

Qimarox®



User Manual
PRORUNNER Mk5
Version1.2 / 26-06-2014

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1 About this manual

1.1 Introduction

This manual provides information about the PRORUNNER Mk5 machine, that is used for the vertical movement of goods within a transport system. From here on in this manual, the PRORUNNER Mk5 is referred to as the “machine”.

This manual is intended for:

- Retailers/Original Equipment Manufacturers (OEM) project engineers and mechanics.
- Operators, installers and maintenance engineers.



WARNING

For optimal safety, carefully read this manual before using the PRORUNNER Mk5.

System integrators/OEMs

This manual explains machine configurations you can use to set up the machine. It also provides instructions on how to add or change the machine’s technical components.

Users

The machine may be supplied pre-assembled; if so, some chapters in this manual will not be applicable. To integrate the machine within a conveyor system, Qimarox advises you to refer to documentation provided by the OEM of the transport system.

1.2 Product documentation

| Document | Reference |
|---|--------------------------|
| Machine manuals* | UM-PRORUNNER_MK5-1.1-ENG |
| Machine assembly instructions* | AI-PRORUNNER_MK5-1.1-ENG |
| Machine layout drawing** | Refer to section 2.2 |
| OEM parts of the machine: <ul style="list-style-type: none"> • Bolts and nuts • Geared motor • Motor reductor • Photocells • Runners • Chain • Induction switches • Belts | |

* Generic information for each machine, apart from exceptions outlined in the machine layout drawing.

** Machine specific information.

1.3 Source language

This manual was originally written in the English language.

1.4 Symbols used in the manual

The following symbols are used in this manual.



DANGER

Risk of serious injury to the user if the instructions are not accurately followed.



WARNING

Risk of damage to the machine if the instructions are not accurately followed.



Note

To provide additional information to the user about a task or issue.



Tip

A tip or point of attention for carrying out a task.

1.5 Terminology list

The table below explains common terms used by Qimarox for the machine.

| Term | Definition |
|--------------------|--|
| supply conveyor | The conveyor that delivers product to the infeed conveyor on the machine. The supply conveyor is not part of the machine. |
| discharge conveyor | The conveyor that discharges products from the machine. The discharge conveyor is not part of the machine. |
| assemble | Assembly of the machine. |
| fenced area | Area around the machine that unauthorised personnel cannot enter for safety reasons. |
| infeed conveyor | The supply conveyor puts products on the infeed conveyor. The infeed conveyor is part of the machine. |
| trolley | The part that keeps the carrier in straight position during forward direction. |
| machine | The PRORUNNER Mk5. |
| installation | Installation of the machine within a transport system. |
| product | Products transported by the machine. |
| product carrier | The part on which the transported product is resting. This part has the form of a product carrier. Refer to the description in section 4.2.3 and the exploded views in chapter 15. |

| Term | Definition |
|------------------|--|
| leveler | The part that makes sure that the product carrier remains horizontal. The direction of view is from the front towards the machine. Refer to the description in section 4.2.3 and the exploded views in chapter 15. |
| transporter | General term used to refer to the supply/discharge or the infeed/outfeed conveyors. |
| outfeed conveyor | The outfeed conveyor puts products on the discharge conveyor. The outfeed conveyor is part of the machine. |

1.6 Further support and information

Qimarox can supply additional expertise and support services, for:

- Training
- Global support
- Service contracts

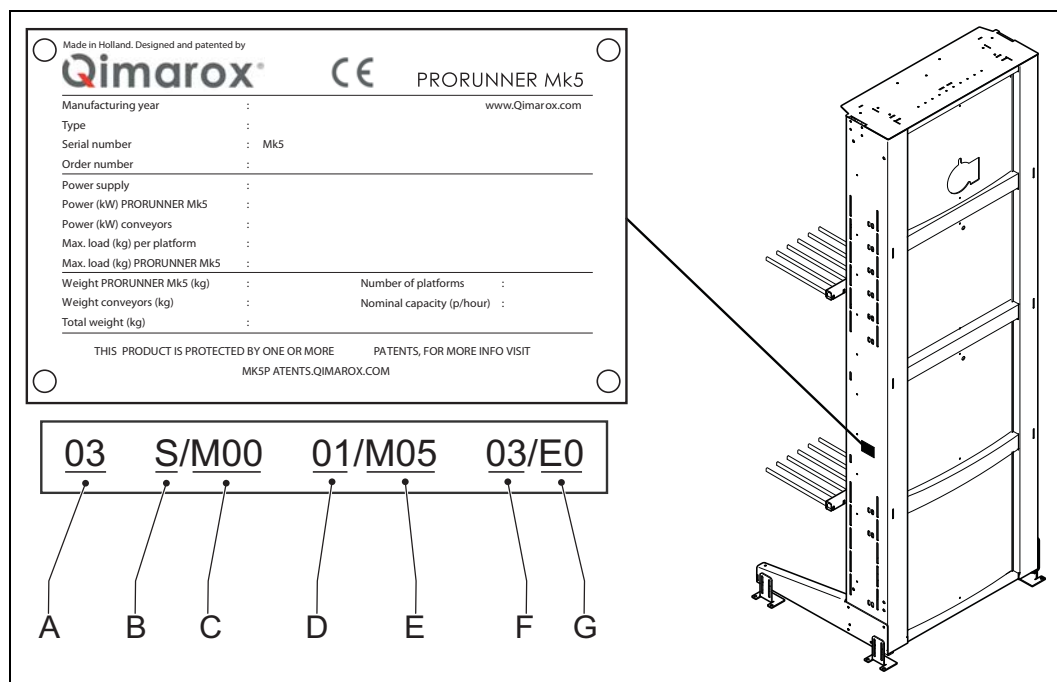
For more information please contact Qimarox.

2 General

2.1 Machine identification

The machine identification is given on the type plate. The type plate is located on the side of the lift.

The type on the type plate has a code consisting of 7 parts (A - G). This indicates in detail which machine type is identified.



- A type lift drive
- B type column
- C type infeed
- D type drive infeed
- E type outfeed
- F type outfeed drive
- G type E components

Column type:

- KS Column with standard (fixed) in / outfeed conveyors
- KB Column bi-directional

Infeed type:

- IV Fixed infeed conveyor
- IB Bi-directional in- and outfeed conveyor
- IP Pneumatic moveable infeed conveyor
- IM 3 Phase ~ motor moveable infeed conveyor
- IS Servo motor moveable infeed conveyor

Outfeed type:

- UV Fixed outfeed conveyor
- UB Bi-directional in- and outfeed conveyor
- UP Pneumatic moveable outfeed conveyor
- UM 3 Phase ~ motor moveable outfeed conveyor
- US Servo motor moveable outfeed conveyor

| Code part | Remark | Possible value | Meaning of the value | Type | Refer to chapter |
|-----------|-----------------|----------------|---|------|------------------|
| A | Lift drive type | 00 | None / not supplied | | |
| | | 01 | SEW reductor without motor | | |
| | | 03 | 3 Phase ~ | | 17.1 |
| | | 04 | 3 Phase ~ + TF | | 17.1 |
| | | 05 | 3 Phase ~ + BR | | 17.1 |
| | | 06 | 3 Phase ~ + TF + BR | | 17.1 |
| | | 20 | 3 Phase ~ Movimot | | 17.1 |
| | | 98 | special | | 17.1 |
| B | Lift drive type | S | Column with standard (fixed) in / outfeed conveyors | KS | 17.2.1 |
| | | B | Column bi-directional | KB | 17.2.2 |
| C | Infeed type | 000 | None / not supplied | | |
| | | G00 | Gravity side infeed | IV | 17.3.1 |
| | | G02 | Gravity front infeed | IV | 17.3.1 |
| | | G03 | Gravity pneumatic tilting belt side infeed | IP | 17.3.3 |
| | | G04 | Gravity pneumatic tilting belt front infeed | IP | 17.3.3 |
| | | M00 | Rollers | IV | 17.3.1 |
| | | M01 | Rollers tilting belt pneumatic | IP | 17.3.3 |
| | | M02 | Rollers shuttle pneumatic | IP | 17.3.3 |
| | | M03 | Rollers shuttle servo drive | IS | 17.3.5 |
| | | M04 | Belt conveyor | IV | 17.3.1 |
| | | M05 | Belt conveyor pneumatic folding belt | IP | 17.3.3 |
| | | M06 | Belt conveyor shuttle pneumatic | IP | 17.3.3 |
| | | M07 | Belt conveyor shuttle asynchronous motor | IM | 17.3.4 |
| | | M20 | RollerDrive conveyor bi-directional | IB | 17.3.2 |
| | | M24 | Belt conveyor bi-directional | IB | 17.3.2 |
| | | M99 | Multi version | | |

| Code part | Remark | Possible value | Meaning of the value | Type | Refer to chapter |
|-----------|--------------------|----------------|---|------|------------------|
| D | Infeed drive type | 00 | None / not supplied | | |
| | | 01 | 24 VDC RollerDrive IP54 with DriveControl IP20 | | 17.1 |
| | | 02 | 24 VDC RollerDrive IP54 with DriveControl IP54 | | 17.1 |
| | | 03 | 3 Phase ~ | | 17.1 |
| | | 05 | 3 Phase ~ + TF | | 17.1 |
| | | 06 | 3 Phase ~ + TF + BR | | 17.1 |
| | | 99 | Multi version | | |
| E | Outfeed type | 000 | None / not supplied | | |
| | | G00 | Gravity side outfeed | UV | 17.4.1 |
| | | G02 | Gravity front outfeed | UV | 17.4.1 |
| | | G03 | Gravity tilting belt pneumatic side outfeed | UP | 17.4.3 |
| | | G04 | Gravity tilting belt pneumatic front outfeed | UP | 17.4.3 |
| | | M00 | Rollers | UV | 17.4.1 |
| | | M01 | Rollers pneumatic tilting belt | UP | 17.4.3 |
| | | M02 | Rollers shuttle pneumatic | UP | 17.4.3 |
| | | M03 | Rollers shuttle servo drive | US | 17.4.5 |
| | | M04 | Belt conveyor | UV | 17.4.1 |
| | | M05 | Belt conveyor pneumatic folding belt | UP | 17.4.3 |
| | | M06 | Belt conveyor shuttle pneumatic | UP | 17.4.3 |
| | | M07 | Belt conveyor shuttle asynchronous motor | UM | 17.4.4 |
| | | M20 | RollerDrive conveyor bi-directional | UB | 17.4.2 |
| | | M24 | Belt conveyor bi-directional | UB | 17.4.2 |
| | | M99 | Multi version | | |
| F | Outfeed drive type | 00 | None / not supplied | | |
| | | 01 | 24 VDC RollerDrive IP54 with DriveControl IP20 | | |
| | | 02 | 24 VDC Roller Drive IP54 with DriveControl IP54 | | 17.1 |
| | | 03 | 3 Phase ~ | | 17.1 |
| | | 04 | 3 Phase ~ + TF | | 17.1 |
| | | 05 | 3 Phase ~ + BR | | 17.1 |
| | | 06 | 3 Phase ~ + TF + BR | | 17.1 |
| | | 99 | Multi version | | |
| G | E-components type | E0 | None / not supplied | | |
| | | E1 | 24 VDC IP66 | | |
| | | E2 | 24 VDC IP67 | | |

2.2 Machine layout drawing and specifications

After a machine order is placed, you will receive an approved machine drawing layout (see fig. 1) and specifications sheet (see fig. 2).

Fig. 1 Approved machine drawing

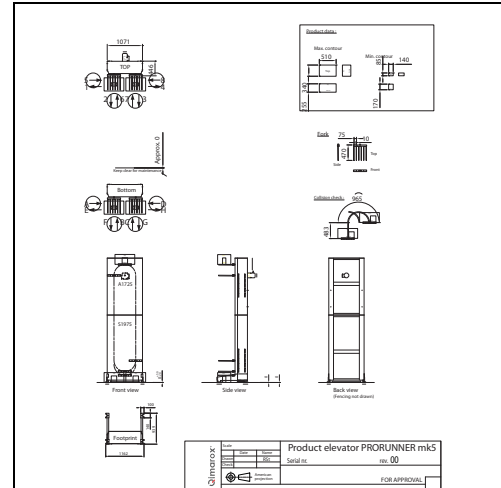


Fig. 2 Specifications sheet

This drawing and specifications sheet includes:

- The machine serial number.
- Product dimensions and mass.
- Lift dimensions.
- Lift configuration.
- Motor specifications.
- The number of transport carriers.



Note
The machine layout drawing illustrated (fig. 2) shows an example.

| PRORUNNER mk1 | |
|---|------------|
| Order number | 0000000000 |
| Serial number | 0000000000 |
| Customer | 0000000000 |
| Designation / Line number | 0000000000 |
| Date | 00.00.0000 |
| By | 0000000000 |
| ELEVATOR TYPE | |
| Elevator type | 0000000000 |
| Carrier type | 0000000000 |
| Carrier mounting (connection point) | 0000000000 |
| Carrier application | 0000000000 |
| CAPACITY | |
| Qualification capacity (person/hour) | 0000 |
| Qualification capacity (person/hour) | 0000 |
| Qualification capacity (person/hour) | 0000 |
| PROFILES | |
| Length (mm) | 000 |
| Width (mm) | 000 |
| Height (mm) | 000 |
| Max. mass (kg) (incl. calculation tool) | 000 |
| Max. weight (kg) - calculation carrier | 000 |
| WHEELS | |
| Type of drive | 0000 |
| Product dimensions - engagement | 0000 |
| Product | 0000 |
| Height (mm) | 0000 |
| OUTFRIED | |
| Type of drive | 0000 |
| Product dimensions | 0000 |
| Product | 0000 |
| Height (mm) | 0000 |
| ELEVATOR | |
| Additional clearance height (mm) | 0000 |
| Minimum clearance height (mm) | 0000 |
| Required operating height - free space (mm) | 0000 |
| Required clearance depth (mm) | 0000 |
| FEEDING CONVEYER | |
| Product dimensions | 0000 |
| Speed (mm/s) | 0000 |
| WHEEL CONVEYER | |
| Speed (mm/s) | 0000 |
| Time for rollout (s) | 0000 |
| OUTFRIED CONVEYER | |
| Speed (mm/s) | 0000 |
| Time for rollout (s) | 0000 |
| EXIT CONVEYER | |
| Speed (mm/s) | 0000 |
| Time for rollout (s) | 0000 |

2.3 Warranty

The scope and duration of the warranty is agreed when an order is placed for the machine. For more information refer to the standard delivery conditions for the machine.

The warranty only applies if the machine is used according to the specifications and if the user and maintenance instructions are performed as described in this manual.

The warranty does not cover wear of the parts.

The machine warranty is null and void in cases of:

- Improper usage.
- Insufficient maintenance.
- Improper maintenance.
- Modifications made to the machine without prior written permission from Qimarox.

2.4 Liability

Qimarox believes to the best of its knowledge that the information in this user manual is accurate. In the event that technical or typographical errors exist, Qimarox reserves the right to make changes to subsequent editions of this user manual without prior notice to holders of this edition. The reader should consult Qimarox if errors are suspected. In no event shall Qimarox be liable for any damages arising out of or related to this user manual or the information contained in it. EXCEPT AS SPECIFIED HEREIN, QIMAROX MAKES NO WARRANTIES, EXPRESS OR IMPLIED, AND EXPRESSLY DISCLAIMS ANY WARRANTY OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. CUSTOMER'S RIGHT TO RECOVER DAMAGES CAUSED BY FAULT OR NEGLIGENCE ON THE PART OF QIMAROX SHALL BE LIMITED TO THE AMOUNT PAID TO QIMAROX BY THE CUSTOMER. QIMAROX SHALL NOT BE LIABLE FOR DAMAGES RESULTING FROM LOSS OF DATA, PROFITS, USE OF PRODUCTS, OR INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF ADVISED OF THE POSSIBILITY THEREOF. This limitation of liability of Qimarox will apply regardless of the form of action, whether in contract or tort, including negligence. Any action against Qimarox must be brought without one (1) year after that cause of action accrues.

Qimarox is not liable for damages, accidents, unsafe conditions, defects, malfunctions, or service failures caused by the following:

- Owner's or user's failure to follow Qimarox's installation, operation and maintenance instructions, including but not limited to neglecting warnings or regulations as shown on the PRORUNNER or in this manual.
- Usage of the PRORUNNER for other applications, or under other circumstances than indicated in this user manual. This includes abuse, misuse or negligent acts.
- Modifications of any kind to the machine. This includes the replacement of parts with parts that are not specified in this manual.
- Insufficient or improper maintenance.

2.5 CE Declaration of Conformity

The machine complies with essential requirements regarding safety and hygiene, refer to chapter 14.

2.6 Patent

Patent protection applies to parts of the machine. Consequently, other parties are not permitted to build this machine in this form, unless Qimarox B.V. has explicitly given permission for this.

For further information about patents refer to mk5patents.Qimarox.com.

2.7 Trademarks

The following terms are trademarks of Qimarox, in the United States, other countries, or both:

- Qimarox
- Prorunner



All other trademarks are the property of their respective owners.

3 Safety

3.1 Intended use of the machine

The machine is exclusively intended for the vertical transportation of goods, as described in this manual. Refer to section 4.3 for a detailed description of the specifications of use.

The machine is always set up within a larger transport system in which products are automatically loaded on and off the machine.

Any other use of the machine is strictly forbidden.

3.2 User types and qualifications

The following user types are referred to in this manual:

- The operator.
- The person setting up the machine.
- The electrical installer.
- The maintenance engineer.

The maintenance engineer must be familiar with the full content of this manual.

Before any person operates, sets up, electrically installs or maintains the machine, permission to carry out these tasks must be obtained from Qimarox. Qimarox determines if the person is qualified for carrying out the given task. The machine should only be operated by qualified personnel.

An electrical installer is only qualified if a person has attended appropriate training and/or attained appropriate industry standard recognized qualifications. Qimarox can provide training if required.

Qimarox can also give advice about actions and tasks to be carried out on the machine.

3.3 Safety instructions

3.3.1 General

- Comply with the safety regulations given in this manual. Deviation from these regulations can lead to unacceptable risks.
- Never close doors (if present) in the fenced area of the machine, when personnel are inside this area.
- Switch off the machine and secure the main power supply switch in the off position with a padlock to prevent the machine from being switched on while personnel work in the fenced area.
- Comply with all relevant local legislation and regulations.

3.3.2 Set up

- Connect the machine in accordance with the local laws and regulations concerning safety and health.
- Before putting the machine into use, check if the machine has been set up in accordance with the instructions in this manual and with the layout drawing.
- Make sure that the transport system complies with all relevant health and safety directives and regulations.

3.3.3 Start the machine

- Do not switch the main power supply on when persons are in contact with the machine.
- Do not start the machine when persons are in contact with the machine.
- Do not start the machine when persons are present in the danger zone of the machine.
- Before the machine is put into operation, all machine parts must comply with all relevant health and safety directives and regulations.

3.3.4 During machine operation

- Keep your hands and feet away from danger zones.
- Make sure you do not wear loose clothing and secure long or loose hair.
- Make sure that no persons or objects are within the range of any moving parts of the machine.
- Make sure that users know and observe all safety rules with regard to the machine and the environment in which it operates.

3.3.5 Maintenance and repair

- Turn the power off the machine using the main power supply switch before starting any maintenance or repair tasks. Secure the main power supply switch in the off position with a padlock.
- Replace damaged or defective parts before putting the machine back into operation.
- Changes and modifications that may affect the safety of the machine can only be carried out when these changes and modifications comply with the relevant regulations, legislation, directives and recognized industry standards.
If changes and modifications are outside the scope of specifications given by Qimarox in this manual and Qimarox has not granted permission changes and modifications, then the changes and modifications will entirely be the responsibility of those persons responsible for carrying out the changes and modifications.
- Electrical installation tasks must only be carried out by qualified personnel.

3.4 Safety equipment

- You must not disassemble, bypass or disable any safety equipment on the machine.
- The machine may not be started and must be immediately taken out of operation if even a single item of machine safety equipment is defective.
- After maintenance tasks are complete, always replace all safety equipment that have been removed from the machine.

The machine has been equipped with the following safety equipment:

- Covers
- Safety fencing.

- Door switches, if doors are present.
- Labels



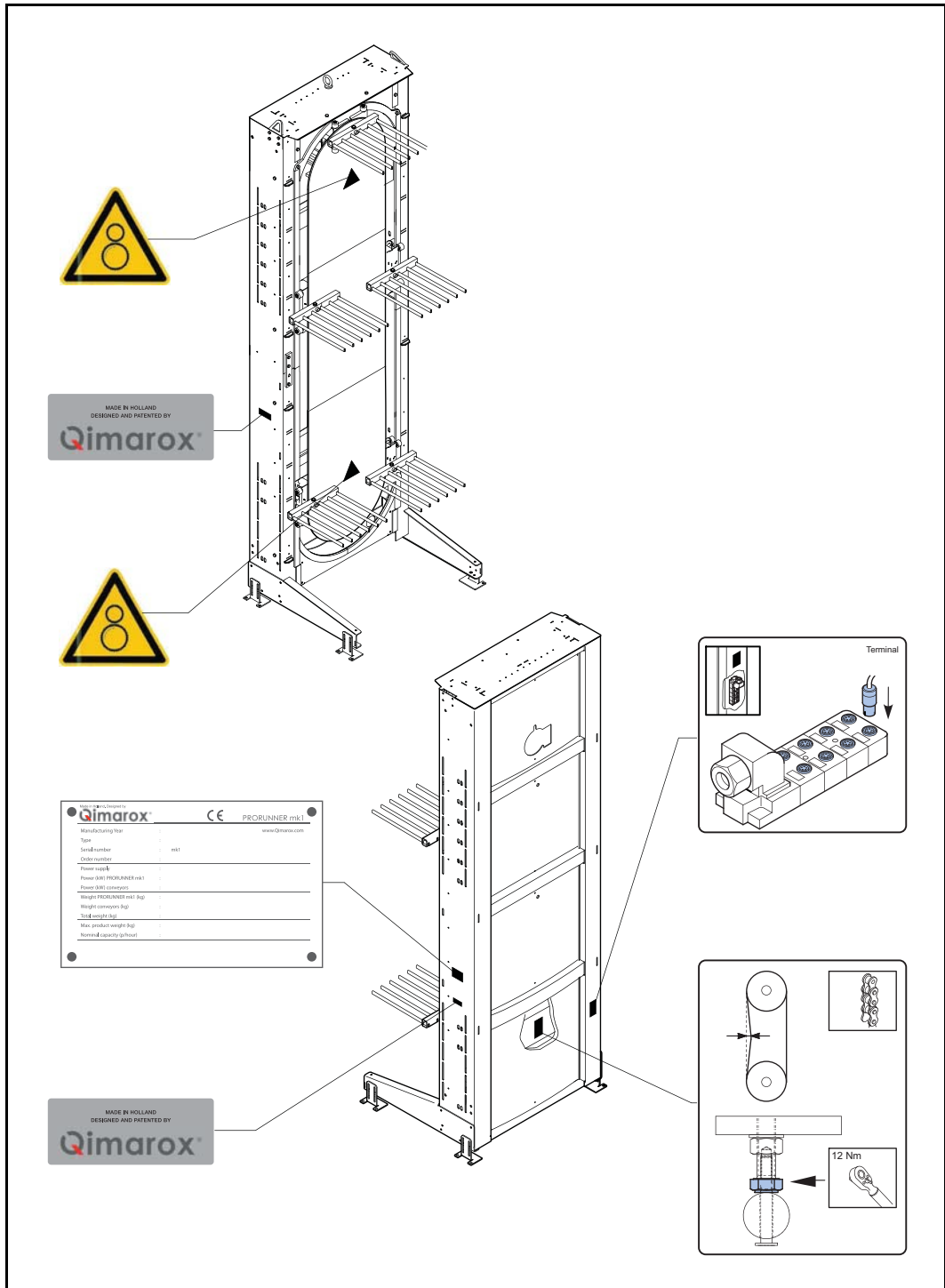
Note

Replace labels on the machine if they become unreadable or damaged.

Qimarox requires a protection fenced area around the machine. Any access doors must be secured with (interlock) door switches. These switches must be included in the emergency stop and safety circuit. Refer to section 5.3 for information about how to set up the fenced area.

In case of non-compliance with the required safety measures, the CE Declaration of Conformity will become null and void.

3.5 Safety symbols on the machine





Danger of clamping.



Danger of high electrical voltage.



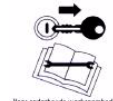
Danger of top limbs getting jammed between chain or sprocket wheels.



Danger of limbs getting jammed between rollers.



No entry.



Switch off the machine.

3.6 Potential risks

The machine is intended to be integrated into a transport system. Qimarox has attempted to protect against as many hazards as possible. The following potential risks should be addressed before machine and assembled parts are put into operation:

- Risk of injury caused by falling products.
- Risk of injury as a result of moving product holders.
- Hazards occurring at places where the machine connects to other parts of the production line, such as supply and discharge conveyors.

The interior of the machine can be accessed through the large openings in the frame at the front side. Protection is required for the supply, discharge, infeed and outfeed conveyors.

All other sides of the machine do not need extra protection. But when one can get at the top cover on the rear side, make sure that the recess for the electric motor is not too large. If that is the case, take action to make this recess smaller or inaccessible.

If the machine is accessible from multiple levels, then protection measures should be taken to avoid hazards.

3.7 Machine end of life and environment disposal

Proper use and maintenance of the machine will not involve any environmental risks. After the machine is no longer useable, the machine should be dismantled and disposed of in an environmentally responsible manner.



DANGER

Observe all relevant legislation, regulations, instructions and precautions with regard to health and safety when dismantling the machine.

Observe all relevant legislation, regulations, instructions and precautions with regard to the disposal of products in the environment.

3.8 Sound level

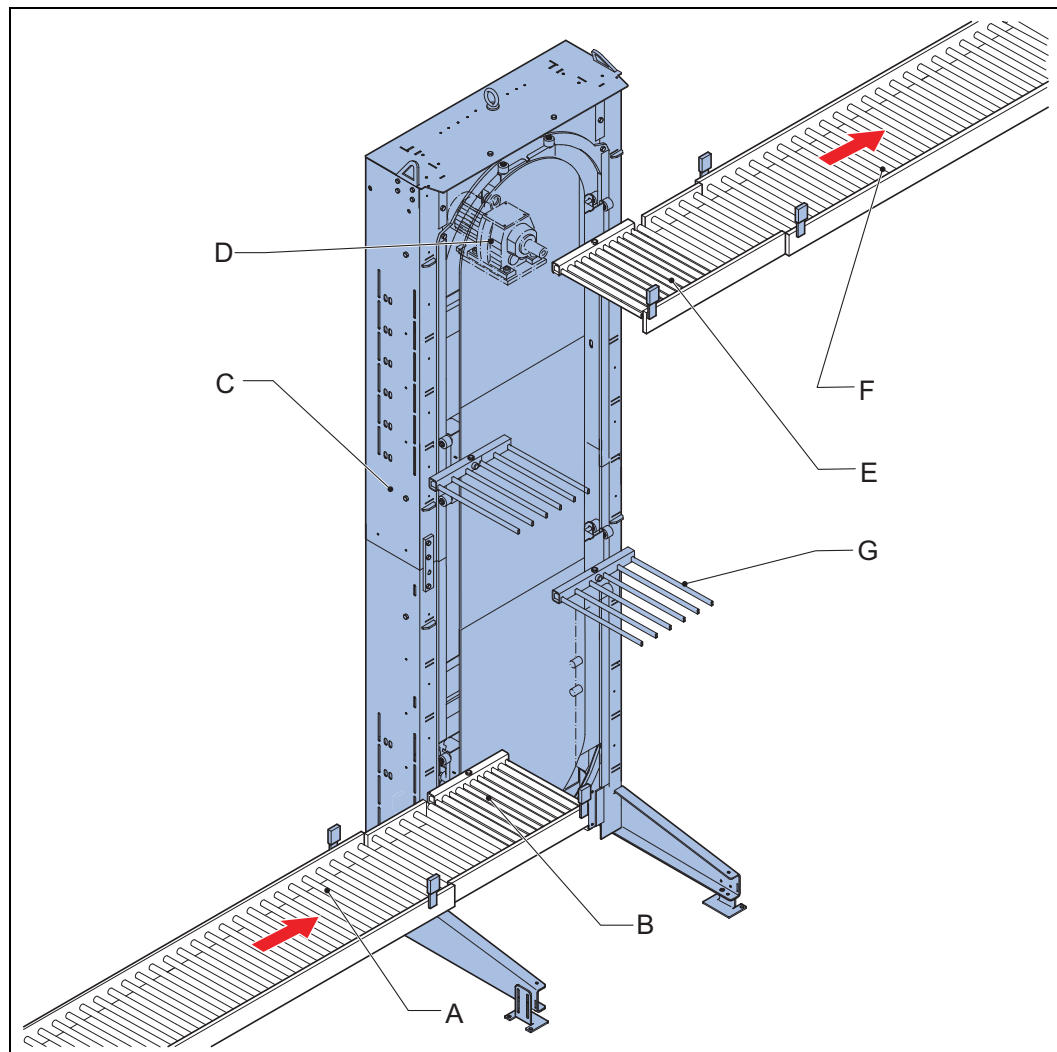
The sound level of the PRORUNNER Mk5 is 80.9 dB(A). To measure and calculate the sound level, refer to the standards ISO 3740 and ISO 3744.

If necessary, you can ask Qimarox for a full report.

4 Description

4.1 Overview of parts

4.1.1 General overview



- A Supply conveyor (not supplied by Qimarox)
- B Infeed conveyor (optional)
- C Lift column
- D Motor
- E Outfeed conveyor (optional)
- F Output conveyor (not supplied by Qimarox)
- G Product carrier

The PRORUNNER Mk5 is designed for the vertical transport of products. This vertical transport unit (or product lift) consists of a lift column, one or more product carriers and, depending on the purchased configuration, a dosing belt, output belt and shielding. The vertical transport of products can be upwards as well as downwards, and depending on the configuration, even a combination of the two. The lift is always installed as part of a larger transport system in which products are automatically transported to the product lift as well as away from the product lift.

The machine can consist of:

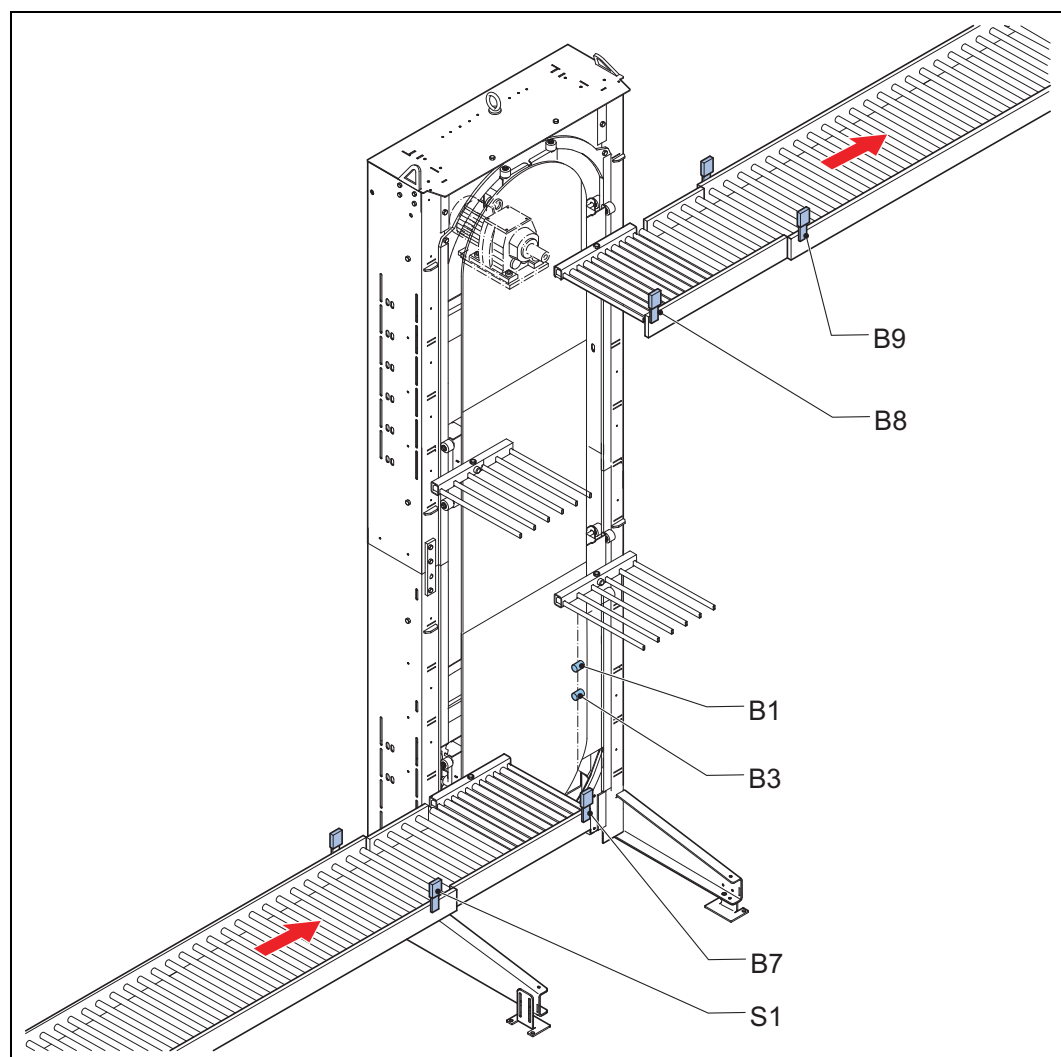
- Mechanical construction.
- Mechanical construction and electric sensors.
- Mechanical construction, electric sensors and cabling to the terminal module.
- Mechanical construction, electric sensors to the terminal module and a control box including control and software.

4.1.2 Motor

The motor drives the circulation of the vertical conveyor. For some configurations it may be necessary to control the motor with a frequency controller for controlled start/stop and optimum adjustment of the rotation speed to the supply speed. If a frequency controller is required, refer to the machine layout drawing. If a frequency controller is used, EMC directives must be observed and the device should be installed according to the manufacturer specifications.

The infeed/outfeed conveyor may also have a motor fitted. For specifications, refer to the machine layout drawing.

4.2 Working principle with fixed conveyors



- S1 Supply conveyor sensor (not supplied by Qimarox)
- B7 End of infeed conveyor sensor
- B1 Product release sensor

- B3 Start time frame sensor
- B8 Sensor for checking presence of product on the outfeed
- B9 Sensor for checking if product has left the outfeed (on falling edge)

The machine works according to a continuous principle in which the machine runs nonstop.

However the machine can be used in start/stop mode. To set up the machine for start/stop mode you must consult Qimarox for the required specifications.

The following sensors must be installed on the machine:

| Sensor code | Sensor name | Refer to section |
|-------------|---|------------------|
| S1 | Supply conveyor sensor (not supplied by Qimarox) | 4.2.1 |
| B7 | End of infeed conveyor sensor | 4.2.1 |
| B1 | Product release sensor | 4.2.1; 4.2.3 |
| B3 | Start time frame sensor | 4.2.4 |
| B8 | Sensor for checking presence of product on the outfeed | 4.2.4 |
| B9 | Sensor for checking if product has left the outfeed (on falling edge) | 4.2.4 |



Note

The description and working principle of the sensors applies to the infeed/out-feed conveyor on the machine. When infeed or outfeed takes place at several levels, more sensors are required. Refer to the machine layout drawing.

4.2.1 Product infeed

Products must always be fed into the machine one by one within the software specified time frame. This affects the infeed speed and acceleration. For specifications, refer to the machine layout drawing.

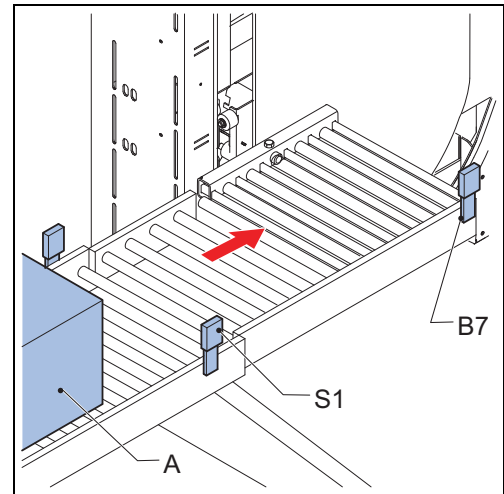
The available infeed time depends on:

- The speed of the product carriers.
- The dimensions of the product carriers.
- The dimensions of the products.
- The speed of the conveyors.

Preparing products for infeed to the machine

| | |
|----|-------------------------------|
| S1 | Supply conveyor sensor |
| B7 | End of infeed conveyor sensor |
| A | Product |

The product is fed in onto the supply conveyor and monitored by sensor S1. The sensor is located on the end of the supply conveyor. The product (A) will wait at this position until the product release sensor B1 (not shown in this figure) sends a release signal to infeed the product to the machine. Refer to sensor B7 as shown in the illustration at the start of section 4.2. Products are supplied to the machine only when this release signal has been sent.



If a product backup occurs, the release to the infeed signal must be stopped to make sure further products are not infeed to the machine. It is still possible to discharge products that are still in the machine.

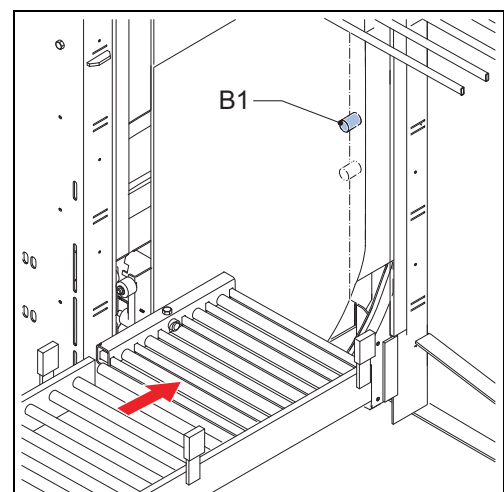
Monitoring products supplied to the infeed/outfeed conveyor

When a product has come off the supply conveyor this is detected by sensor S1. The transport to the infeed conveyor must stop. Sensor B7 detects the product when it is far enough onto the infeed conveyor. The infeed conveyor must also be stopped. The transporter empty photocell monitors run-time. The run-time function checks to make sure a product does not take too long to move from the supply conveyor to the infeed conveyor.

Product release sensor

The product release sensor B1 is operated by each product carrier of the machine in the circular movement, after which a time frame is started. At the moment that this time frame is active, the infeed position is free and there is time to feed in a product to the infeed position.

This sensor must be mounted to the machine frame. The sensor must be set so that it is activated when the product carrier is just above the highest product at the infeed position. The time frame (set by software) must be long enough for feeding in the product at the utmost time without having to stop the machine. This implies that this time depends on the circulation speed of the product carriers and on the infeed speed of the product. This time frame must be set during the test phase.



4.2.2 Product infeed configurations

There are various product infeed configurations that can be used, including mirrored configuration setups. Below are some examples.



DANGER

When the machine has 1 product carrier, the lift has a failure when:

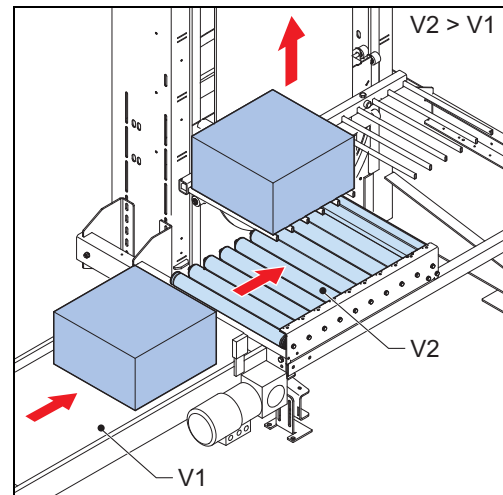
- **There is a product on the outfeed conveyor AND**
- **The product carrier reaches the sensor B3 (D, refer to section 4.1).**



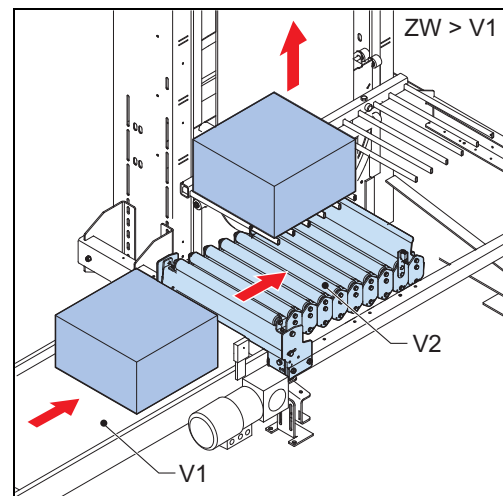
Note

In the configurations illustrated below, the count photocell S1 must be mounted so the opening between products can be detected.

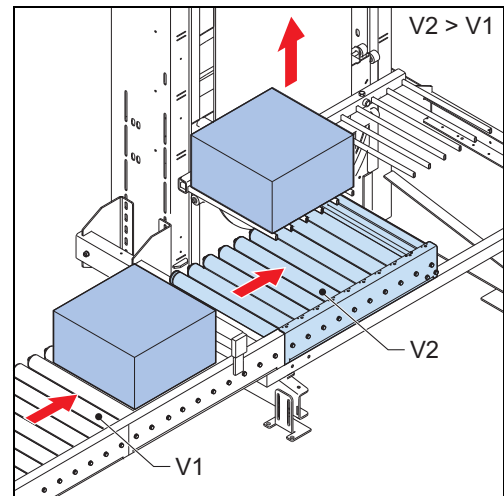
Product infeed with 2 driven conveyors



Product infeed with 1 driven and 1 gravity conveyor



Product infeed with 1 driven conveyor

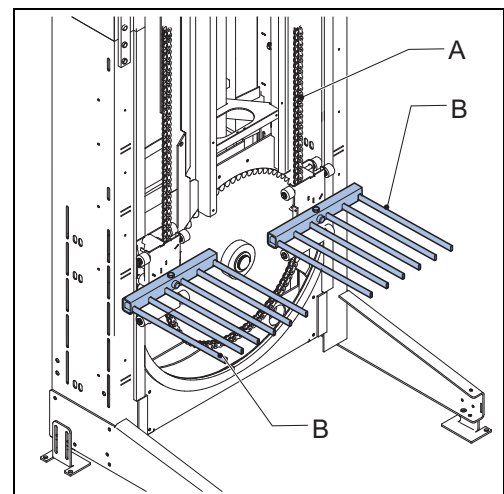


4.2.3 Product transportation

- A Chain system
- B Product carrier

The continuously circulating chain system (A) takes along one or more product carriers (B). These product carriers have a fork-like shape, allowing them to move between the infeed and outfeed conveyors.

Impact forces occur when picking up and putting down the product because the product is abruptly brought to speed. If required, the infeed and outfeed conveyors can be positioned on a slight incline for picking up and putting down the product more smoothly. This will by nature be the case with a gravity conveyor.



As the infeed is discontinuous, buffering product at the supply may be necessary in some cases. If this is not possible and stops of the infeed are undesired, the rotation speed of the machine can be brought in line with the speed of the infeed using a frequency controller.

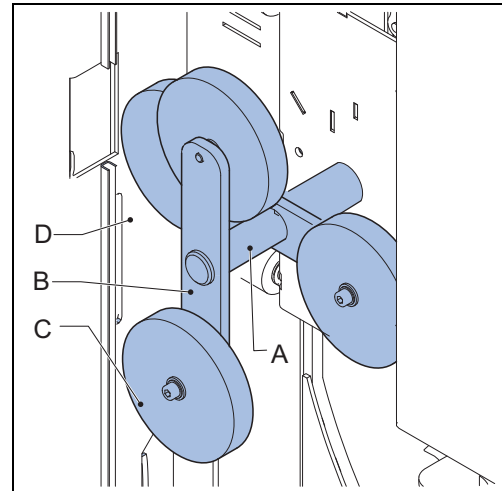
Keeping the product carriers horizontal

Rear side

During transport, the product carriers are kept horizontal by a (patented) circulation system.

- A Shaft
- B Guide
- C Wheels of the guide
- D Guide bars

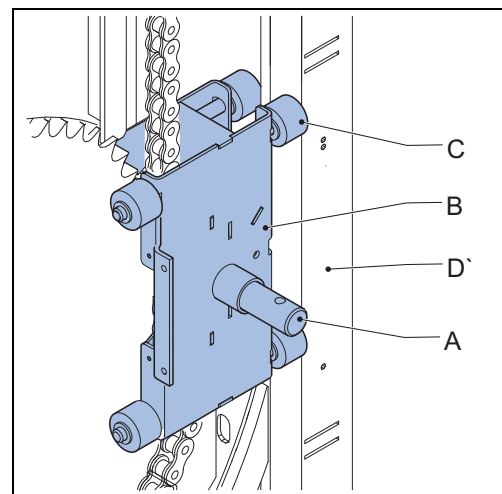
The product carrier has been mounted to a shaft (A) that has been coupled to a guide (B) with 4 wheels (C). The wheels of the guide run below and above along guide bars (D) that keep the product carrier horizontal as seen from the front of the machine.



Front side

- A Shaft
- B Trolley
- C Wheels of the trolley
- D Frame

Between the product carrier and the guide there is the trolley (B) with wheels (C) on both sides of the frame (D). The trolley keeps the product carrier horizontal as seen from the side of the machine.



4.2.4 Product outfeed

The product must be taken from the outfeed conveyor in time to ensure a continuous running of the machine. This places demands on the outfeed speed and the outfeed acceleration. See the layout drawing.

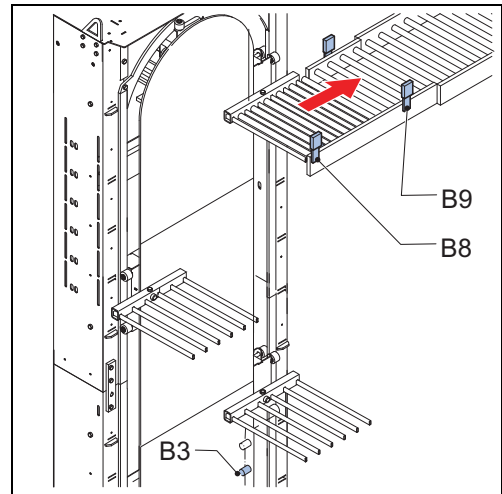
The available outfeed time depends on:

- The speed of the product carriers.
- The dimensions of the product carriers.
- The dimensions of the products.
- The speed of the conveyors.

Monitoring of the passage of the product carrier

- B3 Start time frame sensor
- B8 Sensor for checking presence of product on the outfeed
- B9 Sensor for checking if product has left the outfeed (on falling edge)

Sensor B3 has been mounted into the machine. This sensor is operated by each product carrier in the circulating movement. After this a time frame will start. At the end of this time frame it is checked whether the passage where the product carrier passes the putting down position is free from product. This is checked by sensors B8 and B9.



The distance between operation of sensor B3 and the putting down position must be smaller than the space between the two consecutive product carriers. When products are still present at the moment that the time frame ends, detected by sensors B8 and B9, the machine drive must stop immediately. The drive may only start up again when these positions have been reported empty for a certain period. Sensor B8 sets a flag when there is a product on the outfeed. Sensor B9 resets the flag at a falling edge. If the flag is set (true) the lift stops at the moment that the time frame expires. The lift can go on at the moment that the flag is reset (false) again.

Signalling descending / ascending carrier

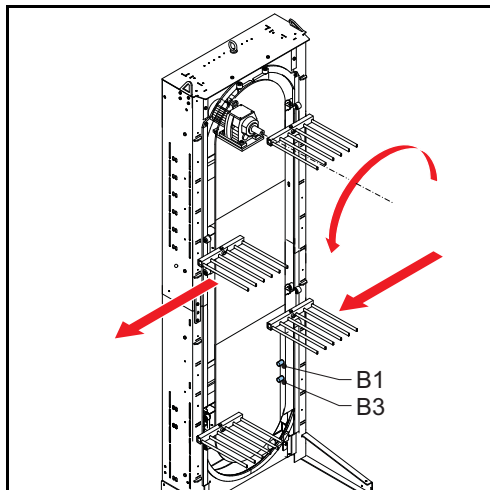


Fig. 1 Ascending carrier

- B1 Product release sensor
- B3 Start time frame sensor

The infeed conveyor is on the lower position and the outfeed conveyor is on the higher position. The products are transported from the lower to the higher position.

Fig. 2 *Descending carrier*

The infeed conveyor is on the higher position and the outfeed conveyor is on the lower position. The products are transported from the higher to the lower position.

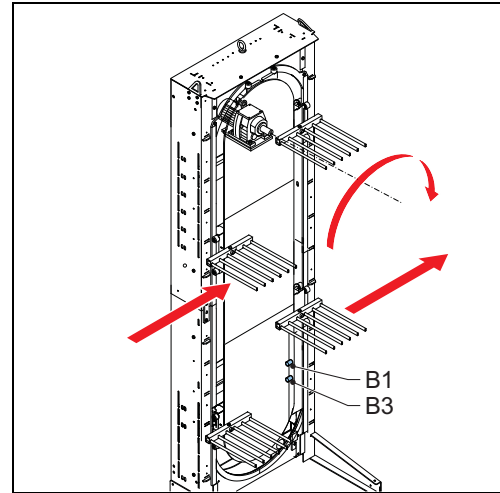
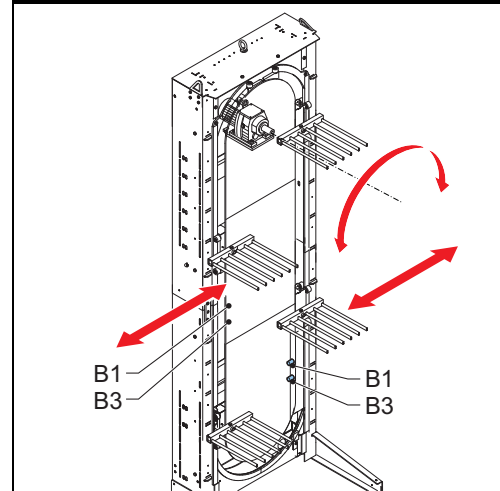


Fig. 3 *Descending / Ascending carrier*

The descending / ascending carrier can operate in 2 directions. There are 2 sets of sensors, 1 set to operate to the left direction and 1 set to operate to the right direction.



4.3 Specifications

The information below and the machine layout drawing give the specifications for the installation.

4.3.1 Product transport specifications

Refer to the machine layout drawing for the product specifications that are applicable to your machine configuration.

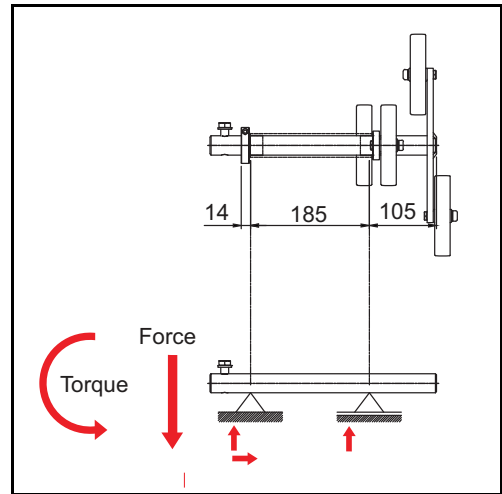
When permitted weight and distance deviate from the specifications in the machine layout drawing, the machine must be adjusted to accommodate this. These type of adjustments may only be carried out by Qimarox or after written permission from Qimarox has been obtained.

4.3.2 Specifications added components

The product carriers for the product lift are not part of the delivery; these parts have to be supplied by yourself. To ensure a safe machine, the carrier must meet the following requirements.

Requirements for the product carrier

The product carrier must be mounted correctly on the carrier axis. For a mounting example refer to the instructions for the mounting carrier. The product carrier must provide stable support for the product during pick up and movement. During the pass through of circular movement, horizontal accelerations occur. The product carrier must be strong enough to capture the static and dynamic forces in order to prevent damage to the product and parts of the machine. During the pick up of a product a peak load occurs. The stiffness of the product carrier along with the product weight, product geometry, and the speed of the carrier determines the height of the peak load. To reduce peak loads, place resilient materials between the product and the product carrier. The center of gravity of the product carrier must be on the centerline of the leveler. The center of gravity of the product must be about the vertical surface through the carrier axis.

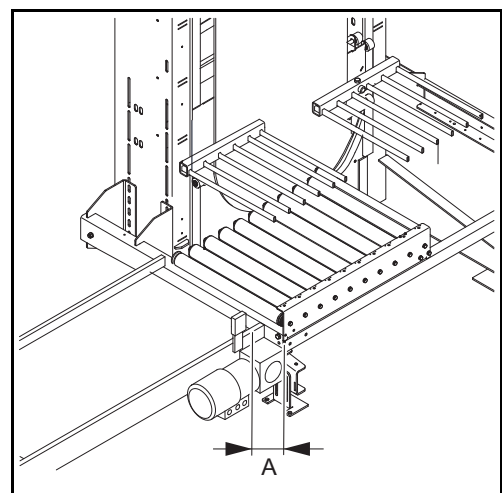


Calculation of the product carrier

The maximal permitted load on the carrier axis is limited by the strength of the carrier axis. The forces on the carrier axis are determined by the weight of the carrier, the weight of the product, and acceleration forces during pick up of the product. The forces during pick up of the product can be considered as a collision of the product with a resilient carrier, and then make an estimation of the maximal force that occurs. The carrier axis can be considered as a layer with support points on both ends and is loaded by a force and a moment. This calculation can be checked by Qimarox on request.

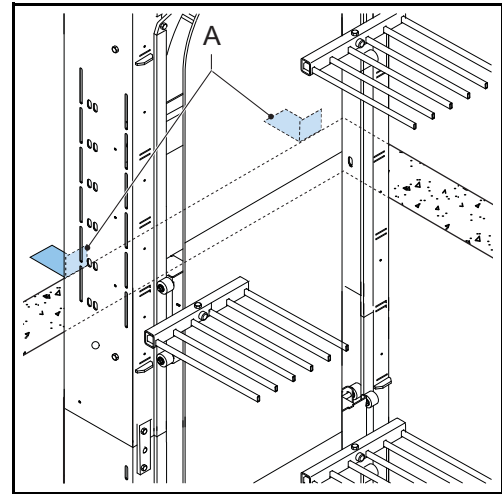
4.3.3 Specification of gap between conveyors

The maximum allowed gap (A) between supply / output conveyor and infeed / outfeed conveyor is 25 mm.



4.3.4 Extra support of the machine

The machine has to be supported with brackets (A) to the first floor or to other construction if the height of the machine exceeds 4 meters. These brackets can be supplied by Qimarox.

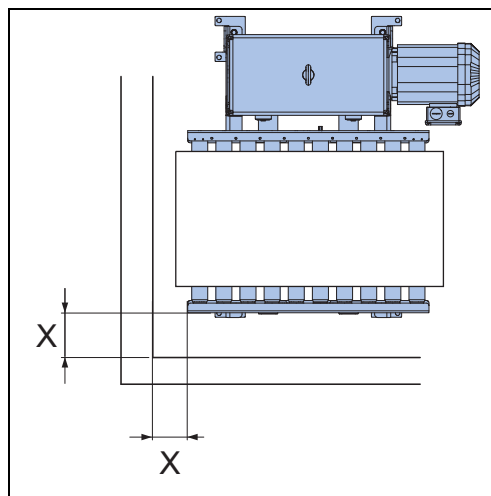


4.3.5 Machine use specifications

If Qimarox does not supply the product conveyors, the specifications below apply to the product conveyors.

| Specifications | Value |
|------------------------------------|-------|
| Maximum weight of infeed conveyor | 75 kg |
| Maximum weight of outfeed conveyor | 75 kg |

Refer to the machine layout drawing for the correct specifications.



The minimum distance of the product and/or carrier on the product carrier and parts of conveyors, conveyor supports, signalling devices, etc., must be 100 mm.

4.3.6 Specifications of the surrounding area

The surrounding area of the machine must have the following properties:

| Property | Description |
|-----------------------|--|
| General | Covered and normally clean for operation. There must be sufficient space around the machine for carrying out maintenance and other activities on the machine. |
| Level | The maximum allowed height level of the machine position is 1000 m above sea level. At higher elevations the power of the machine must be adapted according to the SEW manual. |
| Relative air humidity | Maximum 80%. |
| Temperature | Between +5°C (41 F) and 40°C (104 F). |
| Floor | Level. The floor load is provided on the machine specification sheet. |
| Required height | Refer to the machine layout drawing. |

When the specifications for the surrounding area still deviate from the table above, the machine must be adjusted to this. Such adjustments shall always be carried out by Qimarox or after permission from Qimarox.

4.3.7 Electrical specifications

See the type plate. Refer to section 2.1 and the electrical circuit diagrams in chapter 17.

5 Application information

The machine layout drawing gives application information for the machine.

5.1 Layout options

The machine can be set up in different configurations to work with the layout of the infeed and outfeed conveyors.

This infeed and outfeed conveyor layout determines:

- The transport method for infeed and outfeed. Refer to section 5.4.3.
- The fenced area. Refer to section 5.3.

This chapter gives an overview of most possibilities and the required points of attention.

5.2 Infeed and outfeed

This chapter gives a short description of some options.

5.2.1 Gravity conveyors

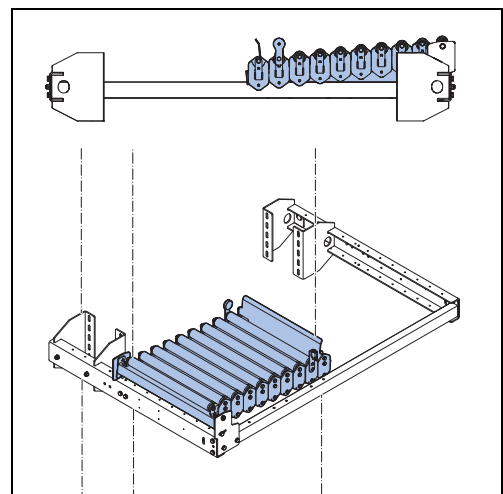
When making use of the gravity conveyor as infeed, an end stop must be used for the product.

The inclination must be adjustable in order to be able to adjust the transport speed and the transport time.

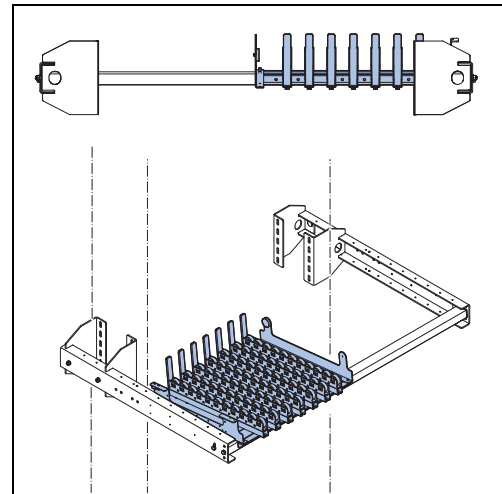
Make sure that the product carriers cannot touch anything during pickup and placement, as well as while they make their circular movement in the machine. A minimum distance of 5 mm is required between the moving and fixed parts. See the layout drawing for the pitch and the position of the fingers.

The drawings below give a few examples. Mirrored versions are possible as well.

Gravity roller conveyor

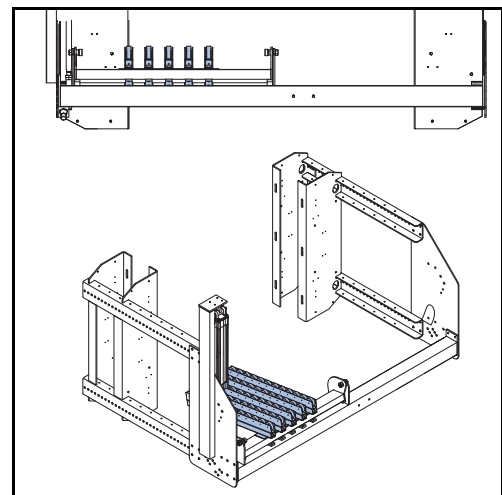


Gravity wheel conveyor



Tilting wheel conveyor

The tilting wheel conveyor can be used to allow for infeed and outfeed at different levels.

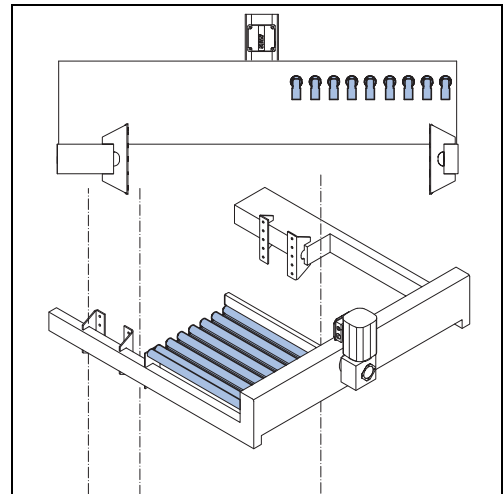


5.2.2 Driven roller conveyor

Make sure that the product carriers cannot touch anything during pickup and placement, as well as while they make their circular movement in the machine. A minimum distance of 5 mm is required between the moving and fixed parts. See the layout drawing for the pitch and the position of the fingers.

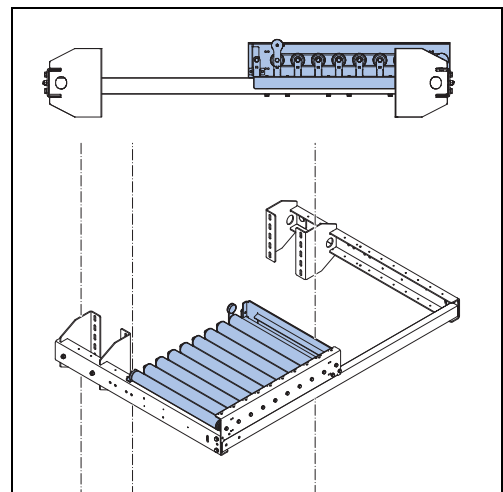
The drawing below gives examples. A mirrored version is possible as well.

On 400 V with motor reductor

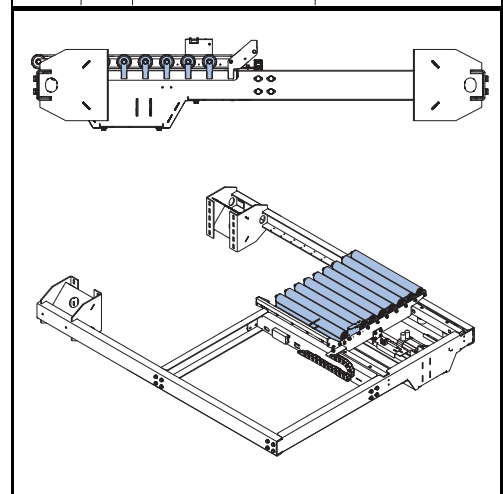


On 24 V with drum motor

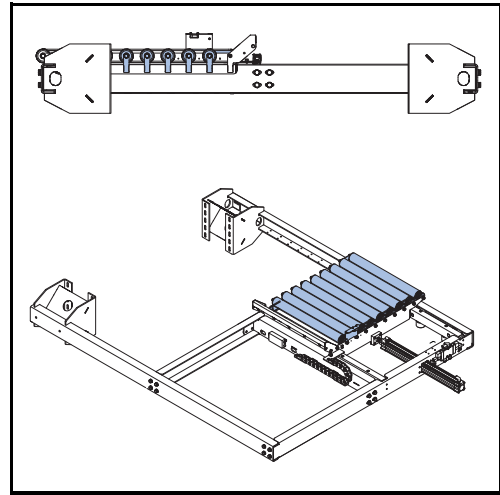
- On 24 V with drum motor



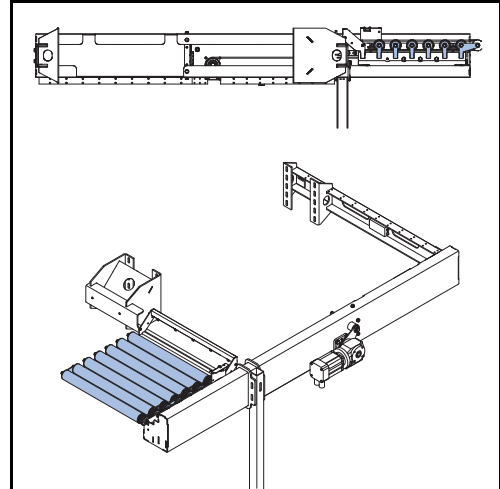
- Moveable roller conveyor to front side, electric



- Moveable roller conveyor to front side, pneumatic



- Moveable roller conveyor to side, electric

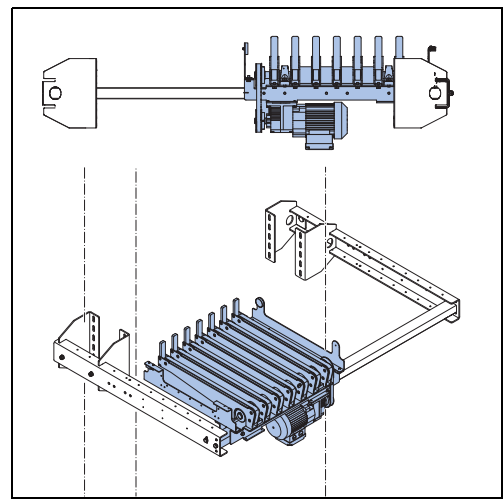


5.2.3 Driven belt conveyoyr

Make sure that the product carriers cannot touch anything during pickup and placement, as well as while they make their circular movement in the machine. A minimum distance of 5 mm is required between the moving and fixed parts. See the layout drawing for the pitch and the position of the fingers.

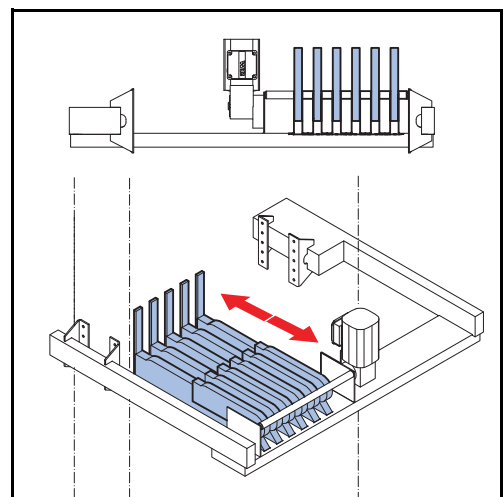
The drawing below gives examples. A mirrored version is possible as well.

Fixed layout



Moveable belt conveyor

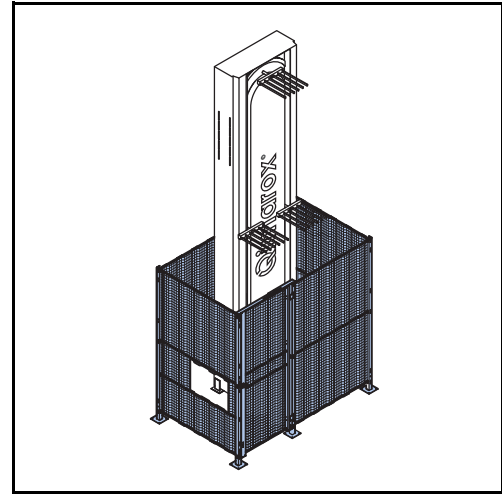
The moveable belt conveyor can be used to allow for infeed and outfeed at different levels.



5.3 Fenced area

Qimarox strongly advises to protect the machine with a fenced area to avoid persons accessing the danger zone of the machine. The fenced area must comply with EN ISO 13857 and EN 619 standards. Refer to the figures as examples.

The infeed and outfeed openings of the machine must be designed such, that they protect persons against accessing the danger zone. When this is not possible, these openings must be provided with a so-called tunnel guard or blocking device. A tunnel guard must be designed in accordance with EN-ISO 13857:2008. A blocking device must be designed in accordance with EN-ISO 1088:1996.



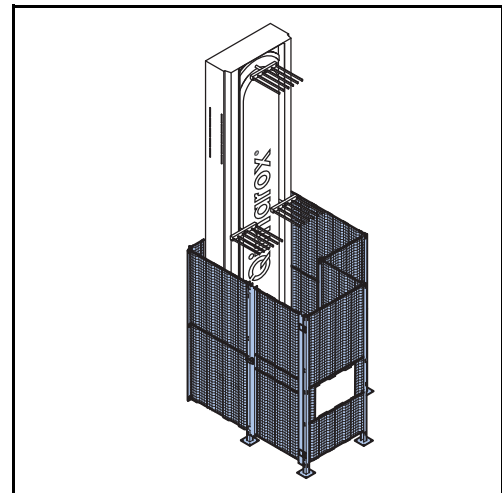
DANGER

Make sure that the fenced area complies with local law and rules for protection against danger.

If the fenced area is fitted with a door, it must have a safety switch to shut down the system when opened. Refer to 5.4.2.

The maximum dimensions of the mesh of the fenced area is 40 x 40 mm (width x height).

If Qimarox supplies the fenced area, the specifications will be included in the machine layout drawing.



5.4 Control

The control of the machine should be done from a central control system.

The conditions for the control are included in the technical specifications. When these control conditions are not met, the emergency stop circuit of the machine must be activated.

5.4.1 Electrical components

This section describes the sensor and motor electrical components.

Sensors

If the sensors are part of the delivery, they are connected to a central terminal box with cables. The central terminal box offers possibilities for connecting several sensors with M12 5-pole connections.

Motor

The motor can be connected directly or through an operating switch in the main power supply switch box. The machine can be controlled with a frequency converter to ensure smooth start and stop movement.

The setting range depends on the motor specifications.

If a power controller controls the machine drive, the European EMC directives concerning the electrical system must be adhered to. For power controller installation information, please contact the supplier of the power controller.

5.4.2 Safety controls

These provisions must be designed according to a Performance Level (PL) indicator that corresponds with the current standard for safety functions of a machine or a machine control in compliance with EN ISO 13849-1:2008. To the machine a PL_d applies, in which d indicates that the risk must be substantially reduced.

Guard the access door with a safety switch

If the fenced area has an access door, it must be guarded with a safety switch (blocking device). When opening the door, this switch activates the emergency stop and safety circuit, switching off the main power and the control current to the machine.

Emergency stop circuit

The machine must have an emergency stop circuit. When one of the emergency stop buttons is pressed, the main power and the control current to the machine are switched off immediately.

Set the motor protection relay

Motor protection devices must be set to the nominal motor current. A relay set too low prevents optimum use of the motor. A relay set too high does not guarantee full thermal protection.

When a correctly set relay trips too often, reduce the load of the motor or use a larger motor.

Thermistor protection (TF contact)

For motors that are frequently started and stopped, intermittently operated, use a high switching frequency or power controller, it is essential to use a motor protection relay and thermistor protection. This is to avoid prematurely switching the motor protection relay or overheating of the motor winding in these operational conditions.

Check continuously moving of products

It is necessary to check if the products are continuously moving during transport to the infeed and outfeed position by means of time monitoring in the software. When the time is exceeded, the machine must immediately stop to avoid damage.

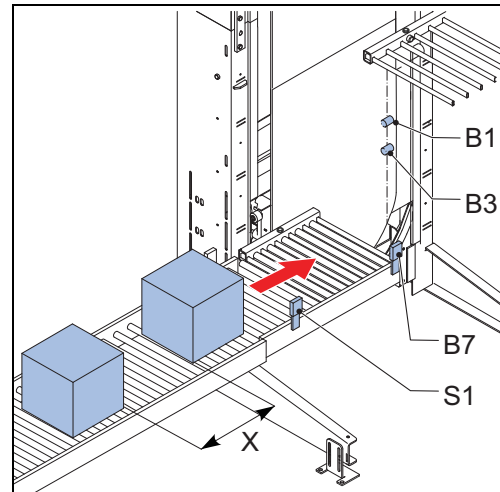
Check the circulation of the product carriers

It is necessary to check the movement of the product carriers during normal operation by means of time monitoring in the software. When the time is exceeded, the machine must immediately stop to avoid damage.

5.4.3 Control advice

The following are important points about the software control of the machine:

- Make sure that the products are fed to the machine with a time interval (X) spaced between them. If products run into each other, sufficient space must be created between these products on the transition to the infeed conveyor.
- Make sure all the photocells and sensors (S1, B7, B1 and B3. Refer to 4.2) have been adjusted correctly to the product and the trolley. Inaccurate settings can result in machine malfunction.
- The product run into the machine is controlled by the starting pulse from the product release sensor (B1). The time that the product needs to run in after the starting pulse is to be determined by experience.
- Make sure that this position is free from product before the product carrier passes the putting down position. The check is started when the product carrier passes the time frame sensor (B3). Dependent on the mutual distance and the position of this sensor, it is necessary to build in a time frame in the software for this, allowing for virtual determination of the position of the sensor.
- The run time (the time the product needs to run in and out of the machine) must be monitored by the software. If this time is exceeded, the machine must stop immediately.
- The continuous movement of the machine must be monitored. This can be done by applying time monitoring to the passing of the product carriers on the product release sensor. If this time is exceeded, the machine must stop immediately.
- A configuration with a crossing infeed involves special control requirements and is less suitable for high capacities.



6 Installation

This chapter describes installation instructions. Refer to chapter 12 for machine assembly instructions.



WARNING

The machine should only be installed by qualified personnel.

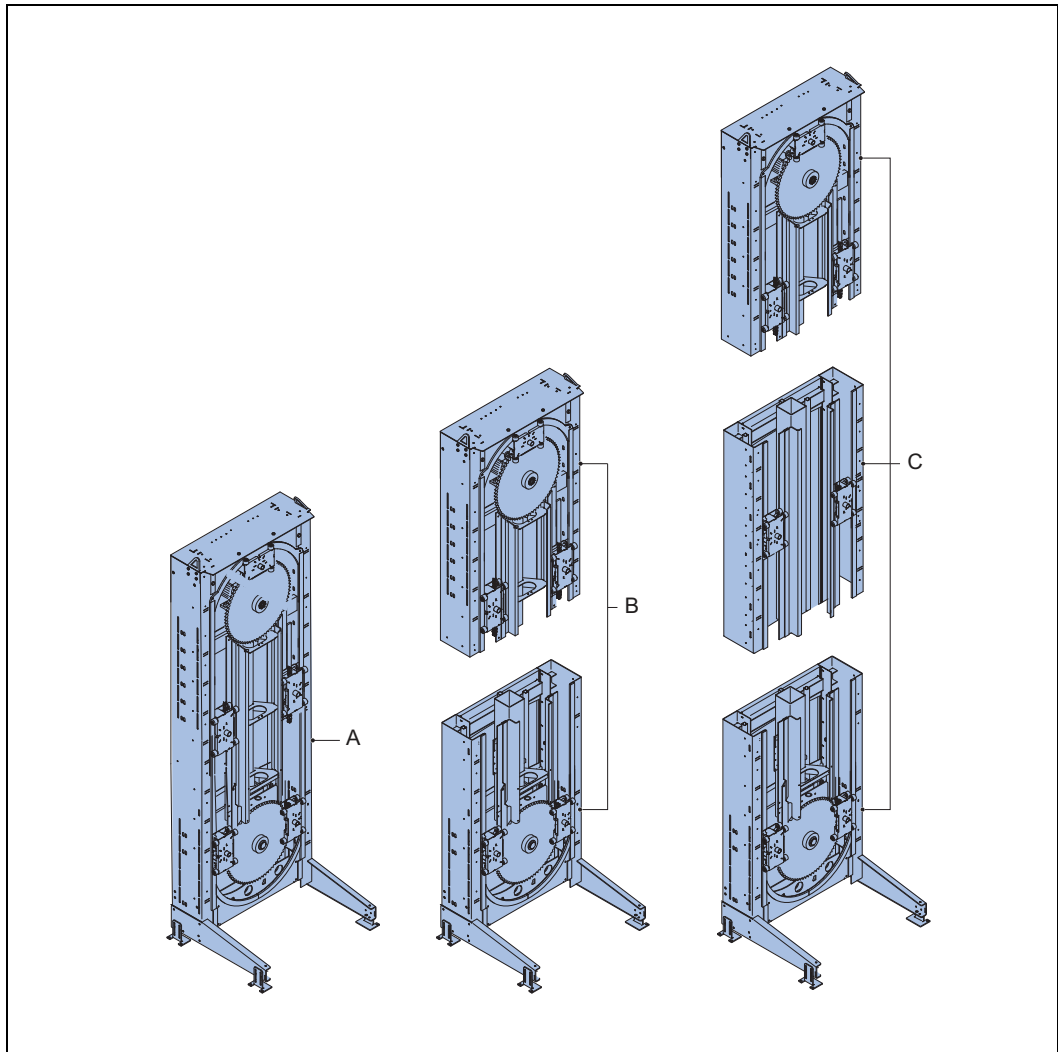
6.1 Unpacking

1. Check the packing list when unpacking the machine.
2. Immediately report damage or missing parts to Qimarox.

6.2 Delivery

The machine can be delivered pre-assembled or in parts.

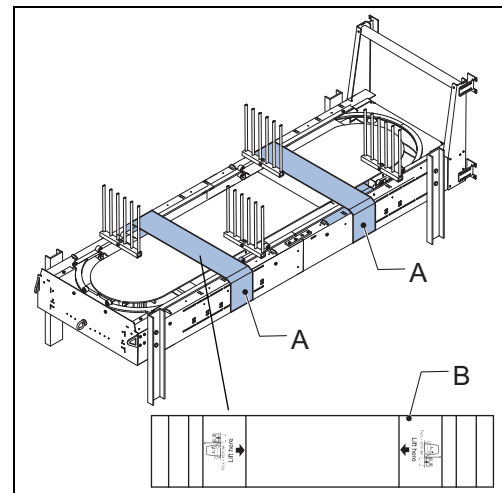
- A pre-assembled machine will be delivered in a horizontal position.
- For a machine delivered in parts, the column section is delivered in an upright position in a crate. Refer to chapter 12 for information on how to assemble the machine parts.



- A Machine pre-assembled
- B Machine in two parts
- C Machine in three or more parts

6.3 Transport

If the machine is delivered as a whole and in the horizontal position, it is packaged in cardboard. The forks of the fork-lift truck must be placed where cardboard has been applied (B). When the machine (A) is picked up at the places where cardboard has been applied, the centre of gravity is achieved. The packaging also indicates the minimum length of the forks.



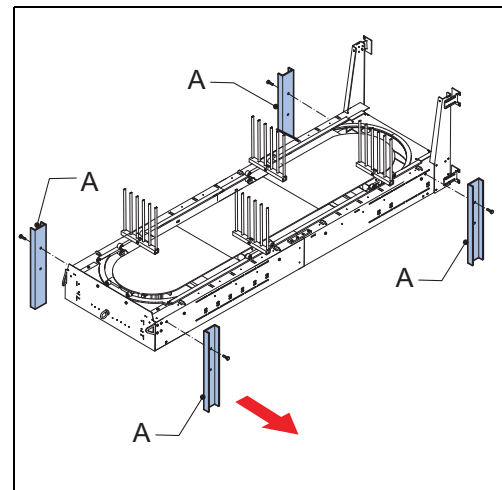
6.3.1 General preparation

1. Calculate the total weight before moving the machine.
 - The weight of the machine is given on the type plate. Refer to section 2.1.
 - Add to this, the weights of any attachments to the machine, for example, product conveyors. The weights are given on the type plates of the product conveyors.

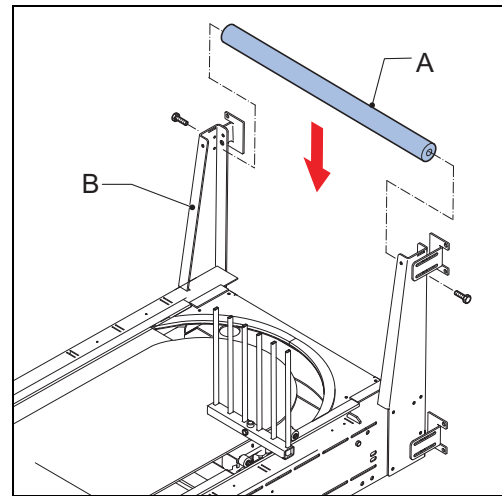
6.3.2 Horizontal transport

Prepare for transport

1. Install the transport supports (A). *For this use hexagonal bolts M12 with a minimum strength class of 8.8.*



2. Install the shaft (A) between the base plates (B).



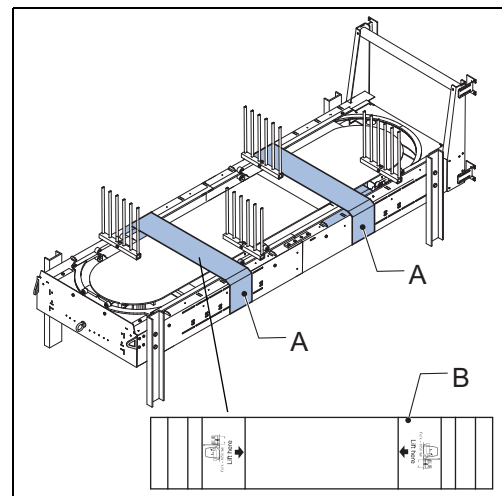
Transport



Note

This method of transport always applies when unloading the machine.

1. Use a fork-lift truck for horizontal transport of the machine:
 - Allowed pick-up points (A) indicated by the cardboard transport protection (B).
2. Make sure that the centre of gravity is in the centre between the forks. With a machine without attachments, the centre of gravity is about one half of the machine height. When the machine has attachments, such as roller conveyors, take these into account when choosing the pick-up points.



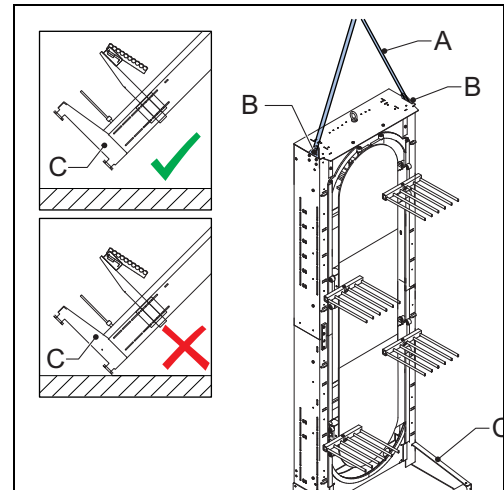
6.3.3 Vertical transport < 1400 kg



DANGER

- The hoisting eyes (B) are suitable for a maximum weight of 1400 kg. Machines up to 7 - 8 m high can be moved using the hoisting eyes.
- If the weight to be moved is more than 1400 kg, use a suitable lifting device (yoke). Refer to section 6.3.4.

1. Check the type plate for the exact weight of the machine.
2. Use a suitable hoisting system that complies with local regulations.
3. Attach a suitable hoisting belt or hoisting chain (A) to the lifting eye (B).
4. If necessary, put the machine in the vertical position. Make sure that the machine does not tip over after it has been put in the vertical position.
5. Make sure that the bottom side of the machine (C) is not dragged along the ground during transport.



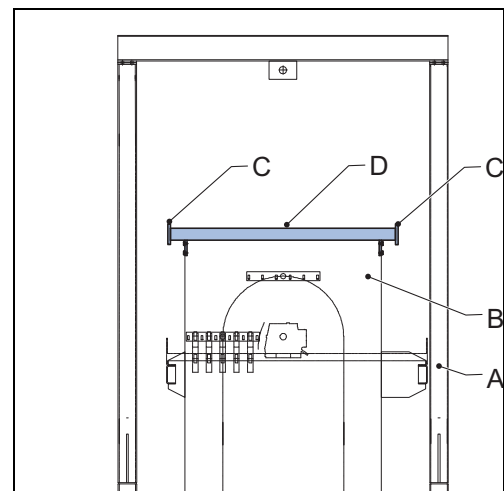
6.3.4 Vertical transport > 1400 kg



Note

The hoisting eyes on the lift (C) are suitable for a maximum weight of 1400 kg. Refer to section 6.3.3 if the weight to be moved is less than 1400 kg.

1. Check the type plate for the exact weight of the machine.
2. Use a suitable hoisting system (A) that complies with local regulations.
3. Install a yoke (D) onto the upper beam (B).
4. Attach a suitable hoisting belt or hoisting chain to the hoisting eyes (C) on the yoke.
5. Follow the rules for lifting using a yoke.
6. Make sure that the bottom side of the machine is not dragged along the ground during transport.



6.4 Preparations for a Qimarox supervised installation (optional)

The preparations described below must be completed before Qimarox can assemble the machine on site. All equipment listed below must be present before and during assembly.

1. Indicate the contact person to whom Qimarox's engineer must report when arriving or leaving before and after the assembly. This only applies when Qimarox supervises the assembly.
2. Make sure that Qimarox's engineer is assisted by two qualified client engineers. Refer to section 3.
3. Make sure that the place where the assembly takes place:
 - is accessible, has sufficient light and is at room temperature.
 - has been laid out such that the engineers can work quietly and safely there.
 - is suitable for drilling and/or grinding, if necessary.
4. Provide hoisting equipment:
 - preferably a bridge crane, minimum carrying capacity 1.5 x the weight of the machine.
 - or a fork-lift truck combined with a hoist with a minimum capacity of 2 x the weight of the machine at a lifting height of 4 metres. Refer to section 6.3.3 and section 6.3.4.
5. Provide electric power (230 V AC) at a maximum of 5 metres from the place of assembly of the machine.
6. Provide the correct safety provisions:
 - Moveable scaffolding or a hydraulic hoist.
 - Personal protection equipment.

6.5 Installing the machine



DANGER

- **The machine must be set up by qualified personnel. Refer to section 3.2.**
- **Machines higher than 4 metres must be laterally supported in order to provide sufficient stability in the lift column. Refer to the machine layout drawing.**

6.5.1 Preparation

1. Make sure that a hoisting system above the machine is available. Refer to section 6.3.3.
2. Make sure that the surface is level and meets the requirements for supporting the total weight of the transport system. Refer to the machine layout drawing.
3. Keep the rear side of the machine, especially the top of the drive, accessible for service. Maintain a free space of approximately 800 mm.

6.5.2 Installing a pre-assembled machine



Tip

The procedure below shows the set-up of an assembled machine as a whole.

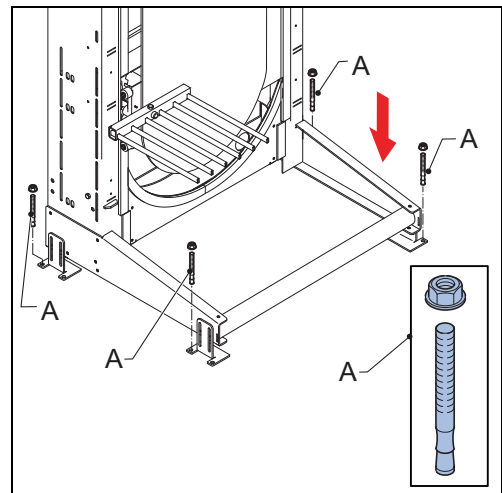
1. Position the machine using a hoisting system. Refer to section 6.3.3 and 6.3.4.
2. Check if the machine is completely level.
3. Anchor the machine (A).



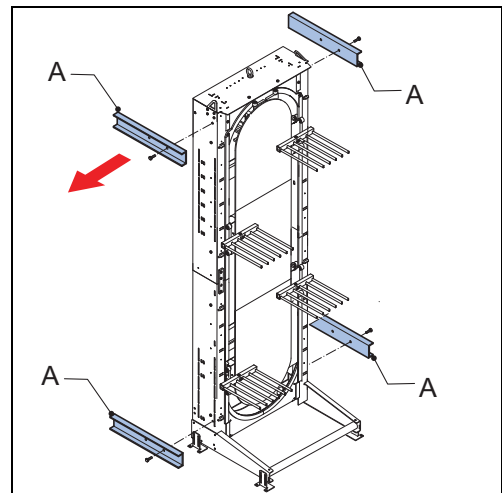
Note

Use Fischer FBN II 12/100 bolts or equal.

These are not by default delivered by Qimarox. See the bolts specifications for information on the supplier.



4. Disconnect the hoisting belt, the hoisting chain, or the yoke.
5. Remove the transport supports (A).

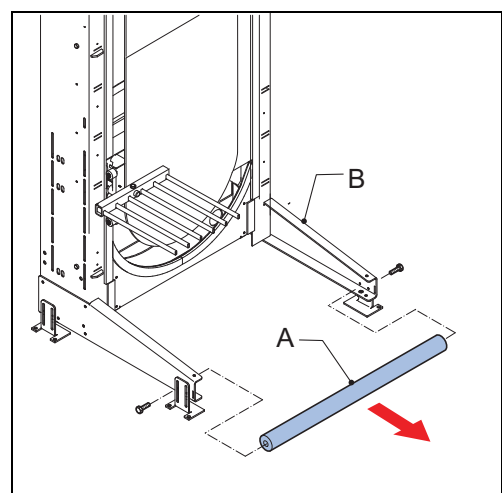


6. Remove the shaft (A).
7. Check the tension of the chain. Refer to section 7.7.



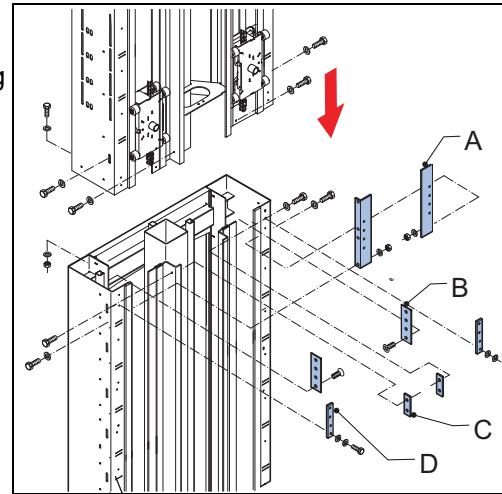
Tip

Keep the transport supports and shaft for any future transport.

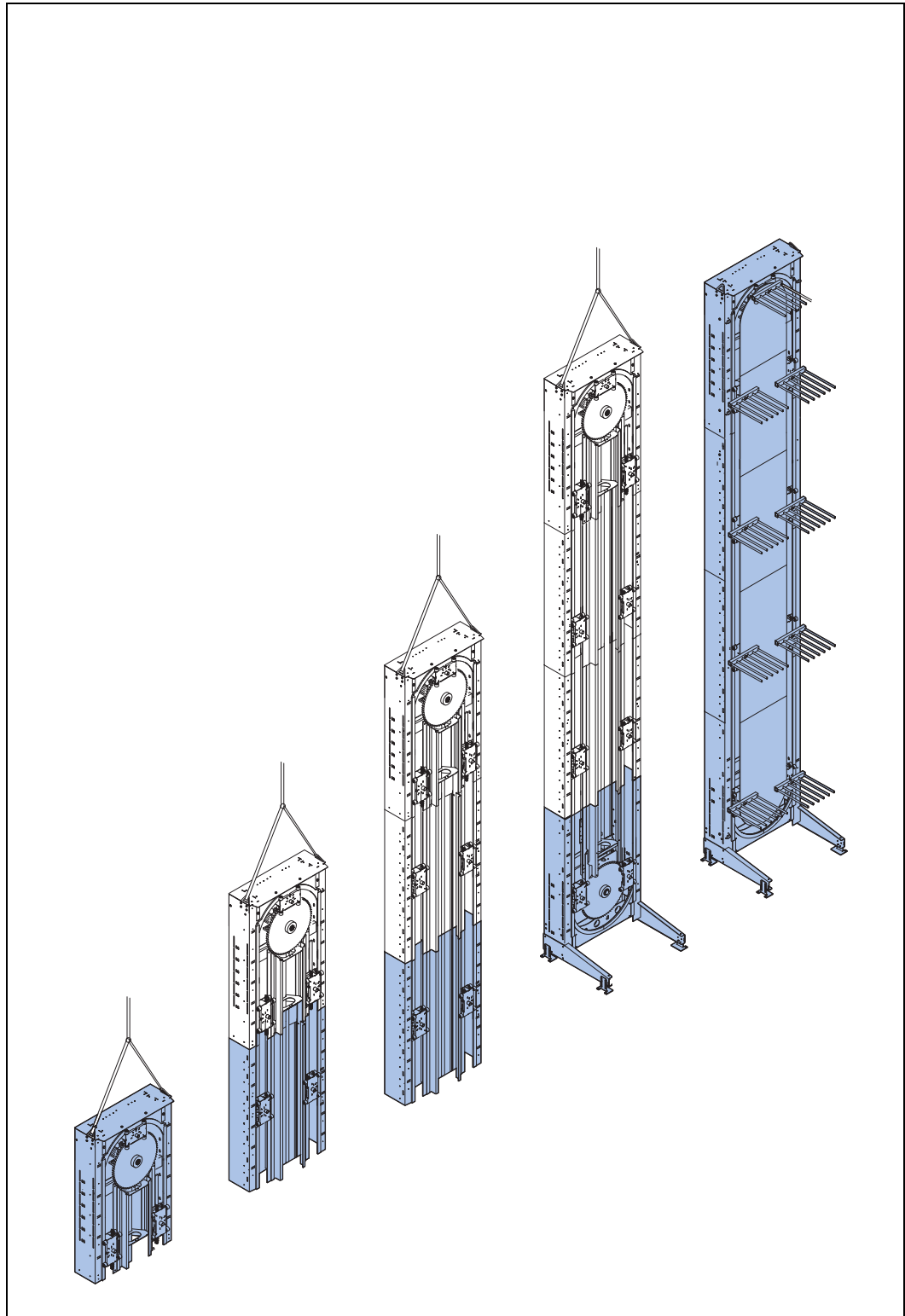


6.5.3 Installing a machine delivered in parts

1. Set up the basis. Refer to section 6.5.2.
2. Install the parts. Use the delivered coupling pieces (A, B, C, D). For the use of hoisting equipment refer to section 6.3.3 and 6.3.4.
3. The machine can be installed from top to bottom (see 6.5.4) or from bottom to top (see 6.5.5).



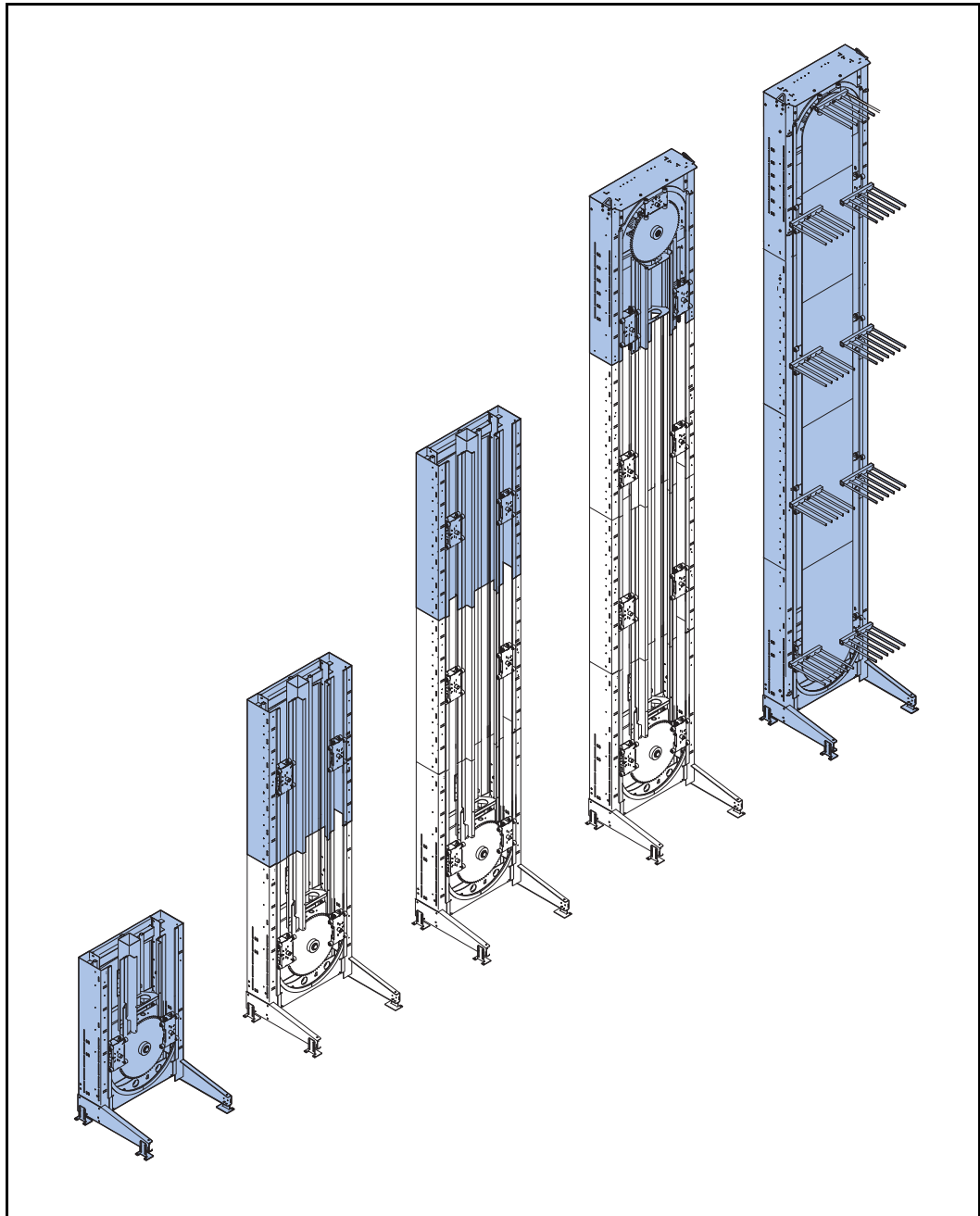
6.5.4 Installing a machine from top to bottom



1. Hoist up top section.
2. Mount next section below top section.
3. Hoist up and mount next section.
4. Repeat step 3 until bottom section has been mounted.
5. Mount the carriages and chain in bottom section.

6. Mount infeed and outfeed conveyors.

6.5.5 Installing a machine from bottom to top



1. Place bottom section.



DANGER

- **Fix the bottom section to the floor if the machine is installed in the final position**
- **Support the machine during installation to prevent falling over if the machine is not in the final position**

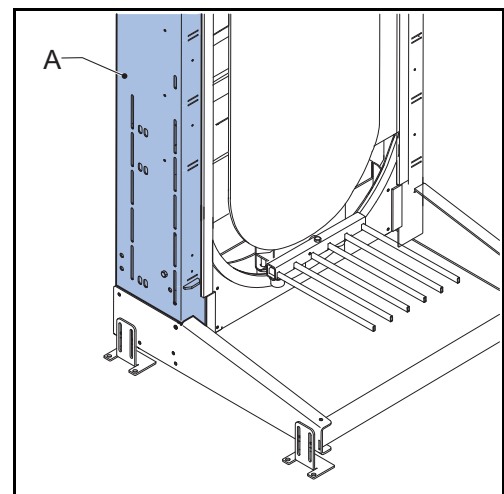
2. Place next sections on top until top section has been placed.

6.6 Installing the supply conveyor



DANGER

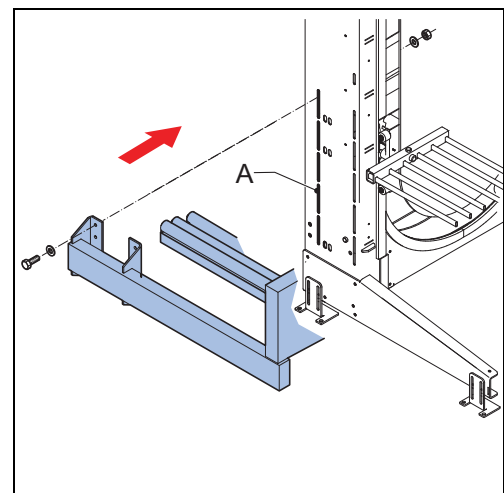
Do not drill any extra cable holes in the shaded part (A) with a diameter larger than 8 mm, unless they are sealed again before use. This is important to make sure there is no risk of body parts becoming jammed in the machine. Always observe national and local legislation and regulations with regard to health and safety.



6.6.1

Procedure

1. Determine the position of the conveyor to be installed. If the conveyor is supplied by Qimarox, the position can be found on the supplied drawings.
2. If required, drill holes if the conveyor is to be installed outside the slotted holes already provided.
3. Attach the conveyor to the frame (A) at the corresponding slotted holes.



7 Maintenance vertical conveyor



WARNING

- The maintenance as described in this chapter is based on 2000 running hours per year. Adjust the maintenance frequency to the actual number of running hours per year.
- If required, Qimarox can carry out the maintenance activities.

7.1 Specific safety regulations

For optimum functioning of the machine the various machine parts must be regularly maintained. In this way defects and inaccuracies of the machine are prevented.



DANGER

- **Only a qualified maintenance engineer is allowed to carry out maintenance activities on the machine. Refer to section 3.2.**
- **Switch the machine off using the main power supply switch before starting any maintenance or repair activities. Secure the main power supply switch with a padlock.**
- **Do not use any corrosive and inflammable solvents or cleaning agents on the machine that contain TRI, PER, TETRA or FCHC. Read the instructions on the packaging when use is made of chemical substances (cleaning agents).**
- **After having completed maintenance activities, always put all safety provisions that have been removed in place again.**
- **Make sure that the machine has always run empty before carrying out any activities. No products must be present in the machine.**
- **Take the appropriate measures for safely working at heights.**



WARNING

Avoid parts made of rubber or plastic, such as cables and gaskets, from making contact with oil, solvents or other chemicals.

7.2 Preventive maintenance schedule, machine excluding the carrier

7.2.1 Weekly maintenance during the first 8 weeks after putting into operation

| Item | Task | Action when required by the check |
|-------|--|-----------------------------------|
| Chain | Tighten the chain. Refer to section 7.7. | |

7.2.2 Daily maintenance

| Item | Task | Action when required by the check |
|-------------------|---|---|
| Guards and covers | Check for visible damage. | Replace damaged guards and / or covers. |
| | Check if the mounting materials are present and have been correctly placed. | Place the mounting materials or correct the way in which they have been fastened. |
| Entire machine | Check for visible dirt. | Clean the machine. Refer to section 7.3. |

7.2.3 Weekly maintenance

| Item | Task | Action when required by the check |
|-----------------------|---|--|
| Wheels of the trolley | Check for visible damage of the running surface and bearings. | Replace the wheels. Refer to section 7.8.2. |
| | Clean. Refer to section 7.3. | |
| | Check for running sounds. | Lubricate the wheels of the trolley. Refer to section 7.4.2. |
| Wheels of the guide | Check for damage of the running surface and bearings. | Replace the wheels. Refer to section 7.8.5. |
| | Clean. Refer to section 7.3. | |
| | Check for running sounds. | Lubricate the wheels of the guide. Refer to section 7.4.3. |

| Item | Task | Action when required by the check |
|------------------|--|--|
| Product carriers | Check for damage. | Replace the product carrier. Refer to section 7.8.3. |
| | Check if the fastening bolt on the carrying shaft is present and has been correctly fixed. | |
| | Clean. Refer to section 7.3. | |
| Curve plates | Check for dirt. | Clean. Refer to section 7.3. |
| | Check for visible deformation of the running surface. | Replace the curve plate. Refer to section 7.8.6 (bottom side) or section 7.8.7 (upper side). |

7.2.4 Monthly maintenance

| Item | Task | Action when required by the check |
|--|--|--|
| Motor reductor Follow the instructions in the manual of the manufacturer of the motor reductor. | Check the seals for leakage. | Replace the seals. |
| | Check for visible damage. | Replace the damaged parts. |
| | Check for running sounds. | Replace the motor reductor. Refer to section 7.8.12. |
| Chain | Tighten the chain. Refer to section 7.7. | Replace the chain if the training device is at the end of the setting range. Refer to section 7.8.8. |
| | Lubricate the chain. Refer to section 7.4.1. | |
| Sprocket wheel and slide bearings | Check for slack. Refer to section 7.5. | Replace the slide bearings of the tensioning wheel when there is too much slack. Refer to section 7.8.9. |
| Bearings of the wheels of the trolley | Check for slack. Refer to section 7.8.2. | Replace the wheels. Refer to section 7.8.2. |
| Bearings of the wheels of the guide | Check for slack. Refer to section 7.6. | Replace the wheels. Refer to section 7.8.5. |
| Photocells | Check for visible damage. | Replace the photocell if necessary. |
| | Check for loose parts. | Fasten loose parts. |
| | Clean. Refer to section 7.3. | |
| Inductive sensors | Check for visible damage. | Replace the sensor if necessary. |
| | Check for loose parts. | Fasten loose parts. |
| | Clean. Refer to section 7.3. | |

| Item | Task | Action when required by the check |
|--|--|---|
| Clamping bush for drive sprocket wheel | Check if the socket screws are fixed. | Tighten the socket screws to the following torques: <ul style="list-style-type: none"> • shaft diameter ≤ 40 mm: 17 Nm • shaft diameter ≤ 65 mm: 41 Nm • shaft diameter ≤ 95 mm: 83 Nm |
| Cabling | Make sure that all cables are securely fastened. | Connect the cables again if necessary. |
| Adjusting rings of the guides | Check if the adjusting rings are fastened tightly and look for visible damage. | Replace the adjusting ring. Refer to section 7.8.4. |
| Adjusting rings of the tension wheel | Check if the adjusting rings are fastened tightly and look for visible damage. | Replace the adjusting ring. Refer to section 7.8.2. |
| Locking rings of the trolleys. | Check the locking for presence and for being fixed well. | Replace the locking ring (Starlock). Refer to section 7.8.2. |

7.2.5 6-monthly maintenance

| Item | Task | Action when required by the check |
|--|----------------------------------|--|
| Motor reductor Follow the instructions in the manual of the manufacturer of the motor reductor. | Check the oil level. | Refill the oil. |
| | Check the oil for contamination. | Change the oil. |
| | Check the air gap of the brake. | Adjust the air gap. |
| All bolt connections | Check all bolt connections. | Tighten bolts using the correct tool and torque. |

7.2.6 2-yearly maintenance¹

| Item | Task | Action when required by the check |
|--|-----------------|-----------------------------------|
| Motor reductor Follow the instructions in the manual of the manufacturer of the motor reductor. | Change the oil. | |

¹ Or after 10,000 running hours, whichever comes first.

7.3 Cleaning



DANGER

Do not use any corrosive and inflammable solvents or cleaning agents on the machine that contain TRI, PER, TETRA or FCHC. Read the instructions on the packaging when use is made of chemical substances (cleaning agents).



WARNING

- Electrical components should not make contact with water or other liquids.
- Do not clean the machine with compressed air or water under high pressure.
- Avoid parts made of rubber or plastic, such as cables and gaskets, from making contact with oil, solvents or other chemicals.

1. Switch off the machine.
2. Secure the main power supply switch with a padlock.
3. Remove deposit and dirt by hand.
4. Report any damage to the technically responsible person or to Qimarox and make sure that any damage is remedied before restarting the machine.

7.4 Lubrication

7.4.1 Lubricate the chain

1. Lubricate the chain with an appropriate chain lubricating agent. Qimarox *recommends the following product: No-Tox Chain Lube.*

7.4.2 Lubricate the wheels of the trolley

1. Lubricate the running surfaces of the wheels with Bel-Ray No-Tox HD Grease (62270, 62280) or equivalent.

7.4.3 Lubricate the wheels of the guide

1. Lubricate the running surfaces of the wheels with Bel-Ray No-Tox HD Grease (62270, 62280) or equivalent.

7.5 Check the slack on the sprocket wheels and slide bearings

1. Replace the slide bearings of the tensioning wheel when the diameter is 51 mm or more. *The bronze bearing may maximally wear out 1.0 mm.*

7.6 Check the slack on the bearings of the trolleys and guide

1. Replace the bearings of the trolley when the diameter is 30.5 mm or more. *The plastic bearings may maximally wear out 0.5 mm.*

7.7 Tighten/slacken the chain

The chain will elongate by use. How fast this happens depends on the conditions of use. Chains elongate the most after the machine has been put into operation for the first time.

- Too low chain tension results in the machine making a noise at the tensioning wheel and jerky product carrier movement.
- Too high chain tension causes extra wear and may damage the bearings of the motor reductor.

7.7.1 How to measure the elongation on the chain



WARNING

- When the chain has become 2% longer, the chain must be replaced soon.
- When the chain has become 3% longer or more, the chain must be replaced immediately.



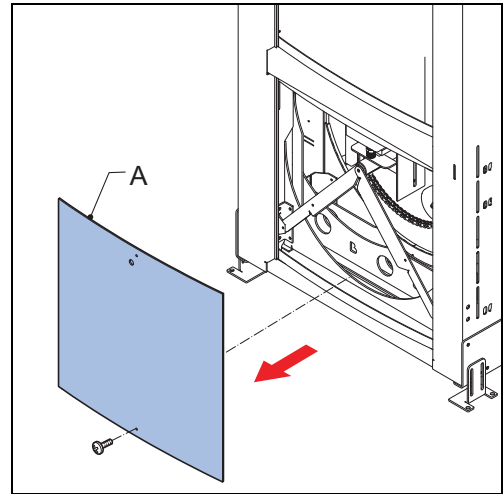
WARNING

When replacing the chain, also replace the chain in the trolley (7 links).

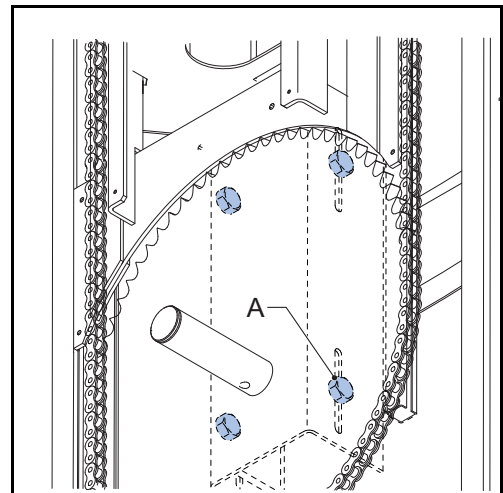
1. Measure the stretch amount using a chain stretch meter.
2. Tighten the chain depending on the measured stretch (or 'elongation').

7.7.2 How to tighten / loosen the chain

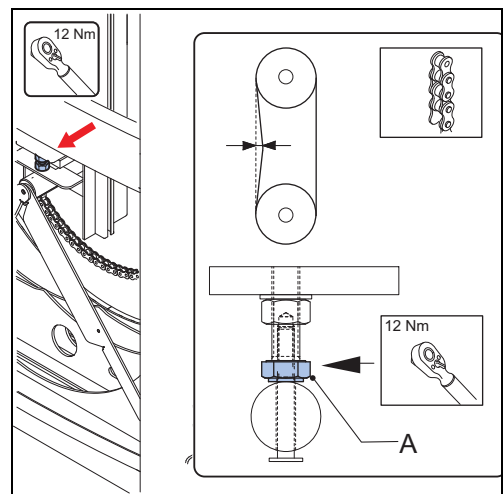
1. Remove the guard (A).



2. Loosen the four bolts at the side of the tension block.



3. Turn the tensioning bolt (A) to tighten or to slacken the chain:
 - Turn clockwise to tighten with a torque of 12 Nm;
 - Turn counterclockwise to slacken.
4. Tighten the four bolts at the side of the tension block.
5. Replace the cover.



7.8 Replace parts

Some machine parts are subject to wear. See the type plate and the exploded view for the specifications of the machine parts.



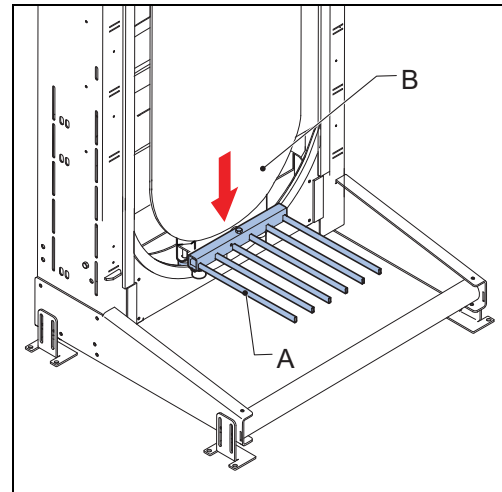
WARNING

Replace parts only with parts supplied or recommended by Qimarox. If parts are not replaced with supplied or recommended Qimarox parts, the machine warranty becomes null and void. Refer to section 2.3.

7.8.1 Replace the trolley

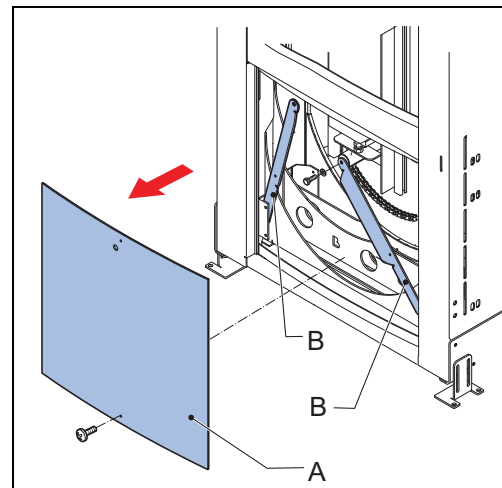
Uninstall the trolley - part 1

1. Before switching off the machine, move the product carrier (A) to the lowest sprocket wheel (B).

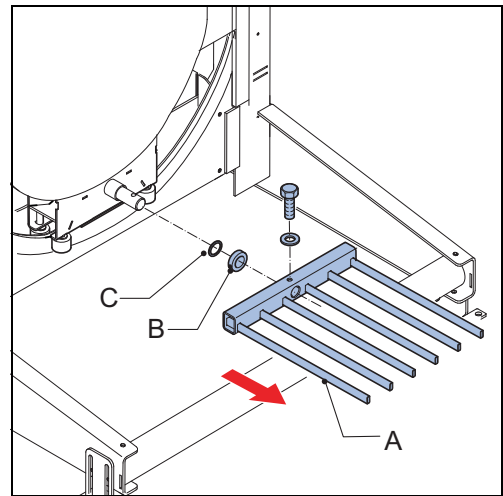


Uninstall the trolley - part 2

1. Remove the guard (A).
2. Remove the bars (B) to make room.



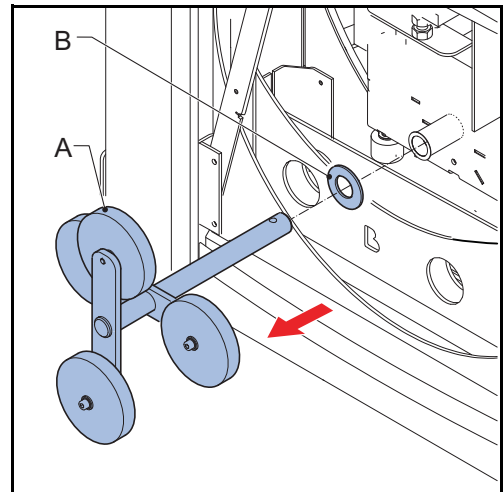
3. Remove the product carrier (A).
4. Remove the clamping ring (B) and the spacer (C).



5. Remove the leveler (A) with the 4 wheels from the machine.



WARNING
Pay attention to ring (B).



Uninstall the trolley - part 3



DANGER

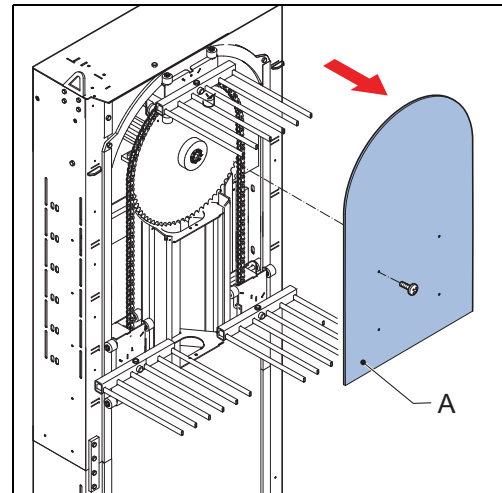
If the drive does not have a brake, the drive sprocket wheel must be clamped onto the frame. If the drive sprocket wheel can turn, this may cause injury. Therefore the auxiliary tool is required. You can order this auxiliary tool through Qimarox.

1. Remove the guard (A).



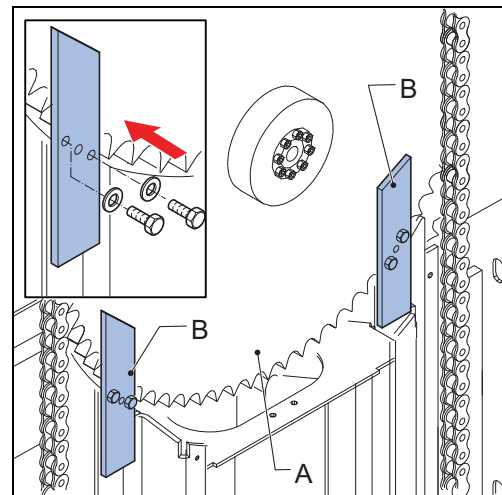
Note

Now an auxiliary tool can be placed to prevent the sprocket wheel from tilting or turning. Refer to section *Uninstall the trolley - part 4*.



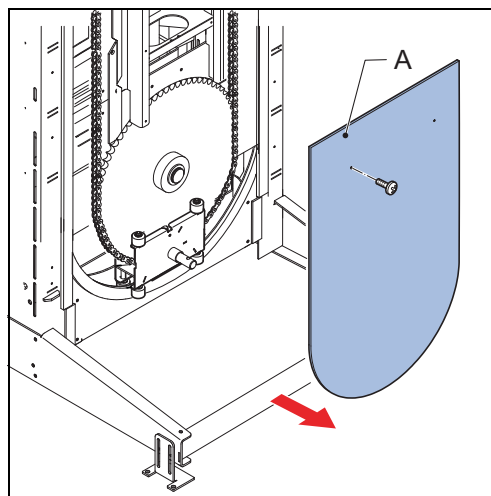
Uninstall the trolley - part 4

1. If the drive does not have a brake, clamp the sprocket wheel (A) onto the frame (B). Use the auxiliary tool. The sprocket wheel must not tilt or turn with respect to the frame.

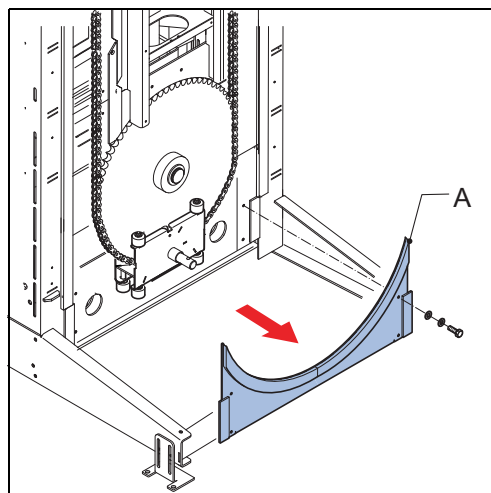


Uninstall the trolley - part 5

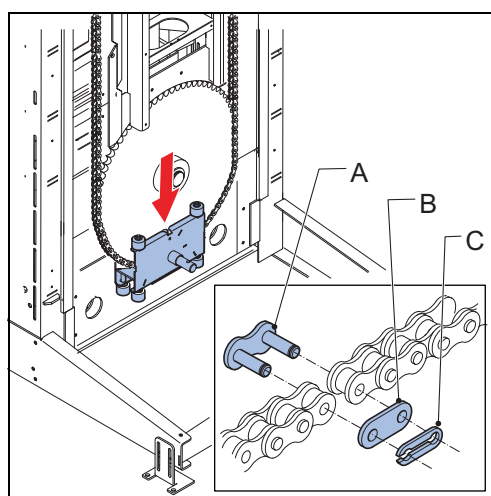
1. Remove the guard (A).



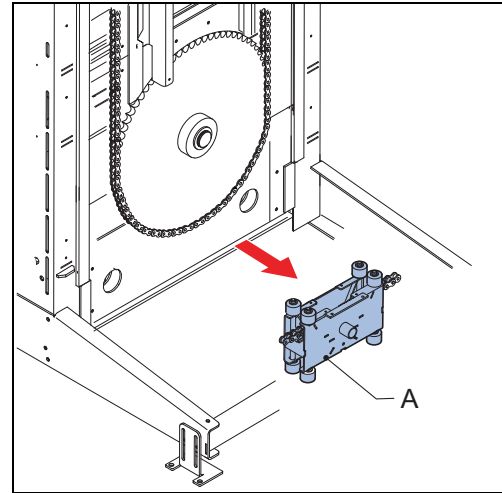
2. Remove the curve plate (A).



3. Remove the closing links (A, B, C) at both sides of the trolley.



4. Remove the trolley (A).



Uninstall the trolley - part 6

1. Check the parts for wear.
2. Replace worn parts by new ones. Refer to section 7.8.2.

Install the trolley



Tip

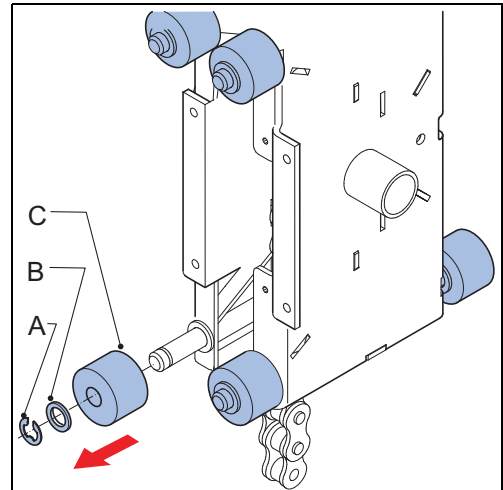
Illustrations for installing: see the illustrations above for uninstalling.

1. Place the trolley into the machine.
2. Install the closing links.
3. Install the curve plate.
4. Remove the auxiliary tool.
5. Install the guards.
6. Install the guide and the spacers.
7. Install the clamping ring onto the leveler.
8. Install the bars.
9. Install the guard.

7.8.2 Replace the wheel of the trolley

Remove the wheel

1. Uninstall the trolley. Refer to section 7.8.1 and follow parts 1 - 5.
2. Remove the locking ring (A).
3. Remove the ring (B).
4. Use a pulley puller to remove the wheel (C).



Replace the wheel



Tip

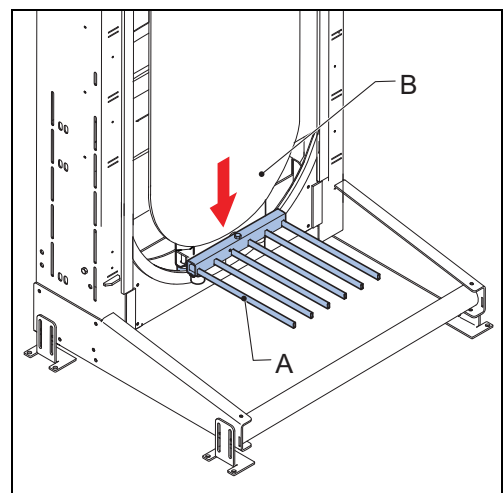
Illustrations for replacing: see the illustrations above for removal.

1. Place a new wheel (C).
2. Place the ring (B). Pay attention to the maximum diameter of the ring.
3. Place a new locking ring (A). Always use a Starlock locking ring.
4. Install the trolley. Refer to section 7.8.1.

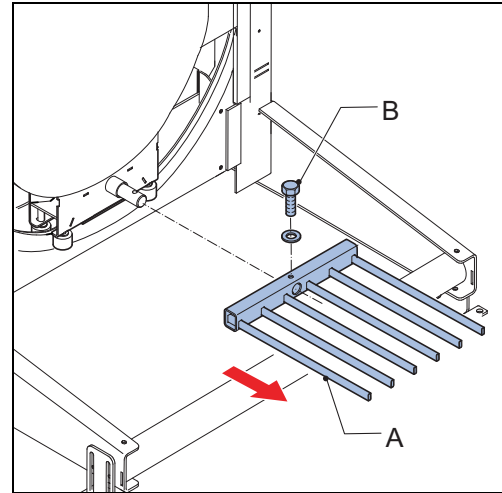
7.8.3 Replace the product carrier

Uninstall the product carrier

1. Before switching off the machine, move the product carrier (A) to the lowest sprocket wheel (B).



2. Remove the bolt (B).
3. Remove the product carrier (A).



Install the product carrier



Tip

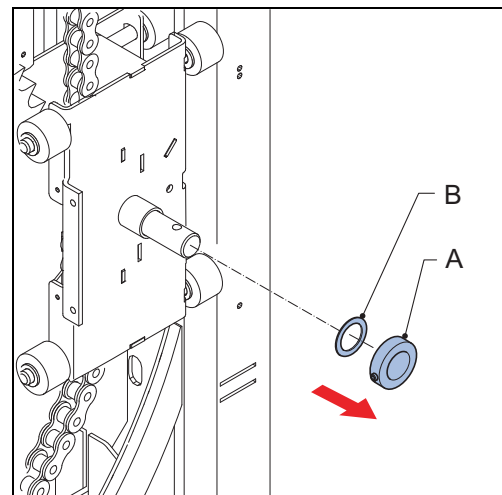
Illustrations for installing: see the illustrations above for uninstalling.

1. Install the product carrier.
2. Before switching on the machine, move the product carrier to the upper sprocket wheel.

7.8.4 Replace the slide bearings of the leveler

Replace slide bearing - front side

1. Open the machine. Refer to section 7.8.1 and follow parts 1 - 4.
2. Remove the adjusting ring (A).
3. Remove the ring (B).

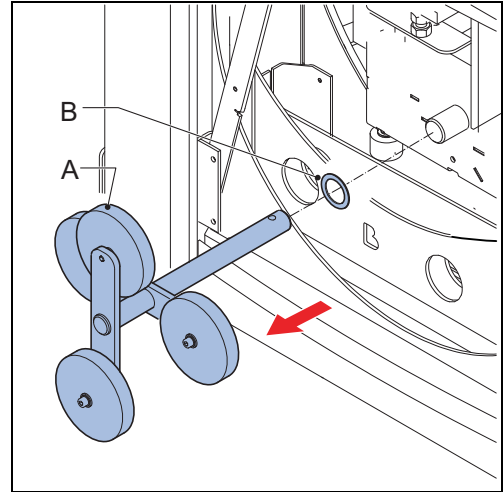


Replace slide bearing - rear side

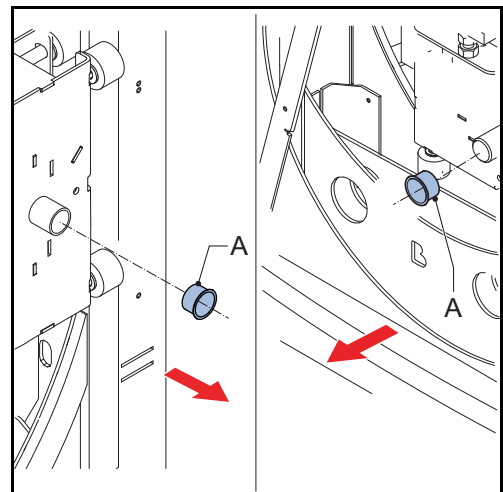
1. Remove the leveler with the 4 wheels (A) from the machine.
2. Remove the ring (B).



WARNING
Pay attention to ring (B).



3. Remove the bearings (A) at front side and rear side.



Install the guide



Tip
Illustrations for installing: see the illustrations above for uninstalling.

1. Install the new bearing on the rear side. Pay attention to the maximum diameter of the ring.
2. Install the guide on the rear side.
3. Place the new bearing on the front side.
4. Place the ring and the adjusting ring on the front side.
5. Place the product carrier on the front side.

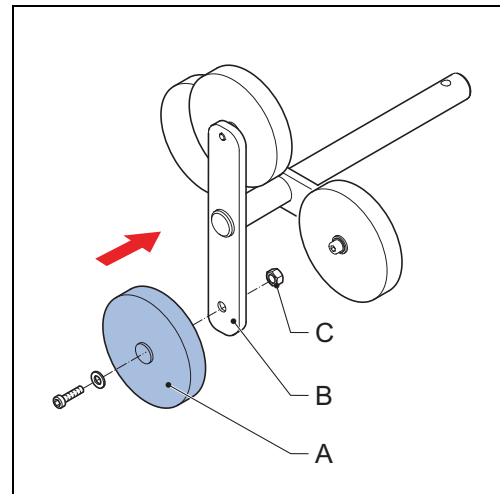
7.8.5 Replace the wheel of the leveler

1. Remove the guide. Refer to section 7.8.4.
2. Loosen the bolt.
3. Replace the wheel (A) of the leveler (B).
4. Replace the bolt and tighten the bolt with a torque of 30 Nm.



Note
Pay attention to the torque.

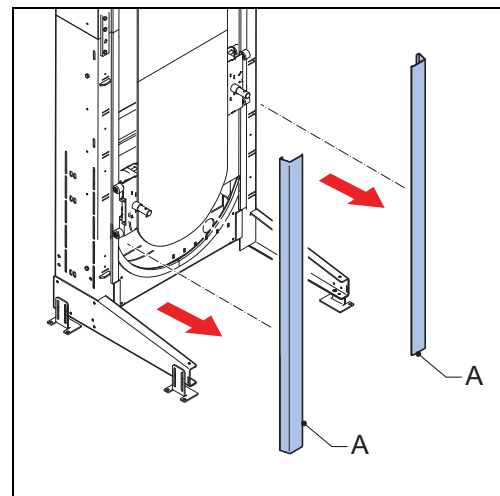
5. Place and tighten a lock nut (C) at the bolt.
6. Re-lubricate the running surfaces of the wheels with Bel-Ray No-Tox HD Grease (62270, 62280) or equal.



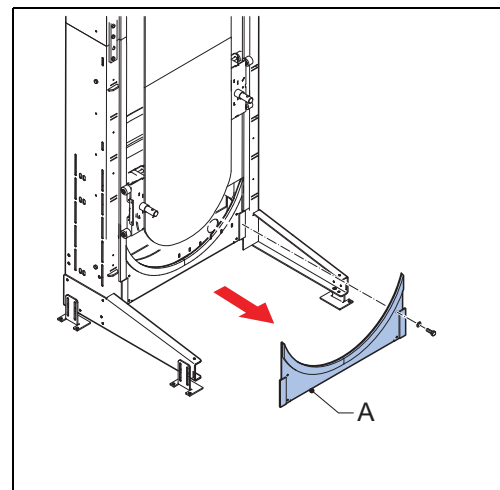
7.8.6 Replace the curve plate - bottom side

Uninstall the curve plate

1. Remove the side covers (A).



2. Remove the curve plate (A).



Install the curve plate



Tip

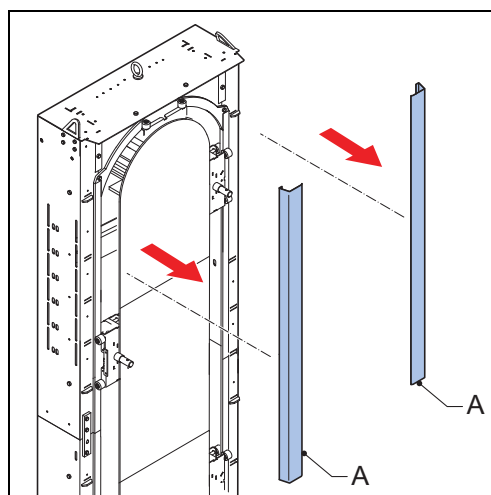
Illustrations for installing: see the illustrations above for uninstalling.

1. Install the curve plate.
2. Install the side covers.

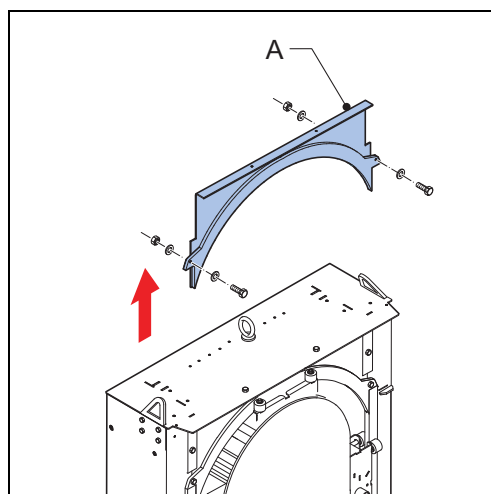
7.8.7 Replace the curve plate - upper side

Uninstall the curve plate

1. Remove the side covers (A).



2. Remove the curve plate (A).



Install the curve plate



Tip

Illustrations for installing: see the illustrations above for uninstalling.

1. Install the curve plate.
2. Install the side covers.

7.8.8 Replace the chain



DANGER

- The product carrier must not contain any products.
- If the drive does not have a brake, the drive sprocket wheel must be clamped onto the frame. If the drive sprocket wheel can turn, this may cause injury. Therefore the auxiliary tool is required. You can order this auxiliary tool through www.Qimarox.com.
- When replacing more than 1 chain section, lock the chain such that, from the top, it cannot fall.



Note

Replace the chain one section at a time. This provides for safe replacement of the chain without having to remove it from the top of the machine.



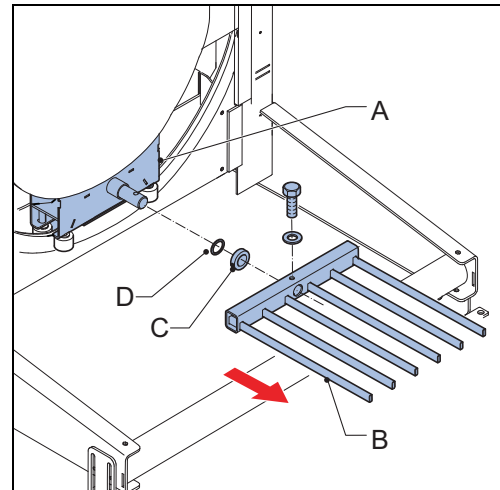
Note

When replacing the chain, also replace the chain in the trolley (7 links).

The chain can be replaced as a whole or per section between the trolleys.

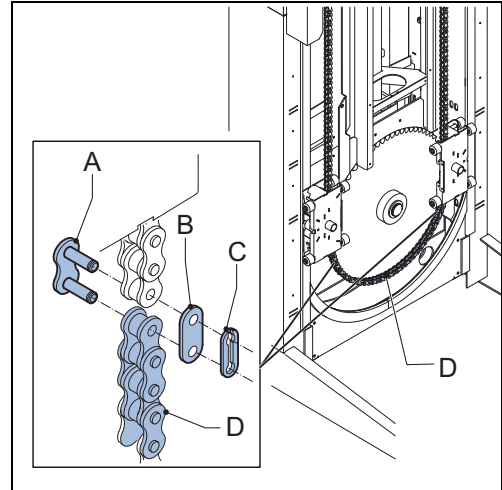
Uninstall a chain section - part 1

1. Before switching off the machine, make sure that the chain section (A) to be replaced is at the bottom of the machine.
2. Remove the product carrier. Refer to section 7.8.1 and follow parts 1 and 2.



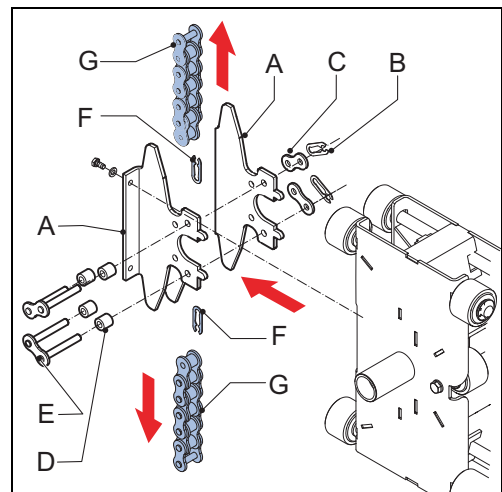
Uninstall a chain section - part 2

1. Slacken the chain by loosening the tensioning bolt. Refer to section 7.7.2.
2. Remove the locking plates (C) on both sides of the chain. *The end link (A) has been attached to the catch (B) by the locking plates.*



Uninstall the chain in the trolley

1. Remove the supports (A) with the chain section by loosening the bolts.
2. Remove the locking plates (B). *The end links (E) and the bushes (D) have been attached to the catch (C) by the locking plates.*
3. Remove the locking plates (F).
4. Remove the two parts of chain (G).



Install a chain section



Tip

Illustrations for installing: see the illustrations above for uninstalling.

1. Install a new chain section into the trolley.
2. Make sure that the chain section has the same number of links as the part that has been removed.
3. Attach both ends of the new chain section to the catches.
4. Lock both ends of the chain section with the locking plates.
5. Install the guard.
6. Tighten the chain. Refer to section 7.7.
7. Install the product carriers. Refer to section 7.8.1 and follow parts 1 and 2 in reverse order.

7.8.9 Replace the sprocket wheel - tensioning wheel



Tip

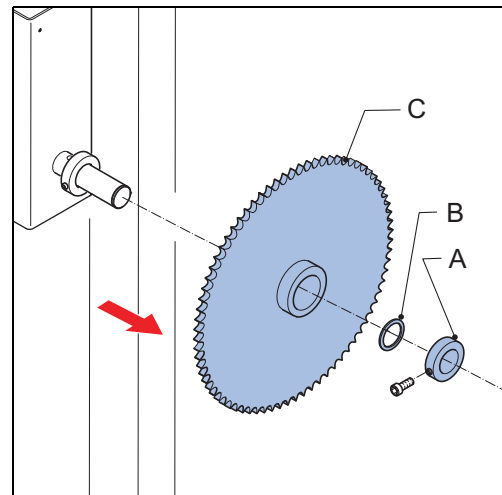
Also use this procedure for replacing the bearings of a sprocket wheel.

Uninstall the sprocket wheel - part 1

1. Remove the trolley. Refer to section 7.8.1 and follow parts 1 - 5.
2. Remove the chain section. Refer to section 7.8.8 and follow parts 1 and 2.

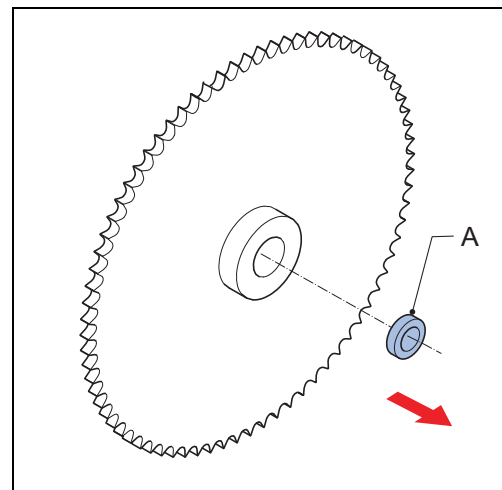
Uninstall the sprocket wheel - part 2

1. Remove the adjusting ring (A).
2. Remove the ring (B).
3. Remove the sprocket wheel (C).



Uninstall the sprocket wheel - part 3

1. Check the slide bearing (A) for wear.
2. Replace the worn slide bearing with a new one.



Install the sprocket wheel



Tip

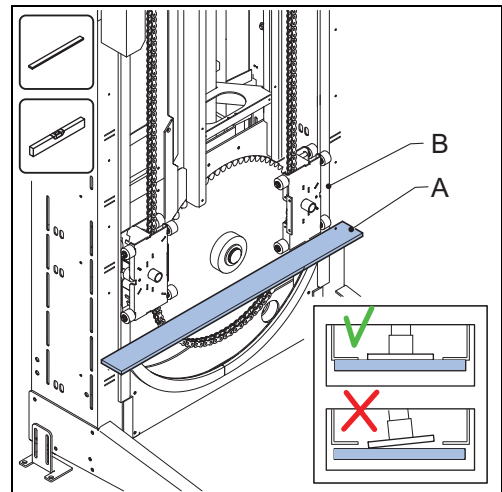
Illustrations for installing: see the illustrations above for uninstalling.

1. Install the clamping ring and ring onto the sprocket wheel shaft.
2. Install the sprocket wheel onto the shaft.
3. Install the ring and the clamping ring onto the sprocket wheel shaft.
4. Align the sprocket wheel. Use a ruler (A) to align the sprocket wheel with the side guides (B) of the chain.
5. Install the chain. Refer to section 7.8.8
6. Install the guard. Refer to section 7.8.1.



WARNING

A poorly aligned sprocket wheel will damage the chain.



7.8.10

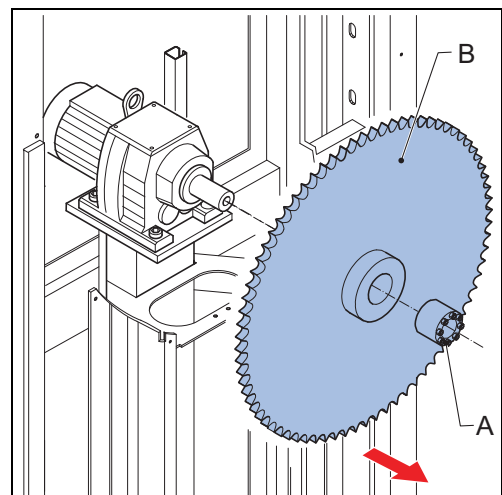
Replace the sprocket wheel - drive wheel

Uninstall the sprocket wheel - part 1

1. Before switching off the machine, make sure that the closing link of the chain is at the bottom of the machine. Refer to section 7.8.1.
2. Remove the chain as a whole. Refer to section 7.8.8.

Uninstall the sprocket wheel - part 2

1. Remove the clamping bush (A).
2. Remove the sprocket wheel (B).



Install the sprocket wheel



Tip

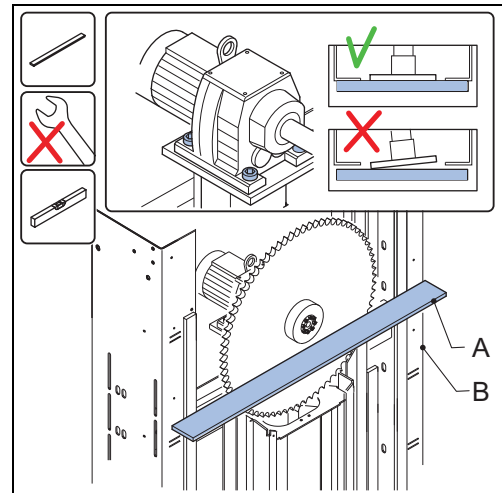
Illustrations for installing: see the illustrations above for uninstalling.

1. Install the sprocket wheel with clamping bush onto the shaft.
2. Align the sprocket wheel. Use a ruler (A) to align the sprocket wheel with the side guides (B) of the chain.

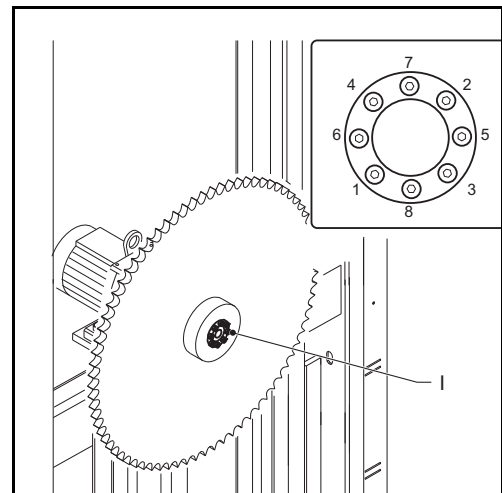


WARNING

A poorly aligned sprocket wheel will damage the chain.



3. Fix the clamping bush in the indicated sequence.
4. Fix the clamping bush.
Use the following torques:
 - shaft diameter \leq 40 mm: 17 Nm
 - shaft diameter \leq 65 mm: 41 Nm
 - shaft diameter \leq 95 mm: 83 Nm
5. Install the chain. Refer to section 7.4.1
6. Install the guard. Refer to section 7.8.1.



7.8.11 Replace the drive - helical gear unit

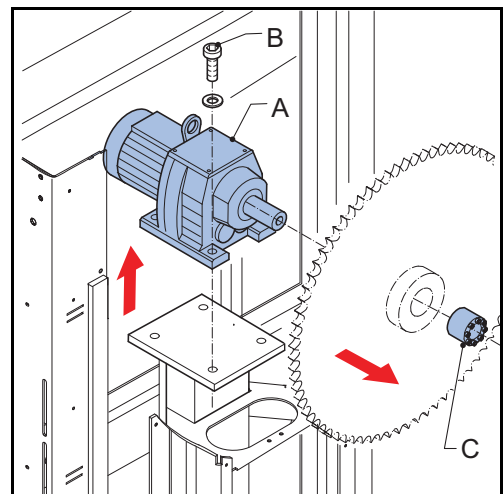


DANGER

Before replacing the drive, the drive sprocket wheel must be clamped onto the frame. If the drive sprocket wheel can turn, this may cause injury. An auxiliary tool is required for this. You can order this auxiliary tool through Qimarox. See the illustration in the section 7.8.1.

Uninstall the drive

1. Remove the cover at the backside.
2. Disconnect the cables.
3. Remove the bolts (B).
4. Remove the clamping bush (C).
5. Remove the drive (A).



Install the drive



Tip

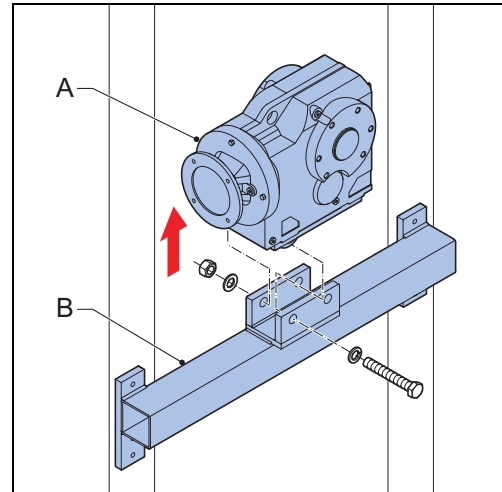
Illustrations for installing: see the illustrations above for uninstalling.

1. Place the drive.
2. Place the clamping bush.
3. Place the bolts and tighten them.
4. Connect the cables.
5. Place the cover at the backside.

7.8.12 Replace the motor reductor

Uninstall the motor reductor

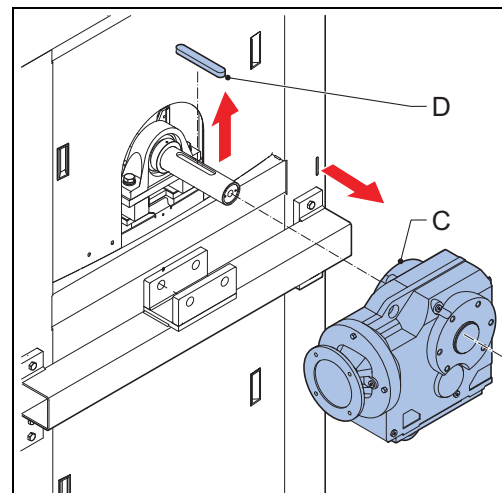
1. Remove the motor reductor (A) from the reactor bar (B).



2. Remove the motor reductor (C) from the axle.

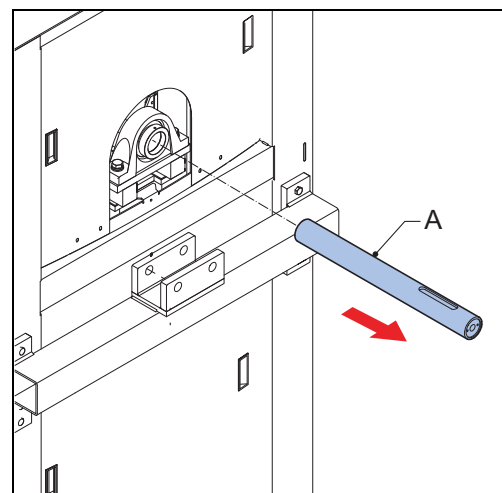


Note
Make sure that the key (D) does not fall.



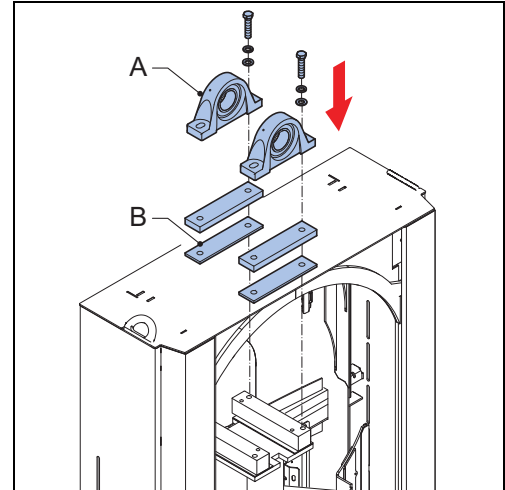
Uninstall the main shaft

1. Remove the main shaft (A) from the bearing.



Uninstall the bearings

1. Remove the bearings (A) and plate washers (B).



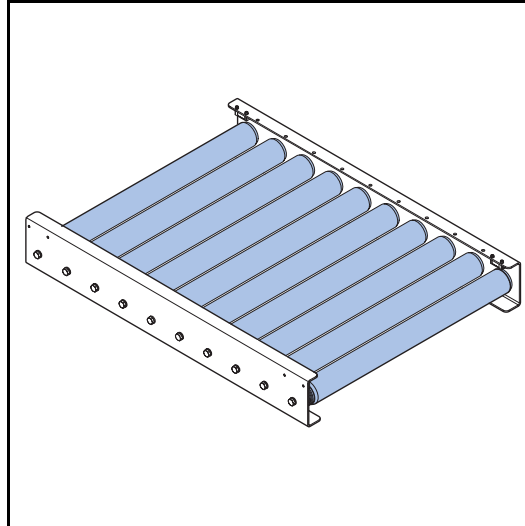
Install the motor reductor

**Tip**

Illustrations for installing: see the illustrations above for uninstalling.

1. Install the bearings and plate washers.
2. Install the main shaft.
3. Install the motor reductor.

8 Maintenance RollerDrive conveyor



WARNING

- The maintenance as described in this chapter is based on 2000 running hours per year. Adjust the maintenance frequency to the actual number of running hours per year.
- If required, Qimarox can carry out the maintenance activities.

8.1 Specific safety regulations

For optimum functioning of the machine the various machine parts must be regularly maintained. In this way defects and inaccuracies of the machine are prevented.



DANGER

- **Only a qualified maintenance engineer is allowed to carry out maintenance activities on the machine. Refer to section 3.2.**
- **Switch the machine off using the main power supply switch before starting any maintenance or repair activities. Secure the main power supply switch with a padlock.**
- **Do not use any corrosive and inflammable solvents or cleaning agents on the machine that contain TRI, PER, TETRA or FCHC. Read the instructions on the packaging when use is made of chemical substances (cleaning agents).**
- **After having completed maintenance activities, always put all safety provisions that have been removed in place again.**
- **Make sure that the machine has always run empty before carrying out any activities. No products must be present in the machine.**
- **Take the appropriate measures for safely working at heights.**



WARNING

Avoid parts made of rubber or plastic, such as cables and gaskets, from making contact with oil, solvents or other chemicals.

8.2 Preventive maintenance schedule, RollerDrive conveyor

8.2.1 Daily maintenance

| Item | Task | Action when required by the check |
|-------------------|---|---|
| Guards and covers | Check for visible damage. | Replace damaged guards and / or covers. |
| | Check if the mounting materials are present and have been correctly placed. | Place the mounting materials or correct the way in which they have been fastened. |
| Entire machine | Check for visible dirt. | Clean the machine. Refer to section 8.3. |

8.2.2 Weekly maintenance

| Item | Task | Action when required by the check |
|--------------|--|---|
| Rollers | Check for visible damage to the surface and sides. | Replace damaged rollers. Refer to section 8.7. |
| | Clean. Refer to section 8.3. | |
| | Make sure the rollers run freely and smoothly. | Replace the roller. Refer to section 8.7. |
| | Check the Poly-V drive head for damage. | Replace the roller. Refer to section 8.7. |
| | Check for running sounds. | Replace the roller. Refer to section 8.7. |
| Drive roller | Check for damage on the running surface. | Replace the drive roller. Refer to section 8.7. |
| | Clean. Refer to section 8.3. | |
| | Check the Poly-V drive head for damage. | Replace the drive roller. Refer to section 8.7. |
| | Check for running sounds. | Replace the drive roller. Refer to section 8.7. |
| Belts | Check for damage. | Replace damaged belts. Refer to section 8.7. |
| | Clean. Refer to section 8.3. | |
| | Check for visible deformation. | Replace the belt. Refer to section 8.7. |

8.2.3 Monthly maintenance

| Item | Task | Action when required by the check |
|------------|--|---|
| Photocells | Check for visible damage. | Replace the photocell and the reflector if necessary. Refer to section 8.7. |
| | Check for loose parts. | Fasten loose parts. |
| | Clean. Refer to section 8.3. | |
| Cabling | Make sure that all cables are securely fastened. | Connect the cables again if necessary. |

8.2.4 6-monthly maintenance

| Item | Task | Action when required by the check |
|----------------------|-----------------------------|--|
| All bolt connections | Check all bolt connections. | Tighten bolts using the correct tool and torque. |

8.2.5 2-yearly maintenance¹

| Item | Task | Action when required by the check |
|--|---------------------------|-----------------------------------|
| Drive roller Follow the instructions in the manual of the manufacturer of the drive roller. | Replace the drive roller. | |

¹ Or after 10,000 running hours, whichever comes first.

8.3 Cleaning



DANGER

Do not use any corrosive and inflammable solvents or cleaning agents on the machine that contain TRI, PER, TETRA or FCHC. Read the instructions on the packaging when use is made of chemical substances (cleaning agents).



WARNING

- Electrical components should not make contact with water or other liquids.
- Do not clean the machine with compressed air or water under high pressure.
- Avoid parts made of rubber or plastic, such as cables and gaskets, from making contact with oil, solvents or other chemicals.

1. Switch off the machine.
2. Secure the main power supply switch with a padlock.
3. Remove deposit and dirt by hand.
4. Report any damage to the technically responsible person or to Qimarox and make sure that any damage is remedied before restarting the machine.

8.4 Check the drive roller

1. Replace the drive roller if it is damaged or making running sounds.

8.5 Check the rollers

1. Replace the roller if it is damaged or making running sounds.

8.6 Check the belts

The belts will elongate with use. How fast this happens depends on the conditions of use. Belts elongate the most after the machine has been put into operation for the first time. A belt with insufficient tension will slip and may not convey the product properly. Slipping belts must be replaced.

8.7 Replace parts

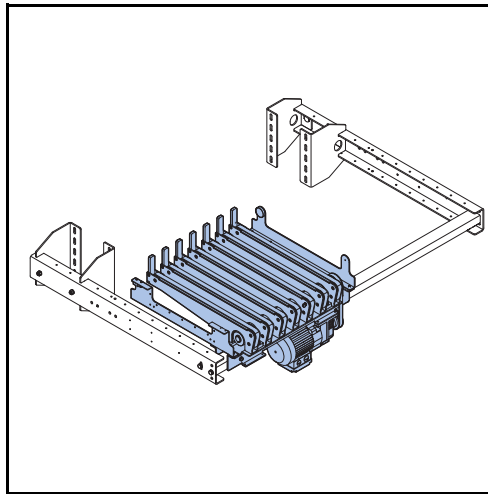
Some machine parts are subject to wear. See the type plate and the exploded view for the specifications of the machine parts.



WARNING

Replace parts only with parts supplied or recommended by Qimarox. If parts are not replaced with supplied or recommended Qimarox parts, the machine warranty becomes null and void. Refer to section 2.3.

9 Maintenance belt conveyor



WARNING

- The maintenance as described in this chapter is based on 2000 running hours per year. Adjust the maintenance frequency to the actual number of running hours per year.
- If required, Qimarox can carry out the maintenance activities.

9.1 Specific safety regulations

For optimum functioning of the machine the various machine parts must be regularly maintained. In this way defects and inaccuracies of the machine are prevented.



DANGER

- **Only a qualified maintenance engineer is allowed to carry out maintenance activities on the machine. Refer to section 3.2.**
- **Switch the machine off using the main power supply switch before starting any maintenance or repair activities. Secure the main power supply switch with a padlock.**
- **Do not use any corrosive and inflammable solvents or cleaning agents on the machine that contain TRI, PER, TETRA or FCHC. Read the instructions on the packaging when use is made of chemical substances (cleaning agents).**
- **After having completed maintenance activities, always put all safety provisions that have been removed in place again.**
- **Make sure that the machine has always run empty before carrying out any activities. No products must be present in the machine.**
- **Take the appropriate measures for safely working at heights.**



WARNING

Avoid parts made of rubber or plastic, such as cables and gaskets, from making contact with oil, solvents or other chemicals.

9.2 Preventive maintenance schedule, belt carrier

9.2.1 Daily maintenance

| Item | Task | Action when required by the check |
|-------------------|---|---|
| Guards and covers | Check for visible damage. | Replace damaged guards and / or covers. |
| | Check if the mounting materials are present and have been correctly placed. | Place the mounting materials or correct the way in which they have been fastened. |
| Entire machine | Check for visible dirt. | Clean the machine. Refer to section 9.3. |

9.2.2 Weekly maintenance

| Item | Task | Action when required by the check |
|---------------|---|---|
| Conveyor belt | Check for visible damage to the surface and sides. | Replace the conveyor belt. Refer to section 9.7. |
| | Clean. Refer to section 9.3. | |
| Driving drum | Check for damage of the running surface and bearings. | Replace the driving drum. Refer to section 9.7. |
| | Clean. Refer to section 9.3. | |
| | Check for running sounds. | Lubricate the bearings in the driving drum. Refer to section 9.4.1. |
| Timing belt | Check for damage. | Replace the timing belt Refer to section 9.7. |
| | Check the alignment. | Align the pulleys. Refer to section 9.7. |
| | Clean. Refer to section 9.3. | |
| Pulley | Check for dirt. | Clean. Refer to section 9.3. |
| | Check for visible deformation. | Replace the pulley. Refer to section 9.7. |
| | Make sure the is running freely and smoothly. | Replace the pulley. Refer to section 9.7. |
| | Check the alignment. | Align the pulleys. Refer to section 9.7. |

9.2.3 Monthly maintenance

| Item | Task | Action when required by the check |
|--|--|---|
| Motor reductor Follow the instructions in the manual of the manufacturer of the motor reductor. | Check the seals for leakage. | Replace the seals. |
| | Check for visible damage. | Replace the damaged parts. |
| | Check for running sounds. | Replace the motor reductor. |
| Pulley bearings | Check for slack. Refer to section 9.6. | Replace the pulley. Refer to section 9.7. |
| Photocells and reflectors | Check for visible damage. | Replace the photocell and the reflector if necessary. Refer to section 9.7. |
| | Check for loose parts. | Fasten loose parts. |
| | Clean. Refer to section 9.3. | |
| Cabling | Make sure that all cables are securely fastened. | Connect the cables again if necessary. |

9.2.4 6-monthly maintenance

| Item | Task | Action when required by the check |
|--|----------------------------------|--|
| Motor reductor Follow the instructions in the manual of the manufacturer of the motor reductor. | Check the oil level. | Refill the oil. |
| | Check the oil for contamination. | Change the oil. |
| | Check the air gap of the brake. | Adjust the air gap. |
| All bolt connections | Check all bolt connections. | Tighten bolts using the correct tool and torque. |

9.2.5 2-yearly maintenance¹

| Item | Task | Action when required by the check |
|--|----------------------|-----------------------------------|
| Motor reductor Follow the instructions in the manual of the manufacturer of the motor reductor. | Change the oil. | |
| Pulleys | Replace the pulleys. | |

¹ Or after 10,000 running hours, whichever comes first.

9.3 Cleaning



DANGER

Do not use any corrosive and inflammable solvents or cleaning agents on the machine that contain TRI, PER, TETRA or FCHC. Read the instructions on the packaging when use is made of chemical substances (cleaning agents).



WARNING

- Electrical components should not make contact with water or other liquids.
- Do not clean the machine with compressed air or water under high pressure.
- Avoid parts made of rubber or plastic, such as cables and gaskets, from making contact with oil, solvents or other chemicals.

1. Switch off the machine.
2. Secure the main power supply switch with a padlock.
3. Remove deposit and dirt by hand.
4. Report any damage to the technically responsible person or to Qimarox and make sure that any damage is remedied before restarting the machine.

9.4 Lubrication

9.4.1 Driving drum bearings

1. Lubricating of the bearings is not necessary. Replace the bearings if they produce vibration or noise.

9.5 Check the slack on the driving drum bearings

1. Replace the driving drum bearings when the bearings produce abnormal noise or vibration.

9.6 Tightening/loosening the belt

The belt will elongate with use. How fast this happens depends on the conditions of use. Most of the elongation happens after first putting the machine into operation.

- A belt with insufficient tension will slip and may not convey the product properly.

9.6.1 How to tighten/loosen the belt

1. Be sure the new belts have the correct length to obtain a correct wheel tension.
2. Mount the track of the driving drum to tighten the belt.
3. Demount the track of the driving drum to loosen the belt.

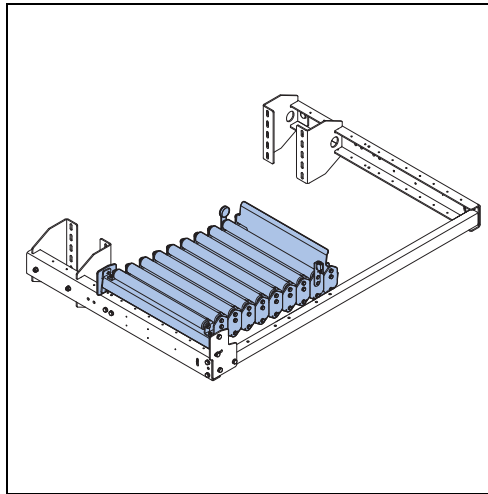
9.7 Replace parts

Some machine parts are subject to wear. See the type plate and the exploded view for the specifications of the machine parts.

**WARNING**

Replace parts only with parts supplied or recommended by Qimarox. If parts are not replaced with supplied or recommended Qimarox parts, the machine warranty becomes null and void. Refer to section 2.3.

10 Maintenance gravity roller conveyor



WARNING

- The maintenance as described in this chapter is based on 2000 running hours per year. Adjust the maintenance frequency to the actual number of running hours per year.
- If required, Qimarox can carry out the maintenance activities.

10.1 Specific safety regulations

For optimum functioning of the machine the various machine parts must be regularly maintained. In this way defects and inaccuracies of the machine are prevented.



DANGER

- **Only a qualified maintenance engineer is allowed to carry out maintenance activities on the machine. Refer to section 3.2.**
- **Switch the machine off using the main power supply switch before starting any maintenance or repair activities. Secure the main power supply switch with a padlock.**
- **Do not use any corrosive and inflammable solvents or cleaning agents on the machine that contain TRI, PER, TETRA or FCHC. Read the instructions on the packaging when use is made of chemical substances (cleaning agents).**
- **After having completed maintenance activities, always put all safety provisions that have been removed in place again.**
- **Make sure that the machine has always run empty before carrying out any activities. No products must be present in the machine.**
- **Take the appropriate measures for safely working at heights.**



WARNING

Avoid parts made of rubber or plastic, such as cables and gaskets, from making contact with oil, solvents or other chemicals.

10.2 Preventive maintenance schedule, gravity roller conveyor

10.2.1 Daily maintenance

| Item | Task | Action when required by the check |
|-------------------|---|---|
| Guards and covers | Check for visible damage. | Replace damaged guards and / or covers. |
| | Check if the mounting materials are present and have been correctly placed. | Place the mounting materials or correct the way in which they have been fastened. |
| Entire machine | Check for visible dirt. | Clean the machine. Refer to section 10.3. |

10.2.2 Weekly maintenance

| Item | Task | Action when required by the check |
|---------|--|---|
| Rollers | Check for visible damage to the surface and sides. | Replace damaged rollers. Refer to section 10.5. |
| | Clean. Refer to section 10.3. | |
| | Check for running sounds. | Replace the roller. Refer to section 10.5. |
| | Make sure the rollers run freely and smoothly. | Replace the roller. Refer to section 10.5. |

10.2.3 Monthly maintenance

| Item | Task | Action when required by the check |
|---------------------------|--|--|
| Photocells and reflectors | Check for visible damage. | Replace the photocell and the reflector if necessary. Refer to section 10.5. |
| | Check for loose parts. | Fasten loose parts. |
| | Clean. Refer to section 10.3. | |
| Cabling | Make sure that all cables are securely fastened. | Connect the cables again if necessary. |

10.2.4 6-monthly maintenance

| Item | Task | Action when required by the check |
|----------------------|-----------------------------|--|
| All bolt connections | Check all bolt connections. | Tighten bolts using the correct tool and torque. |

10.3 Cleaning



DANGER

Do not use any corrosive and inflammable solvents or cleaning agents on the machine that contain TRI, PER, TETRA or FCHC. Read the instructions on the packaging when use is made of chemical substances (cleaning agents).



WARNING

- Electrical components should not make contact with water or other liquids.
- Do not clean the machine with compressed air or water under high pressure.
- Avoid parts made of rubber or plastic, such as cables and gaskets, from making contact with oil, solvents or other chemicals.

1. Switch off the machine.
2. Secure the main power supply switch with a padlock.
3. Remove deposit and dirt by hand.
4. Report any damage to the technically responsible person or to Qimarox and make sure that any damage is remedied before restarting the machine.

10.4 Check the slack on the driving drum bearings

1. Replace the driving drum bearings when the bearings produce abnormal noise or vibration.

10.5 Replace parts

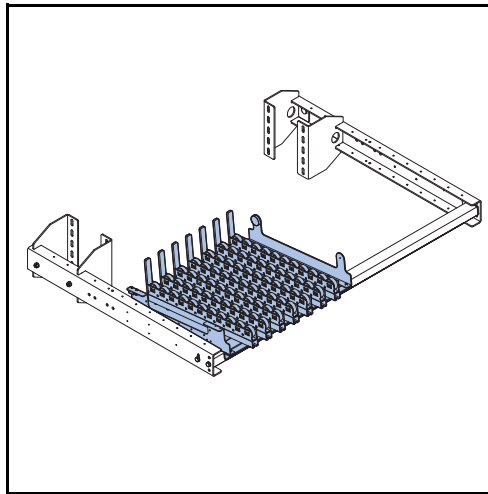
Some machine parts are subject to wear. See the type plate and the exploded view for the specifications of the machine parts.



WARNING

Replace parts only with parts supplied or recommended by Qimarox. If parts are not replaced with supplied or recommended Qimarox parts, the machine warranty becomes null and void. Refer to section 2.3.

11 Maintenance gravity wheel conveyor



WARNING

- The maintenance as described in this chapter is based on 2000 running hours per year. Adjust the maintenance frequency to the actual number of running hours per year.
- If required, Qimarox can carry out the maintenance activities.

11.1 Specific safety regulations

For optimum functioning of the machine the various machine parts must be regularly maintained. In this way defects and inaccuracies of the machine are prevented.



DANGER

- **Only a qualified maintenance engineer is allowed to carry out maintenance activities on the machine. Refer to section 3.2.**
- **Switch the machine off using the main power supply switch before starting any maintenance or repair activities. Secure the main power supply switch with a padlock.**
- **Do not use any corrosive and inflammable solvents or cleaning agents on the machine that contain TRI, PER, TETRA or FCHC. Read the instructions on the packaging when use is made of chemical substances (cleaning agents).**
- **After having completed maintenance activities, always put all safety provisions that have been removed in place again.**
- **Make sure that the machine has always run empty before carrying out any activities. No products must be present in the machine.**
- **Take the appropriate measures for safely working at heights.**



WARNING

Avoid parts made of rubber or plastic, such as cables and gaskets, from making contact with oil, solvents or other chemicals.

11.2 Preventive maintenance schedule, wheels of the gravity conveyor

11.2.1 Daily maintenance

| Item | Task | Action when required by the check |
|-------------------|---|---|
| Guards and covers | Check for visible damage. | Replace damaged guards and / or covers. |
| | Check if the mounting materials are present and have been correctly placed. | Place the mounting materials or correct the way in which they have been fastened. |
| Entire machine | Check for visible dirt. | Clean the machine. Refer to section 11.3. |

11.2.2 Weekly maintenance

| Item | Task | Action when required by the check |
|---------------------|---|---|
| Wheels | Check for visible damage of the running surface and bearings. | Replace the wheels. Refer to section 11.5. |
| | Clean. Refer to section 11.3. | |
| | Check for running sounds. | Replace the wheels that are making running sounds. Refer to section 11.5. |
| | Make sure the roller runs freely and smoothly. | Replace the roller. Refer to section 11.5. |
| Wheels of the guide | Check for dirt. | Clean. Refer to section 11.3. |
| | Check for visible deformation. | Replace the roller. Refer to section 11.5. |
| | Check if the fastening bolt on the wheel guide is present and has been correctly fixed. | |

11.2.3 Monthly maintenance

| Item | Task | Action when required by the check |
|------------|--|--|
| Photocells | Check for visible damage. | Replace the photocell and the reflector if necessary. Refer to section 11.5. |
| | Check for loose parts. | Fasten loose parts. |
| | Clean. Refer to section 11.3. | |
| Cabling | Make sure that all cables are securely fastened. | Connect the cables again if necessary. |

11.2.4 6-monthly maintenance

| Item | Task | Action when required by the check |
|----------------------|-----------------------------|--|
| All bolt connections | Check all bolt connections. | Tighten bolts using the correct tool and torque. |

11.3 Cleaning



DANGER

Do not use any corrosive and inflammable solvents or cleaning agents on the machine that contain TRI, PER, TETRA or FCHC. Read the instructions on the packaging when use is made of chemical substances (cleaning agents).



WARNING

- Electrical components should not make contact with water or other liquids.
- Do not clean the machine with compressed air or water under high pressure.
- Avoid parts made of rubber or plastic, such as cables and gaskets, from making contact with oil, solvents or other chemicals.

1. Switch off the machine.
2. Secure the main power supply switch with a padlock.
3. Remove deposit and dirt by hand.
4. Report any damage to the technically responsible person or to Qimarox and make sure that any damage is remedied before restarting the machine.

11.4 Check the wheels for slack

1. Replace the wheels in the wheel frame in case of abnormal sound or vibration.

11.5 Replace parts

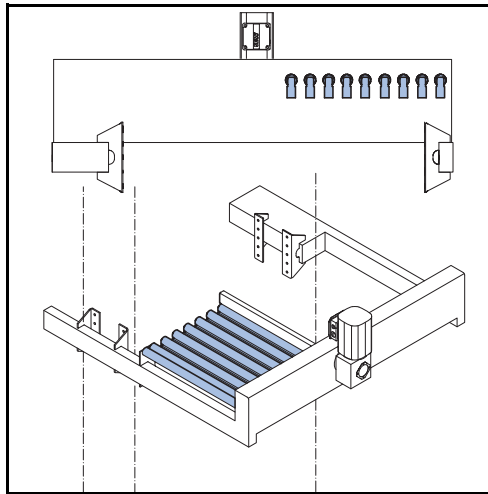
Some machine parts are subject to wear. See the type plate and the exploded view for the specifications of the machine parts.



WARNING

Replace parts only with parts supplied or recommended by Qimarox. If parts are not replaced with supplied or recommended Qimarox parts, the machine warranty becomes null and void. Refer to section 2.3.

12 Maintenance driven roller conveyor



WARNING

- The maintenance as described in this chapter is based on 2000 running hours per year. Adjust the maintenance frequency to the actual number of running hours per year.
- If required, Qimarox can carry out the maintenance activities.

12.1 Specific safety regulations

For optimum functioning of the machine the various machine parts must be regularly maintained. In this way defects and inaccuracies of the machine are prevented.



DANGER

- **Only a qualified maintenance engineer is allowed to carry out maintenance activities on the machine. Refer to section 3.2.**
- **Switch the machine off using the main power supply switch before starting any maintenance or repair activities. Secure the main power supply switch with a padlock.**
- **Do not use any corrosive and inflammable solvents or cleaning agents on the machine that contain TRI, PER, TETRA or FCHC. Read the instructions on the packaging when use is made of chemical substances (cleaning agents).**
- **After having completed maintenance activities, always put all safety provisions that have been removed in place again.**
- **Make sure that the machine has always run empty before carrying out any activities. No products must be present in the machine.**
- **Take the appropriate measures for safely working at heights.**



WARNING

Avoid parts made of rubber or plastic, such as cables and gaskets, from making contact with oil, solvents or other chemicals.

12.2 Preventive maintenance schedule, driven roller carriers

12.2.1 Weekly maintenance during the first 8 weeks after putting into operation

| Item | Task | Action when required by the check |
|---------------|----------------------------|-----------------------------------|
| Conveyor belt | Tighten the conveyor belt. | Refer to section 12.9. |

12.2.2 Daily maintenance

| Item | Task | Action when required by the check |
|-------------------|---|---|
| Guards and covers | Check for visible damage. | Replace damaged guards and / or covers. |
| | Check if the mounting materials are present and have been correctly placed. | Place the mounting materials or correct the way in which they have been fastened. |
| Entire machine | Check for visible dirt. | Clean the machine. Refer to section 12.3. |

12.2.3 Weekly maintenance

| Item | Task | Action when required by the check |
|-----------------|--|---|
| Drive belt | Check for visible damage to the surface and sides. | Replace the belt. Refer to section 12.10. |
| | Clean. Refer to section 12.3. | |
| Drive pulley | Check for damage of the running surface and bearings. | Replace the drive pulley. Refer to section 12.10. |
| | Clean. Refer to section 12.3. | |
| | Check for running sounds. | Lubricate the drive pulley bearings. Refer to section 12.4.1. |
| Return wheels | Check for damage. | Replace the return wheel. Refer to section 12.10. |
| | Check if the fastening bolt on the carrying shaft is present and has been correctly fixed. | Replace the return wheel. Refer to section 12.10. |
| | Clean. Refer to section 12.3. | |
| Pressure roller | Check for dirt. | Clean. Refer to section 12.3. |
| | Check for visible deformation. | Replace the pressure roller. Refer to section 12.10. |
| | Make sure the rollers run freely and smoothly. | Replace the pressure roller. Refer to section 12.10. |

12.2.4 Monthly maintenance

| Item | Task | Action when required by the check |
|--|--|---|
| Motor reductor Follow the instructions in the manual of the manufacturer of the motor reductor. | Check the seals for leakage. | Replace the seals. |
| | Check for visible damage. | Replace the damaged parts. |
| | Check for running sounds. | Replace the motor reductor. |
| Pressure roller bearings | Check for slack. Refer to section 12.5. | Replace the rollers. Refer to section 12.10. |
| Drive pulley bearings | Check for slack. Refer to section 12.5. | Replace the pulley. Refer to section 12.10. |
| Return wheel bearings | Check for slack. Refer to section 12.5. | Replace the wheel. Refer to section 12.10. |
| Tension wheel bearings | Check for slack. Refer to section 12.5. | Replace the wheel. Refer to section 12.10. |
| Photocells | Check for visible damage. | Replace the photocell and the reflector if necessary. Refer to section 12.10. |
| | Check for loose parts. | Fasten loose parts. |
| | Clean. Refer to section 12.3. | |
| Cabling | Make sure that all cables are securely fastened. | Connect the cables again if necessary. |

12.2.5 6-monthly maintenance

| Item | Task | Action when required by the check |
|--|----------------------------------|--|
| Motor reductor Follow the instructions in the manual of the manufacturer of the motor reductor. | Check the oil level. | Refill the oil. |
| | Check the oil for contamination. | Change the oil. |
| | Check the air gap of the brake. | Adjust the air gap. |
| All bolt connections | Check all bolt connections. | Tighten bolts using the correct tool and torque. |

12.2.6 2-yearly maintenance¹

| Item | Task | Action when required by the check |
|--|-----------------|-----------------------------------|
| Motor reductor Follow the instructions in the manual of the manufacturer of the motor reductor. | Change the oil. | |

¹ Or after 10,000 running hours, whichever comes first.

12.3 Cleaning



DANGER

Do not use any corrosive and inflammable solvents or cleaning agents on the machine that contain TRI, PER, TETRA or FCHC. Read the instructions on the packaging when use is made of chemical substances (cleaning agents).



WARNING

- Electrical components should not make contact with water or other liquids.
- Do not clean the machine with compressed air or water under high pressure.
- Avoid parts made of rubber or plastic, such as cables and gaskets, from making contact with oil, solvents or other chemicals.

1. Switch off the machine.
2. Secure the main power supply switch with a padlock.
3. Remove deposit and dirt by hand.
4. Report any damage to the technically responsible person or to Qimarox and make sure that any damage is remedied before restarting the machine.

12.4 Lubrication

12.4.1 Lubricate the drive pulley bearings

1. Lubricate the bearings with an appropriate chain lubricating agent. Qimarox recommends the following product: Bel Ray No-Tox Food Grade (#64060 / 64070).

12.5 Check the slack on the drive pulley bearings

1. Replace the drive pulley bearings when the bearings produce abnormal noise or vibration.

12.6 Check the slack on the tension wheel bearings

1. Replace the tension wheel bearings when the bearings produce abnormal noise or vibration.

12.7 Check the slack on the bearings of the return and pressure rollers

1. Replace the return or pressure roller if the slack on the bearings is above the specifications of the supplier.

12.8 Check the slack on the roller bearings

1. Replace a roller if the slack is above the specifications of the supplier.

12.9 Tightening/loosening the belt

The belt will elongate with use. How fast this happens depends on the conditions of use. Most of the elongation happens after first putting the machine into operation.

- A belt with insufficient tension will slip and may not convey the product properly.

12.9.1 How to tighten/loosen the belt

1. Be sure the new belts have the correct length to obtain a correct wheel tension.

12.10 Replace parts

Some machine parts are subject to wear. See the type plate and the exploded view for the specifications of the machine parts.



WARNING

Replace parts only with parts supplied or recommended by Qimarox. If parts are not replaced with supplied or recommended Qimarox parts, the machine warranty becomes null and void. Refer to section 2.3.

13 Troubleshooting

13.1 Vertical conveyor

| Problem | Possible cause | Solution |
|---|---|---|
| Clamped product at conveyor | Sensor defect. | Go to manual control. Move the product carrier in the opposite direction to get the clamped product free. Remove the clamped product. |
| The motor does not run. | Electrical failure. | Remedy the electrical failure. |
| | The operation or main power supply switch is on "OFF". | Set the operation/main power supply switch to "ON". |
| | The door switch or emergency stop is active. | Release the emergency stop switch after having checked if the situation is safe. |
| The motor does not run and makes a humming sound. | Mechanical or electrical failure. | An authorised qualified person should disconnect the motor. Refer to section 7.4.1. |
| | No full power. | Check the power cable for a break or short circuit. |
| | Poor contact. | Check the terminal clamps. |
| | Defect in the motor. | Check the connection and the motor winding. |
| | Blown fuse. | Replace the fuse. |
| | Thermal safeguard triggered. | Investigate and remedy the cause of the overheating. |
| | Motor protection triggered by short circuit or overload. | Investigate and remedy the cause, then reset the motor protection. |
| | Defective power controller. | Investigate and remedy the cause. Replace the power controller. |
| The motor starts with difficulty. | Electrical faults such as "The motor does not run and makes a humming sound". | Check the starting current and the nominal current. Investigate and remedy the cause of the increased use of energy. |

| Problem | Possible cause | Solution |
|--|---|--|
| The motor is overheated. | The motor was designed for a star connection but has been connected in a triangle. | Change the connection from triangle into star. |
| | Voltage and/or frequency deviates from the nominal value when switching on. | Connect the motor according to the data on the type plate. |
| | The supply voltage deviates more than 5% from the nominal motor voltage. | Find out why it deviates and try to remedy this. |
| | Insufficient motor cooling. | Check the ventilation openings in the motor housing for blockage. Check the fan for damage. |
| The motor overheats and runs at a low speed. | Loose contact or broken cable in the power circuit of the motor. | Check the power circuit for loose contacts or broken cables. |
| | Too high use of energy. | Check the weight of the product according to the data on the type plate. Check the motor for ease of movement. |
| The motor hums and does not run properly. | The motor runs with 2 phases, e.g. because of a faulty connection, broken cable or a defective winding. | Check the connections and the cable. Dismount the motor for repair. Refer to section 7.8.11. |
| The fuses blow and/or the motor protection is triggered. | The power has been incorrectly connected. | Connect the power in the correct way. |
| | Short circuit in the power. | Remedy the short circuit. |
| | Wrong fuse (too low value). | Adjust the fuse to the nominal motor current. |
| | Motor protection poorly set. | Adjust the motor protection to the nominal motor current. |
| | Short circuit in the winding or with respect to the earth. | Dismount the motor for repair. Refer to section 7.8.11. |
| The motor does not run. The motor protection is triggered immediately. | Incorrect setting of the motor protection. | Check and/or adjust the motor protection to the correct value. |
| | The mechanical drive (chains, belts, rollers or guides) are blocked. | Remove the blockage. Clean the machine. If possible, shorten the inspection/maintenance/cleaning intervals. Check the chains, drive belts, rollers, guides and the like for damage or incorrect adjustment. |

| Problem | Possible cause | Solution |
|--|---|---|
| The motor does not run. | The operation or main power supply switch is on "OFF". | Set the operation/main power supply switch to "ON". |
| | The door switch or emergency stop is active. | Make sure that the situation is safe. Then release the emergency stop or the switch. |
| Use of energy (motor current) too high and higher motor temperature. | The weight of the products is too much. | Make sure the specifications for use of the machine have been observed. |
| Use of energy (motor current) too high and wear of chains and/or drive belts. | The chain or drive belt has been tensioned too tightly. | Lower the tension of the chain. Refer to section 7.7.2. |
| | The drive belt does not run in line over the drive return wheels. | Align the chain or the drive belt. |
| Use of energy (motor current) too high and high temperature of the bearing housing (sometimes accompanied by sound). | Ball bearing, ball bush, return roller or the like is blocked. | Check the ball bearing, ball bush, return roller or the like and replace if necessary. |
| Abnormal sounds, unusual vibrations and swinging movements. | Drive system clogged by dirt. | Check the movement of the chain or drive belt and remove dirt or deposit. Shorten the cleaning interval. |
| | Chains or drive belts are not running parallel. | Check if the drive shafts are straight with respect to the frame and correct if necessary. |
| | Guides, sprocket wheels or return wheels are dirty or damaged. | Check guides, sprocket wheels, chains and return wheels for damage or dirt. Replace or clean them if necessary. |
| Irregular transport of the chain. | The tension of the chain or the drive belt is too low. | Tension the chain or the drive belt. Refer to section 7.7.2. |
| | Damaged chain. | Replace the chain. Refer to section 7.8.8. |
| | Damaged return wheels. | Replace the damaged return wheels. Refer to section 7.8.10. |
| Increased temperature of the bearing blocks. The return wheels turn with difficulty. | Damaged bearing blocks or return wheels. | Investigate and remedy the cause. Reset the motor protection. |
| | Transport speed too high. | Investigate and remedy the cause. Reset the motor protection. |
| | Loose bolt connections. | Investigate and remedy the cause. Reset the motor protection. |
| | Other machine parts run loose. | Investigate and remedy the cause. Reset the motor protection. |

13.2 RollerDrive conveyor

| Problem | Possible cause | Solution |
|---|--|--|
| The motor does not run. | Electrical failure. | Remedy the electrical failure. |
| | The operation or main power supply switch is on "OFF". | Set the operation/main power supply switch to "ON". |
| | The door switch or emergency stop is active. | Release the emergency stop switch after having checked if the situation is safe. |
| The motor does not run and makes a humming sound. | Mechanical or electrical failure. | An authorised qualified person should disconnect the motor. Refer to section 7.4.1. |
| | No full power. | Check the power cable for a break or short circuit. |
| | Poor contact. | Check the terminal clamps. |
| | Defect in the motor. | Check the connection and the motor winding. |
| | Blown fuse. | Replace the fuse. |
| | Thermal safeguard triggered. | Investigate and remedy the cause of the overheating. |
| | Motor protection triggered by short circuit or overload. | Investigate and remedy the cause. Then reset the motor protection. |
| | Defective power controller. | Investigate and remedy the cause. Replace the power controller. |
| The motor starts with difficulty. | Electrical faults such as "The motor does not run and makes a humming sound". | Check the starting current and the nominal current. Investigate and remedy the cause of the increased use of energy. |
| The motor is overheated. | The motor was designed for a star connection but has been connected in a triangle. | Change the connection from triangle into star. |
| | Voltage and/or frequency deviates from the nominal value when switching on. | Connect the motor according to the data on the type plate. |
| | The supply voltage deviates more than 5% from the nominal motor voltage. | Find out why it deviates and try to remedy this. |
| | Insufficient motor cooling. | Check the ventilation openings in the motor housing for blockage. Check the fan for damage. |
| The motor overheats and runs at a low speed. | Loose contact or broken cable in the power circuit of the motor. | Check the power circuit for loose contacts or broken cables. |
| | Too high use of energy. | Investigate and remedy the cause. |

| Problem | Possible cause | Solution |
|--|---|---|
| The motor hums and does not run properly. | The motor runs with 2 phases, e.g. because of a faulty connection, broken cable or a defective winding. | Check the connections and the cable. Dismount the motor for repair. Refer to section 7.8.11. |
| The fuses blow and/or the motor protection is triggered. | The power has been incorrectly connected. | Connect the power in the correct way. |
| | Short circuit in the power. | Remedy the short circuit. |
| | Wrong fuse (too low value). | Adjust the fuse to the nominal motor current. |
| | Motor protection poorly set. | Adjust the motor protection to the nominal motor current. |
| The motor does not run. The motor protection is triggered immediately. | Short circuit in the winding or with respect to the earth. | Dismount the motor for repair. Refer to section 7.8.11. |
| | Incorrect setting of the motor protection. | Check and/or adjust the motor protection to the correct value. |
| The motor does not run. | The mechanical drive (chains, belts, rollers or guides) are blocked. | Remove the blockage. Clean the machine. If possible, shorten the inspection/maintenance/cleaning intervals. Check the chains, drive belts, rollers, guides and the like for damage or incorrect adjustment. |
| | The operation or main power supply switch is on "OFF". | Set the operation/main power supply switch to "ON". |
| Use of energy (motor current) too high and wear of chains and/or drive belts. | The door switch or emergency stop is active. | Make sure that the situation is safe. Then release the emergency stop or the switch. |
| | The weight of the products is too much. | Make sure the specifications for use of the machine have been observed. |
| Use of energy (motor current) too high and higher motor temperature. | The chain or drive belt has been tensioned too tightly. | Lower the tension of the chain. Refer to section 7.7. |
| | The drive belt does not run in line over the drive return wheels. | Align the chain or the drive belt. |
| Use of energy (motor current) too high and high temperature of the bearing housing (sometimes accompanied by sound). | Ball bearing, ball bush, return roller or the like is blocked. | Check the ball bearing, ball bush, return roller or the like and replace if necessary. |

| Problem | Possible cause | Solution |
|--|--|---|
| Abnormal sounds, unusual vibrations and swinging movements. | Drive system clogged by dirt. | Check the movement of the chain or drive belt and remove dirt or deposit. Shorten the cleaning interval. |
| | Chains or drive belts are not running parallel. | Check if the drive shafts are straight with respect to the frame and correct if necessary. |
| | Guides, sprocket wheels or return wheels are dirty or damaged. | Check guides, sprocket wheels, chains and return wheels for damage or dirt. Replace or clean them if necessary. |
| Irregular transport of the chain. | The tension of the chain or the drive belt is too low. | Tension the chain or the drive belt. Refer to section 7.7. |
| | Damaged chain. | Replace the chain. Refer to section 7.4.1. |
| | Damaged return wheels. | Replace the damaged return wheels. Refer to section 7.8.9. |
| Increased temperature of the bearing blocks. The return wheels turn with difficulty. | Damaged bearing blocks or return wheels. | Investigate and remedy the cause. Reset the motor protection. |
| | Transport speed too high. | Investigate and remedy the cause. Reset the motor protection. |
| | Loose bolt connections. | Investigate and remedy the cause. Reset the motor protection. |
| | Other machine parts run loose. | Investigate and remedy the cause. Reset the motor protection. |

13.3 Belt carrier

| Problem | Possible cause | Solution |
|--|---|--|
| Product is not transported while drive is running. | Belt tension too loose. | Replace belt. |
| The motor hums and does not run properly. | The motor runs with 2 phases, e.g. because of a faulty connection, broken cable or a defective winding. | Check the connections and the cable. Dismount the motor for repair. Refer to section 7.8.11. |
| The motor does not run. | Electrical failure. | Check electrical connections |
| | The operation or main power supply switch is on "OFF". | Set the operation/main power supply switch to "ON". |
| | The door switch or emergency stop is active. | Release the emergency stop switch after having checked if the situation is safe. |
| The motor does not run and makes a humming sound. | Mechanical or electrical failure. | An authorised qualified person should disconnect the motor. Refer to section 7.4.1. |
| | No full power. | Check the power cable for a break or short circuit. |
| | Poor contact. | Check the terminal clamps. |
| | Defect in the motor. | Check the connection and the motor winding. |
| | Blown fuse. | Replace the fuse. |
| | Thermal safeguard triggered. | Investigate and remedy the cause of the overheating. |
| | Motor protection triggered by a short circuit or overload. | Investigate and remedy the cause. Then reset the motor protection. |
| The motor starts with difficulty. | Defective power controller. | Investigate and remedy the cause. Replace the power controller. |
| | Electrical faults such as "The motor does not run and makes a humming sound". | Check the starting current and the nominal current. Investigate and remedy the cause of the increased use of energy. |
| | Transported product weight is above specifications. | Check maximum weight and contact Qimarox to check if drive can be replaced with stronger version. |

| Problem | Possible cause | Solution |
|--|--|--|
| The motor overheats. | The motor was designed for a star connection but has been connected in a triangle. | Change the connection from triangle into star. |
| | Voltage and/or frequency deviates from the nominal value when switching on. | Connect the motor according to the data on the type plate. |
| | The supply voltage deviates more than 5% from the nominal motor voltage. | Find out why it deviates and try to remedy this. |
| | Insufficient motor cooling. | Check the ventilation openings in the motor housing for blockage. Check the fan for damage. |
| The motor overheats and runs at a low speed. | Loose contact or broken cable in the power circuit of the motor. | Check the power circuit for loose contacts or broken cables. |
| | Too high use of energy. | Investigate and remedy the cause. |
| The fuses blow and/or the motor protection is triggered. | The power has been incorrectly connected. | Connect the power in the correct way. |
| | Short circuit in the power. | Remedy the short circuit. |
| | Wrong fuse. (too low value) | Adjust the fuse to the nominal motor current. |
| | Motor protection poorly set. | Adjust the motor protection to the nominal motor current. |
| | Short circuit in the winding or with respect to the earth | Dismount the motor for repair. Refer to section 7.8.11. |
| The motor does not run. The motor protection is triggered immediately. | Incorrect setting of the motor protection. | Check and/or adjust the motor protection to the correct value. |
| | The mechanical drive (chains, belts, rollers or guides) are blocked. | Remove the blockage. Clean the machine. If possible, shorten the inspection/maintenance/ cleaning intervals. Check the chains, drive belts, rollers, guides and the like for damage or incorrect adjustment. |
| The motor does not run. | The operation or main power supply switch is on "OFF". | Set the operation/main power supply switch to "ON". |
| | The door switch or emergency stop is active. | Make sure that the situation is safe, then release the emergency stop or the switch. |
| Use of energy (motor current) too high and higher motor temperature. | The weight of the products is too much. | Make sure the specifications for the use of the machine have been adhered to. |

| Problem | Possible cause | Solution |
|--|---|--|
| Use of energy (motor current) too high and wear of drive belt. | The drive belt has been tensioned too tightly. | Lower the tension of the belt. |
| | The drive belt does not run in line over the drive return wheels. | Align the drive belt. |
| Use of energy (motor current) too high and high temperature of the bearing housing (sometimes accompanied by sound). | Ball bearing, ball bush or return roller is blocked. | Check the ball bearing, ball-bush or return roller and replace if necessary. |

13.4 Gravity roller carrier

| Problem | Possible cause | Solution |
|-------------------------|---------------------|-----------------|
| Roller is not running. | Bearing is damaged. | Replace roller. |
| Roller is making noise. | Bearing is damaged. | Replace roller. |

13.5 Gravity wheel carrier

| Problem | Possible cause | Solution |
|------------------------|---------------------|----------------|
| Wheel is not running. | Bearing is damaged. | Replace wheel. |
| Wheel is making noise. | Bearing is damaged. | Replace wheel. |

13.6 Driven roller carrier

| Problem | Possible cause | Solution |
|---|---|---|
| Roller is not running. | Bearing is damaged. | Replace roller. |
| Roller is making noise, | Bearing is damaged. | Replace roller. |
| RollerDrive does not run. | No power supply. | Check 24 VDC power supply. |
| | Plug not connected properly. | Check cable connection. |
| RollerDrive is rotating in the wrong direction or at the wrong speed. | Wrong DriveControl settings on the speed and rotational direction Dip switches. | Change setting on DriveControl. |
| | Wrong voltage at speed setting pin (if the RollerDrive is not operated with the recommended InterrollDriveControl). | Check the voltage of the speed setting pins on the motor plug. |
| Abnormal noise coming from the RollerDrive. | Motor or gearbox is damaged. | Replace the RollerDrive. |
| Interrupted RollerDrive operation. | Damaged motor cable. | Check motor cable for damage. If the motor cable is damaged, replace the RollerDrive. |
| | RollerDrive overloaded. | See "Overload protection device", in the Interroll documentation. |

| Problem | Possible cause | Solution |
|--|---------------------------------------|--|
| DriveControl does not function or functions incorrectly. | No power supply. | Check whether the output voltage of the power supply is within the specified voltage range. Inspect the connections and correct if necessary. |
| | Wrong position of the DIP switches. | Check and if necessary correct the position of the DIP switches according to the Interroll documentation. |
| DriveControl defective or damaged. | Internal fuse triggered or defective. | Replace the DriveControl. |

13.7 Error signal on the DriveControl

An error signal on the DriveControl is switched with the following faults:

- RollerDrive error
- RollerDrive is not connected
- Fuse defective
- Permissible operating voltage range has been exceeded or fallen below
- Operating voltage reverse connected
- Chopper resistance overheated

14 CE declaration of conformity

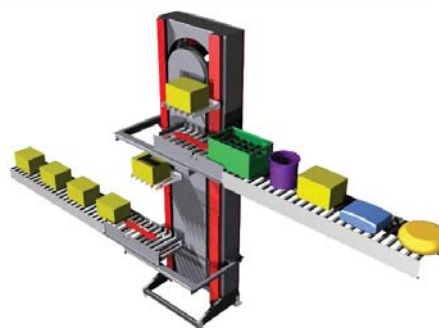
14.1 CE declaration of conformity

EC Declaration of Conformity of the Machinery
in accordance with Directive 2006/42/EC, Annex II, point 1.A
(Translation)

Qimarox B.V.
Nobelstraat 43
3846 CE Harderwijk
The Netherlands

Qimarox®

Telephone : +31 (0) 341 436 700
Fax : +31 (0) 341 436 701
Email : info@qimarox.com



hereby declares that the undersigned
is authorised to act on its behalf to compile this
Technical Dossier for this machine and
also declares that the machine:

Name: **PRORUNNER mk5**
Function: Vertical transport
Model/Type: mk5
Method of construction: according to layout drawing
Date of construction: 2019
Serial number: mk5-1901001 / 1912999

complies with all applicable provisions of the following Directive(s):

Directive 2006/42/EC (Machinery Directive)
Directive 2006/95/EC
Directive 2004/108/EC (EMC Directive)

Where applicable, the following harmonised standards are used:

NEN-EN-ISO 12100:2010-1 (Safety of machinery)
NEN-EN-IEC 60204-1 (Electrical safety of machinery)
NEN-EN 619:2010 (Continuous handling equipment and systems - Safety and EMC requirements for equipment for mechanical handling of unit loads)

City: Harderwijk
Date:

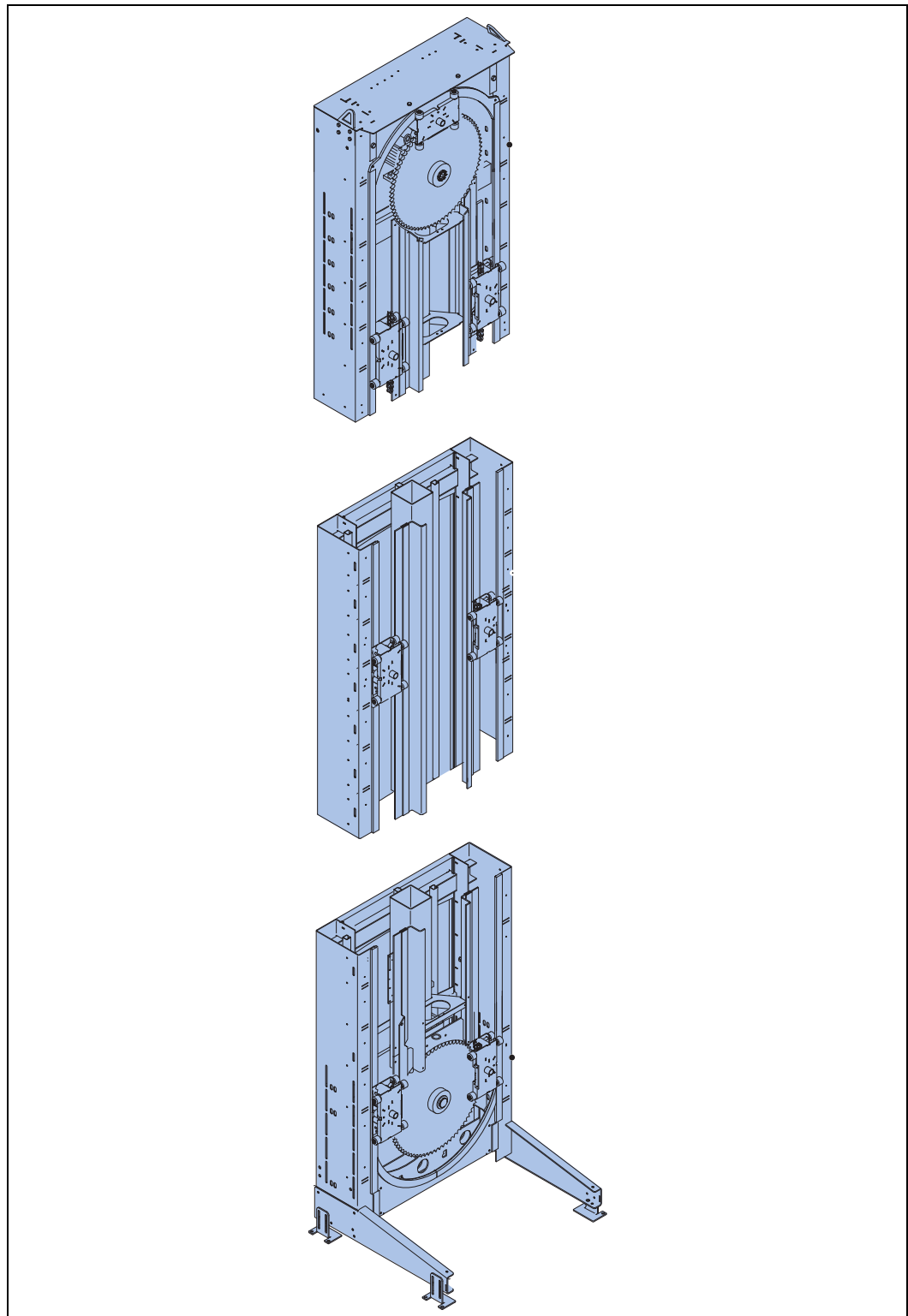
Name: P.G. Hannessen
Function: Director

Signature:

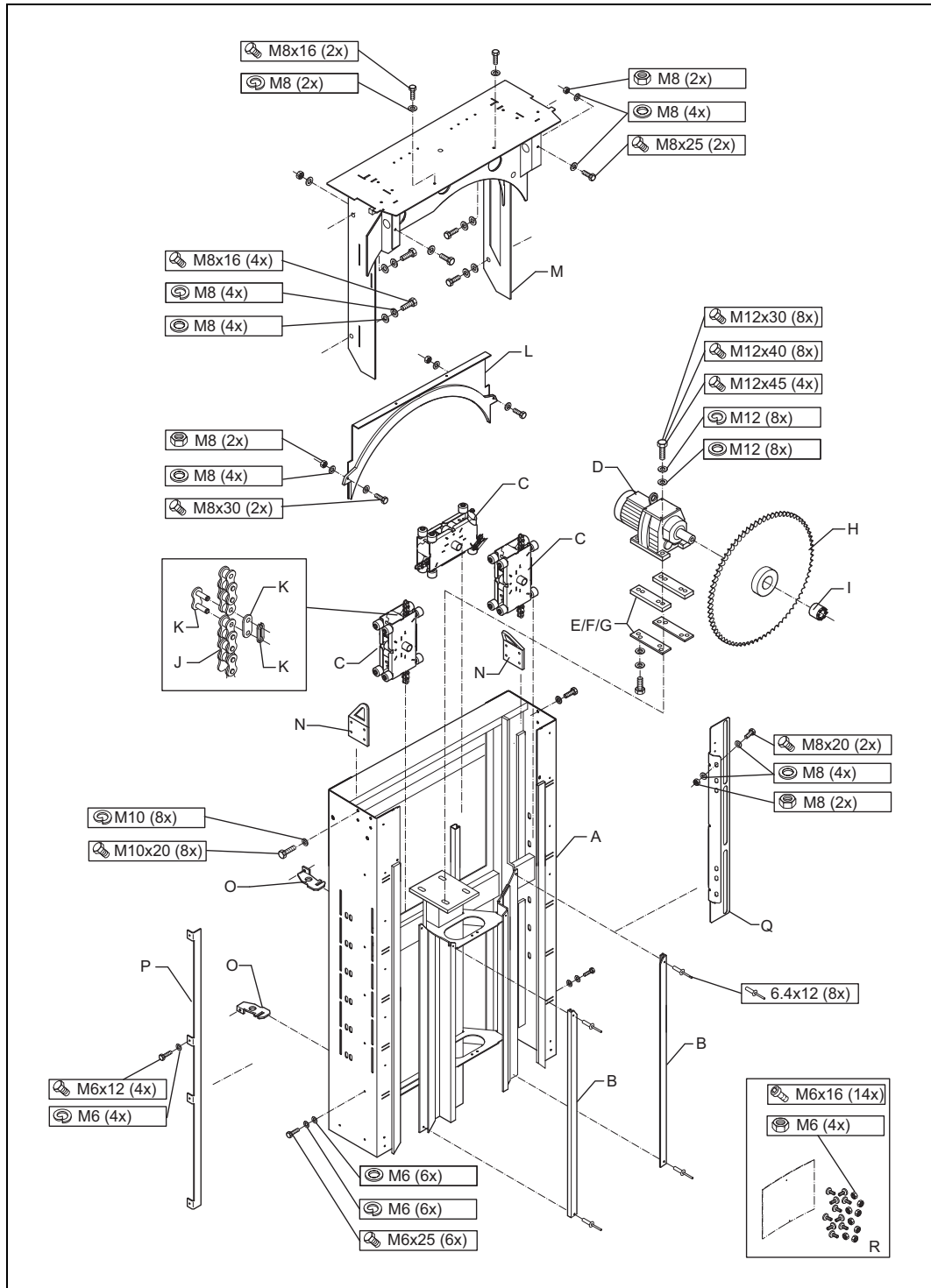
15 Exploded views of frame parts

15.1 Introduction

The following pages show the exploded views, the parts lists and the mounting materials of the individual frame parts.



15.2 Drive section



15.2.1 Drive section parts list

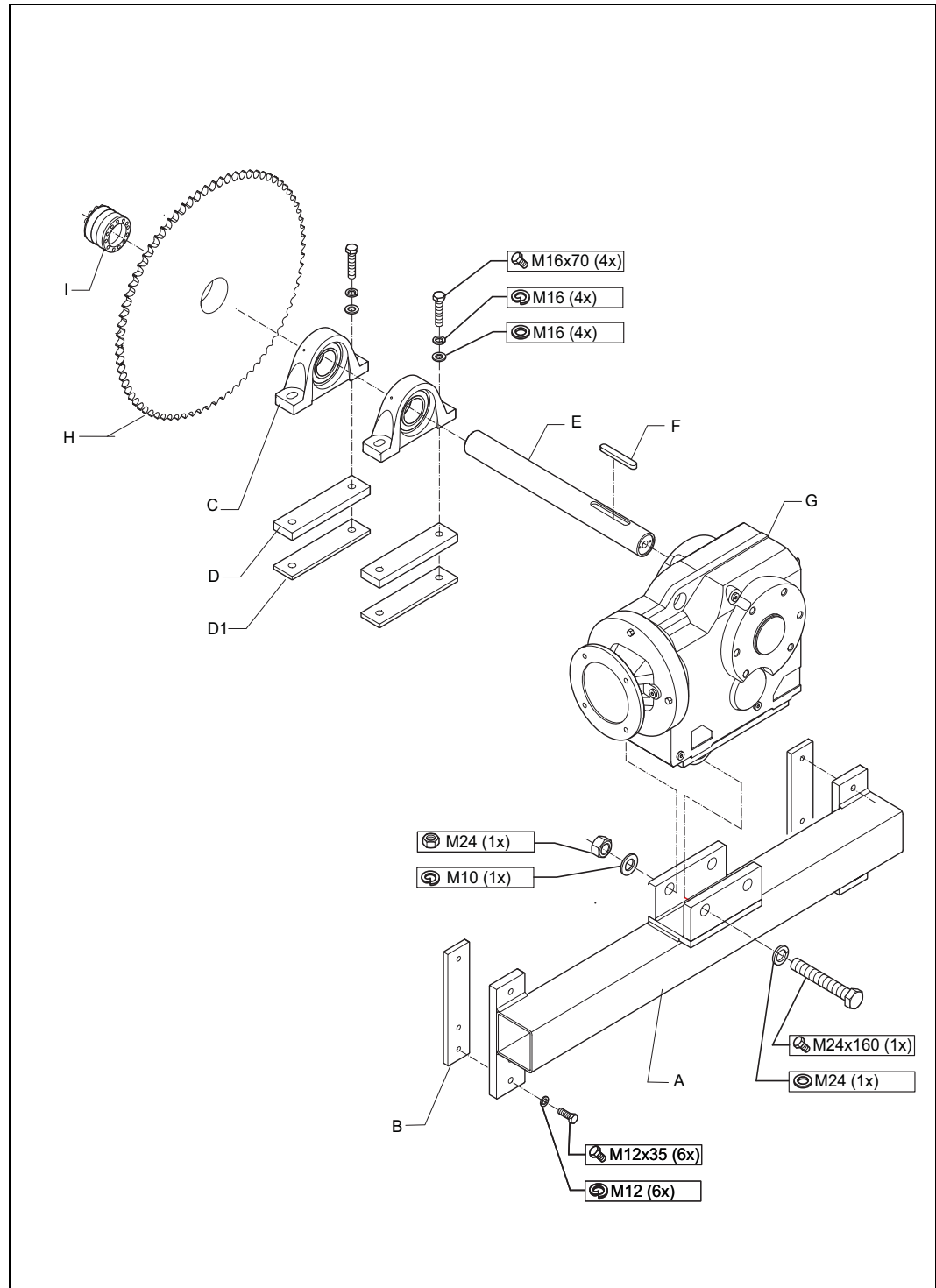
| Drive section Package B-01 | | | | |
|----------------------------|----------|-------------|---------------------------------------|------------------------------|
| Item no. 1000143 | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| | 1 | 100060 | Box | 185 x 125 x 90 mm |
| A | 1 | 1001346 | Drive section | L = 1475 mm |
| | 1 | 1001347 | Drive section | L = 1725 mm |
| | 1 | 1001348 | Drive section | L = 1975 mm |
| B | 2 | 1000099 | Chain guide | L = 800 mm |
| | 2 | 1000107 | Chain guide | L = 1050 mm |
| | 2 | 1000100 | Chain guide | L = 1300 mm |
| C | 3 | 1000214 | Trolley | |
| | 3 | 1000820 | Trolley HD | |
| D | 1 | | Drive, see layout drawing | in manual |
| E | 1 | 1000187 | Filling plate R77 | 3 mm |
| F | 1 | 1000188 | Filling plate R57 | |
| G | 1 | 1000189 | Filling plate R67 | |
| H | 1 | 1000111 | Sprocket 1" Z=76 | clamping bush hole D = 60 mm |
| | 1 | 1000112 | Sprocket 1" Z=76 | clamping bush hole D = 65 mm |
| | 1 | 1001012 | Sprocket 1" Z=76 | clamping bush hole D = 90 mm |
| J | 1 | 1000875 | Chain 16B1 | |
| K | 1 | 1000154 | Closing link 16B1 | |
| L | 1 | 1000095 | Baffle top | |
| M | 1 | 1000056 | Curve frame top | |
| N | 2 | 1000081 | Hoisting eye | 12 mm |
| O | 6 | 1000692 | Shield clamping bracket | 0.8 mm |
| | 6 | 1000113 | Shield clamping bracket | 1.5 mm |
| P | 1 | 1000736 | Cable guide side | L = 1275 mm |
| | 1 | 1000752 | Cable guide side | L = 1525 mm |
| | 1 | 1000756 | Cable guide side | L = 1775 mm |
| Q | 1 | 1000093 | Cable guide centre | L = 790 mm |
| | 1 | 1000088 | Cable guide centre | L = 1040 mm |
| | 1 | 1000089 | Cable guide centre | L = 1290 mm |
| R | | | Assemble these parts at a later stage | |

15.2.2 Drive section mounting materials

| Drive section Package B-02 | | | |
|----------------------------|----------------|-----------------------------------|----------|
| Item no.: 1000143 | | | |
| Quantity | Article number | Description (mounting mat.) | Notes |
| 6 | 1000148 | Washer | M6 |
| 10 | 1000174 | Spring washer | M6 |
| 8 | 1000172 | Spring washer | M10 |
| 6 | 1000175 | Spring washer | M8 |
| 18 | 1000149 | Washer | M8 |
| 6 | 1000050 | Locknut | M8 |
| 6 | 1000197 | Hexagonal stud bolt | M6 x 25 |
| 2 | 1001175 | Hexagonal stud bolt | M8 x 20 |
| 8 | 1000193 | Hexagonal stud bolt | M10 x 20 |
| 2 | 1000198 | Hexagonal stud bolt | M8 x 25 |
| 6 | 1000209 | Hexagonal stud bolt | M8 x 16 |
| 2 | 1000974 | Hexagonal stud bolt | M8 x 30 |
| 8 | 1000173 | Spring washer | M12 |
| 8 | 1000201 | Hexagonal stud bolt | M12 x 30 |
| 8 | 1000202 | Hexagonal stud bolt | M12 x 40 |
| 4 | 1000975 | Hexagonal stud bolt | M21 x 45 |
| 8 | 1000150 | Washer | M12 |
| 8 | 1000134 | Pop rivet Al | 6.4 x 12 |
| 4 | 1000208 | Hexagonal stud bolt | M6 x 12 |
| 4 * | 1000973 | Locknut | M6 |
| 14 * | 1000167 | Taptite round head cylinder screw | M6 x 16 |

* Assemble these parts at a later stage

15.3 Motor reductor section (option)



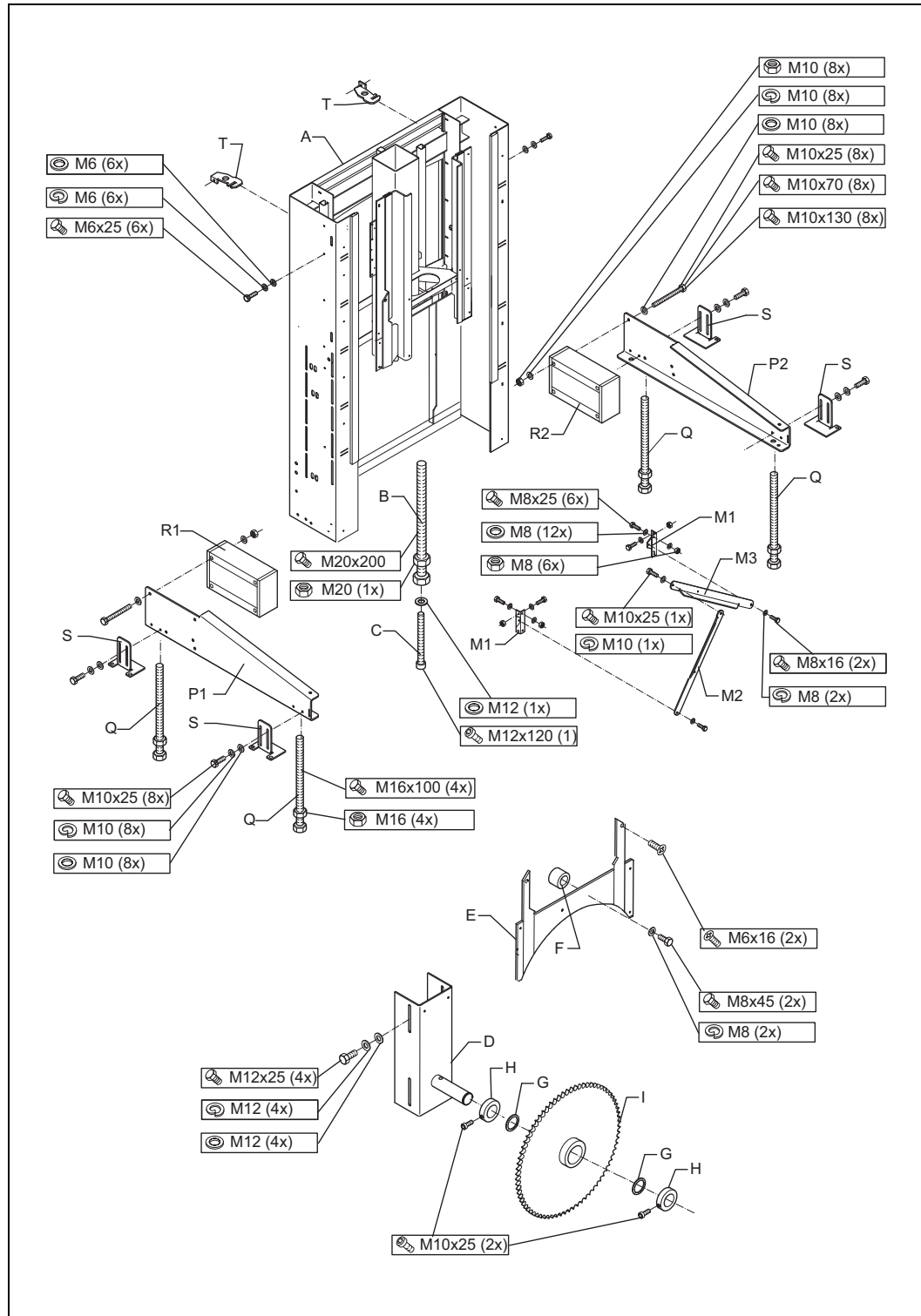
15.3.1 Motor reductor (option) section parts list

| Motor reductor section Package | | | | |
|--------------------------------|----------|-------------|--|------------------|
| Item no. | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| A | 1 | 1001183 | Moment arm support KA87 PRmk5 | |
| B | 2 | 1001010 | Nut plate moment arm KA87 PRmk5 | |
| C | 1 | 1000976 | Bearing block PASE 60N | |
| D | 1 | 1001007 | Bearing block mounting Prmk5 | |
| D1 | 2 | 1001008 | Filling plate bearing block Prmk5 PASE 60N | |
| E | 2 | 1001299 | Drive spindle PRmk5 KA87 | |
| F | 2 | 1001014 | Key steel | 18 x 11 x 125 mm |
| G | 3 | 1001011 | Reductor KA87 / TAM90 | l = 147,32 |
| H | 3 | 1001012 | Sprocket 1" ø90 ELVZ | Z = 76 mm |
| I | 3 | 1000803 | Clamping bush DX ø60/ø90 | L = 72 mm |

15.3.2 Motor reduction (option) section mounting materials

| Motor reduction section Package | | | | |
|---------------------------------|----------------|-----------------------------|-----------|--|
| Item no.: | | | | |
| Quantity | Article number | Description (mounting mat.) | Notes | |
| 4 | 1001015 | Hexagonal stud bolt | M16 x 70 | |
| 4 | 1000151 | Washer | M16 | |
| 4 | 1000883 | Spring washer | M16 | |
| 1 | 1001016 | Hexagonal stud bolt | M24 x 160 | |
| 1 | 1001019 | Washer | M24 | |
| 1 | 1001020 | Spring washer | M24 | |
| 1 | 1001021 | Hexagonal nut | M24 | |
| 6 | 1001022 | Hexagonal stud bolt | M12 x 35 | |
| 6 | 1000173 | Spring washer | M12 | |

15.4 Tensioning section 1/2



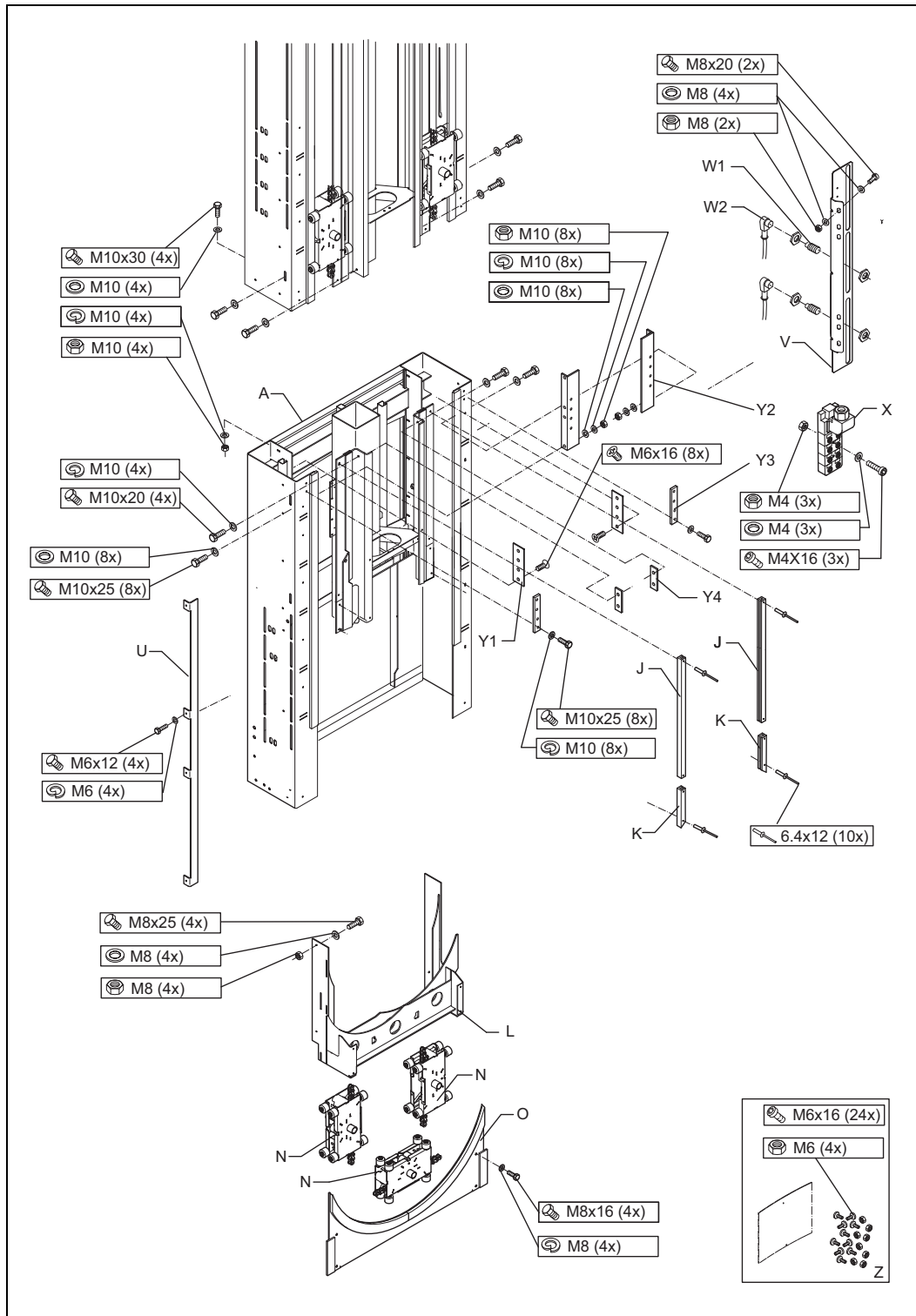
15.4.1 Tensioning section parts list 1/2

| Tensioning section Package A-01-1 | | | | |
|-----------------------------------|----------|-------------|-------------------------------------|--------------------|
| Item no. 1000142 | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| | 1 | 1001606 | Box | 600 x 350 x 120 mm |
| A | 1 | 1000815 | Tensioning section | L = 1475 mm |
| | 1 | 1000818 | Tensioning section | L = 1725 mm |
| | 1 | 1000854 | Tensioning section | L = 1975 mm |
| B | 1 | 1000156 | Clamping bolt | M20 x 200 mm |
| C | 1 | 1000087 | Cylinder head screw | M12 x 12.0 mm |
| D | 1 | 1000157 | Lug | |
| E | 1 | 1000078 | Guide plate centre | z = 76 |
| F | 1 | 1000185 | Guide plate spacer sleeve | |
| G | 1 | 1000122 | Plastic ring | 50 x 61 x 1 mm |
| H | 1 | 1000165 | Adjusting ring | 50 mm |
| I | 1 | 1000863 | Sprocket 1" Z=76 with slide bearing | |
| M1 | 1 | 1000049 | Tie rod attachment | |
| M2 | 1 | 1000951 | Tie rod curve frame left | |
| M3 | 1 | 1000169 | Tie rod curve frame right | |
| P1 | 1 | 1000181 | Foot right | |
| P2 | 1 | 1000824 | Foot left | |
| Q | 4 | 1000196 | Hexagonal stud bolt | M16 x 100 mm |
| R1 | 1 | 1000872 | Foot spacer right | |
| R2 | 1 | 1000871 | Foot spacer left | |
| S | 4 | 1000164 | Adjustment anchor hook line | H = 150 mm |
| T | 6 | 1000692 | Shield clamping bracket | 0.8 mm |
| | 6 | 1000113 | Shield clamping bracket | 1.5 mm |

15.4.2 Mounting materials tensioning section 1/2

| Tensioning section Package A-02-1 | | | |
|-----------------------------------|----------------|-----------------------------|-----------|
| Item no.: 1000142 | | | |
| Quantity | Article number | Description (mounting mat.) | Notes |
| 1 | 1000087 | Hexagonal socket bolt | M12 x 120 |
| 2 | 1000086 | Hexagonal socket bolt | M10 x 25 |
| 4 | 1000126 | Hexagonal nut | M16 |
| 1 | 1000206 | Hexagonal nut | M20 |
| 4 | 1000200 | Hexagonal stud bolt | M12 x 25 |
| 4 | 1000173 | Spring washer | M12 |
| 5 | 1000150 | Washer | M12 |
| 2 | 1000209 | Hexagonal stud bolt | M8 x 16 |
| 6 | 1000198 | Hexagonal stud bolt | M8 x 25 |
| 4 | 1000398 | Spring washer | M8 |
| 12 | 1000149 | Washer | M8 |
| 6 | 1000050 | Locknut | M8 |
| 2 | 1000199 | Hexagonal stud bolt | M8 x 45 |
| 17 | 1000194 | Hexagonal stud bolt | M10 x 25 |
| 8 | 1000911 | Hexagonal stud bolt | M10 x 70 |
| 8 | 1000674 | Hexagonal stud bolt | M10 x 130 |
| 17 | 1000172 | Spring washer | M10 |
| 8 | 1000125 | Nut | M10 |
| 16 | 1000147 | Washer | M10 |
| 6 | 1000197 | Hexagonal stud bolt | M6 x 25 |
| 6 | 1000148 | Washer | M6 |
| 6 | 1000174 | Spring washer | M6 |
| 2 | 1000177 | Countersunk bolt | M6 x16 |

15.4.3 Exploded view tensioning section 2/2



Tensioning section parts list 2/2

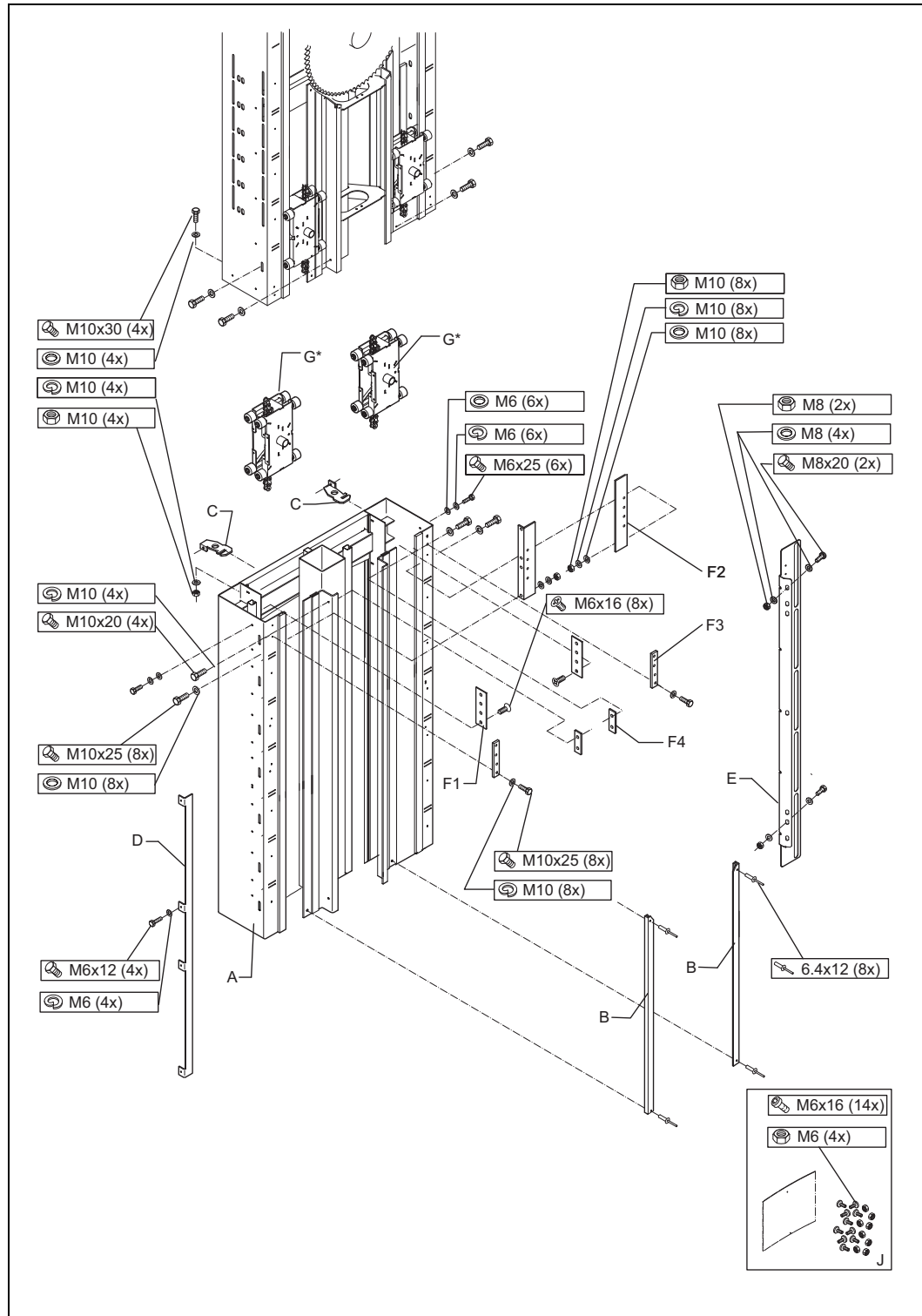
| Tensioning section Package A-01-2 | | | | |
|-----------------------------------|----------|-------------|---------------------------------------|----------------|
| Item no. 1000142 | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| A | 1 | 1000815 | Tensioning section | L = 1475 mm |
| | 1 | 1000818 | Tensioning section | L = 1725 mm |
| | 1 | 1000854 | Tensioning section | L = 1975 mm |
| J | 2 | 1000103 | Chain guide profile | L = 480 mm |
| | 2 | 1000104 | Chain guide profile | L = 730 mm |
| | | 1000105 | Chain guide profile | L = 980 mm |
| K | 2 | 1000106 | Chain guide profile | L = 250 mm |
| L | 1 | 1000055 | Curve frame bottom Z = 76 | |
| N | 3 | 1000214 | Trolley | |
| | 3 | 1000820 | Trolley HD | |
| O | 1 | 1000094 | Baffle plate bottom Z = 76 | |
| U | 1 | 1000736 | Cable guide side | |
| | 1 | 1000752 | Cable guide side | |
| | 1 | 1000756 | Cable guide side | |
| V | 1 | 1000088 | Cable guide centre | |
| | 1 | 1000089 | Cable guide centre | |
| | 1 | 1000091 | Cable guide centre | |
| W1 | 2 | 1000932 | Inductive sensor | |
| W2 | 2 | 1001326 | Prefab cable PVC-OB | L = 5 m |
| | 2 | 1001528 | Prefab cable PVC-OB | L = 2 m |
| | 2 | 1001599 | Prefab cable PVC-OB | L = 5 m UL CSA |
| | 2 | 1001600 | Prefab cable PVC-OB | L = 10 m |
| | 2 | 1001601 | Prefab cable PVC-OB | L = 1 m |
| X | 1 | 1000723 | Exact 12 | 4 x M12 |
| | 1 | 1000903 | Exact 12 | 8 x M12 |
| Y1 | 2 | 1000117 | Wheel guide coupling plate | |
| Y2 | 2 | 1000118 | Inner column coupling plate | |
| Y3 | 2 | 1000119 | Outer column coupling plate | |
| Y4 | 2 | 1000129 | Nut plate | M10 st. 50 mm |
| Z | | | Assemble these parts at a later stage | |

Mounting materials tensioning section 2/2

| Tensioning section Package A-02-2 | | | |
|-----------------------------------|----------------|-----------------------------|-----------|
| Item no.: 1000142 | | | |
| Quantity | Article number | Description (mounting mat.) | Notes |
| 10 | 1000134 | Allen bolt | M12 x 120 |
| 8 | 1000177 | Hexagonal socket bolt | M10 x 25 |
| 4 | 1000209 | Hexagonal nut | M16 |
| 2 | 1001175 | Hexagonal nut | M20 |
| 4 | 1000198 | Hexagonal stud bolt | M12 x 25 |
| 10 | 1000398 | Spring washer | M12 |
| 12 | 1000149 | Washer | M12 |
| 6 | 1000050 | Hexagonal stud bolt | M8 x 16 |
| 4 | 1000193 | Hexagonal stud bolt | M8 x 25 |
| 16 | 1000194 | Spring washer | M8 |
| 4 | 1000195 | Washer | M8 |
| 24 | 1000172 | Locknut | M8 |
| 12 | 1000125 | Hexagonal stud bolt | M8 x 45 |
| 20 | 1000147 | Hexagonal stud bolt | M10 x 25 |
| 4 | 1000208 | Hexagonal stud bolt | M10 x 70 |
| 4 | 1000174 | Hexagonal stud bolt | M10 x 130 |
| 3 | 1001677 | Spring washer | M10 |
| 3 | 1001676 | Nut | M10 |
| 3 | 1001675 | Washer | M10 |
| 4 * | 1000973 | Spring washer | M6 |
| 24 * | 1000167 | Countersunk bolt | M6 x16 |

* Assemble these parts at a later stage

15.5 Centre section



15.5.1 Centre section parts list

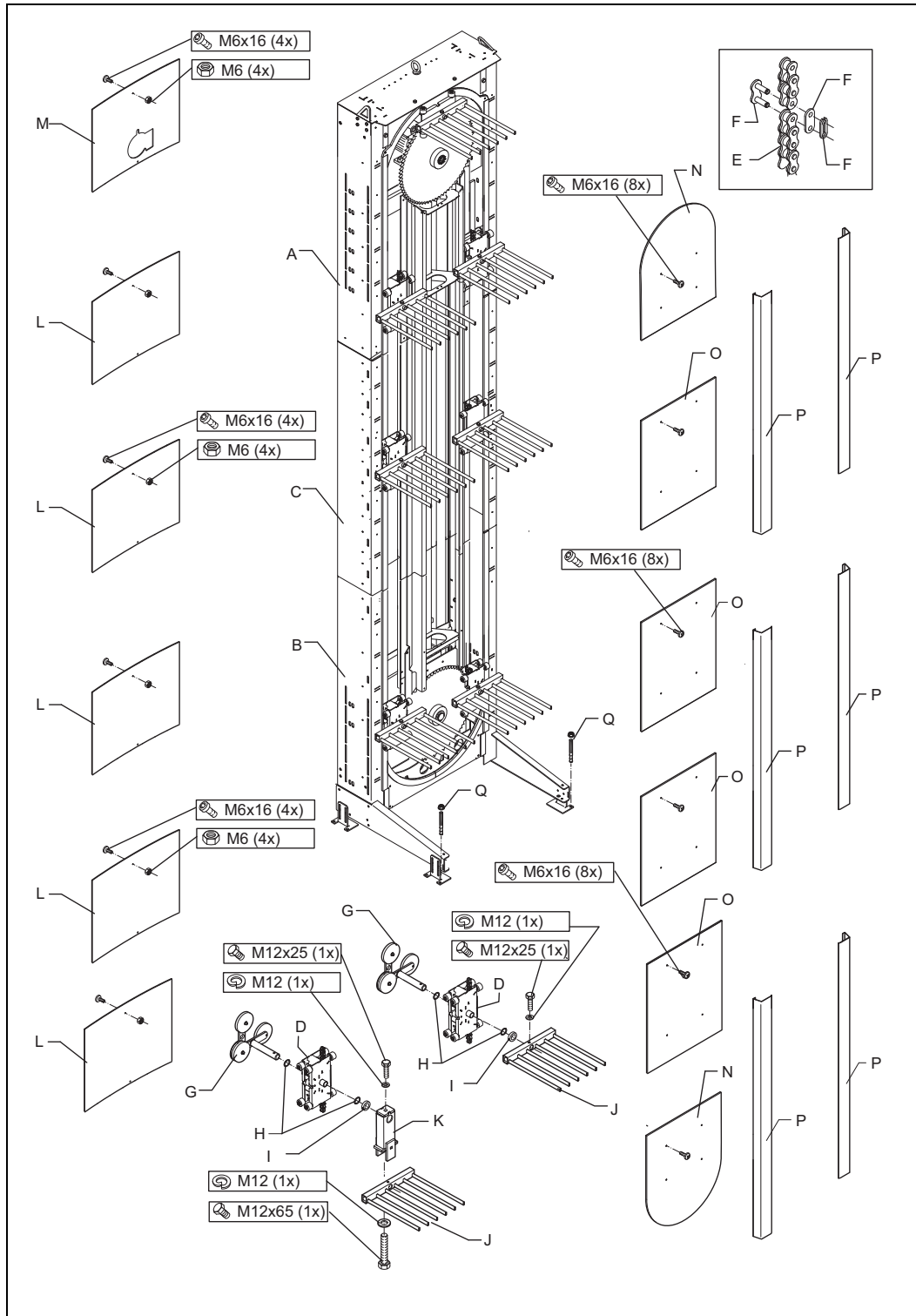
| Centre section Package C-01 | | | | |
|-----------------------------|----------|-------------|---------------------------------------|--------------------|
| Item no. 1000144 | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| | 1 | 1001606 | Box | 600 x 350 x 120 mm |
| A | 1 | 1000800 | Centre section | L = 1250 mm |
| | 1 | 1000805 | Centre section | L = 1950 mm |
| | 1 | 1000810 | Centre section | L = 1350 mm |
| B | 2 | 1000101 | Chain guide profile | L = 1250 mm |
| | 2 | 1000102 | Chain guide profile | L = 1950 mm |
| | 2 | 1000813 | Chain guide profile | L = 1350 mm |
| C | 6 | 1000692 | Shield clamping bracket | 0.8 mm |
| | 6 | 1000113 | Shield clamping bracket | 1.5 mm |
| D | 1 | 1000801 | Cable guide side | L = 1050 mm |
| | 1 | 1000806 | Cable guide side | L = 1750 mm |
| | 1 | 1000812 | Cable guide side | L = 1350 mm |
| E | 1 | 1000090 | Cable guide centre | L = 2140 mm |
| | 1 | 1000102 | Cable guide centre | L = 1940 mm |
| | 1 | 1000811 | Cable guide centre | L = 1340 mm |
| E | 1 | 1000692 | Shield clamping bracket | 0.8 mm |
| | 1 | 1000113 | Shield clamping bracket | 1.5 mm |
| F1 | 2 | 1000117 | Wheel guide coupling plate | |
| F2 | 2 | 1000118 | Inner column coupling plate | |
| F3 | | 1000119 | Outer column coupling plate | |
| F4 | 2 | 1000129 | Nut plate | M10 st. 50 mm |
| G * | 1 | 1000214 | Trolley mounting assembly | |
| | 1 | 1000820 | Trolley HD mounting assembly | |
| J | | | Assemble these parts at a later stage | |

15.5.2 Centre section mounting materials

| Centre section Package C-02 | | | |
|-----------------------------|----------------|-----------------------------------|--------------------|
| Item no.: 1000144 | | | |
| Quantity | Article number | Description (mounting mat.) | Notes |
| 1 | 1001606 | Box | 600 x 350 x 120 mm |
| 8 | 1000134 | Pop rivet Al | 6.4 x 12 |
| 6 | 1000197 | Hexagonal stud bolt | M6 x 25 |
| 6 | 1000148 | Washer | M6 |
| 10 | 1000174 | Spring washer | M6 |
| 8 | 1000177 | Countersunk hexagonal socket bolt | M6 x 16 |
| 24 | 1000172 | Spring washer | M10 |
| 12 | 1000125 | Nut | M10 |
| 20 | 1000147 | Washer | M10 |
| 4 | 1000193 | Hexagonal stud bolt | M10 x 20 |
| 16 | 1000194 | Hexagonal stud bolt | M10 x 25 |
| 4 | 1000195 | Hexagonal stud bolt | M10 x 30 |
| 4 | 1000149 | Washer | M8 |
| 2 | 1000050 | Locknut | M8 |
| 4 | 1001175 | Hexagonal stud bolt | M8 x 20 |
| 4 | 1000208 | Hexagonal stud bolt | M8 x 12 |
| 2 | 1000209 | Hexagonal stud bolt | M8 x 16 |
| 4 * | 1000973 | | M6 |
| 14 * | 1000167 | | M6 x 16 |

* Assemble these parts at a later stage

15.6 Assembly sections



15.6.1 Assembly section parts list - 1

| Assembly Package C-01-1 | | | |
|-------------------------|----------------|----------------------------|------------------|
| Item no. 1000144 | | | |
| Pos | Article number | Description (parts) | Notes |
| A | | Drive section | |
| B | | Tensioning section | |
| C | | Centre section | |
| D | | Trolley | |
| E | 1000097 | Chain 1" 16B-1 | 7 links |
| | 1000702 | Chain 1" 16B-1 | 1 link |
| F | 1000154 | Closing link 16B-1 | |
| G | 1000215 | Assembly of guide standard | |
| | 1000821 | Guide HD assembly | |
| H | 1000130 | Spacer | 30 x 42 x 0.5 mm |
| | 1000224 | Spacer | 35 x 45 x 0.5 mm |
| I | 1000116 | Clamp adjusting ring | 30 mm |
| | 1000223 | Clamp adjusting ring | 35 mm |
| J | 1000713 | Fork St. 75 8x | L = 473 mm |
| | 1000714 | Fork St. 75 8x | L = 473 mm |
| | 1000715 | Fork HD St. 75 6x | L = 523 mm |
| | 1000716 | Fork HD St. 75 6x | L = 473 mm |
| | 1000751 | Fork HD St. 75 8x | L = 673 mm |
| | 1000943 | Fork St. 75 10x | L = 673 mm |
| | 1000982 | Fork St. 100 8x | L = 723 mm |
| | 1001095 | Fork St. 75 6x | L = 473 mm |
| | 1001168 | Fork St. 75 6x | L = 473 mm |
| | 1001212 | Fork HD St. 75 8x | L = 723 mm |
| | 1001213 | Fork HD St. 75 8x | L = 743 mm |
| | 1001259 | Fork St. 55 10x | L = 473 mm |
| | 1001370 | Fork HD St. 75 6x | L = 473 mm |
| | 1001635 | Fork HD St. 75 10x | L = 523 mm |
| | 1002567 | Fork St. 75 6x | L = 625 mm |
| M | 1000004 | Cover PRmk5 rear | 5 mm R77 |
| | 1000738 | Cover PRmk5 rear | 0.75 mm R77 |
| | 1001023 | Cover PRmk5 rear | 5 mm R77 Mov. |
| | 1001402 | Cover PRmk5 rear | 0.75 mm R77 |
| | 1001650 | Cover PRmk5 rear | 0.75 mm R77 |

| Assembly Package C-01-1 | | | |
|-------------------------|----------------|---------------------|--------|
| Item no. 1000144 | | | |
| Pos | Article number | Description (parts) | Notes |
| K | 1001228 | Gooseneck | 150 mm |
| | 1001229 | Gooseneck | 100 mm |
| | 1001230 | Gooseneck | 75 mm |

15.6.2 Assembly section parts list - 2

| Assembly section - 2 | | | |
|----------------------|----------------|-------------------------------|--------------------------------|
| Item no. 1000144 | | | |
| Pos | Article number | Description (parts) | Notes |
| L | 1000006 | Cover PRmk5 rear 5 mm | 781 x H 595 plastic Red MJ21 |
| L | 1000007 | Cover PRmk5 rear 5 mm | 781 x H 845 plastic Red MJ21 |
| L | 1000008 | Cover PRmk5 rear 5 mm | 781 x H 1095 plastic Red MJ21 |
| L | 1000009 | Cover PRmk5 rear 5 mm | 781 x H 521 plastic Red MJ21 |
| L | 1000010 | Cover PRmk5 rear 5 mm | 781 x H 871 plastic Red MJ21 |
| L | 1000011 | Cover PRmk5 rear 5 mm | 781 x H 958 plastic Red MJ21 |
| L | 1000012 | Cover PRmk5 rear 5 mm | 781 x H 458 plastic Red MJ21 |
| L | 1000013 | Cover PRmk5 rear 5 mm | 781 x H 958 plastic Red MJ21 |
| L | 1000014 | Cover PRmk5 rear 5 mm | 781 x H 770 plastic Red MJ21 |
| L | 1000855 | Cover PRmk5 rear 0.8 mm | 781 x H 571 steel, RAL3020 |
| L | 1001196 | Cover PRmk5 rear 0.75 mm | 982 x H 595 steel, RAL3020 |
| L | 1001294 | Cover PRmk5 rear 5 mm | 781 x H 981 plastic Green PW18 |
| L | 1001392 | Cover PRmk5 rear 0.75 mm span | 793 x H 770, S235 SV RAL3020 |
| L | 1001393 | Cover PRmk5 rear 0.75 mm | 781 x H 759, S235 SV RAL3020 |
| L | 1001394 | Cover PRmk5 rear 0.75 mm | 781 x H 1009, S235 SV RAL3020 |

| Assembly section - 2 | | | |
|-----------------------------|-----------------------|--------------------------------|----------------------------------|
| Item no. 1000144 | | | |
| Pos | Article number | Description (parts) | Notes |
| L | 1001397 | Cover PRmk5 rear 0.75 mm | 789 x H 508, S235 SV RAL3020 |
| L | 1001398 | Cover PRmk5 rear 0.75 mm | 799 x H 521, S235 SV RAL3020 |
| L | 1001399 | Cover PRmk5 rear 0.75 mm | 799 x H 871, S235 SV RAL3020 |
| L | 1001400 | Cover PRmk5 rear 0.75 mm | 799 x H 595, S235 SV RAL3020 |
| L | 1001403 | Cover PRmk5 rear 0.75 mm | 799 x H 845, S235 SV RAL3020 |
| L | 1001406 | Cover PRmk5 rear 0.75 mm | 799 x H 1095, S235 SV RAL3020 |
| L | 1001651 | Cover PRmk5 rear 0.75 mm | 799 x H 595, S235 SV RAL5017 |
| L | 1001652 | Cover PRmk5 rear 0.75 mm | 799 x H 521, S235 SV RAL5017 |
| L | 1001654 | Cover PRmk5 rear 0.75 mm | 799 x H 871, S235 SV RAL5017 |
| L | 1001655 | Cover PRmk5 rear 0.75 mm | 781 x H 1009, S235 SV RAL5017 |
| L | 1001656 | Cover PRmk5 rear 0.75 mm span | 793 x H 770, S235 SV RAL5017 |
| L | 1001689 | Cover PRmk5 rear 0.75 mm | 799 x H 1095, S235 SV RAL5017 |
| L | 1001810 | Cover PRmk5 rear 0.75 mm | 799 x H 845, S235 SV RAL9010 |
| L | 1001811 | Cover PRmk5 rear 0.75 mm span | 793 x H 770, S235 SV RAL9010 |
| L | 1001812 | Cover PRmk5 rear 0.75 mm | 781 x H 1009 S235 SV RAL 9010 |
| M | 1001841 | Cover PRmk5 rear 0.75 mm R77 | 793 x H 684, S235 SV RAL 9006 |
| M | 1000004 | Cover PRmk5 rear 5 mm R77 | 781 x H 684 plastic Red MJ21 |
| M | 1001023 | Cover PRmk5 rear 5 mm R77 Mov. | 781 x H 684 plastic Red MJ21 |
| M | 1001402 | Cover PRmk5 rear 0.75 mm R77 | 793 x H 684, S235 SV RAL 3020 |
| M | 1001650 | Cover PRmk5 rear 0.75 mm R77 | 793 x H 684, S235 SV RAL 5017 |

| Assembly section - 2 | | | |
|----------------------|----------------|---------------------------------|--|
| Item no. 1000144 | | | |
| Pos | Article number | Description (parts) | Notes |
| M | 1001809 | Cover PRmk5 rear 0.75 mm R77 | 793 x H 684, S235 SV RAL 9010 |
| N | 1000015 | Cover PRmk5 front 8 mm sprocket | 586 x H 758 plastic, grey 7036 |
| N | 1000963 | Cover PRmk5 front 8 mm sprocket | 586 x H 758 plastic, white 667 |
| N | 1001667 | Cover PRmk5 front 8 mm sprocket | 586 x H 758 plastic, blue FL29 |
| N | 1001805 | Cover PRmk5 front 3 mm sprocket | 586 x H 758 alu panel, white (matt) |
| N | 1001830 | Cover PRmk5 front 3 mm sprocket | 586 x H 758 alu panel, RAL9006 |

15.6.3 Assembly section parts list - 3

| Assembly section - 3 | | | |
|----------------------|----------------|------------------------------|------------------------------------|
| Item no. 1000144 | | | |
| Pos | Article number | Description (parts) | Notes |
| O | 1000017 | Cover PRmk5 front 8 mm A1475 | 586 x H 487 plastic, grey 7036 |
| O | 1000018 | Cover PRmk5 front 8 mm A1725 | 586 x H 737 plastic, grey 7036 |
| O | 1000019 | Cover PRmk5 front 8 mm A1975 | 586 x H 988 plastic, grey 7036 |
| O | 1000020 | Cover PRmk5 front 8 mm A1250 | 586 x H 1249 plastic, grey 7036 |
| O | 1000021 | Cover PRmk5 front 8 mm M1950 | 586 x H 1949 plastic, grey 7036 |
| O | 1000022 | Cover PRmk5 front 8 mm S1975 | 586 x H 914 plastic, grey 7036 |
| O | 1000023 | Cover PRmk5 front 8 mm S1475 | 586 x H 414 plastic, grey 7036 |
| O | 1000024 | Cover PRmk5 front 8 mm S1725 | 586 x H 664 plastic, grey 7036 |
| O | 1000856 | Cover PRmk5 front 8 mm | 586 x H 1349 plastic, grey 7036 |
| O | 1000962 | Cover PRmk5 front 8 mm A1475 | 586 x H 487 plastic, white 667 |

| Assembly section - 3 | | | |
|----------------------|----------------|------------------------------|---|
| Item no. 1000144 | | | |
| Pos | Article number | Description (parts) | Notes |
| O | 1000964 | Cover PRmk5 front 8 mm A1250 | 586 x H 758 plastic, white 667 |
| O | 1000966 | Cover PRmk5 front 8 mm S1725 | 586 x H 684 plastic, white 667 |
| O | 1001197 | Cover PRmk5 front 8 mm | 586 x H 677 plastic, grey 7036 |
| O | 1001458 | Cover PRmk5 front 8 mm | 586 x H 1749 plastic, grey 7036 |
| O | 1001459 | Cover PRmk5 front 8 mm | 586 x H 1274 plastic, grey 7036 |
| O | 1001668 | Cover PRmk5 front 8 mm A1975 | 586 x H 988 plastic, blue FL29 |
| O | 1001669 | Cover PRmk5 front 8 mm A1250 | 586 x H 1249 plastic, blue FL29 |
| O | 1001670 | Cover PRmk5 front 8 mm M1950 | 586 x H 1949 plastic, blue FL29 |
| O | 1001671 | Cover PRmk5 front 8 mm S1975 | 586 x H 914 plastic, blue FL29 |
| O | 1001806 | Cover PRmk5 front 3 mm A1725 | 586 x H 737 alu panel, white (matt) |
| O | 1001807 | Cover PRmk5 front 3 mm S1975 | 586 x H 914 alu panel, white (matt) |
| O | 1001828 | Cover PRmk5 front 3 mm A1475 | 586 x H 487 alu panel, RAL9006 |
| O | 1001829 | Cover PRmk5 front 3 mm A1975 | 586 x H 988 alu panel, RAL9006 |
| O | 1001831 | Cover PRmk5 front 3 mm A1250 | 586 x H 1249 alu panel, RAL9006 |
| O | 1001832 | Cover PRmk5 front 3 mm M1950 | 586 x H 1949 alu panel, RAL9006 |
| O | 1001833 | Cover PRmk5 front 3 mm S1725 | 586 x H 684 alu panel, RAL9006 |
| O | 1001834 | Cover PRmk5 front 3 mm S1975 | 586 x H 914 alu panel, RAL9006 |
| O | 1001835 | Cover PRmk5 front 3 mm S1975 | 586 x H 914 alu panel, RAL9006 |
| P | 1001296 | Cover PRmk5 side 5.0 mm | L = 3050 plastic red MJ21(older type MK5) |
| P | 1000737 | Cover PRmk5 side 0.8 mm | L = 475 steel RAL3020 |
| P | 1000753 | Cover PRmk5 side 0.8 mm | L = 1725 steel RAL3020 |
| P | 1000789 | Cover PRmk5 side 0.8 mm | L = 1975 steel RAL3020 |

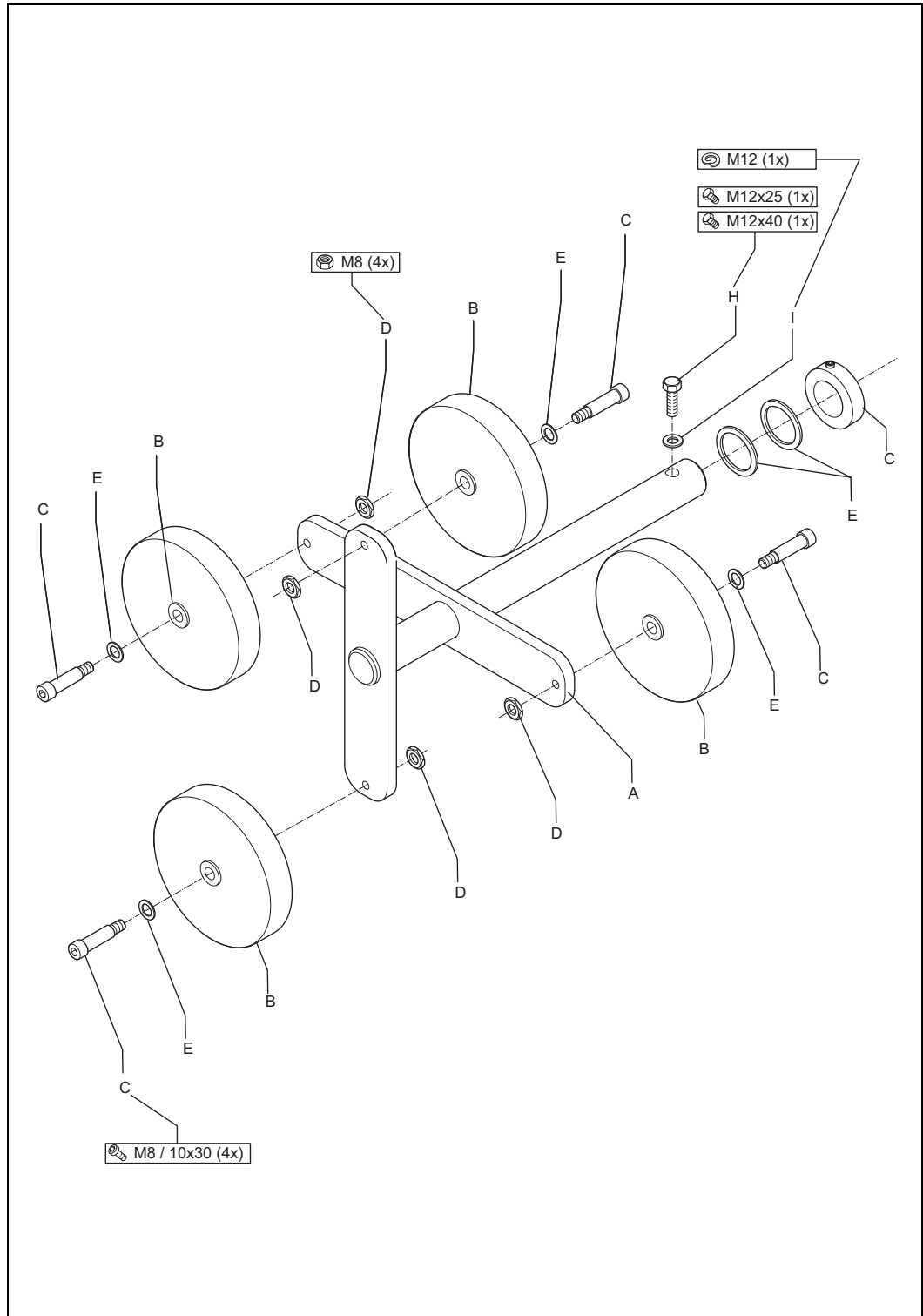
| Assembly section - 3 | | | |
|----------------------|----------------|-------------------------|---|
| Item no. 1000144 | | | |
| Pos | Article number | Description (parts) | Notes |
| P | 1000802 | Cover PRmk5 side 0.8 mm | L = 1250 steel RAL3020 |
| P | 1000807 | Cover PRmk5 side 0.8 mm | L = 1950 steel RAL3020 |
| P | 1000814 | Cover PRmk5 side 0.8 mm | L = 1350 steel, RAL3020 (shortened standard cover) |
| P | 1001663 | Cover PRmk5 side 0.8 mm | L = 1975 steel RAL3020 |
| P | 1001664 | Cover PRmk5 side 0.8 mm | L = 1250 steel RAL3020 |
| P | 1001665 | Cover PRmk5 side 0.8 mm | L = 1950 steel RAL3020 |
| P | 1001666 | Cover PRmk5 side 0.8 mm | L = 1725 steel RAL3020 |
| P | 1001808 | Cover PRmk5 side 0.8 mm | L = 1725 steel RAL3020 |
| P | 1001840 | Cover PRmk5 side 0.8 mm | L = 1725 steel RAL3020 |
| Q | 1000278 | Anchor FBNII 10/20 | M10 x 81 ELVZ |
| Q | 1001219 | Anchor RVS A2 | M10 x 90 |
| R | 1000742 | Mounting handle | |

15.6.4 Assembly sections mounting materials

| Assembly Package C-02 | | | |
|-----------------------|----------------|-----------------------------------|----------|
| Item no.: 1000144 | | | |
| Quantity | Article number | Description (mounting mat.) | Notes |
| 1 | 1001614 | Hexagonal stud bolt | M12 x 65 |
| 1 | 1000173 | Spring washer | M12 |
| 2 | 1000200 | Hexagonal stud bolt | M12 x 25 |
| 8 | 1000201 | Hexagonal stud bolt | M12 x 30 |
| 12 * | 1000973 | Locknut | M6 |
| 52 * | 1000167 | Taptite round head cylinder screw | M6 x16 |

* Assemble these parts at a later stage

15.7 Guide



15.7.1 Guide parts list and mounting materials

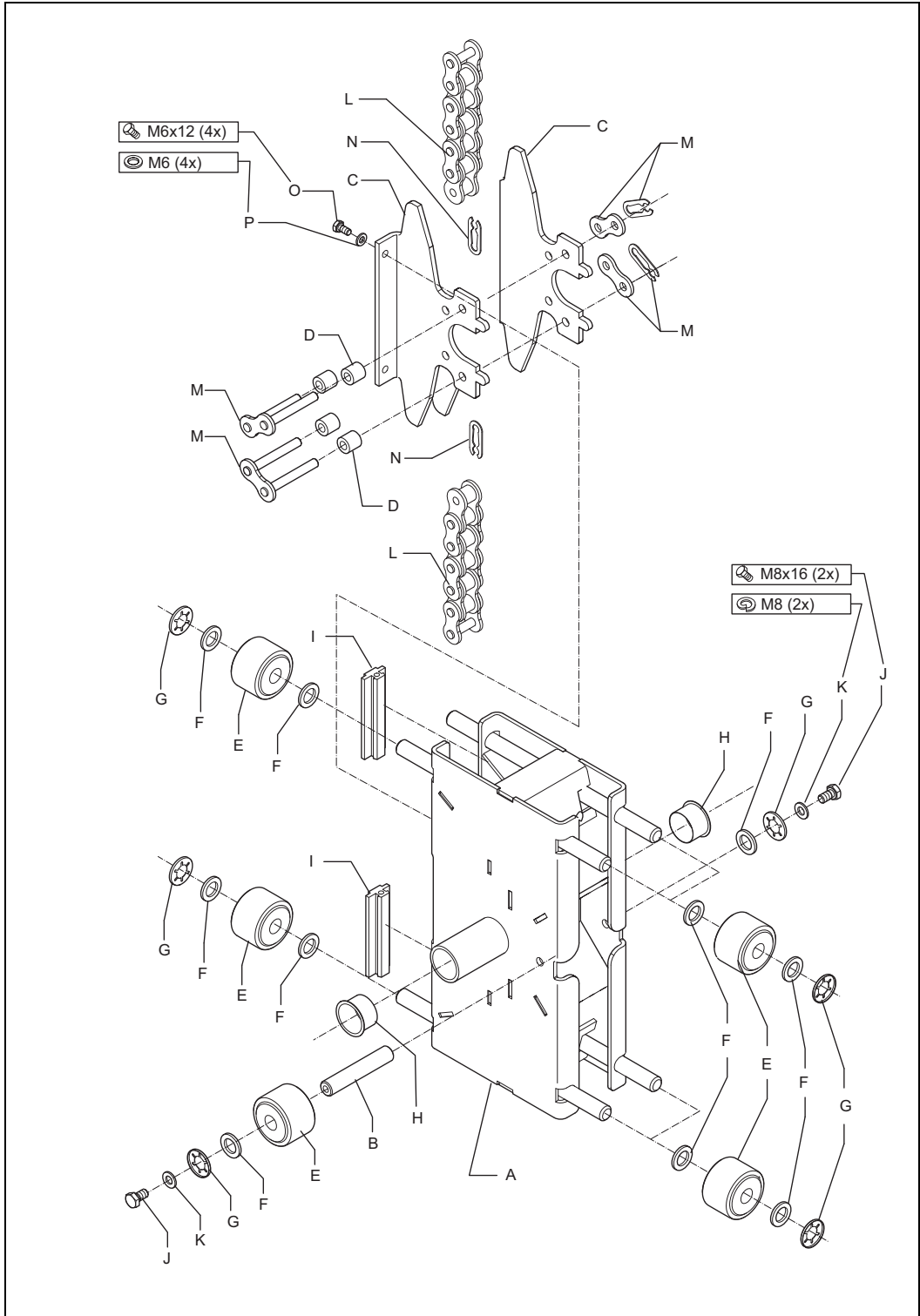
| Guide | | | | |
|----------|----------|-------------|-------------------------------|--|
| Item no. | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| A | 1 | 1000135 | Guide PRmk5 galv. | |
| B | 4 | 1000190 | Wheel PP | 125x24/10-28G-SK |
| C | 4 | 1000219 | Fitted screw, steel | (M8) \varnothing 10 x 30 |
| D | 4 | 1000220 | Low hexagonal nut galv. 8 | M8 |
| E | 4 | 1000221 | Spacer 1 mm steel | \varnothing 10 * \varnothing 16 |
| F | 1 | 1000116 | Clamp adjusting ring steel | \varnothing 30 |
| G | 2 | 1000130 | Spacer, steel | 0.5 mm \varnothing 30 * \varnothing 42 |
| H | 1 | 1000200 | Hexagonal stud bolt 8.8 galv. | M12 x 25 |
| I | 1 | 1000173 | Spring washer galv. | M12 |

| Guide HD | | | | |
|----------|----------|-------------|-------------------------------|--|
| Item no. | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| A | 1 | 1000218 | Guide PRmk5 HD galv. | |
| B | 4 | 1000190 | Wheel PP | 125x24/10-28G-SK |
| C | 4 | 1000219 | Fitted screw, steel | (M8) \varnothing 10 x 30 |
| D | 4 | 1000220 | Low hexagonal nut galv. 8 | M8 |
| E | 4 | 1000221 | Spacer 1 mm steel | \varnothing 10 * \varnothing 16 |
| F | 1 | 1000223 | Clamp adjusting ring steel | \varnothing 35 |
| G | 2 | 1000224 | Spacer, steel | 0.5 mm \varnothing 35 * \varnothing 45 |
| H | 1 | 1000202 | Hexagonal stud bolt 8.8 galv. | M12 x 40 |
| I | 1 | 1000173 | Spring washer galv. | M12 |

| Guide stainless steel | | | | |
|-----------------------|----------|-------------|-----------------------------------|----------------------------|
| Item no. | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| A | 1 | 1000765 | Guide PRmk5 stainless steel galv. | |
| B | 4 | 1000190 | Wheel PP | 125x24/10-28G-SK |
| C | 4 | 1001221 | Fitted screw, stainless steel | (M8) \varnothing 10 x 30 |

| Guide stainless steel | | | | |
|-----------------------|----------|-------------|---|------------------|
| Item no. | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| D | 4 | 1001222 | Low hexagonal nut, stainless steel | M8 |
| E | 4 | 1001225 | Flat washer 1 mm, stainless steel | M10 |
| F | 1 | 1000767 | Clamp adjustment washer stainless steel | ø30 |
| G | 2 | 1000224 | Spacer, stainless steel | 0.5 mm ø35 * ø45 |
| H | 1 | 1001226 | Hexagonal stud bolt, stainless steel A2 | M12 x 25 |
| I | 1 | 1001227 | Spring washer, stainless steel | M12 |

15.8 Trolley



15.8.1 Trolley parts list and mounting materials

| Trolley | | | | |
|----------|----------|-------------|--------------------------------|-----------------|
| Item no. | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| A | 1 | 1000076 | Frame trolley PRmk5 galv. | 3 mm |
| B | 1 | 1000043 | Shaft trolley PRmk5 | ø15 L = 81.4 mm |
| C | 2 | 1000098 | Trolley HD chain mounting | |
| D | 4 | 1000186 | Spacer sleeve for closing link | |
| E | 9 | 1000672 | Ball bearing | ø = 50x30 |
| F | 18 | 1000153 | Flat washer galv. | M14 |
| G | 10 | 1000162 | Starlock without cover | ø15 mm |
| H | 2 | 1000120 | Collar bearing Iglidur G | ø30 x 20 mm |
| I | 2 | 1000139 | Trolley rubber profile | L = 90 mm |
| J | 2 | 1000209 | Hexagonal stud bolt 8.8 galv. | M8 x 16 |
| K | 2 | 1000398 | Spring washer galv. | M8 |
| L | 2 | 1000097 | Chain 16B-1 RKK 7 | link = 177.8 mm |
| M | 2 | 1000155 | Closing link 16B-2 RKK | |
| N | 2 | 1000154 | Closing link 16B-1 RKK | |
| O | 4 | 1000208 | Hexagonal stud bolt 8.8 galv. | M6 x 12 |
| P | 4 | 1000148 | Flat washer galv. | M6 x 12 |

| Trolley HD | | | | |
|------------|----------|-------------|---------------------------------------|-----------------|
| Item no. | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| A | 1 | 1000077 | Frame trolley PRmk5 HD galv. | |
| B | 1 | 1000043 | Shaft trolley PRmk5 | ø15 L = 81.4 mm |
| C | 2 | 1000098 | Trolley HD chain mounting | |
| D | 4 | 1000186 | Spacer sleeve for closing link | |
| E | 9 | 1000191 | Wheel GSPO50/15K | |
| F | 18 | 1000153 | Flat washer galv. | M14 |
| G | 10 | 1000162 | Starlock without cover | ø15 mm |
| H | 2 | 1000121 | Collar bearing sintered bronze finish | ø30 x 20 mm |
| I | 2 | 1000139 | Trolley rubber profile | L = 90 mm |
| J | 2 | 1000209 | Hexagonal stud bolt 8.8 galv. | M8 x 16 |
| K | 2 | 1000398 | Spring washer galv. | M8 |

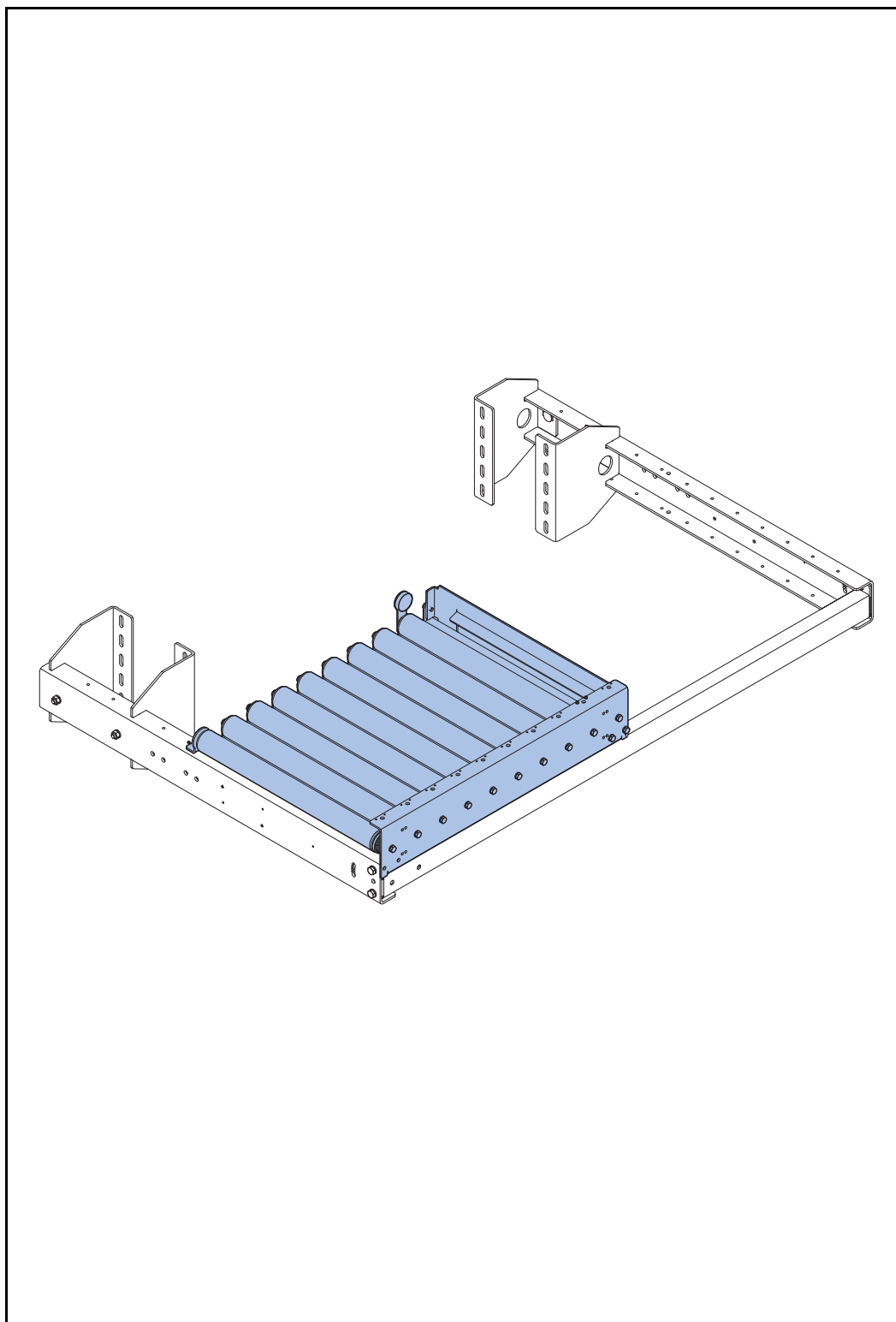
| Trolley HD | | | | |
|------------|----------|-------------|-------------------------------|----------------|
| Item no. | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| L | 2 | 1000097 | Chain 16B-1 RKK 7 | link =177.8 mm |
| M | 2 | 1000155 | Closing link 16B-2 RKK | |
| N | 2 | 1000154 | Closing link 16B-1 RKK | |
| O | 4 | 1000208 | Hexagonal stud bolt 8.8 galv. | M6 x 12 |
| P | 4 | 1000148 | Flat washer galv. | M6 x 12 |

| Trolley stainless steel | | | | |
|-------------------------|----------|-------------|--|-----------------|
| Item no. | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| A | 1 | 1000757 | Frame trolley PRmk5 stainless steel | 4 mm |
| B | 1 | 1000758 | Shaft trolley PRmk5 stainless steel | ø15 L = 81.4 mm |
| C | 2 | 1000759 | Trolley chain mounting stainless steel | |
| D | 4 | 1000760 | Spacer sleeve for closing link stainless steel | |
| E | 9 | 1000763 | Wheel GSPO50/15XK | |
| F | 18 | 1001043 | Flat washer stainless steel A2 | M14 |
| G | 10 | 1001216 | Starlock without cover | ø15 mm |
| H | 2 | 1000764 | Collar bearing Iglidur G | ø30 x 20 mm |
| I | 2 | 1000139 | Trolley rubber profile | L = 90 mm |
| J | 2 | 1001217 | Hexagonal stud bolt stainless steel A2 | M8 x 16 |
| K | 2 | 1001218 | Spring washer stainless steel A2 | M8 |
| L | 2 | 1000770 | Chain 16B-1 SY 7 | link =177.8 mm |
| M | 2 | 1000769 | Closing link 16B-2 SY Aquaprf | |
| N | 2 | 1000768 | Closing link 16B-1 SY Aquaprf | |
| O | 4 | 1001219 | Hexagonal stud bolt stainless steel A2 | M6 x 12 |
| P | 4 | 1001220 | Flat washer stainless steel A2 | M6 x 12 |

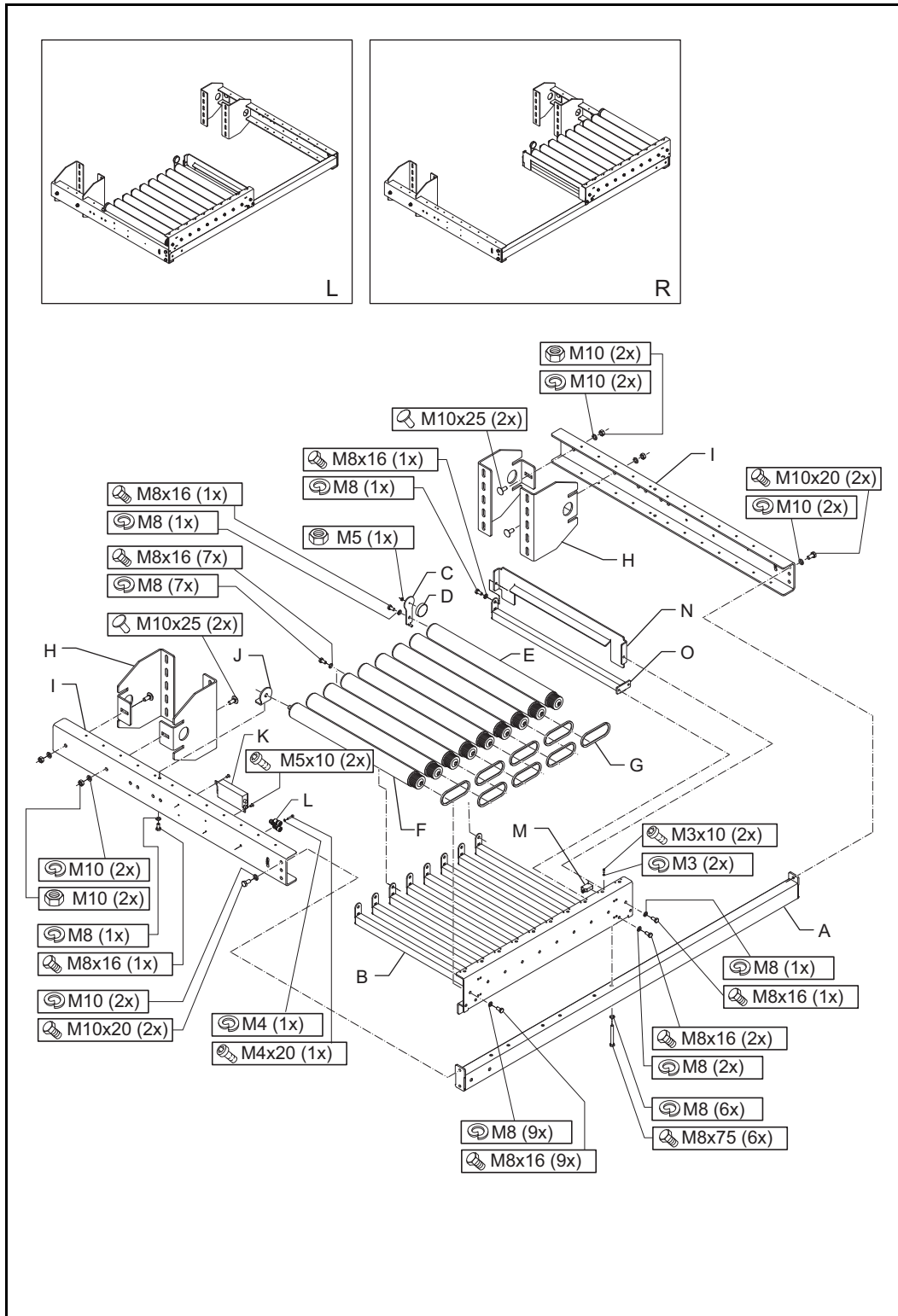
16 Exploded views of product conveyors

16.1 Introduction

The following pages show the exploded views, the parts lists and the mounting materials of the individual product conveyors.



16.2 RollerDrive infeed



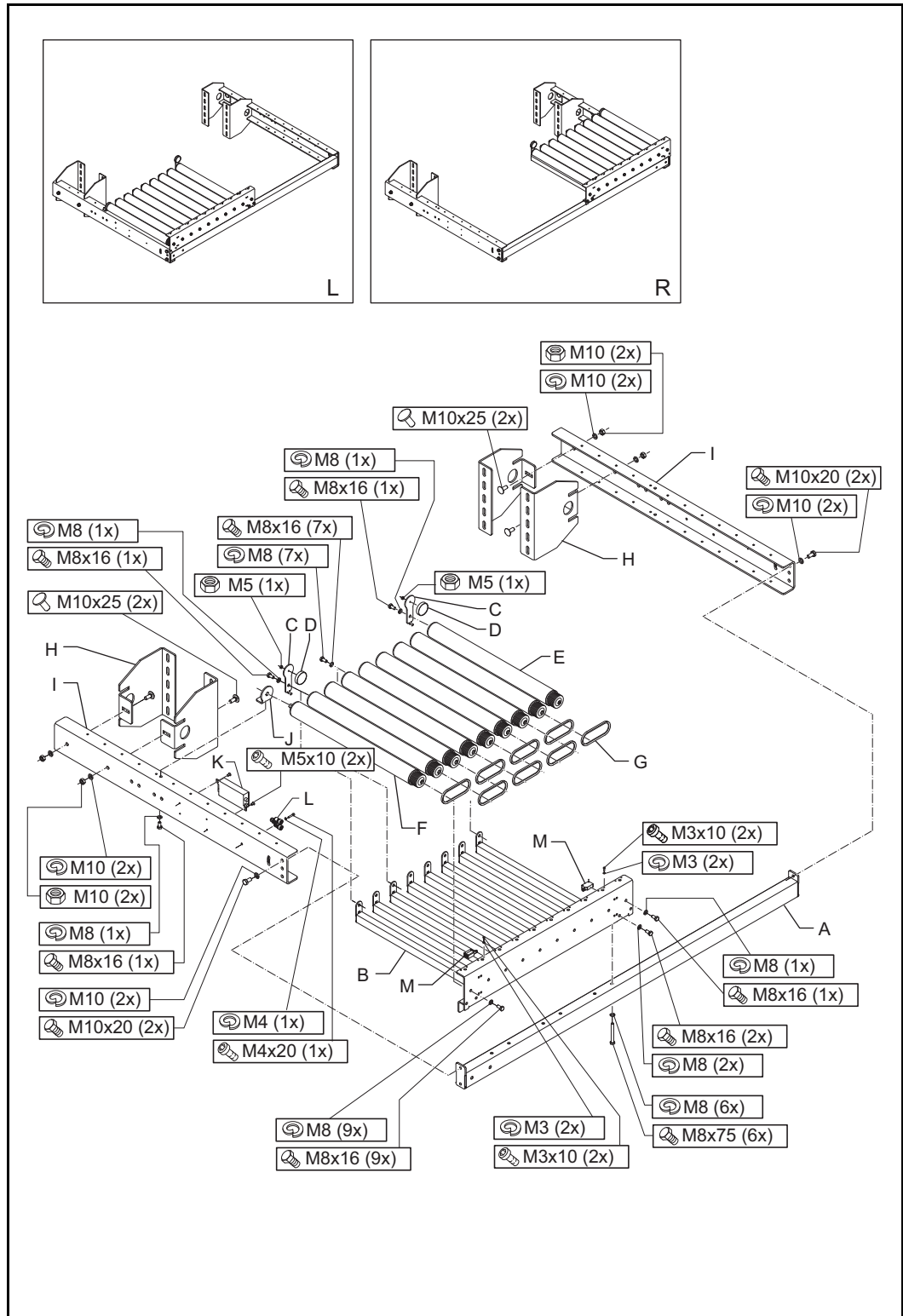
16.2.1 RollerDrive infeed parts list

| Drive section Package B-01 | | | | |
|----------------------------|----------|-------------|------------------------------|----------|
| Item no. 1003924 | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| A | 1 | 1003060 | Conveyor bracket PRmk5 | |
| B | 1 | 1003093 | Basis conveyor frame PRmk5 | |
| C | 2 | 1003072 | Fastening reflector PRmk5 | |
| D | 1 | 1002242 | Reflector | |
| E | 8 | 1000968 | ROL 50 ELVZ IL 560 | |
| F | 1 | 1000707 | RollerDrive EC310 16 : 1 | L=560 mm |
| G | 8 | 1000133 | PolyVee belt PU, 2-v. st. 75 | |
| H | 4 | 1003058 | Support standard | |
| | 4 | 1004269 | Support MK5-XL | |
| I | 0.5 | 1004305 | Conveyor supports PRmk5 400 | |
| J | 1 | 1003094 | Fastening rol PRmk5 | |
| K | 1 | 1000058 | DriveControl 20 | |
| L | 1 | xxxx | Coupling piece | |
| M | 1 | 1002097 | Photocell | |
| N | 1 | 1004325 | End stop | L=400 mm |
| | 1 | 1004326 | End stop | L=600 mm |
| O | 1 | 1003096 | Rol support PRmk5 | |

16.2.2 RollerDrive infeed mounting materials

| Drive section Package B-02 | | | |
|----------------------------|----------------|------------------------------|----------|
| Item no.: 1003931 | | | |
| Quantity | Article number | Description (mounting mat.) | Notes |
| 22 | 1000209 | Hexagonal stud bolt 8.8Elvz | M8 x 16 |
| 6 | 1002261 | Hexagonal stud bolt 8.8Elvz | M8 x 75 |
| 4 | 1000193 | Hexagonal stud bolt 8.8Elvz | M10 x 20 |
| 2 | 1002259 | Cylinder screw BZK | M3 x 10 |
| 2 | 1002258 | Countersunk bolt 8.8 Elvz | M5 x 10 |
| 2 | 1002257 | Spring washer Elvz | M3 |
| 28 | 1000398 | Spring washer Elvz | M8 |
| 8 | 1000172 | Spring washer Elvz | M10 |
| 1 | 1003932 | Cylinder screw BZK | M4 x 20 |
| 1 | 1001676 | Spring washer Elvz | M4 |
| 4 | 1000194 | Hexagonal stud bolt 8.8 Elvz | M10 x 25 |
| 4 | 1000125 | Nut | M10 |
| 1 | 1000325 | Nut | M5 |

16.3 RollerDrive outfitted



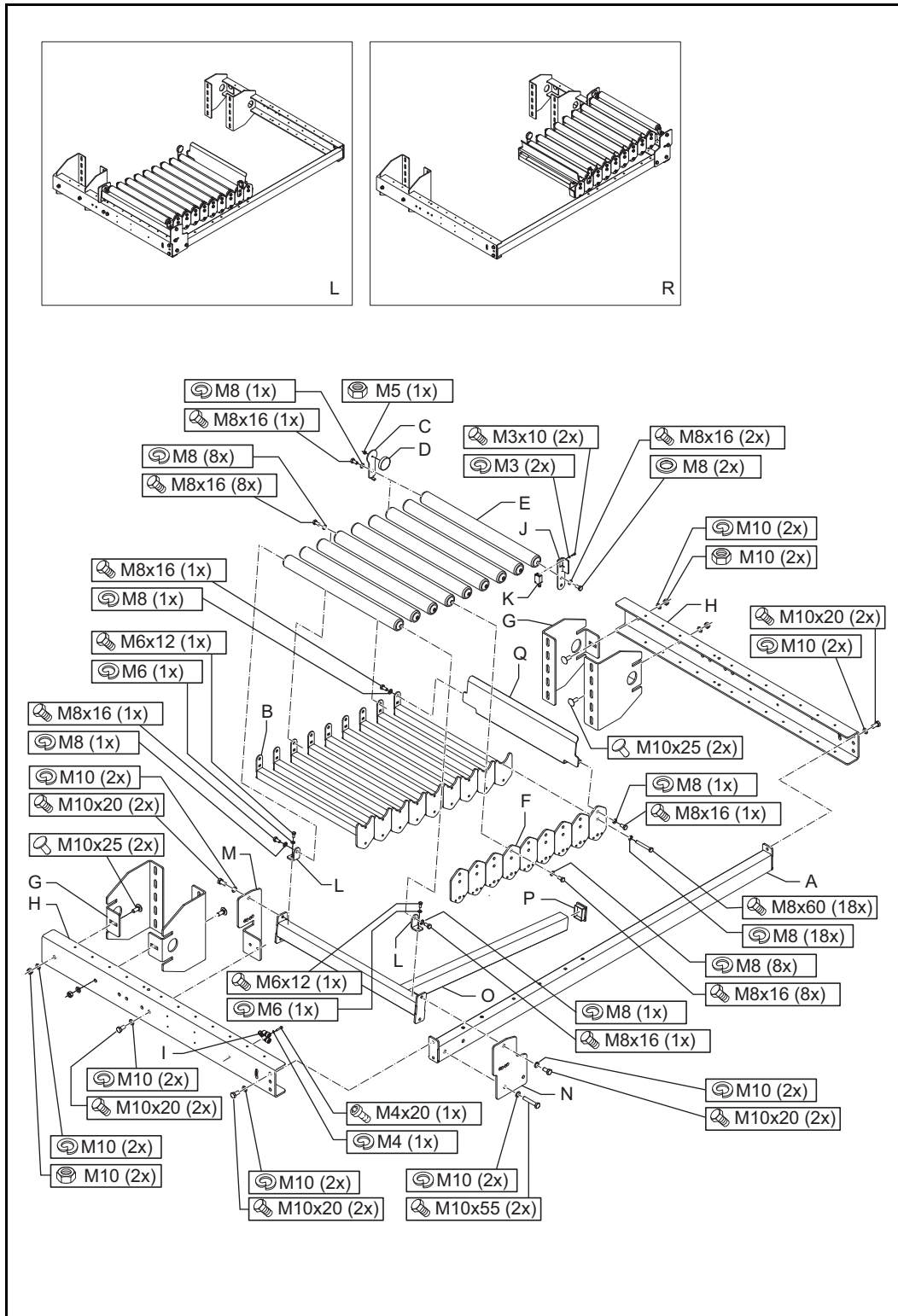
16.3.1 RollerDrive outfeed parts list

| Drive section Package B-01 | | | | |
|----------------------------|----------|-------------|------------------------------|----------|
| Item no. 1003924 | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| A | 1 | 1003060 | Conveyor bracket PRmk5 | |
| B | 1 | 1003093 | Basis conveyor frame PRmk5 | |
| C | 2 | 1003072 | Fastening reflector PRmk5 | |
| D | 2 | 1002242 | Reflector | |
| E | 8 | 1000968 | ROL 50 ELVZ IL 560 | |
| F | 1 | 1000707 | RollerDrive EC310 16 : 1 | L=560 mm |
| G | 8 | 1000133 | PolyVee belt PU, 2-v. st. 75 | |
| H | 4 | 1003058 | Support standard | |
| | 4 | 1004269 | Support MK5-XL | |
| I | 0.5 | 1004305 | Conveyor supports PRmk5 400 | |
| J | 1 | 1003094 | Fastening rol PRmk5 | |
| K | 1 | 1000058 | DriveControl 20 | |
| L | 1 | xxxx | Coupling piece | |
| M | 2 | 1002097 | Photocell | |

16.3.2 RollerDrive outfeed mounting materials

| Drive section Package B-02 | | | |
|----------------------------|----------------|------------------------------|----------|
| Item no.: 1003931 | | | |
| Quantity | Article number | Description (mounting mat.) | Notes |
| 18 | 1000209 | Hexagonal stud bolt 8.8Elvz | M8 x 16 |
| 6 | 1002261 | Hexagonal stud bolt 8.8Elvz | M8 x 75 |
| 4 | 1000193 | Hexagonal stud bolt 8.8Elvz | M10 x 20 |
| 4 | 1002259 | Cylinder screw BZK | M3 x 10 |
| 2 | 1002258 | Countersunk bolt 8.8 Elvz | M5 x 10 |
| 4 | 1002257 | Spring washer Elvz | M3 |
| 24 | 1000398 | Spring washer Elvz | M8 |
| 8 | 1000172 | Spring washer Elvz | M10 |
| 1 | 1003932 | Cylinder screw BZK | M4 x 20 |
| 1 | 1001676 | Spring washer Elvz | M4 |
| 4 | 1000194 | Hexagonal stud bolt 8.8 Elvz | M10 x 25 |
| 4 | 1000125 | Nut | M10 |
| 2 | 1000325 | Nut | M5 |

16.4 Gravity roller infeed



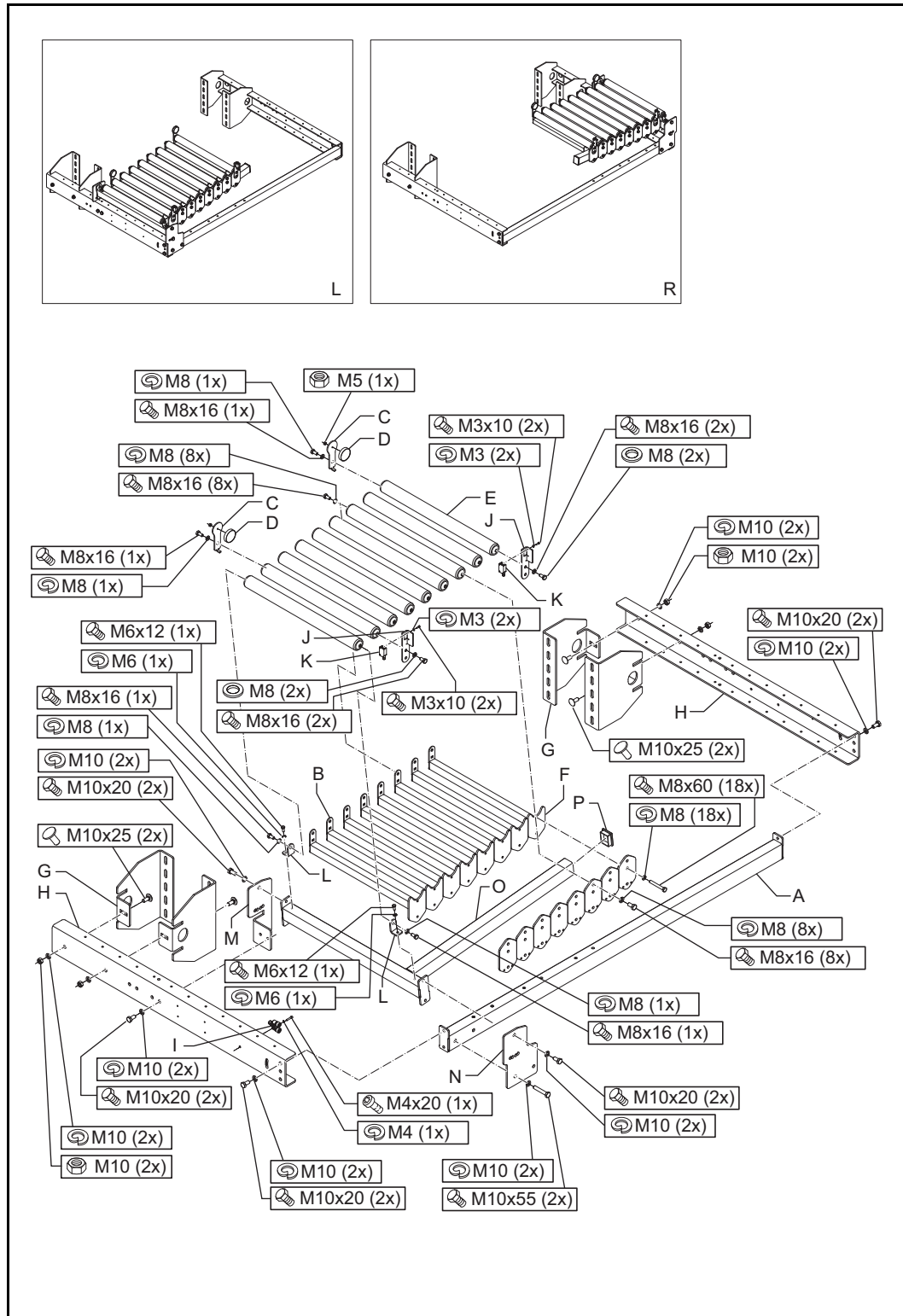
16.4.1 Gravity roller infeed parts list

| Drive section Package B-01 | | | | |
|----------------------------|----------|-------------|-----------------------------|-------|
| Item no. 1003925 | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| A | 1 | 1003060 | Conveyor bracket PRmk5 | |
| B | 9 | 1003064 | Arm t.b.v. rol PRmk5 | |
| C | 1 | 1003072 | Fastening reflector PRmk5 | |
| D | 1 | 1002242 | Reflector | |
| E | 9 | 1003106 | ROL 40 KUN IL 500 | |
| F | 9 | 1003065 | Contraplat arm PRmk5 | |
| G | 4 | 1003058 | Support standard | |
| | 4 | 1004269 | Support MK5-XL | |
| H | 0.5 | 1004305 | Conveyor supports PRmk5 400 | |
| I | 1 | xxxx | Coupling piece | |
| J | 1 | 1003068 | Fastening photocell PRmk5 | |
| K | 1 | 1002097 | Photocell | |
| L | 2 | 1003066 | Fastening rol PRmk5 | |
| M | 1 | 1003062 | Bracket rolsupport bi PRmk5 | |
| N | 1 | 1003061 | Bracket rolsupport bu PRmk5 | |
| O | 1 | 1003063 | Basis conveyor frame PRmk5 | |
| Q | 1 | 1003071 | End stop PRmk5 | |

16.4.2 Gravity roller infeed mounting materials

| Drive section Package B-02 | | | |
|----------------------------|----------------|-----------------------------|---------------|
| Item no.: 1003999 | | | |
| Quantity | Article number | Description (mounting mat.) | Notes |
| 2 | 1000208 | Hexagonal stud bolt 8.8Elvz | M6 x 12 |
| 17 | 1000209 | Hexagonal stud bolt 8.8Elvz | M8 x 16 |
| 18 | 1001332 | Hexagonal stud bolt 8.8Elvz | M8 x 60 |
| 10 | 1000193 | Hexagonal stud bolt 8.8Elvz | M10 x 20 |
| 2 | 1000387 | Hexagonal stud bolt 8.8Elvz | M10 x 55 |
| 4 | 1000194 | Hexagonal stud bolt 8.8Elvz | M10 x 25 |
| 2 | 1002259 | Cylinder screw BZK | M3 x 10 |
| 2 | 1002257 | Spring washer Elvz | M3 |
| 2 | 1000174 | Spring washer Elvz | M6 |
| 35 | 1000398 | Spring washer Elvz | M8 |
| 16 | 1000172 | Spring washer Elvz | M10 |
| 1 | 1003105 | Cap RH 50 x 40 | black (pos P) |
| 1 | 1003932 | Cylinder screw BZK | M4 x 20 |
| 1 | 1001676 | Spring washer Elvz | M4 |
| 4 | 1000125 | Nut | M10 |
| 1 | 1000325 | Nut | M5 |

16.5 Gravity roller outfitted



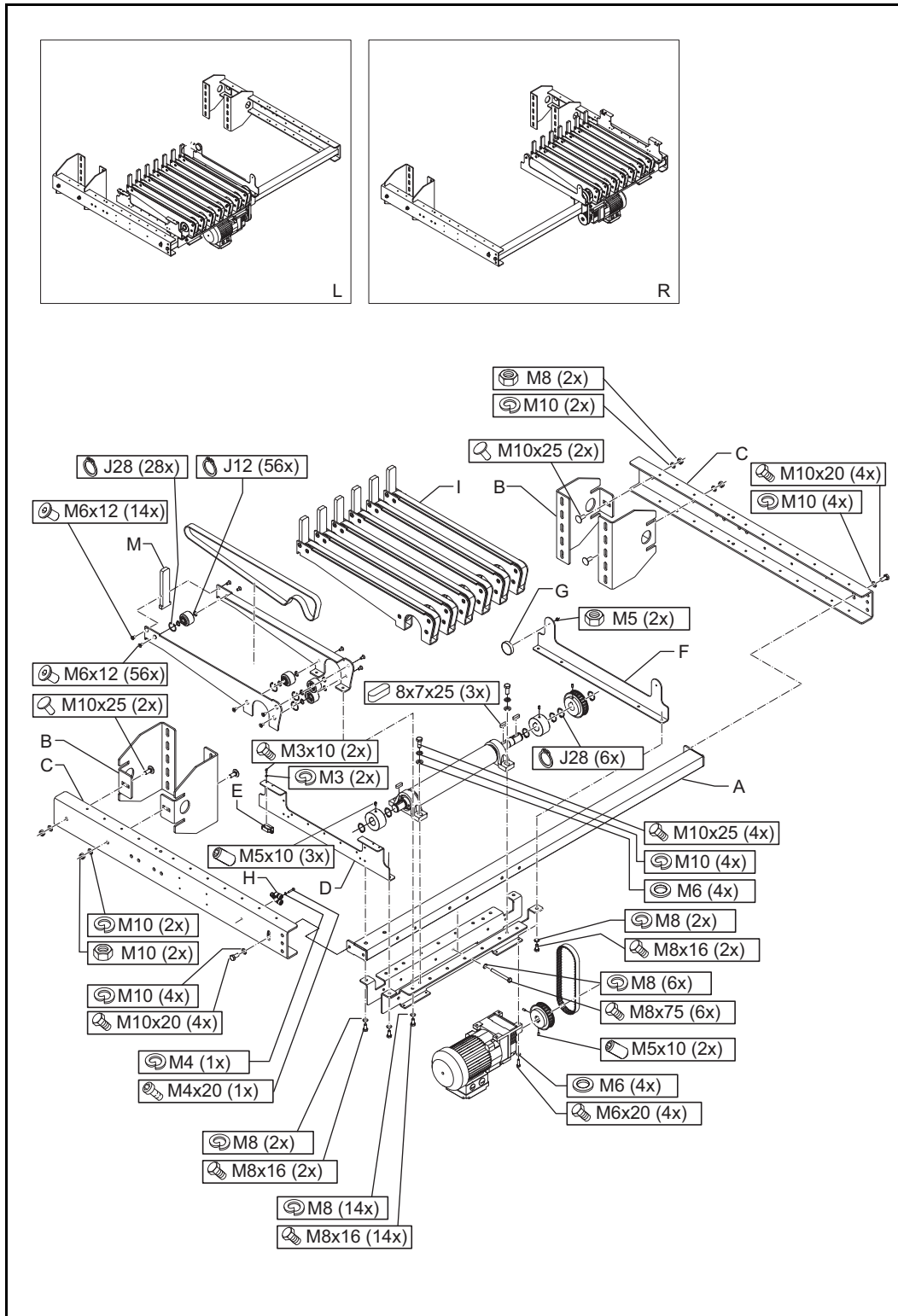
16.5.1 Gravity roller outfeed parts list

| Drive section Package B-01 | | | | |
|----------------------------|----------|-------------|---------------------------------|-------|
| Item no. 1003926 | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| A | 1 | 1003060 | Conveyor bracket PRmk5 | |
| B | 9 | 1003064 | Arm t.b.v. rol PRmk5 | |
| C | 2 | 1003072 | Fastening reflector PRmk5 | |
| D | 2 | 1002242 | Reflector | |
| E | 10 | 1003106 | ROL 40 KUN IL 500 | |
| F | 9 | 1003065 | Contraplate arm PRmk5 | |
| G | 4 | 1003058 | Support standard | |
| | 4 | 1004269 | Support MK5-XL | |
| H | 0.5 | 1004305 | Conveyor supports PRmk5 400 | |
| I | 1 | xxxx | Coupling piece | |
| J | 2 | 1003068 | Fastening photocell PRmk5 | |
| K | 2 | 1002097 | Photocell | |
| L | 2 | 1003066 | Fastening rol PRmk5 | |
| M | 1 | 1003062 | Bracket roller support bi PRmk5 | |
| N | 1 | 1003061 | Bracket roller support bu PRmk5 | |
| O | 1 | 1003063 | Basis conveyor frame PRmk5 | |

16.5.2 Gravity roller outfeed mounting materials

| Drive section Package B-02 | | | |
|----------------------------|----------------|-----------------------------|-------------------|
| Item no.: 1003999 | | | |
| Quantity | Article number | Description (mounting mat.) | Notes |
| 2 | 1000208 | Hexagonal stud bolt 8.8Elvz | M6 x 12 |
| 20 | 1000209 | Hexagonal stud bolt 8.8Elvz | M8 x 16 |
| 18 | 1001332 | Hexagonal stud bolt 8.8Elvz | M8 x 60 |
| 10 | 1000193 | Hexagonal stud bolt 8.8Elvz | M10 x 20 |
| 2 | 1000387 | Hexagonal stud bolt 8.8Elvz | M10 x 55 |
| 4 | 1000194 | Hexagonal stud bolt 8.8Elvz | M10 x 25 |
| 4 | 1002259 | Cylinder screw BZK | M3 x 10 |
| 4 | 1002257 | Spring washer Elvz | M3 |
| 2 | 1000174 | Spring washer Elvz | M6 |
| 38 | 1000398 | Spring washer Elvz | M8 |
| 16 | 1000172 | Spring washer Elvz | M10 |
| 1 | 1003105 | Cap RH 50 x 40 | black (see pos P) |
| 1 | 1003932 | Cylinder screw BZK | M4 x 20 |
| 1 | 1001676 | Spring washer Elvz | M4 |
| 4 | 1000125 | Nut | M10 |
| 2 | 1000325 | Nut | M5 |

16.6 Multi belt infeed



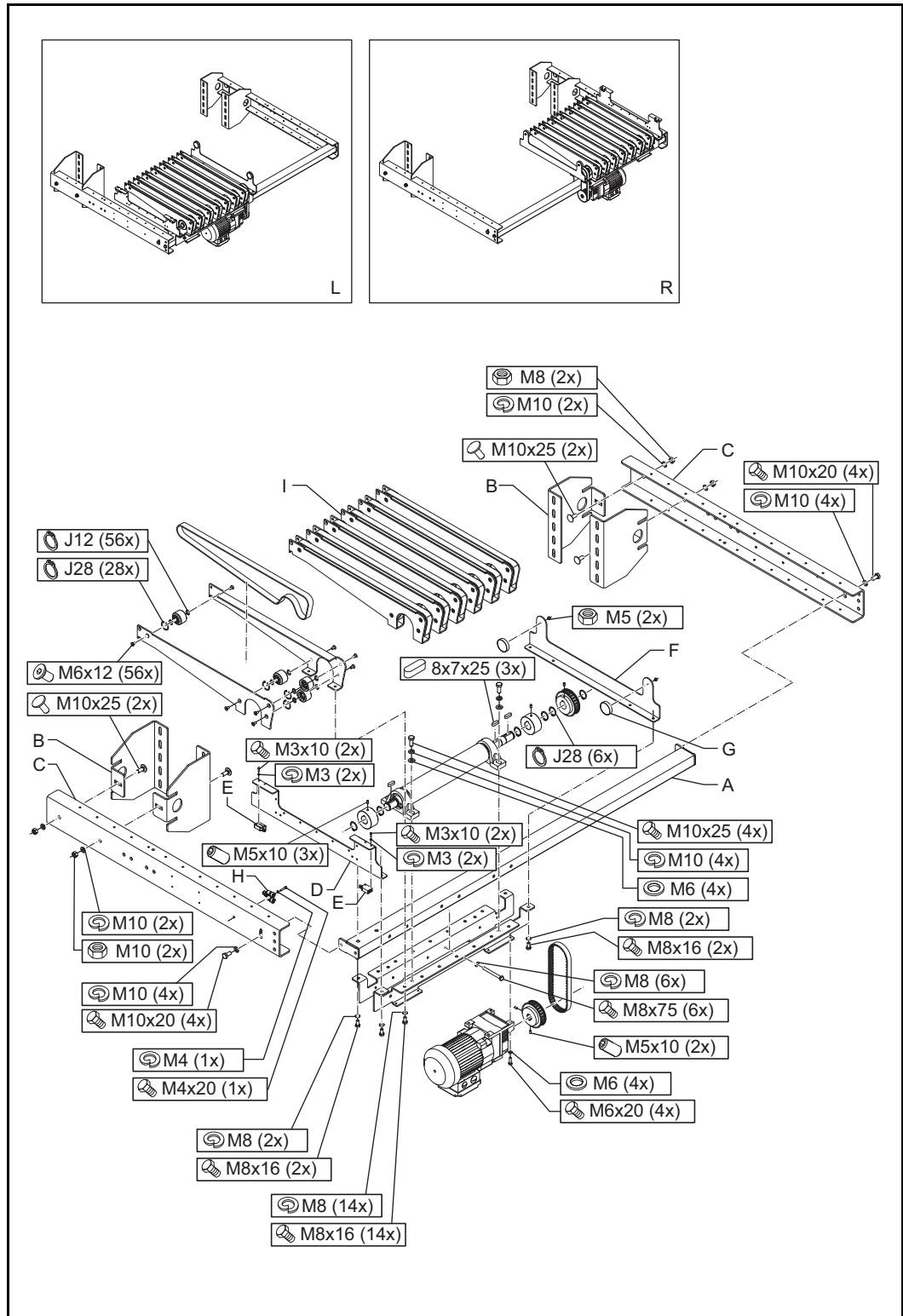
16.6.1 Multi belt infeed parts list

| Drive section Package B-01 | | | | |
|----------------------------|----------|-------------|-------------------------------|-------|
| Item no. 1003930 | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| A | 1 | 1003060 | Conveyor bracket PRmk5 | |
| B | 4 | 1003058 | Support standard | |
| | 4 | 1004269 | Support MK5-XL | |
| C | 0.5 | 1004305 | Conveyor supports PRmk5 400 | |
| D | 1 | 1003087 | Fastening photocell PRmk5 | |
| E | 1 | 1002097 | Photocell | |
| F | 1 | 1003086 | Fastening reflector PRmk5 | |
| G | 1 | 1002242 | Reflector | |
| H | 1 | xxxx | Coupling piece | |
| I | 7 | 1003107 | Wheel bracket L = 572 | |
| J | 7 | 1003091 | C-Profile wheel bracket PRmk5 | |
| K | 1 | 1003088 | Track plate PRmk5 | |
| L | 1 | 1003089 | Track contraplate PRmk5 | |
| M | 1 | 1003085 | Endstop | |

16.6.2 Multi belt infeed mounting materials

| Drive section Package B-02 | | | |
|----------------------------|----------------|-----------------------------|------------|
| Item no.: 1004000 | | | |
| Quantity | Article number | Description (mounting mat.) | Notes |
| 4 | 1000897 | Hexagonal stud bolt 8.8Elvz | M6 x 20 |
| 18 | 1000209 | Hexagonal stud bolt 8.8Elvz | M8 x 16 |
| 6 | 1002261 | Hexagonal stud bolt 8.8Elvz | M8 x 75 |
| 4 | 1000193 | Hexagonal stud bolt 8.8Elvz | M10 x 20 |
| 4 | 1000194 | Hexagonal stud bolt 8.8Elvz | M10 x 25 |
| 4 | 1000194 | Hexagonal stud bolt | M10 x 25 |
| 2 | 1002259 | Cylinder screw BZK | M3 x 10 |
| 70 | 1000895 | Countersunk bolt 8.8 Elvz | M6 x 12 |
| 5 | 1002633 | Adjusting screw BZK Elvz | M5 x 10 |
| 56 | 1001658 | Circlip Steel | A12 |
| 6 | 1001104 | Circlip Steel | A25 |
| 28 | 1002263 | Circlip Steel | J28 |
| 2 | 1002257 | Spring washer Elvz | M3 |
| 4 | 1000174 | Spring washer Elvz | M6 |
| 24 | 1000398 | Spring washer Elvz | M8 |
| 12 | 1000172 | Spring washer Elvz | M10 |
| 4 | 1000147 | Flat washer Elvz | M10 |
| 3 | 1003104 | Wedge steel | 8 x 7 x 25 |
| 1 | 1003932 | Cylinder screw BZK | M4 x 20 |
| 1 | 1001676 | Spring washer Elvz | M4 |
| 4 | 1000125 | Nut | M10 |
| 1 | 1000325 | Nut | M5 |

16.7 Multi belt outfed



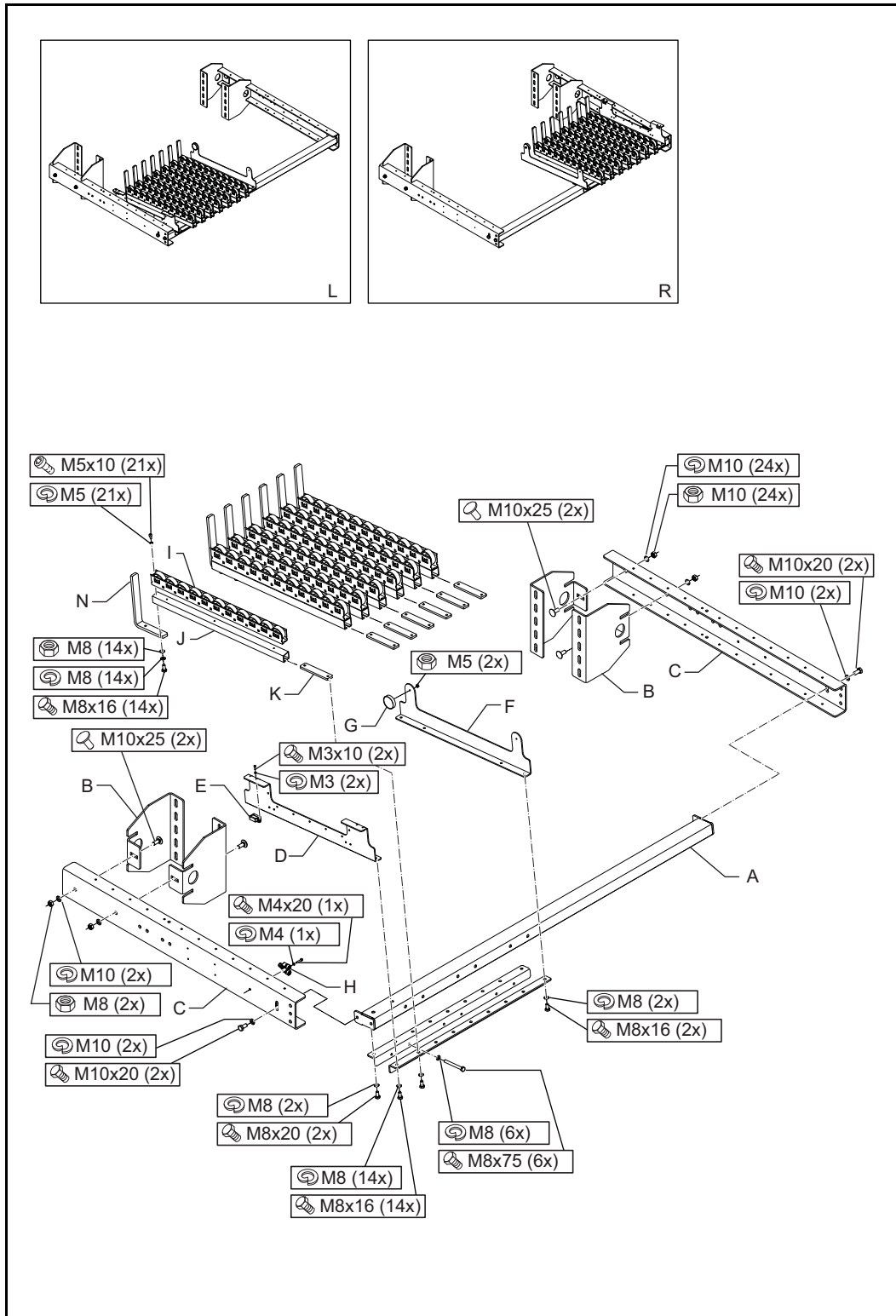
16.7.1 Multi belt outfeed parts list

| Drive section Package B-01 | | | | |
|----------------------------|----------|-------------|-------------------------------|-------|
| Item no. 1003930 | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| A | 1 | 1003060 | Conveyor bracket PRmk5 | |
| B | 4 | 1003058 | Support standard | |
| | 4 | 1004269 | Support MK5-XL | |
| C | 0.5 | 1004305 | Conveyor supports PRmk5 400 | |
| D | 1 | 1003087 | Fastening photocell PRmk5 | |
| E | 2 | 1002097 | Photocell | |
| F | 1 | 1003086 | Fastening reflector PRmk5 | |
| G | 2 | 1002242 | Reflector | |
| H | 1 | xxxx | Coupling piece | |
| I | 7 | 1003107 | Wheel bracket L = 572 | |
| J | 7 | 1003091 | C-Profile Wheel bracket PRmk5 | |
| K | 1 | 1003088 | Track plate PRmk5 | |
| L | 1 | 1003089 | Track contraplate PRmk5 | |

16.7.2 Multi belt outfeed mounting materials

| Drive section Package B-02 | | | |
|----------------------------|----------------|-----------------------------|------------|
| Item no.: 1004000 | | | |
| Quantity | Article number | Description (mounting mat.) | Notes |
| 4 | 1000897 | Hexagonal stud bolt 8.8Elvz | M6 x 20 |
| 18 | 1000209 | Hexagonal stud bolt 8.8Elvz | M8 x 16 |
| 6 | 1002261 | Hexagonal stud bolt 8.8Elvz | M8 x 75 |
| 4 | 1000193 | Hexagonal stud bolt 8.8Elvz | M10 x 20 |
| 4 | 1000194 | Hexagonal stud bolt 8.8Elvz | M10 x 25 |
| 4 | 1000194 | Hexagonal stud bolt | M10 x 25 |
| 4 | 1002259 | Cylinder screw BZK | M3 x 10 |
| 56 | 1000895 | Countersunk bolt 8.8 Elvz | M6 x 12 |
| 5 | 1002633 | Adjusting screw BZK Elvz | M5 x 10 |
| 56 | 1001658 | Circlip Steel | A12 |
| 6 | 1001104 | Circlip Steel | A25 |
| 28 | 1002263 | Circlip Steel | J28 |
| 4 | 1002257 | Spring washer Elvz | M3 |
| 4 | 1000174 | Spring washer Elvz | M6 |
| 24 | 1000398 | Spring washer Elvz | M8 |
| 12 | 1000172 | Spring washer Elvz | M10 |
| 4 | 1000147 | Flat washer Elvz | M10 |
| 3 | 1003104 | Wedge steel | 8 x 7 x 25 |
| 1 | 1003932 | Cylinder screw BZK | M4 x 20 |
| 1 | 1001676 | Spring washer Elvz | M4 |
| 4 | 1000125 | Nut | M10 |
| 2 | 1000325 | Nut | M5 |

16.8 Gravity wheel infeed



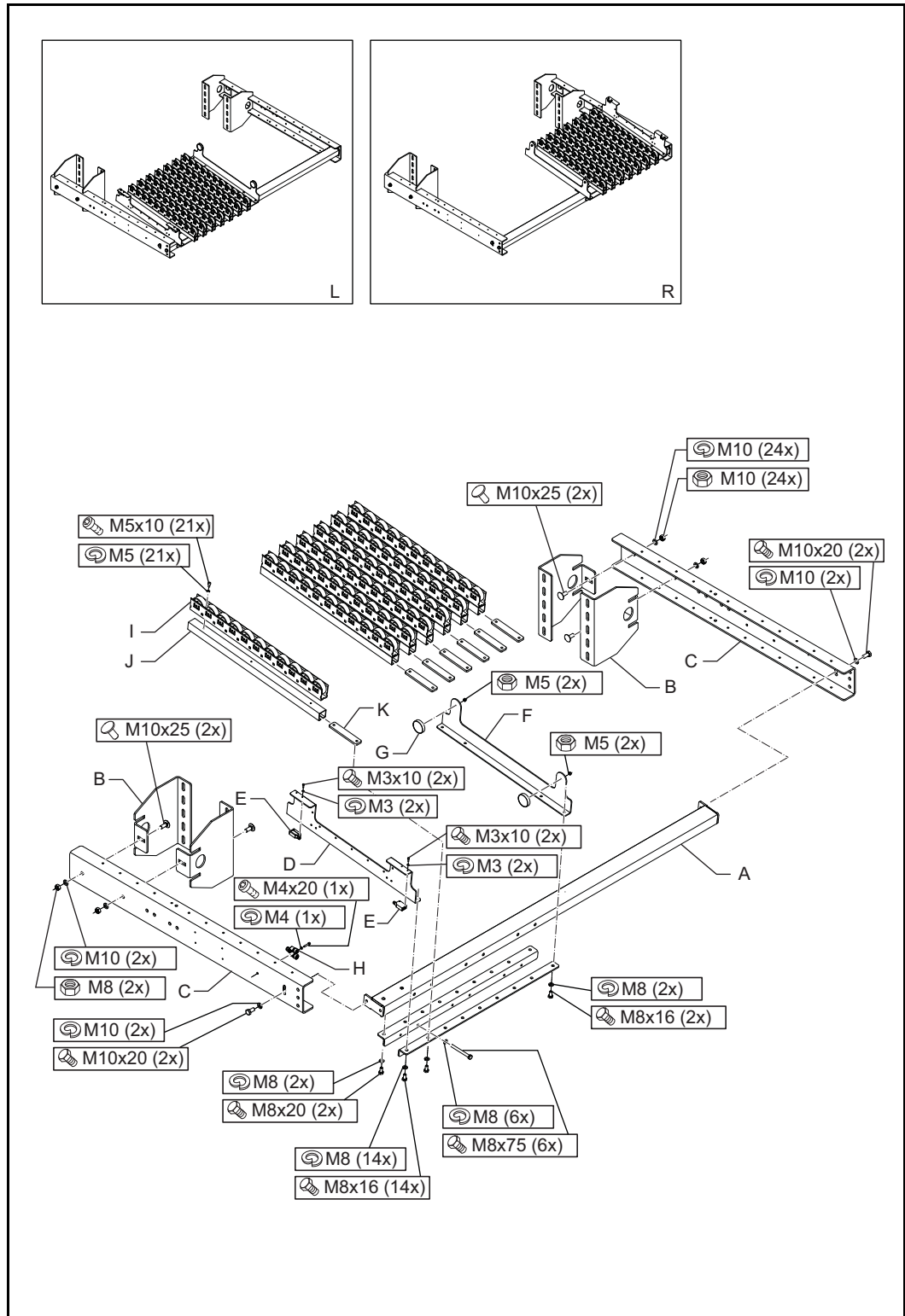
16.8.1 Gravity wheel infeed parts list

| Drive section Package B-01 | | | | |
|----------------------------|----------|-------------|-------------------------------|-------|
| Item no. 1003929 | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| A | 1 | 1003060 | Conveyor bracket PRmk5 | |
| B | 4 | 1003058 | Support standard | |
| | 4 | 1004269 | Support MK5-XL | |
| C | 0.5 | 1004305 | Conveyor supports PRmk5 400 | |
| D | 1 | 1003087 | Fastening photocell PRmk5 | |
| E | 2 | 1002097 | Photocell | |
| F | 1 | 1003086 | Fastening reflector PRmk5 | |
| G | 2 | 1002242 | Reflector | |
| H | 1 | xxxx | Coupling piece | |
| I | 7 | 1003107 | Wheel bracket L = 572 | |
| J | 7 | 1003091 | C-profile wheel bracket PRmk5 | |
| K | 7 | 1003090 | Nutplate 2 x M8 St. 100 PRmk5 | |
| L | 1 | 1003089 | Track contraplate PRmk5 | |
| M | 1 | 1003088 | Track plate PRmk5 | |
| N | 7 | 1003092 | End stop PRmk5 | |

16.8.2 Gravity wheel infeed mounting materials

| Drive section Package B-02 | | | |
|----------------------------|----------------|-----------------------------|----------|
| Item no.: 1004001 | | | |
| Quantity | Article number | Description (mounting mat.) | Notes |
| 32 | 1000209 | Hexagonal stud bolt 8.8Elvz | M8 x 16 |
| 6 | 1002261 | Hexagonal stud bolt 8.8Elvz | M8 x 75 |
| 4 | 1000193 | Hexagonal stud bolt 8.8Elvz | M10 x 20 |
| 4 | 1000194 | Hexagonal stud bolt 8.8Elvz | M10 x 25 |
| 2 | 1002259 | Cylinder screw BZK | M3 x 10 |
| 21 | 1002271 | Cylinder screw BZK | M5 x 10 |
| 2 | 1002257 | Spring washer Elvz | M3 |
| 38 | 1000398 | Spring washer Elvz | M8 |
| 8 | 1000172 | Spring washer Elvz | M10 |
| 21 | 1000396 | Spring washer Elvz | M5 |
| 14 | 1000149 | Flat washer Elvz | M8 |
| 1 | 1003932 | Cylinder screw BZK | M4 x 20 |
| 1 | 1001676 | Spring washer Elvz | M4 |
| 4 | 1000125 | Nut | M10 |
| 1 | 1000325 | Nut | M5 |

16.9 Gravity wheel outfeed



16.9.1 Gravity wheel outfeed parts list

| Drive section Package B-01 | | | | |
|----------------------------|----------|-------------|-------------------------------|-------|
| Item no. 1003929 | | | | |
| Pos | Quantity | Item number | Description (parts) | Notes |
| A | 1 | 1003060 | Conveyor bracket PRmk5 | |
| B | 4 | 1003058 | Support standard | |
| | 4 | 1004269 | Support MK5-XL | |
| C | 0.5 | 1004305 | Conveyor supports PRmk5 400 | |
| D | 1 | 1003087 | Fastening photocell PRmk5 | |
| E | 2 | 1002097 | Photocell | |
| F | 1 | 1003086 | Fastening reflector PRmk5 | |
| G | 2 | 1002242 | Reflector | |
| H | 1 | xxxx | Coupling piece | |
| I | 7 | 1003107 | Wheel bracket L = 572 | |
| J | 7 | 1003091 | C-profile wheel track PRmk5 | |
| K | 7 | 1003090 | Nutplate 2 x M8 St. 100 PRmk5 | |
| L | 1 | 1003089 | Bracket wheel track PRmk5 | |
| M | 1 | 1003088 | Track plate PRmk5 | |

16.9.2 Gravity wheel outfeed mounting materials

| Drive section Package B-02 | | | |
|----------------------------|----------------|-----------------------------|----------|
| Item no.: 1004001 | | | |
| Quantity | Article number | Description (mounting mat.) | Notes |
| 24 | 1000209 | Hexagonal stud bolt 8.8Elvz | M8 x 16 |
| 6 | 1002261 | Hexagonal stud bolt 8.8Elvz | M8 x 75 |
| 4 | 1000193 | Hexagonal stud bolt 8.8Elvz | M10 x 20 |
| 4 | 1000197 | Hexagonal stud bolt 8.8Elvz | M10 x 25 |
| 4 | 1002259 | Cylinder screw BZK | M3 x 10 |
| 21 | 1002271 | Cylinder screw BZK | M5 x 10 |
| 4 | 1002257 | Spring washer Elvz | M3 |
| 24 | 1000398 | Spring washer Elvz | M8 |
| 8 | 1000172 | Spring washer Elvz | M10 |
| 21 | 1000396 | Spring washer Elvz | M5 |
| 1 | 1003932 | Cylinder screw BZK | M4 x 20 |
| 1 | 1001676 | Spring washer Elvz | M4 |
| 4 | 1000125 | Nut | M10 |
| 2 | 1000325 | Nut | M5 |

17 Electrical circuit diagrams

17.1 Drives

17.1.1 Lift drive type: SEW 3PH

Connection main power:

<http://www.productliften.nl/media/text/240/247/680010306.pdf>

Connection TF:

<http://www.productliften.nl/media/text/240/247/681510306.pdf>

Connection BR:

<http://www.productliften.nl/media/text/240/247/69001006.pdf>

Other connection diagrams DR:

<http://www.productliften.nl/media/text/240/247/9pd0058us.pdf>

17.1.2 Lift drive type: Movimot

Connections Movimot:

<http://www.productliften.nl/media/text/240/247/17000017.pdf>

<http://www.productliften.nl/media/text/240/247/16742419en.pdf>

17.1.3 RollerDrive with DriveControl IP20

RollerDrive:

http://www.productliften.nl/media/text/240/247/ec310_ip66.pdf

DriveControl:

http://www.productliften.nl/media/text/240/247/dc20_54.pdf

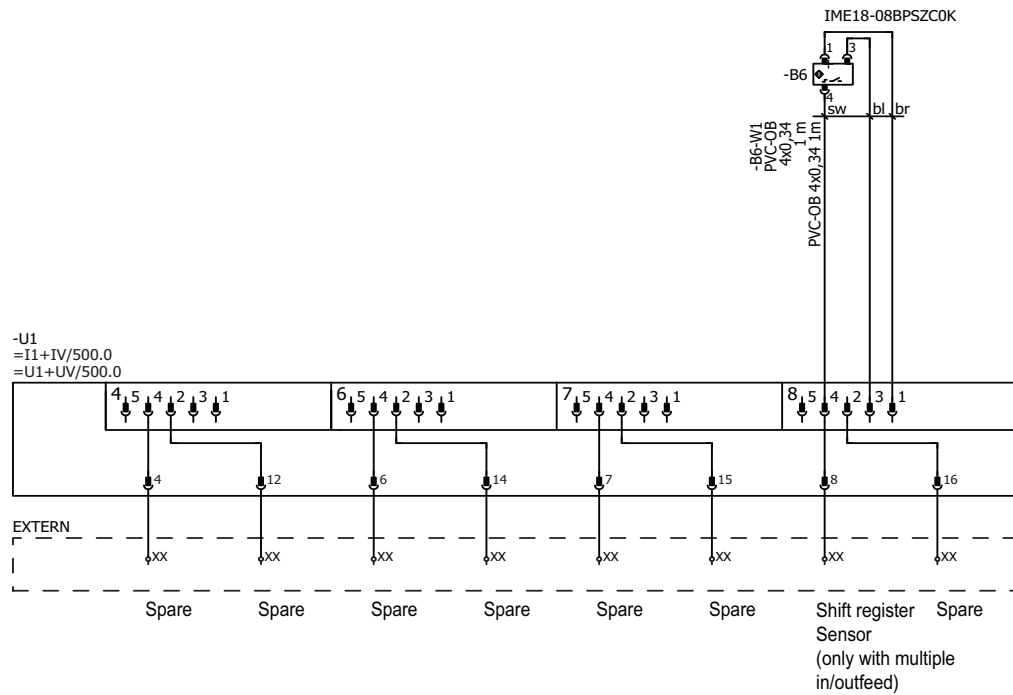
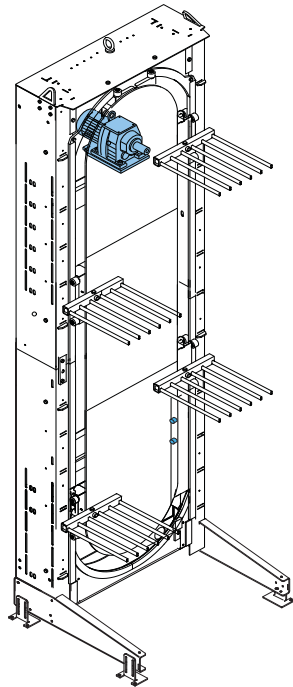
17.1.4 RollerDrive with DriveControl IP54

http://www.productliften.nl/media/text/240/247/ec310_ip66.pdf

http://www.productliften.nl/media/text/240/247/dc20_54.pdf

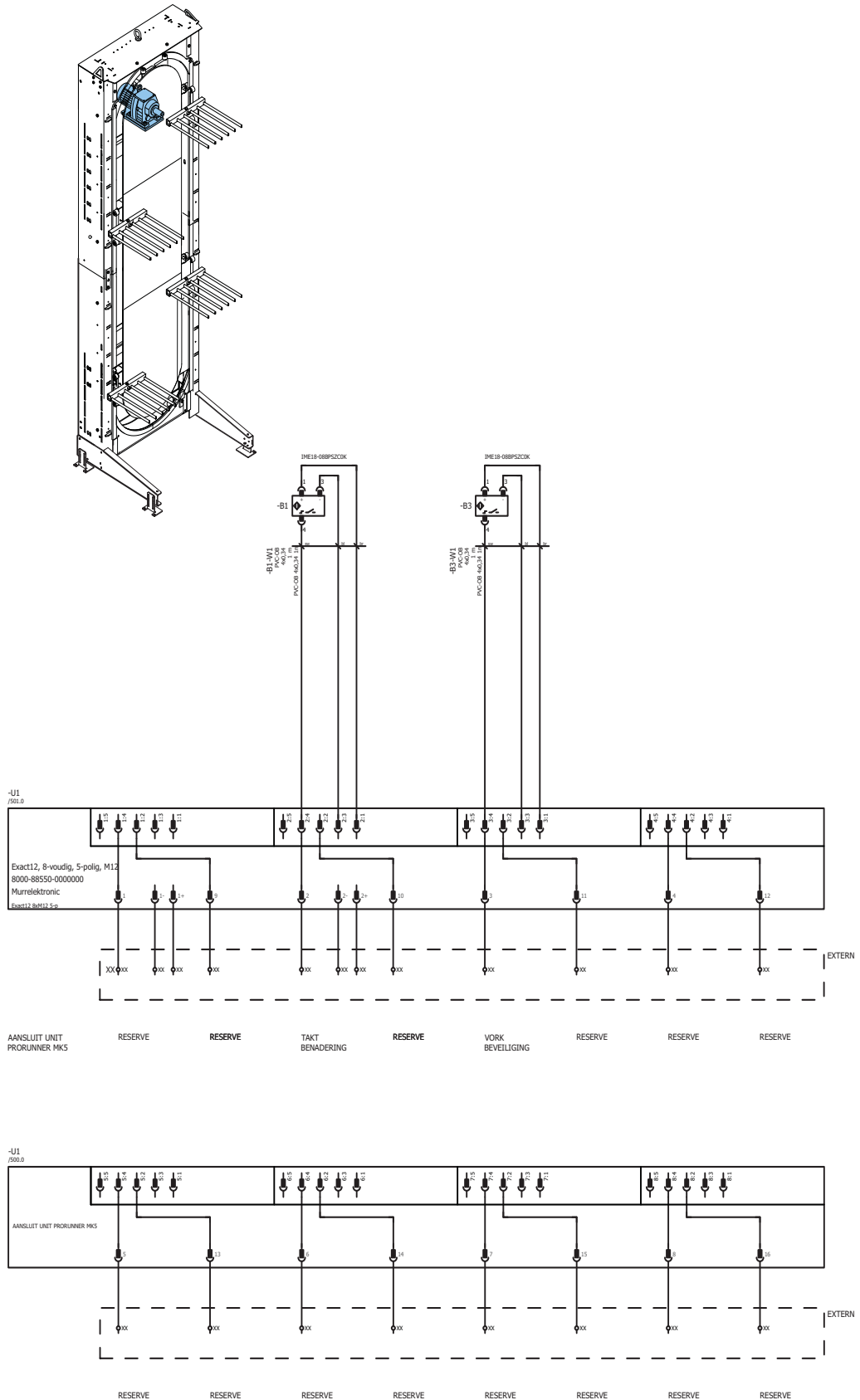
17.2 Signalling Column K

17.2.1 Type KS



| Position | Name | Amount | Article number | Description |
|----------|-----------------------|--------|----------------|--|
| -B6 | Shift register sensor | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B6-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90° + M12 female 90°, 4-pole |
| -U1 | Connection unit | 1 | 1003309 | Exact12, 8-way, 5-pole, M12 |

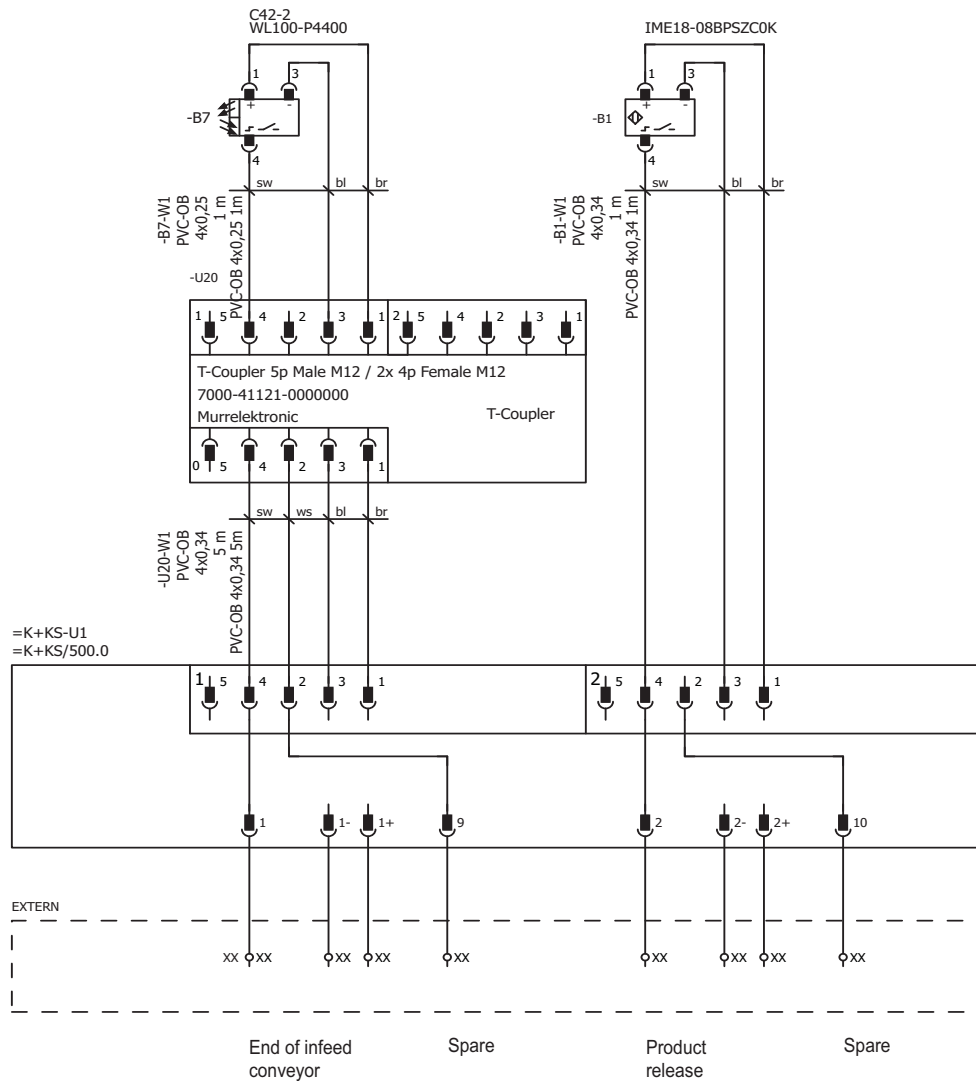
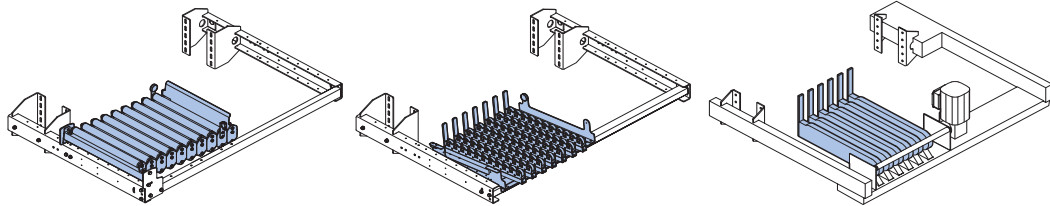
17.2.2 Type KB



| Position | Name | Amount | Article number | Discription |
|----------|-----------------|--------|----------------|-----------------------------|
| -U1 | Connection unit | 1 | 1003309 | Exact12, 8-way, 5-pole, M12 |

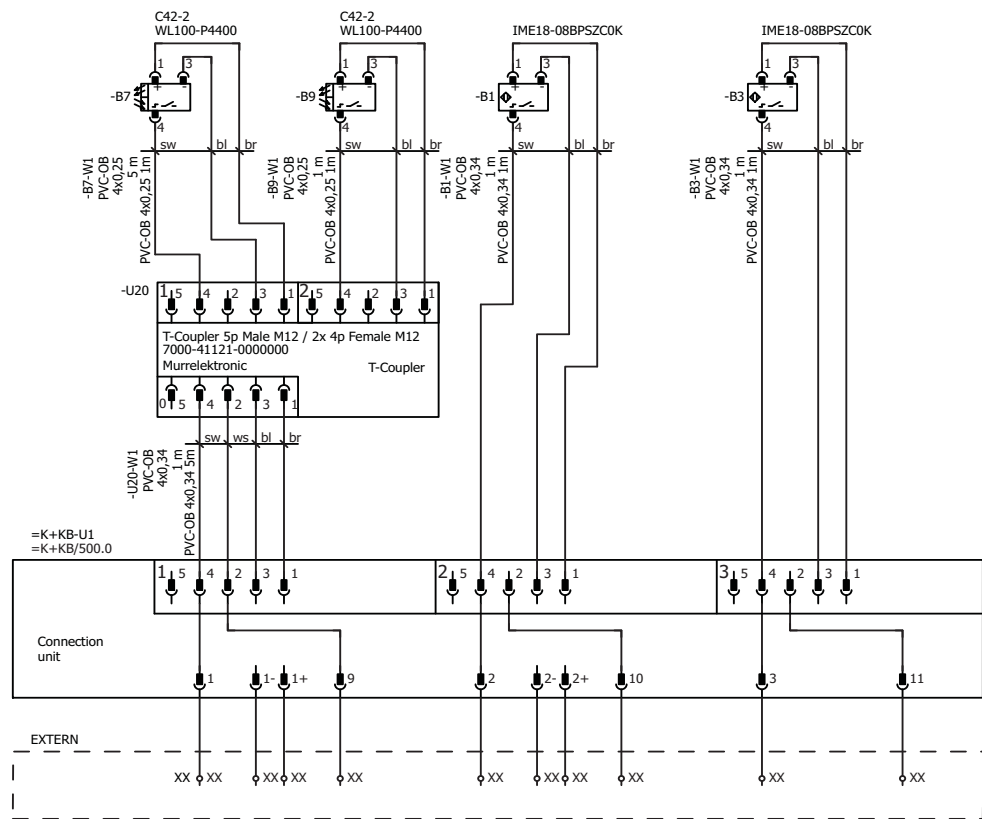
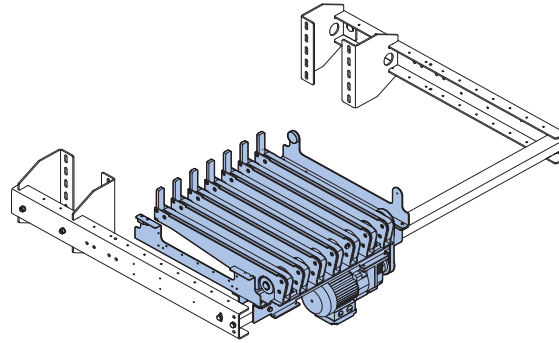
17.3 Infeed conveyors IX

17.3.1 Type IV



| Position | Name | Amount | Article number | Description |
|----------|------------------------|--------|----------------|---|
| -B1 | Product release | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B1-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B7 | End of infeed conveyor | 1 | 1002097 | Photoelectric retro-reflex sensor, WL100-P4400 |
| -B7 | | 1 | 1002242 | Reflector, C42-2 |
| -B7-W1 | | 1 | 1003307 | Cable, PVC, 1 meter, M12 male straight + M8 female straight, 4-pole |
| -U20 | T-Couple | 1 | 1003313 | T-Coupler 5 Pole Male M12 / 2x 4 Pole Female M12 |
| -U20-W1 | | 1 | 1001326 | Cable, PVC, 5 meter, M12 male 90°+ M12 female 90°, 4-pole |

17.3.2 Type IB



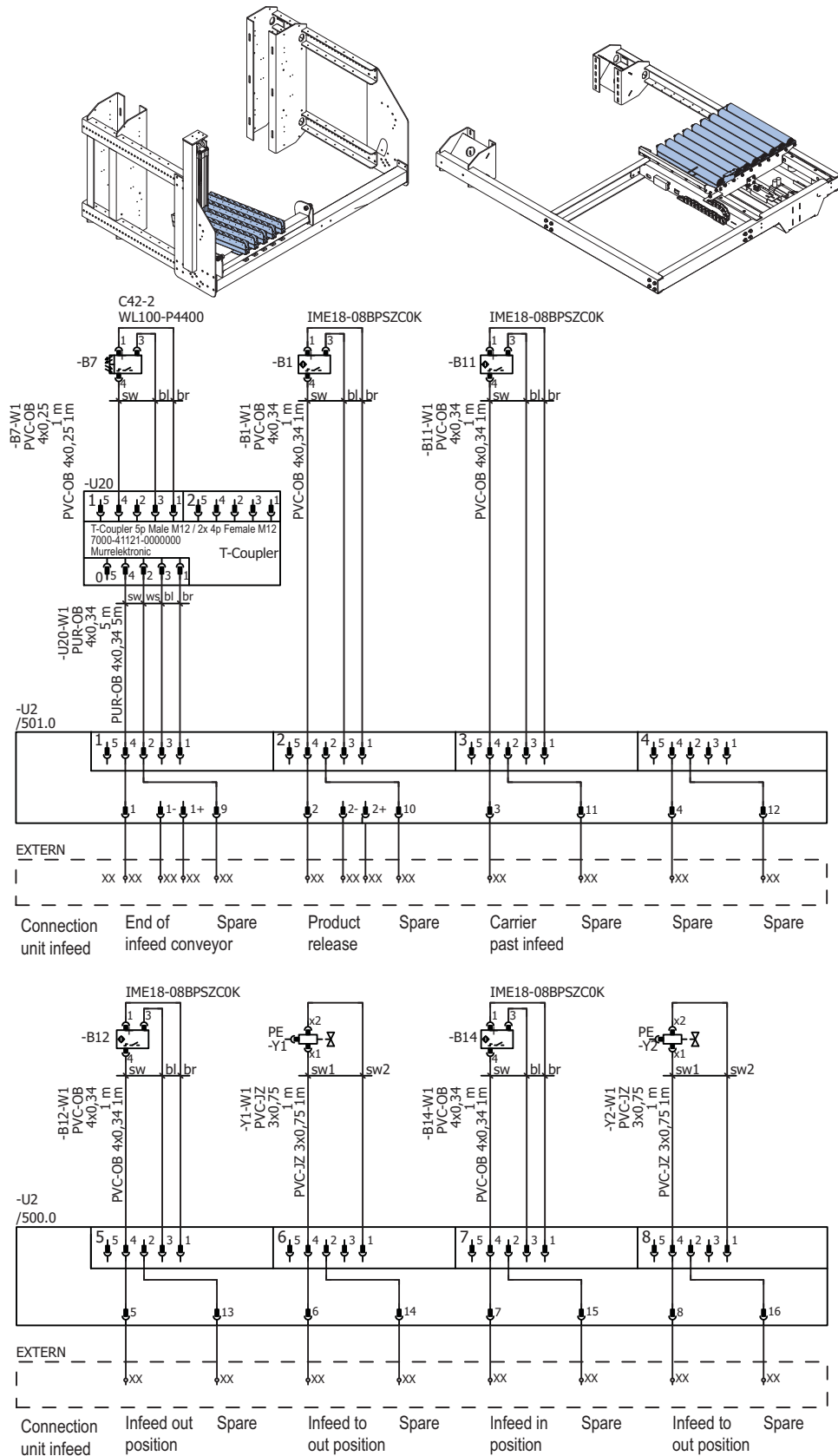
End of infeed conveyor / product on outfeed

Product left outfeed

Product release

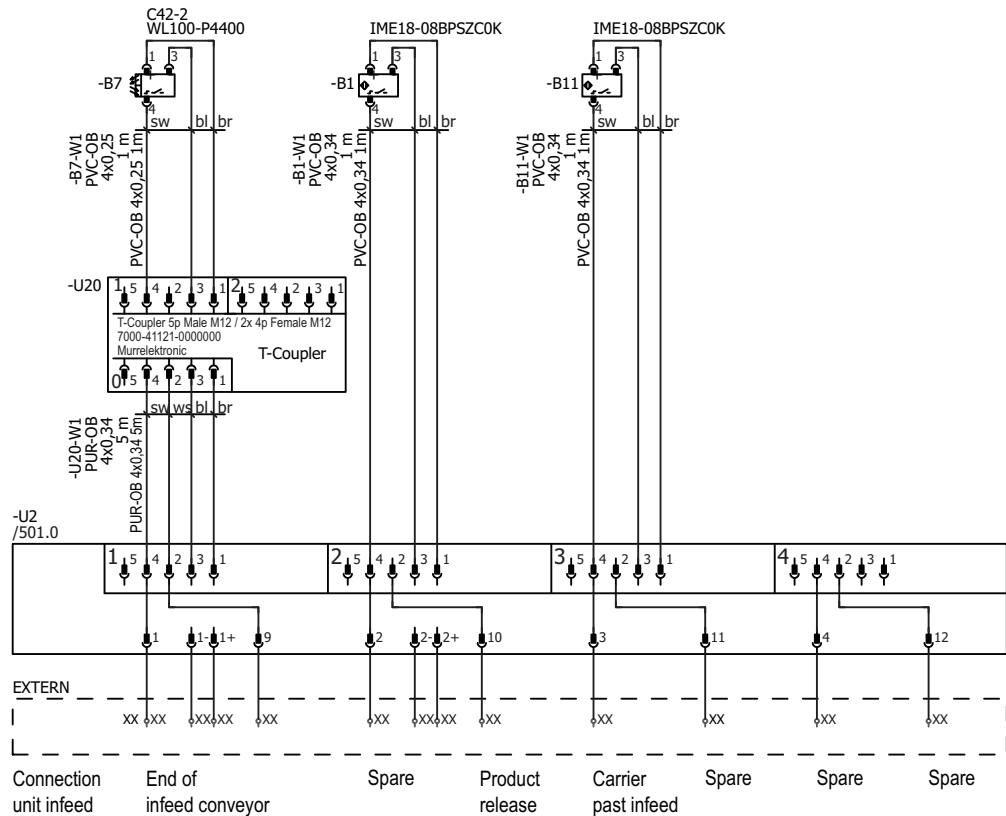
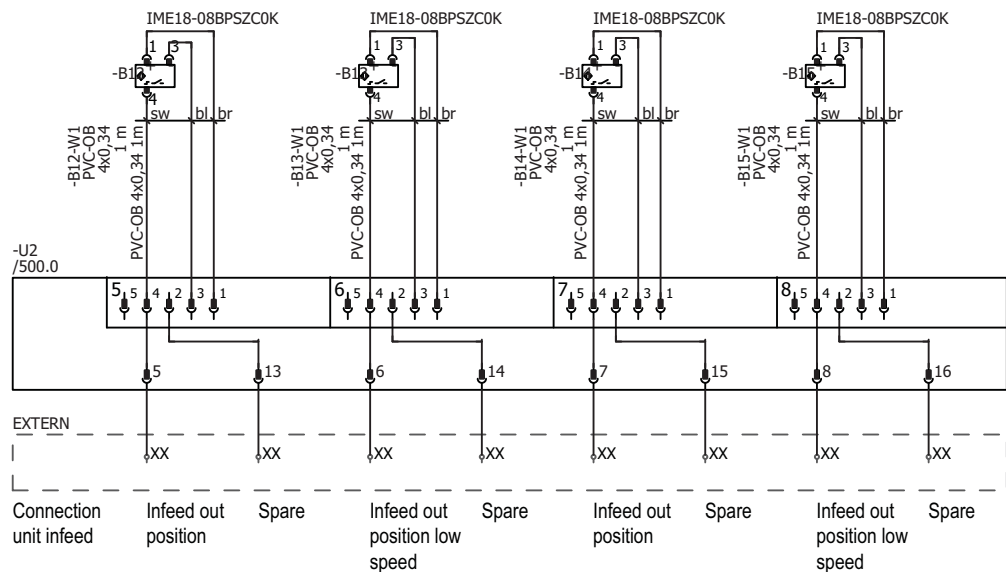
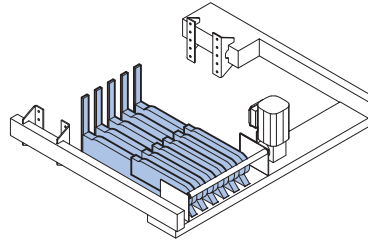
Start time frame

17.3.3 Type IP



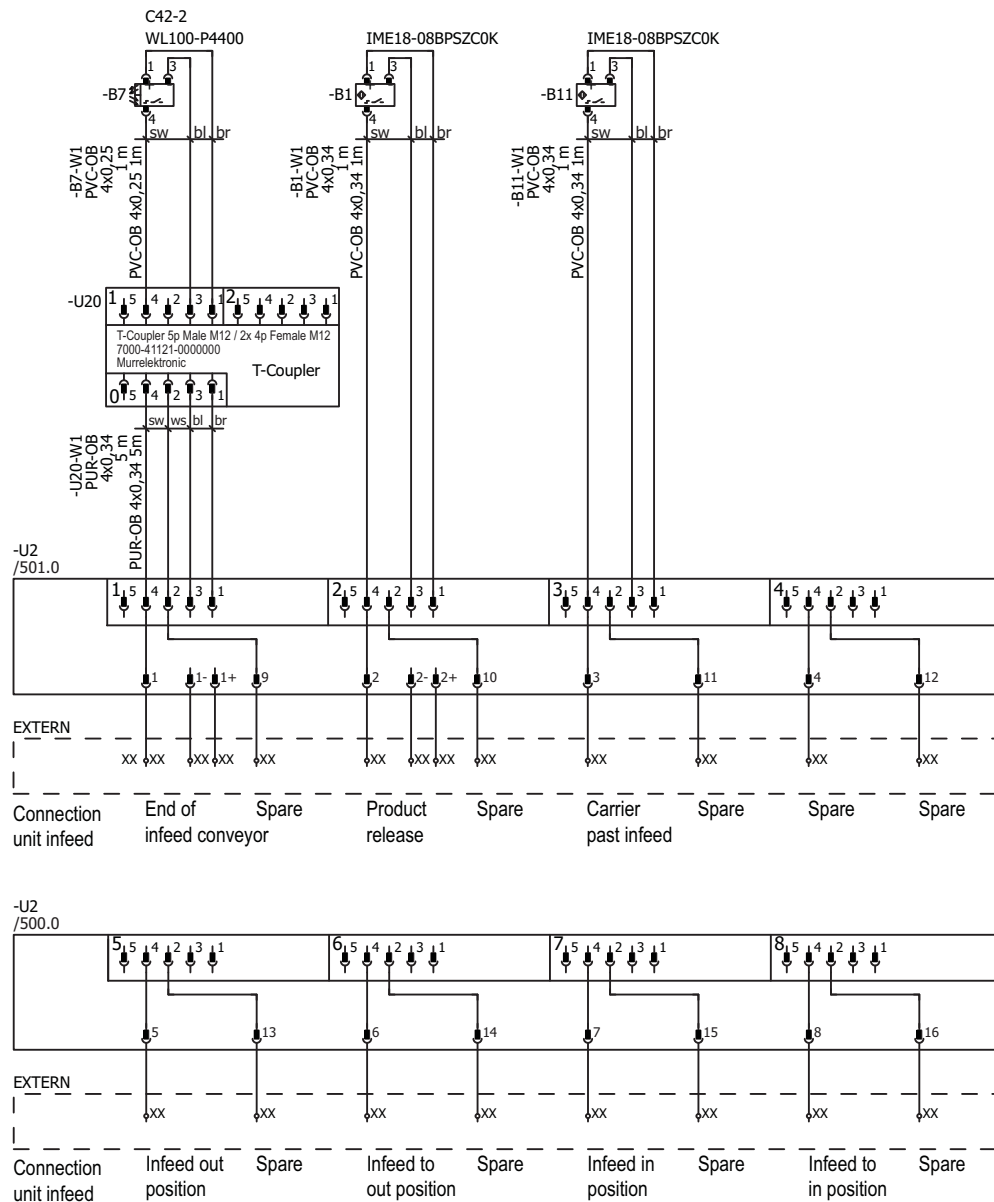
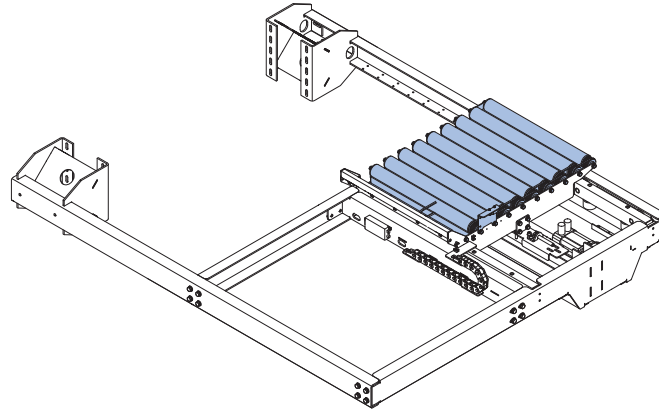
| Position | Name | Amount | Article number | Description |
|----------|------------------------|--------|----------------|--|
| -B1 | Product release | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B1-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B7 | End of infeed conveyor | 1 | 1002097 | Photoelectric retro-reflex sensor, WL100-P4400 |
| -B7 | | 1 | 1002242 | Reflector, C42-2 |
| -B7-W1 | | 1 | 1003307 | Cable, PVC, 1 meter, M12 male straight + M8 female straight, 4-pole |
| -B11 | Carrier past infeed | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B11-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B12 | Infeed out position | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B12-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B14 | Infeed in position | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B14-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -Y1 | Infeed to out position | 1 | | Coil, see mechanical specification |
| -Y1-W1 | | 1 | | Prefab cable, PVC, 1 meter, connector M12 male + MSUD coil C-Form 8 mm |
| -Y2 | Infeed to in position | 1 | | Coil, see mechanical specification |
| -Y2-W1 | | 1 | | Prefab cable, PVC, 1 meter, connector M12 male + MSUD coil C-Form 8 mm |
| -U20 | T-Couple | 1 | 1003313 | T-Coupler 5 Pole Male M12 / 2x 4 Pole Female M12 |
| -U20-W1 | | 1 | 1001326 | Cable, PVC, 5 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -U2 | Connection unit infeed | 1 | 1003309 | Exact12, 8-way, 5-pole, M12 |

17.3.4 Type IM



| Position | Name | Amount | Article number | Description |
|----------|------------------------------|--------|----------------|---|
| -B1 | Product release | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B1-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B7 | End of infeed conveyor | 1 | 1002097 | Photoelectric retro-reflex sensor, WL100-P4400 |
| -B7 | | 1 | 1002242 | Reflector, C42-2 |
| -B7-W1 | | 1 | 1003307 | Cable, PVC, 1 meter, M12 male straight + M8 female straight, 4-pole |
| -B11 | Carrier past infeed | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B11-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B12 | Infeed out position | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B12-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B13 | Infeed in position low speed | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B13-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B14 | Infeed in position | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B14-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B15 | Infeed in position low speed | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B15-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -U20 | T-Couple | 1 | 1003313 | T-Coupler 5 Pole Male M12 / 2x 4 Pole Female M12 |
| -U20-W1 | | 1 | 1001326 | Cable, PVC, 5 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -U2 | Connection unit infeed | 1 | 1003309 | Exact12, 8-way, 5-pole, M12 |

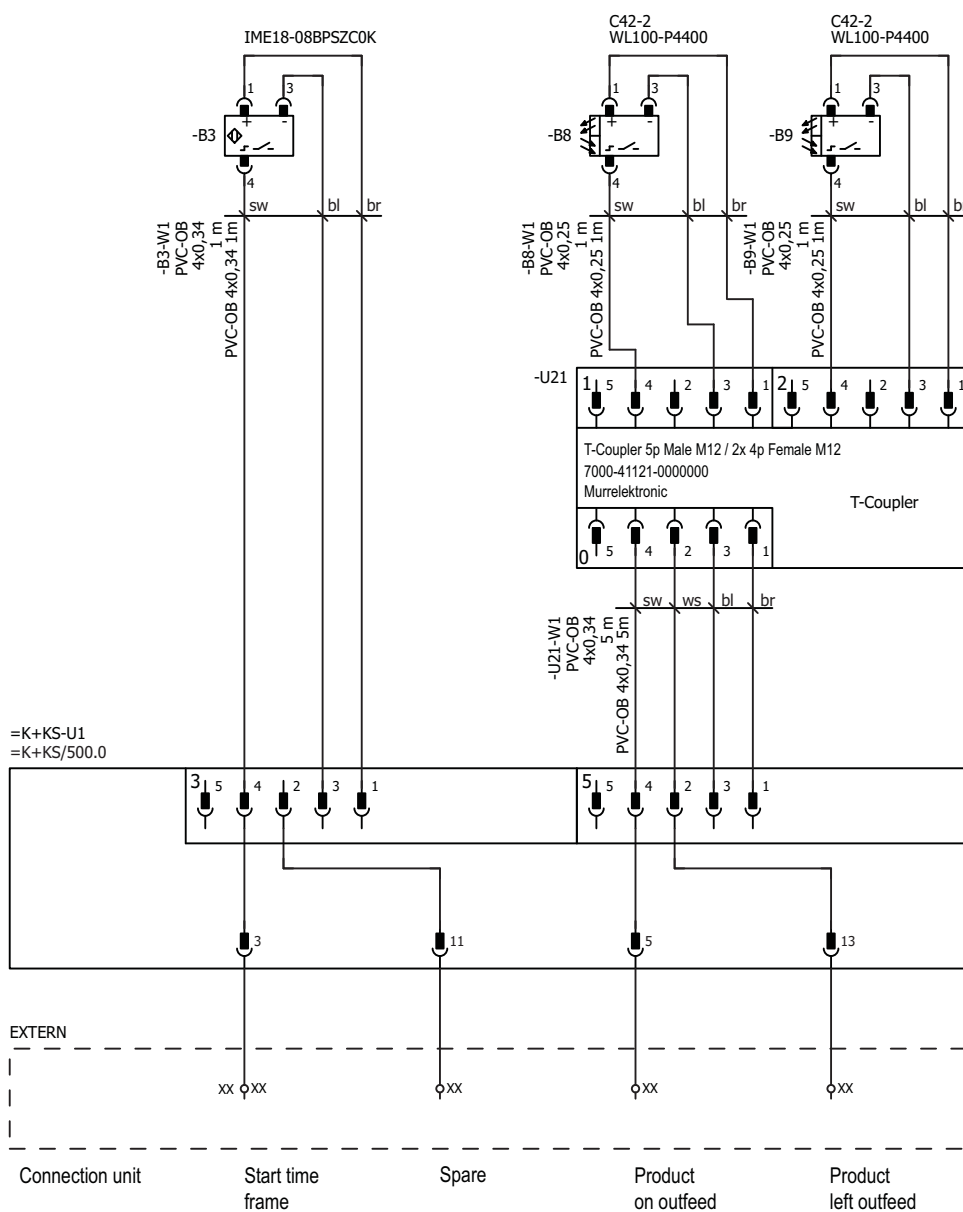
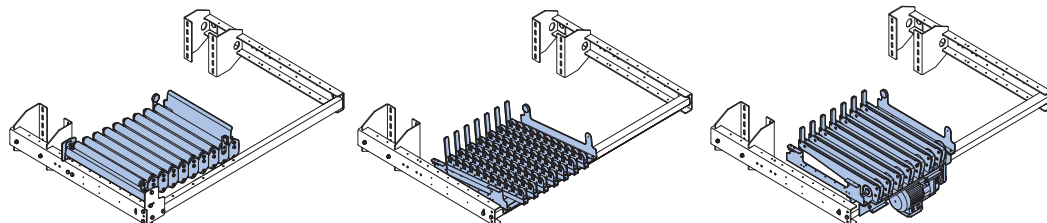
17.3.5 Type IS



| Position | Name | Amount | Article number | Discription |
|----------|------------------------|--------|----------------|---|
| -B1 | Product release | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B1-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B7 | End of infeed conveyor | 1 | 1002097 | Photoelectric retro-reflex sensor, WL100-P4400 |
| -B7 | | 1 | 1002242 | Reflector, C42-2 |
| -B7-W1 | | 1 | 1003307 | Cable, PVC, 1 meter, M12 male straight + M8 female straight, 4-pole |
| -B11 | Carrier past infeed | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B11-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -U20 | T-Couple | 1 | 1003313 | T-Coupler 5 Pole Male M12 / 2x 4 Pole Female M12 |
| -U20-W1 | | 1 | 1001326 | Cable, PVC, 5 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -U2 | Connection unit infeed | 1 | 1003309 | Exact12, 8-way, 5-pole, M12 |

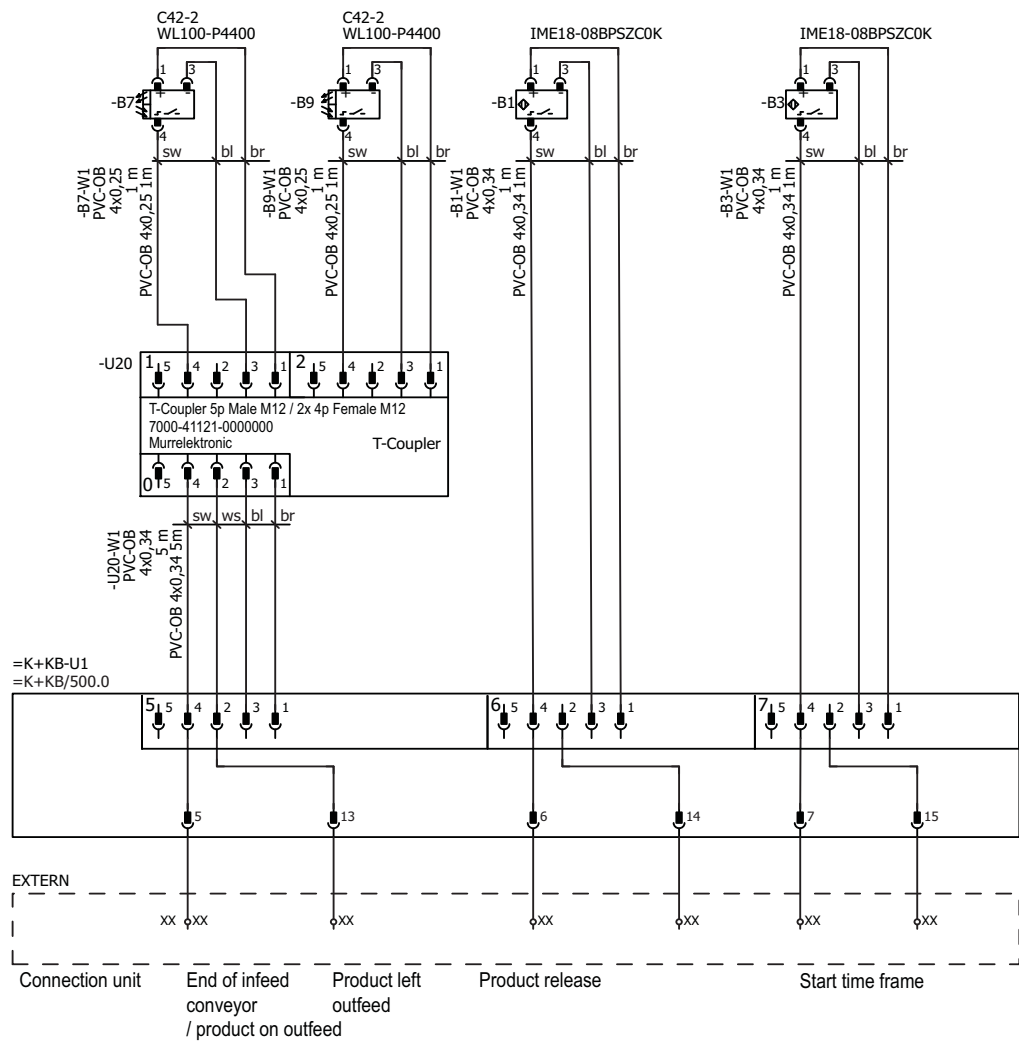
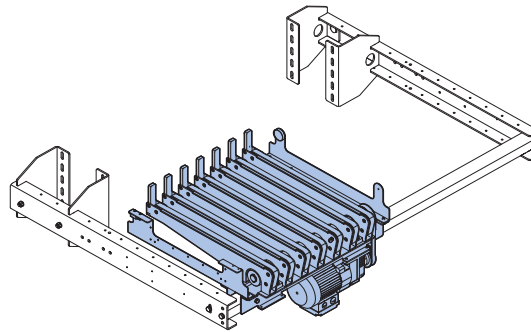
17.4 Outfeed conveyors (UX)

17.4.1 Type UV

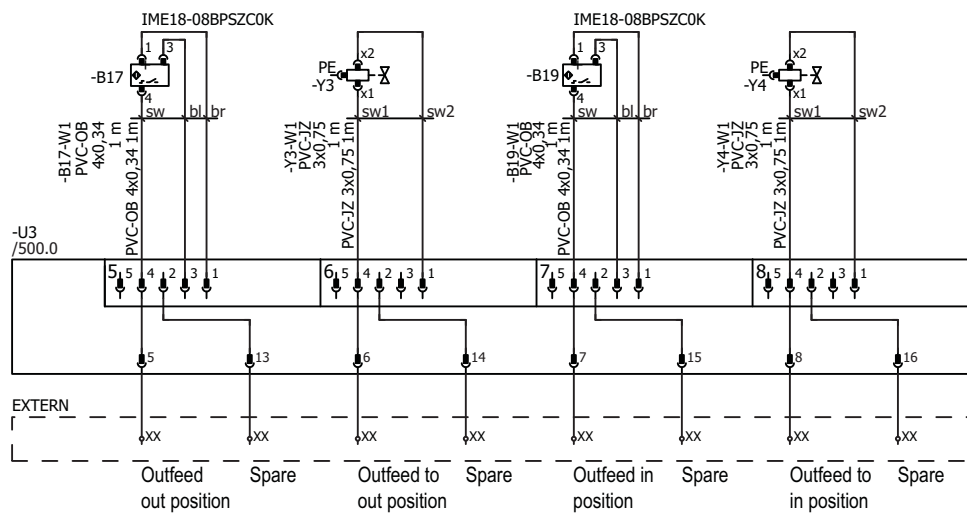
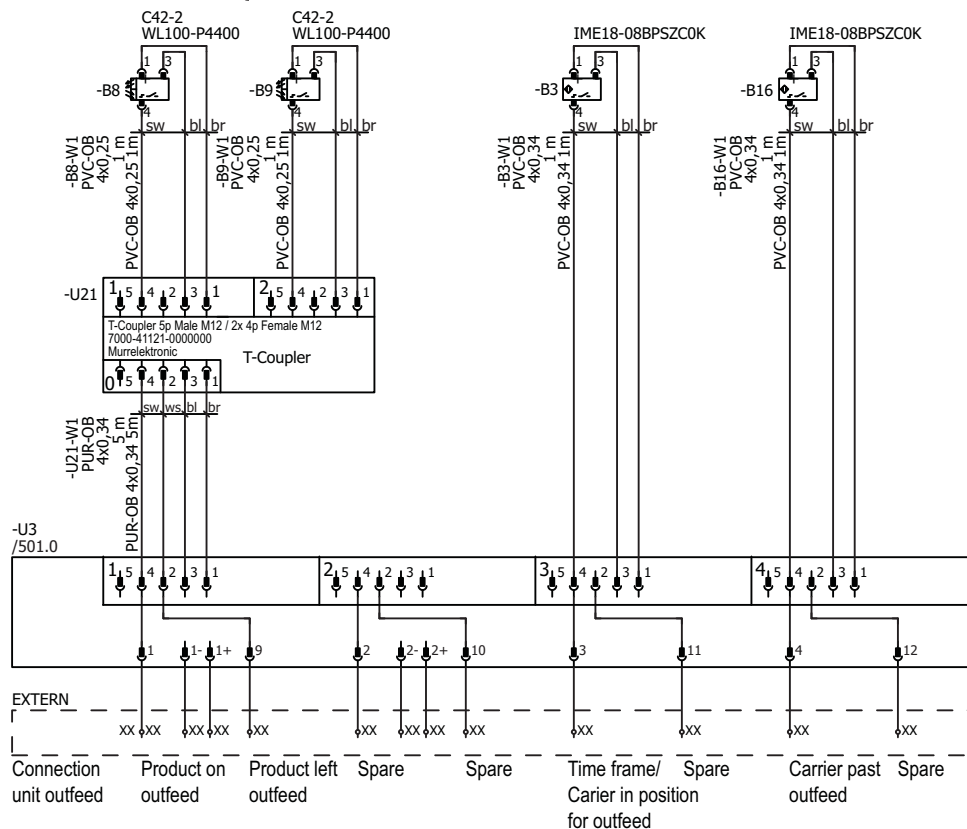
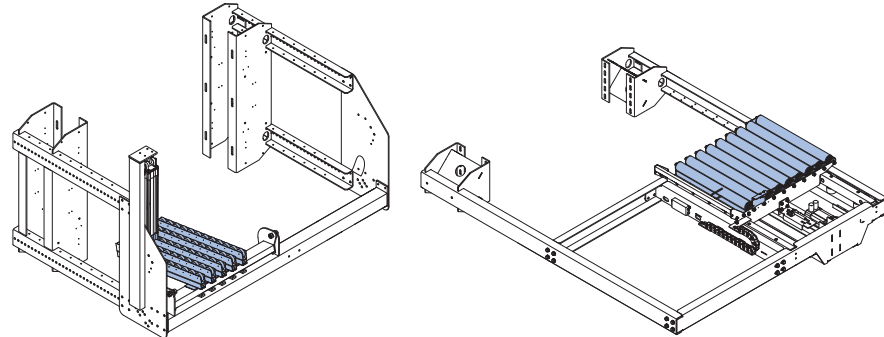


| Position | Name | Amount | Article number | Description |
|----------|-----------------------|--------|----------------|---|
| -B3 | Start time frame | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B3-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B8 | Product on out-feed | 1 | 1002097 | Photoelectric retro-reflex sensor, WL100-P4400 |
| -B8 | | 1 | 1002242 | Reflector, C42-2 |
| -B8-W1 | | 1 | 1003307 | Cable, PVC, 1 meter, M12 male straight + M8 female straight, 4-pole |
| -B9 | Product left out-feed | 1 | 1002097 | Photoelectric retro-reflex sensor, WL100-P4400 |
| -B9 | | 1 | 1002242 | Reflector, C42-2 |
| -B9-W1 | | 1 | 1003307 | Cable, PVC, 1 meter, M12 male straight + M8 female straight, 4-pole |
| -U21 | | 1 | 1003313 | T-Coupler 5 Pole Male M12 / 2x 4 Pole Female M12 |
| -U21-W1 | | 1 | 1001326 | Cable, PVC, 5 meter, M12 male 90°+ M12 female 90°, 4-pole |

17.4.2 Type UB

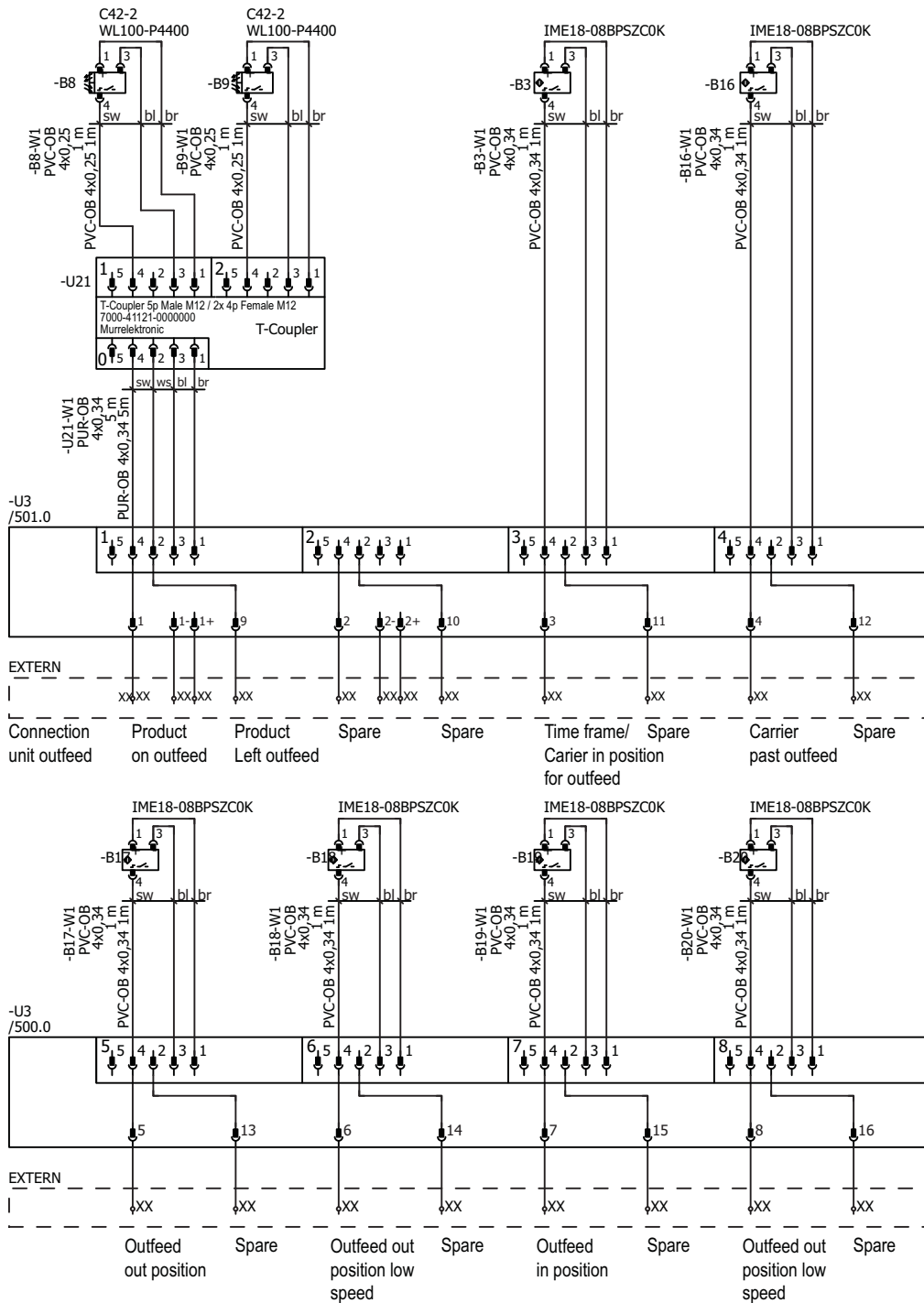
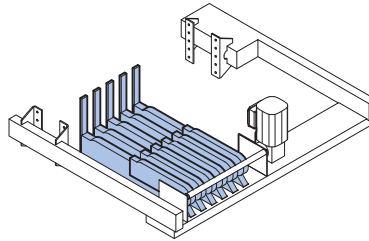


17.4.3 Type UP



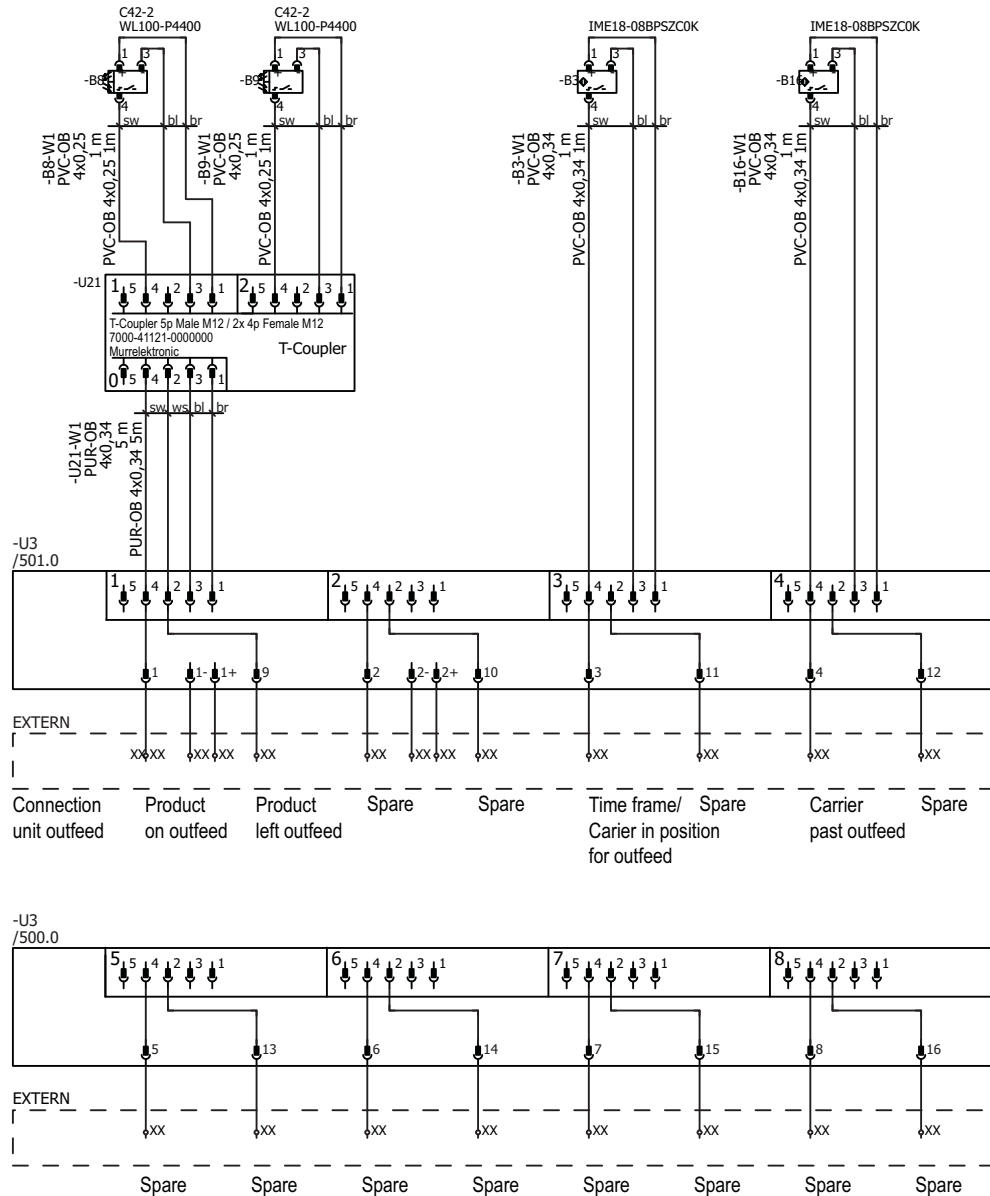
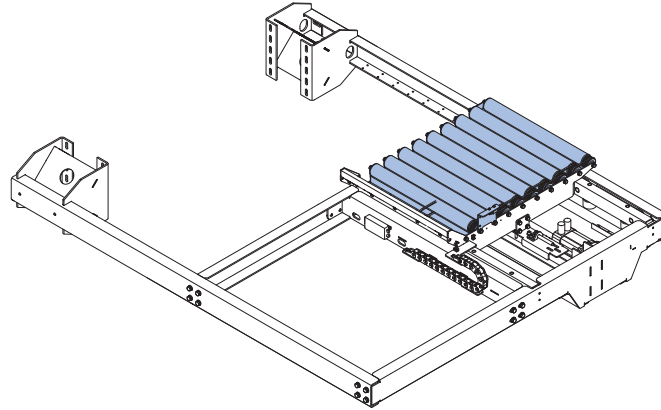
| Position | Name | Amount | Article number | Discription |
|----------|-------------------------|--------|----------------|---|
| -B3 | Start time frame | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B3-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B8 | Product on out-feed | 1 | 1002097 | Photoelectric retro-reflex sensor, WL100-P4400 |
| -B8 | | 1 | 1002242 | Reflector, C42-2 |
| -B8-W1 | | 1 | 1003307 | Cable, PVC, 1 meter, M12 male straight + M8 female straight, 4-pole |
| -B9 | Product left out-feed | 1 | 1002097 | Photoelectric retro-reflex sensor, WL100-P4400 |
| -B9 | | 1 | 1002242 | Reflector, C42-2 |
| -B9-W1 | | 1 | 1003307 | Cable, PVC, 1 meter, M12 male straight + M8 female straight, 4-pole |
| -B16 | Carrier past out-feed | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B16-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B17 | Outfeed out position | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B17-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B19 | Outfeed in position | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B19-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -Y3 | Outfeed to out position | 1 | | Coil, see mechanical parts list |
| -Y3-W1 | | 1 | | Cable, PVC, 1 meter, M12 male + MSUD Coil C-Form 8mm |
| -Y4 | Outfeed to in position | 1 | | Coil, see mechanical parts list |
| -Y4-W1 | | 1 | | Cable, PVC, 1 meter, M12 male + MSUD Coil C-Form 8mm |
| -U21 | | 1 | 1003313 | T-Coupler 5 Pole Male M12 / 2x 4 Pole Female M12 |
| -U21-W1 | | 1 | 1001326 | Cable, PVC, 5 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -U3 | | 1 | 1003309 | Exact12, 8-way, 5-pole, M12 |

17.4.4 Type UM



| Position | Name | Amount | Article number | Discription |
|----------|--------------------------------|--------|----------------|---|
| -B3 | Start time frame | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B3-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B8 | Product on out-feed | 1 | 1002097 | Photoelectric retro-reflex sensor, WL100-P4400 |
| -B8 | | 1 | 1002242 | Reflector, C42-2 |
| -B8-W1 | | 1 | 1003307 | Cable, PVC, 1 meter, M12 male straight + M8 female straight, 4-pole |
| -B9 | Product left out-feed | 1 | 1002097 | Photoelectric retro-reflex sensor, WL100-P4400 |
| -B9 | | 1 | 1002242 | Reflector, C42-2 |
| -B9-W1 | | 1 | 1003307 | Cable, PVC, 1 meter, M12 male straight + M8 female straight, 4-pole |
| -B16 | Carrier past out-feed | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B16-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B17 | Outfeed out position | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B17-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B18 | Outfeed out position low speed | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B18-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B19 | Outfeed in position | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B19-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B20 | Outfeed in position low speed | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B20-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -U21 | | 1 | 1003313 | T-Coupler 5 Pole Male M12 / 2x 4 Pole Female M12 |
| -U21-W1 | | 1 | 1001326 | Cable, PVC, 5 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -U3 | | 1 | 1003309 | Exact12, 8-way, 5-pole, M12 |

17.4.5 Type US



| Position | Name | Amount | Article number | Description |
|----------|-----------------------|--------|----------------|---|
| -B3 | Start time frame | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B3-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -B8 | Product on out-feed | 1 | 1002097 | Photoelectric retro-reflex sensor, WL100-P4400 |
| -B8 | | 1 | 1002242 | Reflector, C42-2 |
| -B8-W1 | | 1 | 1003307 | Cable, PVC, 1 meter, M12 male straight + M8 female straight, 4-pole |
| -B9 | Product left out-feed | 1 | 1002097 | Photoelectric retro-reflex sensor, WL100-P4400 |
| -B9 | | 1 | 1002242 | Reflector, C42-2 |
| -B9-W1 | | 1 | 1003307 | Cable, PVC, 1 meter, M12 male straight + M8 female straight, 4-pole |
| -B16 | Carrier past out-feed | 1 | 1000932 | Inductive proximity switch, IME18-08BPSZC0K |
| -B16-W1 | | 1 | 1001601 | Cable, PVC, 1 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -U21 | | 1 | 1003313 | T-Coupler 5 Pole Male M12 / 2x 4 Pole Female M12 |
| -U21-W1 | | 1 | 1001326 | Cable, PVC, 5 meter, M12 male 90°+ M12 female 90°, 4-pole |
| -U3 | | 1 | 1003309 | Exact12, 8-way, 5-pole, M12 |

18 Assembly instruction

18.1 Assembly instruction

Qimarox delivers the assembly instruction separately.

19 Appendix

19.1 Product registration form

Fill in this form and send it to support@qimarox.com for correct product registration.

| Machine type * | Mk 1 | Mk 5 | Mk 9 |
|--|------|------|------|
| Order number Qimarox | | | |
| Serial number | | | |
| Integrated by | | | |
| Order number integrator | | | |
| Installation date | | | |
| Start production date | | | |
| Your reference (line / machine number) | | | |
| Contact details user | | | |
| Company name | | | |
| Address | | | |
| Zip code | | | |
| Town / city | | | |
| Country | | | |
| Phone number | | | |
| Fax number | | | |
| e-mail | | | |
| website | | | |
| Technical contact user | | | |
| First name | | | |
| Last name | | | |
| Function | | | |
| e-mail | | | |
| Phone number | | | |

| | | |
|--------------------------------|-----|----|
| spare parts ordered * | yes | no |
| contact for service contract * | yes | no |

* Draw a circle around the choice.

| |
|---------|
| REMARKS |
|---------|

THIS FORM IS USED TO INFORM THE USER OF QIMAROX PRODUCTS ABOUT MODIFICATIONS ON THE USED EQUIPMENT AND TO IMPROVE OUR SERVICE ON THE EQUIPMENT. THE CONTACT BETWEEN USER AND QIMAROX WILL BE THROUGH THE SUPPLIER / INTEGRATOR.



Nobelstraat 43

3846 CE Harderwijk

Tel: +31 341 436 700

Fax: +31 341 436 701

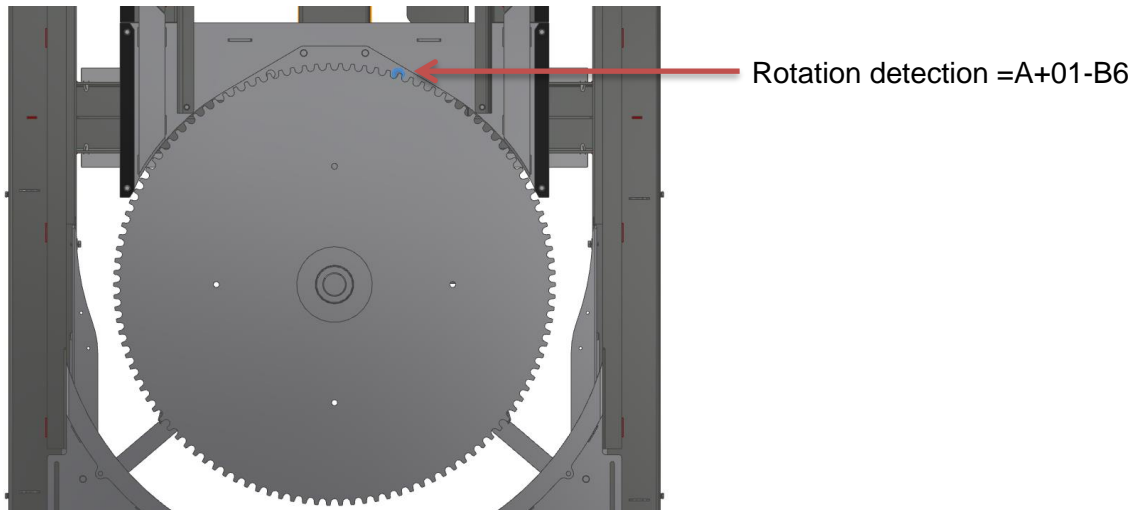
E-mail: info@Qimarox.com

Internet: www.Qimarox.com

Rotation detection Prmk5 (XL)

Sensor

The Prorunner mk5 (XL) is equipped with a sensor monitoring the bottom sprocket. When the sprocket is rotating, each individual tooth is detected. The sensor is located near the top of the sprocket, as illustrated in the image below.



Function

During normal use the pulse frequency must be within a predefined range, dependent on the speed of the machine. Deviations of this frequency are an indication of a malfunction, such as jamming. When a deviation is detected, stop the machine immediately to prevent or reduce damage to the machine.

Encoder (optional)

The main drive of the machine can be equipped with an encoder (=A+01-E2). If so, the sensor (=A+01-B6) is not included. Monitor the signal of the encoder to detect deviations in the frequency.

Software

For an example of how to process the signal to detect a malfunction, please refer to the software supplied by Qimarox. There are different versions available for the rotation detection with and without an encoder.