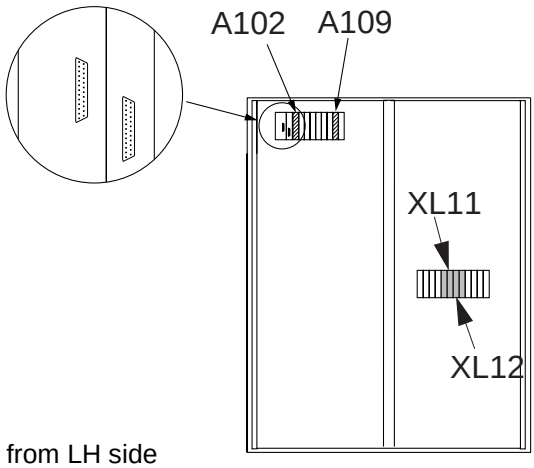
9.1.3 Draining procedure

For the inter-connecting procedure, use a special cable to inter-connect the solenoid valves if one is available. If no special cable is available, make sure that the solenoid valves are inter-connected correctly.

For the electronic procedure, connect the portable PC to the PLC using the cables specified above. See section *6.13 Other operations* and the EM for further details.

Caution! When bridging control and power terminals, connect the cable to the control terminal first and then to the power terminal. Take care not to cause short circuits.

For the manual bridging procedure, connect the bridge cable to any free terminal on the +24 VDC power terminal block XL.11 or XL.12. See the EM for further details.



View from LH side

Turn on the mains power switch.

Make sure that no **Emergency stops** are engaged, all doors with switches are closed and no error conditions are present.

Step up to **Preheating**.

Water gun circuit

Operate the water gun until only dry air comes out.

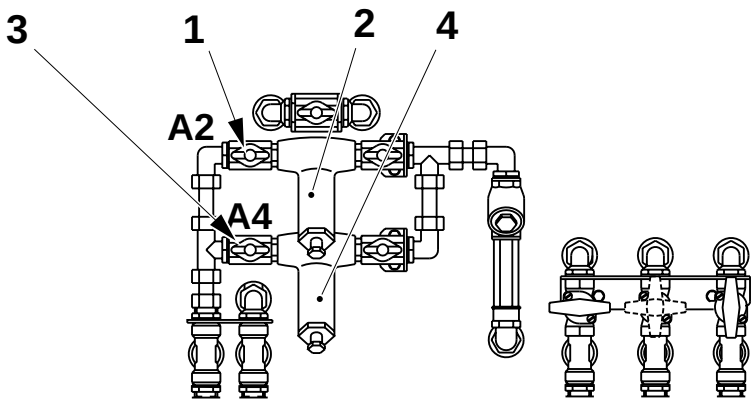
(Cont'd)

(Cont'd)

Water filter circuit

a) Close valve A2 (1). Remove the water filter (2) and blow clean with compressed air. Open valve A2 briefly to drain any water from the pipe. Close valve A2 again. Replace the filter and tighten.

b) Close valve A4 (3). Remove the water filter (4) and blow clean with compressed air. Open valve A4 briefly to drain any water from the pipe. Close valve A4 again. Replace the filter and tighten.



1 Valve A2
2 Filter
3 Valve A4
4 Filter

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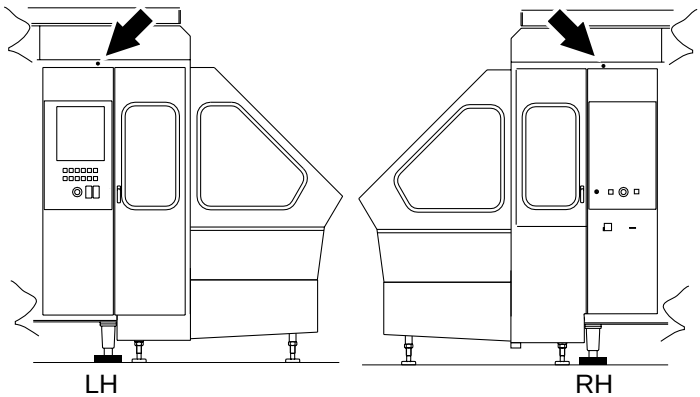
Tube flushing circuit

Open the two manual tube flushing valves (one on either side of the machine body). Wait until all the water has been blown from the tube flushing pipes (approx. 30 seconds) and re-close both valves.



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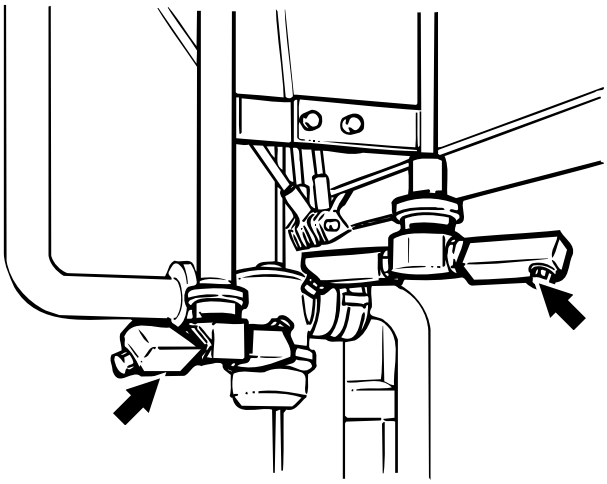
External cleaning circuit

a) Tape or tie together the two rotating spray heads above the conveyor to prevent them rotating at high speed. Close the hood.



b) Press the manual flushing button on the control panel and hold until dry air is blown out of the spray heads.

(Cont'd)

(Cont'd)

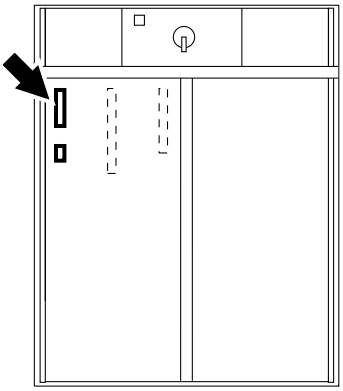
Hot water and cooling water circuits

Note! **Use just one of the following three procedures c, d, and e.**

a) **Inter-connecting procedure**

Note! Use a special cable if one is available. Otherwise make sure that the solenoid valves are inter-connected correctly.

– Switch off power to the machine and disconnect the outgoing cable no 405 to the compressor from terminal block X1, terminal 17,18 and 19. Turn on the mains power switch again. Make sure that no **Emergency stops** are engaged, all doors with switches are closed, and no error conditions are present. Step up to **Preheating**.



View from RH side

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Electronic procedure

a) Connect the serial cable (TP No. 90025-048) between the portable PC and the TPMC.

b) Force PLC output O21.11 (cold water circuit) **ON** for about 60 seconds. Cancel the force.

c) Force PLC output O14.11 (guide roller circuit) **ON** for about 60 seconds. Cancel the force.

d) Force PLC output O21.06 (hot water circuit) **ON** for about 60 seconds. Cancel the force.

e) Step down to **Step 0**. Turn the mains power switch off. Padlock the mains power switch. Re-connect the compressor (cables 17/18/19 at terminal block X1).

f) Release the spray heads at the centre of the hood.

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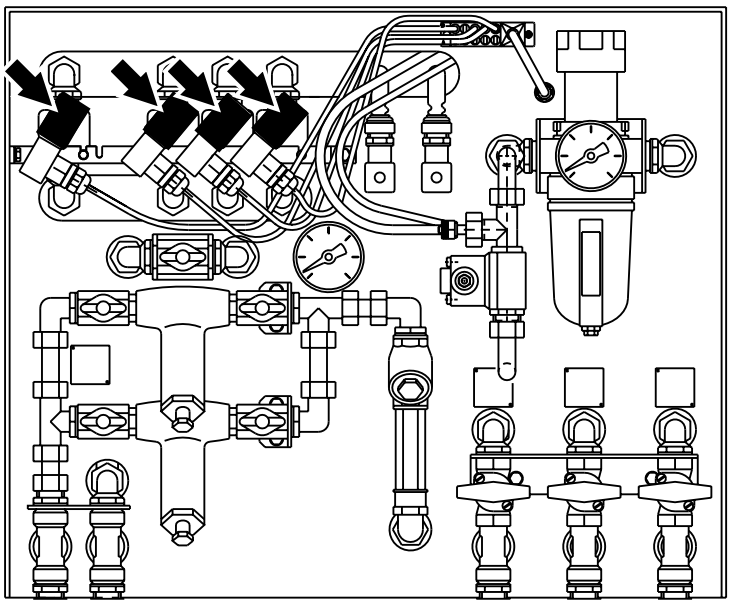
(Cont'd)

Inter-connecting procedure

- Remove the connectors from solenoid valves MY36 and MY33.
- Inter-connect solenoid valves MY36 and MY33 (cold water circuit).
- Press the manual flushing button on the control panel. Hold for about 60 seconds.
- Disconnect the cable from solenoid valve MY33 and connect it to solenoid valve MY32 (guide roller circuit). Leave the other end of the cable connected to solenoid valve MY36.
- Press the manual flushing button on the control panel. Hold for about 60 seconds.
- Disconnect the cable from solenoid valve MY33 and connect it to solenoid valve MY29 (hot water circuit). Leave the other end of the cable connected to solenoid valve MY36.
- Press the manual flushing button on the control panel. Hold for about 60 seconds.
- Remove the cable and re-connect all connectors. Take care to connect the connectors to the correct solenoid valves. (The cables are tagged with the numbers of the solenoids.)
- Re-connect the compressor cable No 405 to term. 17/18/19 at terminal block X1).



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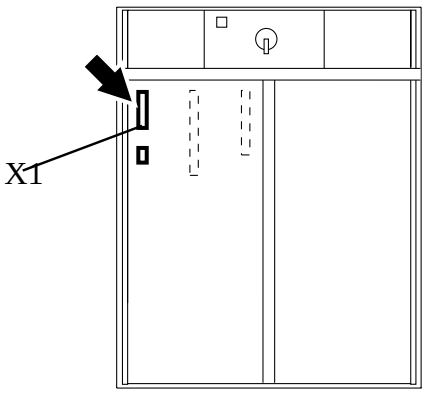
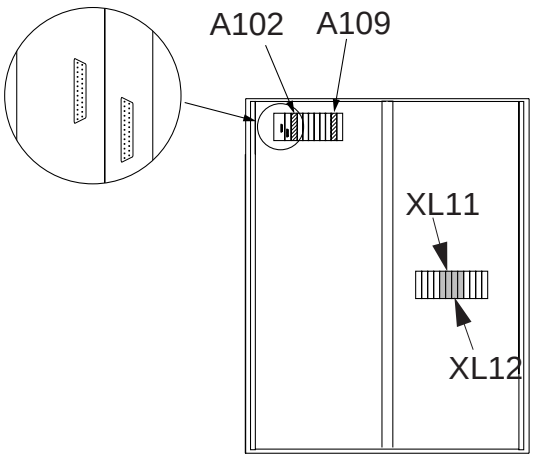
g) **Electronic procedure**

– Switch off power to the machine and disconnect the compressor (cables 17/18/19 at terminal block X1). Turn on the mains power switch again. Make sure that no **Emergency stops** are engaged, all doors with switches are closed, and no error conditions are present. Step up to **Preheating**.



View from RH side

– Connect the serial cable (TP No. 90031-300) between the portable PC and the GE-FANUC PLC. See section *6.13 Other operations* and the EM for further details.



View from LH side

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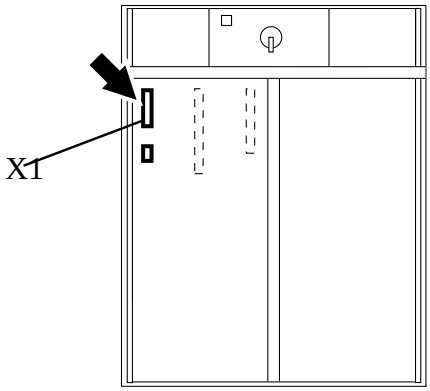
- Force PLC output Q234 (cold water valve M.Y 33) **ON** for about 60 seconds. Cancel the force.
- Force PLC output Q154 (Commpresor water valve M.Y 32, K10) **ON** for about 60 seconds. Cancel the force.
- Force PLC output Q231 (valve M.Y 29) **ON** for about 60 seconds. Cancel the force.
- Re-connect the compressor (cables 17/18/19 at terminal block X1).

h) **Manual bridging procedure (alternative)**

- Switch off power to the machine and disconnect the compressor (cables 17/18/19 at terminal block X1). Turn on the mains power switch again. Make sure that no **Emergency stops** are engaged, all doors with switches are closed, and no error conditions are present. Step up to **Preheating**.



View from RH side

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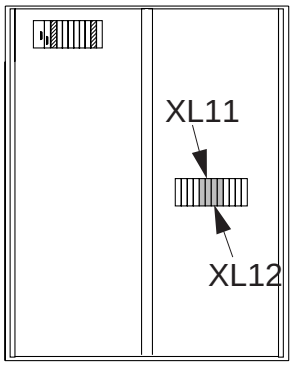
Caution! Connect the bridge cable to the control terminal first and to the power terminal last in order to avoid the risk of short circuits.

- Connect one end of the bridge cable to terminal A126:13 (cold water valve M.Y 33). Connect the other end to any free terminal on the +24 VDC power terminal block XL.11 or XL.12 and hold for about 60 seconds. Remove the bridge cable.
- Connect one end of the bridge cable to terminal A121:13 (Commpresor water valve M.Y 32). Connect the other end to any free terminal on the +24 VDC power terminal block XL.11 or XL.12 and hold for about 60 seconds. Remove the bridge cable.
- Connect one end of the bridge cable to terminal A126:08 (valve M.Y 29). Connect the other end to any free terminal on the +24 VDC power terminal block XL.11 or XL.12 and hold for about 60 seconds. Remove the bridge cable.



View from LH side

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- Re-connect the compressor (cables 17/18/19 at terminal block X1).

i) Release the spray heads at the centre of the hood.

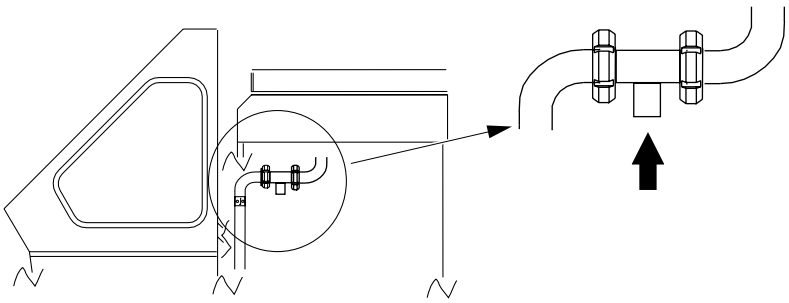
(Cont'd)

(Cont'd)

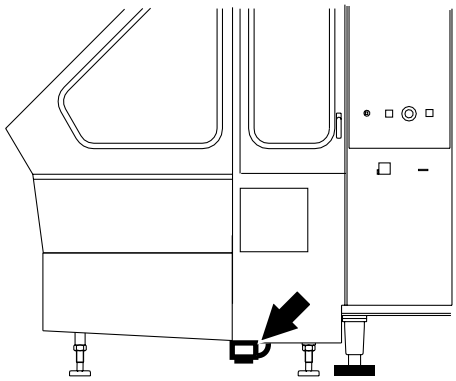
External cleaning pump circuit

a) Shut off the compressed air supply. Operate the water gun for a few seconds to release residual pressure from the circuit. Disconnect the compressed air lines from the connections panel on the platform. Plug the connection holes.

b) Remove the filter at the top of the final folder external cleaning pipe. Blow the filter clean with compressed air. Clean the filter body.



c) Disconnect the drain connection from the pump.



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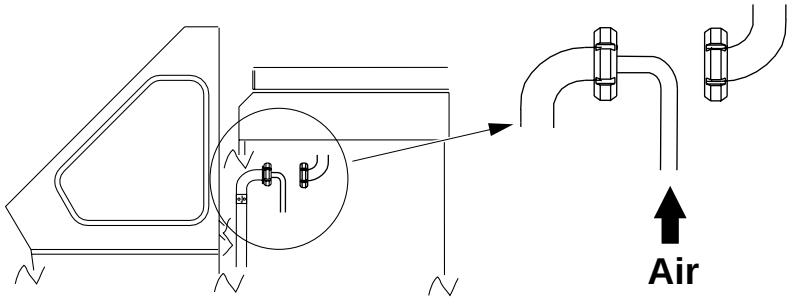
d) Connect a compressed air line to the pipe leading to the external cleaning pump.

Note! Use a special adapter if one is available. Otherwise block the pipe around the air line to prevent air from escaping.



e) Blow compressed air into the pipe until no more water comes out of the external cleaning pump drain.

f) Remove the compressed air line and pour into the external cleaning pipe approx. 400 - 500 ml of flushing oil (TP No. 90296-75 or equivalent).

g) Replace the compressed air line. Place a suitable container under the external cleaning pump drain to catch the oil blown out. Blow air into the pipe until oil is blown out of the pump drain.

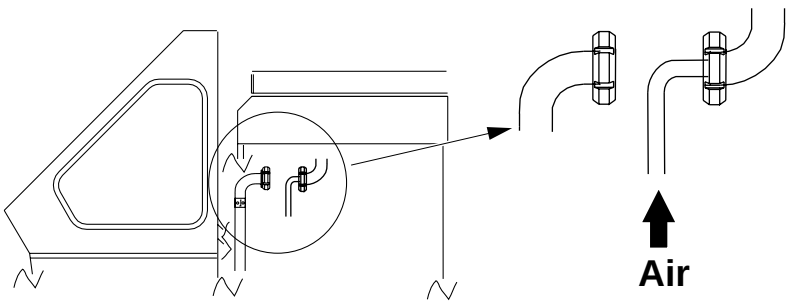
h) Remove the compressed air line. Fit the filter.

i) Plug the pump drain.

External cleaning nozzles circuit

a) Connect a compressed air line to the pipe leading to the external cleaning nozzles.

Note! Use a special adapter if one is available. Otherwise block the pipe around the air line to prevent air from escaping.



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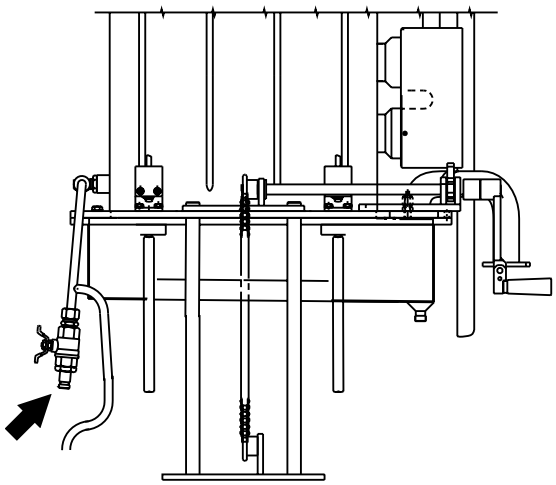
b) Blow compressed air into the pipe until no more water comes out of the external cleaning nozzles.

c) Remove the compressed air line.

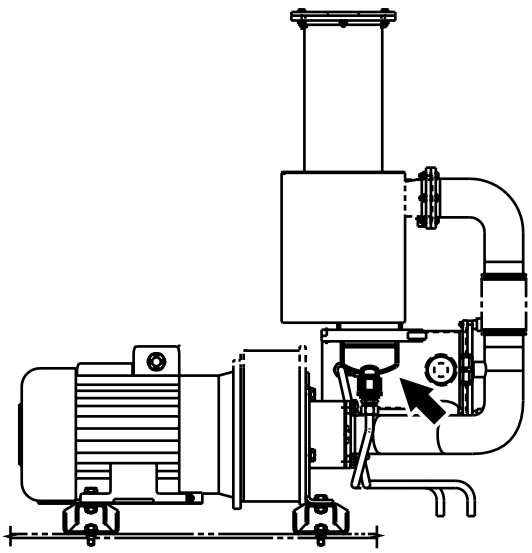
Sterilisation bath

Place a suitable container under the sterilisation bath drain valve and open the valve. Drain off all the water from the bath (approx. 16 l). Close the drain valve.



Separator

Unscrew the float chamber at the bottom of the separator. Drain off all the water and fit the float chamber again.



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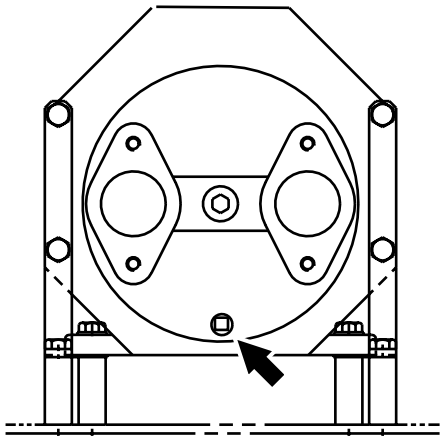
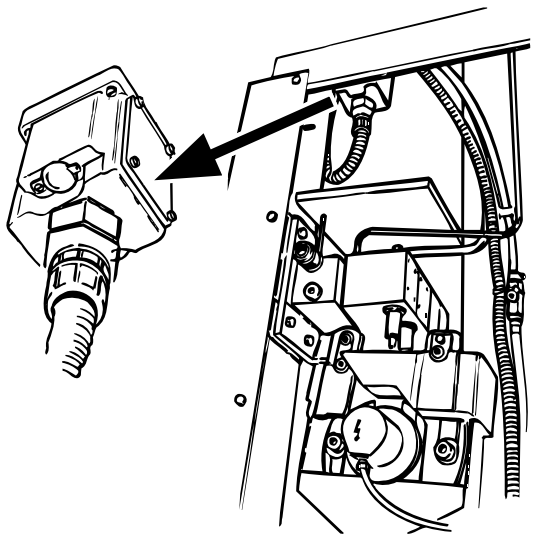
Compressor

Place a suitable container under the flange of the compressor and unscrew the drain plug at the bottom of the flange. Drain off all the water from the compressor (approx. 2 l). Fit and tighten the drain plug.



Water level pressure switch

Remove the protective grille and document holder from the rear RH side of the machine body. Remove the pressure switch for the sterilisation bath water level. Drain off all the water from the connection pipe. Drain off all the water from the switch body. Fit the pressure switch and the protective grille again.



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Hydrogen peroxide circuit and dilution tank

Risk of corrosion and chemical burns!
Hydrogen peroxide. Follow the *Safety precautions*.

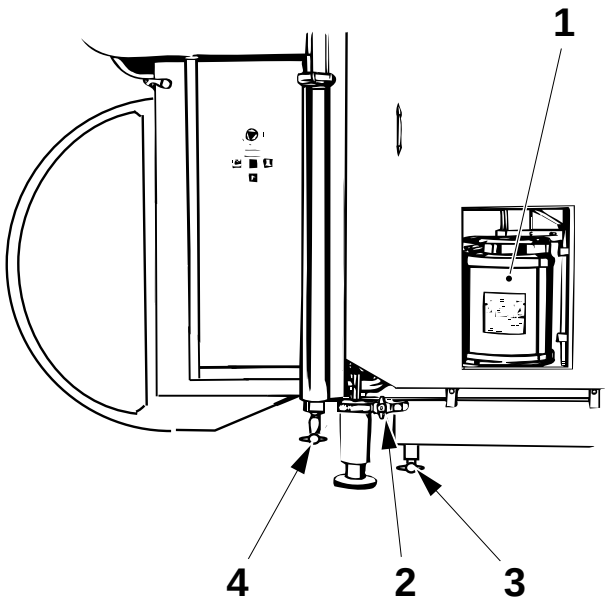
a) Disconnect and remove the hydrogen peroxide container (1).

b) Open the hydrogen peroxide filter drain valve (2) and wait for all the hydrogen peroxide to drain into the dilution tank (approx. 5 minutes).

c) Close the hydrogen peroxide filter drain valve (2).

d) Place a suitable container under the dilution tank drain outlet (3). Open the drain valve and drain the contents of the dilution tank into the container for disposal in compliance with local regulations.

e) Place a suitable container under the hydrogen peroxide sampling valve (4). Open the valve and drain off any residual hydrogen peroxide. Close the valve.



1 Hydrogen peroxide container
2 Drain valve
3 Drain outlet
4 Sampling valve

(Cont'd)

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Final checks

a) Make sure that all the connections on the connections panel are plugged.

b) Make sure that the solenoid valves are connected correctly (only if they have been disconnected as part of the inter-connecting procedure).

c) Make sure that all cables used for the draining procedure (electronic procedure or bridge procedure) are disconnected.

d) Make sure that the external cleaning pipe filter and valve panel filters are fitted.

e) Make sure that all the valves on the valve panel, dilution tank, water and hydrogen peroxide circuits are set to the correct operating position.

f) Make sure that the drain plug on the compressor is tight.

g) Make sure that the separator float chamber is fitted and tight.

9.2 Moving the machine

9.2.1 Short moves and short term storage

Risk of electrocution!
High voltage. Follow the *Safety precautions*.

See section *6 Positioning, assembly and connections* for further details on the following operations.

To disassemble parts, follow the assembly instructions in the reverse order.

Preparations for moving

Caution! Either the final folder must be removed from the machine body or it must be fixed to the platform with rigid tie-rods before the machine can be moved.

a) Shut off all the utility and product supplies upstream from the machine:
   - electrical power
   - cold water
   - hot water
   - consumption (flushing) water in and cold water out (machines with recirculating cooling water only)
   - compressed air
   - steam
   - product

b) Turn off and padlock the mains power switch.
   Turn off the power switch upstream from the machine.

c) Close all the utility and drain valves on the machine:
   - compressed air valve (A7)
   - cold water valve (A1)
   - hot water valve (A6)

(Cont'd)

(Cont'd)

d) Disconnect the power, utility, drain, and product lines:
   - electrical power (disconnect at power terminals and remove cable from electrical cabinet)
   - cold water
   - hot water
   - consumption (flushing) water in and cold water out (machines with recirculating cooling water only)
   - compressed air
   - steam
   - product
   - cooling water drain
   - external cleaning pump outlet

e) Plug or protect all open connections.

f) Disconnect and remove the hydrogen peroxide container.

g) Disconnect the package outfeed conveyor.

h) Remove the eject bin.

i) Remove the final folder and fit the transport frame for the final folder hood. Alternatively, fix the final folder to the platform with rigid tie-rods.

j) Remove the ladder.

k) Move the machine to its new postition.

Caution! Level the machine approximately even if it is not going to be used. If the machine is not supported evenly by all its feet, the frame could be subjected to damaging torsional forces.

l) Level the machine approximately.

m) Cover the equipment with a suitable protective covering.

n) Make sure that the storage conditions comply with the specifications. See section 5.4 Moving a storing crates.

9.2.2 Long moves and long term storage

See section *6 Positioning, assembly, and connections* for further details on the following operations.

To disassemble parts, follow the assembly instructions in the reverse order.

a) Drain the equipment. See section *9.1 Draining*.

b) Perform the operations listed in section *9.2.1 Short moves and short term storage*, **as far as step *h)***.

c) Remove the protective guards from the fillng machine.

d) Remove the hydrogen peroxide dilution tank.

e) Remove the LS strip magazine or ASSU.

f) Remove the upper platform.

g) Disconnect the superstructure electrical connections. Remove the electrical cabinet.

h) Remove the product and CIP pipes.

i) Remove the column and compressor.

j) Tape together all the electrical cables on the platform.

k) Remove the warning beacon, handrails, foot plates, and ‘L’ profiles.

l) Remove the final folder.

m) Lubricate all sliding components on the filling machine (rods, cams, etc.).

n) Drain the hydraulic system and refill with a suitable flushing fluid. See the *MM*.

o) Wrap small components in bubble wrapping to prevent damage.

p) Pack the equipment in suitable crates. Use the original crates and packing if available. Make sure that all groups and components are adequately protected. Fix any loose sub-crates or boxes to the floors or walls of the crates to prevent them moving during transport.

9.3 Return to the manufacturer

a) Prepare the equipment for transport. See section ***9.1 Draining***.

b) Contact the local Service Organisation for further instructions and to arrange shipment.

9.4 Disposal

If the equipment is to be permanently disposed of, perform the following operations.

a) Drain the equipment. See section *9.1 Draining*.

b) Drain the hydraulic tank and dispose of the hydraulic fluid in compliance with local regulations. See the *MM*.

c) Remove the packaging material, LS strip, IS Strip, and tab reels and dispose of these in compliance with local regulations.

d) Disassemble the equipment as far as possible and separate the following materials:
   - stainless steel (panels and doors)
   - cast iron (frames)
   - rubber (seals, O-rings, etc.)
   - nylon and other plastics
   - electrical cables
   - hydraulic and pneumatic hoses
   - electrical components

e) Recycle or dispose of all materials, groups, and components in compliance with local regulations.

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Tetra Pak