5112204

Elevator

User Manual

FlexLink®

Elevator

User Manual

5112204

Preface

Purpose of this manual

The purpose of this manual is to describe a number of operations that are intended for the user concerned. Here it becomes clear how the user can work as well and as safely as possible. By making use of clear illustrations and texts FlexLink wants to achieve a simple and safe way of working with the Elevator. This document contains remarks that point out a risky or specific situation to the user. In many cases this situation is provided with one of the symbols given below.

General warning for danger!

Warning for electrical voltage!

Attention, this is an important notice!

Compliance with the operations described in this document is important in order to prevent dangerous situations and unnecessary damage to the Elevator. Carefully keep this document! It is recommended to keep one copy near the machine and one copy with your technical documentation.

Structure of the manual

The user’s manual has been composed in such a way, that a number of operations can quickly and easily be found. This manual will not describe operations that are not meant for the user. It does, however, indicate what the user must do when carrying out a certain operation, for example calling in technical staff. The user’s manual has been divided into sections. These sections describe, among other things, the safety and the operation of the Elevator. FlexLink would like to point out to the user that section Safety is to be read carefully.

Requirements of the user

The Elevator may be operated by any adult person who has become acquainted with section Safety. If the user is not technically qualified, he or she may not carry out any maintenance or repair activities on the elevator.

Note! *Maintenance activities on the elevator may only be carried out by a technically qualified person.*

NB: *Technically qualified employees means: employees that have followed an adequate training for carrying out the activities involved and have a good ability to read and understand the English language.*

1 Safety

The Elevator has been designed in such a way, that it can be used and maintained in a safe way. This holds for the application, the circumstances and the instructions described in the manual. Any person working with or on this machine should study the manual and follow the instructions. It is the responsibility of the employer to make sure that the employee is familiar with and follows these instructions.

The company or the country in which the machine is used may require extra safety measures. This particularly applies to the working conditions. This manual does not describe how these are to be complied with. In case of doubt, consult your government or safety officer!

1.1 System information

The project number and/or general drawing number shall always be specified when communicating with FlexLink with respect to the elevator.

Project number	See machine nameplate
Supplier	FlexLink Engineering Polska Sp. z.o.o ul. Za Motelem 2c 62-080 Sady, Poland
Machine type:	Elevator
Date of manufacture	See machine nameplate
Gen. drwg. no.	See machine nameplate

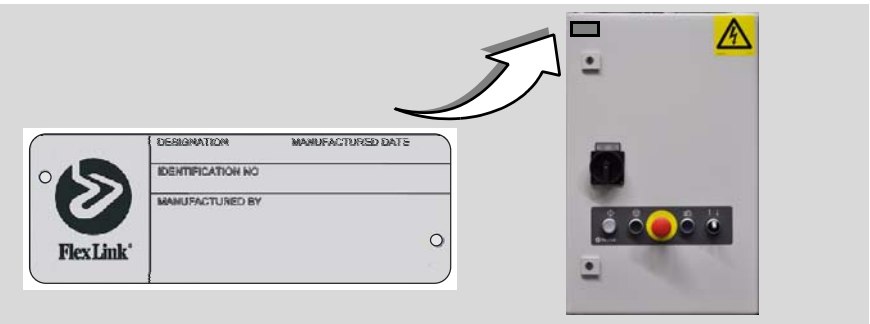


Figure 1 Machine nameplate

The machine nameplate is located on the electrical cabinet as shown in the figure above.

1.2 Important safety conditions

At the moment that the elevator is going to be operated by a user, the following safety conditions must be met:

- Make sure that children or animals have no access to the machine and its surrounding area by, for example, screening off the elevator with a fence.
- Only persons who have read and understood the operating instructions are allowed to operate, maintain and clean the machine.
- Do not reach into the machine while it is running or on. Even if the machine is not running, it can be ‘on’, which means start operating automatically.
- Safety provisions, such as side plating, bottom plating, emergency stops and detectors may not be removed or deactivated while the elevator is running.
- Provide good ambient lighting to enable the operator to work well and orderly with the elevator.

1.2.1 General

- Incorrect use of the equipment can cause personal injury.
- Do not stand or climb on the equipment.
- Do not wear clothing or other articles that can fasten in the machine.
- Follow the instructions in this user manual when transporting the machine. FlexLink Components AB must approve all modifications or changes to this machine.
- Only use recommended spare parts.
- Only authorised personnel may open electrical units.
- FlexLink is not responsible for damage if service on the equipment is not performed in accordance with this user manual.

1.2.2 Service technicians

Service technicians must have:

- Sufficient knowledge for reading technical information
- Ability to comprehend technical drawings
- Basic knowledge of mechanics
- Sufficient knowledge in the use of hand tools

1.2.3 Electricians

Electricians must have:

- Experience from similar installations
- Sufficient knowledge to work from drawings and wiring diagrams
- Knowledge of local safety regulations for electrical power and automation

To avoid risks, only experienced personnel with technical knowledge and experience may perform repair work on the machine's electronics components.

1.2.4 Operators

To correctly use the equipment, operators must have appropriate training and/or experience.

1.3 Description of safety provisions

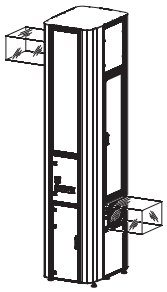
As a standard the Elevator is not provided with control and any safety provisions. Before putting the Elevator into operation some safety provisions are to be taken care of. The purpose of these safety provisions is to protect the user, the product and the Elevator against undesired situations (damage). Without these safety provisions FlexLink cannot give a guarantee on any damage caused in absence of these safety provisions.

The table below gives a general description of the safety provisions required. Here it should be noted that only technically qualified employees are allowed to work on the settings of the safety provisions!

Control	Remark
Emergency stop switch	Each Elevator is to be provided with one or more emergency stop switches that can be operated within reach of the user. The switch must have the standard red colour. The emergency stop switch must make sure that the input and output tracks are switched off simultaneously.
Motor protection	The technical specification of the Elevator is, among other things, geared to the load given in the order confirmation. Should the Elevator (motor) be overloaded for certain reasons, this should be detected. Without this protection there is a chance that the Motor or other components of the Elevator will be damaged.

Note! *If it cannot be made sure that there will be no product on the machine that exceeds the minimum or maximum dimensions (see technical specification), the detector described below must be installed on the Elevator.*

Height / width detector	The product that is put into the Elevator may not get stuck as a result of a too high / wide or twisted product. In order to ensure that products fit in the Elevator and will not get stuck, the input of the Elevator can be checked for height / width. This detection must take place well before the Elevator prior to putting the product on the Elevator. The maximum dimensions of the product are given in the technical specification.

Mechanical	Remark
Transition guard	At the transition between the Elevator and a connected conveyor a guard must have been placed, so that persons are kept at a reaching distance from the transition. Do not use the Elevator as a platform for maintenance work or in the production, use equipment intended for these purposes. 

Note! *Only technically qualified employees are allowed to change the settings of the safety provisions.*

1.3.1 Safety system architecture

The safety system architecture varies depending on elevator version.

Elevators require motor supply voltage and permanent 24V DC power supply for communication devices. Motor supply voltage depends on version (50 Hz version: 400 V AC, 60 Hz version: 480 V AC).

Safe 24V DC (disconnected at emergency) is not used although the elevator provides means for passing on the power.

1.3.1.1 Profibus/DeviceNet versions

Emergency switch

The purpose of the safeguard is to be part of the line global emergency safety system and affect the motor power supply to the elevator.
In case of emergency, the motor power supply to elevator shall be disconnected (stop category 0, EN60204-1).

Door switch

The elevator is equipped with a service door for access inside. Opening the door results in a elevator internal disconnection to motors (stop category 0, EN60204-1).

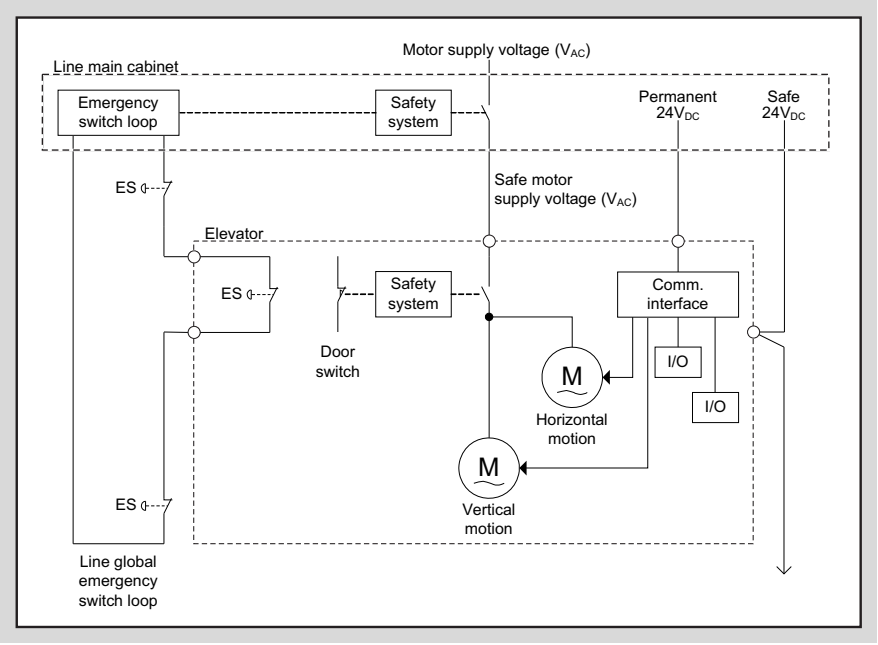


Figure 2 Profibus or DeviceNet version

1.3.1.2 Profisafe versions

Emergency switch and door switch

Safety fieldbus protocols provide flexibility in safety architecture.

The emergency switch and door switch are connected to safe inputs of the communication interface inside the control box of elevator.
Safety outputs of the communication interface disconnects the motor power supply internally in the elevator.

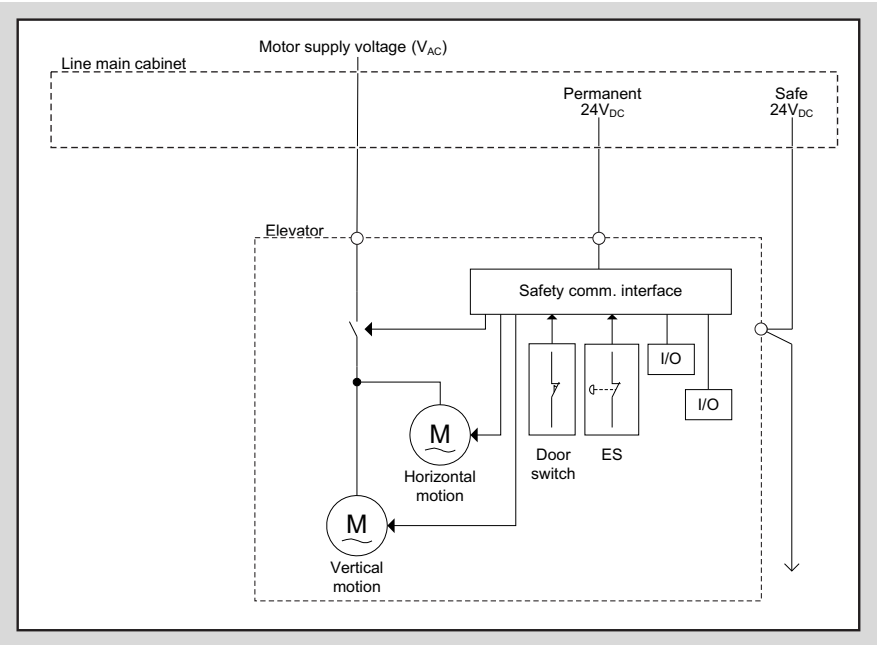


Figure 3 Profisafe version

1.3.2 Emergency stops

If personal safety is endangered or if there is a risk for equipment damage, the emergency stop button must be immediately pressed.

An emergency stop button is mounted on the front of the electrical cabinet.

Figure 4 Location of emergency stop button

The emergency stop device does not disconnect power to the machine.

For more detailed information about the emergency stop function, see the application manual.

1.3.3 Guards

The elevator consists of moving parts that can cause injury.

Feed-in and feed-out areas around the elevator are unprotected; they must be protected by, for example, the installation of tunnels or similar devices.

The elevator may not be operated if the door switch is inoperable or if a stationary guard is improperly fitted.

Stationary guards

The elevator is protected by stationary guards of clear PC and aluminium.

Openable guard

The elevator is equipped with a service door for accessing the interior. This door is equipped with a door switch. If the door is opened during operation, power to elevator motors is disconnected (stop category 0 according to EN 60204-1).

Stop the elevator before opening the door. Do not open the door for the purpose of stopping the elevator.

The door switch does not disconnect power to the machine.

1.3.4 Noise level

The noise level produced by the elevator is under 70 dB(A).

1.3.5 Electrical cabinet

The voltage in the electrical cabinet is 400 V or 480 V, depending on version. Ensure that the electrical cabinet is closed and locked after working in the electrical cabinet.

Never bypass the safety system.

The electrical cabinet can only be opened using a tool.

Before working in the electrical cabinet, the main switch to the motor must be turned off and locked. The key is retained by the service technician until work is finished.

Examples of service work include:

- Disconnection of wiring
- Replacement of motors, etc.
- Service work in the electrical cabinet, terminal boxes, etc.
- Service work performed on the machine that cannot be seen from the electrical cabinet.

For adjustment of photo-electric cells, inductive sensors, etc., power is required:

- Stop the machine and wait until the moving parts have come to a complete stop.
- Ensure that *"Start"* is turned off.
- Open the elevator door.
- Make adjustment.

Verify adjustments using manual operation of the elevator with the door closed (see Handling on page 58).

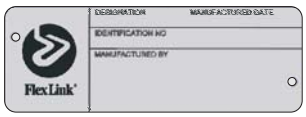
1.4 Safety measures to be taken

For a safe operation of the Elevator a number of safety measures are to be taken. These include the following measures:

- **Clean floor surface** - With a clean floor surface the operator will not be hindered while operating the Elevator. This can prevent tripping or slipping, so that the operator does not unexpectedly come into contact with the Elevator.

1.5 Explanation of symbols

Just like in the manual, symbols are used that have been placed on the Elevator in order to point the attention of the user to certain situations or provide certain information on components of the Elevator.

No.	Description	Picture
1.Type plate Elevator	This contains the name and the address of the Manufacture. Apart from that the declaration of incorporation, series or type indication, serial number and the year of construction of the Elevator.	
2.Type plate motor	This contains the name and the address of the motor supplier. Apart from that the CE-mark, kind of motor oil, series or type indication, serial number and the year of construction of the motor.	
3. Risk for electric shock	Placed on control box.	
4. Protective earth	According to IEC 60417. Placed below control box. Points out where to connect equipotential bonding conductors.	

5. Start	According to IEC 60417. Pictogram at pushbutton on control box door.	
6. Stop	According to IEC 60417. Pictogram at pushbutton on control box door.	
7. Alarm reset	According to IEC 60417. Pictogram at pushbutton on control box door.	
8. Up/Down	According to IEC 60417. Pictogram at pushbutton on control box door.	

2 Technical specification

Complete turn-key version.

In feed and discharge protections are not included.

Cycle time	13- 16 sec (low elevator) 18- 24 sec (high elevator)
Max weight*	*
Max product height	400 mm
A number of pallets can be elevated at the same time.	
Conveyor length	Max. length 550/640 mm
Conveyor speed	15 m/min
Electrical environment	50 Hz: 400 V AC 60 Hz: 480 V AC

ESD version elevators are available.

Cabinet for Profibus, Profisafe or Device Net communication for Line control.

*) Maximum product weights are as follows:

Type	**Max. load/level**	**Max. total load in elevator**
X85/XK/XT	30 Kg	30 Kg
RTI	15 Kg	100 Kg
DAS 80	85 Kg	85 Kg

Dimensions	LxBxH: See appendix.
Weight	Low elevator: ~ 300 kg (Depending of configuration)
Weight	High elevator: ~ 400 kg (Depending of configuration)
Electrical specifications	Supply: 3 phase + neutral + PE, 400 V AC, 50 Hz, 24 V DC Max. power: 1 kW N/A
Pneumatic system	N/A
Capacity	Products per minute: See application. Max. speed: See application.

2.1 Technical data

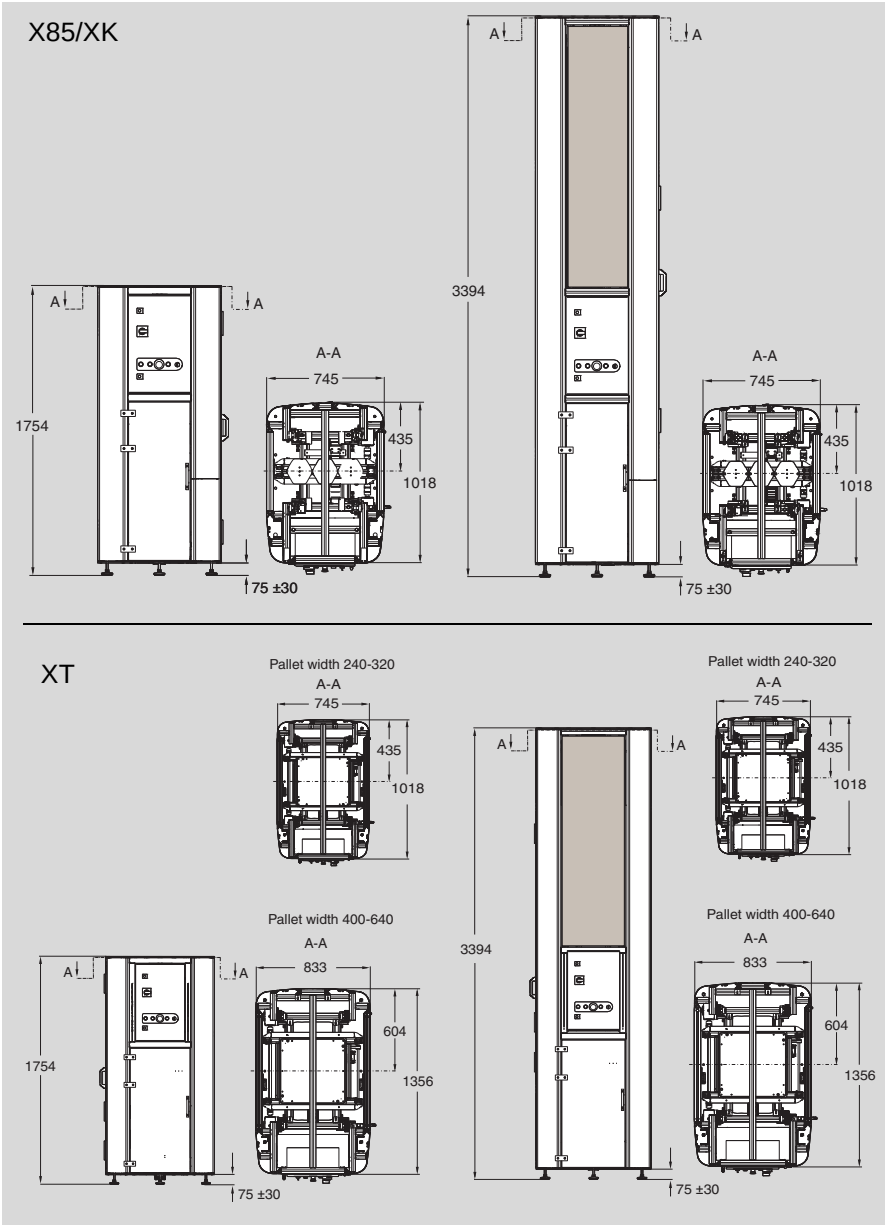


Figure 5 Elevator description

2.2 Ordering information

Example of strings obtained from the configurator:

A		C		D		E		F		G		H		I		J
X85	-	200	-	ABCD	-	E	-	900	-	2800	-	50	-	PB	-	AS0

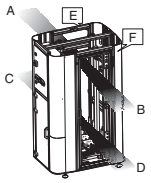
Table 1: X85 High elevator with Profibus

A		B		C		D		E		F		G		H		I		J
XT	-	400	-	150	-	AB	-	E	-	400	-	1200	-	50	-	PS	-	AS2

Table 2: XT low elevator, pallet width 400, Profisafe

A		C		D		E		F		G		H		I		J
X85	-	200	-	ABCD	-	E	-	900	-	2800	-	50	-	DN	-	AS0

Table 3: X85 High elevator with Device net

Input	Variable
A- Platform:	X85 XK XT
B- Pallet width:	240 320 400 480 640
C- Product height:	1-400 mm
D- In feed and discharge positions: 	A B C D
E- Door positions: 	E= Left F= Right
F- Lower height:	Low elevator 300-600 mm High elevator 300-1200 mm
G- Upper height:	Low elevator 900-1400 mm High elevator 2400-3000 mm
H- Drive unit version	50 Hz, European 60 Hz, American
I- Fieldbus:	PB: Profibus PS: Profisafe DN: Device net
J- ESD version:	Standard: AS0 Conductive: AS2

For more information please contact your local FlexLink office.

2.3 Operating conditions

The circumstances under which the Elevator can be applied partly depend on the materials selected. FlexLink has defined a number of parameters within which the Elevator would be allowed to function. Should the Elevator still be applied beyond these limiting values, FlexLink cannot guarantee the good functioning of the Elevator.

Ambient temperature (in operation)	-20°C to +60°C
Relative air humidity (RH)	30% to 95%, not condensing
Lighting	Normal ambient lighting

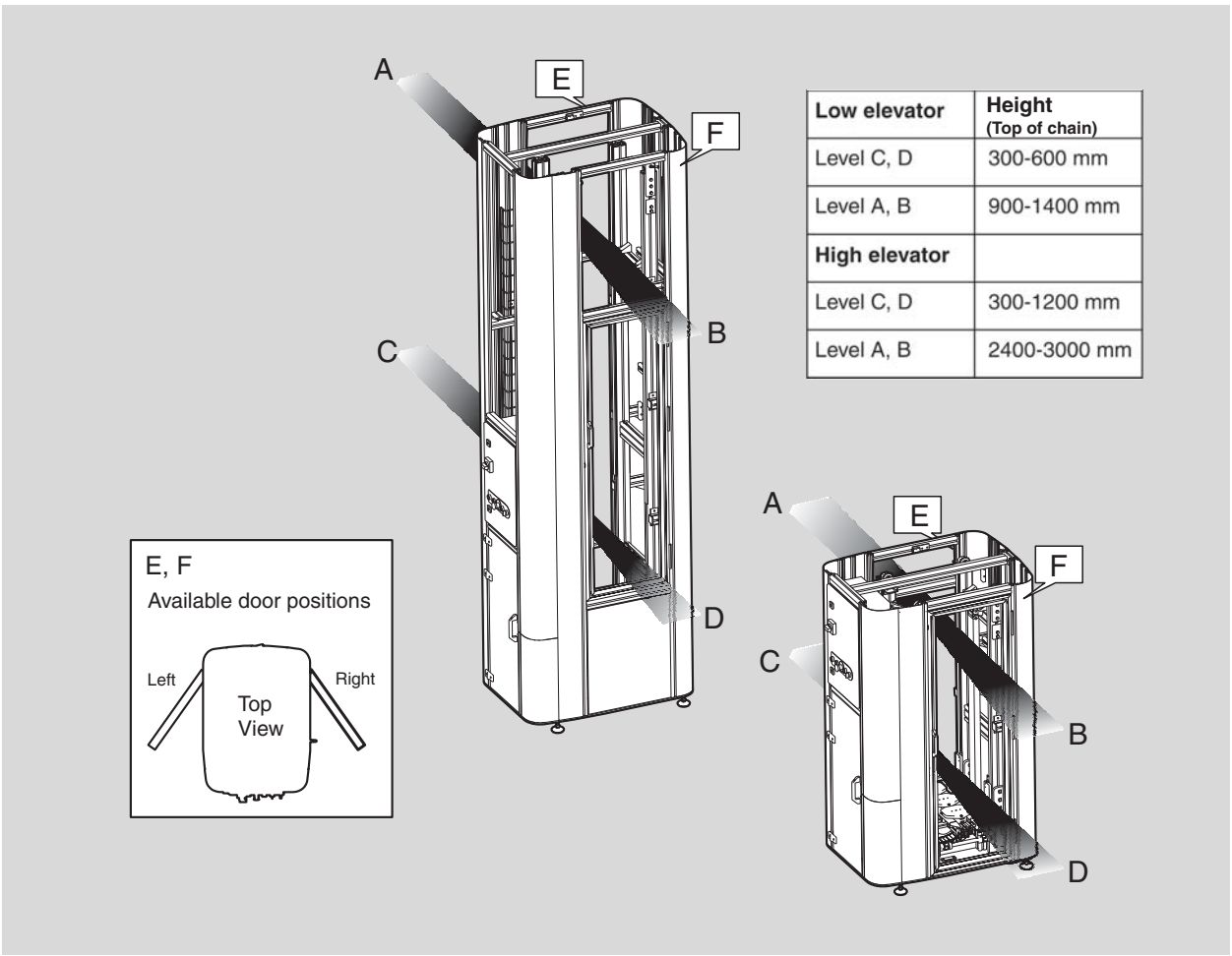
As a standard no lighting is installed on the Elevator and this can neither be installed as an option. Normal ambient lighting is sufficient to work safely with the Elevator. The Elevator is not intended for use in the open air and besides the Elevator is not suitable for an environment with a risk of explosion.

For use under deviating circumstances you may contact the supplier of the Elevator.

3 Introduction function and components

3.1 Purpose of use

The elevator changes the elevation of products in a flow, such as boxes or pallets, according to the principle of first in/first out.



Low elevator	Height (Top of chain)
Level C, D	300-600 mm
Level A, B	900-1400 mm
High elevator	
Level C, D	300-1200 mm
Level A, B	2400-3000 mm

3.2 Description of the Elevator

The elevator primarily consists of two main units:

- Control system
- Mechanical lifting device

Control system

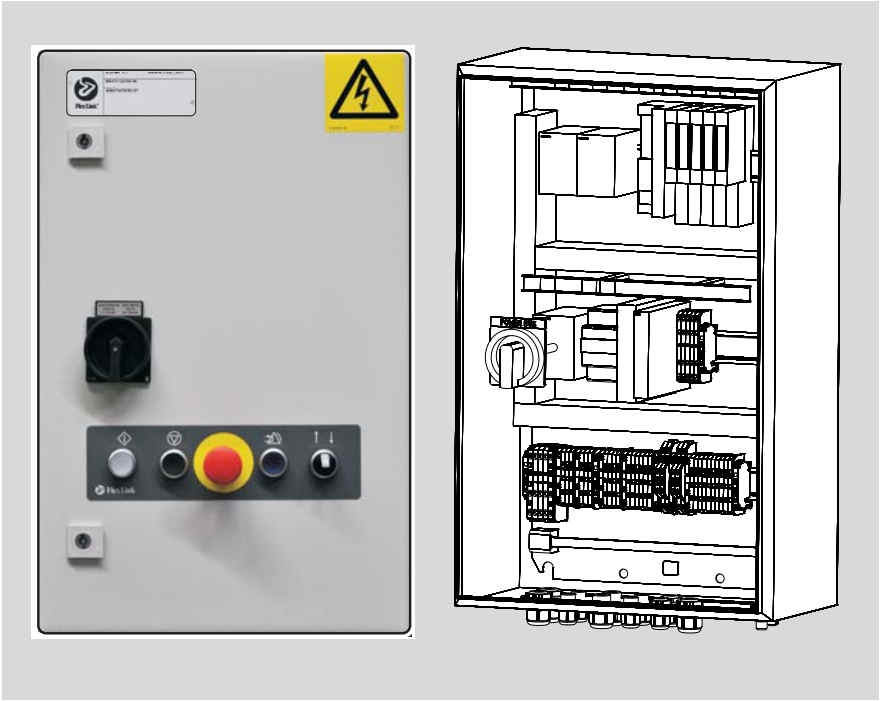


Figure 6 Electrical cabinet

Central intelligence and distributed I/O

The elevator is to be controlled by a Line controller and do not itself contain any intelligence such as PLC. The Line controller (PLC/PC/etcetera) controls the elevator through the integrated communication interface in the control box.

Safety system

Profibus and DeviceNet versions includes an autonomous safety system for the door switch, disconnecting the power suply to the motors through the safety relay and main contactors.

For Profisafe versions the door switch and emergency switch are connected to safety inputs of the communication interface. Main contactors are connected to safety outputs of the communication interface.

For Profibus and DeviceNet versions the conductors of emergency switch is connected to a terminal group. This terminal group is integrated into the line global emergency stop safety system by integrator.
The red knob of emergency switch is delivered in plastic bag as the elevator emergency switch functionality is not guaranteed before it is appropriately integrated into the line's safety system by the integrator.

Drives

The horizontal drive is with fixed speed controlled by a device including contactor and motor protection.

The vertical drive is frequency controlled by a frequency converter placed on the motor itself.
For standard versions the motor control is discrete: On/Off, Up/Down, High speed/Low speed. Speeds are preset in hardware of motor.
For advanced versions a second communication interface provides advanced control of the motor. Speed and ramp times can be controlled by software in Line controller. Motor current value and error codes can be provided by the motor to the Line controller.

Mechanical lifting device

For RTI elevators (Paternoster), the lifting device consists of a number of carriers attached to a roller chain. These are powered by a Movimot brake motor mounted in the lower part of the elevator. Feed-in and discharge devices are required for feeding in and feeding out pallets. These are not included with the elevator.

For XT/X85/XK elevators, the lifting device consist of a short conveyer with separate drives for feeding in and feeding out pallets (see the figure below). Vertical movement of the lifting device is powered by a drive chain to a Movimot brake motor, mounted in the lower part of the elevator.

Figure 7 Lifting device

Elevator function is controlled by a number of photo-electric cells and inductive sensors.

The photo-electric cells check that product feed-in is correct and that the product is correctly positioned for discharge. For XT elevators, this check is made by inductive sensors.

Inductive sensors control the lowering of the lifting speed and stopping of the lifting movement.

The machine is of the stand-alone design and can be combined with conveyers. Feed-in and discharge can be single or multiple.

Maximum product size is dependent on product stability and the dimensions of the elevator.

RTI elevators do not include feed-in or discharge devices at the top.

3.2.1 Components

3.2.1.1 Electrical cabinet

The electrical cabinet is fitted in the front of elevator. The door is equipped with the required means of maneuvering (pushbuttons/lamps) and module electrical main switch.

The main switch do not disconnect 24 V DC power supply to module.

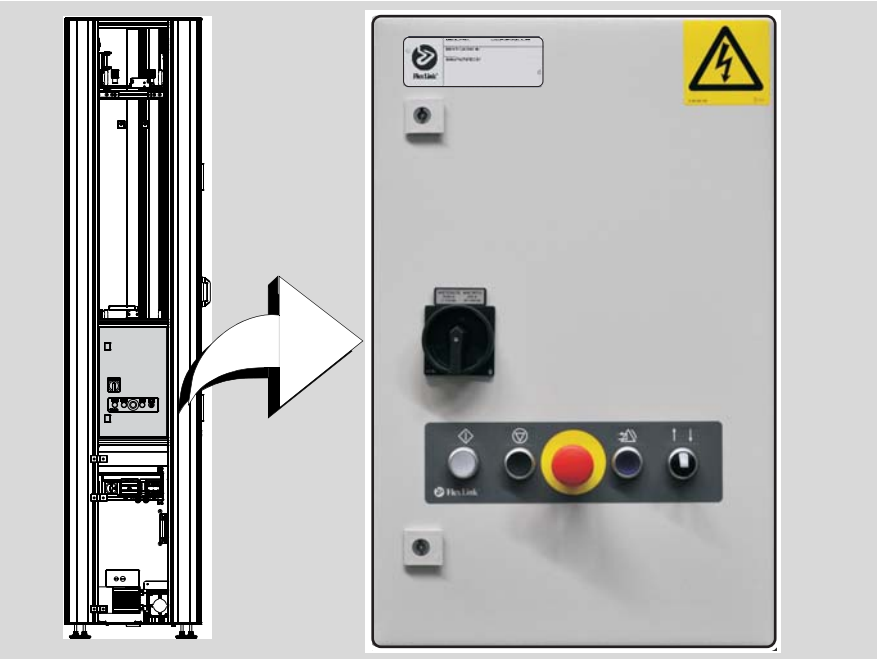


Figure 8 Electrical cabinet

The through-puts in the bottom of box is according to module version, see electrical drawings. In the bottom is also the fast-connectors for fieldbus positioned.

Inside the electrical cabinet is the module safety system, fieldbus communication interface, circuit breakers, etcetera.

The safety system design depends on version. Profibus and DeviceNet versions include a safety relay to which the door is connected. Profisafe version do not contain any safety relay. Common for all versions is that motor supply voltage is disconnected at emergency stop through main contactors.

In the bottom of cabinet is an earth rail for cables. There is also one earth terminal for each terminal group.

The fieldbus cable is connected by fast connectors as mentioned above, see electrical documentation. If the module contains several communication interfaces, such as the advanced versions with field distributor, there is still only one connection point for fieldbus.

Outside and below the electrical cabinet is the connection point for equipotential bonding, see electrical documentation.

Warning: *The voltage is 400 V AC (or 480 V AC).*

Warning: *The voltage in the field distributor is 400 V. There is risk for serious injury due to electrocution. Immediately seek the care of a physician if an accident occurs. After the main switch of field distributor is turned off, voltage is still high in the field distributor.*

Warning: *Check that the electrical cabinet is closed and locked after working in the electrical cabinet.*

Warning: *Never bypass the safety system.*

3.2.1.2 Field distributor

The field distributor, used in advanced versions, is the communication interface of the adjustable speed drive for the vertical motion.

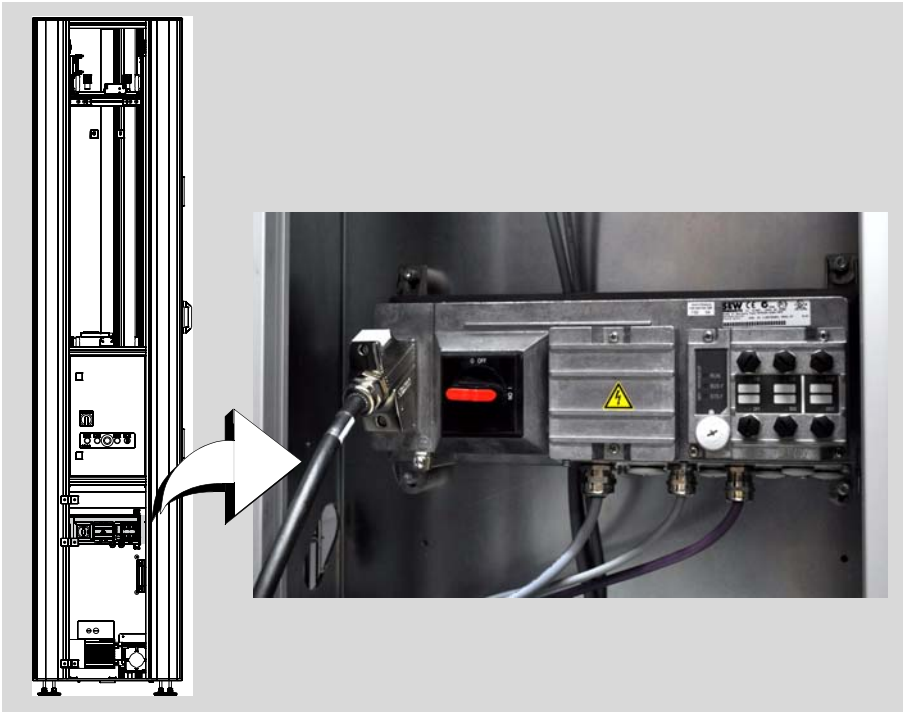


Figure 9 Field distributor

3.2.1.3 Motor

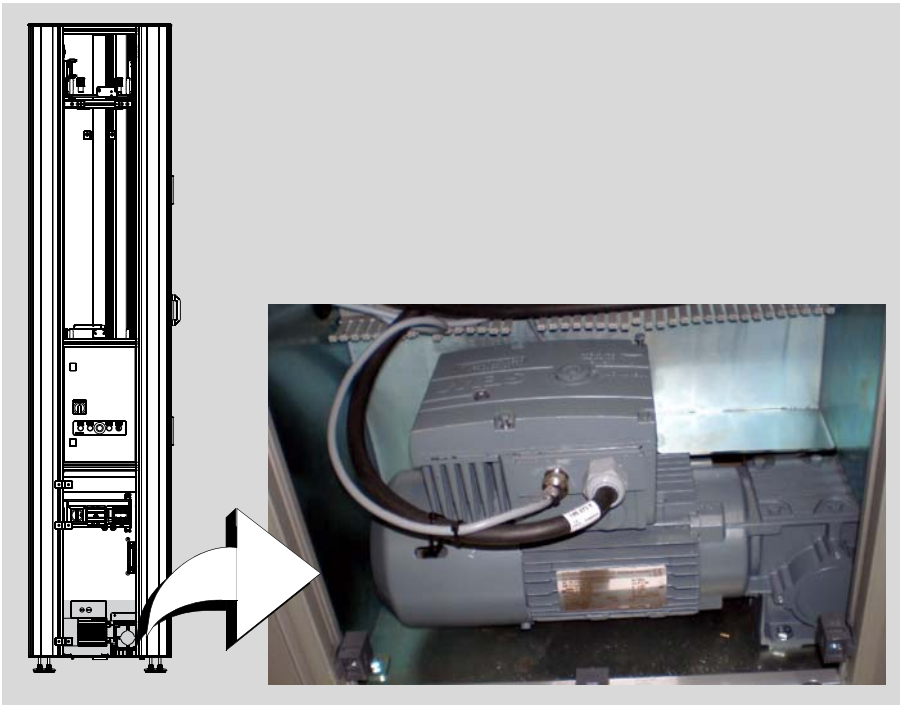


Figure 10 Adjustable speed drive (motor with frequency inverter)

An adjustable speed drive powers the elevator's lifting motion, vertical motion, via roller chain/gears. The drive package is mounted in the lower part of the elevator.

3.2.1.4 Guards

The elevator consists or moving parts that can cause injury. Feed-in and discharge are covered by stationary and openable guards. The elevator may not be operated if the door switch is inoperable or if a stationary guard is improperly fitted.

Stationary guards

The elevator is protected by stationary guards of clear PC and aluminium. These guards must be correctly fitted when the elevator is in service. The stationary guards must be in place when the power is on.

Openable guard

The elevator is equipped with a service door for accessing the interior. This door is equipped with a door switch. If the door is opened during operation, power to the elevator motors is disconnected (stop category 0 according to EN 60204-1). The door switch is a part of the safety system and may under no circumstances be by passed or in any other way made inoperable. Once the door is closed, the elevator can be reset and started.

Warning: *Stop the elevator before opening the door. Do not open the door for the purpose of stopping the elevator.*

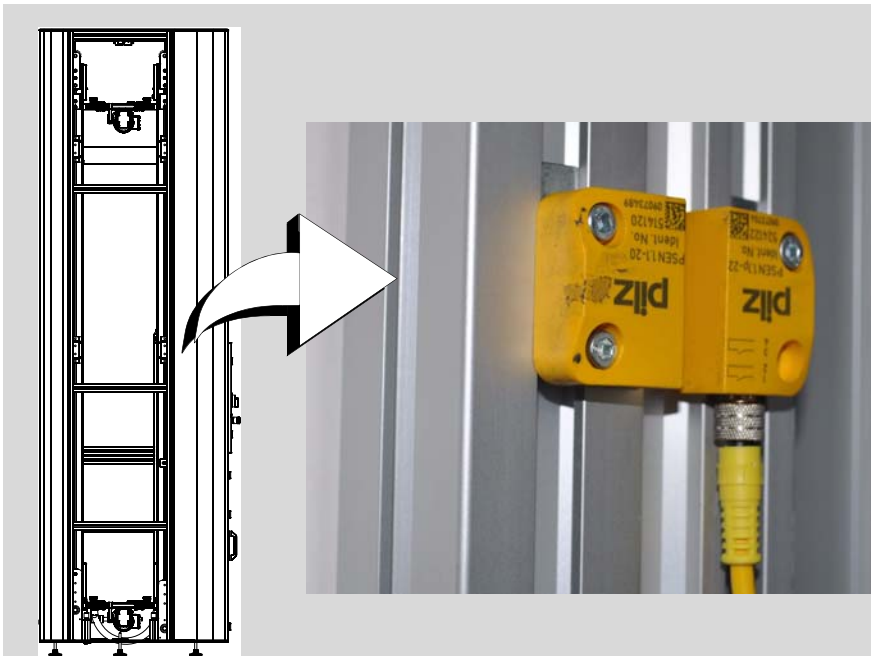


Figure 11 Safety switch, door

Possible conveyor motors placed inside elevator, not part of Elevator module, are not affected by the door switch.

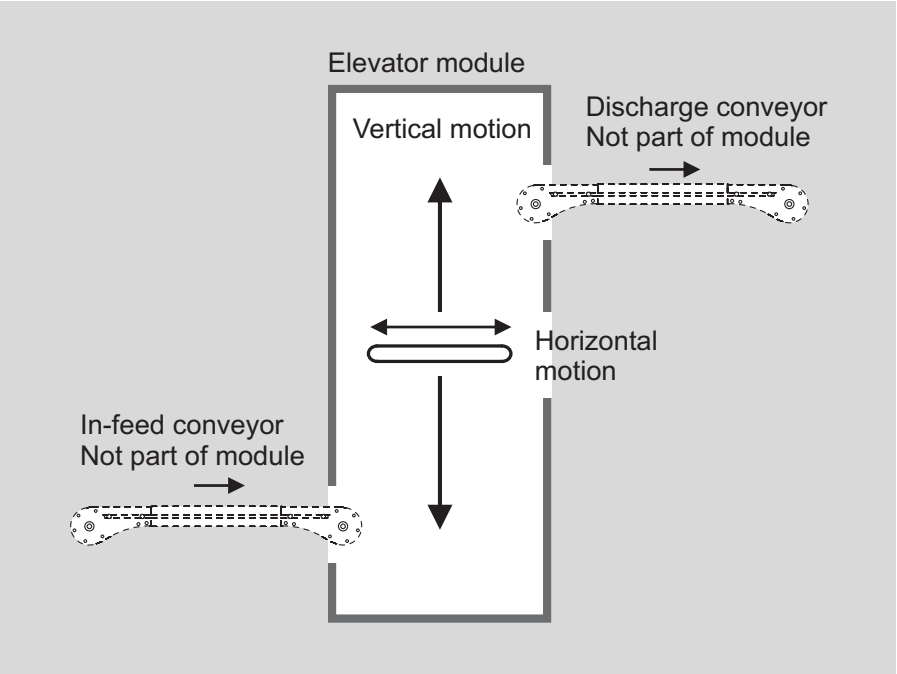


Figure 12 Elevator module

Warning: *Stop the elevator before opening the door. Do not open the door for the purpose of stopping the elevator.*

3.2.1.5 Sensors

3.2.1.5.1 Lift cage

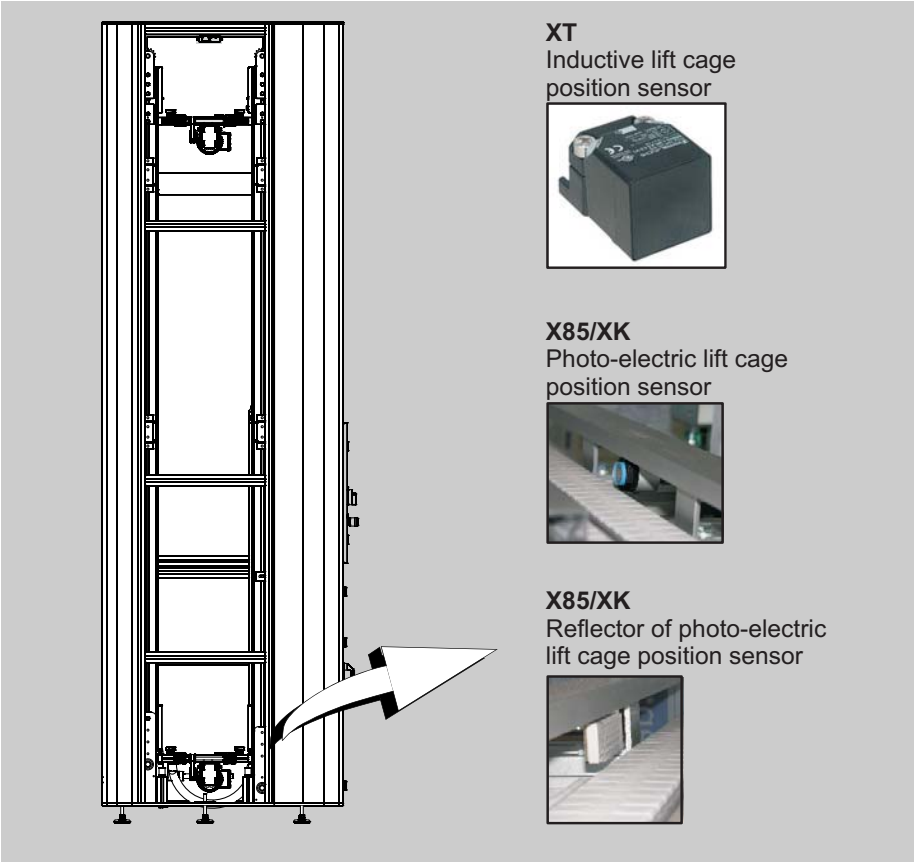


Figure 13 Photo-electric cells

Photo-electric or inductive sensors, depending on version, are used for detecting that product is positioned in the lift cage.

The photo-electric sensor type is retro-reflective, thus the light beam is reflected by a reflector on the opposite side of conveyor back to sensor, making the detection of product less sensitive to colour differences of product.

The stop position of conveyed item, due to sensor position, is such that the conveyed item does not reach to the end of lift cage conveyor.

RTI elevator version

For RTI elevators, photo-electric cells are used, mounted at fixed positions in the elevator frame.

3.2.1.5.2 Vertical motion

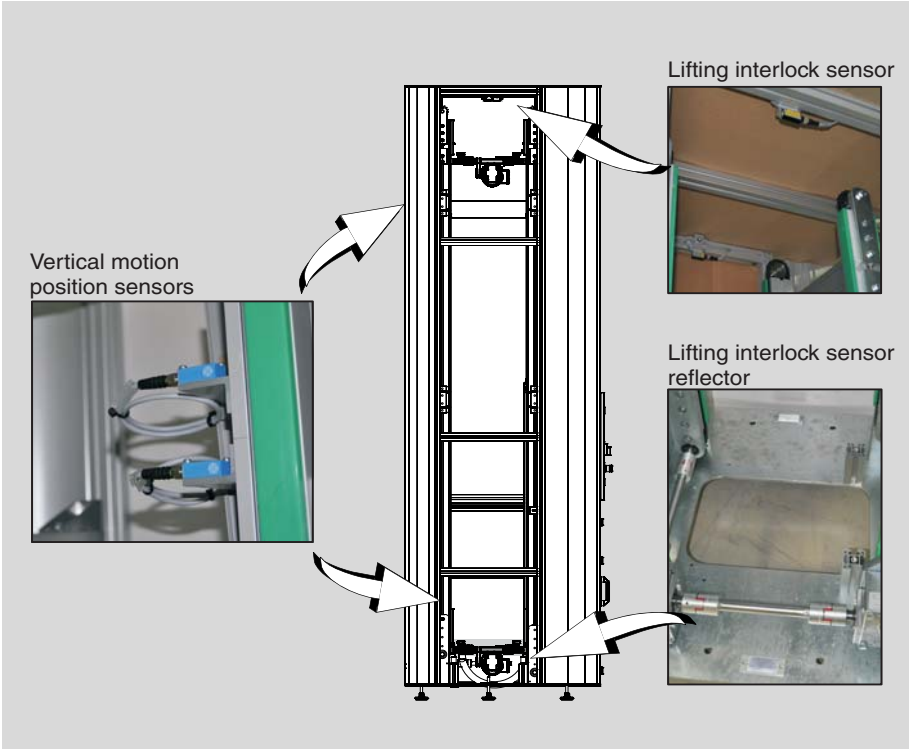


Figure 14 Inductive sensors

Vertical motion sensors

Inductive sensors are used at stop positions and low-speed stretches of the vertical motion.

Interlocking sensors

Retro-reflective photo-electric sensors are mounted in the upper part of frame with reflectors mounted on the bottom plate of elevator. Their purpose is to interlock vertical motion if obstacle is detected.

3.2.1.5.3 Limit switches

This does not apply to RTI units. These should be protected by the application.

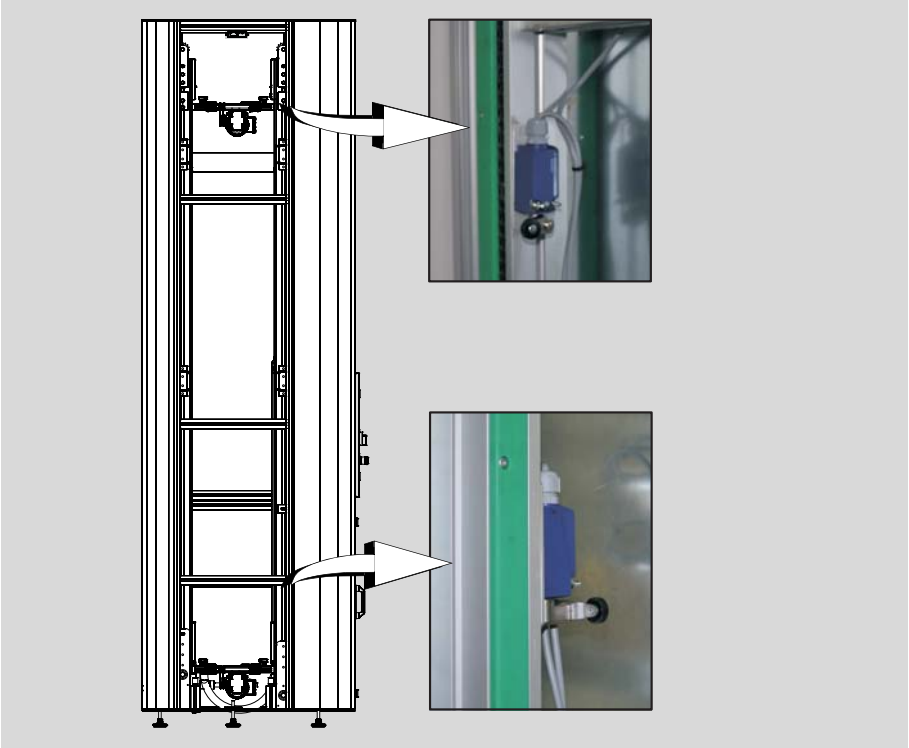


Figure 15 Limit switches

The limit switches are located in the upper and lower parts of the frame and are activated in the event of excessive lifting device travel.

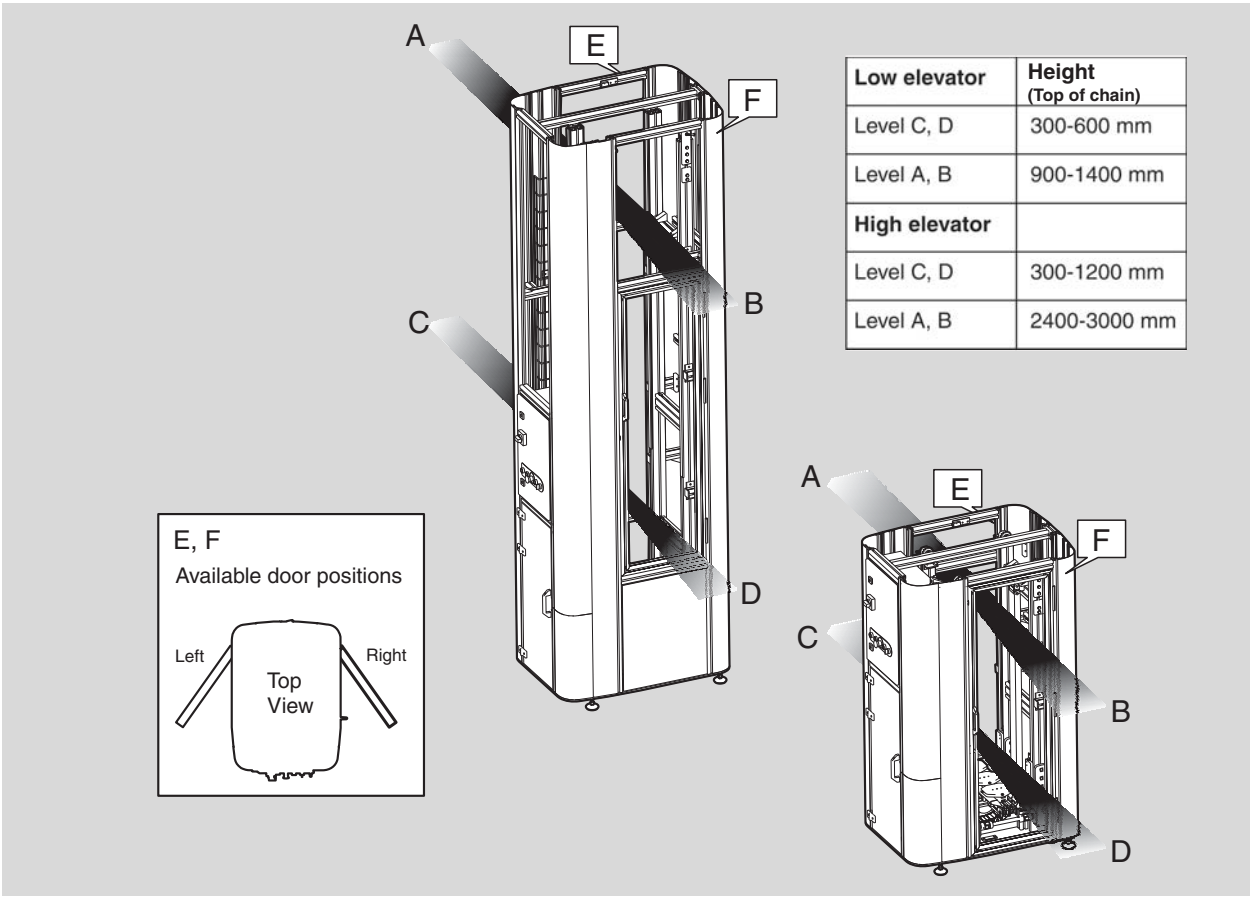
The upper limit switch interlock the vertical motion upwards electrically and vice versa for the lower limit switch. Thus, activating the lower limit switch still allows upward motion.

Mechanical dampers serve as protection after the limit switches.

To assure correct operation of the elevator, ensure that the switches are correctly positioned and are activated in the intended direction of travel.

3.3 Working principle

The purpose of the elevator is to transport products / goods vertically to bridge a difference of height or to function as buffer zone.



Low elevator	Height (Top of chain)
Level C, D	300-600 mm
Level A, B	900-1400 mm
High elevator	
Level C, D	300-1200 mm
Level A, B	2400-3000 mm

Figure 16 Principle sketch elevator

In most cases the Elevator is integrated in a system. The input / output side of the Elevator is determined by the application.

4 Unload the elevator

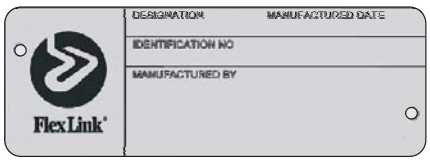
4.1 Preparation

This section describes the steps that are required for unloading the Elevator. It is recommended to make use of the devices described. When using this or another device, this device is expected to be provided with a quality mark.

Note! *The operations concerned are to be carried out calmly in order to be able to carefully monitor any movement of the Elevator.*

Before starting the unloading a good preparation is required. The appropriate devices must be available. Apart from that the first transport check is an important part of the unloading, as in case of damage this should be mentioned on the delivery note in relation to guarantee and the like.

The first transport check after arrival of the Elevator a transport check is to be carried out. The check can be carried out at the moment the Elevator has been unloaded from the container or the truck. The technical specification gives the dimensions to be checked. Is the elevator delivered undamaged and is it the correct Elevator?



Machine serial number type plate

Note! *Any damage is to be mentioned on the delivery note and should immediately be reported to the supplier. This with respect to the guarantee of the machine.*

4.2 Unloading instructions

Before starting unloading, all fastening means (securing belts, screws, etc.) that secure the Elevator unto the means of transport must be removed. Subsequently check whether the transport supports are still connected well to the Elevator. After this the unloading procedure may be started.

4.2.1 Erecting the Elevator See Erecting the Elevator on page 37

When putting upright, just like when moving the Elevator, make sure that the floor is level and clean and has sufficient carrying capacity. At the moment the Elevator is on the correct place it can be put upright. Dependent on the situation the Elevator can be put upright using a hoist, a crane or a forklift truck.

Device(s)

Hoist Crane

Open-end spanner

Note! *Make sure when putting upright there is enough space / height to put the Elevator upright!*

Hoist

- The hoisting device is to be fastened to the top of the Elevator. While hoisting the hoist should be well fixed and may not ride/shift away unexpectedly.
- After having mounted the adjusting feet the Elevator can be put upright. Now the hoisting device can calmly hoist the Elevator in the upright position.

Note! *Be careful that the Elevator does not tip at the moment it almost has been hoisted in the upright position. Make sure there are no persons near the Elevator!*

Note! *Carry out these operations calmly in order to be able to carefully monitor any movement of the Elevator.*

Note! *It is forbidden to walk under the Elevator during putting upright.*

Note! *Make sure that while putting upright there are no unauthorised persons or people that are not supposed to be there near the Elevator.*

Figure 17 Erecting the Elevator

5 Installation and adjustment

This section deals with the operations to have the elevator function well within a (transport) system. First section 1.2 on page 4, in which the provisions to be taken care of are given, should be studied carefully. section 1.3 on page 6 is particularly important for the elevators that are delivered to the end user not fully assembled.

5.1 Provisions to be provided

Make sure before integrating that the surroundings are clean and free from obstacles and the mounting surface is clean and level. Besides, it should be repeated that the operations are to be carried out in a calm and controlled way!

After having placed the elevator in the correct position, the elevator is to be fastened to the mounting surface by using the holes in the adjusting feet.

The elevator has an input and output and these are to be connected to the connecting tracks. Correct adjustment determines the quality of the system.

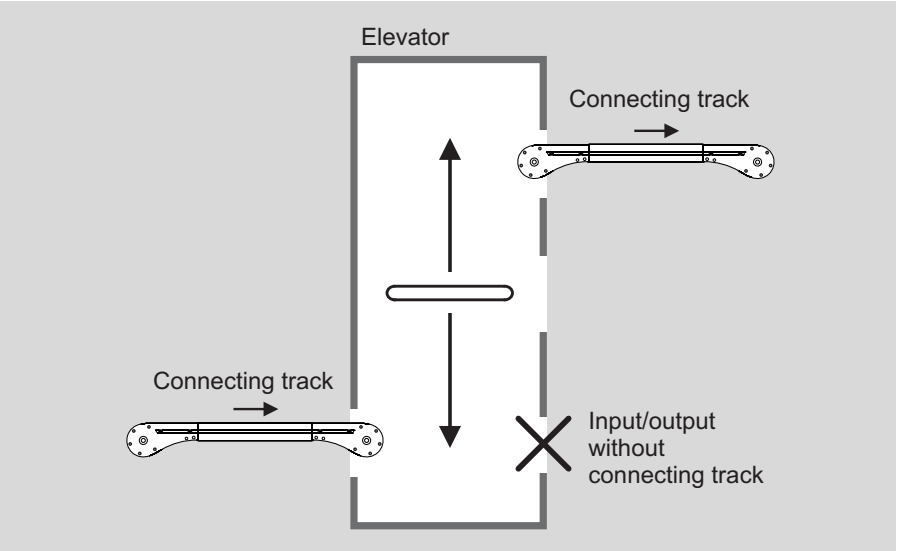


Figure 18 In feed and discharge

5.2 Mechanical assembly

5.2.1 Integration in a (transport) system

The elevator is a machine that is integrated in a system of conveyors. This means that an input and output are to be connected to it. If the elevator is to be fitted into an existing situation, this usually gives more problems than in a completely new situation. In both cases one should aim at optimum functioning.

5.2.2 Floor construction

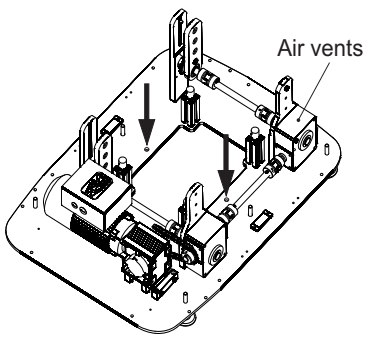
Below a number of items are given which should be paid attention to during integrating a elevator as floor construction.

Tools

Opend end spanner

Ring spanner

Plastic hammer



- Before placing the elevator first make sure that it is placed on the right place and at the right height. For setting the correct height the adjusting feet mounted under the elevator can be used.
- Now that the correct height has been established, the connecting tracks at the lower and upper ends of the elevator can be adjusted. A special sliding bridge or roller bridge may be needed for a safe transfer of products.
- After the elevator has been well integrated in the system, the elevator can be attached to the floor surface. This can be done by anchoring the adjusting feet firmly to the floor or/and connect through the holes shown in the picture.
- At installation, dismount transport protections and replace them with air vents.
  For more information, see the separate manual from gear box manufacture.

NB: *The quality of integration in the system is coresponsible for the good functioning of the elevator. Therefore make sure this is done properly!*

5.2.3 Validation

No.	Component	Remark	Checked
1.	Lower end	Has the lower end the correct height. For the correct height we refer to the technical specification.	Yes / No
2.	Upper end	Has the upper end the correct height. For the correct height we refer to the technical specification.	Yes / No
3.	Elevator	Is there enough space around the elevator to allow working on it.	Yes / No
4.	Fastening / foundation	Has the elevator been fastened well so that the elevator is standing steadily and does not move to the left or to the right.	Yes / No

5.3 Electrical installation and controls

5.3.1 Electrical installation

During this phase all necessary cabling is connected to elevator and application code software for controlling the elevator is downloaded to the line controller (IPC/PLC) as well as the fieldbus hardware configuration.

Reference to the electrical documentation for the version in question.

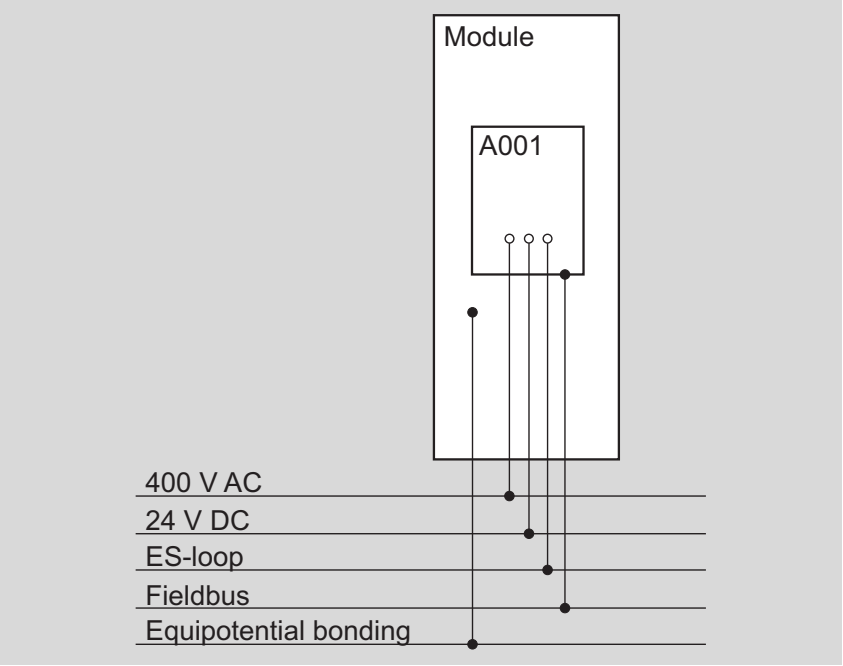


Figure 19 Cabling example

Cabling:

- Power supply
- Fieldbus
- Safety
- Equipotential bonding

5.3.2 Validation

The purpose of the validation phase is to prepare the elevator for test run.

The validation is performed with empty elevator. No products in elevator.

Reference to electrical documentation.

Action	Remark
Power on	- Motor supply (Version dependent. 50 Hz: 400 V AC, 60 Hz: 480 V AC) - 24 V DC
Voltage check	Check equipotential bonding. Check voltages. Turn elevator control box circuit breakers on.
Safety check	Check that safety system is working properly. - Service door can be opened and cause motor power supply disconnection. Closing the door enables safety reset. - Emergency switch activation cause motor power supply disconnection. Deactivating the switch enables safety reset. Where disconnections are made is version dependent.
Manual sensor I/O-check	Important: Service door must be open preventing motions. Make sure all sensor signals reach the communication interface in control box. The sensors are activated manually. (Inductive sensors are activated with metal.) Limit switches are excluded.
Maneuver interface check	Important: Service door must be open preventing motions. Make sure all push button signals reach the communication interface in control box.

5.4 Test run

The purpose is to check functionality. Testing is performed by running manually with an empty elevator without products.

Adjustment for making the lift cage stop exactly in horizontal line with connecting tracks is performed in a later stage.

Action	Remark	
Manual mode check	Elevator can be set to manual mode enabling vertical motion up/down.	
Vertical motion and end positions	Run elevator carefully towards end-position. Listen for noise and vibrations. a. Check that elevator is running high-speed outside the low-speed areas. b. Check ramp-down to low speed while inside low-speed areas. c. Check that when stopped in end position, the stop and low speed sensors are still activated.	See Adjustment on page 53
Limit switch check	Disconnect stop position sensors by unscrewing the sensor cable in the sensor end. The elevator will pass the stop sensor. It will probably loose the low speed sensor which may cause it to switch to high speed. Check that limit switch interlocks the corresponding motion direction. Re-connect stop position sensors.	See Limit switches on page 54
Interlocking sensor check	Check that if any of these sensors are activated vertical motion in both directions is interlocked.	See Adjustment on page 53

5.5 Adjustment

5.5.1 Electrical cabinet

The electrical cabinet contains several items which needs correct settings before usage:

- Contactor (for horizontal drive)
- Communication interface

5.5.1.1 Adjustment

For designations of contactor and communication interface see electrical documentation.

Contactor for horizontal drive

The contactor includes motor protection which must be adjusted to the rated current of motor.

Before adjustment make sure the device is not activated.

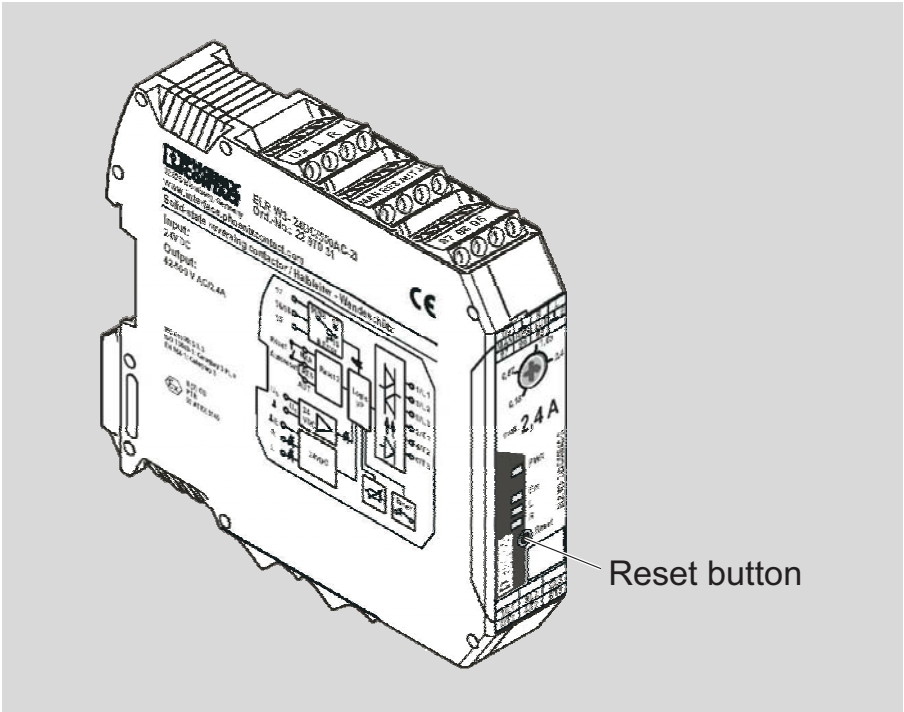


Figure 20 Contactor for horizontal drive

Instruction

1 Activate the reset button for more than 6 s to reach the operating mode "Parameterization" - the green LED PWR flashes once. The LEDs are switched off at intervals of 2 s for 0.3 s in the operating mode "Parameterization" to differentiate from other operating conditions.

2 Set the rated current of the drive with the 240° potentiometer, for value see below. The four LEDs display the set current.

   Current setting = 0.41 A: PWR=0, ERR=0, L=1, R=0.

3 Store the value by pressing the reset button again (retentive area of the memory).

4 Actuate the Reset key for more than 2 s (and less than 6 s) to display the set current for 3 s.

Communication interface

Integrator responsibility due to situation.

5.5.2 Field distributor

Apply to advanced elevator versions. Reference to electrical document.

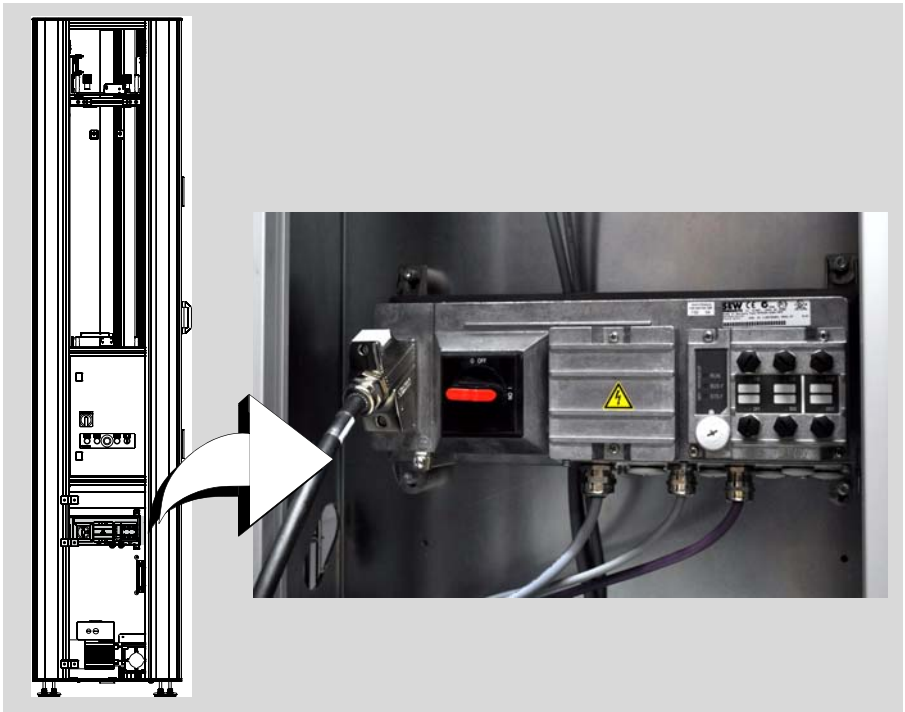


Figure 21 Field distributor

5.5.2.1 Adjustments

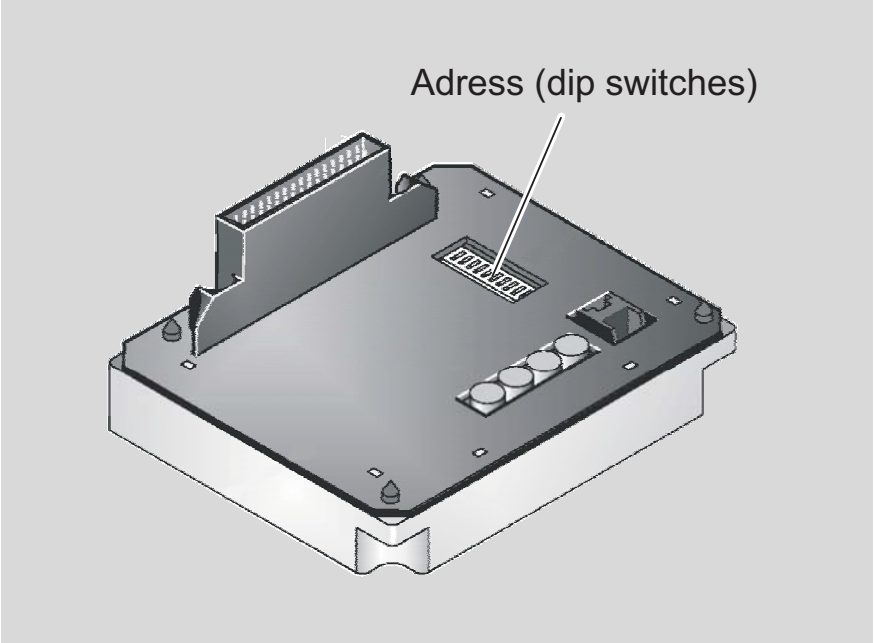


Figure 22 Terminal box cover

- Switch off power supply prior to removing/installing the terminal-box cover.
- Ensure before startup that all protective covers have been fitted correctly.

Necessary settings:

- Address (dip switches)

For more information see manufacturer manual.

5.5.3 Vertical motion drive

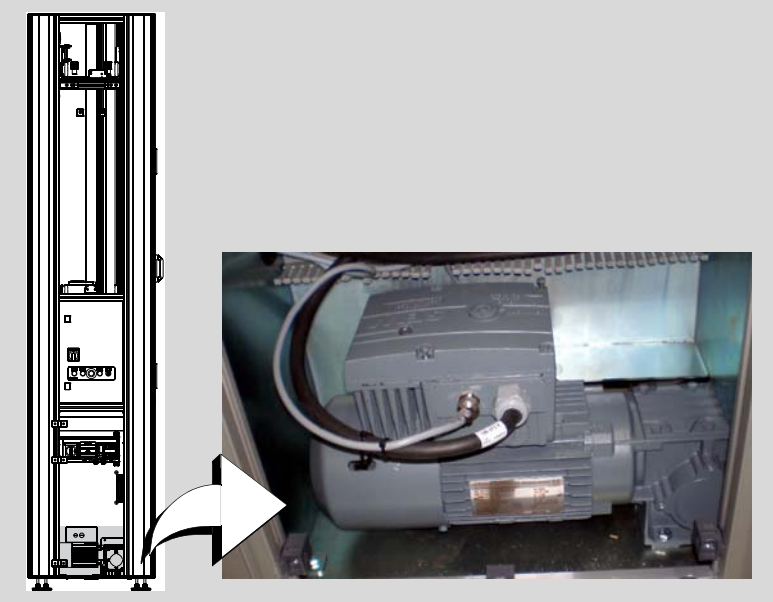


Figure 23 Adjustable speed drive (motor with frequency inverter)

The motor is frequency controlled with the frequency converter integrated on the motor.

The converter requires settings according to application.

The drive powers the elevator's lifting motion, via roller chain/gears. The drive package is mounted in the lower part of the elevator.

5.5.3.1 Adjustments

Reference to electrical documentation.

Reference to manufacturer manual.

Settings are made on the inside of frequency converter top cover.

- Switch off power supply prior to removing/installing the terminal-box cover.
- Ensure before startup that all protective covers have been fitted correctly.

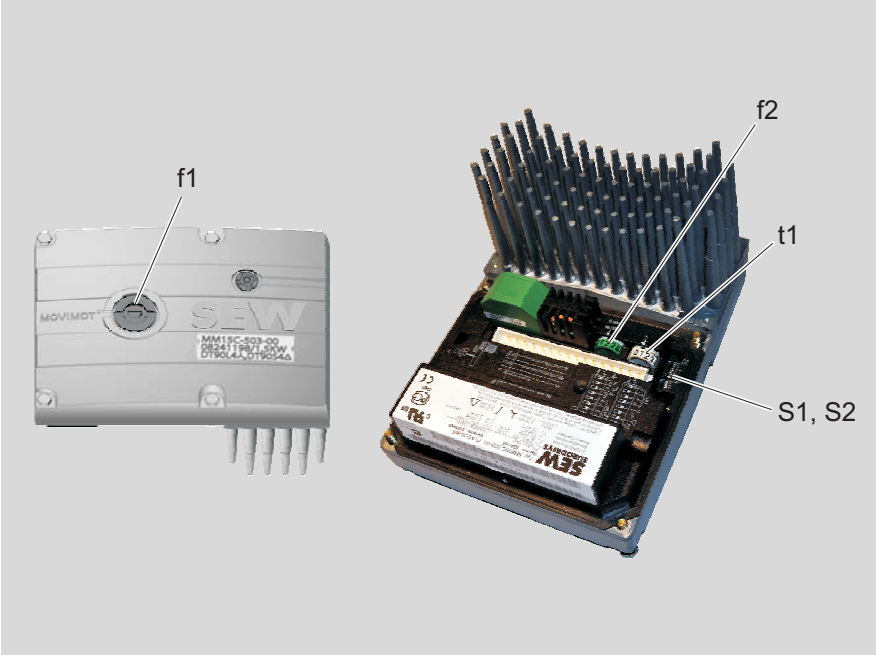


Figure 24 Frequency controlled

Standard elevator settings

Potentiometers:

- Nominal speed (f1)
- Low speed (f2)
- Acceleration (t1)
- Dip switch (S1, S2)
- Address and PWM frequency

Advanced elevator settings

Potentiometers:

- Nominal speed (f1)
- Acceleration (f2)
- Dip switch (S1, S2)
- Address and PWM frequency

For more information, see manufacture manual.

Adjustment procedure, See section 7.2.2 on page 61

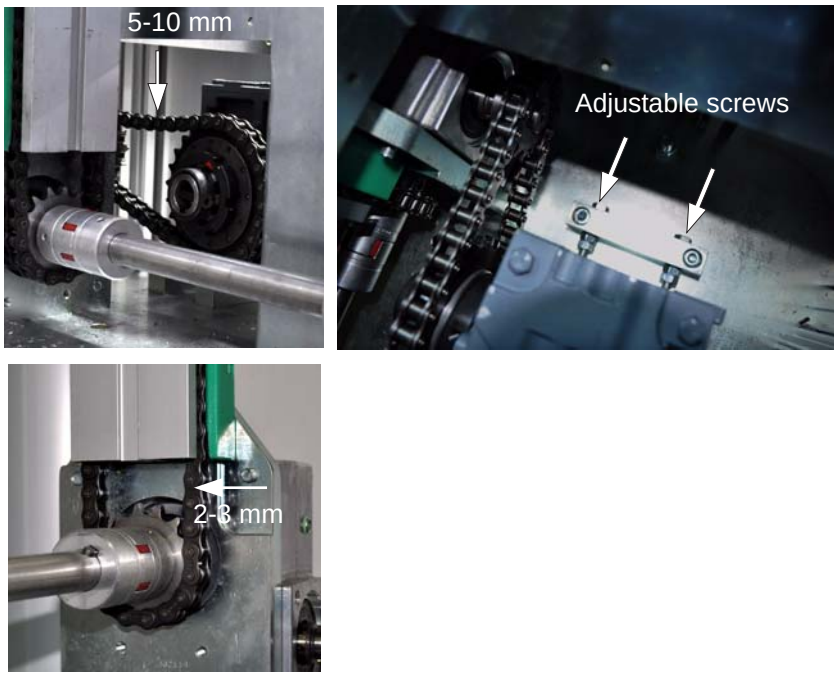


Figure 25 Drive and drift chain adjustment

5.5.4 Connecting tracks

Elevator lift cage conveyor speed see Technical specification on page 15
The optimal speed of the connecting tracks is equal to elevator lift cage conveyor speed as this prevents product twisting and wear of the high friction conveyor plates.

The speed difference may not exceed 15%.

If speed difference is unavoidable, an increasing speed is preferred.

5.5.5 Guards

The elevator consists or moving parts that can cause injury. Feed-in and feed-out are covered by stationary and openable guards. The elevator may not be operated if the door switch is inoperable or if a stationary guard is improperly fitted.

5.5.5.1 Stationary guards

The elevator is protected by stationary guards of clear PC and aluminium. These guards must be correctly fitted when the elevator is in service. The stationary guards must be in place when the power is on.

5.5.5.2 Openable guard

The elevator is equipped with a service door for accessing the interior. This door is equipped with a door switch.

5.5.5.3 Adjustment

To be positioned in line according to figure below.

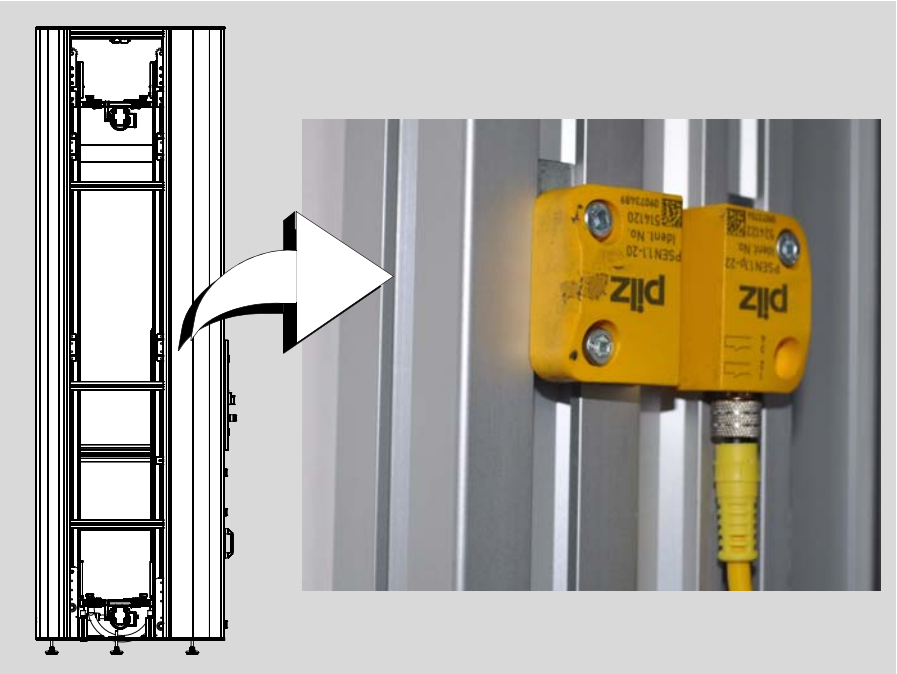


Figure 26 Safety switch, door

Warning: *Stop the elevator before opening the door. Do not open the door for the purpose of stopping the elevator.*

5.5.6 Sensors

5.5.6.1 Lift cage

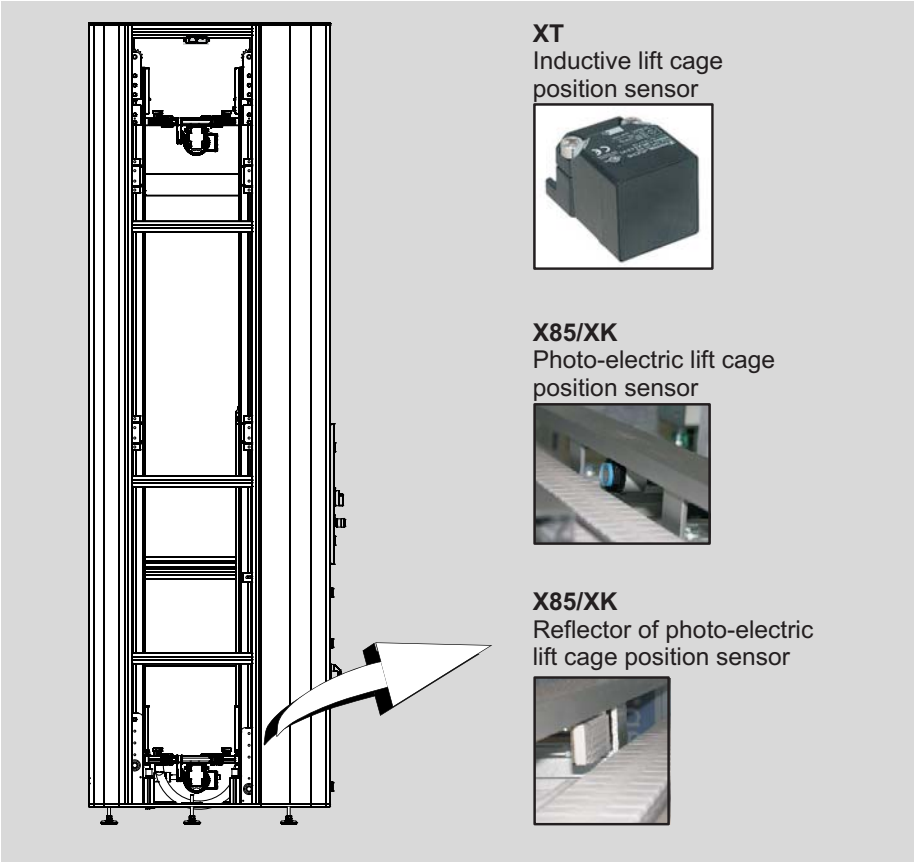


Figure 27 Photo-electric cells

Photo-electric or inductive sensors, depending on version, are used for detecting that product is positioned in the lift cage.

The photo-electric sensor type is retro-reflective, thus the light beam is reflected by a reflector on the opposite side of conveyor back to sensor, making the detection of product less sensitive to colour differences of product.

The stop position of conveyed item, due to sensor position, is such that the conveyed item does not reach to the end of lift cage conveyor.

5.5.6.1.1 Adjustments

Photo-electric sensor
Adjust the sensor angle towards the reflector.
Adjust the reflector angle making the light beam from sensor hit the reflector 90 degrees against reflective surface.

The LED of sensor confirms reflection by reflector with not obstacles between. Any obstacle between should cause the LED to fall.

If anything blocks the signal between the sensor and reflector, the LED indicator shall turn off.

Inductive sensor
Adjust the vertical distance between sensor and sensor flag on pallet.

5.5.6.2 Vertical motion

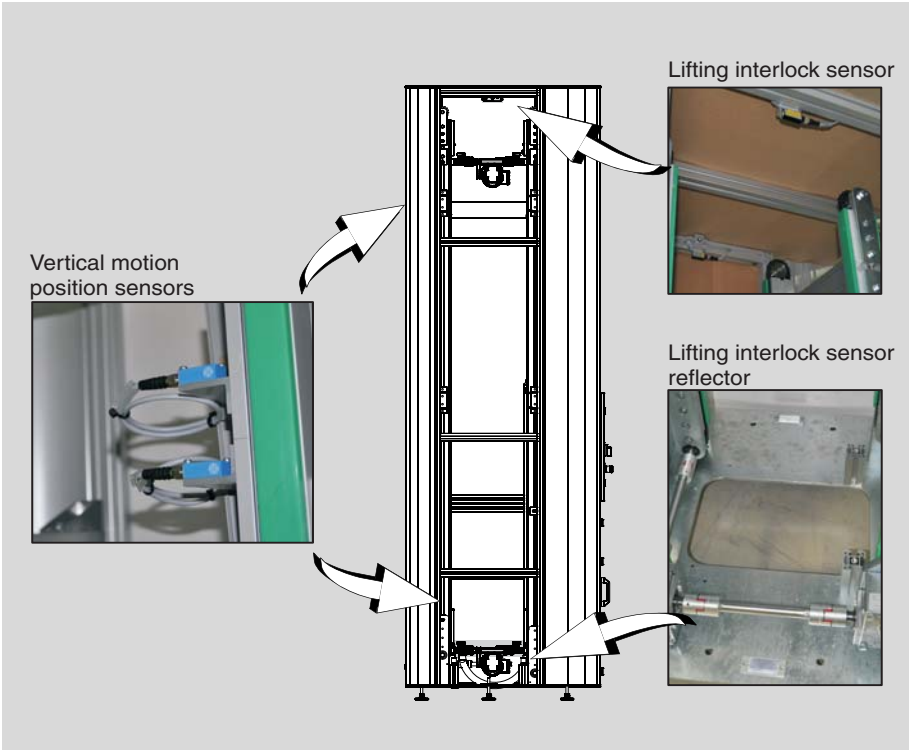


Figure 28 Inductive sensors

Inductive sensors are used at stop positions and low-speed stretches of the vertical motion.

Retro-reflective photo-electric sensors are mounted in the upper part of frame with reflectors mounted on the bottom plate of elevator. Their purpose is to interlock vertical motion if obstacle is detected.

5.5.6.2.1 Adjustment

Vertical motion sensors

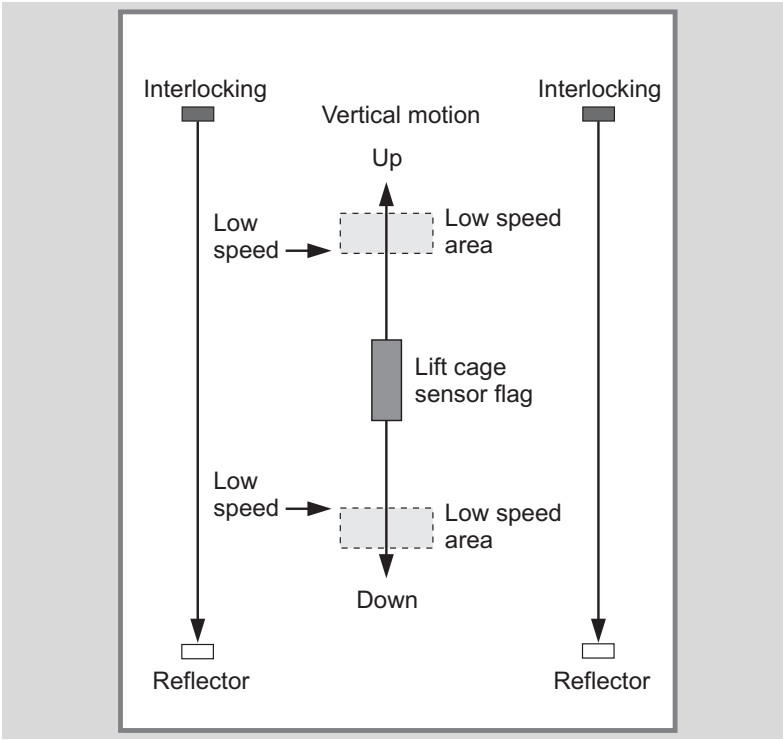


Figure 29 Vertical motion sensors

The low speed and stop sensors for up and down must be adjusted in relation to motion speed and flag length.

The distance between low speed sensor and corresponding stop sensor is affected by:

- Flag length. Distance between sensors may not exceed flag length on lift cage. If not fulfilled, the lift cage will loose the low speed sensor, thus accelerating to high speed the moments before reaching stop sensor.
- Motion speed/ramp time.

1 The combination of high speed, ramp time and distance between sensors should be such that the lift cage successfully ramps down to low speed before reaching stop sensor.

2 The combination of low speed and ramp time should be such that the lift cage successfully ramps down to stop on the stop sensor when the stop sensor is activated.

Interlocking sensors

The light beam of the photo-electric sensor should hit the reflector. The lift cage should not act as obstacle at any height.

5.5.6.2.2 Adjustment

The sensor is adjusted so that the XT conveyers stops within the area, limited by the two photo-electric laser cells (WL9L).

5.5.6.3 Limit switches

This does not apply to RTI units. These should be protected by the application.

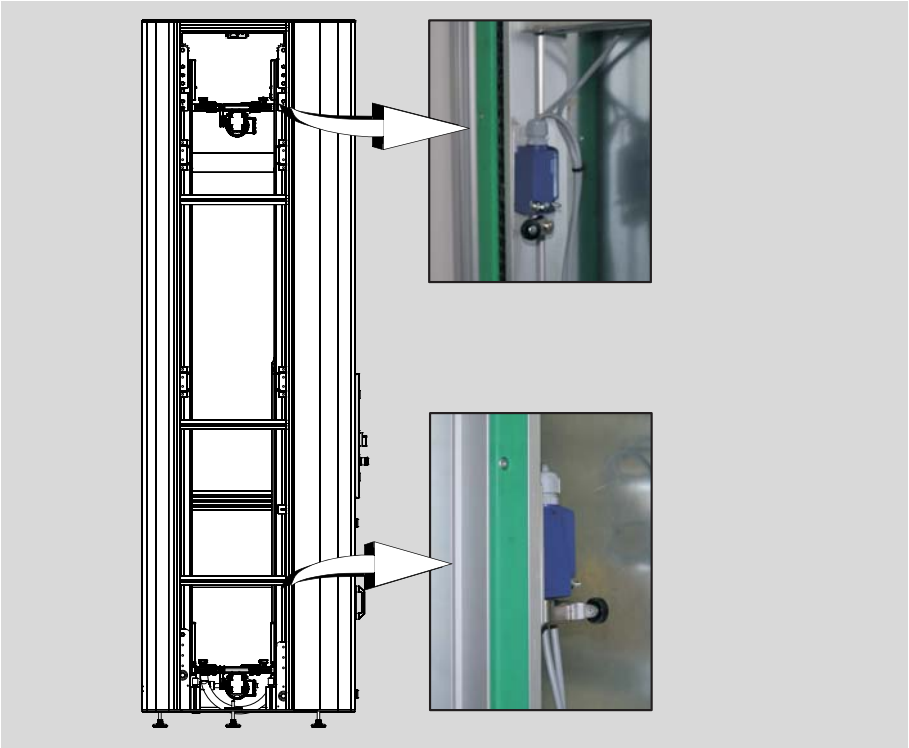


Figure 30 Limit switches

The limit switches are located in the upper and lower parts of the frame and are activated in the event of excessive lifting device travel.

Mechanical dampers serve as protection after the limit switches.

To assure correct operation of the elevator, ensure that the switches are correctly positioned and are activated in the intended direction of travel.

5.5.6.3.1 Adjustment

The limit switches are positioned so that they are activated after the upper and lower feed-in and discharge positions and before the dampers (see the figure 30).

5.6 Check / Shadow run

In this paragraph the elevator will be checked in a semiloaded condition with all safety provisions activated. If during the shadow run irregular sounds or other anomalies occur or if the elevator does not meet the specification or if with a test of ALL products some of these do not fit on the track or get stuck or slip, the machine may not be tested further and advice should be obtained.

Carry out the check

First the elevator is to be put into operation in order to carry out the checks required. The elevator will run with semiload while the specified products are transported through the elevator. If no unusual situations occur, the check of the elevator and the associated safety provisions can be started.

Check elevator

Below a check table is set up with respect to how the elevator can be checked for a number of items.

Checklist

No.	Check		Remarks
1.	Does excessive noise occur.	Yes / No	This may occur because the tension of the chain is not correct, lifting device are loose or a sprocket wheel is not aligned well (see Troubleshooting on page 63. ‘troubleshooting list’).
2.	There is a ticking sound.	Yes / No	This may occur because the tension of the chain is not correct, lifting device are loose or a sprocket wheel is not aligned well (see Troubleshooting on page 63. ‘troubleshooting list’).
3.	Are the lifting device strongly moving at any place in the elevator.	Yes / No	This may occur as there are some loose lifting device (see Troubleshooting on page 63. ‘troubleshooting list’)
4.	Are lifting device touching the frame, the guide, the guard or anything else.	Yes / No	Adjust the lifting device.
5.	Do all products fit on the track.	Yes / No	Check in the technical specification whether the product dimensions are correct.

6.	Are there any products that do not run over the transitions uninterruptedly.	Yes / No	Check the setting of the transition distance or the transition roller. See section 5.2.2 on page 39 ‘integration elevator’.
7.	Is the product correctly supplied / discharged at the input / output track.	Yes / No	The system designer has determined this and will have guidelines with respect to this and know how to adjust an incorrect output.
8.	Is the product properly transported through the elevator.	Yes / No	The product may not move on the track. If so, contact the supplier
9.	Can any irregularities be found in the chain guide.	Yes / No	The lifting device may not get stuck anywhere or find resistance, otherwise this is to be reworked or improved

6 Instructions for use

6.1 Handling

The control box contains pushbuttons and indications (lamps) to start/stop/jog/alarm och to reset alarms. Pictograms are used for describing purpose of pushbuttons and indications; Start, Stop, Reset, Jog up/down.

Pushbutton and lamp overview

"Start" is used for starting the module
" Stop" is used for stopping the module normally. The elevator can be stopped normally in two ways, quickly or controlled. A quick stop is executed when the stop-button is activated more than one time per second. A quick stop will cause the elevator to stop immediately (as quick as possible). A controlled stop is executed if the stop-button is activated once per second and cause the elevator to finish the motions in progress before it stops.
"Alarm reset" is used for resetting alarms.
"Jog up/down" is used for manually adjusting the lift cage's vertical position.

Start procedure

Before the elevator can be started all alarms must be reset. Press *"Start"* to start. The *"Start"*-indication will start flashing slowly (1 Hz) a certain time, ca 2 seconds, before the flash turns into steady light. At fixed light the elevator is started and in production.

Production

When the elevator is in production it receives products from connecting tracks, elevates to correct vertical level, sends the product to receiving conveyor and returns to home position.

Stop procedure

Quick stop instruction: Press several times during one second. The elevator will stop immediately/quickly. It will not finish motions in progress.
Controlled stop instruction: Press once per second. The elevator will finish ongoing motions before stopping. While stopping, the *"Start"*-indication flash quickly (2 Hz). When the elevator is stopped the *"Start"*-indication is off.

Emergency stop

Emergency stop must not be used for normal stop. It should be used in case of emergency. Emergency stopping may cause the whole line to emergency stop. An emergency stop of the elevator disconnect parts of the electric power. A certain amount of manual labour may be required to get the elevator back into normal run.

Opening door as stop

The door must not be used for normal stop. It should be used in case of emergency or when the elevator already is normally stopped. Opening the door during production will have the same effect on elevator as an emergency stop. See above.

Alarm

During normal state the *"Reset"* -indication has steady light. At the occasion of alarm the indication will start flashing until alarm is reset. Press *"Reset"* in order to reset alarm. The flashing turns into steady light if alarms are reset.

6.2 Manual operation

The elevator's vertical motion can be manually adjusted in stopped state. Alarms must be reset. Stop the elevator, wait until it is stopped and adjust the lift cage's vertical position up/down using the 3-position switch. The motion is interlocked to avoid running past the up-and down-sensors. If the elevator is run upwards it will stop automatically when the up-sensor is activated, which is an advantage when verifying an adjusted sensor-position, checking that lift cage and adjacent conveyor are in level thus making the transition smooth. The motion downwards is not affected by the up-sensor. Occasionally it is necessary to run past the up-and down-sensors, for example at a crash-situation. In order to realize a run past the up-and down-sensors keep *"Stop"*-button pressed.

Manual operation, upward direction: Turn the switch to the left.
Manual operation, downward direction: Turn the switch to the right.
To return to operation in automatic mode: Leave the switch in neutral position and press *"Start"*-button.

7 Technical maintenance

Technical maintenance is an important part of this manual. Good maintenance will lead to cost reduction, because defects can be timely recognised and solved. This section starts with a troubleshooting list, subsequently a maintenance schedule is set up in section 7.2 on page 61 describes different maintenance activities.

During carrying out any activities on the elevator make sure that the main switch has been switched off, so that there is no voltage on the machine.

7.1 Check and control procedures

7.1.1 Daily maintenance

- Check for abnormal sound/heat
- Check for dust and particles (especially on sensors)

7.1.2 Monthly maintenance

- Check function of the emergency stop device.
- Check chain tension and lubrication.
- Check the roller chain guides.
- Check drive chain for wear and tension.
- Check the bearings.

7.1.3 Maintenance performed every third month

- Check threaded fasteners.
- Check that the elevator is running smoothly.
- Check attachment of the carriers.
- Check that the chain, cog belt and carriers/lifting device are free from damage.

7.2 Maintenance procedures

Disconnect the power when performing maintenance on the elevator.

A clearly visible sign must be displayed, indicating that work is underway.

If you have questions related to maintenance, contact FlexLink.

7.2.1 Cleaning

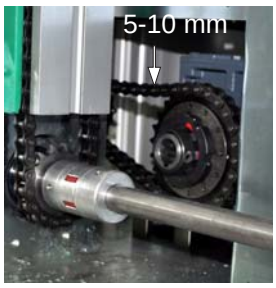
Periodic cleaning keeps the elevator in service and extends its service life. Do not employ high pressure cleaning on drive ends, chains and electrical components. Cleaning behind guards is conducted with a damp cloth or sponge.

7.2.2 Roller chain

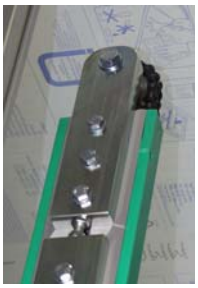
Chains/cog belt replaced as necessary.

After replacement, ensure that the cog belt/chain is correctly tensioned.

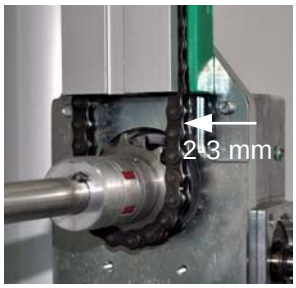
The drive chain is correctly tensioned when it does not flutter during operation.



Chain tensioning is conducted at the top of the elevator; the lower sprocket wheel and drive shaft shall move freely after tensioning



Once the chain is correctly tensioned, the chain should be possible to depress 2–3 mm between the lower sprocket wheel and the chain guide.



See Recommended spare parts on page 67.

7.2.3 Motor

For standard elevators without field distributor the main switch of the cabinet needs to be switched off and locked prior to motor replacement.

- Turn off electrical main switch of module located on control box door.
- Check no voltage in motor.
- Replace motor electrically and mechanically.
- Set all DIP switches and thumb wheels in the cover of the motor according to replaced motor.
- Connect the internal cables on the terminal block according to either the electrical documentation or the replaced motor.

The vertical drive for advanced versions is connected to the field distributor through a fast connector cable to facilitate service.

- Turn off the switch on the field distributor and lock it prior to disconnecting the fast connector to the motor.
- Set all DIP switches and thumb wheels in the cover of the motor so that they are the same positions as the one to be replaced.
- Connect the internal cables on the terminal block according to either the electrical documentation or the replaced motor.
- Plug in the connector and tighten it before turning on the power switch.

To assure trouble-free operation, the motor and gears must be maintained according to manufacturer's user manual.

For more information, see manufacturer manual.

7.2.4 Chain guide profile

The chain guide profile shall be replaced as necessary.

See Recommended spare parts on page 67.

7.3 Troubleshooting

If in doubt concerning the troubleshooting procedures below, contact FlexLink.

Troubleshooting guide		
Symptom	**Cause**	**Corrective action**
The elevator does not start	Peripheral equipment is not connected. Power not on, emergency stop button pressed, door not closed, no signal from peripheral equipment or circuit breaker tripped.	Only personnel with technical knowledge or equivalent sufficient experience may conduct the following actions. • Check circuit-breakers. • Check that peripheral equipment has started. • Check that the power is on. • Check that the emergency stop button is not pressed. • Check that the door switch is activated. • Press *"Reset"*. • Check that peripheral equipment produces signals. • Press *"Start"*.
	No products to discharge	Wait for products to arrive.
	Foreign matter on photo-electric cells	Clean photo-electric cells.
Products fasten/ have fastened	Photo-electric cell faulty, out of position or dirty	Only personnel with technical knowledge or equivalent sufficient experience may perform the following actions. 1 Clean photo-electric cells. 2 Adjust photo-electric cells. 3 Check photo-electric cells' position and operation, and that they are connected.

7.4 Maintenance schedule elevator

The elevator requires relatively little maintenance. Still some maintenance activities are to be carried out. Below there is a maintenance schedule with an interval that is referred to normal operating conditions in an organisation with one shift without excessive accumulation of dirt caused by the products or the environment conditions. The user has to apply an appropriate maintenance schedule dependent on the individual operating conditions.

It is very important for the proper functioning of the elevator that maintenance is done correctly and timely. Improper, insufficient or not documented maintenance will void any warranty.

No.	Execution	Interval	Remark
1.	Clean elevator	Monthly	Regular cleaning depends on product and environment
2.	Check the elevator for broken or missing parts, replace if necessary	Daily	It is the task of the operator to check this daily (see user's manual)
3.	Check the chain tension	Monthly	See section 7.2.2 on page 61
4.	Check the sprocket wheel and alignment. Replace or align if necessary	Monthly	Faulty alignment of the gear may cause permanent wear or make the chain derail and can so cause serious stoppages
5.	Check the guide rails for dents, damages and connection	Monthly	Replace guides
6.	Check the drive for oil leakage and annoying noise	Monthly	Repair or replace if necessary. See the troubleshooting list
7.	Check whether the Motor is fastened well to the elevator. Tighten the bolts if necessary	Monthly	Drive vibrations can make the bolts loosen by vibration, the faulty alignment of the drive can bend the shaft and the chain may derail.
8.	Check the oil level in the gear boxes, fill up if necessary	Monthly	
9.	Change the oil in the Gear box		In accordance with the gear boxes specification of the manufacturer!

Note! *During carrying out any activities on the elevator make sure that the main switch has been switched off, so that there is no voltage on the machine.*

8 Put out of commission

Place the elevator on a pallet or pallets with specially cut supports and with the electrical cabinet upwards. Secure the elevator with straps. The elevator must be well protected and strapped during transport.

At the moment a elevator is put out of operation for some reason, a number of steps are to be taken in order to avoid dangerous situations. This section clearly indicates how one should proceed in a number of cases with respect to uncoupling, dismounting, transport and reuse of materials coming from the elevator

8.1 Disconnect the power sources

Prior to starting the dismounting, the voltage is to be cut off from the power source. First the main switch is to be switched off before the power source can be disconnected.

Danger: *First switch off the main switch before the power source may be disconnected.*

8.2 Disassemble

While dismounting the machine, the regulations for waste processing applicable on the place and at the time of the dismantling are to be complied with. The machine only contains commonly known materials. At the time of assembling the elevator there were processing possibilities for this and no particular risks were known for persons involved in dismantling. The disassembly of the elevator generally requires few operations. The elevator can be disposed of in the same way as it was delivered.

Note! *At the time of assembling the elevator there were processing possibilities for this and no particular risks were known for persons involved in dismantling.*

8.3 Transport

While transporting the elevator a number of safety measures are to be taken.

Use the tools / aids indicated in section. If not, it is assumed that the tool / device used instead is safe and provided with a quality mark.

Carry out the transport operations calmly in order to be able to carefully monitor any movement of the elevator.

Note! *Vertical or horizontal movement depends on the height of the elevator. It is recommended to move a elevator higher than 2400 mm in a horizontal position!*

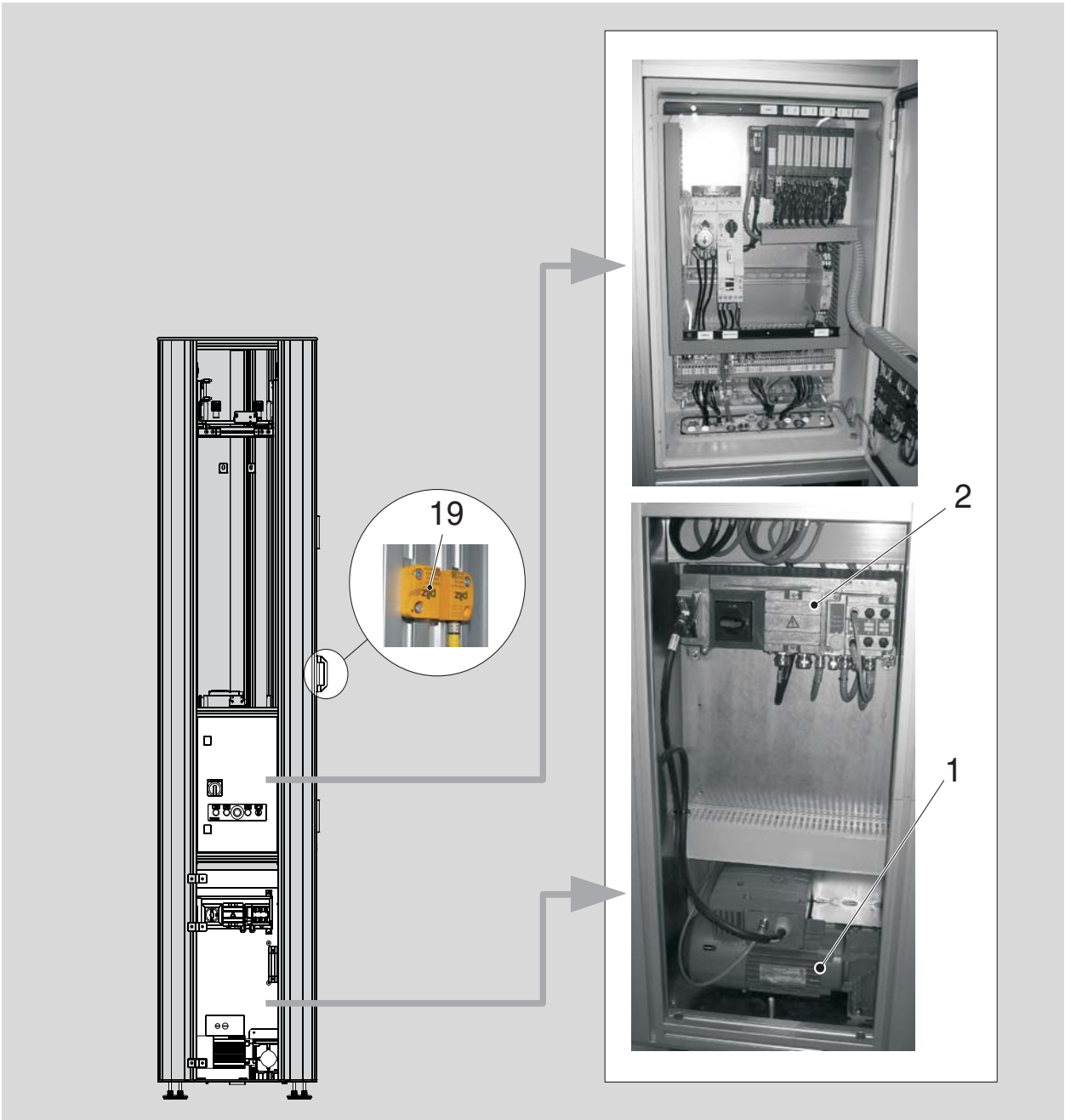
8.4 Reuse

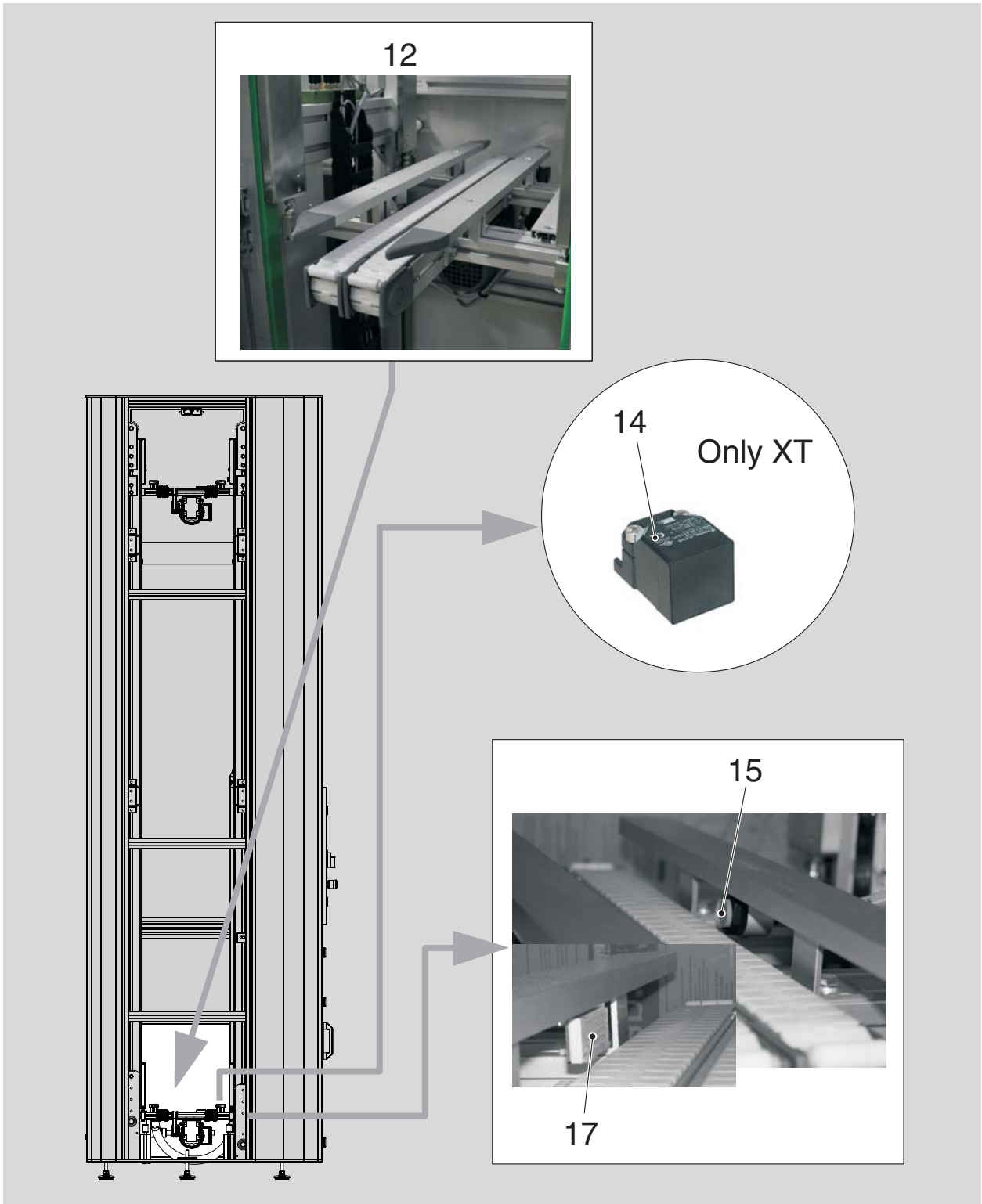
No fixed rules have been made up for reuse of the elevator, because the elevator does not contain any hazardous substances. At the time of assembling the elevator there were processing possibilities for this and no particular risks were known for persons involved in the reuse.

Note! *Putting the elevator out of operation with all operations involved may only be done by technically qualified personnel.*

9 Recommended spare parts

9.1 Mechanical

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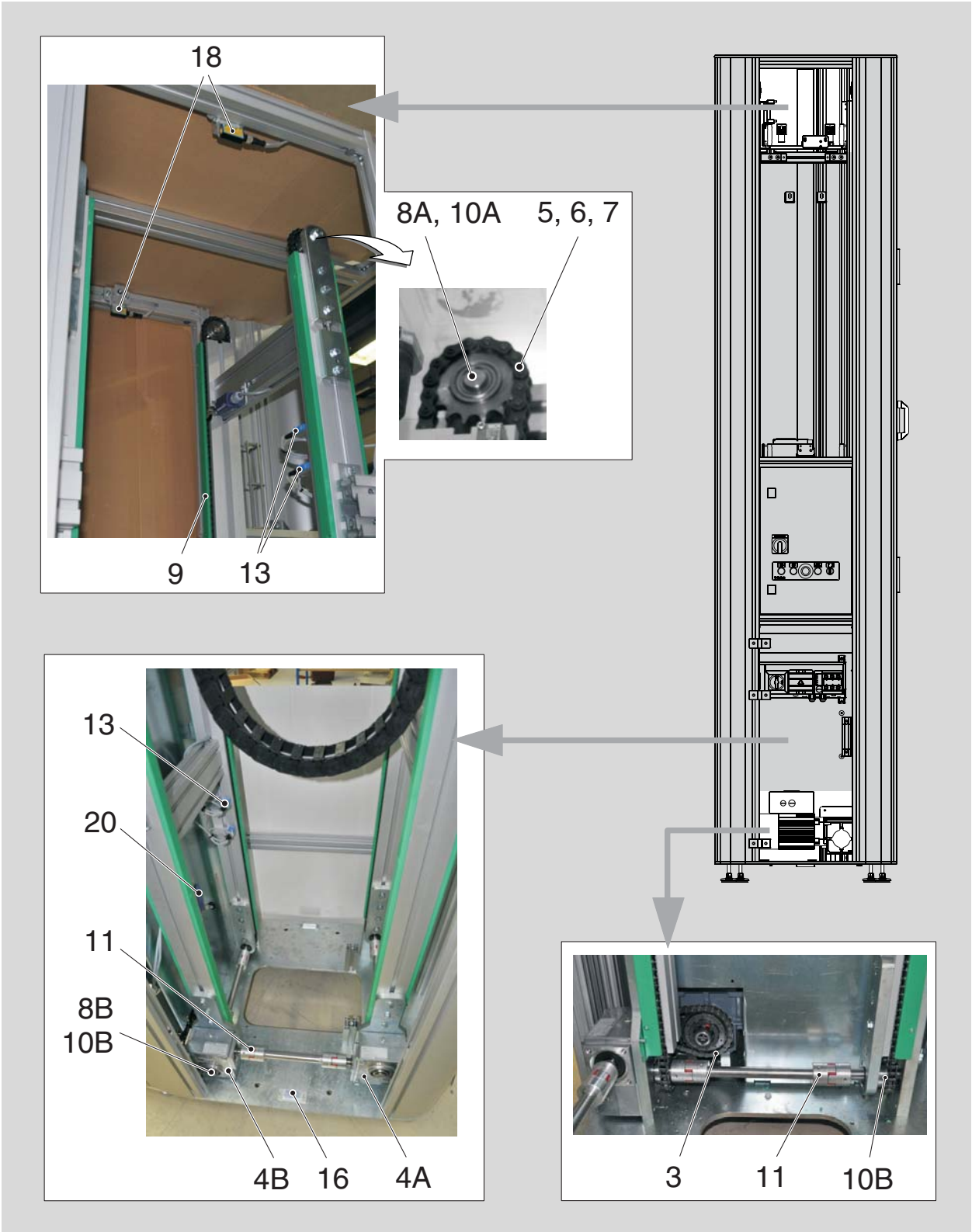
14
Only XT
15
17


18
8A, 10A
5, 6, 7
9
13
13
20
11
8B
10B
4B
16
4A
3
11
10B

Group	Pos	Part	Part no.	Designation	Comments	Supplier
Drive unit	1	**Motors:** XT 640 XT 480-240 XK/X85 XK/X85 RTI	 5111464 5111919 5111545 5111569 5111684	 K37DT80K4MM07BMG W30DT80K4MM05BMG W30DT80K4MM05BMG W30DT80K4MM05BMG K37DT80N4MM07BMG	(All with KPF6 1.5 M) 50 Hz, 54-541 rpm 50 Hz, 27-137 rpm 50 Hz, 43-213 rpm (EU) 60 Hz, 43-259 rpm (US) 50 Hz, 35-176 rpm	SEW
	2	Field distributor	5057737	Z6 PROFIBUS		SEW
	3	Roller chain		08-B1 LAMDA		FlexLink or local supplier
	4A 4B	Gear box	5111425 5111424	BS 50A0U BS 50 A0O- DP		Benzlers
	5	Roller chain	5045327	08-B1		FlexLink or local supplier
	6	Carrier link	5986156	08-B1 Special Contact FlexLink		FlexLink
	7	Chain lock	5045326	08-B1		FlexLink or local supplier
	8A 8B	Bearings	5052978 5058259	6202-2 Z/C3 6204- 2 RSH/C3	Top Bottom	SKF
	9	Guide profile	5986013			FlexLink
	10A 10B	Sprocket wheel	5986022 5986183		Top Bottom	FlexLink or local supplier
	11	Coupling element		ROTEX GS 19 98 SH A GS		FlexLink or local supplier
Lifting device	12	(Applies to XT, X85 and XK variants) For spare mechanical parts, see FlexLink catalogue 5147 or www.flexlink.com.				
Sensors	13	Inductive sensor	5058574	IQ10		SICK
	14	Inductive sensor	5111460	NBN40-L2-E2-V1	Applies only to XT pallets	SICK
	15	Photo-electric cell	5059929	MHL 15-p3336	(Does not apply to XT)	SICK
Sensors	16	Reflector	5110995	PL 30A		SICK
	17	Reflector	5111135			SICK

Group	Pos	Part	Part no.	Designation	Comments	Supplier
	18	Photo-electric laser cell	5111749	WL9L-P430		SICK
Switches						
	19	Door switch	5112509	PSEN 1.1p-22, 504222		Pilz
	20	Limit switch	5059096	XCKP 2118 P16		TELE-MECANIQUE

9.2 Electrical

Spare parts list Kit 5112499				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
W320	Cable	U.I. Lapp	1119 404	4G2.5
W321	Cable	U.I. Lapp	1119 107	7G0.75
W322	Cable	U.I. Lapp	1119 802	2x0.75
W323	Cable	U.I. Lapp	1119 802	2x0.75
W330	Cable	U.I. Lapp	1119 304	4G1.5
W360	Cable	Murr Electronic	7000-08061-2210150	
W430	Cable	Murr Electronic	7000-88001-2200300	
W431	Cable	Murr Electronic	7000-88001-2200300	
W432	Cable	Murr Electronic	7000-88001-2200300	
W433	Cable	Murr Electronic	7000-88001-2200300	
W434	Cable	Murr Electronic	7000-88261-2200300	
W435				
W436	Cable	Murr Electronic	7000-88241-2200300	
W437	Cable	Murr Electronic	7000-88241-2200300	
W438	Cable integrated on unit A438 Split box			
Item 5113374 Specification 3940639				

Spare parts list Control box 5112396				
Des	Name	Manufacturer	Manufacturer item nr	Comment
K360, K361	Contactor	Moeller Electric	276600	DILM7
Q300	Main switch	Moeller Electric	P1-25/V/SVB-SW	
Q320	Miniature circuit breaker	Moeller Electric	278873	C16/3
Q320	Auxiliary contact	Moeller Electric	286054	
K330	Contactor	Phoenix Contact	2297031	
A360	Safety relay	Pilz	PNOZ s3	
A410	Communication interface	Siemens	6ES7151-1AA05-0AB0	
T410	Connector	Siemens	6ES7193-4CD30-0AA0	
	Power supply	Siemens	6ES7138-4CA50-0AB0	
A420, A430, A440	Input module	Siemens	6ES7131-4BF00-0AA0	
	Connector	Siemens	6ES7193-4CB30-0AA0	
A450	Output module	Siemens	6ES7132-4BF00-0AA0	
	Connector	Siemens	6ES7193-4CB30-0AA0	
S420 + (H450)	Pushbutton	Moeller Electric	216922	Illuminated, White
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Lamp	Moeller Electric	216557	White
S421	Pushbutton	Moeller Electric	216590	Black
	Contact element	Moeller Electric	216503	+Fixing adapter, 1NC
S350	Switch	Moeller Electric	216515	Emergency
	Contact element	Moeller Electric	216376	1NO
	Contact element	Moeller Electric	216378	1NC
S360 + (H452)	Pushbutton	Moeller Electric	216931	Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Contact element	Moeller Electric	216376	1NO
	Lamp	Moeller Electric	218057	Blue
S426 + (H451)	Switch	Moeller Electric	216870	3-pos, Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Contact element	Moeller Electric	216376	1NO
	Lamp	Moeller Electric	216557	White

Spare parts list Kit 5112226				
Des	Name	Manufacturer	Manufacturer item nr	Comment
W320	Cable	U.I. Lapp	1119 404	4G2.5
W321	Cable	U.I. Lapp	1119 107	7G0.75
W322	Cable	U.I. Lapp	1119 802	2x0.75
W323	Cable	U.I. Lapp	1119 802	2x0.75
W330	Cable	U.I. Lapp	1119 304	4G1.5
W360	Cable	Murr Electronic	7000-08061-2210150	
W430	Cable	Murr Electronic	7000-88001-2200300	
W431	Cable	Murr Electronic	7000-88001-2200300	
W432	Cable	Murr Electronic	7000-88001-2200300	
W433	Cable	Murr Electronic	7000-88001-2200300	
W434	Cable	Murr Electronic	7000-88261-2200300	
W435	Cable	Murr Electronic	7000-88261-2200300	
W436	Cable	Murr Electronic	7000-88241-2200300	
W437	Cable	Murr Electronic	7000-88241-2200300	
W438	Cable integrated on unit A438 Split box			
Item 5113375 Specification 3940640				

Spare parts list Control box 5112396				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
K360, K361	Contactor	Moeller Electric	276600	DILM7
Q300	Main switch	Moeller Electric	P1-25/V/SVB-SW	
Q320	Miniature circuit breaker	Moeller Electric	278873	C16/3
Q320	Auxiliary contact	Moeller Electric	286054	
K330	Contactor	Phoenix Contact	2297031	
A360	Safety relay	Pilz	PNOZ s3	
A410	Communication interface	Siemens	6ES7151-1AA05-0AB0	
T410	Connector	Siemens	6ES7193-4CD30-0AA0	
	Power supply	Siemens	6ES7138-4CA50-0AB0	
A420, A430, A440	Input module	Siemens	6ES7131-4BF00-0AA0	
	Connector	Siemens	6ES7193-4CB30-0AA0	
A450	Output module	Siemens	6ES7132-4BF00-0AA0	
	Connector	Siemens	6ES7193-4CB30-0AA0	
S420 + (H450)	Pushbutton	Moeller Electric	216922	Illuminated, White
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Lamp	Moeller Electric	216557	White
S421	Pushbutton	Moeller Electric	216590	Black
	Contact element	Moeller Electric	216503	+Fixing adapter, 1NC
S350	Switch	Moeller Electric	216515	Emergency
	Contact element	Moeller Electric	216376	1NO
	Contact element	Moeller Electric	216378	1NC
S360 + (H452)	Pushbutton	Moeller Electric	216931	Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Contact element	Moeller Electric	216376	1NO
	Lamp	Moeller Electric	218057	Blue
S426 + (H451)	Switch	Moeller Electric	216870	3-pos, Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Contact element	Moeller Electric	216376	1NO
	Lamp	Moeller Electric	216557	White

Spare parts list Kit 5112227				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
W320	Cable	U.I. Lapp	1119 404	4G2.5
W321	Cable	U.I. Lapp	1119 107	7G0.75
W322	Cable	U.I. Lapp	1119 802	2x0.75
W323	Cable	U.I. Lapp	1119 802	2x0.75
W330	Cable	U.I. Lapp	1119 304	4G1.5
W360	Cable	Murr Electronic	7000-08061-2210150	
W430	Cable	Murr Electronic	7000-88001-2200300	
W431	Cable	Murr Electronic	7000-88001-2200300	
W432	Cable	Murr Electronic	7000-88001-2200300	
W433	Cable	Murr Electronic	7000-88001-2200300	
W434	Cable	Murr Electronic	7000-88261-2200300	
W435				
W436	Cable	Murr Electronic	7000-88241-2200300	
W437	Cable	Murr Electronic	7000-88241-2200300	
W438	Cable integrated on unit A438 Split box			
Item 5113376 Specification 3940641				

Spare parts list Control box 5112234				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
K470, K471	Contactor	Moeller Electric	276600	DILM7
Q300	Main switch	Moeller Electric	P1-25/V/SVB-SW	
Q320	Miniature circuit breaker	Moeller Electric	278873	C16/3
Q320	Auxiliary contact	Moeller Electric	286054	
K330	Contactor	Phoenix Contact	2297031	
A410	Communication interface	Siemens	6ES7151-1BA02-0AB0	
T410	Connector	Siemens	6ES7193-4CD30-0AA0	
	Power supply	Siemens	6ES7138-4CA50-0AB0	
A420, A430	Input module	Siemens	6ES7131-4BF00-0AA0	
	Connector	Siemens	6ES7193-4CB30-0AA0	
A450	Output module	Siemens	6ES7132-4BF00-0AA0	
	Connector	Siemens	6ES7193-4CB30-0AA0	
T411	Connector	Siemens	6ES7193-4CD30-0AA0	
	Power supply	Siemens	6ES7138-4CA50-0AB0	
A460	Input module	Siemens	6ES7138-4FA04-0AB0	
	Connector	Siemens	6ES7193-4CG30-0AA0	
A470	Output module	Siemens	6ES7138-4FB03-0AB0	
	Connector	Siemens	6ES7193-4CG30-0AA0	
S420 + (H450)	Pushbutton	Moeller Electric	216922	Illuminated, White
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Lamp	Moeller Electric	216557	White
S421	Pushbutton	Moeller Electric	216590	Black
	Contact element	Moeller Electric	216503	+Fixing adapter, 1NC
S460	Switch	Moeller Electric	216515	Emergency
	Contact element	Moeller Electric	216378	1NC
S462 + (H452)	Pushbutton	Moeller Electric	216931	Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Lamp	Moeller Electric	218057	Blue
S426 + (H451)	Switch	Moeller Electric	216870	3-pos, Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Contact element	Moeller Electric	216376	1NO
	Lamp	Moeller Electric	216557	White

Spare parts list Kit 5112229				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
W320	Cable	U.I. Lapp	1119 404	4G2.5
W321	Cable	U.I. Lapp	1119 107	7G0.75
W322	Cable	U.I. Lapp	1119 802	2x0.75
W323	Cable	U.I. Lapp	1119 802	2x0.75
W330	Cable	U.I. Lapp	1119 304	4G1.5
W360	Cable	Murr Electronic	7000-08061-2210150	
W430	Cable	Murr Electronic	7000-88001-2200300	
W431	Cable	Murr Electronic	7000-88001-2200300	
W432	Cable	Murr Electronic	7000-88001-2200300	
W433	Cable	Murr Electronic	7000-88001-2200300	
W434	Cable	Murr Electronic	7000-88261-2200300	
W435	Cable	Murr Electronic	7000-88261-2200300	
W436	Cable	Murr Electronic	7000-88241-2200300	
W437	Cable	Murr Electronic	7000-88241-2200300	
W438	Cable integrated on unit A438 Split box			
Item 5113377 Specification 3940642				

Spare parts list Control box 5112234				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
K470, K471	Contactor	Moeller Electric	276600	DILM7
Q300	Main switch	Moeller Electric	P1-25/V/SVB-SW	
Q320	Miniature circuit breaker	Moeller Electric	278873	C16/3
Q320	Auxiliary contact	Moeller Electric	286054	
K330	Contactor	Phoenix Contact	2297031	
A410	Communication interface	Siemens	6ES7151-1BA02-0AB0	
T410	Connector	Siemens	6ES7193-4CD30-0AA0	
	Power supply	Siemens	6ES7138-4CA50-0AB0	
A420, A430	Input module	Siemens	6ES7131-4BF00-0AA0	
	Connector	Siemens	6ES7193-4CB30-0AA0	
A450	Output module	Siemens	6ES7132-4BF00-0AA0	
	Connector	Siemens	6ES7193-4CB30-0AA0	
T411	Connector	Siemens	6ES7193-4CD30-0AA0	
	Power supply	Siemens	6ES7138-4CA50-0AB0	
A460	Input module	Siemens	6ES7138-4FA04-0AB0	
	Connector	Siemens	6ES7193-4CG30-0AA0	
A470	Output module	Siemens	6ES7138-4FB03-0AB0	
	Connector	Siemens	6ES7193-4CG30-0AA0	
S420 + (H450)	Pushbutton	Moeller Electric	216922	Illuminated, White
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Lamp	Moeller Electric	216557	White
S421	Pushbutton	Moeller Electric	216590	Black
	Contact element	Moeller Electric	216503	+Fixing adapter, 1NC
S460	Switch	Moeller Electric	216515	Emergency
	Contact element	Moeller Electric	216378	1NC
S462 + (H452)	Pushbutton	Moeller Electric	216931	Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Lamp	Moeller Electric	218057	Blue
S426 + (H451)	Switch	Moeller Electric	216870	3-pos, Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Contact element	Moeller Electric	216376	1NO
	Lamp	Moeller Electric	216557	White

Spare parts list Kit 5112230				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
W320	Cable	U.I. Lapp	281404	4G2.5, UL
W321	Cable	U.I. Lapp	281807	7G1 UL
W322	Cable	U.I. Lapp	281602	2x0.75 UL
W323	Cable	U.I. Lapp	281602	2x0.75 UL
W324	Cable	U.I. Lapp	281805	5G1 UL
W330	Cable	U.I. Lapp	281604	4G1.5 UL
W360	Cable	Murr Electronic	7000-08061-2210150	
W430	Cable	Murr Electronic	7000-88001-2200300	
W431	Cable	Murr Electronic	7000-88001-2200300	
W432	Cable	Murr Electronic	7000-88001-2200300	
W433	Cable	Murr Electronic	7000-88001-2200300	
W434	Cable	Murr Electronic	7000-88261-2200300	
W435				
W436	Cable	Murr Electronic	7000-88241-2200300	
W437	Cable	Murr Electronic	7000-88241-2200300	
W438	Cable integrated on unit A438 Split box			
Item 5113378 Specification 3940643				

Spare parts list Control box 5112235				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
K360, K361	Contactor	Moeller Electric	276600	DILM7
Q300	Main switch	Moeller Electric	P1-25/V/SVB-SW	
Q320	Miniature circuit breaker	Moeller Electric	1489-A3C160	C16/3
Q320	Auxiliary contact	Moeller Electric	1489-AAHS3	
K330	Contactor	Phoenix Contact	2297031	
A360	Safety relay	Pilz	PNOZ s3	
A410	Communication interface	Rockwell	1734-ADN	
A420, A430, A440	Input module	Rockwell	1734-IB8	
	Connector	Rockwell	1734-TBS	
A450	Output module	Rockwell	1734-OB8	
	Connector	Rockwell	1734-TBS	
S420 + (H450)	Pushbutton	Moeller Electric	216922	Illuminated, White
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Lamp	Moeller Electric	216557	White
S421	Pushbutton	Moeller Electric	216590	Black
	Contact element	Moeller Electric	216503	+Fixing adapter, 1NC
S350	Switch	Moeller Electric	216515	Emergency
	Contact element	Moeller Electric	216378	1NC
	Contact element	Moeller Electric	216376	1NO
S360 + (H452)	Pushbutton	Moeller Electric	216931	Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Contact element	Moeller Electric	216376	1NO
	Lamp	Moeller Electric	218057	Blue
S426 + (H451)	Switch	Moeller Electric	216870	3-pos, Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Contact element	Moeller Electric	216376	1NO
	Lamp	Moeller Electric	216557	White

Spare parts list Kit 5112230				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
W320	Cable	U.I. Lapp	281404	4G2.5, UL
W321	Cable	U.I. Lapp	281807	7G1 UL
W322	Cable	U.I. Lapp	281602	2x0.75 UL
W323	Cable	U.I. Lapp	281602	2x0.75 UL
W324	Cable	U.I. Lapp	281805	5G1 UL
W330	Cable	U.I. Lapp	281604	4G1.5 UL
W360	Cable	Murr Electronic	7000-08061-2210150	
W430	Cable	Murr Electronic	7000-88001-2200300	
W431	Cable	Murr Electronic	7000-88001-2200300	
W432	Cable	Murr Electronic	7000-88001-2200300	
W433	Cable	Murr Electronic	7000-88001-2200300	
W434	Cable	Murr Electronic	7000-88261-2200300	
W435	Cable	Murr Electronic	7000-88261-2200300	
W436	Cable	Murr Electronic	7000-88241-2200300	
W437	Cable	Murr Electronic	7000-88241-2200300	
W438	Cable integrated on unit A438 Split box			
Item 5113379 Specification 3940644				

Spare parts list Control box 5112235				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
K360, K361	Contactor	Moeller Electric	276600	DILM7
Q300	Main switch	Moeller Electric	P1-25/V/SVB-SW	
Q320	Miniature circuit breaker	Moeller Electric	1489-A3C160	C16/3
Q320	Auxiliary contact	Moeller Electric	1489-AAHS3	
K330	Contactor	Phoenix Contact	2297031	
A360	Safety relay	Pilz	PNOZ s3	
A410	Communication interface	Rockwell	1734-ADN	
A420, A430, A440	Input module	Rockwell	1734-IB8	
	Connector	Rockwell	1734-TBS	
A450	Output module	Rockwell	1734-OB8	
	Connector	Rockwell	1734-TBS	
S420 + (H450)	Pushbutton	Moeller Electric	216922	Illuminated, White
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Lamp	Moeller Electric	216557	White
S421	Pushbutton	Moeller Electric	216590	Black
	Contact element	Moeller Electric	216503	+Fixing adapter, 1NC
S350	Switch	Moeller Electric	216515	Emergency
	Contact element	Moeller Electric	216378	1NC
	Contact element	Moeller Electric	216376	1NO
S360 + (H452)	Pushbutton	Moeller Electric	216931	Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Contact element	Moeller Electric	216376	1NO
	Lamp	Moeller Electric	218057	Blue
S426 + (H451)	Switch	Moeller Electric	216870	3-pos, Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Contact element	Moeller Electric	216376	1NO
	Lamp	Moeller Electric	216557	White

Spare parts list Kit 5112224				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
W320	Cable	U.I. Lapp	1119 404	4G2.5
W321	Cable	U.I. Lapp	1119 107	7G0.75
W322	Cable	U.I. Lapp	1119 802	2x0.75
W323	Cable	U.I. Lapp	1119 802	2x0.75
W325 (+ A001.X410)	Connector with cable	Phoenix Contact	1525571	Belongs to A001
W326	Cable	U.I. Lapp	2170 220	Profibus
W330	Cable	U.I. Lapp	1119 304	4G1.5
W360	Cable	Murr Electronic	7000-08061-2210150	
W430	Cable	Murr Electronic	7000-88001-2200300	
W431	Cable	Murr Electronic	7000-88001-2200300	
W432	Cable	Murr Electronic	7000-88001-2200300	
W433	Cable	Murr Electronic	7000-88001-2200300	
W434	Cable	Murr Electronic	7000-88261-2200300	
W435				
W436	Cable	Murr Electronic	7000-88241-2200300	
W437	Cable	Murr Electronic	7000-88241-2200300	
W438	Cable integrated on unit A438 Split box			
Item 5113380 Specification 3940645				

Spare parts list Control box 5112233				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
K360, K361	Contactor	Moeller Electric	276600	DILM7
Q300	Main switch	Moeller Electric	P1-25/V/SVB-SW	
Q320	Miniature circuit breaker	Moeller Electric	278873	C16/3
Q320	Auxiliary contact	Moeller Electric	286054	
K330	Contactor	Phoenix Contact	2297031	
A360	Safety relay	Pilz	PNOZ s3	
A410	Communication interface	Siemens	6ES7151-1AA05-0AB0	
T410	Connector	Siemens	6ES7193-4CD30-0AA0	
	Power supply	Siemens	6ES7138-4CA50-0AB0	
A420, A430, A440	Input module	Siemens	6ES7131-4BF00-0AA0	
	Connector	Siemens	6ES7193-4CB30-0AA0	
A450	Output module	Siemens	6ES7132-4BF00-0AA0	
	Connector	Siemens	6ES7193-4CB30-0AA0	
S420 + (H450)	Pushbutton	Moeller Electric	216922	Illuminated, White
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Lamp	Moeller Electric	216557	White
S421	Pushbutton	Moeller Electric	216590	Black
	Contact element	Moeller Electric	216503	+Fixing adapter, 1NC
S350	Switch	Moeller Electric	216515	Emergency
	Contact element	Moeller Electric	216376	1NO
	Contact element	Moeller Electric	216378	1NC
S360 + (H452)	Pushbutton	Moeller Electric	216931	Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Contact element	Moeller Electric	216376	1NO
	Lamp	Moeller Electric	218057	Blue
S426 + (H451)	Switch	Moeller Electric	216870	3-pos, Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Contact element	Moeller Electric	216376	1NO
	Lamp	Moeller Electric	216557	White

Spare parts list Kit 5112139				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
W320	Cable	U.I. Lapp	1119 404	4G2.5
W321	Cable	U.I. Lapp	1119 107	7G0.75
W322	Cable	U.I. Lapp	1119 802	2x0.75
W323	Cable	U.I. Lapp	1119 802	2x0.75
W330	Cable	U.I. Lapp	1119 304	4G1.5
W360	Cable	Murr Electronic	7000-08061-2210150	
W430	Cable	Murr Electronic	7000-88001-2200300	
W431	Cable	Murr Electronic	7000-88001-2200300	
W432	Cable	Murr Electronic	7000-88001-2200300	
W433	Cable	Murr Electronic	7000-88001-2200300	
W434	Cable	Murr Electronic	7000-88261-2200300	
W435				
W436	Cable	Murr Electronic	7000-88241-2200300	
W437	Cable	Murr Electronic	7000-88241-2200300	
W438	Cable integrated on unit A438 Split box			
Item 5113381 Specification 3940646				

Spare parts list Control box 5112233				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
K360, K361	Contactor	Moeller Electric	276600	DILM7
Q300	Main switch	Moeller Electric	P1-25/V/SVB-SW	
Q320	Miniature circuit breaker	Moeller Electric	278873	C16/3
Q320	Auxiliary contact	Moeller Electric	286054	
K330	Contactor	Phoenix Contact	2297031	
A360	Safety relay	Pilz	PNOZ s3	
A410	Communication interface	Siemens	6ES7151-1AA05-0AB0	
T410	Connector	Siemens	6ES7193-4CD30-0AA0	
	Power supply	Siemens	6ES7138-4CA50-0AB0	
A420, A430, A440	Input module	Siemens	6ES7131-4BF00-0AA0	
	Connector	Siemens	6ES7193-4CB30-0AA0	
A450	Output module	Siemens	6ES7132-4BF00-0AA0	
	Connector	Siemens	6ES7193-4CB30-0AA0	
S420 + (H450)	Pushbutton	Moeller Electric	216922	Illuminated, White
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Lamp	Moeller Electric	216557	White
S421	Pushbutton	Moeller Electric	216590	Black
	Contact element	Moeller Electric	216503	+Fixing adapter, 1NC
S350	Switch	Moeller Electric	216515	Emergency
	Contact element	Moeller Electric	216376	1NO
	Contact element	Moeller Electric	216378	1NC
S360 + (H452)	Pushbutton	Moeller Electric	216931	Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Contact element	Moeller Electric	216376	1NO
	Lamp	Moeller Electric	218057	Blue
S426 + (H451)	Switch	Moeller Electric	216870	3-pos, Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Contact element	Moeller Electric	216376	1NO
	Lamp	Moeller Electric	216557	White

Spare parts list Kit 5112282				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
W320	Cable	U.I. Lapp	1119 404	4G2.5
W321	Cable	U.I. Lapp	1119 107	7G0.75
W322	Cable	U.I. Lapp	1119 802	2x0.75
W323	Cable	U.I. Lapp	1119 802	2x0.75
W325 (+ A001.X410)	Cable with connector	Phoenix Contact	1525571	Belongs to A001
W326	Cable	U.I. Lapp	2170 220	Profibus
W330	Cable	U.I. Lapp	1119 304	4G1.5
W360	Cable	Murr Electronic	7000-08061-2210150	
W430	Cable	Murr Electronic	7000-88001-2200300	
W431	Cable	Murr Electronic	7000-88001-2200300	
W432	Cable	Murr Electronic	7000-88001-2200300	
W433	Cable	Murr Electronic	7000-88001-2200300	
W434	Cable	Murr Electronic	7000-88261-2200300	
W435				
W436	Cable	Murr Electronic	7000-88241-2200300	
W437	Cable	Murr Electronic	7000-88241-2200300	
W438	Cable integrated on unit A438 Split box			
Item 5113382 Specification 3940647				

Spare parts list Control box 5112133				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
K470, K471	Contactor	Moeller Electric	276600	DILM7
Q300	Main switch	Moeller Electric	P1-25/V/SVB-SW	
Q320	Miniature circuit breaker	Moeller Electric	278873	C16/3
Q320	Auxiliary contact	Moeller Electric	286054	
K330	Contactor	Phoenix Contact	2297031	
A410	Communication interface	Siemens	6ES7151-1BA02-0AB0	
T410	Connector	Siemens	6ES7193-4CD30-0AA0	
	Power supply	Siemens	6ES7138-4CA50-0AB0	
A420, A430	Input module	Siemens	6ES7131-4BF00-0AA0	
	Connector	Siemens	6ES7193-4CB30-0AA0	
A450	Output module	Siemens	6ES7132-4BF00-0AA0	
	Connector	Siemens	6ES7193-4CB30-0AA0	
T411	Connector	Siemens	6ES7193-4CD30-0AA0	
	Power supply	Siemens	6ES7138-4CA50-0AB0	
A460	Input module	Siemens	6ES7138-4FA04-0AB0	
	Connector	Siemens	6ES7193-4CG30-0AA0	
A470	Output module	Siemens	6ES7138-4FB03-0AB0	
	Connector	Siemens	6ES7193-4CG30-0AA0	
S420 + (H450)	Pushbutton	Moeller Electric	216922	Illuminated, White
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Lamp	Moeller Electric	216557	White
S421	Pushbutton	Moeller Electric	216590	Black
	Contact element	Moeller Electric	216503	+Fixing adapter, 1NC
S460	Switch	Moeller Electric	216515	Emergency
	Contact element	Moeller Electric	216378	1NC
S462 + (H452)	Pushbutton	Moeller Electric	216931	Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Lamp	Moeller Electric	218057	Blue
S426 + (H451)	Switch	Moeller Electric	216870	3-pos, Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Contact element	Moeller Electric	216376	1NO
	Lamp	Moeller Electric	216557	White

Spare parts list Kit 5112285				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
W320	Cable	U.I. Lapp	1119 404	4G2.5
W321	Cable	U.I. Lapp	1119 107	7G0.75
W322	Cable	U.I. Lapp	1119 802	2x0.75
W323	Cable	U.I. Lapp	1119 802	2x0.75
W325 (+ A001.X410)	Cable with connector	Phoenix Contact	1525571	Belongs to A001
W326	Cable	U.I. Lapp	2170 220	Profibus
W330	Cable	U.I. Lapp	1119 304	4G1.5
W360	Cable	Murr Electronic	7000-08061-2210150	
W430	Cable	Murr Electronic	7000-88001-2200300	
W431	Cable	Murr Electronic	7000-88001-2200300	
W432	Cable	Murr Electronic	7000-88001-2200300	
W433	Cable	Murr Electronic	7000-88001-2200300	
W434	Cable	Murr Electronic	7000-88261-2200300	
W435	Cable	Murr Electronic	7000-88261-2200300	
W436	Cable	Murr Electronic	7000-88241-2200300	
W437	Cable	Murr Electronic	7000-88241-2200300	
W438	Cable integrated on unit A438 Split box			
Item 5113383 Specification 3940648				

Spare parts list Control box 5112133				
Des	**Name**	**Manufacturer**	**Manufacturer item nr**	**Comment**
K470, K471	Contactor	Moeller Electric	276600	DILM7
Q300	Main switch	Moeller Electric	P1-25/V/SVB-SW	
Q320	Miniature circuit breaker	Moeller Electric	278873	C16/3
Q320	Auxiliary contact	Moeller Electric	286054	
K330	Contactor	Phoenix Contact	2297031	
A410	Communication interface	Siemens	6ES7151-1BA02-0AB0	
T410	Connector	Siemens	6ES7193-4CD30-0AA0	
	Power supply	Siemens	6ES7138-4CA50-0AB0	
A420, A430	Input module	Siemens	6ES7131-4BF00-0AA0	
	Connector	Siemens	6ES7193-4CB30-0AA0	
A450	Output module	Siemens	6ES7132-4BF00-0AA0	
	Connector	Siemens	6ES7193-4CB30-0AA0	
T411	Connector	Siemens	6ES7193-4CD30-0AA0	
	Power supply	Siemens	6ES7138-4CA50-0AB0	
A460	Input module	Siemens	6ES7138-4FA04-0AB0	
	Connector	Siemens	6ES7193-4CG30-0AA0	
A470	Output module	Siemens	6ES7138-4FB03-0AB0	
	Connector	Siemens	6ES7193-4CG30-0AA0	
S420 + (H450)	Pushbutton	Moeller Electric	216922	Illuminated, White
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Lamp	Moeller Electric	216557	White
S421	Pushbutton	Moeller Electric	216590	Black
	Contact element	Moeller Electric	216503	+Fixing adapter, 1NC
S460	Switch	Moeller Electric	216515	Emergency
	Contact element	Moeller Electric	216378	1NC
S462 + (H452)	Pushbutton	Moeller Electric	216931	Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Lamp	Moeller Electric	218057	Blue
S426 + (H451)	Switch	Moeller Electric	216870	3-pos, Illuminated, Blue
	Contact element	Moeller Electric	216504	+Fixing adapter, 1NO
	Contact element	Moeller Electric	216376	1NO
	Lamp	Moeller Electric	216557	White

10 Supplier’s information

This manual goes together with the elevator of the type mentioned on the order and on the title page of this manual. This document was drawn up by:

FlexLink Components AB

Date: 2010/03/01

The machine was produced by:

FlexLink Engineering Polska

Sp. z.o.o

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Note! *In case of failures please contact the system integrator.*

EC Declaration of Incorporation

FlexLink Components AB
SE-41550 Göteborg
Sweden

We hereby declare that the following equipment is intended to be incorporated into a FlexLink conveyor system and thereby forming a machine. Operation is prohibited until it has been determined that the machine in which these products are incorporated, has been declared in conformity with the Machinery Directive 2006/42/EC, together with amendments which have entered into force as of the date of issue of this declaration, with particular reference to the essential health and safety requirements in connection with the design, construction and manufacture of the below specified equipment.

- **Elevator**

Corresponding EC directives:

Low Voltage Directive 2006/95/EC

FlexLink Components AB

Svante Anderholm
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Responsible Technical file

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