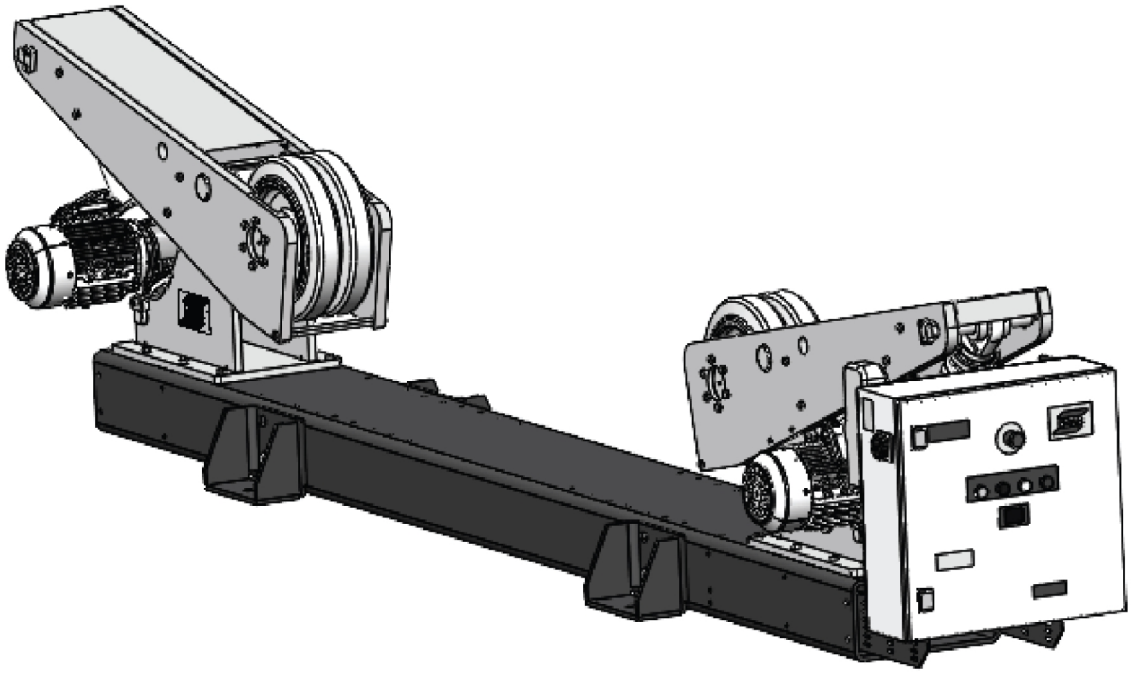
EFU 30, EFU 30 IB

Fit-up unit



Instruction manual

0463 760 101 GB 20230428

Valid for: Serial number:
LX246-xxxx-xxxx

EU DECLARATION OF CONFORMITY

According to
The Machinery Directive 2006/42/EC, entering into force 17 May 2006
The EMC Directive 2014/30/EU, entering into force 20 April 2016
The RoHS Directive 2011/65/EU, entering into force 2 January 2013

Type of equipment
Welding handling equipment, Fit-up Unit

Type designation
EFU 30, stationary fit-up unit (item no 0909651880)
from serial number LX246 xxxx xxxx (2022 w46)

EFU 30 IB, mobile fit-up unit for track width 1730mm (item no 0909652880)
EFU 30 IB, mobile fit-up unit for track width 2500mm (item no 0909652881)
from serial number LX246 xxxx xxxx (2022 w46)

Brand name or trade mark
ESAB

Manufacturer or his authorised representative established within the EEA
Name, address, and telephone No:
ESAB AB Welding Automation
SE-69581 Laxå, Sweden
Phone: +46 (0)584 81000, www.esab.com

The following harmonised standard in force within the EEA has been used in the design:
EN 12100:2010
EN 60204-1:2018
EN 61000-6-2:2019
EN 61000-6-4:2019

Additional Information:
Restrictive use, Class A equipment, intended for use in location other than residential

By signing this document, the undersigned declares as manufacturer, or the manufacturer's authorised representative established within the EEA, that the equipment in question complies with the safety requirements stated above.

Date	**Signature**	**Position**
Gothenburg 2023-04-17	Peter Kjällström	Director Welding Automation

CE 2023

1 SAFETY

1.1 Meaning of symbols

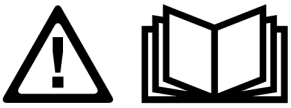
As used throughout this manual: Means Attention! Be Alert!

DANGER!
Means immediate hazards which, if not avoided, will result in immediate, serious personal injury or loss of life.

WARNING!
Means potential hazards which could result in personal injury or loss of life.

CAUTION!
Means hazards which could result in minor personal injury.

WARNING!
Before use, read and understand the instruction manual and follow all labels, employer´s safety practices and Safety Data Sheets (SDSs).



1.2 Non-compliant operation

CAUTION!
This handling equipment is not suitable for the following:

- Any vessel which is heavier than the maximum weight limit of the handling equipment
- Any vessel that is larger/smaller than the maximum/minimum diameter supported
- If the handling equipment have polyurethane or rubber tires, do not use them on preheated vessels above 60 °C

1.3 Safety precautions

Users of ESAB equipment have the ultimate responsibility for ensuring that anyone who works on or near the equipment observes all the relevant safety precautions. Safety precautions must meet the requirements that apply to this type of equipment. The following recommendations should be observed in addition to the standard regulations that apply to the workplace.

All work must be carried out by trained personnel well-acquainted with the operation of the equipment. Incorrect operation of the equipment may lead to hazardous situations which can result in injury to the operator and damage to the equipment.

1. Anyone who uses the equipment must be familiar with:
   - its operation
   - location of emergency stops
   - its function
   - relevant safety precautions
   - welding and cutting or other applicable operation of the equipment
2. The operator must ensure that:
   - no unauthorised person is stationed within the working area of the equipment when it is started up
   - no-one is unprotected when the arc is struck or work is started with the equipment
3. The workplace must:
   - be suitable for the purpose
   - be free from drafts
4. Personal safety equipment:
   - Always wear recommended personal safety equipment, such as safety glasses, flame-proof clothing, safety gloves
   - Do not wear loose-fitting items, such as scarves, bracelets, rings, etc., which could become trapped or cause burns
5. General precautions:
   - Make sure the return cable is connected securely
   - Work on high voltage equipment **may only be carried out by a qualified electrician**
   - Appropriate fire extinguishing equipment must be clearly marked and close at hand
   - Lubrication and maintenance must **not** be carried out on the equipment during operation

WARNING!
Arc welding and cutting can be injurious to yourself and others. Take precautions when welding and cutting.

ELECTRIC SHOCK - Can kill

- Do not touch live electrical parts or electrodes with bare skin, wet gloves or wet clothing
- Insulate yourself from work and ground.
- Ensure your working position is safe

ELECTRIC AND MAGNETIC FIELDS - Can be dangerous to health

- Welders having pacemakers should consult their physician before welding. EMF may interfere with some pacemakers.
- Exposure to EMF may have other health effects which are unknown.
- Welders should use the following procedures to minimize exposure to EMF:
  - Route the electrode and work cables together on the same side of your body. Secure them with tape when possible. Do not place your body between the torch and work cables. Never coil the torch or work cable around your body. Keep welding power source and cables as far away from your body as possible.
  - Connect the work cable to the workpiece as close as possible to the area being welded.

FUMES AND GASES - Can be dangerous to health

- Keep your head out of the fumes
- Use ventilation, extraction at the arc, or both, to take fumes and gases away from your breathing zone and the general area

ARC RAYS - Can injure eyes and burn skin

- Protect your eyes and body. Use the correct welding screen and filter lens and wear protective clothing
- Protect bystanders with suitable screens or curtains

NOISE - Excessive noise can damage hearing

Protect your ears. Use earmuffs or other hearing protection.

MOVING PARTS - Can cause injuries

- Keep all doors, panels and covers closed and securely in place. Have only qualified people remove covers for maintenance and troubleshooting as necessary. Reinstall panels or covers and close doors when service is finished and before starting the roller beds.
- Stop the handling equipment before installing or connecting unit.
- Keep hands, hair, loose clothing and tools away from moving parts.

FIRE HAZARD

- Sparks (spatter) can cause fire. Make sure therefore that there are no inflammable materials nearby

HOT SURFACE - Parts can burn

- Do not touch parts bare handed.
- Allow cooling period before working on equipment.
- To handle hot parts, use proper tools and/or insulated welding gloves to prevent burns.

MALFUNCTION - Call for expert assistance in the event of malfunction.

PROTECT YOURSELF AND OTHERS!

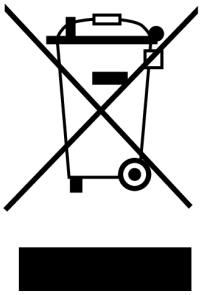
CAUTION!
Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There may be potential difficulties in ensuring electromagnetic compatibility of class A equipment in those locations, due to conducted as well as radiated disturbances.

NOTE!
Dispose of electronic equipment at the recycling facility!

In observance of European Directive 2012/19/EC on Waste Electrical and Electronic Equipment and its implementation in accordance with national law, electrical and/or electronic equipment that has reached the end of its life must be disposed of at a recycling facility.

As the person responsible for the equipment, it is your responsibility to obtain information on approved collection stations.

For further information contact the nearest ESAB dealer.



ESAB has an assortment of welding accessories and personal protection equipment for purchase. For ordering information contact your local ESAB dealer or visit us on our website.

2 INTRODUCTION

This Instruction manual describes the use and maintenance of the fit-up unit **EFU 30** and **EFU 30 IB**, referred to as EFU in this document. Actions that must be carried out by the manufacturer are not included in this manual.

This manual is part of the EFU. Keep a copy of the manual with the EFU and the original in a safe place. If the EFU is sold, supply the manual with it.

The illustrations and diagrams used in this manual are for illustrative purposes only to help explain instructions in the text. The equipment supplied may differ slightly.

2.1 Equipment

The EFU is supplied with:

- Lifting units
- Mounted control cabinet
- Wireless remote - control pendant
- Base frame
- Instruction manual

2.2 Purpose and function of EFU

The EFU is designed to aid the joining and welding of cylindrical vessels.

By placing and adjusting the independent lifting units on the EFU, vessels with varying diameters can be placed on the EFU in combination with a suitable roller bed (ECD or ESD). The wheels can be adjusted on the base frame to accommodate different vessel diameters.

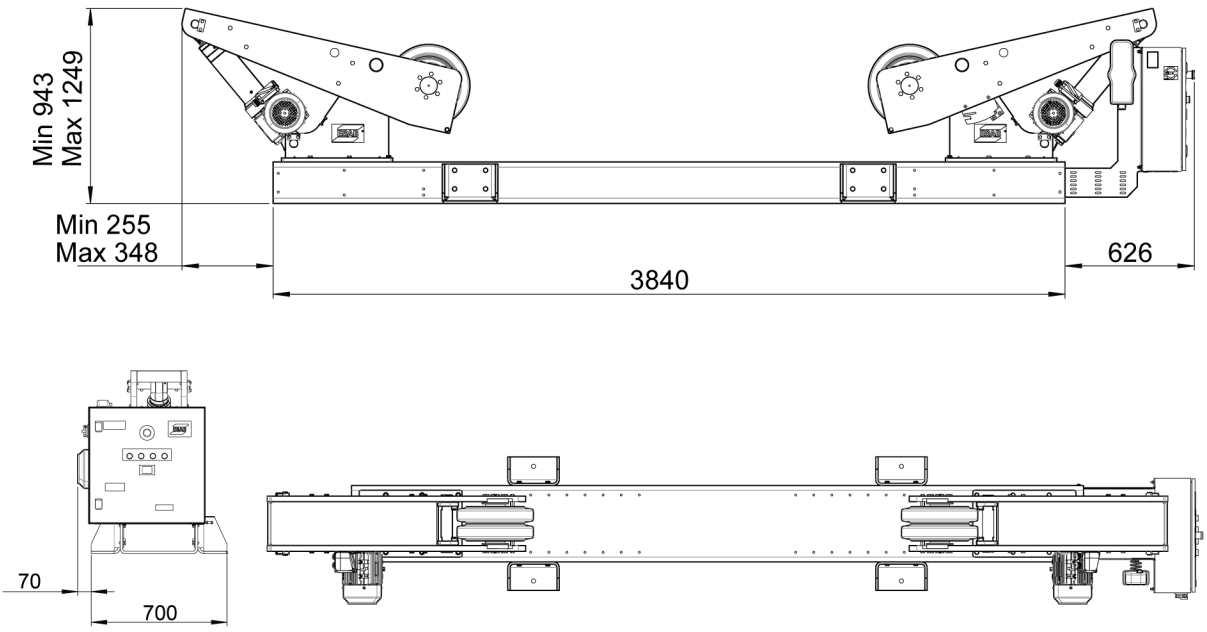
2.3 Terminology used in this manual

Base frame	The frame where wheel stands are mounted on. These are pre-drilled so that the wheel stands can be positioned for different vessel diameters.
Wheel stand	The stand which houses the EFU wheels. This is bolted down to the base frame. It also houses a powered electrical cylinder that lift or lower the wheel.
Control panel	Electrical control box mounted on the base frame end.

Wireless remote - control pendant	A wireless operator hand control pendant.
Receiver	The receiver that communicates with the wireless remote-control pendant.
Vessel	Any component or device that is handled on the roller bed set.

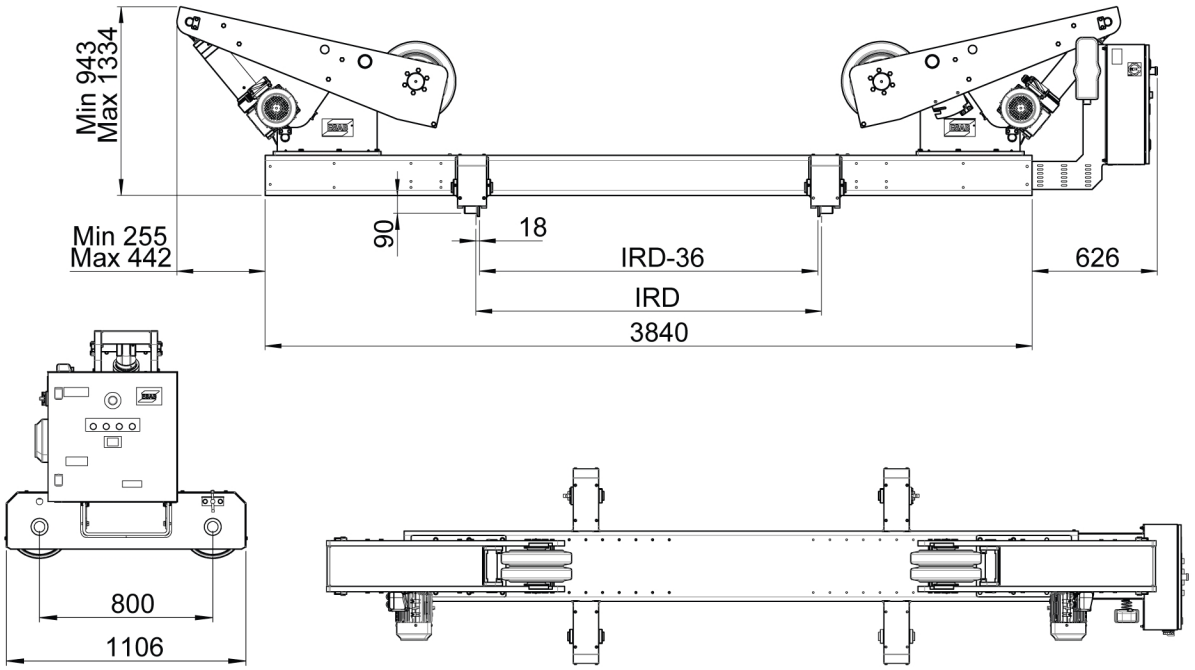
3 TECHNICAL DATA

3.1 EFU 30



EFU 30	
Max loading capacity	15 000 kg (33 069 lb)
Vertical workpiece adjustment	±40 mm (±1.57 in.)
Workpiece diameter Ø, conventional Roller Bed	480 mm (18.90 in.) up to 5700 mm (224.41 in.)
Workpiece diameter Ø, self-aligning Roller Bed	1420 mm (55.91 in.) up to 5000 mm (196.85 in.)
Mains supply	380–440 V, 3 phase, 50 Hz
Mains fuse	16 A
Roller type	Polyurethane (90 °C / 92 °A Shore)
Roller width / diameter Ø	2×90 mm (2×3.54 in.) / 400 mm (15.74 in.)
Dimensions (L × W × H), max	4619 × 700 × 1249 mm (181.85 × 27.56 × 49.17 in.)
Weight	1285 kg (2834 lb)
Wireless remote - control pendant	Wireless
Control voltage	24 V
Operation temperature	0 to +40 °C (+32 to +104 °F)

3.2 EFU 30 IB



EFU 30 IB	
Max loading capacity	15 000 kg (33 069 lb)
Turning capacity	45 000 kg (99 208 lb)
Turning drive motor	2×0.37 kW
Turning speed	200–2000 mm/min (5.51-78.74 in./min)
Vertical workpiece adjustment	±40 mm (±1.57 in.)
Workpiece diameter Ø, conventional Roller Bed	480 mm (18.90 in.) up to 5700 mm (224.41 in.)
Workpiece diameter Ø, self-aligning Roller Bed	1420 mm (55.91 in.) up to 5000 mm (196.85 in.)
Mains supply	380–440 V, 3 phase, 50 Hz
Mains fuse	16 A
Roller type	Polyurethane (90 °C / 92 °A Shore)
Roller width / diameter Ø	2×90 mm (2×3.54 in.) / 400 mm (15.74 in.)
Travelling capacity	30 000 kg (66 138 lb
Traveling drive motor	2×0.12 kW
Travelling Speed Low / High	200/2000 mm/min (5.51/78.74 in./min)
Assembled for track width[1)]	1730 mm (68.11 in.) or 2500 mm (98.43 in.)
Dimensions (L × W × H), max	4619 × 700 × 1249 mm (181.85 × 27.56 × 49.17 in.)
Weight	1285 kg (2834 lb)
Wireless remote - control pendant	Wireless
Control voltage	24 V
Operation temperature	0 to +40 °C (+32 to +104 °F)

[1)] EFU 30 IB is available in two different track widths variants.

4 INSTALLATION

4.1 Location

WARNING!
Always ensure that there is sufficient space around the EFU.

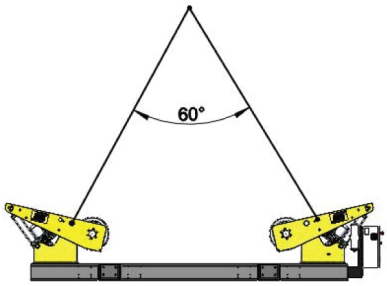
Ensure to have suitable access and enough space around the EFU, including the vessel when loaded. Position it to allow unhindered loading and unloading of vessels onto the EFU by overhead crane or other lifting devices.

4.2 Lifting instructions

WARNING!
When a direction button (upward or downward) is pressed, the EFU begin to lift or lower the vessel.

NOTE!
Use correctly rated overhead cranes or forklift trucks to move the EFU.

Lifting by crane
Lift the EFU by using the lifting points on the EFU wheel stands. Use one lifting point on each side of the wheel stand, four lifting points in total. The recommended angle between the chain and the lifting points on the roller beds is 60°.



Place the EFU on a smooth, level, hard floor capable of taking the weight of the EFU and vessel over the contact area of the EFU with the floor.

The distances between the base frames should match the vessel dimensions. If the vessel is perfectly symmetrical and one drive with one idler is used, place the drive unit and the idler unit on one-third of the way along the vessel's length to ensure that each section carries an equal load.

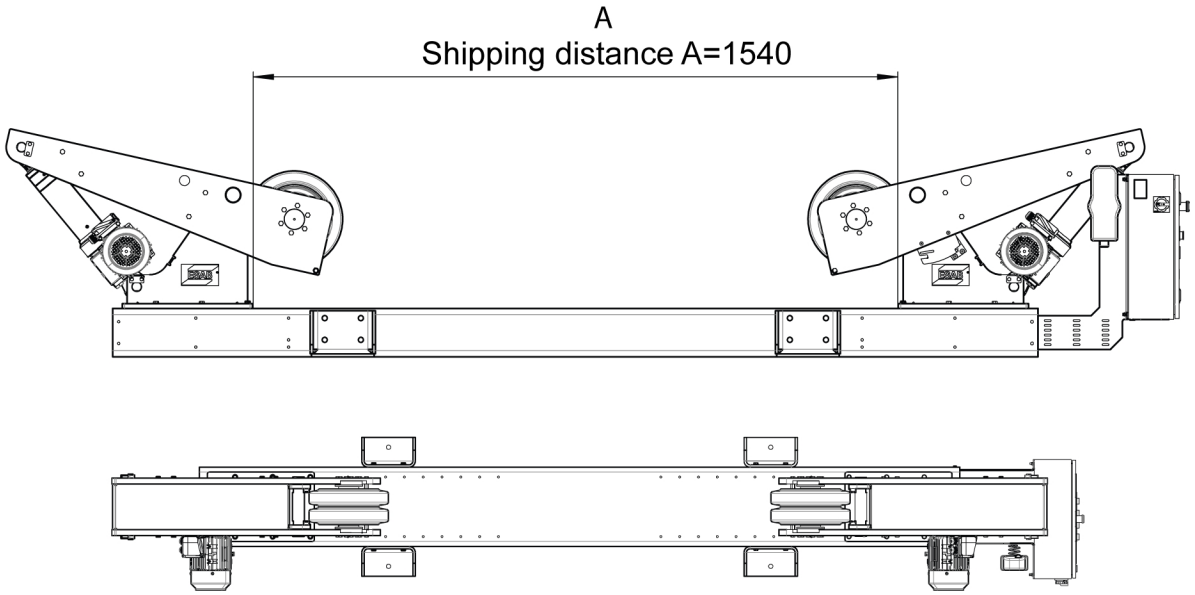
If one end of the vessel is heavier, move the drive or idler section closer to this end to balance the loading on each section.

4.3 Adjusting the wheel stands

NOTE!
Adjust the wheel stands so that the axis of rotation of the vessel is on the centre line of the EFU frame.

The positions of the two wheel stands on the base frame must be adjusted to load vessels of different diameters.

1. Unbolt the wheel stand from the base frame.
2. Use an overhead crane to lift the wheel stand using the lifting points.
3. Move the wheel stand to the required position for the diameter of the vessel.
4. Bolt the wheel stands back onto the base frame using all the bolts, and tighten to the correct torque i.e. M12 (8.8) 81 Nm and M16 (8.8) 197 Nm.
5. See tables and the picture below for correct distances between the two wheels stands.

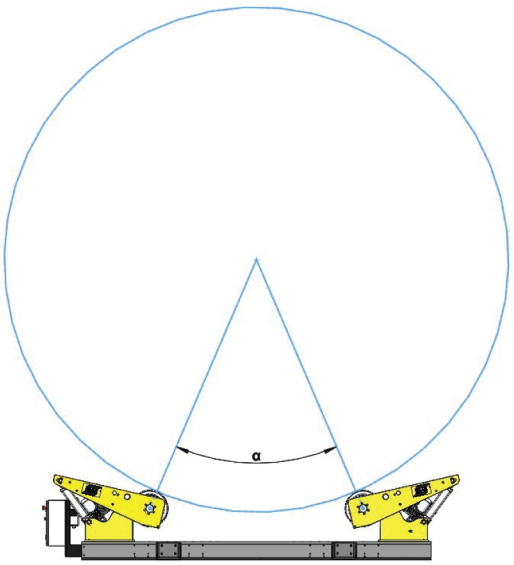


	In combination with conventional roller bed		In combination with self aligning roller bed	
Distance A	**Minimum object Ø (mm)**	**Maximum object Ø mm)**	**Minimum object Ø (mm)**	**Maximum object Ø (mm)**
780	480	750		
970	750	1240		
1160	1240	1740		
1540	1740	2370		
1920	2370	3700		
2300	3600	4300		
2680	4300	5700		
1260			1420	2000
1640			2200	3000
2020			3000	4000
2400			3700	5000

4.4 Adjusting the included angle

The included angle (α) is the angle between two lines from the centre of the rotation axis of the vessel to the centre of each wheel on the EFU. As the angle increases, so do the resulting load on each wheel, and consequently, the load on the bearings. Also, by increasing the angle, more torque, therefore, more power is required to lift the vessel.

The distance between the wheel stands on EFU depends on the diameter of the vessel. To achieve a safe and smooth operation of the EFU, the recommendation is the keep the included angle (α) between 45° and 60°.



4.5 Installation procedure

Follow this installation procedure before the first use, after maintenance or repair work, or after a storage period of the EFU.

The EFU are fully tested functionally before dispatching from the factory.

It is recommended to check the operation of all controls before the EFU are taken into production.

Installation procedure:

- Check that all moving parts, for example, the wheels, can move freely.
- Check the integrity of all cables, mains, and motors, make sure there are no cuts, etc.
- Check that all wireless remote - control pendant controls operate correctly.
- Check that the emergency stop on both wireless remote - control pendants is functional and locks all other controls so the roller beds cannot restart, then reset on the control panel.
- Check that the emergency stop on the control panel works and locks all other controls so the roller beds cannot restart, then reset on the control panel.
- Check that the steel framework is not damaged.

5 OPERATION

5.1 EFU unit details

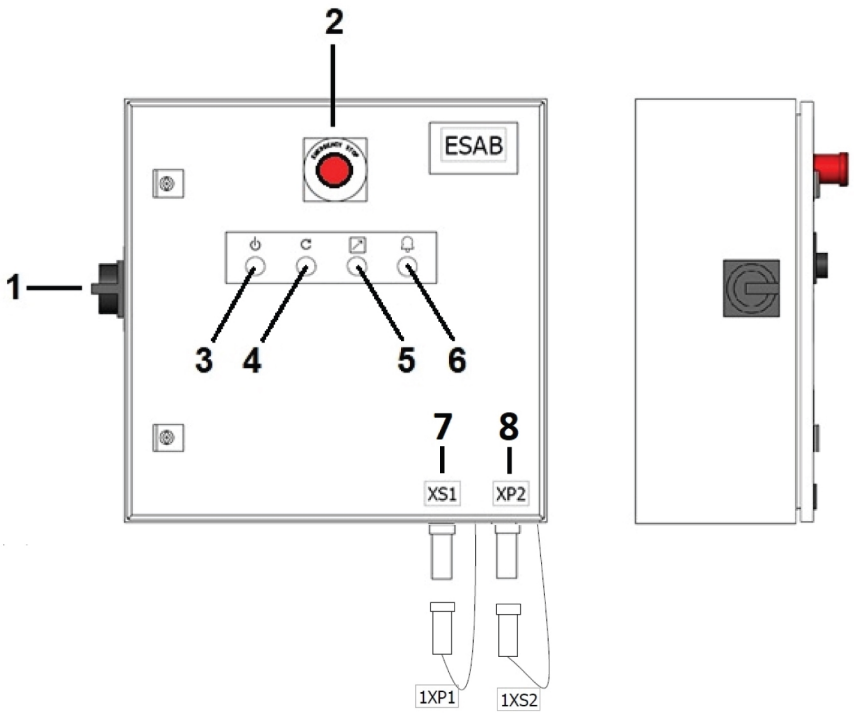
The EFU is to be used in combination with a driven roller bed when the object is conical and in combination with another EFU for joining cans together or in growing lines.

The EFU consists of a base frame with two wheel stands bolted onto the top. Holes are drilled through the top of the base frame for the wheel stands to be positioned at different distances to suit the vessel diameter.

Both wheel stands are equipped with electromechanical cylinders that lift or lower the vessel via a steel cradle. Both electromechanical cylinders are equipped with an inverter that controls the cylinder.

The fit-up unit is manually controlled using a wireless remote-control pendant.

5.2 Control panel



1. Mains switch (F1)
2. Emergency stop button (F30)
3. Mains ON lamp (F32)
4. E-stop reset pushbutton (F31)
5. White lamp (F34)
6. Alarm lamp/pushbutton (F33)

Control panel

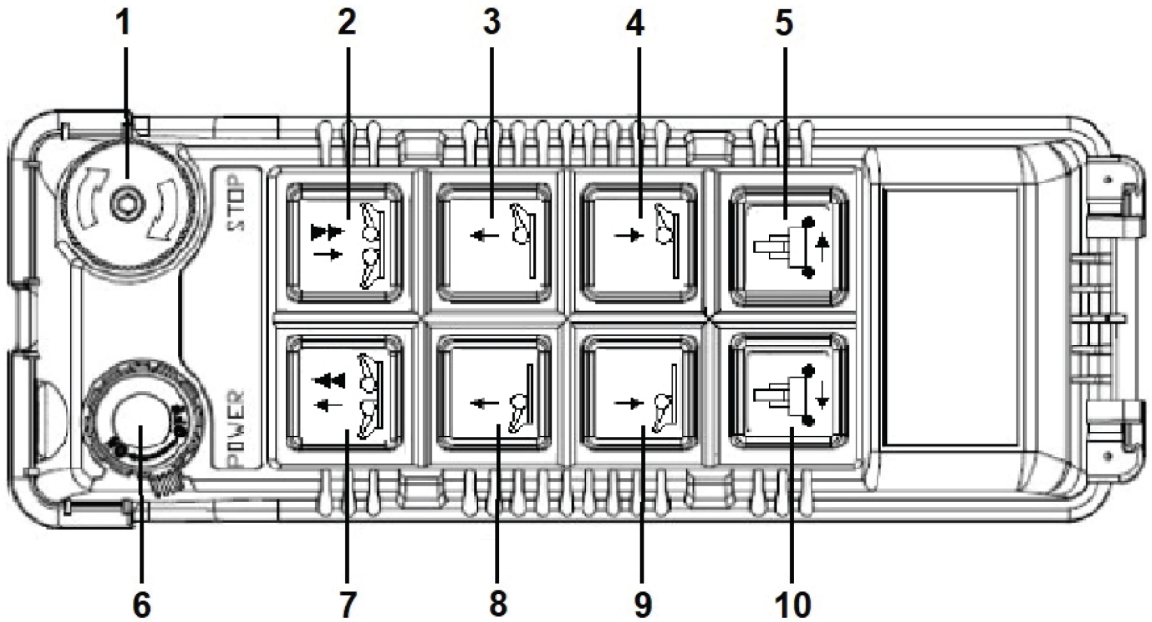
1. Mains switch (F1).
2. Emergency stop button (F30). Pressing causes loss of function. The button must be released before reset is possible.
3. Mains ON lamp (F32). Illuminates (green) once power has been turned on and the control system has started up. (Mains switch (1) is turned to ON position). This pushbutton, in combination with (F33), is also used for calibration and reset of a second roller bed (RB2) connected to the primary roller bed (RB1).
4. E-stop reset button (F31). Illuminates (blue) when any of the emergency stop pushbuttons are activated and/or not reset. It flashes when the e-stop pushbuttons are de-activated again and will go off when the buttons are pushed (E-stop reset).

5. White lamp (F34). Illuminates after requested control mode has been chosen, either local (illuminates constantly) or controlled from an external device (flashes), for example, ESAB CaB. Press this pushbutton to activate local control when the roller bed is used as a standalone unit. Press again to deactivate it. When the roller bed is connected to and controlled from an ESAB CaB i.e., digital output from the CaB is set to high, this lamp flashes until the signal is set to low again.
6. Alarm lamp / pushbutton (F33). Illuminates constantly (red) when any kind of fault has occurred. Must be manually reset after the fault has been detected and fixed. It flashes if battery power is low on the wireless remote-control pendant and stops flashes when the battery is charged or replaced.
7. Connector to external control, for example, CaB (XS1). A dummy plug with jumpers (1XP1) must be connected to be able to run the roller bed as a stand-alone unit.
8. Connector to a second EFU controller i.e., synchronized drives (XP2). An EFU can be connected to any ECD/ESD or EFU unit. A dummy plug with jumpers (1XS2) must be connected to be able to run the EFU as either a single unit or when it is the last unit in a chain of several connected EFU.

5.3 Wireless remote - control pendant

NOTE!
When one of the direction buttons (up or down) is pressed, the EFU immediately begin to lift or lower the vessel.

The system is delivered with two wireless remote-control pendants with rechargeable batteries, one receiver (mounted behind the control panel), and one inductive charger. The two wireless remote-control pendants are working on the same radio channel and frequency, and therefore only one at a time would be used. Ideally, one is used in the operation while the other is connected to the charger.



1. Emergency stop button
2. Lowering both wheels parallel
3. Lifting right wheel. Toggling function ON/OFF
4. Lowering right wheel
5. Railcar motion direction A (optional function)
6. Main switch, ON/OFF
7. Lifting both wheels parallel
8. Lifting left wheel Toggling function ON/OFF
9. Lowering left wheel
10. Railcar motion direction B (optional function).

5.4 Switch the mains power on

WARNING!
Do not operate the fit up if there are signs of damage. Always have an authorized ESAB service technician to check and make repairs if necessary.

Before switching on the fit-up unit, check that:

1. The wheel stands are correctly bolted on the base frame.
2. The wheels are correctly positioned under the vessel.
3. There are no obstructions to prevent rotation of the vessel (if one is loaded).

Visually inspect the wheels, electrical cylinders, wireless remote - control pendant, control panel and cables for any signs of damage.

WARNING!
Make sure that the mains supply matches the electrical voltage shown on the control panel.

WARNING!
Ensure that mains cable do not lay on vehicle or forklift traffic lanes and do not cause a tripping hazard.

1) Plug in the mains lead to the power supply.
2) Switch on the mains power, the mains on lamp (green) on the control panel illuminates.
3) Turn on any of the two wireless remote - control pendants.

WARNING!
Only **one** remote control unit is to be used while utilising the equipment. The other remote control unit must be turned off and securely stored in a designated location.

4) Check that the emergency stop buttons are not pressed in.
5) Press the E-stop reset pushbutton.

   If running as standalone, press the control mode pushbutton (white lamp).

The EFU unit is now ready to operate.

5.5 Operating the fit up unit

NOTE!
Test the emergency stop functionality frequently by pressing the e-stop pushbuttons, at least one time a month.

1) When the EFU is correctly aligned with another unit and the wheel stands are in the correct position, start loading the vessel on th EFU and the combined unit.

   This must be done steadily, to not shock load the EFU. Shock loading cause damage to the electromechanical cylinders.

   Ensure that no protuberances on the vessel can strike objects around the EFU or the floor during rotation.
2) To lift or lower the vessel, press the respective motion direction pushbutton:

   - 2, 3 and 4 for lowering
   - 6, 7 and 8 for lifting

   Pushbuttons 2 and 7 have two modes:

   - Press down to the first position - normal speed
   - Press further to the bottom position - high speed

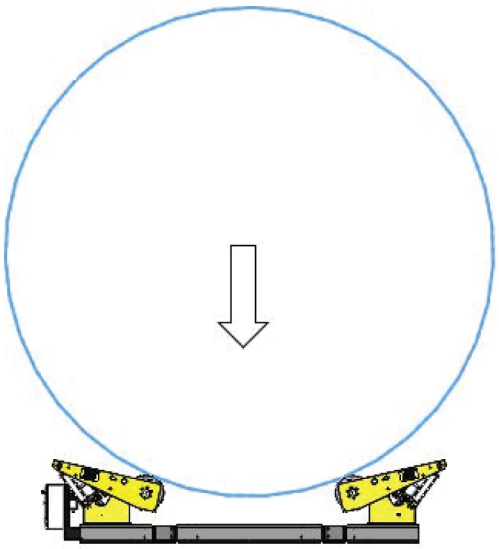
5.6 Operation safety

Do not let parts of the vessel, for example, the connection tubes, come into contact with the EFU, floor, or objects in the vicinity during rotation and/or lowering the vessel. This can cause damage to the EFU.

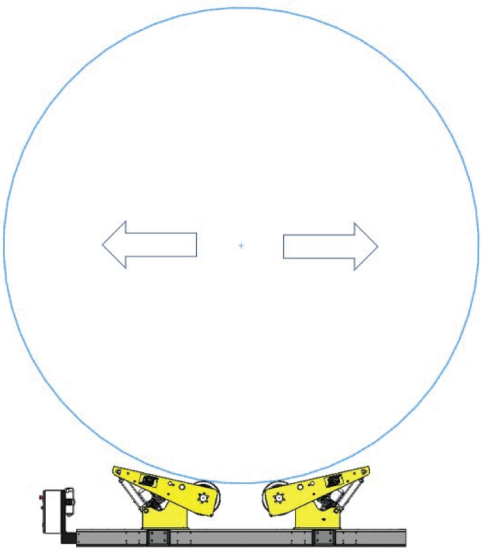
Ensure to have proper earthing during welding. Lack of proper earthing can cause the electrics on the EFU to short out.

If the emergency stop button is pressed in, find out the reason for the action before restarting the EFU.

The EFU can be overloaded, as more load is put through each wheel if wheel stands are too far apart.



CAUTION!
Ensure that the wheel stands are **not** too close together.

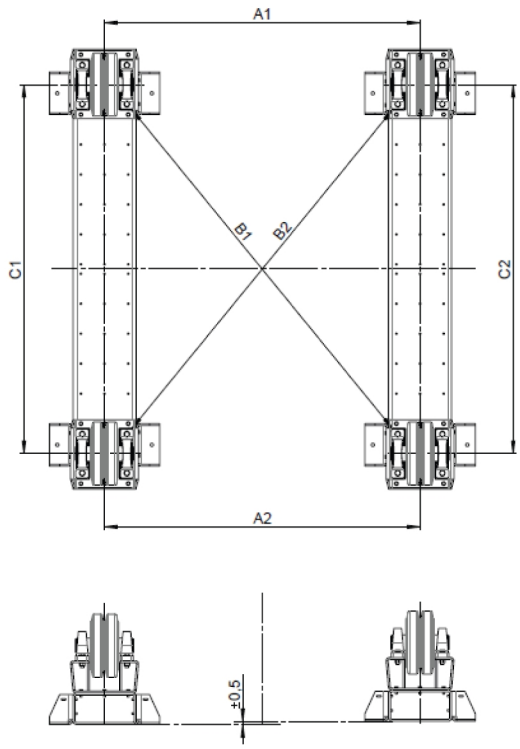


DANGER!
Very unsafe position.

Never operate the EFU at an included angle of less than 45°.

During rotation, the vessel could roll off the EFU causing serious injury to anyone in the vicinity. This can also happen with an unbalanced load when the centre of gravity of the vessel is offset from the axis of rotation.

See section "Adjusting the wheel stands" for more information. Make sure that the units are aligned parallel to each other. Otherwise, the vessel can creep lengthways and fall off the EFU and/or the roller beds. This can also cause wear and damage to the EFU wheels.



The illustration shows the correct alignment procedure between two sections (two roller bed idler units in the picture above).

Alignment

1. Ensure that the floor is leveled and free from cracks or other damages.
2. Ensure that heights are within limits.
3. Ensure that both sections have their wheel stands mounted at the corresponding place, i.e., C1 and C2 are equal.
4. Ensure that sections are not tilted.
5. Ensure that: A1 = A2 ± 0.5 mm (0.02 in.) and B1 = B2 ± 0.5 mm (0.02 in.).

5.7 Welding

WARNING!
The vessel must be earthed independently from the EFU when welding.

Earthing through the EFU causes serious damage to the EFU.

The earthing requirements of specific welding procedures must be known, and earthing should be correctly connected to the vessel before welding. An EFU is not designed to earth the vessel during welding.

5.8 Stopping the EFU

On the wireless remote-control pendant, lifting or lowering directions are only activated when any dedicated pushbuttons are pressed.

Motion is stopped as soon as the pushbutton is released.

NOTE!
Use the emergency stop button on the control panel and wireless remote-control pendant only in case of an emergency.

6 MAINTENANCE

6.1 General

WARNING!
During all maintenance or repair procedures, the EFU must be electrically isolated. Switch off the main electrical supply and unplug the mains cable.

WARNING!
After disconnecting the power, there may be some residual charge in some components in the panel. Wait for a few minutes after disconnecting the mains power before commencing work on any electrical elements of the EFU.

The installation procedure must be carried out after maintenance, repair, or storage period, see section "Installation procedure".

6.2 Storage

Store the EFU in a cool dry place. After a long period of storage, the EFU must be thoroughly checked before use.

WARNING!
When the EFU are stored or transported in a cold climate and moved into a warm location, condensation can be built up in the EFU or the electrical controls. To prevent damage, allow the EFU to adjust to the new environment temperature.

CAUTION!
Do not store the EFU outside unprotected. The EFU must be sheeted, bare metal areas, bearings, gears, and shafts suitably greased to prevent corrosion.

6.3 Repair and maintenance

Keep the EFU clean and free from dirt or waste from the welding process.

Check the electromechanical cylinder regularly and keep it clean, especially the piston and the area around the sealing on top of the cylinder. Check for any damages on the piston and sealing.

Inspect the entire EFU installation at least once per year. Pay particular attention to:

- Electrical contacts
- Switches and controls
- Mechanical parts, fixings are not loose.
- Condition of PU wheels

- Wheel rotation is full and there is no eccentric rotation around the axles.
- Metal corrosion
- Frame damage
- Signs of damage to any of the sliding bearings
- Electrcial cylinder maintenance
- Cable damage: mains and any visible cable running from the control panel to the motors.
- Correct functioning of the emergency stops and the control panel mains switch.

Remove and replace any damaged parts.

6.4 Cleaning

WARNING!
EFU must be electrically isolated before cleaning. Electrical components must not come in contact with water or other cleaning fluids.

NOTE!
Ensure that the EFU are clean. Any arc sparks, flux or slag must be removed from the EFU as soon as possible.

Frequently check that the equipment is free from any damages, mechanical or electrical. At least one time a month.

The EFU do not require any special cleaning instructions. The EFU do not create any pollution to the environment around them during normal operation, although, the welding process being carried out on them may pollute the EFU.

6.5 Breakdowns

If the EFU stop working, the equipment must be repaired by authorized ESAB service technicians.

NOTE!
Repeated faults indicate a problem with the EFU. Inform the person responsible for service and maintenance.

6.6 Electromechanical cylinder

WARNING!
During all maintenance work on the electromechanical cylinder, the power source must be disconnected.

WARNING!
Protect moving/rotating parts from accidental access.

Regular maintenance checks:

- Regularly check that the electromechanical cylinder always stops before the warning zones.
- Regularly check that the electromechanical cylinder always stops before the external mechanical stops have been reached.

The trapezoid spindle of the electromechanical cylinder should be lubricated at least once every 24 months or sooner if the number of cycles indicated below has been reached (see the table). For the type of lubrication, see 5.9 Lubricant.

Strokes (mm)	Cycles (lubrication interval)
0-300	5000

6.6.1 Lubrication trapezoid spindle/tube MCT 75(standard) / MCT 75 WE

Run the electromechanical cylinder to reach its lubricating position.

Lubricating position (mm from the retracted position)	
MCT 75	X=12 to 28mm

Lubricate the electromechanical cylinder through the nipple, approximately 100g / 1000mm stroke. Don´t use more grease than is recommended.

The electromechanical cylinder gear case is normally lubricated permanently. The lubricant level should be at least halfway up the worm wheel or should cover the entire worm screw.

6.6.2 Lubricant

NOTE!
Never mix a synthetic lubricant with a mineral oil-based lubricant. Refill only with the type of lubricant specified on the plate!

Use only the specified grease on the trapezoidal spindle.

The machine plate specify the type of lubricant to be used in the electromechanical cylinder gear case. The electromechanical cylinder gear case have a one-time lubrication on delivery and the lubricant does not need to be replaced during normal operations.

Lubrication gear case quantity

Electromechanical cylinder size	MCT20	MCT30	MCT40	MCT75
Quantity (Liters)	0.1	0.3	0.3	0.65

The trapezoidal spindle/tube is greased with: **"Klüber Duotempi PMY45"**

6.6.3 Bearings

All bearings on the EFU are of sliding type.

Several of them are permanently lubricated from the factory, but slide bearings at the wheel shaft shall be lubricated at least once every second month, depending on the grade of use. There is one grease nipple on each end of the wheel shaft.

6.6.4 PU Wheels

To replace a PU wheel:

1) Unscrew the 6 screws on each side to loosen the shaft with the wheel.
2) Lift the PU wheel.
3) Make sure that the wheels and the shaft are hanging safely in the overhead crane when doing this operation.
4) Also, the side plate needs support from a crane due to its mass. There is a locking screw located at each end of the casted rim, which needs to be loosened before the PU Wheels can be pushed off the shaft.
5) Before mounting the new PU Wheels, ensure that the shaft and keys are undamaged. Replace them if necessary.

7 TROUBLESHOOTING

Perform these checks and inspections before sending for an authorized service technician.

- Check that the control panel is connected to the correct mains voltage.
- Check that all three phases have live voltage (phase sequence is not significant).
- In a case where several EFU units and roller beds are used in the same production area, make sure that correct wireless remote-control pendants are used to the corresponding receiver unit that is mounted behind the control panel. (Serial no., ID would be the same on all units belonging to the same EFU or ECD).
- Check that the mains supply is disconnected before starting any type of repair action.

NOTE!
When a malfunction occurs, it is not always clear if the problem is mechanical or electrical. For a given fault (for example, cylinder doesn't move), the root cause may be mechanical (for example, motor brake blocked) or electrical (for example, electrical power not validated in the servo amplifier). Consequently, in case of malfunction, please consider all possible causes (mechanical and electrical) to identify all possible solutions.

7.1 Mechanical malfunctions

Type of fault	Possible cause	Corrective action
The roller bed struggles to turn component	Work piece exceeds capacity of the roller bed	Check component weight
	Wheel centres are too far apart	Check that wheel centres are correct to component diameter
	Out of balance loading has been exceeding	Check if out of balance loading is acceptable
Cylinder doesn't move and/or uses a lot of current and/or makes a noise when moving	Motor brake blocked	Check brake connection and supply voltage
	System moved by cylinder blocked	Check mobility of system moved by cylinder
Cylinder is too hot	Overloading	Measure RMS torque value on one complete cycle (including pause time before starting a new cycle). Send this information to ESAB for analysis.
	Ambient temperature too high	Comply with permitted temperature range

7.2 Electrical malfunctions

Type of fault	Possible cause	Corrective action
Power light is not illuminated	No incoming power	Check the incoming mains power
	Possible phase loss	Check that all phases are present
	Faulty or tripped circuit breaker	Check reset circuit breaker
Failure to reset when reset button is pressed	Emergency stop pressed	Check that all emergency stops are reset
	Circuit breaker has tripped	Check and reset tripped breaker(s)
	Low voltage power failure	Check output from low voltage power supply (24 V)
No cylinder motion (alarm ON)	Wireless remote does not communicate with the receiver attached to the control panel	Ensure the correct transmitter is in use. The labels on the receiver and the transmitter will identify the RF channel and ID code in use
	Inverter not receiving speed reference	Make sure the wireless control has a full charged battery
	A pushbutton is stuck to the bottom and does not release	Check that pushbutton on the wireless control for any damage
	No power from the inverter	Check if the inverter has proper power supply. Service Manual 0463762001 will give more information about fault tracing.

Type of fault	Possible cause	Corrective action
Cylinder doesn't move	Incorrect motor connection	Check motor connections
	No electrical power on cylinder motor	Check voltage, main switch status and fuses status above the servo amplifier. Check that the servo amplifier authorizes cylinder move and cylinder motor torque on
	Incorrect definition of cylinder move	Check that all move parameters (target position, speed and acceleration) are correctly defined in servo amplifier
	Servo amplifier fault	Read the technical documentation of the servo amplifier. In function of fault number, possible causes are suggested with associated solutions.
Cylinder moves a little and stops immediately with fault servo amplifier	Incorrect motor connection	Check motor connections
	Servo amplifier fault	Read the technical documentation of the servo amplifier. In function of fault number, possible causes are suggested with associated solutions.
Cylinder vibrates in stop position	Position control parameters not adapted to application	Optimize the position control parameters definition in relation with the application

8 ORDERING SPARE PARTS

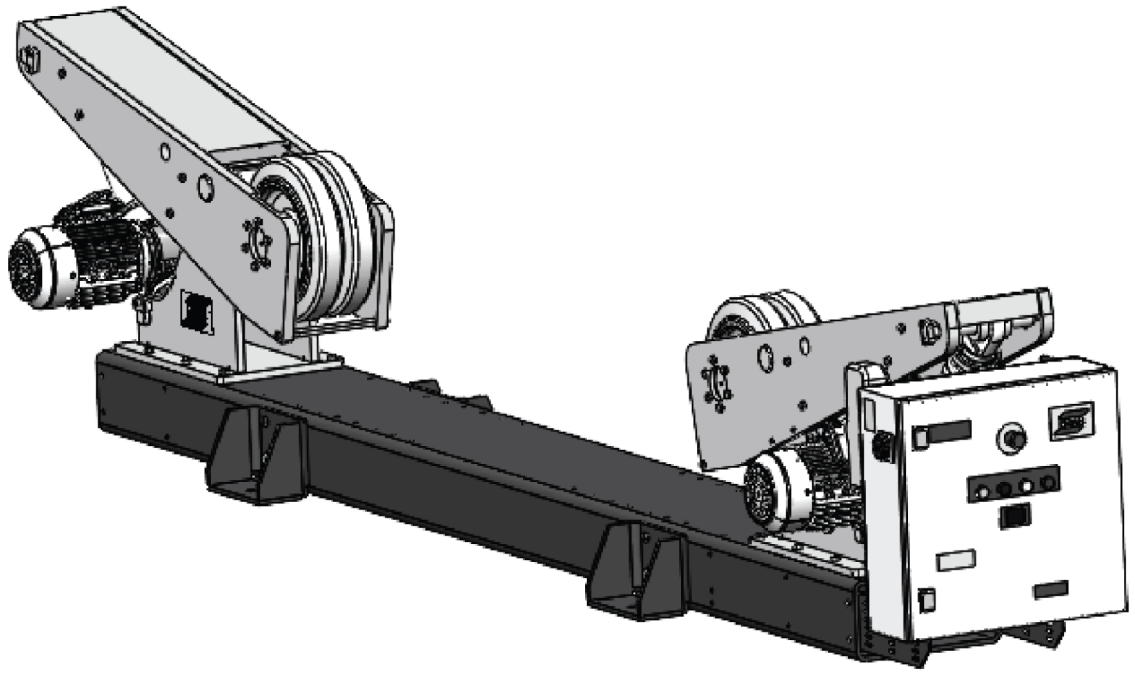
CAUTION!
Repair and electrical work should be performed by an authorised ESAB service technician. Use only ESAB original spare and wear parts.

EFU 30 and **EFU 30 IB** are designed and tested in accordance with the international and European standards **EN 12100:2010, EN 60204-1:2018, EN 61000-6-2:2019** and **EN 61000-6-4:2019**. On completion of service or repair work, it is the responsibility of the person(s) performing the work to ensure that the product still complies with the requirements of the above standards.

Spare parts and wear parts can be ordered through your nearest ESAB dealer, see **esab.com**. When ordering, please state product type, serial number, designation and spare part number in accordance with the spare parts list. This facilitates dispatch and ensures correct delivery.

APPENDIX

ORDERING NUMBERS

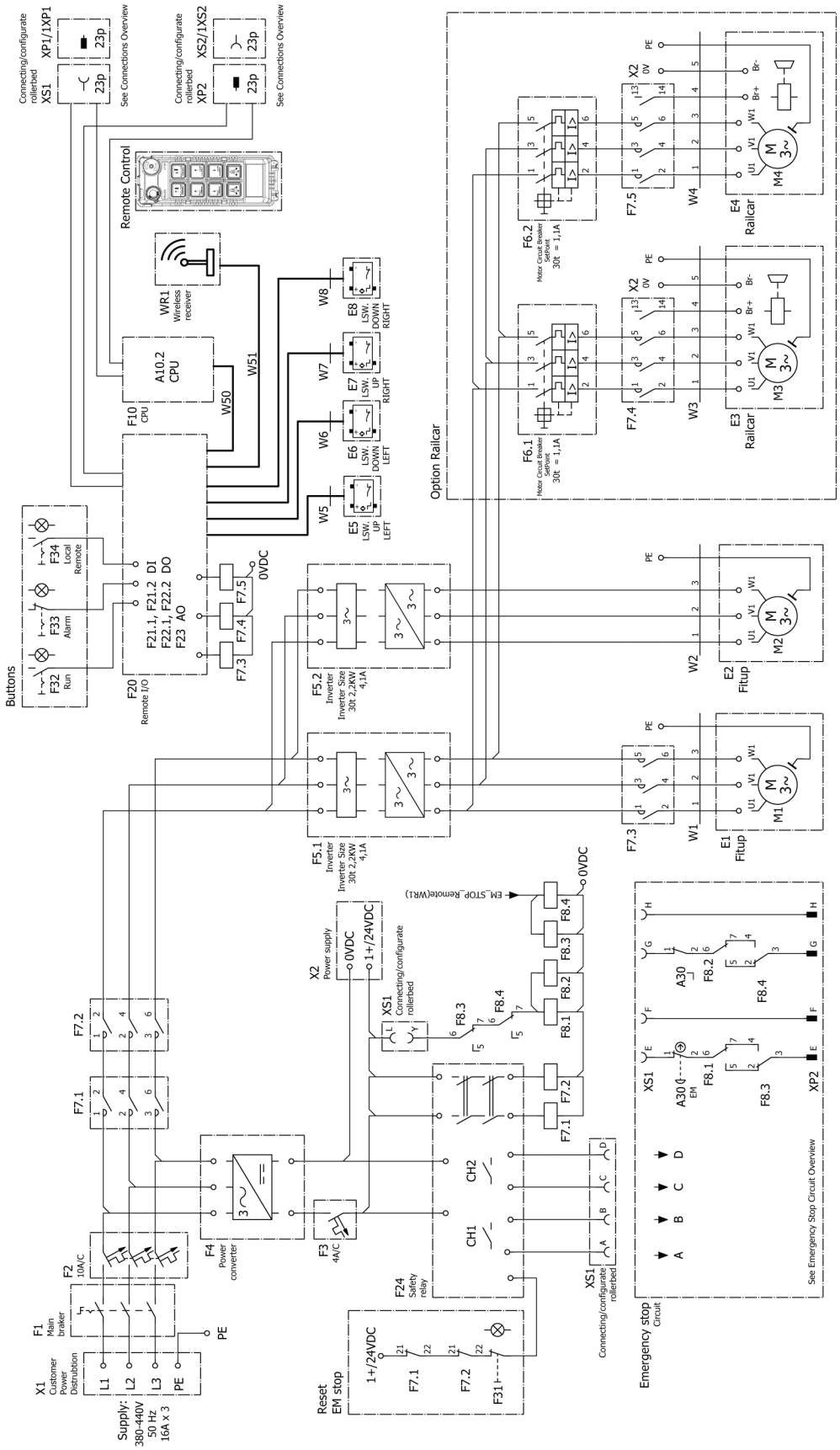


Ordering number	Denomination	Type	Notes
0909 651 880	Fit-up unit	EFU 30	
0909 652 880	Fit-up unit	EFU 30 IB	Track width 1730 mm (68.11 in.)
0909 652 881	Fit-up unit	EFU 30 IB	Track width 2500 mm (98.43 in.)
0463 760 *	Instruction manual		
0463 900 001	Spare parts list		

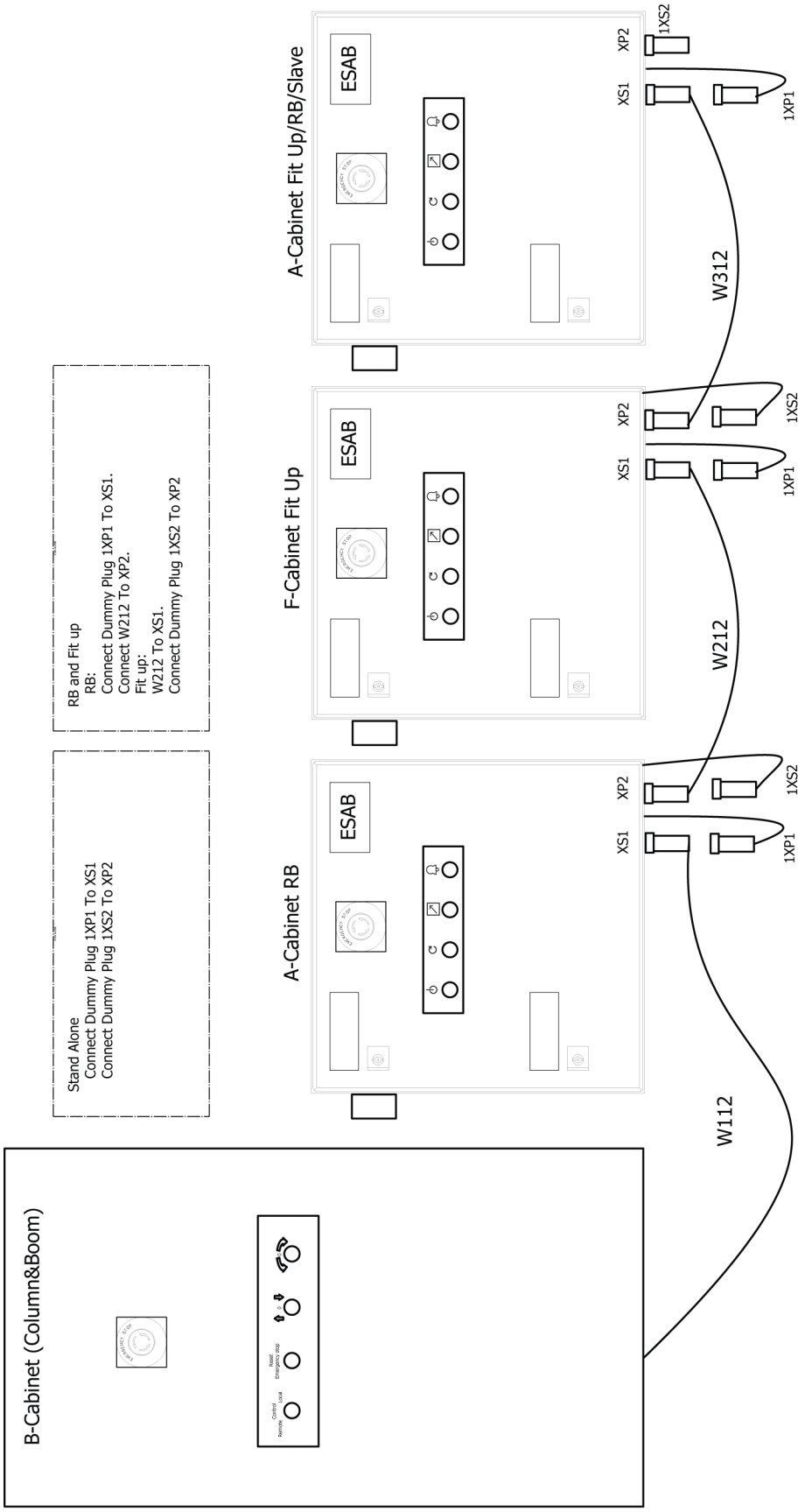
The three last digits in the document number of the manual show the version of the manual. Therefore they are replaced with * here. Make sure to use a manual with a serial number or software version that corresponds with the product, see the front page of the manual.

Technical documentation is available on the Internet at: **www.esab.com**

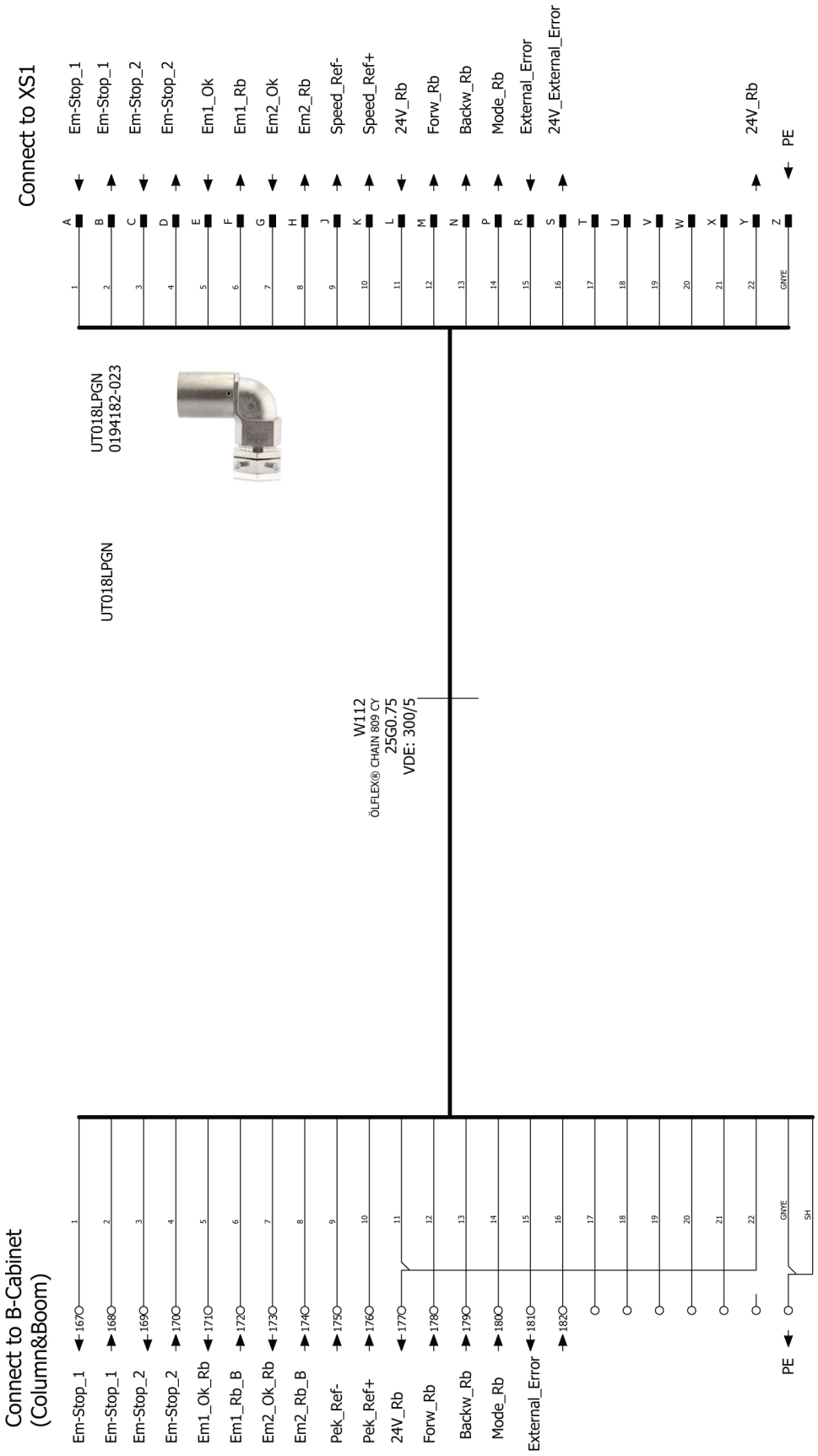
WIRING DIAGRAM



Connections overview



Connections



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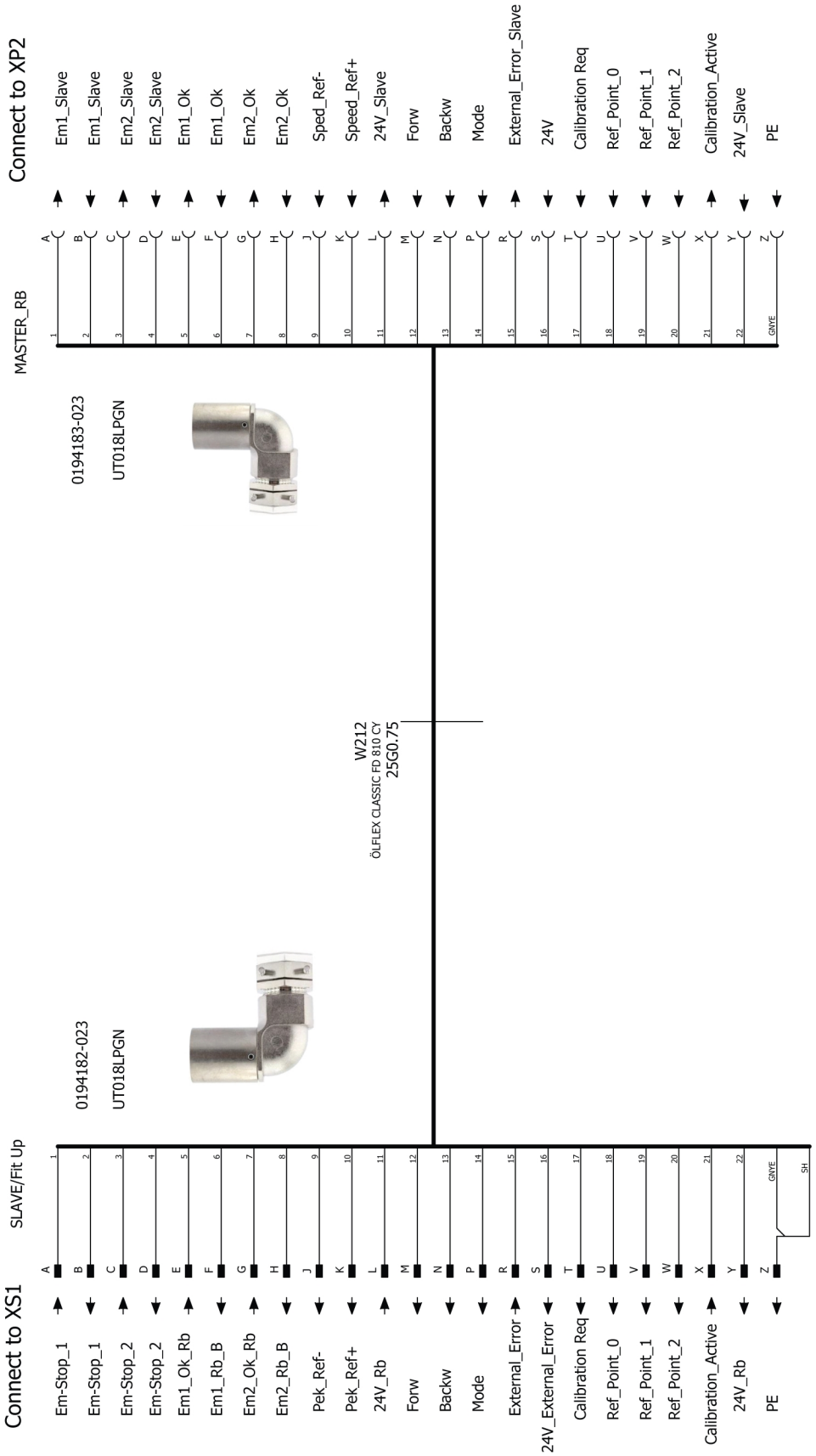
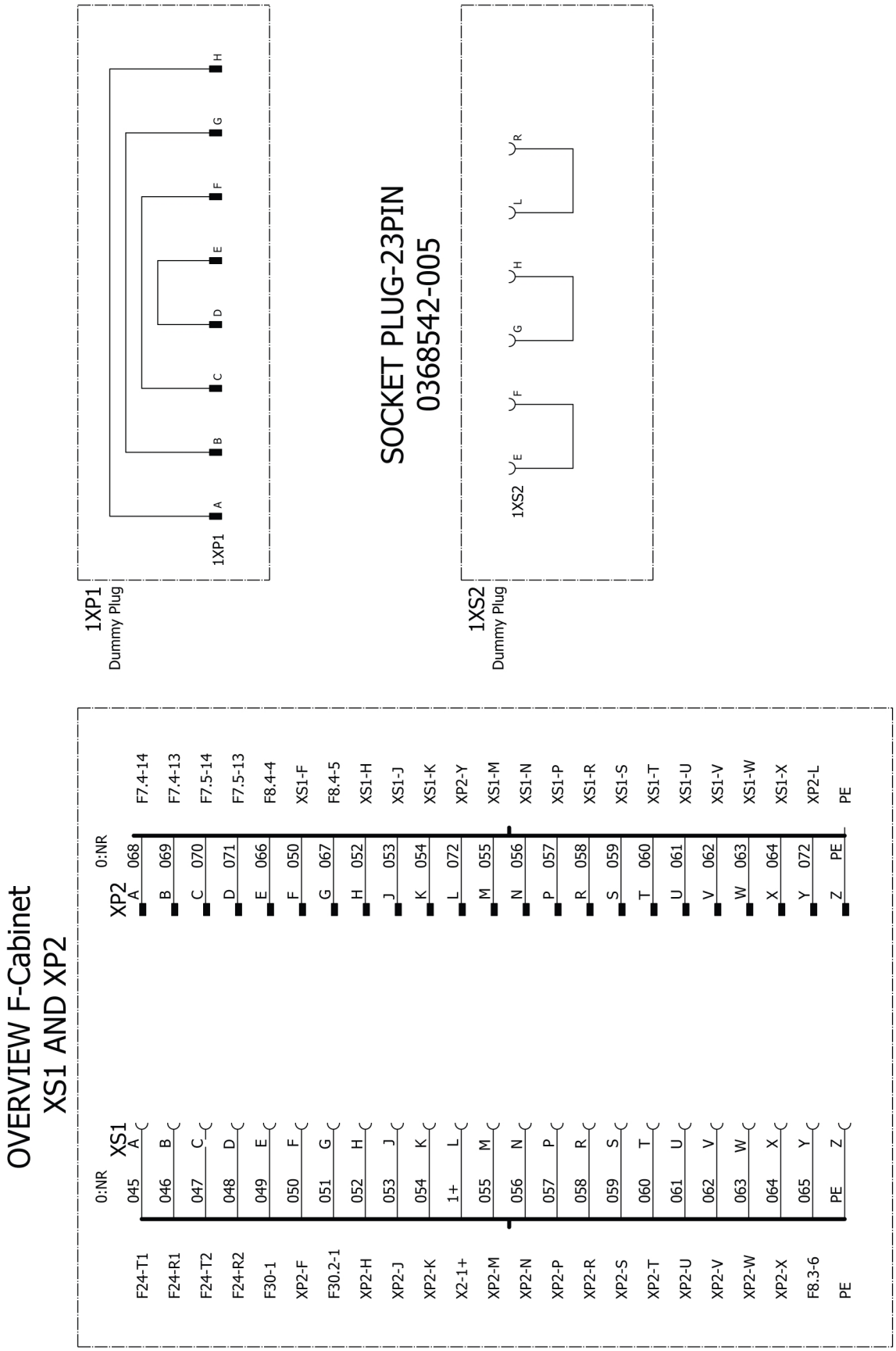
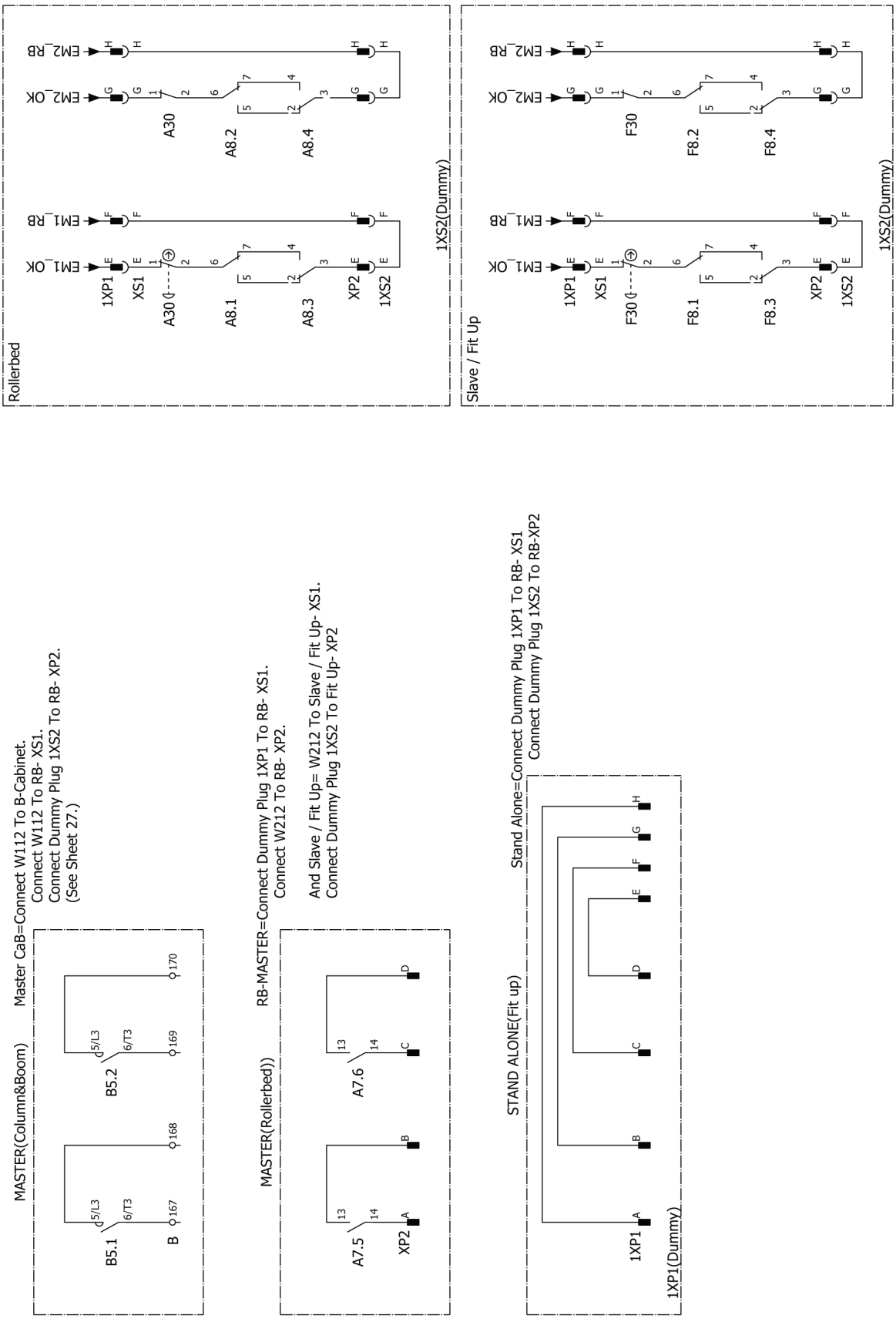


Connections XS1 and XP2



Emergency stop circuit overview



ACCESSORIES

Qty	Ordering no.	Denomination	Notes
1	0909 530 880	CaB integration cable, CE	10 m
1	0909 530 881	CaB integration cable, CE	20 m
1	0909 530 882	CaB integration cable, CE	30 m
1	0909 530 883	CaB integration cable, CE	40 m
1	0909 530 884	CaB integration cable, CE	50 m
1	0909 530 900	Synchronization cable, CE	10 m
1	0909 530 901	Synchronization cable, CE	20 m
1	0909 530 902	Synchronization cable, CE	30 m
1	0909 530 903	Synchronization cable, CE	40 m
1	0909 530 904	Synchronization cable, CE	50 m

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For contact information visit http://esab.com

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