FMB
MASCHINENBAU

turbo RS 3-38

Operating instructions

Operating instructions

turbo RS 3-38, series 1

Confirmation number from: 1906087

Editorial deadline: 14.07.2022

FMB Maschinenbau
Paul-Hohe-Straße 1
97906 Faulbach
+49 9392 801 0

info@fmb-machinery.de
www.fmb-machinery.de

Operating instructions

1, 3, en_US

Table of contents

1 General

1.1 Operating instructions

Product versions and special equipment

The operating instructions cover several versions of the described product. You can see which version of the product you have in the field "Type" on the name plate. ➚ *"Name plate" on page 8*.

The product versions differ with regards to the length of the loading magazine and therefore also with regards to the number of supports. In the chapters "Transport" and "Assembly" the respective product version is to be observed. Product versions over a certain length can be delivered in two pieces. Please find more precise information about the individual product versions from the respective dimension sheet. ➚ *"Other applicable documents" on page 5*.

The diagrams may vary from the actual product. The principle described does, however, apply to all versions.

The operating instructions also describe special equipment, which may not be installed on your product. The descriptions of special equipment state that they are optionally installed.

Special equipment with a greater scope is described in corresponding supplemental instructions, which can also be found in the technical documentation folder. The supplemental instructions are a supplement to the operating instructions, and are to be observed in connection with it. First familiarize yourself with the operating instructions, before you use the supplemental instructions.

Other applicable documents

The operating instructions are supplemented by the following documents, which are also kept in the technical documentation folder:

- Circuit diagram
- Pneumatics plan
- Dimension sheet (specific to the product version)
- Adapter set/attachment diagram (optional)
- Supplemental instructions (optional)

Explanation of symbols

Warning Hazard
Warns of a hazard with a high risk level which, if not avoided, will cause death or severe injury.

⚠ DANGER

Type and source of hazard

Consequences if the note is disregarded.

– Actions necessary to avert the hazard.

Warning Hazard
Warns of a hazard with a medium risk level which, if not avoided, could cause death or severe injury.

⚠ WARNING

Type and source of hazard

Consequences if the note is disregarded.

– Actions necessary to avert the hazard.

Warning Caution
Warns of a hazard with a low risk level which, if not avoided, could cause minor or moderate injury.

⚠ CAUTION

Type and source of hazard

Consequences if the note is disregarded.

- **Actions necessary to avert the hazard.**

Note (material damage)
A note that misuse could cause material damage.

NOTICE

Type and source of hazard

Consequences if the note is disregarded.

- **Actions necessary to avert the hazard.**

Useful information
Notes or additional information.

Useful information.

Instructions on use

→ These instructions require the user to take action.

Display text
Display text comprises terms or text which appear on the control panel of the product.
Example: Display text.

Menu pathway
The menu pathway shows the path for actions, where you have to navigate through more than one menu level.
Example: *'Start → Sub menu → Destination"*

Cross-reference
Cross-references refer to further information about a topic.
Example: ↗ *"Explanation of symbols" on page 5*.

Intended use

The loading magazine is intended for attachment to machine tools, and is only allowed to be operated if it has been installed on a machine tool in accordance with the specifications of these operating instructions. The loading magazine is exclusively intended for the supply of material bars to machine tools. These materials are round or have multiple edges. In individual cases, special profiles are allowed to be suppled, which have been agreed with FMB in advance.

Furthermore, the intended use of the loading magazine can be seen by observing the Technical Data chapter of these operating instructions ↗ *Chapter 1.3 "Technical data" on page 12*.

The applicable accident prevention guidelines and other generally-recognized technical safety regulations are to be observed.

Reasonably foreseeable misuse

- Non-observance of the requirements on the material bars. ↗ *"Requirements on the material bars" on page 59*.
- Operation with asymmetric profile bars without consultation with FMB.

- Operation with special profiles without consultation with FMB.
- Operation with non-homogenous material bars (imbalance).
- Processing outside of the permitted area (diameter, length). ➚ *"Technical data of the loading magazine" on page 12*.
- Use of unintended fuel. ➚ *"Lubricant" on page 14*.
- Operation without lubrication.
- Operation without a capacity adjustment set or with the wrong set.

  Operation without a clamping device or with the wrong clamping device.
- Transportation not done in accordance with the operating instructions. ➚ *Chapter 3.2 "Transporting the product" on page 23*.
- Operation outdoors.
- Manipulation of safety equipment.
- Performance of work without sufficient qualifications. ➚ *"Qualifications of the personnel" on page 7*.

Unauthorized alterations to the product are not permitted and exclude the liability of the manufacturer for any damage incurred as a result.

Qualifications of the personnel

The work described in these operating instructions is only allowed to be performed by personnel who have been qualified according to the table specified below.

Area of responsibility	Training by the manufacturer concerning assembly and start-up*	Product training**	Specific technical training***
Transport			X
Assembly / Start-up	X		
Operation		X	
Maintenance		X	X
Disposal			X

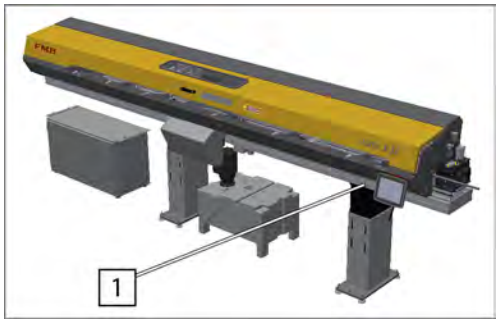
*Extensive qualification in the assembly and start up of FMB products. Qualification is done by FMB.

**Personnel who have received training for the product, are familiar with the functions and have been made aware of the risks. The training can be done by FMB or by a person who has already received training.

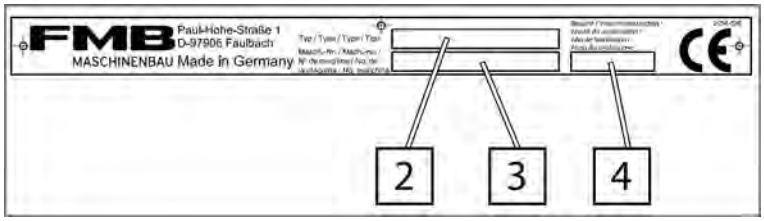
***Personnel who have received training in the respective area of responsibility, and have qualifications allowing them to perform the work correctly, to properly estimate risks and avoid hazards.

1.2 Information about the product

Name plate



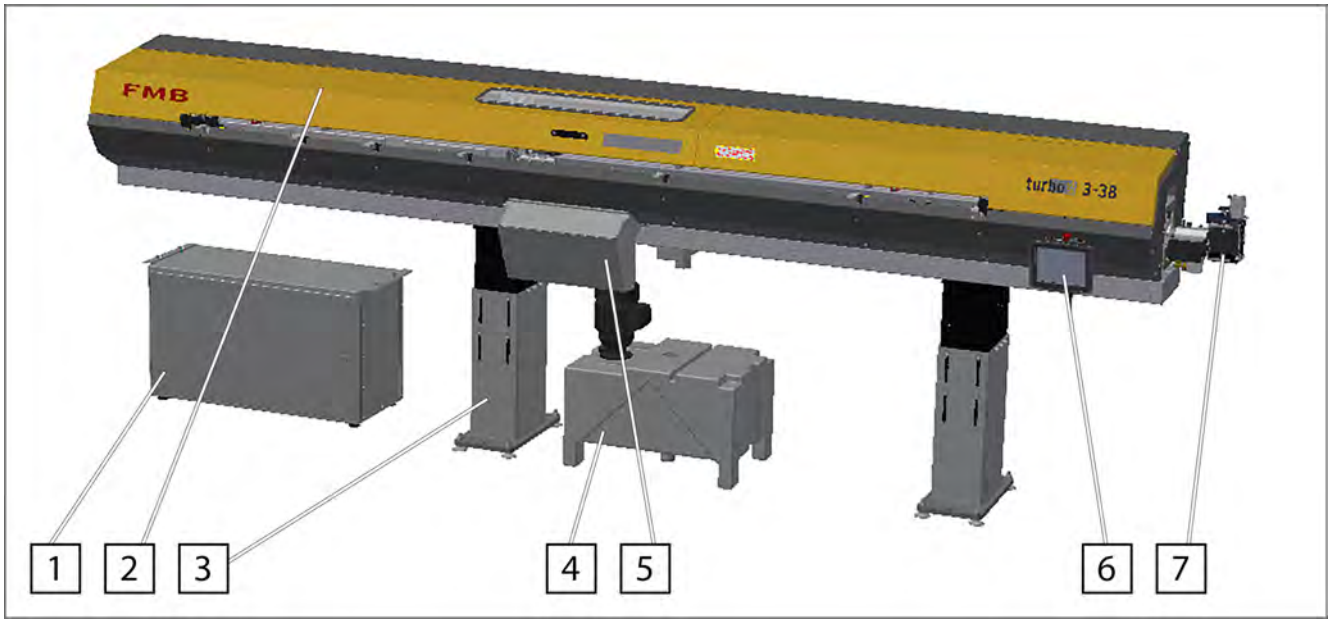
The name plate is attached to the loading magazine in position 1.



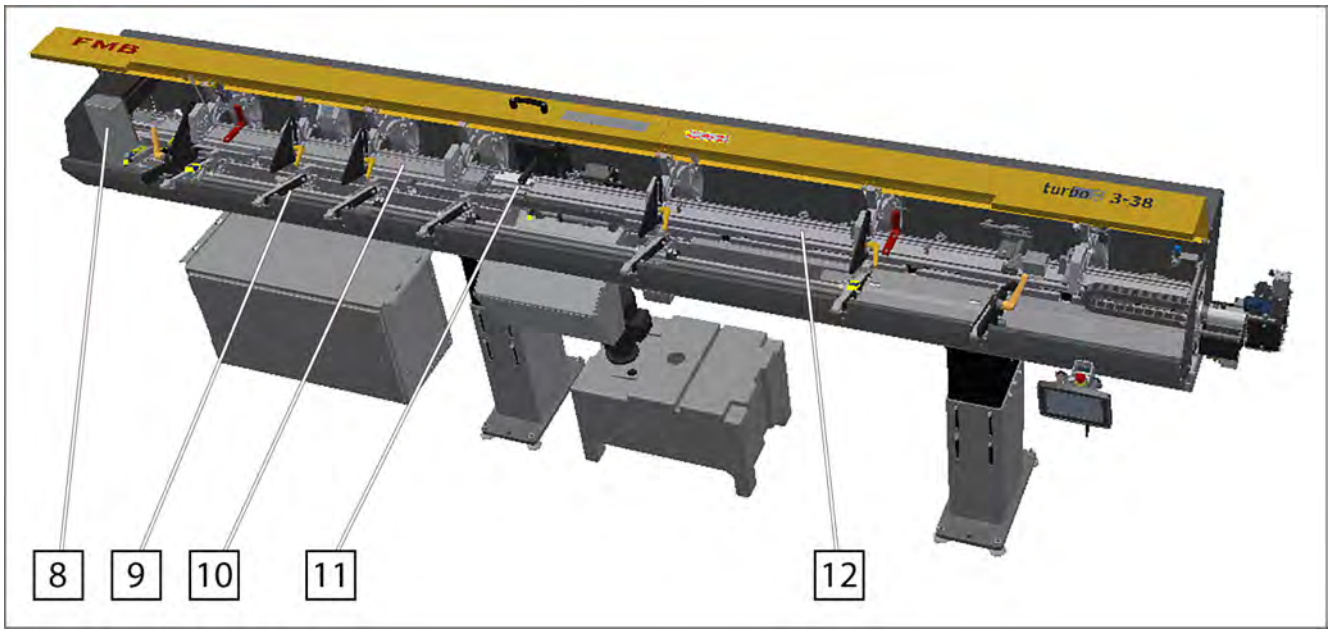
2	Types and lengths	3	Machine number
4	Year of construction		

The declaration of conformity (CE or UKCA) shall be added, if issued, to the name plate of the loading magazine.

Overview



1	Control cabinet	2	Cover
3	Support	4	Oil tank
5	Remnant bin	6	Control panel
7	Steady		



8	Drive	9	Lateral material storage with separation device
10	Guide channel, rear	11	Material gripper
12	Guide channel, front		

Functional description

The loading magazine supplies material bars and pushes them through the spindle into the processing area of the machine tool. The loading magazine works at the speed of the machine tool and thereby allows the automatic loading of the machine tool.

The collet of the machine tool closes and processing begins. The guide channel filled with oil and the steady placed between the machine tool and the guide channel ensure the exact bar guide required for processing. After a workpiece has been completed, the collet of the machine tool opens. The pusher of the loading magazine moves the material bar into the cut-off position, the collet of the machine tool closes and the next workpiece is processed.

If the material bar has been used up and the last possible part has been made, the working process of the machine tool is stopped. The collet of the machine tool opens and the pusher is moved back. The material gripper closes and holds the remnant of the material bar in position. The remnant is taken out of the clamping sleeve and is ejected into the remnant bin. The working process begins again.

Drive

The pusher is driven by a servomotor with a toothed belt. A sensor on the servomotor detects the exact position of the pusher.

Material gripper

The material gripper is equipped with blades, allowing it to grab the material bar. The newly-inserted material bars are held by the material gripper and pressed into the clamping device using the

force of the pusher. Remnants of processed material bars are held by the material gripper and removed from the clamping device using the force of the pusher.

Synchronizing unit

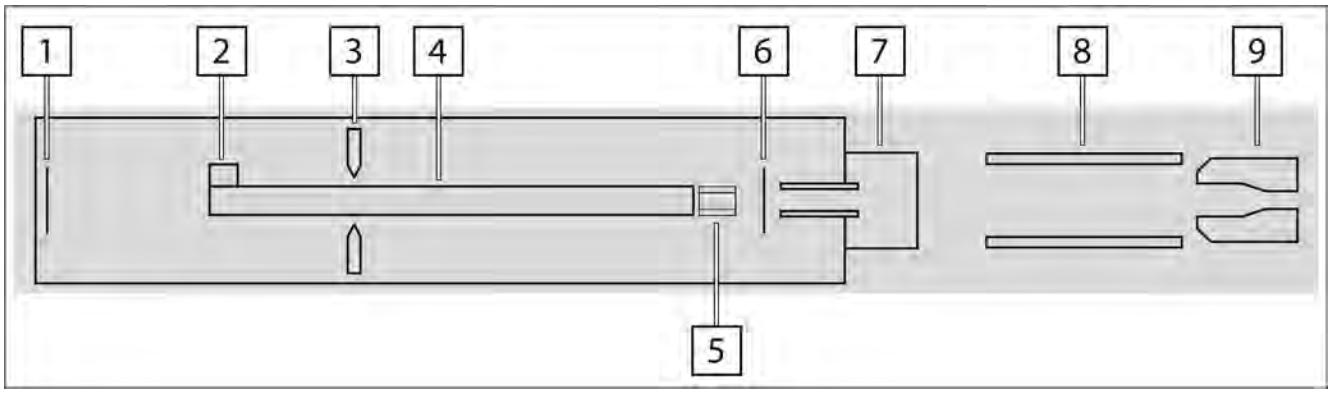
The synchronizing unit is only installed in loading magazines, which are intended for attaching to lathes with a moving headstock. The synchronizing unit ensures that the pusher of the loading magazine and the material bar also complete the traverse paths of the lathe headstock.

This is made possible by the synchronization bar, which is connected to the lathe headstock and transfers any movement of the lathe headstock to the pusher via the synchronization clutch.

During the processing by the lathe, the drive of the loading magazine is switched off and the synchronization clutch is closed. The movements of the lathe spindle are transferred to the pusher. The pusher and the material bar move at the speed of the lathe headstock.

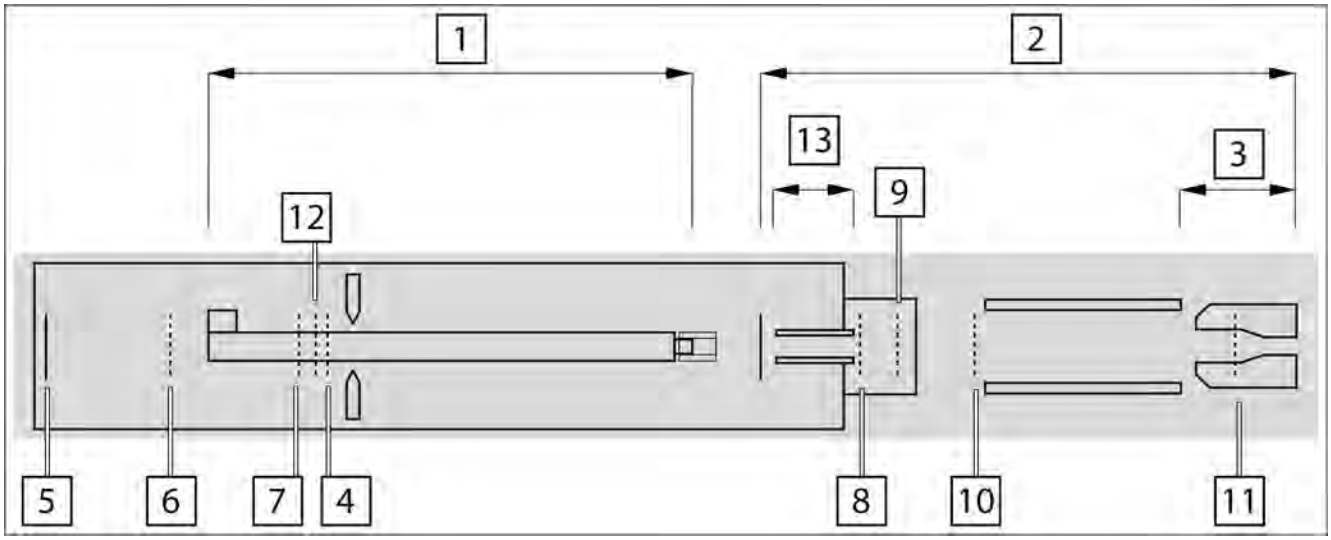
During the bar feed the drive of the loading magazine is switched on and the synchronization clutch is opened. The pusher is moved by the drive of the loading magazine. The material bar is pushed on.

Layout of the components



1	End stop	2	Pusher with short pusher flag
3	Material gripper	4	Pusher
5	Clamping sleeve	6	Starting switch
7	Guide module	8	Lathe spindle
9	Lathe collet		

Positions and traverse paths



1	Pusher length	The dimension for the parameter Pusher length is measured from the rear edge of the pusher to the front edge of the bearing insert.
2	Traverse path First insert travel	The first insert is performed after the material bar is changed. The traverse path First insert travel is the path from the starting switch in the loading magazine to the cut-off position in the working area of the lathe.
3	Traverse path Travel interval on	With interval insert active, an intermittent feed takes place in the area of Travel interval on .
4	Position draw off	At the position Position draw off the material gripper grips the material bar.
5	Position rear limit	The maximum rear position the pusher is able to reach. The position Position rear limit is reached when the remnant is removed or the pusher swings out.
6	Position storage	The position at which the short pusher picks up a new material bar. The pusher travels at high speed, just before the position Position storage it brakes, picks up the material bar and accelerates again.
7	Position Limit pos. short pusher front	The position to which the pusher moves the material bar, enabling the material gripper to grab the material bar.
8	Position open steady	During operation, the clamping sleeve must pass the steady. When the clamping sleeve is at the position Position open steady the steady opens to prevent damage.
9	Position close steady	During operation, the clamping sleeve must pass the steady. When the pusher passes the open steady and has reached the position Position close steady the steady closes.

10	Pos. reverse rotation return	When returning from the spindle of the lathe, the pusher moves from the position Pos. reverse rotation return at high speed.
11	Position front limit	The maximum front position the pusher is able to reach. The clamping sleeve is just before the collet of the lathe. The value Position front limit and the value Part length 1 are used to calculate when the last part will be fed in.
12		The clamping sleeve is pressed on to the material bar up to this position.
13	Length of guide module	The dimension for the parameter Length of guide module is measured from the rear edge to the front edge of the guide tube and depends on the stroke of the guide module.

1.3 Technical data

Technical data of the loading magazine

Characteristic	Unit	Value
Material flow in the guide channel	mm	3 - 38
Bar length	mm	3200 / 3800 / 4200 / 4775 / 5300 / 6200 / 7400
Maximum feed force	N	550
Insert speed	mm/s	520
Feed speed	mm/s	1000
Return speed	mm/s	2000
Maximum remnant length	mm	450
Weight [3] Length version 3200	kg	750
Weight [3] Length version 3800	kg	900
Weight [3] Length version 4200	kg	1000
Weight [3] Length version 4775	kg	1100
Weight [3] Length version 5300	kg	1250

Characteristic	Unit	Value
Weight [3] Length version 6200	kg	1500
Weight [3] Length version 7400	kg	1850
Weight of transport pallet	kg	Depending on length variant approx. 250 - 500
Oil tank level	l	80
Supply of compressed air	bar	6 - 10
Compressed air consumed per loading process	l	approx. 10
Compressed air consumed per double stroke of the steady	l	approx. 0.5
Noise emission during the bar change	dB(A)	48 +/- 5
Operating voltage [1, 4]	V	200 / 400 / other types
Power requirement	KW	2
Nominal frequency [2, 5]	Hz	50 / 60
Control voltage	V	24

1) According to DIN EN 60204 (VDE 0113), the continuous operating voltage must be within 100% ± 10% of the line voltage.

2) According to DIN EN 60204 (VDE 0113), the frequency must be between 0.99 and 1.01 of the nominal frequency.

3) Empty, without equipment and without transport pallets.

4) The operating voltage applicable for your product can be seen on the circuit diagram. ➚ *"Other applicable documents" on page 5*.

5) The product is rated for a nominal frequency of 50 Hz and 60 Hz.

Operating conditions

Characteristic	Unit	Value
Surrounding temperature	°C	+ 15 - + 40
Air humidity, non-condensing	%	30 - 75
Altitude about sea level	m	up to 1000

Storage conditions

Characteristic	Unit	Value
Surrounding temperature	°C	- 20 - + 65

The loading magazine is only allowed to be stored in dry rooms.

Lubricant

The lubricant used must comply with one of the following standards.

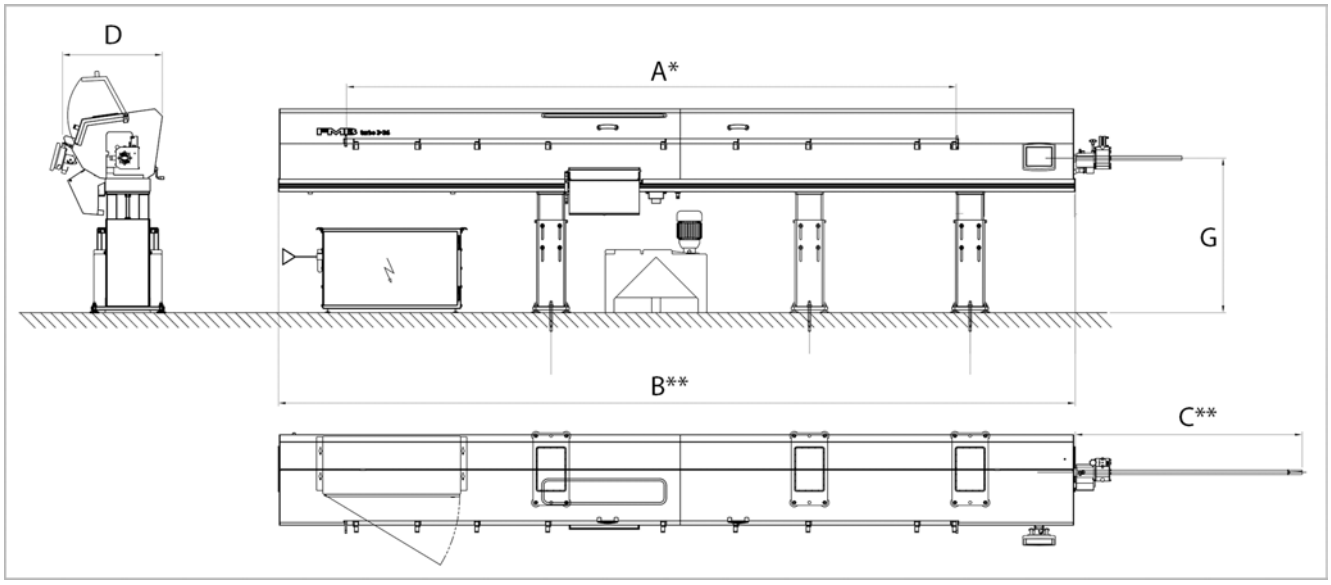
- DIN 51 517-2 CL 68,
- DIN 51 506 VBL 68,
- DIN ISO 3448 ISO VG 68.

The following lubricants are recommended for use in the loading magazine:

Manufacturer	Type
Aral	Motanol HE 68
Mobil / Esso	Vacuoline 1409
Shell	Morlina 68

Dimensions of the loading magazine

*Dimension A: Material bar length; **Dimensions B and C: Depending on the pusher



Stroke	400	400	600	600
Pusher length	1466	1666	1666	1866
	B1	B2	B2	B3
	C1	C2	C2	C3

Table of dimensions

Loading magazine length	Dimensions in mm								
	A	B1	B2	B3	D	C1	C2	C3	G***
2200	2200	3295	3495	3695	690	1365	1565	1765	740 - 1440
3200	3200	4295	4495	4695					
3800	3800	4895	5095	5295					
4200	4200	5295	5495	5695					
4775	4775	5870	6070	6270					
5300	5300	6395	6595	6795					
6200	6200	7295	7495	7695					

*** Set to the spindle height. On loading magazines with a shifting device, this value increases by 30 mm.

2 Safety

2.1 Safety measures

Personal safety equipment

The operator of the product must provide the following safety equipment and ensure they are used.

- Safety shoes
- Ear protection
- Safety gloves
- Eye protection
- Skin protection

2.2 Safety equipment

Emergency stop device

The loading magazine has an emergency stop device which complies with DIN EN 60204 (VDE 0113). The emergency stop button is mounted on the control panel ➚ *"Press the emergency stop button" on page 46*.

When the emergency stop button is pressed, the power is shut off for the safety-relevant PLC outputs. In addition, the power supply for the drive motor is shut off. The drive motor and hence the pusher cannot perform any more movements. The pressurization of the pneumatic valves remains for the function "Open / close guide channel", so that the guide channel remains shut. The pressurization of the rest of the pneumatic valves is interrupted. They go to their original position. An error message appears on the control panel of the loading magazine.

The emergency stop signal is transmitted to the machine tool and has to be processed there in accordance with DIN EN 23125.

If the emergency stop button of the machine tool is pressed, the emergency stop signal is forwarded to the loading magazine and also triggers an emergency stop there.

Lock

The cover of the loading magazine and the lid of the steady are monitored by the lock. In open position, the lock prevents the loading magazine operating. If the lock reports an "open" position, there is no power at certain PLC outputs and the drive is shut down. The lock helps ensure the loading magazine operates safely.

Safety door of the machine tool

If the safety door of the machine tool is opened during operation, the drive of the loading magazine is shut down. It is not possible to move the pusher of the loading magazine if the safety door of the machine tool is open. A risk to people due to the pusher of the loading magazine being in the working area of the machine tool is therefore excluded.

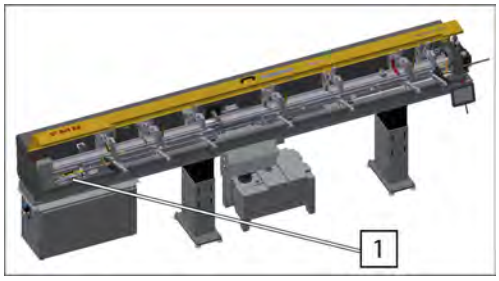
Working on the guide channel

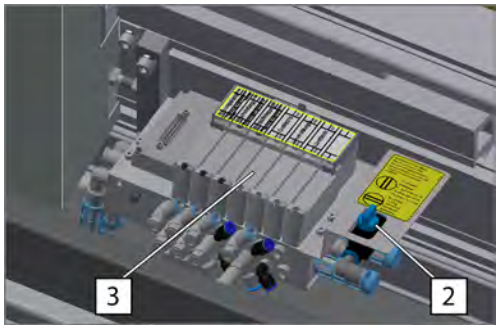
The guide channel is divided into the front guide channel and the rear guide channel. Both parts can be opened either separately or together. Safety bolts are attached to the bearing brackets. They

must be used when working on an open guide channel to secure the guide channel. ➚ *"Securing the guide channel with safety bolts" on page 76*.

Valve block

The valve block is located in position 1 on the loading magazine.





On the valve block, all valves are centrally supplied with compressed air. The compressed air for all valves can be shut off centrally at the stop valve 2.

After shutting off the compressed air, compressed air can be stored in the individual pneumatic cylinders. This can cause unforeseen movements of individual components of the loading magazine. The pneumatic cylinders can be vented separately via the valves 3 after shutting off the supply of compressed air.

This is the case in the event of certain repair work and with troubleshooting. The valve block is only allowed to be operated by personnel qualified to use it. In the event of questions please contact FMB. ➚ *"Service contact details" on page 119*.

3 Transport

3.1 Prepare for transportation

Preparing the loading magazine for transportation

⚠ DANGER

Movable guide channel/guide module can unexpectedly move forward out of the loading magazine

During transport, the movable guide channel/guide module can move forward out of the loading magazine due to its inertia caused by jerky movements. Personal injury from impact can result.

- **Do not loiter in the danger area.**
- **Install the transport lock for the guide channel/guide module before transport as described in the operating instructions.**

⚠ WARNING

Falling attachments/components

Loose attachments or components being transported by the loading magazine can fall and cause personal injury due to crushing and impact.

- **Secure loose attachments or components against slipping and falling before transport.**

Once the loading magazine has been raised, the pins extending out of the floor must be detached at ground level or removed from the floor using suitable means.

1. Completely remove any material bars. ➚ *"Removing the material bar from the loading magazine" on page 69* or ➚ *"Draw off and eject the remnant" on page 69*.
2. Press the ☰ button.
3. SETUP Opening.
4. Move the pusher all the way to the back using the ◂ button.
5. Leave the loading magazine at a standstill for at least 8 hours to allow the oil to drain out.
6. Turn off the main switch of the lathe.
7. Disconnect the power supply to the lathe (remove the connector).
8. Remove all the electrical connections from the loading magazine to the control cabinet.
9. Dispose of the oil / cooling lubricant in accordance with the legal provisions.
10. Depressurize the compressed air line to the loading magazine.
11. Switch off the compressed air supply. ➚ *"Switch the supply of compressed air on/off" on page 112*

    ➥ The loading magazine is vented.
12. Fasten the control cabinet to the beam ➚ *"Removing the control cabinet from / attaching the control cabinet to the loading magazine" on page 34*.

13. Install the transport lock for the guide channel/guide module.
↗ *"Assembly/disassembly of guide module transport lock (steady with material passage 26 mm)" on page 20*,
↗ *"Assembly/disassembly of guide module transport lock (steady with material passage 38 mm)" on page 21*.

14. Loosen the anchors on the floor.

➡ The loading magazine is ready for transportation.

Transport beams

Two transport beams 1 have to be attached to the loading magazine. The attachment points for the transport beams 1 are on the underside of the loading magazine.

Assembling the transport beams

⚠ DANGER

Falling loading magazine

Personal injury due to squashing and impact by the falling loading magazine.

If the transport beams are attached improperly to the loading magazine, they might come loose or the screw connections might break.

- **Observe the description about the assembly of transport beams in the operating instructions.**

⚠ DANGER

Falling transport beams

Personal injury due to squashing and impact by the falling transport beams.

If the raising of the loading magazine is not done by the transport beam, there is a danger that it might fall down if mounted improperly and hit people.

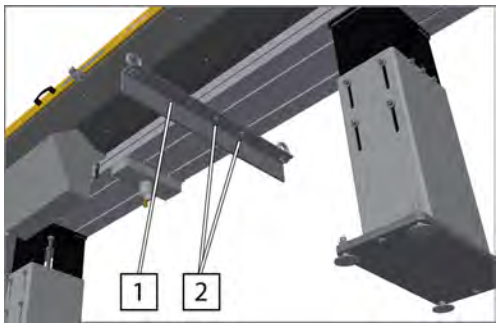
- **Do not stay in the danger area.**
- **Only install transport beams for the purpose of crane transportation and then remove them directly.**

⚠ CAUTION

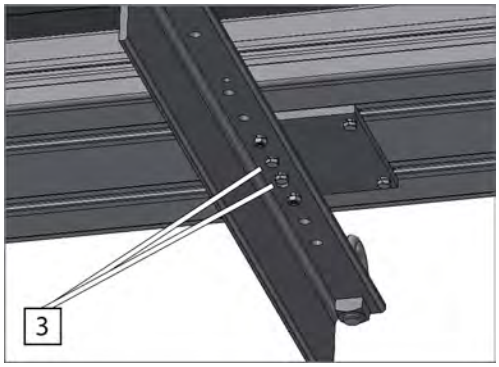
Protruding transport beams

Personal injury because of impact due to protruding transport beams.

- **Remove the transport beams after the loading magazine has been transported.**



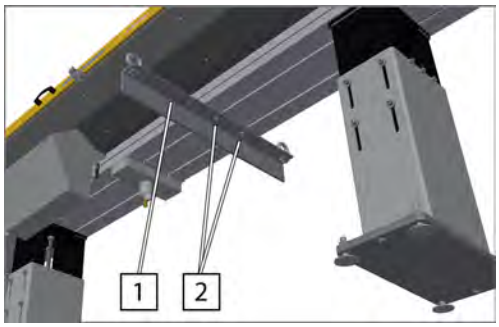
1. Place the transport beam [1] on the threaded bolt.
2. Insert and tighten the nuts [2].



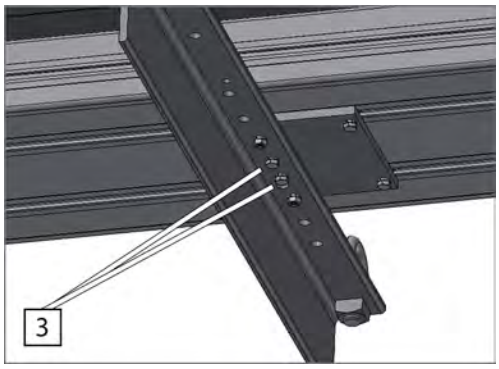
3. From length version 6200: Insert and tighten the screws [3] additionally.

   Information about the length versions: ➚ *"Name plate" on page 8*.
4. Assemble the second transport beam in the same way.

Removing the transport beams



1. Loosen and remove the nuts [2].

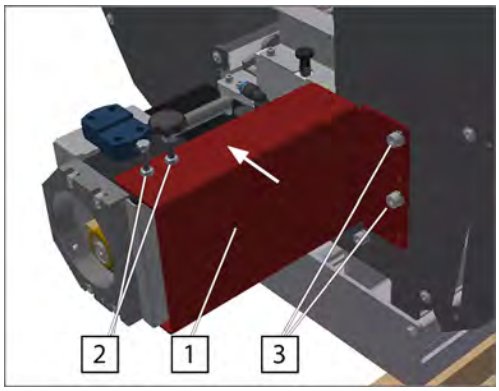


2. From length version 6200: Loosen and remove the screws [3].
3. Remove the transport beam [1].
4. Remove the second transport beam in the same way.

Assembly/disassembly of guide module transport lock (steady with material passage 26 mm)

The described procedure refers to the steady with a material passage of up to 26 mm.

Assembly:



1. Loosen the lock nuts [2].
2. Insert the transport lock [1] in the direction of the arrow.
3. Tighten the lock nuts [2].
4. Insert and tighten the screws [4].

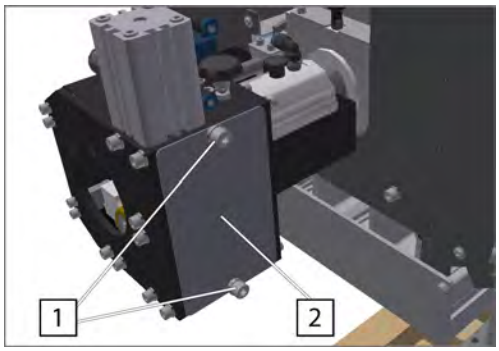
Disassembly:

→ Disassemble in reverse order.

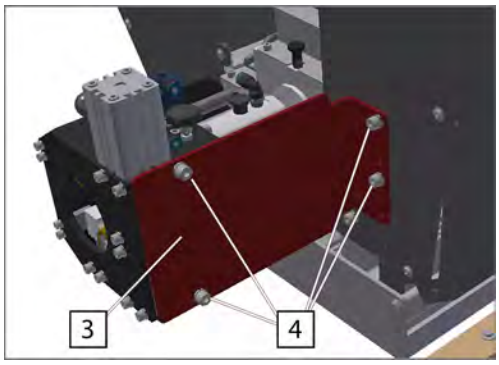
Assembly/disassembly of guide module transport lock (steady with material passage 38 mm)

The described procedure refers to the steady with a material passage of up to 38 mm.

Assembly:



1. Loosen and remove the screws [1].
2. Remove the lid [2].



3. Position the transport lock [3].
4. Insert and tighten the screws [4].

Disassembly:

→ Disassemble in reverse order.

Angle of inclination of the load attachment gear

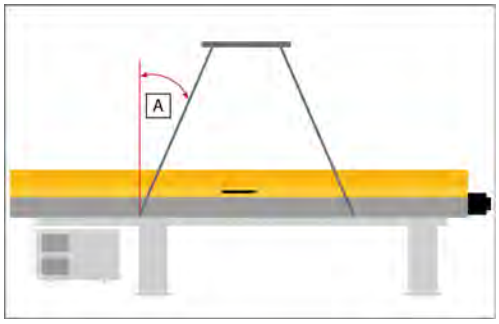
⚠ DANGER

Falling loading magazine

Personal injury due to crushing and impact by the falling loading magazine.

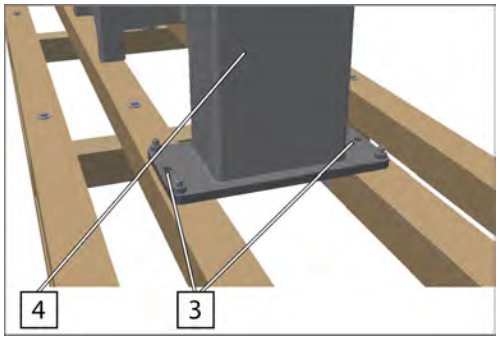
When lifting the loading magazine with the multi-chain load attachment gear, the specified maximum angle of the load attachment gear has to be observed. If this angle is exceeded, the attachments of the transport beams may break and the loading magazine could fall down.

- **Observe the specified maximum angle of inclination of the load attachment gear.**

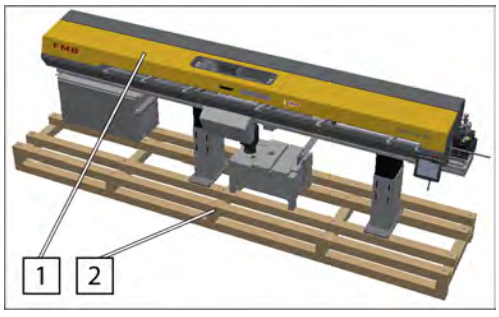


When using the multi-chain load attachment gear, the load attachment gear chosen must not exceed the angle of inclination of A 40°. Greater angles of inclination generate transverse forces that are beyond the rating of the attachment of the transport beams.

Detaching the loading magazine from the transport pallet



1. Secure the loading magazine to prevent tipping over.
2. Loosen and remove the screws in the attachment holes 3 of the support 4.
3. Loosen the rest of the supports from the transport pallet in the same way.



4. Using a crane, raise the loading magazine 1 from the transport pallet 2 and set down safely ↗ *"Transporting the loading magazine using the crane" on page 23*.

1. Detach the oil tank from the transport pallet.
2. Lift the oil tank off the transport pallet using a suitable hoist.

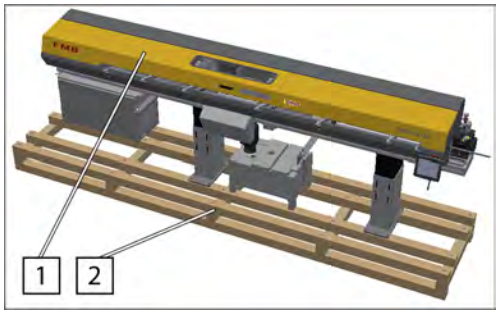
Fastening the loading magazine to the transport pallet

Fastening the loading magazine to the transport pallet serves only to prevent it from slipping or to raise the loading magazine and transport pallet over the transport beams of the loading magazine. For transportation, the loading magazine has to be additionally secured. Fastening it to the transport pallet is not sufficient.

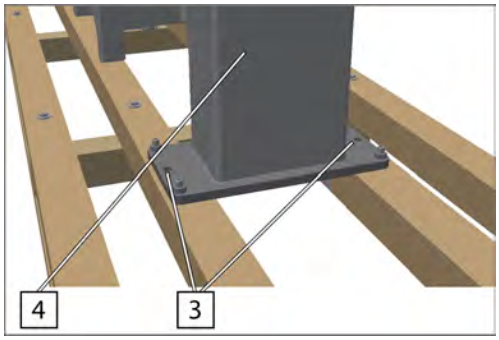
The loading magazine must be fastened to the transport pallet using adequately dimensioned fasteners.

- Pay attention to the weight of the transport pallet in the technical data. ➚ *"Technical data of the loading magazine" on page 12*.

1. Place the oil tank on the transport pallet using a suitable hoist.
2. Secure the oil tank to prevent it from slipping.



1. Raise the loading magazine 1 onto the transport pallet 2 using a crane. ➚ *"Transporting the loading magazine using the crane" on page 23*.
2. Secure the loading magazine to prevent tipping over.



3. Drill through the attachment holes 3 in the transport pallet .
4. Insert the screws and washers through the attachment holes 3 of the support 4.
5. Attach and tighten the washers and nuts from the other side.
6. Fasten the rest of the supports to the transport pallet in the same way.

3.2 Transporting the product

Transporting the loading magazine using the crane

If the loading magazine is hoisted with the transport pallet, it must be ensured that the attachment screws of the pallet are adequately dimensioned to prevent the pallet coming loose from the loading magazine.

⚠ DANGER

Falling loading magazine

Personal injury due to squashing and impact by the falling loading magazine.

- **Do not stay in the danger area.**
- **Use hoisting equipment suitable for the weight of the loading magazine.**
- **Observe the weight of the loading magazine and, where applicable, the transport pallet in the technical data.**
- **Only hoist the loading magazine using a crane via the transport beams.**
- **Observe the description on hoisting the loading magazine in the operating instructions.**

⚠ DANGER

Falling transport pallets / Loose loading magazine

Personal injury due to squashing and impact as a result of a falling transport pallet.

If the loading magazine is secured insufficiently or incorrectly to the transport palette, this may come loose. The transport pallet may fall down. The loading magazine may be knocked over and fall down.

- **Do not stay in the danger area.**
- **Observe the description about the correct attachment of the loading magazine to the transport pallet in the operating instructions.**

⚠ DANGER

Falling control cabinet

Personal injury due to squashing and impact by the falling control cabinet.

- **Do not stay in the danger area.**
- **Observe the description on securing the control cabinet in the operating instructions.**

⚠ DANGER

Falling oil tank

Personal injury due to squashing and impact by the falling oil tank.

- **Do not stay in the danger area.**
- **Secure the oil tank on the transport pallet against slipping.**

1. Assembling the transport beams ➚ *"Assembling the transport beams" on page 19*.
2. Fasten suitable hoists to all four eyebolts [1] of the transport beam.
3. Hoist the loading magazine and set it down securely.
4. Remove the hoists from the eyebolts [1] of the transport beams.
5. Remove the transport beams again after the loading magazine has been set down ➚ *"Removing the transport beams" on page 20*.

Transporting the loading magazine using the fork-lift truck

⚠ DANGER

Falling loading magazine

Personal injury due to squashing and impact by the falling loading magazine.

- **Do not stay in the danger area.**
- **Only hoist the loading magazine on a transport pallet using a fork-lift truck.**
- **Observe the description on the correct attachment of the loading magazine to the transport pallet in the operating instructions.**
- **Pay attention to the centre of gravity when hoisting with the fork-lift truck.**
- **Observe the weight of the loading magazine and, where applicable, the transport pallet in the technical data.**

⚠ DANGER

Falling transport pallets / Loose loading magazine

Personal injury due to squashing and impact as a result of a falling transport pallet.

If the loading magazine is secured insufficiently or incorrectly to the transport palette, this may come loose. The transport pallet may fall down. The loading magazine may be knocked over and fall down.

- **Do not stay in the danger area.**
- **Observe the description about the correct attachment of the loading magazine to the transport pallet in the operating instructions.**

⚠ DANGER

Falling control cabinet

Personal injury due to squashing and impact by the falling control cabinet.

- **Do not stay in the danger area.**
- **Observe the description on securing the control cabinet in the operating instructions.**

⚠ DANGER

Falling oil tank

Personal injury due to squashing and impact by the falling oil tank.

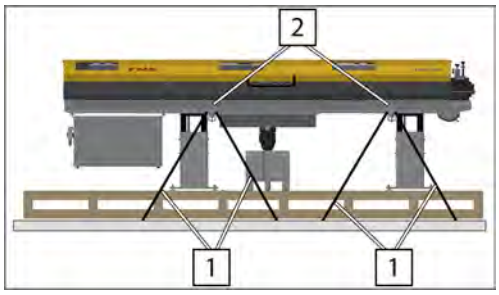
- **Do not stay in the danger area.**
- **Secure the oil tank on the transport pallet against slipping.**

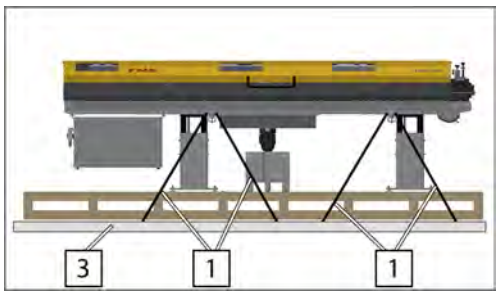
1. Fasten the loading magazine to a transport pallet ➚ *"Fastening the loading magazine to the transport pallet" on page 23*.
2. Calculate the center of gravity of the load.
3. Place the forks of the fork-lift truck beneath the center of gravity of the load.
4. Hoist the transport pallet with the loading magazine and set it down securely.
5. Detach the loading magazine from the transport pallet ➚ *"Detaching the loading magazine from the transport pallet" on page 22*.

Transport the loading magazine with means of transportation

When transporting the loading magazine with means of transportation such as a truck, it is necessary to attach the loading magazine to a transport pallet ↗ *"Fastening the loading magazine to the transport pallet" on page 23*. The unit consisting of the transport pallet and the loading magazine must also be secured via the transport beams of the loading magazine to the floor of the means of transport, strapped diagonally. ↗ *"Attach the loading magazine to the means of transport" on page 26*.

Attach the loading magazine to the means of transport





1. Attach the loading magazine to a transport pallet ↗ *"Fastening the loading magazine to the transport pallet" on page 23*.
2. Attach suitable fasteners [1] to the end stop of the transport beams [2].
3. Raise the loading magazine and the transport pallet with a crane or fork-lift truck onto the means of transport ↗ *"Transporting the loading magazine using the crane" on page 23* or ↗ *"Transporting the loading magazine using the fork-lift truck" on page 25*.
4. Strap the loading magazine diagonally using suitable fasteners [1] to the floor of the means of transport [3].
5. Attach the opposite side of the loading magazine in the same way.

4 Assembly and start-up

4.1 Prepare for assembly

Assembly requirements

NOTICE

Damage to the floor

The floor on which the product is placed, must be designed to bear the loads. Non observance can lead to material damage.

- **Have the suitability of the floor checked by an expert.**

NOTICE

Damage to wires in the floor

When selecting the place to set the product down, you must make sure that there are no wires in the floor in the area under the product. They could be damaged when securing the product.

- **Have the suitability of the installation location checked by an expert.**

Delivery state

The loading magazine and all add-on parts and equipment are delivered together on a transport pallet. The entire consignment is covered with a protective film to prevent coarse contamination.

- The loading magazine is screwed to the transport pallet.
- The add-on set for fastening the loading magazine to the floor is packed and stored in the remnant bin.
- The adapter set is packed and stored in the remnant bin.
- Depending on the equipment, further equipment parts such as the telescopic tube set, steady, lathe, capacity adjustment set or lacquered parts are also supplied. They are all packed on the carton and secured to prevent them from slipping on the transport pallet.

Unpacking the product

Check the delivery:

1. Remove the protective film.
2. Remove the add-on parts and equipment from the transport pallet.
3. Take the add-on parts and equipment out of the remnant bin.
4. Unpack the add-on parts and equipment.
5. Check the delivery to make sure it is complete.

Detach the consignment from the transport pallet:

5. Detach the loading magazine from the transport pallet.
↗ *"Detaching the loading magazine from the transport pallet" on page 22*.

4.2 Aligning

Calculate the distance of the loading magazine from the machine tool

Attachment to machine tools with moving headstock:

1. Set up the loading magazine on the machine tool. ➚ *"Setting up the loading magazine" on page 28*.
2. Calculate the distance from the loading magazine to the machine tool using the order-specific adapter diagram.
3. Adjust the distance.

Setting up the loading magazine

⚠ DANGER

Falling loading magazine

Personal injury due to squashing and impact by the falling loading magazine.

The loading magazine has a high centre of gravity. When aligning the loading magazine there is a danger of it tipping over.

- **Do not stay in the danger area.**
- **Observe the description on aligning and setting up the loading magazine in the operating instructions.**

⚠ DANGER

Moving the whole loading magazine during set-up

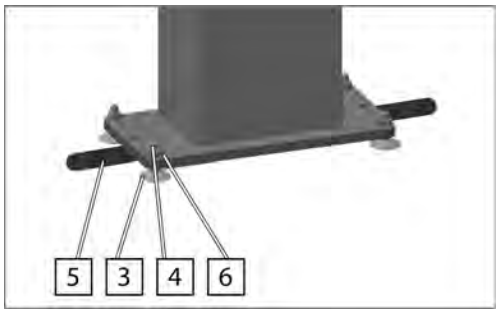
Personal injury due to squashing or impact due to moving the whole loading magazine.

When setting up and aligning the loading magazine, the whole loading magazine has to be moved. People may be struck by the loading magazine or become stuck between the loading magazine and the lathe.

- **Do not stay in the danger area.**

For alignment, the loading magazine with the supports is placed on round material bars (diameter 18 mm - 22 mm).

1. Position the round material bars [1] so that the loading magazine is as close as possible to the lathe.
2. Hoist the loading magazine using suitable equipment and together with the supports [2] place it on the round material bars [1].
3. Align the middle of the loading magazine roughly so that the side faces the lathe spindle.
4. Calculate the distance between the loading magazine and the lathe. ➚ *"Calculate the distance of the loading magazine from the machine tool" on page 28*.
5. Move the loading magazine along the round material bars and create the calculated distance to the lathe.



6. Position the foot plates [3] beneath the threaded pins [4].
7. Turn the threaded pins [4] to the right until the round material bars [5] are free.
8. Tighten the [6] nuts.
9. Remove the [5] round material bars.

4.3 Electrical connection

Electrical connection of the loading magazine and lathe

The electrical connection between the loading magazine and the lathe is shown in the order-specific electrical documents. The order-specific electrical documents are contained in the technical documentation of the product. The configuration of the plug and the operating voltage of the loading magazine are determined by the lathe. The configuration of the plug is done by FMB at the factory and is completed upon delivery. The contacts are configured according to the table below and have to be checked when starting up the loading magazine. If the contacts are not configured as described in the tables, please contact FMB.

- Contacts from the loading magazine to the lathe: → *"Contacts from the loading magazine to the machine tool" on page 29*
- Contacts from the lathe to the loading magazine: → *"Contacts from the machine tool to the loading magazine" on page 30*

Contacts from the loading magazine to the machine tool

Name	Explanation
-K30	Contact closed >> No fault reported by the loading magazine Contact open >> The loading magazine reports a fault In the event of a fault, the spindle of the tool machine can no longer turn
-K1	The material bar is pushed into the machine tool or Input release, Program - Start This signal is emitted, depending on the machine tool control system, as an impulse or permanent contact.
-K9	This signal indicates to the machine tool that the material bar has been processed. This signal is emitted, depending on the machine tool control system, as a normally closed or normally open contact.
-K91 (optional)	When working with two different part lengths, this signal is emitted when the bar end of the longer part Part length 1 is reached.
-K90	Contact closed >> The loading magazine is in automatic mode
-K44	This signal is emitted after the execution of the part length feed and continues until the moving signal (collet open) is removed. The signal is only emitted in the following cases: Operating mode Part length internal, Part length external and Collet open, fixed speed.

Name	Explanation
Loading magazine emergency stop	Potential-free contact of the loading magazine. This contact is to be included in the emergency-stop circuit of the machine tool.

Contacts from the machine tool to the loading magazine

Signal from the machine tool	Loading magazine action
Collet open	The feed equipment of the loading magazine is switched on.
End of cycle, start bar change	On machine tools with a program skip in the bar starting program, the contact must be queued in front of "collet open". Contact triggers a bar change on the loading magazine.
Machine tool ready for operation, enable automatic mode	The loading magazine can be switched to automatic mode (for this to happen, this contact must be active).
Loading magazine on (option)	Contact starts automatic mode of the loading magazine.
Safety door closed	The feed movement through the loading magazine is executed only if this contact is active.
Follow-up with sub-spindle (optional)	M-command from the machine tool. If this signal is emitted before the collet is opened (push command), the next follow-up is converted from Part length internal, Part length external, to Part follow-up with sub-spindle .
Emergency stop of the machine tool	Potential-free contact of the lathe. This contact is included in the emergency-stop circuit of the loading magazine.

4.4 Assembly

Establish the power supply to the loading magazine

⚠ DANGER

Live components of the control cabinet

Personal injury by electrical shock due to contact with live components of the control cabinet.

This work is only allowed to be performed by a qualified electrician.

- **Turn off the machine tool before starting work on the main switch.**

⚠ DANGER

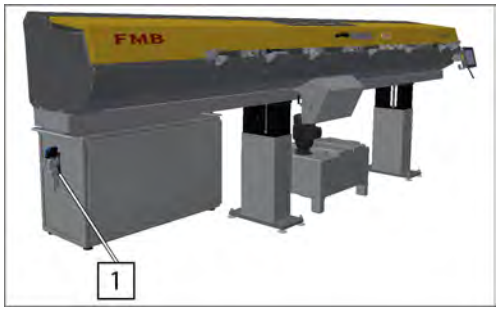
Damaged wires or plugs

Personal injury by electric shock due to damaged wires or plug-in connections.

- **Perform a visual check of wires and plug-in connections for damage before inserting them into the control cabinet.**

The main power supply of the loading magazine is connected to the loading magazine and attached to the front of the loading magazine.

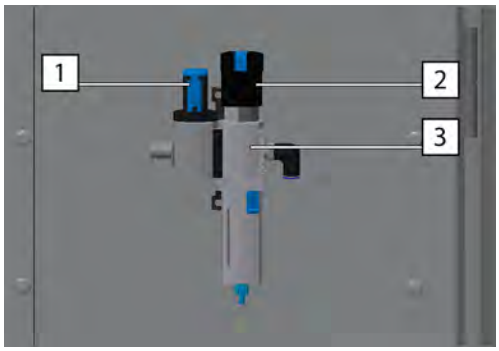
1. Turn off the machine tool before starting work on the main switch.
2. Check the electrical connection of the loading magazine and lathe. → *"Electrical connection of the loading magazine and lathe" on page 29*



3. Insert the main power supply cable of the loading magazine into the control cabinet of the lathe.
4. Check the input voltage of the loading magazine.
5. Insert the connecting pipe for the compressed air supply to the loading magazine into the maintenance unit 1.

Setting the supply of compressed air

Values for the supply of compressed air: → *"Technical data of the loading magazine" on page 12.*



1. Switch off the supply of compressed air on/off at the knob 1.
2. Set the supply of compressed air at the control unit 2.
3. Check the compressed air supply on the display 3.

Aligning the loading magazine

⚠ DANGER

Falling loading magazine

Personal injury due to squashing and impact by the falling loading magazine.

The loading magazine has a high centre of gravity. When aligning the loading magazine there is a danger of it tipping over.

- **Do not stay in the danger area.**
- **Observe the description on aligning and setting up the loading magazine in the operating instructions.**

⚠ DANGER

Moving pusher without protective equipment

Personal injury due to squashing and impact because of work on an unsecured pusher.

When aligning the loading magazine, it is necessary for technical reasons to move the pusher without the intended protective equipment. The danger area is not covered during this process. The moving pusher may catch extremities or people.

- **Do not stay in the danger area.**

⚠ CAUTION

Sharp knives of the material gripper

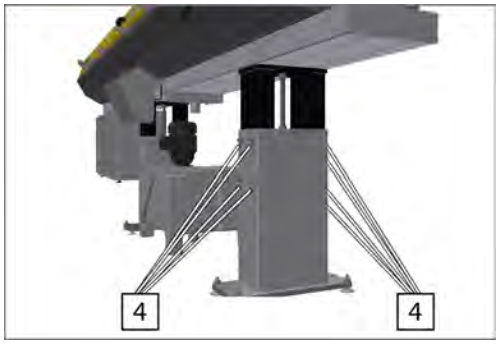
Cuts due to the sharp knives of the material gripper.

When working in the vicinity of the material gripper, there is a risk of cuts in the event of inattentiveness.

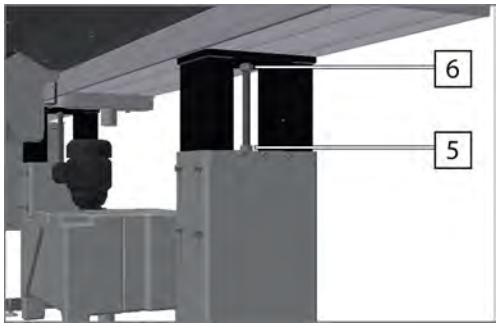
- **Wear safety gloves.**

→ The centering hole on the pusher of the loading magazine must align with the lathe spindle. Set and verify the alignment with an optical alignment aid. In the event of questions about this please contact FMB. ↗ *"Service contact details" on page 119*.

Correcting the height (roughly):



1. Loosen the clamping screws 4.

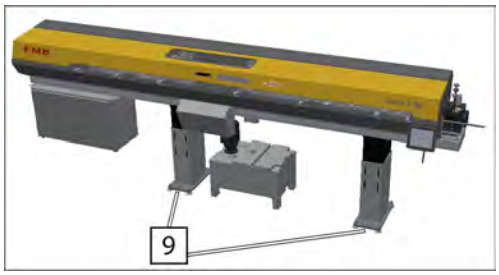


2. Loosen the lock nuts 5 of the threaded spindles 6.
3. Correct the height of the loading magazine with the threaded spindles 6.
4. Tighten the lock nuts 5 of the threaded spindles 6.
5. Tighten the clamping screws 4.

Correcting the position:

1. Loosen the lock nuts 7 of the threaded pins 8.
2. Correct the position of the loading magazine by adjusting the threaded pins 8.
3. Tighten the lock nuts 7 of the threaded pins 8.

Correcting the lateral position:

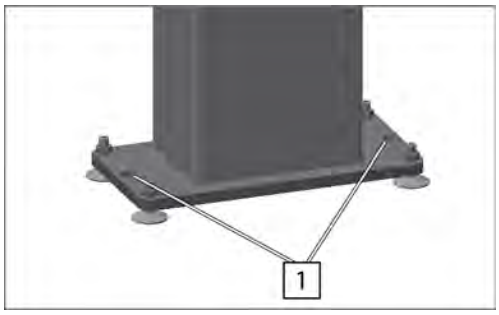


1. Apply the lever (e.g. crowbar) at the lifting points 9 and correct the side position.
2. Remove the optical alignment aids again.

Attaching the loading magazine to the floor

The number of attachment points to be used depends on the condition of the floor and the equipment of the loading magazine. In the event of uncertainty, please consult FMB.

To attach the loading magazine to the floor, appropriately designed drop-in anchors or adhesive anchors must be used. In the event of uncertainty, please consult FMB.



1. Aligning the loading magazine ↗ *"Aligning the loading magazine" on page 31*.
2. Drill the floor holes through the attachment points 1.
3. Fix attachment aids to the floor hole.
4. Screw the nuts to the attachment aid and tighten.

Attachment to machine tool

⚠ DANGER

Moving components of the loading magazine and the machine tool

Personal injury due to crushing, impact or entanglement by movements of the loading magazine and the machine tool.

When working on the unsecured interface (connection between loading magazine and machine tool released), the extremities may become trapped or entangled by the moving components of the loading magazine or machine tool.

- **Turn off the machine tool before starting work on the main switch.**

⚠ WARNING

Movement of the guide channel during assembly

Personal injury from crushing of upper limbs due to loose guide channel.

During commissioning, the movable guide channel is detached from the headstock of the lathe. This allows the movable guide channel to move freely. The high dead weight of the movable guide channel can present hazards for the operator.

- **Be aware that the guide channel is detached during assembly.**

⚠ CAUTION

Falling add-on parts

Personal injury due to squashing and impact by the falling add-on parts.

When setting up the loading magazine, various add-on parts have to be mounted at the interface between the loading magazine and the machine tool. They might fall down and hit body extremities.

- **Raise and secure add-on parts with suitable hoisting equipment.**

The attachment of the loading magazine to the machine tool is order-specific and dependent on the individual design of the interface between the loading magazine and the machine tool. Refer to the adapter set/attachment diagram for the precise procedure.
➚ *"Other applicable documents" on page 5*.

If you have any questions about how the loading magazine is attached to the machine tool, please contact FMB. ➚ *"Service contact details" on page 119*.

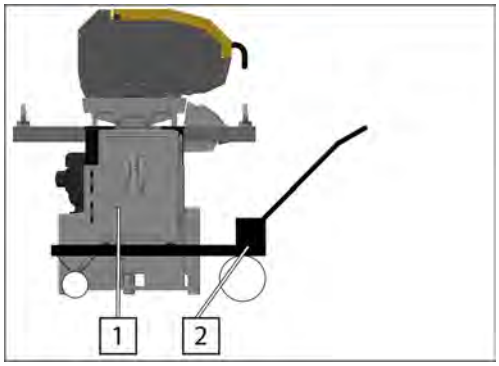
Removing the control cabinet from / attaching the control cabinet to the loading magazine

⚠ CAUTION

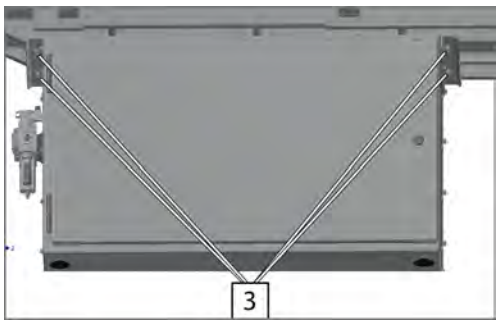
Falling control cabinet

Personal injury due to squashing and impact by the falling control cabinet.

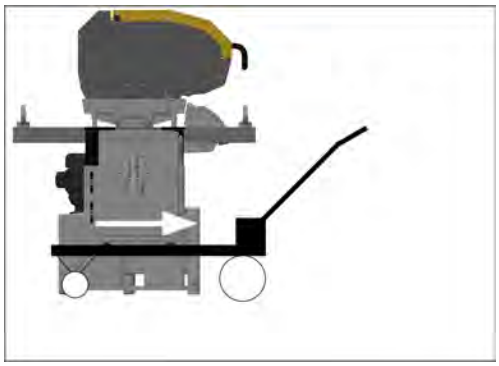
- **Observe the description on removing and fastening the control cabinet from the loading magazine in the operating instructions.**



1. Support the control cabinet 1 using suitable hoisting equipment 2.



2. Loosen the screws 3.



3. Shift the control cabinet in the direction indicated by the arrow and unhinge.
4. Lower the control cabinet and place it on the floor.
5. Attach the control cabinet to the loading magazine in reverse order.

Setting up and connecting the oil tank

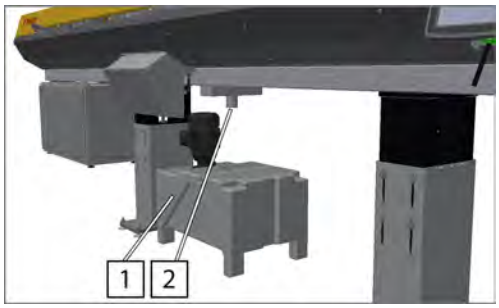
⚠ DANGER

Damaged wires or plugs

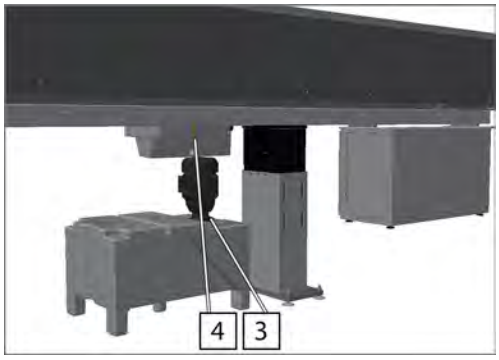
Personal injury by electric shock due to damaged wires or plug-in connections.

- **Perform a visual check of wires and plug-in connections for damage before inserting them into the control cabinet.**

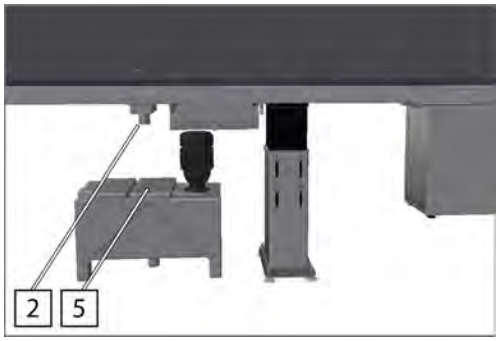
1. Turn off the machine tool before starting work on the main switch.



2. Place the oil tank [1] below the oil return pipe [2] using suitable hoisting equipment.



3. Connect the pump outlet [3] and the oil feed [4] to the oil feed line.
4. Secure the oil feed line outlet [3] and the oil feed [4] with tube clips.



5. Guide the oil return line into the oil return hole [5].
6. Insert the remaining end of the oil return line into the oil return outlet [2].
7. Secure the oil return line onto the oil return outlet [2] using a tube clip.
8. Insert the plug of the oil pump into the control cabinet (the socket is located outside the control cabinet) of the loading magazine.
9. Fill the oil tank. ↗ *"Filling the oil tank of the loading magazine" on page 110*.

4.5 Adjustments

Positional values to be set

During start-up, positional values have to be set once for the parameter settings. This concerns certain positions, which can only be calculated from the perspective of the whole system (the loading magazine installed on a lathe).

The following positional values have to be set:

- First insert travel
- Position front limit

Determining value for First insert travel

If the loading magazine is attached to the machine tool, which can be operated in the fixed headstock turning mode and sliding headstock turning mode, a separate value must be determined for each mode. In Settings, there is then a field for each mode (sliding headstock turning, fixed headstock turning).

1. Load a short material bar (approx. 1 m) ➚ *"Draw off remnant, eject it and draw on the new material bar" on page 70*.
2. Press the ☰ button.
3. SETUP Open .
4. Move the end of the material bar on the lathe side to the starting switch using the ▸ button.
5. Check and note the current position on the control panel.
6. **On lathes with a moving headstock:** Move the end of the material bar on the lathe side through the collet of the lathe until just before the guide sleeve of the lathe using the ▸ button.

   The position "just before the guide sleeve" has to be clarified, if necessary with FMB or with the lathe manufacturer.
7. **On lathes with a fixed headstock:** Move the end of the material bar on the lathe side through the collet of the lathe up to the cut-off position using the ▸ button.
8. Check and note the current position on the control panel.
9. Deduct the first position from the second position.
10. *The result is the value for the First insert travel.*
11. Press the ☰ button.
12. *"SETTINGS → Service settings → Position"*
13. Tap the First insert travel field.

    ➧ An input window opens.
14. Enter value for First insert travel .

    ➧ The value for First insert travel is determined.

Determining value for Position front limit

If the loading magazine is attached to the machine tool, which can be operated in the fixed headstock turning mode and sliding headstock turning mode, a separate value must be determined for each mode. In Settings, there is then a field for each mode (sliding headstock turning, fixed headstock turning).

1. **Only for lathes with a moving headstock:** Move the headstock of the spindle towards the guide sleeve to the end position.
2. Close the collet of the lathe.
3. Press the ☰ button.
4. SETUP Open .
5. Move the pusher with the clamping sleeve towards the lathe using the ▸ button until the clamping sleeve of the loading magazine is queued on the collet of the lathe.
6. Press the ☰ button.
7. *"SETTINGS → Service settings → Position"*
8. Tap the Position front limit field.
   ➡ An input window opens.
9. Enter the recorded value, minus the safety distance of 5 mm for Position front limit .
   ➡ The value for Position front limit is determined.

4.6 Settings

Distanceview

Distanceview is a display on the control panel, which is active after a pre-set time and is ended by pressing the touchscreen. On the Distanceview display, only the information relevant for production is shown on an enlarged display. This makes it possible to see the current statuses of the loading magazine, even from a distance.

Set the Distanceview

The display Distanceview is active, if the touchscreen is not pressed within the pre-set time. The time is set in seconds. If the time has been set to "0", the function is deactivated.

1. Press the ☰ button.
2. *"SETTINGS → System settings"*
3. Click on the field TIME DISTANCEVIEW.
   ➡ An input field opens.
4. Enter the value for the activation of the display.
   ➡ Distanceview has been set and is active after the expiry of the entered time.

Set the date and time

1. Press the ☰ button.

2. *‘SETTINGS → System settings”*
3. Click on the field SET DATE.
   ➡ An input field opens.
4. Enter the current date.
5. Click on the field SET TIME.
   ➡ An input field opens.
6. Enter the current time.

Changing language settings

1. Press the ☰ button.
2. *‘SETTINGS → System settings”*
3. Click on the respective language.

Set the unit of measure

1. Press the ☰ button.
2. *‘SETTINGS → System settings”*
3. Click on the respective unit of measure in the field UNIT OF MEASURE.
   ➡ The status display on the button turns green. The unit of measure has been set.

Setting the oil feed

The setting of the oil feed must be done during operation for rotating material bars.

1. Set the ball value on the oil pump to "off".
2. Open the ball valve slowly, until the material bar runs slowly.
   ➡ The oil feed has been set.

Position oilpump on / Position oilpump off Setting

The oil pump keeps the oil flowing in the guide channel. The flow of oil is necessary to guide the material bar optimally in the guide channel of the loading magazine. If the end of the material bar is in the transition section from the guide channel to the spindle of the lathe, the oil pump can be switched off. This prevents oil getting into the working area of the lathe.

On loading magazines with an active synchronization clutch, the "Position oilpump off" position is controlled automatically.

1. Press the ☰ button.
2. *‘SETTINGS → Basic settings → Parameter”*
3. Tap the Position oilpump on field.
   ➡ An input field opens.

4. Enter value for Position oilpump on .
5. Tap the Position oilpump off field.
   ➡ An input field opens.
6. Enter value for Position oilpump off .

4.7 Pre-set parameters

Pusher length Entering

Information about Pusher length: ➚ "Positions and traverse paths" on page 11.

This value is pre-set by the FMB. If necessary, the value can be adjusted.

1. Press the ☰ button.
2. *'SETTINGS → Service settings → Position"*
3. Tap the Pusher length field.
   ➡ An input field opens.
4. Enter the value for Pusher length .

Position storage Entering

Information about Position storage: ➚ "Positions and traverse paths" on page 11.

This value is pre-set by the FMB. If necessary, the value can be adjusted.

1. Press the ☰ button.
2. *'SETTINGS → Service settings → Position"*
3. Tap the Position storage field.
   ➡ An input field opens.
4. Enter the value for Position storage .

Speed Acceleration Short pusher forward Entering

The value Speed Acceleration Short pusher forward describes the speed at which the pusher moves to the Position storage value to pick up the material bar and push it into the area of the material gripper.

1. Press the ☰ button.
2. *'SETTINGS → Service settings → Speed"*
3. Scroll to the next page using the ↷ button.
4. Tap the Speed Acceleration Short pusher forward field.
   ➡ An input field opens.
5. Enter the value for Speed Acceleration Short pusher forward .

Limit pos. short pusher front Entering

Information about Limit pos. short pusher front see: ➚ "Positions and traverse paths" on page 11.

1. Press the ☰ button.
2. *'SETTINGS → Service settings → Position"*
3. Tap the Limit pos. short pusher front field.
   ➥ An input field opens.
4. Enter the value for Limit pos. short pusher front .

Enter Speed First insert low

The value Speed First insert low describes the speed at which the pusher moves to the Position front limit position.

This value is pre-set by the FMB. If necessary, the value can be adjusted.

1. Press the ☰ button.
2. *'SETTINGS → Service settings → Speed"*
3. Click on the field Speed First insert low.
   ➥ An input field opens.
4. Enter the value for Speed First insert low.

Enter Position open steady

Information about Position open steady: ➚ "Positions and traverse paths" on page 11.

This value is pre-set by the FMB. If necessary, the value can be adjusted.

1. Press the ☰ button.
2. *'SETTINGS → Service settings → Position"*
3. Click on the field Position open steady.
   ➥ An input field opens.
4. Enter the value for Position open steady.

Enter Position close steady

Information about Position close steady: ➚ "Positions and traverse paths" on page 11.

This value is pre-set by the FMB. If necessary, the value can be adjusted.

1. Press the ☰ button.
2. *'SETTINGS → Service settings → Position"*

3. Click on the field Position close steady.
   ➡ An input field opens.
4. Enter the value for Position close steady.

Enter the Speed Return from spindle

The value Speed Return from spindle describes the slower of the two speeds of the pusher when retracting. This is used if the pusher is in the area of the machine tool spindle.

This value is pre-set by the FMB. If necessary, the value can be adjusted.

1. Press the ☰ button.
2. *"SETTINGS → Service settings → Speed"*
3. Click on the field Speed Return from spindle.
   ➡ An input field opens.
4. Enter the value for Speed Return from spindle.

Enter the Pos. reverse rotation return

At the Pos. reverse rotation return position the speed of the pusher when returning out of the machine tool spindle is switched from Speed Return from spindle to the higher Speed Return high.

This value is pre-set by the FMB. If necessary, the value can be adjusted.

1. Press the ☰ button.
2. *"SETTINGS → Basic settings → Parameter"*
3. Click on the field Pos. reverse rotation return.
   ➡ An input field opens.
4. Enter the value for Pos. reverse rotation return.

Enter the Speed Return high

The value Speed Return high describes the faster of the two speeds of the pusher when retracting. This is used if the pusher is no longer in the area of the machine tool spindle.

This value is pre-set by the FMB. If necessary, the value can be adjusted.

1. Press the ☰ button.
2. *"SETTINGS → Service settings → Speed"*
3. Click on the field Speed Return high.
   ➡ An input field opens.
4. Enter the value for Speed Return high.

Enter the Position draw off

Information about Position draw off: ➚ "Positions and traverse paths" on page 11.

This value is pre-set by the FMB. If necessary, the value can be adjusted.

1. Press the ☰ button.
2. *'SETTINGS → Service settings → Position"*
3. Click on the field Position draw off.
   ➡ An input field opens.
4. Enter the value for Position draw off.

Set the Collet Signal

This function is available as an option.

This value is pre-set by the FMB. If necessary, the value can be adjusted.

1. Press the ☰ button.
2. *'SETTINGS → Service settings → Mode"*
3. Click on the field Collet Signal.
   ➡ A selection window opens.
4. Click on the respective selection.
   ➡ The chosen selection is shown in the field.

Set the Feed Stop Signal

This function is available as an option.

This value is pre-set by the FMB. If necessary, the value can be adjusted.

1. Press the ☰ button.
2. *'SETTINGS → Service settings → Mode"*
3. Click on the field Feed Stop Signal.
   ➡ A selection window opens.
4. Click on the respective selection.
   ➡ The chosen selection is shown in the field.

Length of guide module Entering

This value is pre-set by the FMB.

1. Press the ☰ button.
2. *'SETTINGS → Basic settings → Parameter"*

3. Tap the Length of guide module field.

   ➡ An input field opens.

4. Enter the value for Length of guide module .

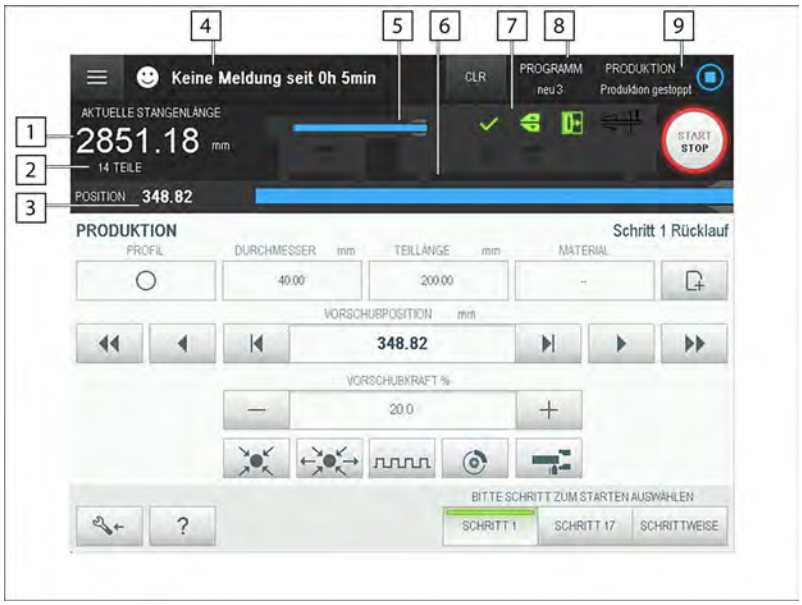
5 Control panel

5.1 Control panel, general

Layout

The control panel has a touchscreen, which is operated by touching it with a finger.

The upper, darker area of the screen provides information about the current statuses of the loading magazine and is visible in every menu. On the lower part of the screen the different menus are shown.



1	Display of the current material bar length
2	Number of possible parts
3	Display of the current position
4	Fault message display
5	Visualization of the current material bar length
6	Visualization of the current material bar length (enlarged image)
7	Display of the current status
8	Display of the loaded program
9	Product status (automatic mode)

Navigation

The contents of the control panel are split into several main menus. In the main menus you can reach the corresponding content page directly or via the sub-menus.

The way to reach the respective action in the control panel is described via a menu pathway in the guidelines of these operating instructions. The menu pathway shows the way via the menus to the content page which the action is on.

Example: *"Main menu → Sub menu 1 → Sub menu 2"*

If you selected the last menu, you are directly on the content page on which the action occurs. The guidelines then indicate the field which should be worked on, or the button which should be pressed.

Example: Field Click on the example field.

Some pages contain more content that can be shown on one page of the control panel. In this case the described field or button may be on one of the following pages. To reach any following pages, you have to scroll through the content page. The fact that content may be located on following pages is not considered in the operating instructions.

Scroll through content pages: ➚ *"Scroll through content page" on page 45*.

Scroll through content page

Access the following page

→ Access the following pages with .

Access the previous page

→ Access the previous page with .

Explanation of symbols

In the main menus PRODUCTION and SETUP there is a help page, which provides explanations of the symbols used.

Explanation of symbols Main menu PRODUCTION

1. Press the button.
2. Press PRODUCTION.
3. Press the ? button.

Explanation of symbols Main menu SETUP

1. Press the button.
2. Press SETUP.
3. Press the ? button.

6 Operation

6.1 Basic functions

Press the emergency stop button

The emergency stop button is located on the control panel. Pressing the emergency-stop button switches the outputs of the PLC output card off. The drive of the loading magazine is shut down. An error message appears on the display of the control panel.

→ Press the emergency stop button 1.

➡ The loading magazine stops.

Make the loading magazine ready for operation after the emergency stop

1. → Unlock the emergency stop button 1.
2. → Where necessary, cancel the emergency stop on the machine tool.

➡ The loading magazine is ready for operation

Switch on the loading magazine

→ Turn on the main switch of the machine tool.

➡ The loading magazine is ready for operation.

Switch off the loading magazine

During active production, the production can be stopped after the end of the machine tool's cycle, and the whole system can be switched off. When the system is switched on again, the processing is continued from the same place.

→ Turn off the main switch of the machine tool.

➡ The loading magazine is switched off.

Parts counter

The parts counter counts the number of parts produced. If a target value is reached, the parts counter stops the production. Product can only be restarted if the actual value has been reset. The target value of the parts counter can be adjusted ➚ *"Set the parts counter" on page 47*.

Set the parts counter

Once the target value has been reached, the parts counter stops production.

Production can only be restarted, if the actual value of the parts counter has been reset ➚ *"Reset the actual value of the parts counter" on page 47.*

Entering Parts counter Desired = "0" deactivates the parts counter.

1. Press the ☰ button.
2. *'SETTINGS → Basic settings → Parts counter"*
3. Click on the field Parts counter Desired.
   ➡ An input field opens.
4. Enter the value for the target number of units.
   ➡ The parts counter is activated with the entered target quantity.

Reset the actual value of the parts counter

1. Press the ☰ button.
2. *'SETTINGS → Basic settings → Parts counter"*
3. Click on the field Reset parts counter.
   ➡ The parts counter is reset.

6.2 Overview of selections

Selections

Selections are available for the functions and components of the loading magazine with several respective selection options. They can be selected if required to adjust the operation of the loading magazine.

Part follow-up

Selection	Selection option	Description
Part follow-up		
	Collet open, fixed speed	Push to the stop.
	Part length internal	Push without stop to the specified position.

Selection	Selection option	Description
	Part length external (optional)	As Part length internal. Feed values are, however, provided by the lathe.
	Part length internal+w/o tension	Push without stop to the specified position. Once the push command has been removed, the system is depressurized.
	Part length external+w/o tension (optional)	As Part length internal. Feed values are, however, provided by the lathe. Once the push command has been removed, the system is depressurized.

Remnant gripper

Selection	Selection option	Description
Remnant gripper		
	Standard	The remnant is removed and falls into the remnant bin.
	Push forward	The remnant is removed and pushed forward by the pusher onto the remnant flap. Caution: In this operating mode the max. remnant length is 480 mm.

With / without gripper

The selection With / without gripper allows the remnant to be removed from the working area of the lathe. For this purpose there are several operating modes available.

Selection	Selection option	Description
With / without gripper	with gripper	The material bar is clamped in a clamping sleeve on the loading magazine side. The remnant must be removed from the lathe side.
	without gripper	The material bar is moved by a centering sleeve on the loading magazine side. The material bar sits loosely in the centering sleeve. The remnant is pushed by the lathe spindle and removed from the working area of the lathe.
	without gripper with press upon	The material bar is clamped in a clamping sleeve on the loading magazine side. The remnant must be removed from the lathe side.

Selection	Selection option	Description
	with gripper with press upon + bar change	The material bar is clamped in a clamping sleeve on the loading magazine side. The remnant must be removed from the lathe side. During the processing of the last part a new material bar is loaded.

Interval insert

The interval insert improves the insertion of multi-sided material in the collet.

Selection	Selection option	Description
Interval insert	without return	Intermittent feed of short strokes.
	with return	Intermittent feed of short forward and backward strokes (recommended setting).

Steady

Selection	Selection option	Description
Steady		
	Steady roll. op. as push.pass.	During processing, the roller steady closes. When the pusher moves, the roller steady opens. As soon as the pusher is in the area of the roller steady, the roller steady remains open.
	Steady jaws op. as push.pass.	During processing, the jaw steady closes. When the pusher moves, the steady remains closed. As soon as the pusher is in the area of the jaw steady, the jaw steady remains open.
	Jaw steady closed when pushing	During processing, the jaw steady opens. When the pusher moves the jaw steady closes. As soon as the pusher is in the area of the jaw steady, the jaw steady remains open.
	R. steady on as pusher passes	During processing, the roller steady closes. When the pusher moves, the roller steady opens. As soon as the clamping sleeve of the pusher is in the area of the roller steady, the roller steady opens and remains open until the clamping sleeve is through the steady. After that, the roller steady closes during processing. When the pusher moves, the roller steady opens.

Selection	Selection option	Description
	J. steady on as pusher passes	During processing, the jaw steady closes. When the pusher moves, the jaw steady remains closed. As soon as the clamping sleeve of the pusher is in the area of the jaw steady, the jaw steady opens and remains open until the clamping sleeve is through the steady. The jaw steady then closes during processing. When the pusher moves, the jaw steady opens.

Mode sliding-fixed headstock

This selection is available only if the machine tool can be operated in both modes (Long turn and Short turn).

Selection	Selection option	Description
Mode sliding-fixed head-stock		
	Long turn	The parameters "First insert sliding head-stock turning" and "Position front end posi-tion sliding headstock turning" are used.
	Short turn	The parameters "First insert fixed headstock turning" and "Position front end position fixed headstock turning" are used.

First insert

Selection	Selection option	Description
First insert	Standard	The pusher moves to the First insert travel position.
	To stop	The pusher moves to the First insert travel position and then goes on to a stop in the lathe.

Draw on bar

Selection	Selection option	Description
Draw on bar	without first insert	The material bar is loaded and pressed.
	with first insert	The material bar is loaded and pressed. Then the pusher moves to the position end First insert.

Separation

Selection	Selection option	Description
Separation		
	with channel opened (standard)	The material bar is separated if the guide channel is open and rolls directly into the guide channel.
	with channel closed (special)	The material bar is separated if the guide channel is closed and is queued in the guide channel until it opens and then rolls inside.

Loading magazine

This function is available as an option.

Selection	Selection option	Description
Loading magazine	On	Normal work flow with the loading magazine.
	Off (chucker mode)	The loading magazine is switched off (collet mode).

6.3 Edit and manage programs

Program

Processing parameters are saved in the programs, which are valid for particular processing. During production, the program parameters of the loaded program are consulted.

For the creation of programs, a particular selection of program parameters is available, which can be set in the program editor. They are described under "Edit and manage programs".
↗ *Chapter 6.3 “Edit and manage programs” on page 51.*

In addition to the program parameters, general processing settings can be made which are not, however, saved in the programs. They are described under "Processing settings".
↗ *Chapter 6.4 “Processing settings” on page 56 .*

Creating a new program

1. Press the ☰ button.
2. *‘PROGRAM → NEW”*
   ➡ PROGRAM EDITOR opens.
3. Enter the program parameters.
4. Scroll to page 2 using the ↷ button.
5. Press the 🖫 button.
6. Give the program a name.
7. Press the NEW button.
   ➡ A new program is created.

Editing a program

1. Press the ☰ button.
2. Select PROGRAM.
3. Click on the program to be edited in the list.
   ➡ The selected program is marked blue.
4. Press Edit.
5. Enter the program parameters.
6. Press the 🖫 button.
7. Press the Overwrite button.
   ➡ The changes are saved.

Load program

To use a program in automatic mode, it must be loaded.

1. Press the ☰ button.
2. Select PROGRAM.
3. Click on the corresponding program in the list.
   ➡ The selected program is marked blue.
4. Press Open and load.
   ➡ The selected program is loaded and is used in automatic mode.

Enter the profile of the material bar

1. Open the program in the program editor. ➚ *"Creating a new program" on page 51* or ➚ *"Editing a program" on page 52*.
2. Click on the field Profile.
   ➡ A list of profiles opens.
3. Click on the profile to be processed.
4. Save changes with the 🖫 button.

Entering the material to be processed

1. Open the program in the program editor. ➚ *"Creating a new program" on page 51* or ➚ *"Editing a program" on page 52*.
2. Click on the field Material.
   ➡ An input field opens.
3. Enter the material to be processed.
4. Save changes with the 🖫 button.

Enter the diameter of the material bar to be processed

1. Open the program in the program editor. ➚ *"Creating a new program" on page 51* or ➚ *"Editing a program" on page 52*.
2. Click on the field Diameter.
   ➡ An input field opens.
3. Enter the diameter to be processed.
4. Save changes with the button.

Enter the Part length

The length dimension of the part to be produced is recorded under Part length. This is used by the control unit to automatically calculate the possible number of parts to be manufactured.

The length dimension of the part to be produced currently has to be adjusted.

1. Open the program in the program editor. ➚ *"Creating a new program" on page 51* or ➚ *"Editing a program" on page 52*.
2. Click on the field Part length 1.
   ➡ An input field opens.
3. Enter the part length.
4. Save changes with the button.

Enter the Feed force for part follow-up

The Feed force for part follow-up is the force with which the pusher moves the material bar.

This setting is also editable during production.

1. Open the program in the program editor. ➚ *"Creating a new program" on page 51* or ➚ *"Editing a program" on page 52*.
2. Click on the field Feed force.
   ➡ An input field opens.
3. Enter the feed force.
4. Save changes with the button.

Enter the Speed for part follow-up

The Speed for part follow-up is the speed with which the pusher moves the material bar.

1. Open the program in the program editor. ➚ *"Creating a new program" on page 51* or ➚ *"Editing a program" on page 52*.
2. Click on the field Speed.
   ➡ An input field opens.
3. Enter the speed.

4. Save changes with the button.

Enter the feed of the material bar

The pusher moves the material bar once per turned part by the set value in the working area of the lathe. The material bar is moved directly to the cut-off position.

1. Open the program in the program editor. *“Creating a new program” on page 51* or *“Editing a program” on page 52*.
2. Click on the field Feed 1.
   ➡ An input field opens.
3. Enter the feed of the material bar.
4. Save changes with the button.

Set the Selection option Part follow-up

1. Open the program in the program editor. *“Creating a new program” on page 51* or *“Editing a program” on page 52*.
2. Click on the field Part follow-up.
   ➡ A selection window opens.
3. Click on the selection option.
   ➡ The chosen selection option is shown in the field.
4. Save changes with the button.

Set the Selection option First insert

1. Open the program in the program editor. *“Creating a new program” on page 51* or *“Editing a program” on page 52*.
2. Click on the field First insert.
   ➡ A selection window opens.
3. Click on the selection option.
   ➡ The chosen selection option is shown in the field.
4. Save changes with the button.

Enter Feed force for first insert

Feed force for first insert is the force with which the pusher moves a new material bar into the working area of the lathe.

This value is pre-set by the FMB. If necessary, the value can be adjusted.

1. Open the program in the program editor. *“Creating a new program” on page 51* or *“Editing a program” on page 52*.
2. Click on the field Feed force for first insert.
   ➡ An input field opens.

3. Enter Feed force for first insert.
4. Save changes with the button.

Enter Feed force for press upon

The Feed force for press upon is the force with which the pusher presses the material bar against the clamping device.

This value is pre-set by the FMB. If necessary, the value can be adjusted.

1. Open the program in the program editor. ➚ *"Creating a new program" on page 51* or ➚ *"Editing a program" on page 52*.
2. Click on the field Feed force for press upon.
   ➥ An input field opens.
3. Enter Feed force for press upon.
4. Save changes with the button.

Enter Extension first insert

This function allows the extension of the First insert travel. The entered value is added to the First insert travel path.

This value is set to "0" (off) by FMB. If necessary, the value can be adjusted.

1. Open the program in the program editor. ➚ *"Creating a new program" on page 51* or ➚ *"Editing a program" on page 52*.
2. Click on the field Extension first insert.
   ➥ An input field opens.
3. Enter Extension first insert.
4. Save changes with the button.

Enter Speed sub-spindle

1. Open the program in the program editor. ➚ *"Creating a new program" on page 51* or ➚ *"Editing a program" on page 52*.
2. Click on the field Speed sub-spindle.
   ➥ An input field opens.
3. Enter Speed sub-spindle.
4. Save changes with the button.

Enter Feed force for sub-spindle

1. Open the program in the program editor. ➚ *"Creating a new program" on page 51* or ➚ *"Editing a program" on page 52*.
2. Click on the field Feed force for sub-spindle.
   ➥ An input field opens.

3. Enter Feed force for sub-spindle.
4. Save changes with the button.

6.4 Processing settings

Enter the selection option

1. Press the button.
2. *"SETTINGS → Basic settings → Selection option"*
3. Click on the field with the corresponding selection.
   ➡ A selection window opens.
4. Click on the selection option.
   ➡ The chosen selection option is shown in the field.

Enter Speed First insert

Speed First insert is the speed with which the pusher moves a new material bar into the working area of the lathe.

This value is pre-set by the FMB. If necessary, the value can be adjusted.

1. Press the button.
2. *"SETTINGS → Service settings → SPEED"*
3. Click on the field Speed First insert.
   ➡ An input field opens.
4. Enter the value for Speed First insert.

Correct. value after auto / door start enter

This function balances out minor position changes to the pusher, which may occur if the system is depressurized.

When the material bar is clamped by the lathe collet, there may be a slight distortion, which is caused by the feed force of the pusher. If the system is switched from automatic to manual operation, or the working area of the lathe is opened, the drive of the loading magazine switches off. The pressure on the pusher reduces and the distortion disappears. This causes a slight change in position of the pusher, which can then be corrected by the entered value.

This value is set to "0" (off) by FMB. If necessary, the value can be adjusted.

1. Press the button.
2. *"SETTINGS → Basic settings → Parameter"*
3. Tap the Correct. value after auto / door start field.
   ➡ An input field opens.
4. Enter value for Correct. value after auto / door start .

Enter the Max. bar return

If the material bar is clamped by the lathe collet, the pusher may be pressed back. This function reports a fault if the pusher is pressed back by more than the set value.

This value is set to "0" (off) by FMB. If necessary, the value can be adjusted.

1. Press the ☰ button.
2. *'SETTINGS → Basic settings → Parameter"*
3. Click on the field Max. bar return.
   ➡ An input field opens.
4. Enter the value for Max. bar return.

Enter the Max. part length follow-up

This function monitors the insert travel when pushing the material bar. If the set value is exceeded when pushing the part length, the loading magazine reports a fault.

This value is set to "0" (off) by FMB. If necessary, the value can be adjusted.

1. Press the ☰ button.
2. *'SETTINGS → Basic settings → Parameter"*
3. Click on the field Max. part length follow-up.
   ➡ An input field opens.
4. Enter the value for Max. part length follow-up.

Enter the Min. part length follow-up

This function monitors the insert travel when pushing the material bar. If the set value is not reached when moving the part length, the loading magazine reports a fault.

This value is set to "0" (off) by FMB. If necessary, the value can be adjusted.

1. Press the ☰ button.
2. *'SETTINGS → Basic settings → Parameter"*
3. Click on the field Min. part length follow-up.
   ➡ An input field opens.
4. Enter the value for Min. part length follow-up.

Max. remnant length Entering

This function limits the length of the remnant to the entered value. If this value is exceeded, an error message is output.

This value is set to "0" (off) by FMB. If necessary, the value can be adjusted.

1. Press the ☰ button.
2. *"SETTINGS → Service settings → Position"*
3. Tap the Max. remnant length field.
   ➡ An input field opens.
4. Determining the value for "Max. remnant length".

Enter the Collet open delay

This function delays the pushing of the material bar by the set value.

This value is set to "0" (off) by FMB. If necessary, the value can be adjusted.

1. Press the ☰ button.
2. *"SETTINGS → Basic settings → Parameter"*
3. Click on the field Collet open delay .
   ➡ An input field opens.
4. Enter the value for Collet open delay .

Enter the Collet close delay

This function delays the return of the material bar after being pushed by the set value. The pressure on the material bar is therefore maintained for longer.

This value is set to "0" (off) by FMB. If necessary, the value can be adjusted.

1. Press the ☰ button.
2. *"SETTINGS → Basic settings → Parameter"*
3. Click on the field Collet close delay.
   ➡ An input field opens.
4. Enter the value for Collet close delay.

Enter the Feed force for part follow-up with sub-spindle

1. Press the ☰ button.
2. *"SETTINGS → Service settings → Feed"*
3. Click on the field Feed force for part follow-up with sub-spindle.
   ➡ An input field opens.
4. Enter the value for Feed force for part follow-up with sub-spindle.

Enter the Speed for part follow-up sub-spindle

1. Press the ☰ button.
2. *'SETTINGS → Service settings → Speed"*
3. Click on the field Speed for part follow-up sub-spindle.
   ➡ An input field opens.
4. Enter the value for Speed for part follow-up sub-spindle.

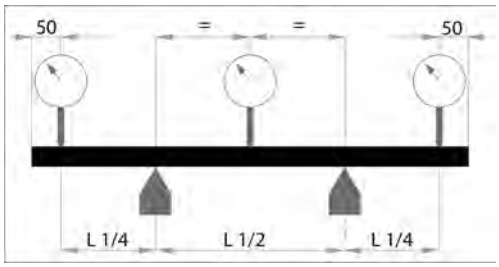
Switching on/off the headstock position determination

This function is optional and is only available if the shaft encoder - B4 is installed.

1. Press the ☰ button.
2. *'SETTINGS → Service settings → Mode"*
3. Tap the Rotary encoder -B4 field.
   ➡ A selection window opens.
4. Tap on the selection option.
   ➡ The chosen selection option is shown in the field.

6.5 Clamp material bars

Requirements on the material bars



The smooth running of the material bar depends on the material and the precise geometric shape. Straightness, roundness and imbalance are key for the possible speed. The importance of the straightness increases as the diameter gets bigger. In general, a deviation in the straightness of more than 0.5 mm / m has a negative effect on the smooth running.

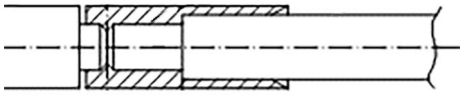
When measuring the straightness of the material bar proceed as shown in the following diagram. For the measurement, the material bar is rotated four times by 90°.

Requirements:

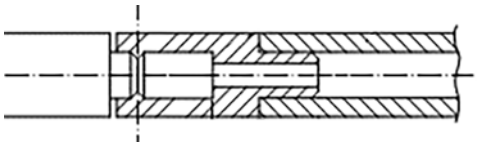
- The start of the material bar (on the lathe side) must be burr-free.
- The end of the material bar (on the loading magazine side) must not be bent or deformed.
- The material bar must be free of dirt.
- Bars with multiple sides must not have any circumferential chamfers on the lathe side.
- Material bars with a circular cross-section, whose diameter is closer to the pusher diameter, must be chamfered so that they can be interested easier into the clamping sleeve.

Clamping device

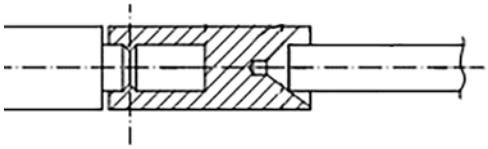
A clamping device is attached to the pusher to guide the end of the material bar. Depending on the application, either a clamping sleeve, a centering sleeve or a clamping mandrel is necessary. The size of the clamping device depends on the diameter of the material bar to be processed.



Clamping sleeve: Material bars are pushed into the clamping sleeve and clamped by a frictional connection to the external diameter.



Clamping mandrel: Raw material is pushed to the clamping mandrel and clamped o the inner diameter by a frictional connection.



Centering sleeve: Material bars are pushed onto the disc of the centering sleeve and moved without voltage.
The end of the material bar on the side of the loading magazine must have a centric chamfer. The chamfer must have minimum dimensions of 20% of the material bar diameter x 45° and a run-out accuracy of < 0.1 mm.

Changing the clamping device

⚠ WARNING

Falling material bar

Personal injury due to squashing and impact as a result of a falling material bar.

Material bars which are located on the lateral material storage, may fall down during conversion work.

- **Before conversion work, remove the material bars from the lateral material storage.**

⚠ CAUTION

Sharp knives of the material gripper

Cuts due to the sharp knives of the material gripper.

When working in the vicinity of the material gripper, there is a risk of cuts in the event of inattentiveness.

- **Wear safety gloves.**

⚠ CAUTION

Driven guide channel cover

Personal injury due to squashing and impact by the closing of the guide channel cover.

When working on the opened guide channel, the driven guide channel cover may squash extremities.

- **Insert the safety bolts when working on the open guide channel. Observe the description in the operating instructions.**

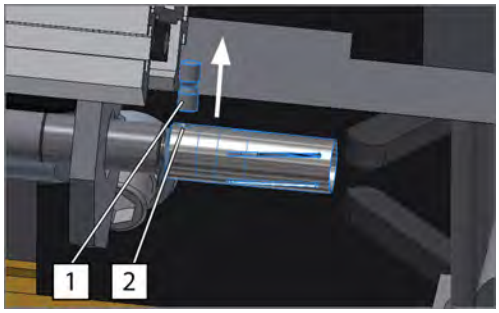
Clamping devices with a diameter < 25 mm are attached to the bearing insert with a cross pin.

Clamping devices with a diameter of 25 mm and above are attached to the bearing insert with three setscrews.

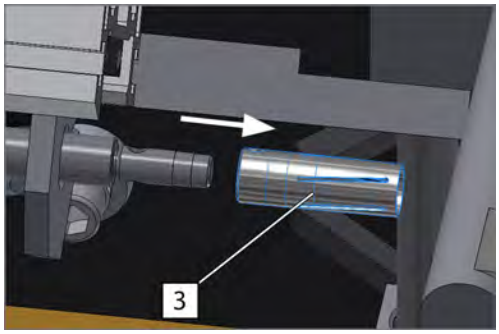
Clamping device with a diameter < 25 mm:

1. Press the ☰ button.

2. SETUP Opening.
3. Move the pusher right to the back using the button.
4. Swing out the pusher with the button.
5. Press the emergency stop button. *"Press the emergency stop button" on page 46*.
6. Switch off the compressed air supply. *"Switch the supply of compressed air on/off" on page 112*
7. Where necessary, obtain release from the lathe to open the cover.
8. Open the cover.
9. Secure the guide channel with safety bolts. *"Securing the guide channel with safety bolts" on page 76*



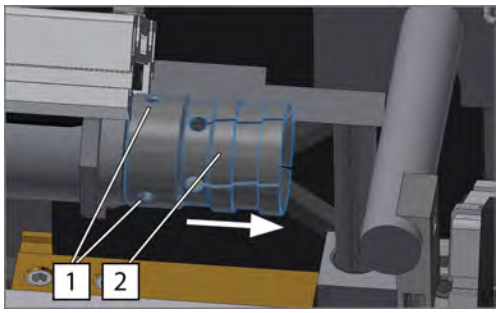
10. Push the cross pin [1] out of the hole [2] in the direction indicated by the arrow.



11. Pull the clamping device [3] in the direction indicated by the arrow and take it out.
12. Mount and attach the clamping device in reverse order.
13. Remove the safety bolts in the guide channel.
14. Close the cover.
15. Switch on the compressed air supply. *"Switch the supply of compressed air on/off" on page 112*
16. Unlock the emergency stop button. *"Make the loading magazine ready for operation after the emergency stop" on page 46*
17. Swing in the pusher using the button.
18. Acknowledge the error message using the CLR button.

Clamping device with a diameter of 25 mm and greater:

1. Press the button.
2. SETUP Opening.
3. Move the pusher all the way to the back using the button.
4. Swing out the pusher with the button.
5. Press the emergency stop button. *"Press the emergency stop button" on page 46*.
6. Switch off the compressed air supply. *"Switch the supply of compressed air on/off" on page 112*
7. Where necessary, obtain release from the lathe to open the cover.



8. Open the cover.
9. Secure the rear guide channel with safety bolts. → *"Securing the guide channel with safety bolts" on page 76*
10. Loosen the threaded pins 1 (3 pieces).
11. Pull the clamping device 2 in the direction indicated by the arrow and take it out.
12. Mount and attach the clamping device in reverse order.
13. Remove the safety bolts in the guide channel.
14. Close the cover.
15. Switch on the compressed air supply. → *"Switch the supply of compressed air on/off" on page 112*
16. Unlock the emergency stop button. → *"Make the loading magazine ready for operation after the emergency stop" on page 46*
17. Swing in the pusher using the button.
18. Acknowledge the error message using the CLR button.

The material bar diameter is greater than the inner diameter of the clamping sleeve

To clamp material bars with a diameter which is greater than the inner diameter of the clamping sleeve, the end of the material bar has to be rotated. This is necessary, for example, to make full use of the nominal diameter of the capacity adjustment set.

Here the following applies:

- The diameter of the chamfer must be adjusted to the inner diameter of the clamping sleeve.
- The length of the chamfer must be adjusted to the clamping width of the clamping sleeves (the material bar must be moved up to the stop in the clamping sleeve).
- The chamfer must have a concentricity of < 0.1 mm.

6.6 Feed material bars

Push the part several times

The functions push part once, push part twice, and push part three time, allow the material bar to be pushed repeatedly within one machining cycle of the lathe. Entering the corresponding feed values allows the material bar to be pushed into different positions three times.

- Push part once: → *"Set push part once:" on page 62*
- Push part twice: → *"Set push part twice" on page 63*
- Push part three times: → *"Set push part three times" on page 63*

Set push part once:

The pusher moves the material bar once per turned part in the working area of the lathe. The material bar is moved directly to the cut-off position.

1. Open the program in the program editor. ➚ *"Creating a new program" on page 51* or ➚ *"Editing a program" on page 52*.
2. Set the option Part follow-up to selection option Part length internal. ➚ *"Set the Selection option Part follow-up" on page 54* or ➚ *"Enter the selection option" on page 56*.
3. Click on the field Feed 1.

   ➥ An input field opens.
4. Enter the length of the first processing.
5. Scroll to the next page using the button.
6. Save changes.

Set push part twice

The pusher moves the material bar twice per turned part in the working area of the lathe. The material bar is moved to for the first Feed 1 machining operation. Then the material bar is moved to for the second Feed 2 machining operation. At Feed 2 the material bar is cut off.

1. Open the program in the program editor. ➚ *"Creating a new program" on page 51* or ➚ *"Editing a program" on page 52*.
2. Set selection Part follow-up to selection option Part length internal set. ➚ *"Set the Selection option Part follow-up" on page 54* or ➚ *"Enter the selection option" on page 56*.
3. Tap the Feed 1 field.

   ➥ An input field opens.
4. Enter the length of the first machining operation.
5. Scroll to the next page using the button.
6. Tap the Feed 2 field.

   ➥ An input field opens.
7. Enter the length of the second machining operation.
8. Save changes.

Set push part three times

The pusher moves the material bar into the work area of the lathe three times per turned part. The material bar is moved to for the first Feed 1 machining operation. Then the material bar is moved to for the second Feed 2 machining operation. The material bar is now moved to for the third Feed 3 machining operation. At Feed 3 the material bar is cut off.

1. Open the program in the program editor. ➚ *"Creating a new program" on page 51* or ➚ *"Editing a program" on page 52*.
2. Set selection Part follow-up to selection option Part length internal set. ➚ *"Set the Selection option Part follow-up" on page 54* or ➚ *"Enter the selection option" on page 56*.

3. Tap the Feed 1 field.
   ➡ An input field opens.
4. Enter the length of the first machining operation.
5. Scroll to the next page using the button.
6. Tap the Feed 2 field.
   ➡ An input field opens.
7. Enter the length of the second machining operation.
8. Tap the Feed 3 field.
   ➡ An input field opens.
9. Enter the length of the third machining operation.
10. Save changes.

Pushing the material bar with the sub-spindle of the machine tool

If the lathe sends a signal for the sub-spindle to the loading magazine, the saved values for speed and feeding force are automatically used when pushing with the sub-spindle.

If the lathe sends no signal for the sub-spindle to the loading magazine, the saved values are automatically used when pushing with the sub-spindle for speed and feeding force, which are also used for standard pushing. It may be necessary to adjust these values when working with the sub-spindle.

The values of loading magazine and machine tool should generally be set so that the loading magazine can follow the machine tool. The technical data for the loading magazine must be taken into account.

All the settings for working with the sub-spindle have to be set in a program.

1. Enter values for Feed force for sub-spindle and Speed sub-spindle . *“Enter Feed force for sub-spindle” on page 55* and *“Enter Speed sub-spindle” on page 55*.
2. Set selection Part follow-up to selection option Collet open, fixed speed .

Process two different part lengths

This function is available as an option.

This function means it is possible to process two different long parts. The second part length can be used to process shorter parts from the remnant. Once the remnant is too short for the first part length, the second part length is pushed.

1. Open the program in the program editor. *“Creating a new program” on page 51* or *“Editing a program” on page 52*.
2. Scroll to the next page using the button.

3. Click on the field Feed 1 part 2.
   ➡ An input field opens.
4. Enter the value for the shorter part.
5. Save changes.

Interval insert

The interval insert improves the insertion of multi-sided material into the lathe collet. During the first insert, the pusher performed intervals of short forward and backward strokes. The interval insert can be adjusted ↗ *"Set the Interval insert" on page 65*.

Set the Interval insert

The value Travel interval on determines the length of the intermittent movement.

The intermittent movement is set for the time of the forward and backward stroke.

Length of the intermittent movement:

1. Press the ☰ button.
2. *'SETTINGS → Service settings → Position"*
3. Click on the field Travel interval on.
   ➡ An input field opens.
4. Enter the value for Travel interval on.

Set the speed:

1. Press the ☰ button.
2. *'SETTINGS → Basic settings → Selection option"*
3. Click on the field Time on.
   ➡ A selection window opens.
4. Enter the value for Time on.
5. Click on the field Time off.
   ➡ A selection window opens.
6. Enter the value for Time off.

Set the interval insert selection:

1. Press the ☰ button.
2. *'SETTINGS → Basic settings → Selection option"*
3. Click on the field Interval insert.
   ➡ A selection window opens.
4. Click on the selection option.
   ➡ The chosen selection option is shown in the field.

Switching Interval insert on/off

1. Open the program in Programeditor. ➚ *“Creating a new program” on page 51* or ➚ *“Editing a program” on page 52*.
2. Click on the field Interval insert.
   ➡ A selection window opens.
3. Select a corresponding value.
   ➡ The selection is shown in the field.
4. Scroll to the next page using the button.
5. Save changes.

6.7 Processing phase

Loading the lateral material storage

⚠ WARNING

High weight of the material bar

Physical overloading when raising the material bar by a high weight.

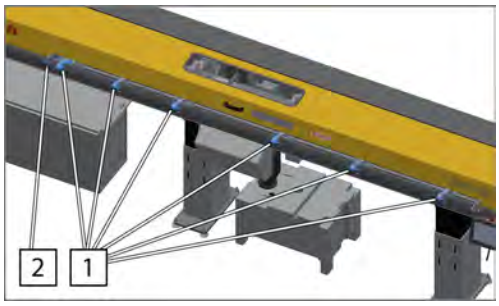
- **Observe the weight of the material bar.**
- **Use suitable hoisting equipment.**

⚠ WARNING

High weight of the material bar

Danger of squashing limbs when putting down the material bar.

- **Observe the weight of the material bar.**
- **Use suitable hoisting equipment.**



1. Store the material bar on the lateral material storage 1.
2. Move the material bar to the material stop 2.

Report of the last material bar

This function is available as an option.

If a signal light is build into the loading magazine, the yellow light flashes as soon as the report is displayed on the control panel.

If the last material bar has been loaded from the lateral material storage into the guide channel during production (automatic mode), a yellow light flashes on the control panel, with the text Last bar. This notifies the operator that the lateral material storage is empty.

Production

During production the automatic mode is active. The loading magazine works at the same speed as the lathe. The program flow is completed taking into account the set values.

Automatic mode can be started in two stages of the program flow. This requires the following conditions:

- Step 1: A remnant is in the clamping sleeve.
- Step 17: A material bar is drawn onto the clamping device and is located in the lathe, at the cut-off position.

If the requirements for automatic mode have not been met, they can be established by the following procedure:

- Remove remnant, eject it and draw on the new material bar → *"Draw off remnant, eject it and draw on the new material bar" on page 70*.

Start/stop production

1. Observe the prerequisites for automatic mode → *"Production" on page 67*.
2. Press the ☰ button.
3. Access PRODUCTION.
4. If there is a remnant in the clamping sleeve: press the S1 button.

   If a material bar is drawn onto the clamping device and is located in the cut-off position in the lathe, press the S17 button.
5. Start/stop production with the button.

Work flow for production (automatic mode)

Step	Description	Position
Step 1 Return	The pusher moves with the remnant from the lathe spindle into the area of the material gripper.	From the position: Pos. reverse rotation return at high speed End: Position draw off
Step 2 Close gripper blades	The material gripper closes and grabs the remnant.	-
Step 3 Draw off remnant	The pusher moves back again. The remnant is removed from the pusher.	End: Position rear limit
Step 4 Open gripper blades / guide channel	The guide channel opens. The material gripper opens. The remnant falls on the remnant flap.	-
Step 5 Open remnant flap	The remnant flap opens. The remnant falls into the remnant bin.	-

Step	Description	Position
Step 6 Close gripper blades / remnant flap	The remnant flap closes. The material gripper closes.	-
Step 7 Swing pusher out	The pusher swings out of the guide channel. The separation device moves down. A material bar rolls from the lateral material storage onto the separation device.	-
Step 8 Separate material	The separation device moves up. The material bar falls into the open guide channel.	-
Step 9 Close guide channel, short pusher forward	The guide channel closes. The short pusher moves the material bars forward.	End: Limit pos. short pusher front
Step 10 Short pusher return	The material bar remains in position. The short pusher moves back.	End: Position rear limit
Step 11 Swing pusher in	The pusher swings into the guide channel. The material gripper closes and grabs the material bar.	-
Step 12 Press upon	The pusher moves forward. The material bar is pressed onto the pusher.	End: Position draw off
Step 13 Open gripper blades	The material gripper opens.	-
Step 14 First insert	The pusher moves the material bar into the working area of the lathe.	End: First insert travel
Step 15 Start lathe	The loading magazine reports "End of bar change – program start" on the lathe. The collet of the lathe closes. The processing begins.	-
Step 16 Material cut-off	The processed part is cut off. The collet of the lathe opens.	-
Step 17 Part production	The pusher moves the material bar until the end of the material bar is reached.	End: Position front limit - Part length 1
Step 18 Insert last part	The pusher moves the material bar for the last time.	-
Step 19 Machine last part	The lathe operates the last part.	-
Step 20 Stop lathe / start bar change	A transfer time switch into step 1 is activated	-

Approaching Position rear limit

The "Position rear limit" position is reached when the pusher stops by itself while moving back and a value in the region of "0.00" (tolerance - 2.00 mm to + 1.50 mm) is displayed in the FEED POSITION field on the control panel.

1. Press the ☰ button.
2. Access SETUP.
3. Move the pusher back using the ◂ or ▸ button until the pusher stops.

Draw off and eject the remnant

The remnant is removed from the clamping sleeve and is ejected into the remnant bin.

1. Press the ☰ button.
2. Access SETUP.
3. Press the ⇆ button.
   - ➡ The status display on the button turns green during the action. Once the action has been completed, the status display on the button is switched off. The remnant lies in the remnant bin.

Removing the material bar from the loading magazine

This action is suitable for material bars, which cannot be removed from the remnant bin due to their length. When the action is performed, the material bar is removed from the clamping sleeve and placed in the guide channel. The material bar can then be removed from the guide channel.

⚠ WARNING

High weight of the material bar

Physical overloading when raising the material bar by a high weight.

- **Observe the weight of the material bar.**
- **Use suitable hoisting equipment.**

⚠ CAUTION

Driven guide channel cover

Personal injury due to squashing and impact by the closing of the guide channel cover.

When working on the opened guide channel, the driven guide channel cover may squash extremities.

- **Insert the safety bolts when working on the open guide channel. Observe the description in the operating instructions.**

⚠ CAUTION

Sharp knives of the material gripper

Cuts due to the sharp knives of the material gripper.

When working in the vicinity of the material gripper, there is a risk of cuts in the event of inattentiveness.

- **Wear safety gloves.**

1. Press the ☰ button.
2. Access SETUP.

3. Press the button.

   ➡ The status display on the button turns green during the action. Once the action has been completed, the status display on the button is switched off. The material bar is removed from the clamping device and lies in the guide channel.

4. Push the material out of the range of the material gripper with the button.

5. Move the pusher by pressing the button to Position rear limit.

6. Open the guide channel with the button.

7. Press the emergency stop button. ↗ *"Press the emergency stop button" on page 46*.

8. Switch off the supply of compressed air. ↗ *"Switch the supply of compressed air on/off" on page 112*

9. Where necessary, obtain release from the lathe to open the cover.

10. Open the cover.

11. Secure the guide channel with safety bolts. ↗ *"Securing the guide channel with safety bolts" on page 76*

12. If the material bar reaches into the working area of the lathe: pull the material bar by hand towards the loading magazine, until the material bar is fully on the loading magazine.

13. Remove the material bar from the loading magazine via the lateral material storage.

14. Remove the safety bolts in the guide channel.

15. Close the cover.

16. Switch on the compressed air supply. ↗ *"Switch the supply of compressed air on/off" on page 112*

17. Unlock the emergency stop button. ↗ *"Make the loading magazine ready for operation after the emergency stop" on page 46*

18. Close the guide channel with the button.

19. Acknowledge the error message by pressing the CLR button.

Draw off remnant, eject it and draw on the new material bar

When executing the action, the remnant is removed from the clamping sleeve, ejected into the remnant bin and then a new material bar is loaded from the lateral material storage and drawn onto the clamping device.

With this action, a first insert can be performed after the new bar has been drawn in. For this purpose, select the desired operating mode.

There must be a material bar in the lateral material storage.

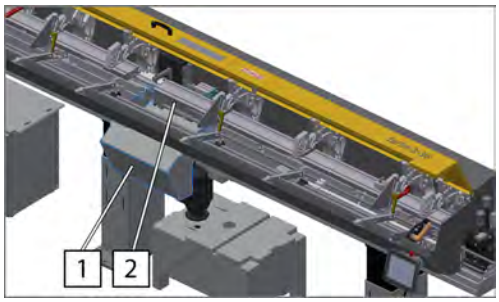
1. Press the button.

2. Access SETUP.
3. Press the button.
   ➡ The status display on the button turns green during the action. Once the action has been completed, the status display on the button is switched off.

   Without first insert: The remnant is located in the remnant bin. The new material bar is drawn in and is in the working room of the lathe.

   With first insert: The remnant is located in the remnant bin. The new material bar is drawn in and is in the working room of the lathe.

Remnant bin



The remnant bin 1 is located below the loading magazine and is accessible from the front. When the remnant flap 2 opens, the remnant lying on it falls down into the remnant bin and can be removed by the operator.

Removing the remnant

⚠ WARNING

Driven remnant flap

Personal injury due to squashing, impact or striking by the driven remnant flap.

When removing the remnant, the operator has to reach down into the remnant bin. If the operator reaches up, his/her hand would be in the area of the driven remnant flap.

- **When removing the remnants in the remnant bin, do not reach upwards.**

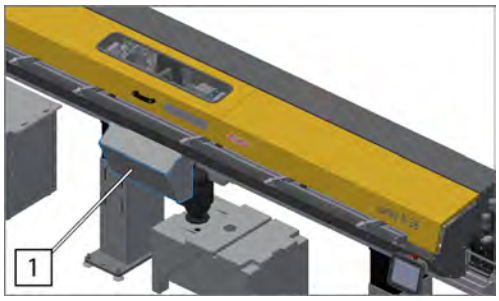
⚠ CAUTION

Further ejection of remnants into the remnant bin

Personal injury due to squashing and impact as a result of addition residual ejection.

When removing a remnant from the remnant bin, there may be a further ejection of remnants. The remnant may hit extremities in the remnant bin.

- **Do not reach into the remnant bin during the bar change.**
- **When removing a remnant, observe the current operating conditions of the loading magazine.**



→ Remove the remnant from the remnant bin 1.

Switching Steady on/off

1. Press the ☰ button.
2. Access PRODUCTION or SETUP.

Switch on:

1. Press the button.

➡ The status display on the button turns green. The steady is switched on.

Switch off:

1. Press the button.

➡ The status display on the button is off. The steady is switched off.

Switch the steady on/off as a insertion aid

1. Press the ☰ button.
2. Access PRODUCTION.

Switch on:

→ Press the button.

➡ The status display on the button turns green. The steady function as an insertion aid is switched on.

Switch off:

→ Press the button.

➡ The status display on the button is off. The steady function as an insertion aid is switched off.

Switching Interval insert on/off

1. Press the ☰ button.
2. Access PRODUCTION.

Switch on:

1. Press the button.

➡ The status display on the button turns green. The interval insert is switched on.

Switch off:

1. Press the button.

   ➡ The status display on the button is off. The interval insert is switched off.

Switching the brake function on/off

The brake function holds the pusher in position during the processing of the machine tool and prevents the pusher being pressed back.

1. Press the button.
2. Access PRODUCTION.

Switch on:

1. Press the button.

   ➡ The status display on the button turns green. The brake function is switched on.

Switch off:

1. Press the button.

   ➡ The status display on the button is off. The brake function is switched off.

Switching Oil pump on/off

1. Press the button.
2. Access SETUP.

Switch on:

1. Press the button.

   ➡ The status display on the button turns green. The oil pump is switched on.

Switch off:

1. Press the button.

   ➡ The status display on the button is off. The oil pump is switched off.

Eject the remnant

1. Press the button.
2. SETUP Opening.
1. Press and hold the button.

   ➡ The status display on the button turns green. The remnant flap is opened. The remnant falls down into the remnant bin.

2. Release the button.

➡ The status display on the button is off. The remnant flap is closed.

Close/open the material gripper

1. Press the button.
2. Access SETUP.

Close:

1. Press the button.

➡ The status display on the button turns green. The material gripper is closed.

Open:

1. Press the button.

➡ The status display on the button is off. The material gripper is opened.

Open/close the guide channel

1. Press the button.
2. Access SETUP.

Open:

1. Press the button.

➡ The status display on the button turns green. The front guide channel is opened.

Close:

1. Press the button.

➡ The status display on the button is off. The guide channel is closed.

Swing the pusher out/in

1. Press the button.
2. SETUP Opening.

Swing out:

Press the button.

➡ The status display on the button turns green. The pusher has been swung out.

Swing in:

Press the button.

➡ The status display on the button is off. The pusher has been swung in.

Switch discharge material bar oil on / off

This function is available as an option.

1. Press the ☰ button.
2. Access SETUP.

Switch on:

- Press the button.
  - ➡ The status display on the button turns green. The function discharging oil from the material bar is switched on.

Switch off:

- Press the button.
  - ➡ The status display on the button is off. The function discharging oil from the material bar is switched off.

7 Converting

7.1 General conversion

Capacity adjustment set

The loading magazine can process material bars of different diameters. Certain components of the loading magazine can be adjusted to the material bar diameter to be processed, to improve the guide of the material bar. These components are consolidated in a capacity adjustment set and can be exchanged if needed.

In the event of questions about the choice of the right capacity adjustment set, please contact FMB. ➚ *"Service contact details" on page 119*.

The capacity adjustment set includes:

- A pusher with a short pusher and flag
- Inserts of the guide channel
- Lifting plates

The guide jaws of the steady and the telescopic tube/guide tube/guide module can also be adapted to the material diameter to be processed. However, these are not part of the capacity adjustment set.

Depending on the extension version and the type of lathe, further adjustments may be necessary during conversion to other diameters. For information about this, see the extension-specific adapter set/attachment diagram. ➚ *"Other applicable documents" on page 5*.

Move to the conversion position

1. Press the ☰ button.
2. Access SETUP.
3. Press the ⤮ button.
   ➥ The status display on the button turns green. The conversion position is moved to (duration approx. 10s).

7.2 Guide channel

Securing the guide channel with safety bolts

⚠ **WARNING**

Falling material bar

Personal injury due to squashing and impact as a result of a falling material bar.

Material bars which are located on the lateral material storage, may fall down during conversion work.

– **Before conversion work, remove the material bars from the lateral material storage.**

⚠ CAUTION

Sharp knives of the material gripper

Cuts due to the sharp knives of the material gripper.

When working in the vicinity of the material gripper, there is a risk of cuts in the event of inattentiveness.

- **Wear safety gloves.**

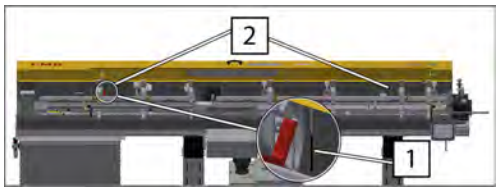
⚠ CAUTION

Driven guide channel cover

Personal injury due to squashing and impact by the closing of the guide channel cover.

When working on the opened guide channel, the driven guide channel cover may squash extremities.

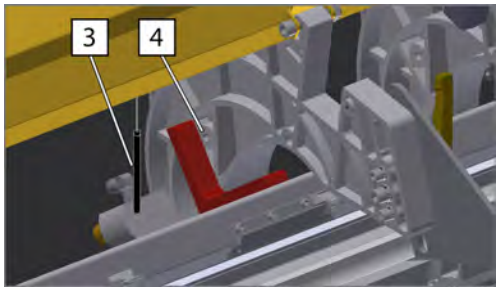
- **Insert the safety bolts when working on the open guide channel. Observe the description in the operating instructions.**



The safety bolts 1 are attached to a chain on the loading magazine and are in the position 2. The guide channel can open at the front, at the back or at the front and back. The safety bolts must secure the respective open position when working on the open guide channel (front only, rear only or front and rear).

Guide channel, front:

1. Press the ☰ button.
2. SETUP Press .
3. Open the front guide channel using the ▫ button.
4. Press the emergency stop button. ↗ *"Press the emergency stop button" on page 46*.
5. Switch off the compressed air supply. ↗ *"Switch the supply of compressed air on/off" on page 112*
6. Where necessary, obtain release from the lathe to open the cover.
7. Open the cover.



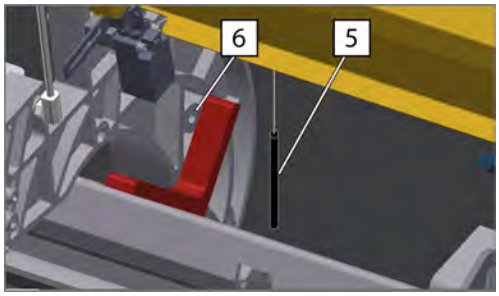
8. Insert the safety bolt 3 into the hole 4.

   ➡ The front guide channel is secured by a safety bolt.
9. After finishing work on the guide channel, remove the safety bolt 3 from the hole 4.
10. Close the cover.
11. Switch on the compressed air supply. ↗ *"Switch the supply of compressed air on/off" on page 112*
12. Unlock the emergency stop button. ↗ *"Make the loading magazine ready for operation after the emergency stop" on page 46*
13. Close the front guide channel using the ▫ button.
14. Acknowledge the error message by pressing the CLR button.

Guide channel, rear:

1. Press the ☰ button.
2. SETUP Press .

3. Open the rear guide channel using the button (swing out the pusher).
4. Press the emergency stop button. *"Press the emergency stop button" on page 46*.
5. Switch off the compressed air supply. *"Switch the supply of compressed air on/off" on page 112*
6. Where necessary, obtain release from the lathe to open the cover.
7. Open the cover.



8. Insert the safety bolt [5] into the hole [6].
   ➥ The rear guide channel is secured by a safety bolt.
9. After finishing work on the guide channel, remove the safety bolt [5] from the hole [6].
10. Close the cover.
11. Close the rear guide channel using the button (swing in the pusher).
12. Acknowledge the error message by pressing the CLR button.

Pusher

The pusher is driven by the drive motor and moves the material bar into the working area of the lathe. The diameter of the pusher depends on the diameter of the material to be processed and must be changed when processing different material thicknesses.

Depending on the spindle diameter of the lathe, it may be necessary for the spindle diameter to also be adjusted. In the event of questions about this please contact FMB. *"Service contact details" on page 119*

Changing the pusher and lifting plates

⚠ WARNING

Falling material bar

Personal injury due to squashing and impact as a result of a falling material bar.

Material bars which are located on the lateral material storage, may fall down during conversion work.

- **Before conversion work, remove the material bars from the lateral material storage.**

⚠ CAUTION

Sharp knives of the material gripper

Cuts due to the sharp knives of the material gripper.

When working in the vicinity of the material gripper, there is a risk of cuts in the event of inattentiveness.

- **Wear safety gloves.**

⚠ CAUTION

Driven guide channel cover

Personal injury due to squashing and impact by the closing of the guide channel cover.

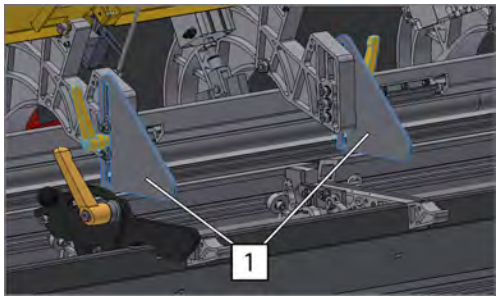
When working on the opened guide channel, the driven guide channel cover may squash extremities.

- **Insert the safety bolts when working on the open guide channel. Observe the description in the operating instructions.**

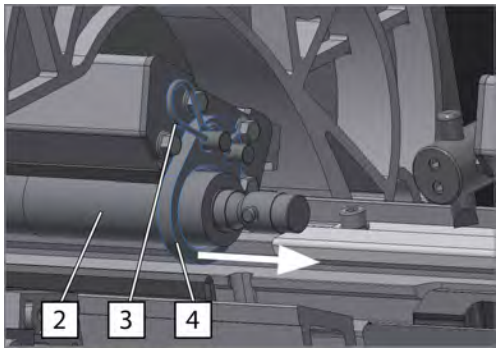
A second person is required to change the pusher, to support the work.

Removal:

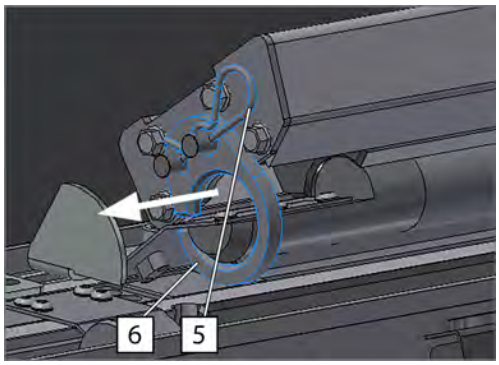
1. Press the ☰ button.
2. SETUP .
3. Approach the conversion position by pressing the ⤮ button. ➚ *"Move to the conversion position" on page 76*.
4. Press the emergency stop button. ➚ *"Press the emergency stop button" on page 46*.
5. Switch off the compressed air supply. ➚ *"Switch the supply of compressed air on/off" on page 112*
6. Where necessary, obtain release from the lathe to open the cover.
7. Open the cover.
8. Secure the front and rear guide channel with safety bolts. ➚ *"Securing the guide channel with safety bolts" on page 76*.



9. Set the holding-down device 1 in the area of the pusher to the highest position. ➚ *"Setting the height of the holding-down device" on page 104*.

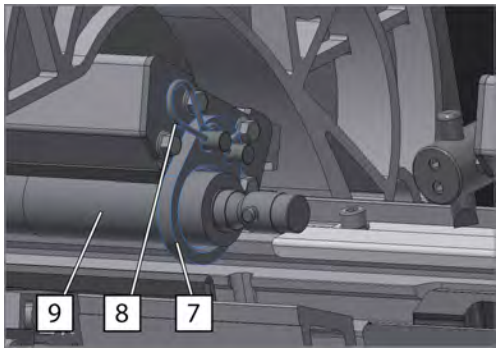


10. Hold the pusher 2 (second person).
11. Remove the safety device 3.
12. Remove the lifting plate (front) 4 in the direction indicated by the arrow.

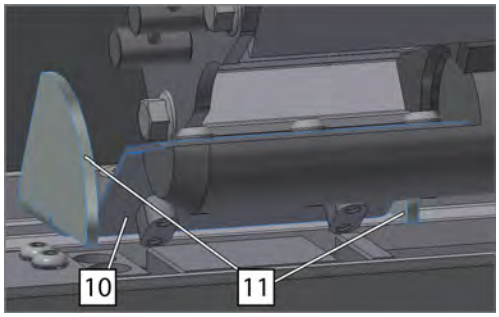


13. Remove the safety device [5].
14. Remove the lifting plate (rear) [6] in the direction indicated by the arrow.
15. Remove the pusher (second person).

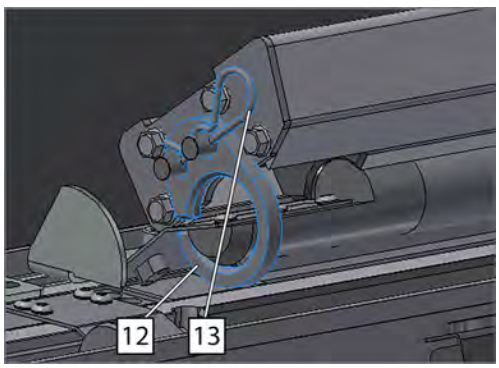
Installation:



1. Insert the lifting plate (front) [7].
2. Insert the safety device [8].
3. Insert the pusher [9] with the front end going into the lifting plate (front) [7] (second person).



4. Insert the rear end of the pusher with the short pusher flag [10] into the guide [11] and hold it (second person).



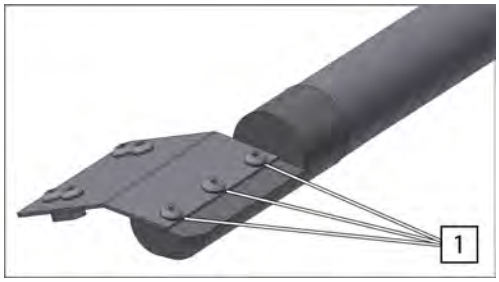
5. Insert the lifting plate (rear) [12].
6. Insert the safety device [13].

   ➥ The pusher is now installed.
7. Remove the safety bolts in the guide channel.
8. Close the cover.
9. Switch on the compressed air supply. ➚ *"Switch the supply of compressed air on/off" on page 112*
10. Unlock the emergency stop button. ➚ *"Make the loading magazine ready for operation after the emergency stop" on page 46*
11. Swing in the pusher using the button.
12. Close the guide channel using the button.
13. Acknowledge the error message using the CLR button.

Changing the short pusher flag

When changing the pusher, the flag from the old pusher is mounted onto the new pusher.

1. Detach the pusher. ↗ *"Changing the pusher and lifting plates" on page 78*.



2. Loosen and remove the screws 1 in the short pusher flag.
3. Remove the flag.
4. Attach the flag in reverse order.
5. Insert the pusher. ↗ *"Changing the pusher and lifting plates" on page 78*.

Changing the insert of the top rear guide channel

⚠ WARNING

Falling material bar

Personal injury due to squashing and impact as a result of a falling material bar.

Material bars which are located on the lateral material storage, may fall down during conversion work.

- **Before conversion work, remove the material bars from the lateral material storage.**

⚠ CAUTION

Sharp knives of the material gripper

Cuts due to the sharp knives of the material gripper.

When working in the vicinity of the material gripper, there is a risk of cuts in the event of inattentiveness.

- **Wear safety gloves.**

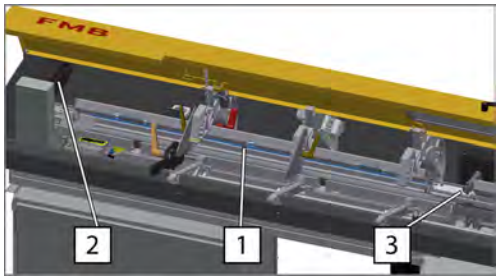
⚠ CAUTION

Driven guide channel cover

Personal injury due to squashing and impact by the closing of the guide channel cover.

When working on the opened guide channel, the driven guide channel cover may squash extremities.

- **Insert the safety bolts when working on the open guide channel. Observe the description in the operating instructions.**

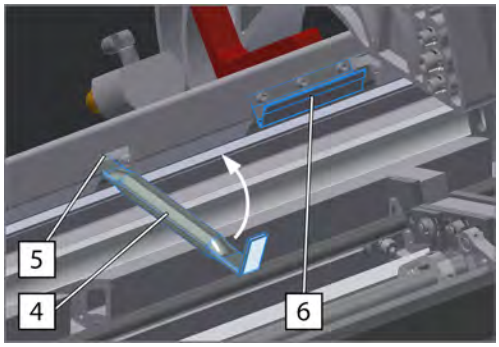


The top rear guide channel insert 1 is located in the area between the drive motor 2 and the material gripper 3

To change the top rear guide channel insert, the pusher must be removed. ↗ *"Changing the pusher and lifting plates" on page 78*.

1. Press the ☰ button.
2. SETUP Press .
3. Move to the conversion position by pressing the ⤮ button. ↗ *"Move to the conversion position" on page 76*.
4. Press the emergency stop button. ↗ *"Press the emergency stop button" on page 46*.

5. Switch off the compressed air supply. ➚ *"Switch the supply of compressed air on/off" on page 112*
6. Where necessary, obtain release from the lathe to open the cover.
7. Open the cover.
8. Secure the front and rear guide channel with safety bolts. ➚ *"Securing the guide channel with safety bolts" on page 76*



9. Place the insertion tool [4] with the short bend into the recess [5] in the upper guide channel.
10. Press and hold the insert safeguard [6] and move the insert tool [4] in the direction indicated by the arrow.

    ➥ The insert is now detached.
11. Remove the insert tool.
12. Remove the insert.
13. Place the new insert into the upper rear guide channel and press in firmly by hand.
14. Remove the safety bolts in the guide channel.
15. Close the cover.
16. Switch on the compressed air supply. ➚ *"Switch the supply of compressed air on/off" on page 112*
17. Unlock the emergency stop button. ➚ *"Make the loading magazine ready for operation after the emergency stop" on page 46*
18. Swing in the pusher using the button.
19. Close the guide channel with the button.
20. Acknowledge the error message by pressing the CLR button.

Changing the insert of the bottom rear guide channel

⚠ WARNING

Falling material bar

Personal injury due to squashing and impact as a result of a falling material bar.

Material bars which are located on the lateral material storage, may fall down during conversion work.

- **Before conversion work, remove the material bars from the lateral material storage.**

⚠ CAUTION

Sharp knives of the material gripper

Cuts due to the sharp knives of the material gripper.

When working in the vicinity of the material gripper, there is a risk of cuts in the event of inattentiveness.

- **Wear safety gloves.**

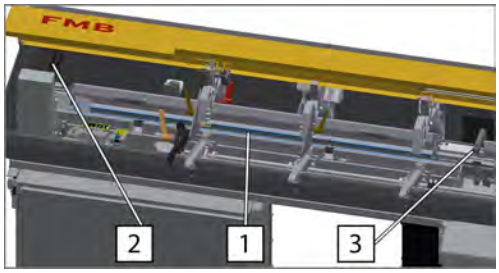
⚠ CAUTION

Driven guide channel cover

Personal injury due to squashing and impact by the closing of the guide channel cover.

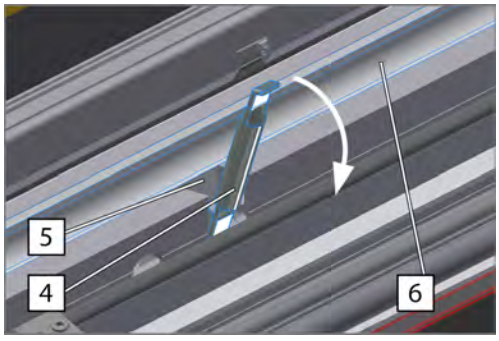
When working on the opened guide channel, the driven guide channel cover may squash extremities.

- **Insert the safety bolts when working on the open guide channel. Observe the description in the operating instructions.**



The bottom rear guide channel insert 1 is located in the area between the drive motor 2 and the remnant bin 3. The insert consists of several parts. The change is described using the example of one part of the insert, but has to be done for all the parts.

1. Press the ☰ button.
2. SETUP Press .
3. Move to the conversion position by pressing the ⤮ button. ↗ *"Move to the conversion position" on page 76*.
4. Press the emergency stop button. ↗ *"Press the emergency stop button" on page 46*.
5. Switch off the compressed air supply. ↗ *"Switch the supply of compressed air on/off" on page 112*
6. Where necessary, obtain release from the lathe to open the cover.
7. Open the cover.
8. Secure the front and rear guide channel with safety bolts. ↗ *"Securing the guide channel with safety bolts" on page 76*



9. Place the insertion tool 4 with the long bend into the recess 5 in the lower guide channel.
10. Move the insert tool 4 in the direction indicated by the arrow.

    ➡ The insert is now detached.
11. Remove the insert.
12. Remove the insert tool.
13. Place the new insert into the bottom rear guide channel and press in firmly by hand.
14. Remove the safety bolts in the guide channel.
15. Close the cover.
16. Switch on the compressed air supply. ↗ *"Switch the supply of compressed air on/off" on page 112*
17. Unlock the emergency stop button. ↗ *"Make the loading magazine ready for operation after the emergency stop" on page 46*
18. Swing in the pusher using the button.
19. Close the guide channel with the button.

20. Acknowledge the error message by pressing the CLR button.

Changing the insert of the top front guide channel

⚠ WARNING

Falling material bar

Personal injury due to squashing and impact as a result of a falling material bar.

Material bars which are located on the lateral material storage, may fall down during conversion work.

- **Before conversion work, remove the material bars from the lateral material storage.**

⚠ CAUTION

Sharp knives of the material gripper

Cuts due to the sharp knives of the material gripper.

When working in the vicinity of the material gripper, there is a risk of cuts in the event of inattentiveness.

- **Wear safety gloves.**

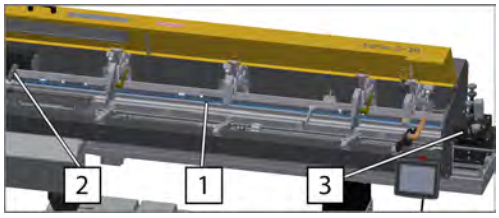
⚠ CAUTION

Driven guide channel cover

Personal injury due to squashing and impact by the closing of the guide channel cover.

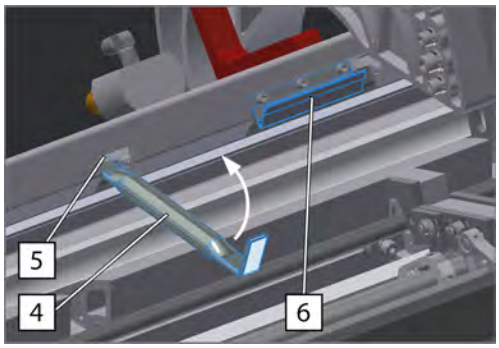
When working on the opened guide channel, the driven guide channel cover may squash extremities.

- **Insert the safety bolts when working on the open guide channel. Observe the description in the operating instructions.**



The top front guide channel insert 1 is located in the area between the material gripper 2 and the steady 3. The insert consists of several parts. The change is described using the example of one part of the insert, but has to be done for all the parts.

1. Press the ☰ button.
2. SETUP Press .
3. Move to the conversion position by pressing the ⤮ button. ↗ *"Move to the conversion position" on page 76*.
4. Press the emergency stop button. ↗ *"Press the emergency stop button" on page 46*.
5. Switch off the compressed air supply. ↗ *"Switch the supply of compressed air on/off" on page 112*
6. Where necessary, obtain release from the lathe to open the cover.
7. Open the cover.
8. Secure the front and rear guide channel with safety bolts. ↗ *"Securing the guide channel with safety bolts" on page 76*



9. Place the insertion tool [4] with the short bend into the recess [5] in the upper guide channel.
10. Press and hold the insert safeguard [6] and move the insert tool [4] in the direction indicated by the arrow.

    ➡ The insert is now detached.
11. Remove the insert tool.
12. Remove the insert.
13. Place the new insert into the top front guide channel and press in firmly by hand.
14. Remove the safety bolts in the guide channel.
15. Close the cover.
16. Switch on the compressed air supply. ↗ *"Switch the supply of compressed air on/off" on page 112*
17. Unlock the emergency stop button. ↗ *"Make the loading magazine ready for operation after the emergency stop" on page 46*
18. Swing in the pusher using the button.
19. Close the guide channel with the button.
20. Acknowledge the error message by pressing the CLR button.

Changing the remnant flap insert

⚠ WARNING

Falling material bar

Personal injury due to squashing and impact as a result of a falling material bar.

Material bars which are located on the lateral material storage, may fall down during conversion work.

- **Before conversion work, remove the material bars from the lateral material storage.**

⚠ CAUTION

Sharp knives of the material gripper

Cuts due to the sharp knives of the material gripper.

When working in the vicinity of the material gripper, there is a risk of cuts in the event of inattentiveness.

- **Wear safety gloves.**

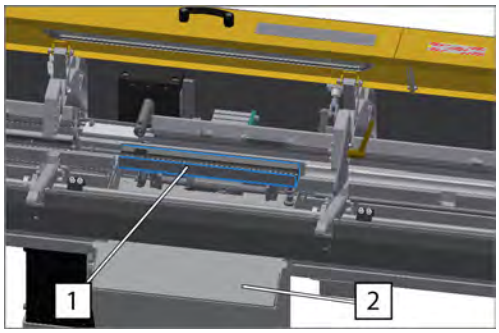
⚠ CAUTION

Driven guide channel cover

Personal injury due to squashing and impact by the closing of the guide channel cover.

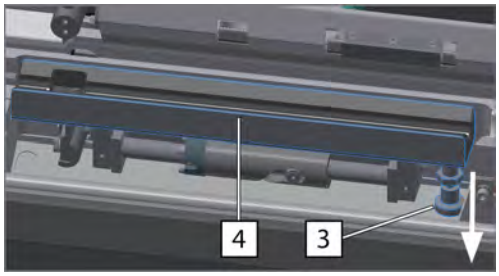
When working on the opened guide channel, the driven guide channel cover may squash extremities.

- **Insert the safety bolts when working on the open guide channel. Observe the description in the operating instructions.**

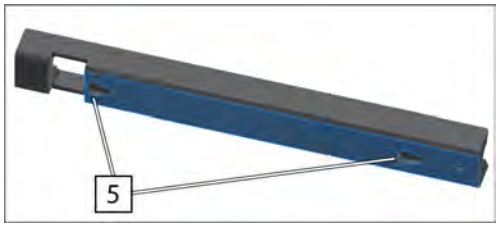


The remnant flap insert 1 is located in the guide channel at the height of the remnant bin 2.

1. Press the ☰ button.
2. SETUP Press .
3. Move to the conversion position by pressing the ⤮ button. ➚ *"Move to the conversion position" on page 76*.
4. Press the emergency stop button. ➚ *"Press the emergency stop button" on page 46*.
5. Switch off the compressed air supply. ➚ *"Switch the supply of compressed air on/off" on page 112*
6. Where necessary, obtain release from the lathe to open the cover.
7. Open the cover.
8. Secure the front and rear guide channel with safety bolts. ➚ *"Securing the guide channel with safety bolts" on page 76*



9. Pull and hold the insert safeguard 3 in the direction indicated by the arrow.
10. Push the remnant flap insert 4 towards the insert safeguard and remove it from above.



11. Place the new remnant flap insert with the holes 5 on the insert pegs in the guide channel.
12. Push the remnant flap insert towards the material gripper until the insert safeguard 3 locks into place.
13. Remove the safety bolts in the guide channel.
14. Close the cover.
15. Switch on the compressed air supply. ➚ *"Switch the supply of compressed air on/off" on page 112*
16. Unlock the emergency stop button. ➚ *"Make the loading magazine ready for operation after the emergency stop" on page 46*
17. Swing in the pusher using the button.
18. Close the guide channel with the button.
19. Acknowledge the error message by pressing the CLR button.

Changing the insert of the bottom front guide channel

⚠ WARNING

Falling material bar

Personal injury due to squashing and impact as a result of a falling material bar.

Material bars which are located on the lateral material storage, may fall down during conversion work.

- **Before conversion work, remove the material bars from the lateral material storage.**

⚠ CAUTION

Sharp knives of the material gripper

Cuts due to the sharp knives of the material gripper.

When working in the vicinity of the material gripper, there is a risk of cuts in the event of inattentiveness.

- **Wear safety gloves.**

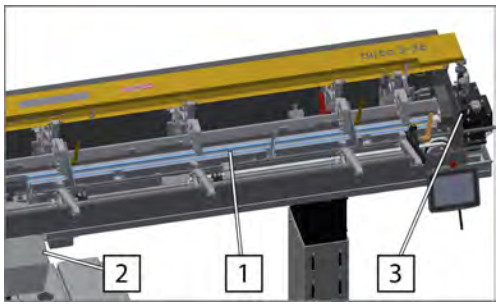
⚠ CAUTION

Driven guide channel cover

Personal injury due to squashing and impact by the closing of the guide channel cover.

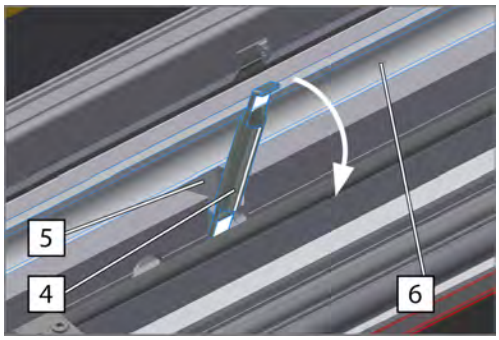
When working on the opened guide channel, the driven guide channel cover may squash extremities.

- **Insert the safety bolts when working on the open guide channel. Observe the description in the operating instructions.**



The bottom front guide channel insert 1 is located in the area between the remnant bin 2 and the steady 3. The insert consists of several parts. The change is described using the example of one part of the insert, but has to be done for all the parts.

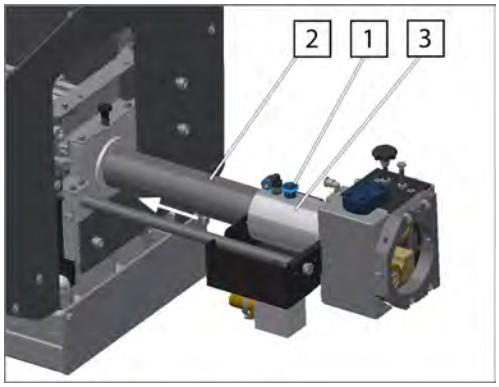
1. Press the ☰ button.
2. SETUP Press .
3. Move to the conversion position by pressing the ⤮ button. ↗ *"Move to the conversion position" on page 76*.
4. Press the emergency stop button. ↗ *"Press the emergency stop button" on page 46*.
5. Switch off the compressed air supply. ↗ *"Switch the supply of compressed air on/off" on page 112*
6. Where necessary, obtain release from the lathe to open the cover.
7. Open the cover.
8. Secure the front and rear guide channel with safety bolts. ↗ *"Securing the guide channel with safety bolts" on page 76*



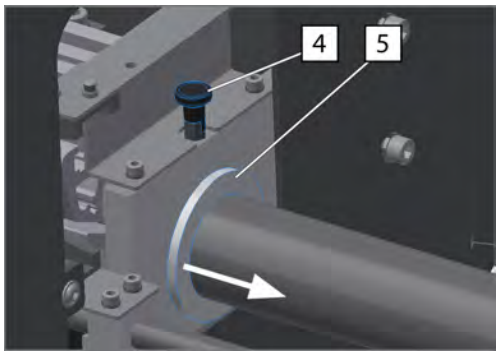
9. Place the insertion tool [4] with the long bend into the recess [5] in the lower guide channel.
10. Move the insert tool [4] in the direction indicated by the arrow.
    ➥ The insert is now detached.
11. Remove the insert.
12. Remove the insert tool.
13. Place the new insert into the bottom front guide channel and press in firmly by hand.
14. Remove the safety bolts in the guide channel.
15. Close the cover.
16. Switch on the compressed air supply. ↗ *"Switch the supply of compressed air on/off" on page 112*
17. Unlock the emergency stop button. ↗ *"Make the loading magazine ready for operation after the emergency stop" on page 46*
18. Swing in the pusher using the button.
19. Close the guide channel with the button.
20. Acknowledge the error message by pressing the CLR button.

Changing the guide module

1. Press the button.
2. SETUP .
3. Approach the conversion position by pressing the button. ↗ *"Move to the conversion position" on page 76*.
4. Press the emergency stop button. ↗ *"Press the emergency stop button" on page 46*.
5. Switch off the compressed air supply. ↗ *"Switch the supply of compressed air on/off" on page 112*
6. Where necessary, obtain release from the lathe to open the cover.
7. Open the cover.
8. Secure the front and rear guide channel with safety bolts. ↗ *"Securing the guide channel with safety bolts" on page 76*



9. Pull the index pin [1] and rotate through 30°.
    ➥ The index pin is in the open position
10. Pull the guide module [2] out of the adapter set [3] in the direction of the arrow.



11. Pull the index pin [4] and rotate through 30°.
    ➡ The index pin is in the open position
12. Remove the guide sleeve [5] in the direction of the arrow.

13. Remove the guide module [6] in the direction of the arrow.
14. Attach the guide module in reverse order. It must be ensured that the locking points for the index pins are in the correct position to ensure that the index pins lock.
15. Remove the safety bolts in the guide channel.
16. Close the cover.
17. Switch on the compressed air supply. ➚ *"Switch the supply of compressed air on/off" on page 112*
18. Unlock the emergency stop button. ➚ *"Make the loading magazine ready for operation after the emergency stop" on page 46*
19. Swing in the pusher using the button.
20. Close the guide channel using the button.
21. Acknowledge the error message using the CLR button.

7.3 Reduction

Reduction, general

The transition area between the loading magazine and the machine tool and the machine tool spindle can be reduced. The procedure is order-specific. The information on "Attachment to the machine tool" must be observed here. ➚ *"Attachment to machine tool" on page 33*.

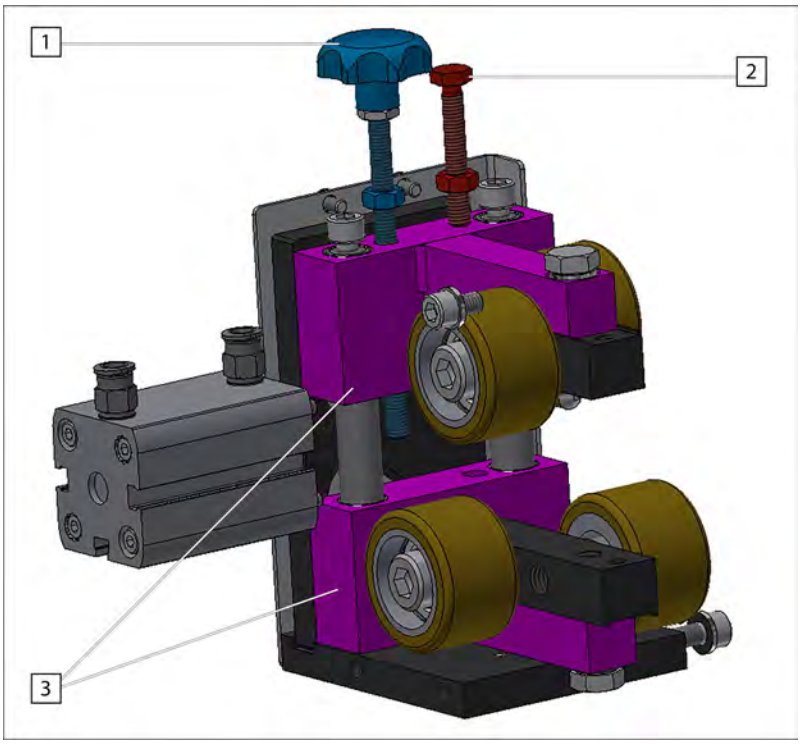
7.4 Steady

Steady

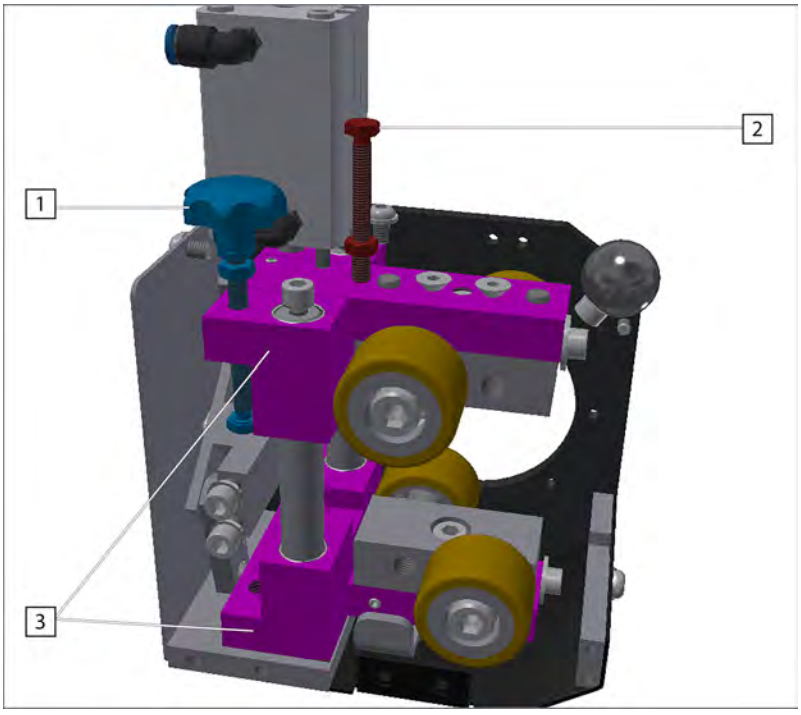
The design of the steady is dependent on the spindle diameter of the machine tool. The steady is supplied in the following versions:

- Material passage up to 26 mm
- Material passage up to 38 mm

The procedure for working on the steady is dependent on the design.



Steady with a material passage of up to diameter 26 mm



Steady with a material passage of up to diameter 38 mm

The steady moves the material bar during processing. For this purpose, the material guide of the steady can be equipped with jaws (jaw steady) or rollers (roller steady). To guide the material bar, the steady is closed. In open condition, the material bar and pusher can pass.

The open and closed position can be adjusted via the end stops. When closing, the steady moves to the desired material bar diameter and guides the material bar. When opening, the steady moves

the material guide apart so that the pusher can pass. The stop screw [1] limits the material guide [3] on closing. The stop screw [2] limits the material guide [3] on opening ➚ *"Setting the steady (material passage 26 mm) to the material bar diameter" on page 91*, ➚ *"Setting the steady (material passage 38 mm) to the material bar diameter" on page 92*.

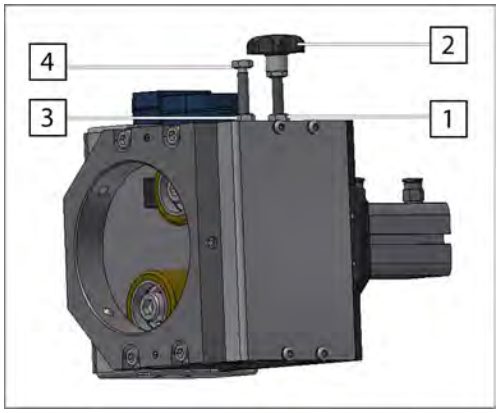
The steady can also be set so that the material guide can be adjusted to the current material thickness when closed. For this purpose, the pressure is reduced at the pressure control valve of the steady. With the right setting, the material guide can adjust itself automatically. In this case the steady opens and closes to the maximum. When closing, the steady stops as soon as the material guide [3] reaches the surface of the material bar. The material bar is then guided without excessive wear. The stop screws [1] and [2] have no function and are set so that the material guide can close or open to the maximum..

Setting the steady (material passage 26 mm) to the material bar diameter

The described procedure refers to the steady with a material passage of up to 26 mm.

The steady can be used as a roller steady or a jaw steady. Depending on the application, rollers or jaws have to be installed to guide the material.

To be able to manually open and close the steady, the following setting must be made for the duration of the set-up process, regardless of the later use: selection Steady, Selection option Jaw steady.



The path of the rollers when the steady is closed is set using the stop screw [2].

The path of the rollers when the steady is opened is set using the stop screw [4]. This is only necessary in case of pusher vibrations ➚ *"Guide the pusher with the steady (material passage 26)" on page 94*, ➚ *"Guiding the pusher with the steady (material passage 38 mm)" on page 95*. In all other cases, the stop screw [4] is completely unscrewed, so that the steady opens fully in the open position.

1. Draw the material bar with the respective diameter onto the clamping sleeve. ➚ *"Draw off remnant, eject it and draw on the new material bar" on page 70*.
2. selection Steady, Selection option Jaw steady set. ➚ *"Enter the selection option" on page 56*.
3. Press the ☰ button.
4. SETUP .
5. Close the steady by pressing the button.
   ➡ The status display on the button turns green. The steady is closed.

6. Loosen the lock nut 3.
7. Turn the stop screw 4 to the left until the stop screw 4 is completely unscrewed.
8. Open the steady using the button.
   ➡ The status display on the button is off. The steady is open.
9. Turn the stop screw 4 to the right until you feel resistance.
10. Tighten the lock nut 3
    ➡ The end stop for the open position is set
11. Loosen the lock nut 1.
12. Turn the stop screw 2 to the left until the stop screw 2 is completely unscrewed.
13. Move the material bar into the lathe using the button.
14. Clamp the material bar in the lathe.
15. Close the steady by pressing the button.
    ➡ The status display on the button turns green. The steady is closed.
16. Turn the stop screw 2 to the right until you feel resistance.
    ➡ The stop screw 2 is touching the end stop.
17. Open the steady using the button.
    ➡ The status display on the button is off. The steady is open.
18. Turn the stop screw 2 approx. half a turn clockwise.
19. Tighten the lock nut 1.
    ➡ The end stop for the closed position is set.
20. **When used as a roller steady:** selection Steady, Selection option Roller steady set. ➚ *"Enter the selection option" on page 56*.
21. **When used as a jaw steady:** selection Steady, Selection option Jaw steady set. ➚ *"Enter the selection option" on page 56*.

Setting the steady (material passage 38 mm) to the material bar diameter

The described procedure refers to the steady with a material passage of up to 38 mm.

The steady can be used as a roller steady or a jaw steady. Depending on the application, rollers or jaws may need to be installed to guide the material.

To be able to manually open and close the steady, the following setting must be made for the duration of the set-up process, regardless of the later use: selection Steady, Selection option Jaw steady.

The path of the rollers when the steady is closed is set with the stop screw [2].

The path of the rollers when the steady is opened is set with the stop screw [4]. This is only necessary in case of pusher vibrations ↗ *"Guide the pusher with the steady (material passage 26)" on page 94*, ↗ *"Guiding the pusher with the steady (material passage 38 mm)" on page 95*. In all other cases, the stop screw [4] is completely unscrewed, so that the steady opens fully in open position.

1. Pull the material bar with the relevant diameter onto the clamping sleeve. ↗ *"Draw off remnant, eject it and draw on the new material bar" on page 70*.
2. selection Steady, Selection option Jaw steady set. ↗ *"Enter the selection option" on page 56*.
3. Press the button.
4. SETUP press.
5. Close the steady by pressing the button.
   - ➡ The status display on the button turns green. The steady is closed.
6. Loosen the lock nut [3].
7. Turn the stop screw [4] to the left until the stop screw [4] is completely unscrewed.
8. Open the steady using the button.
   - ➡ The status display on the button is off. The steady is open.
9. Turn the stop screw [4] to the right until you feel resistance.
10. Tighten the lock nut [3]
    - ➡ The end stop for the open position is set
11. Loosen the lock nut [1].
12. Turn the stop screw [2] clockwise as far as it will go.
13. Move the material bar into the lathe using the button.
14. Clamp the material bar in the lathe.
15. Close the steady by pressing the button.
    - ➡ The status display on the button turns green. The steady is closed.
16. Turn the stop screw [2] to the left until you feel resistance.
    - ➡ The stop screw [2] is touching the end stop.
17. Open the steady using the button.
    - ➡ The status display on the button is off. The steady is open.
18. Turn the stop screw [2] approx. half a turn counterclockwise.

19. Tighten the lock nut 1.

    ➡ The end stop for the closed position is set.

20. **When used as a roller steady:** selection Steady, Selection option Roller steady set. ↗ *"Enter the selection option" on page 56*.

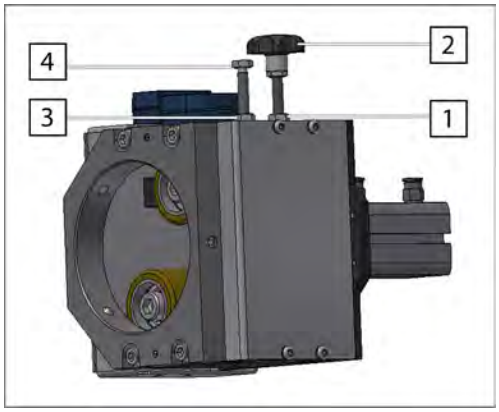
21. **When used as a jaw steady:** selection Steady, Selection option Jaw steady set. ↗ *"Enter the selection option" on page 56*.

Guide the pusher with the steady (material passage 26)

The described procedure refers to the steady with a material passage of up to 26 mm.

If the pusher vibrates, the steady can be set so that it guides the pusher in the open position.

To be able to manually open and close the steady, the following setting must be made for the duration of the set-up process, regardless of the later use: selection Steady, Selection option Jaw steady.



1. selection Steady, Selection option Jaw steady set. ↗ *"Enter the selection option" on page 56*.
2. Press the ☰ button.
3. SETUP .
4. Close the steady by pressing the button.

   ➡ The status display on the button turns green. The steady is closed.
5. Loosen the lock nut 3.
6. Turn the stop screw 4 to the left until the stop screw 4 is completely unscrewed.
7. Open the steady using the button.

   ➡ The status display on the button is off. The steady is open.
8. Move the pusher into the lathe using the button until the pusher is in the steady area.
9. Loosen the lock nut 1.
10. Turn the stop screw 2 to the left until the stop screw 2 is completely unscrewed.
11. **Condition for closing the steady on the pusher:** selection Steady, Selection option Roller steady set. ↗ *"Enter the selection option" on page 56*.
12. **Condition for closing the steady on the pusher:** close the collet of the lathe.
13. Close the steady by pressing the button.

    ➡ The status display on the button turns green. The steady is closed.

14. Turn the stop screw [4] to the right until you feel resistance.
15. Turn the stop screw [4] approx. half a turn counterclockwise.
16. Tighten the lock nut [3].
    ➡ The end stop for the open position is set
17. Open the steady using the button.
    ➡ The status display on the button is off. The steady is open.
18. **When used as a roller steady:** selection Steady, Selection option Roller steady set. ➚ *"Enter the selection option" on page 56*.
19. **When used as a jaw steady:** selection Steady, Selection option Jaw steady set. ➚ *"Enter the selection option" on page 56*.

Guiding the pusher with the steady (material passage 38 mm)

The described procedure refers to the steady with a material passage of up to 38 mm.

If the pusher vibrates, the steady can be set so that it guides the pusher in open position.

To be able to manually open and close the steady, the following setting must be made for the duration of the set-up process, regardless of the later use: selection Steady, Selection option Jaw steady.

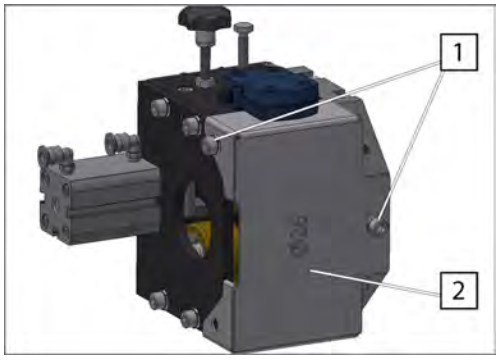
1. selection Steady, Selection option Jaw steady set. ➚ *"Enter the selection option" on page 56*.
2. Press the button.
3. SETUP press.
4. Close the steady by pressing the button.
   ➡ The status display on the button turns green. The steady is closed.
5. Loosen the lock nut [3].
6. Turn the stop screw [4] clockwise as far as it will go.
7. Open the steady using the button.
   ➡ The status display on the button is off. The steady is open.
8. Move the pusher into the lathe using the button until the pusher is in the area of the steady.
9. Loosen the lock nut [1].
10. Turn the stop screw [2] to the left until the stop screw [2] is completely unscrewed.
11. **Condition for closing the steady on the pusher:** selection Steady, Selection option Roller steady set. ➚ *"Enter the selection option" on page 56*.
12. **Condition for closing the steady on the pusher:** close the collet of the lathe.

13. Close the steady by pressing the button.
    ➡ The status display on the button turns green. The steady is closed.
14. Turn the stop screw [4] to the right until you feel resistance.
15. Turn the stop screw [4] approx. half a turn counterclockwise.
16. Tighten the lock nut [3].
    ➡ The end stop for the open position is set
17. Open the steady using the button.
    ➡ The status display on the button is off. The steady is open.
18. **When used as a roller steady:** selection Steady, Selection option Roller steady set. ↗ *"Enter the selection option" on page 56*.
19. **When used as a jaw steady:** selection Steady, Selection option Jaw steady set. ↗ *"Enter the selection option" on page 56*.

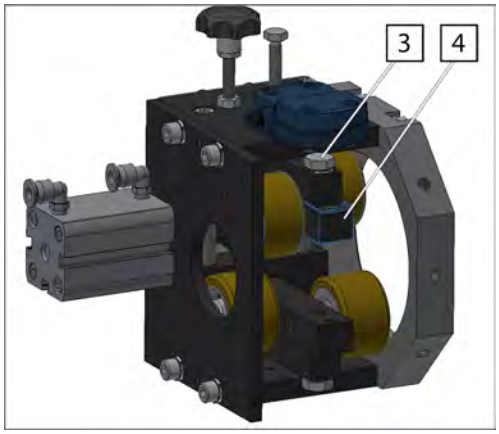
Installing/removing rollers with holder (steady with material passage 26 mm)

The described procedure refers to the steady with a material passage of up to 26 mm.

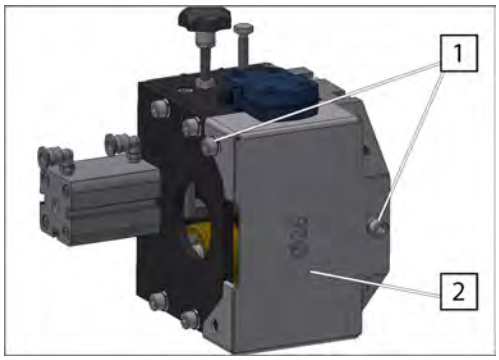
1. Press the emergency stop button. ↗ *"Press the emergency stop button" on page 46*.
2. Switch off the compressed air supply. ↗ *"Switch the supply of compressed air on/off" on page 112*



3. Loosen the screws [1] and remove.
4. Remove the lid [2].



5. Loosen and remove the screw [3].
6. Remove top rollers [4] with holder upwards.
7. Remove bottom rollers with holder in the same way.
8. Insert the rollers with holder in reverse order.



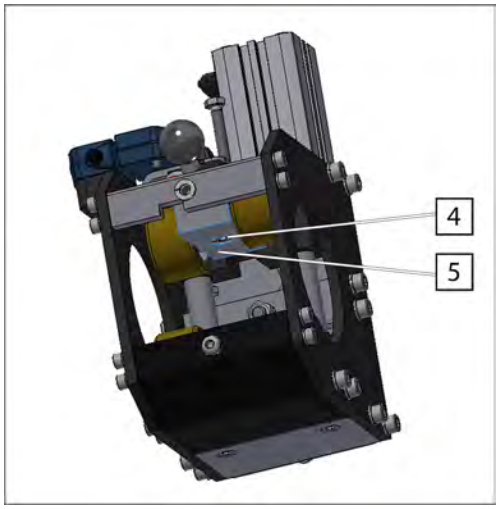
9. Position the cover 2.
10. Insert and tighten the screws 1.
11. Switch on the compressed air supply. → *"Switch the supply of compressed air on/off" on page 112*
12. Unlock the emergency stop button. → *"Make the loading magazine ready for operation after the emergency stop" on page 46*
13. Acknowledge the error message by pressing the CLR button.

Installing/removing rollers with holder (steady with material passage 38 mm)

The described procedure refers to the steady with a material passage of up to 38 mm.

1. Press the emergency stop button. → *"Press the emergency stop button" on page 46*.
2. Switch off the compressed air supply. → *"Switch the supply of compressed air on/off" on page 112*

3. Loosen the screws 1.
4. Loosen the screw 2.
5. Remove the lid 3.



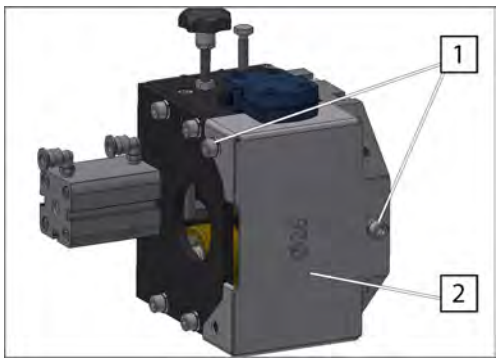
6. Loosen and remove the screw 4.
7. Remove top rollers 5 with holder upwards.
8. Remove bottom rollers with holder in the same way.
9. Insert the rollers with holder in reverse order.

10. Position the cover 3.
11. Tighten the screws 1.
12. Insert and tighten the screw 2.
13. Switch on the compressed air supply. ➚ *"Switch the supply of compressed air on/off" on page 112*
14. Unlock the emergency stop button. ➚ *"Make the loading magazine ready for operation after the emergency stop" on page 46*
15. Acknowledge the error message by pressing the CLR button.

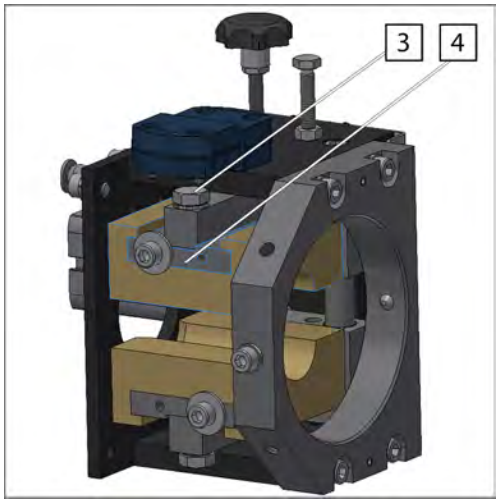
Installing/removing guide jaws with holder (steady with material passage 26 mm)

The described procedure refers to the steady with a material passage of up to 26 mm.

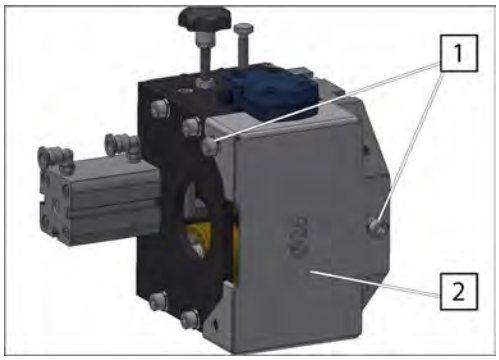
1. Press the emergency stop button. ➚ *"Press the emergency stop button" on page 46*.
2. Switch off the compressed air supply. ➚ *"Switch the supply of compressed air on/off" on page 112*



3. Loosen the screws 1 and remove.
4. Remove the lid 2.



5. Loosen and remove the screw 3.
6. Remove top guide jaws 4 with holder.
7. Remove bottom guide jaws with holder in the same way.
8. Insert the guide jaws with holder in reverse order.



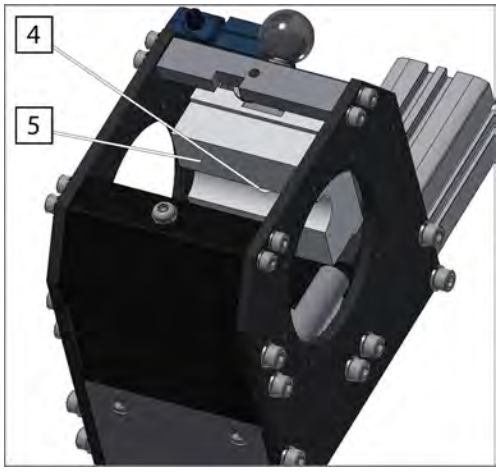
9. Position the cover 2.
10. Insert and tighten the screws 1.
11. Switch on the compressed air supply. *“Switch the supply of compressed air on/off” on page 112*
12. Unlock the emergency stop button. *“Make the loading magazine ready for operation after the emergency stop” on page 46*
13. Acknowledge the error message by pressing the CLR button.

Installing/removing guide jaws with holder (steady with material passage 38 mm)

The described procedure refers to the steady with a material passage of up to 38 mm.

1. Press the emergency stop button. *“Press the emergency stop button” on page 46*.
2. Switch off the compressed air supply. *“Switch the supply of compressed air on/off” on page 112*

3. Loosen the screws 1.
4. Loosen the screw 2.
5. Remove the lid 3.



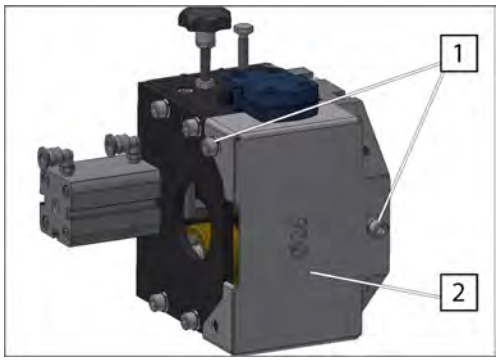
6. Loosen and remove the screw 4.
7. Remove top guide jaws 5 with holder.
8. Remove bottom guide jaws with holder in the same way.
9. Insert the guide jaws with holder in reverse order.

10. Position the cover 3.
11. Tighten the screws 1.
12. Insert and tighten the screw 2.
13. Switch on the compressed air supply. ➚ *"Switch the supply of compressed air on/off" on page 112*
14. Unlock the emergency stop button. ➚ *"Make the loading magazine ready for operation after the emergency stop" on page 46*
15. Acknowledge the error message by pressing the CLR button.

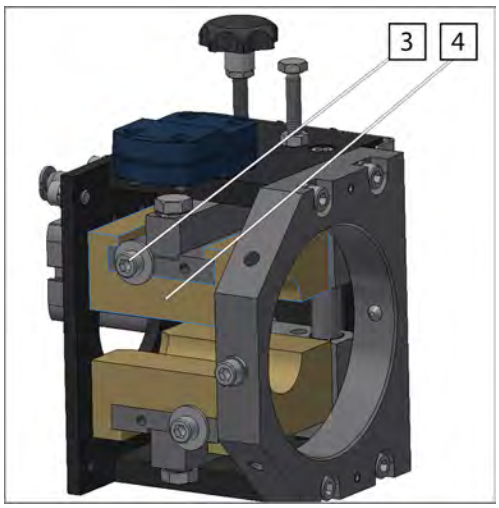
Changing the guide jaws (steady with material passage 26 mm)

The described procedure refers to the steady with a material passage of up to 26 mm.

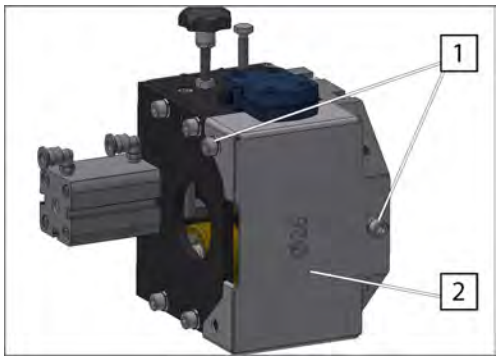
1. Press the emergency stop button. ➚ *"Press the emergency stop button" on page 46*.
2. Switch off the compressed air supply. ➚ *"Switch the supply of compressed air on/off" on page 112*



3. Loosen the screws 1 and remove.
4. Remove the lid 2.



5. Loosen and remove the screw 3.
6. Remove top guide jaw 4.
7. Remove bottom guide jaw in the same way.
8. Install the guide jaws in reverse order.



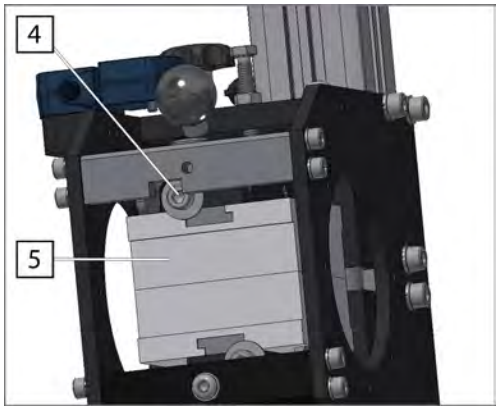
9. Position the cover 2.
10. Insert and tighten the screws 1.
11. Switch on the compressed air supply. ↗ *"Switch the supply of compressed air on/off" on page 112*
12. Unlock the emergency stop button. ↗ *"Make the loading magazine ready for operation after the emergency stop" on page 46*
13. Acknowledge the error message by pressing the CLR button.

Changing the guide jaws (steady with material passage 38 mm)

The described procedure refers to the steady with a material passage of up to 38 mm.

1. Press the emergency stop button. ↗ *"Press the emergency stop button" on page 46*.
2. Switch off the compressed air supply. ↗ *"Switch the supply of compressed air on/off" on page 112*

3. Loosen the screws 1.
4. Loosen and remove the screws 2.
5. Remove the lid 3.

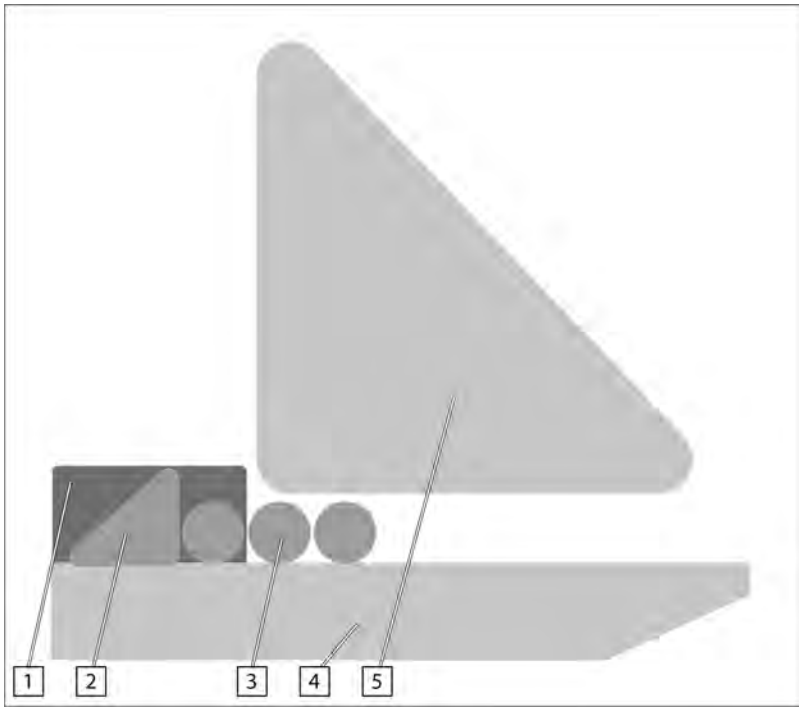


6. Loosen and remove the screw 4.
7. Remove top guide jaw 5.
8. Remove bottom guide jaw in the same way.
9. Install the guide jaws in reverse order.

10. Position the cover [3].
11. Tighten the screws [1].
12. Insert and tighten the screws [2].
13. Switch on the compressed air supply. ➚ *"Switch the supply of compressed air on/off" on page 112*
14. Unlock the emergency stop button. ➚ *"Make the loading magazine ready for operation after the emergency stop" on page 46*
15. Acknowledge the error message by pressing the CLR button.

7.5 Separating device

Separation device, general



1	Ejectors	4	Lateral material storage
2	End stop of the ejectors	5	Holding-down device
3	Material bar		

Thanks to the separation device of the loading magazine, the material bars are stocked and separated for the bar change.

The separation device consists of the lateral material storage, the ejectors, the end stop of the ejectors and the holding-down device.

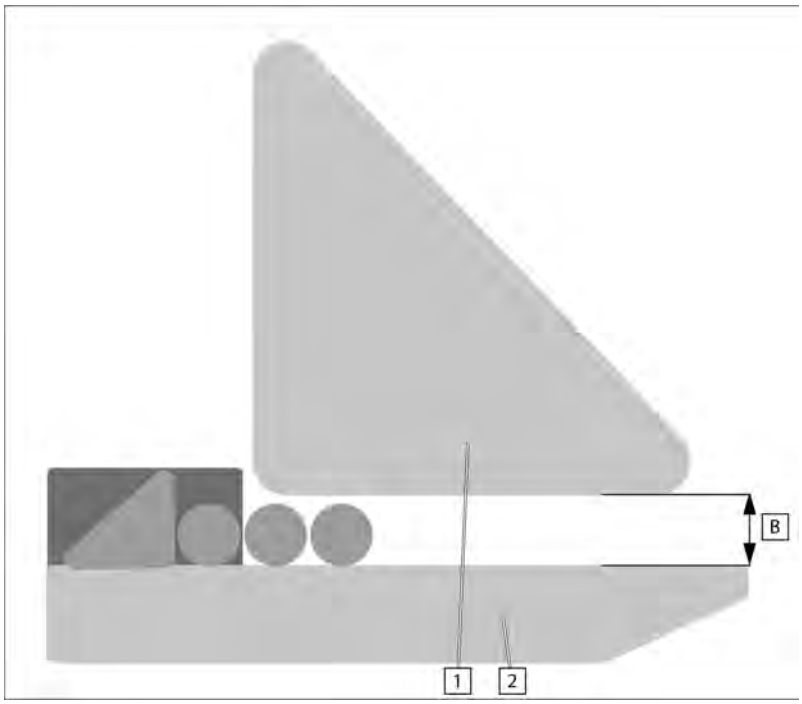
The material bars are kept in the lateral material storage. Thanks to the angle of the lateral material storage, the material bars slide towards the guide channel. The holding-down device limits the height of the lateral material storage, so that the material bars do

not roll over each other. The end stop of the ejectors is set up so that only one material bar lies on the ejectors. The ejectors move up and lift a material bar into the guide channel.

To adjust the separation device to the respective material bar diameter, the following components have to be set.

- The height of the holding-down device
- End stop of the ejectors

Height of the holding-down device



The holding-down devices are set via the dimension B. The dimension B is measured from the lower edge of the holding-down device 1 to the storage area of the lateral material storage 2.

For the dimension B:

- The diameter of the current material bar to be processed + 1 mm.

Setting the height of the holding-down device

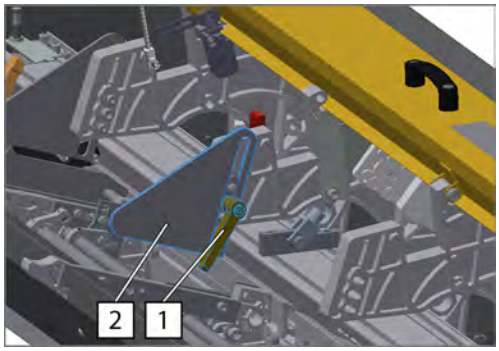
⚠ WARNING

Falling material bar

Personal injury due to squashing and impact as a result of a falling material bar.

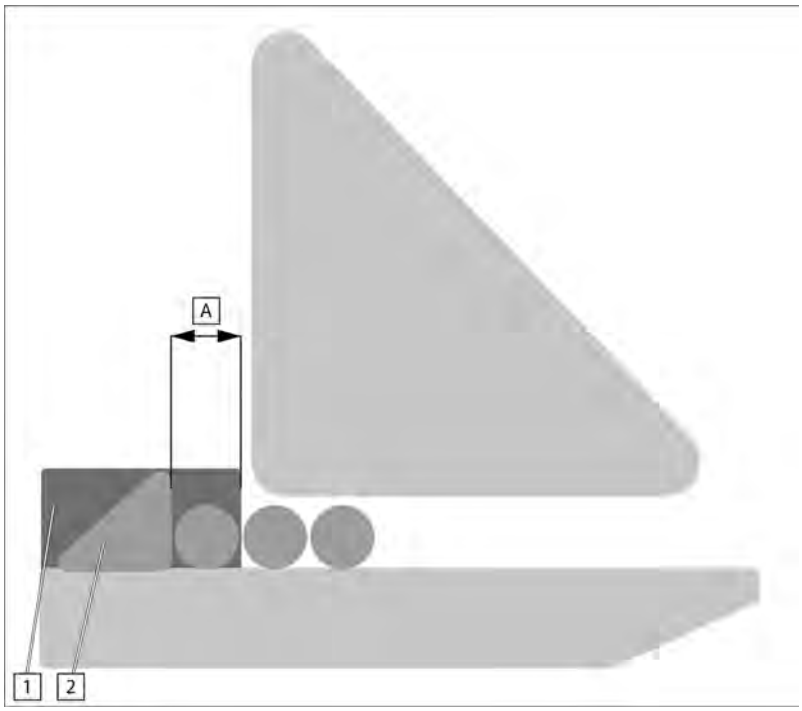
Material bars which are located on the lateral material storage, may fall down during conversion work.

- **Before conversion work, remove the material bars from the lateral material storage.**



1. Press the emergency stop button. ↗ *"Press the emergency stop button" on page 46*.
2. Switch off the compressed air supply. ↗ *"Switch the supply of compressed air on/off" on page 112*
3. Where necessary, obtain release from the lathe to open the cover.
4. Open the cover.
5. Loosen the clamping lever 1.
6. Move the holding-down device 2 to the desired height.
7. Close the clamping lever 1.
8. Set the rest of the holding-down devices in the same way.
9. Close the cover.
10. Switch on the compressed air supply. ↗ *"Switch the supply of compressed air on/off" on page 112*
11. Unlock the emergency stop button. ↗ *"Make the loading magazine ready for operation after the emergency stop" on page 46*
12. Acknowledge the error message using the CLR button.

End stop of the ejectors



The end stop of the ejectors is set by the dimension A. The dimension A is measured from the front edge of the ejectors 1 to the front edge of the end stop of the ejectors 2.

For the dimension A the following applies:

- The diameter of the current material bar to be processed.

Setting the end stop of the ejectors

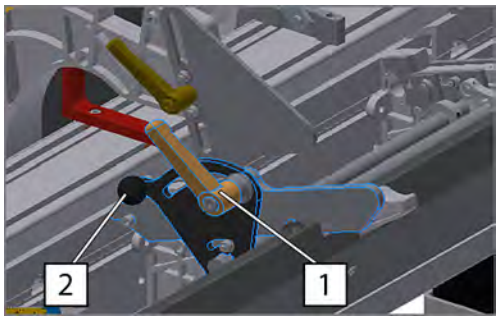
⚠ WARNING

Falling material bar

Personal injury due to squashing and impact as a result of a falling material bar.

Material bars which are located on the lateral material storage, may fall down during conversion work.

- **Before conversion work, remove the material bars from the lateral material storage.**



1. Press the emergency stop button. *“Press the emergency stop button” on page 46*.
2. Switch off the compressed air supply. *“Switch the supply of compressed air on/off” on page 112*
3. Where necessary, obtain release from the lathe to open the cover.
4. Open the cover.
5. Loosen the tapper spanner [1].
6. Move the handle [2] in the direction indicated by the arrow to set the desired distance.
7. Close the tapper spanner [1].
8. Close the cover.
9. Switch on the compressed air supply. *“Switch the supply of compressed air on/off” on page 112*
10. Unlock the emergency stop button. *“Make the loading magazine ready for operation after the emergency stop” on page 46*
11. Acknowledge the error message by pressing the CLR button.

8 Maintenance

8.1 Maintenance actions

Maintenance plan

Chap.	Task to perform	Every 6 months	Every 36 months	If necessary	Page
	Check the drive belt	X			107
	Check the synchronizing unit belt	X			108
	Replace the relay insert in the control cabinet		X		109
	Check the blades of the material gripper	X			109
	Check the lubricant in the oil tank			X	110

Check the drive belt

⚠ DANGER

Moving components of the loading magazine and the tool machine with the cover open

Personal injury due to squashing, impact or striking by movements of the loading magazine and the machine tool with the cover open.

During maintenance work on the loading magazine, there may be unexpected movements of the components of the loading magazine and the machine tool.

- **Turn off the machine tool at the main switch, before performing maintenance work. Observe the sequence of the working steps according to the descriptions listed below.**

⚠ CAUTION

Sharp knives of the material gripper

Cuts due to the sharp knives of the material gripper.

When working in the vicinity of the material gripper, there is a risk of cuts in the event of inattentiveness.

- **Wear safety gloves.**

Condition of the drive belt:

If the drive belt has cracks or is missing teeth, it must be replaced. Contact FMB. ➚ *"Service contact details" on page 119.*

1. Press the emergency stop button. ➚ *"Press the emergency stop button" on page 46.*
2. Switch off the supply of compressed air. ➚ *"Switch the supply of compressed air on/off" on page 112*
3. Where necessary, obtain release from the lathe to open the cover.
4. Open the cover.

5. Turn off the machine tool at the main switch.
6. Check the condition: Check the drive belt visually for missing teeth.
7. Close the cover.
8. Turn on the machine tool at the main switch.
9. Switch on the compressed air supply. → *"Switch the supply of compressed air on/off" on page 112*
10. Unlock the emergency stop button. → *"Make the loading magazine ready for operation after the emergency stop" on page 46*
11. Acknowledge the error message by pressing the CLR button.

Check the synchronizing unit belt

⚠ DANGER

Moving components of the loading magazine and the tool machine with the cover open

Personal injury due to squashing, impact or striking by movements of the loading magazine and the machine tool with the cover open.

During maintenance work on the loading magazine, there may be unexpected movements of the components of the loading magazine and the machine tool.

- **Turn off the machine tool at the main switch, before performing maintenance work. Observe the sequence of the working steps according to the descriptions listed below.**

⚠ CAUTION

Sharp knives of the material gripper

Cuts due to the sharp knives of the material gripper.

When working in the vicinity of the material gripper, there is a risk of cuts in the event of inattentiveness.

- **Wear safety gloves.**

Condition of the synchronizing unit belt:

If the synchronizing unit belt has cracks or is missing teeth, the synchronizing unit belt must be replaced. Contact FMB. → *"Service contact details" on page 119.*

1. Press the emergency stop button. → *"Press the emergency stop button" on page 46.*
2. Switch off the supply of compressed air. → *"Switch the supply of compressed air on/off" on page 112*
3. Where necessary, obtain release from the lathe to open the cover.
4. Open the cover.
5. Turn off the machine tool at the main switch.
6. Check the condition: Check the synchronizing unit belt visually for cracks and missing teeth.
7. Close the cover.
8. Turn on the machine tool at the main switch.

9. Switch on the compressed air supply. ↗ *"Switch the supply of compressed air on/off" on page 112*
10. Unlock the emergency stop button. ↗ *"Make the loading magazine ready for operation after the emergency stop" on page 46*
11. Acknowledge the error message by pressing the CLR button.

Replace the relay insert in the control cabinet

⚠ DANGER

Live components of the control cabinet

Personal injury by electrical shock due to contact with live components of the control cabinet.

This work is only allowed to be performed by a qualified electrician.

- **Turn off the machine tool before starting work on the main switch.**

The relay insert for changing signals with the lathe must be replaced regularly. In the event of uncertainty, please contact FMB. ↗ "Service contact details" on page 119.

1. Turn off the machine tool before starting work on the main switch.
2. Disconnect the relay insert in the control cabinet of the loading magazine.
3. Insert the new relay insert in the control cabinet of the loading magazine.

Check the blades of the material gripper

⚠ DANGER

Moving components of the loading magazine and the tool machine with the cover open

Personal injury due to squashing, impact or striking by movements of the loading magazine and the machine tool with the cover open.

During maintenance work on the loading magazine, there may be unexpected movements of the components of the loading magazine and the machine tool.

- **Turn off the machine tool at the main switch, before performing maintenance work. Observe the sequence of the working steps according to the descriptions listed below.**

⚠ CAUTION

Sharp knives of the material gripper

Cuts due to the sharp knives of the material gripper.

When working in the vicinity of the material gripper, there is a risk of cuts in the event of inattentiveness.

- **Wear safety gloves.**

1. Press the emergency stop button. ↗ *"Press the emergency stop button" on page 46.*
2. Switch off the supply of compressed air. ↗ *"Switch the supply of compressed air on/off" on page 112*

3. Where necessary, obtain release from the lathe to open the cover.
4. Open the cover.
5. Turn off the machine tool at the main switch.
6. Check the material gripper visually for breaks.
7. If the blades of the material gripper break off, the blades of the material gripper must be replaced. .
8. Close the cover.
9. Turn on the machine tool at the main switch.
10. Switch on the compressed air supply. *"Switch the supply of compressed air on/off" on page 112*
11. Unlock the emergency stop button. *"Make the loading magazine ready for operation after the emergency stop" on page 46*
12. Acknowledge the error message by pressing the CLR button.

Check the lubricant in the oil tank

⚠ WARNING

Leaking fuel

Personal injuries due to slipping on leaking fuel.

Leaking fuel causes a slipping hazard in the working area.

- **Remove leaking fuel immediately.**
- **Observe the description in the operating instructions about filling / emptying the oil tank.**
- **Only fill fuel in the intended containers.**

1. Check the lubricant in the oil tank for the formation of foam.
2. Check the lubricant in the oil tank for severe contamination.
3. If the lubricant forms foam in the oil tank, or is severely contaminated, the lubricant in the oil tank must be replaced.
"Empty the oil tank of the loading magazine" on page 111.

Filling the oil tank of the loading magazine

⚠ WARNING

Leaking fuel

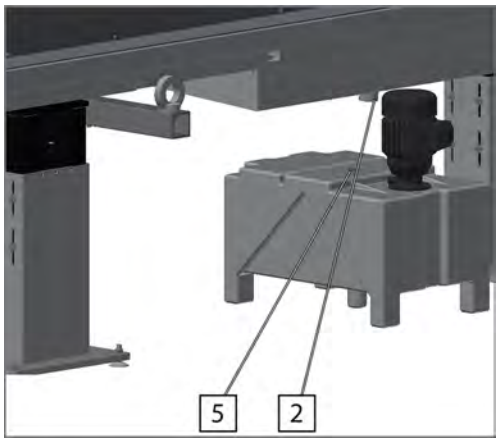
Personal injuries due to slipping on leaking fuel.

Leaking fuel causes a slipping hazard in the working area.

- **Remove leaking fuel immediately.**
- **Observe the description in the operating instructions about filling / emptying the oil tank.**
- **Only fill fuel in the intended containers.**

Observe the oil tank level.

Observe the stated types of oil.



1. Press the emergency stop button. *“Press the emergency stop button” on page 46*.
2. Switch off the compressed air supply. *“Switch the supply of compressed air on/off” on page 112*
3. Turn off the machine tool at the main switch.
4. Pull the oil return line out of the oil return hole 5.
5. Fill the stated quantity of oil into the oil return hole 5.
6. Guide the oil return line to the oil return hole 5.
7. Turn on the machine tool at the main switch.
8. Switch on the compressed air supply. *“Switch the supply of compressed air on/off” on page 112*
9. Unlock the emergency stop button. *“Make the loading magazine ready for operation after the emergency stop” on page 46*
10. Acknowledge the error message by pressing the CLR button.

Empty the oil tank of the loading magazine

⚠ DANGER

Moving components of the loading magazine and the tool machine with the cover open

Personal injury due to squashing, impact or striking by movements of the loading magazine and the machine tool with the cover open.

During maintenance work on the loading magazine, there may be unexpected movements of the components of the loading magazine and the machine tool.

- **Turn off the machine tool at the main switch, before performing maintenance work. Observe the sequence of the working steps according to the descriptions listed below.**

⚠ WARNING

Leaking fuel

Personal injuries due to slipping on leaking fuel.

Leaking fuel causes a slipping hazard in the working area.

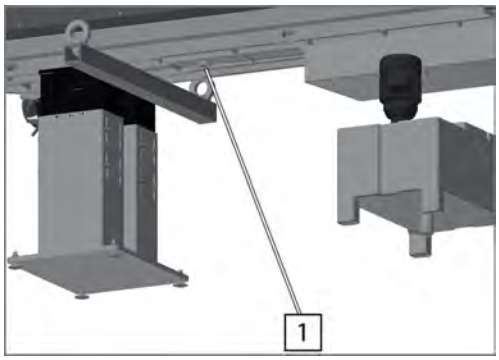
- **Remove leaking fuel immediately.**
- **Observe the description in the operating instructions about filling / emptying the oil tank.**
- **Only fill fuel in the intended containers.**

Observe the oil tank level. *“Technical data of the loading magazine” on page 12.*

Before the next operation of the loading magazine, the oil tank of the loading magazine must be refilled. *“Filling the oil tank of the loading magazine” on page 110.*

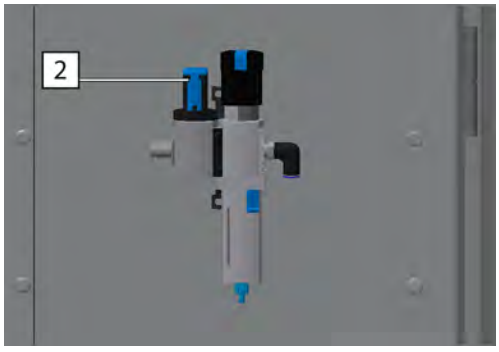
To empty the oil tank, a suitable pump has to be used.

1. Press the emergency stop button. *“Press the emergency stop button” on page 46*.



2. Switch off the compressed air supply. → *"Switch the supply of compressed air on/off" on page 112*
3. Turn off the machine tool at the main switch.
4. Prepare a suitable container with sufficient capacity to collect the oil.
5. Loosen the tube clip on the oil feed 1.
6. Remove the oil feed line on the oil feed 1.
7. Guide the end of the removed oil feed line into the container provided.
8. Pump the whole contents of the oil tank into the container provided, using a suitable pump.
9. Insert the oil feed line onto the oil feed 1.
10. Tighten the tube clip on the oil feed 1.
11. Turn on the machine tool at the main switch.
12. Switch on the compressed air supply. → *"Switch the supply of compressed air on/off" on page 112*
13. Unlock the emergency stop button. → *"Make the loading magazine ready for operation after the emergency stop" on page 46*
14. Acknowledge the error message by pressing the CLR button.

Switch the supply of compressed air on/off



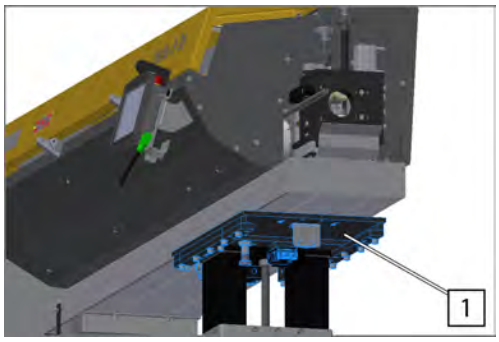
The supply of compressed air is switched on/off at the maintenance unit 1.

- Switch the supply of compressed air on/off at the knob 2.

8.2 Auxiliary equipment

Shifting the loading magazine

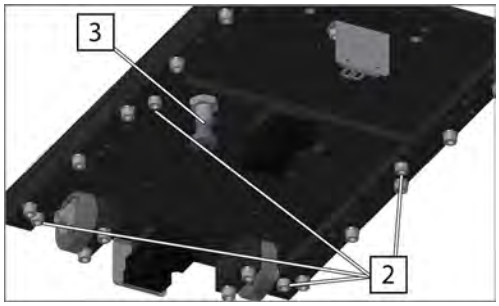
This function is available as an option.



The shifting device 1 is located between the support and the beam of the loading magazine. The procedure is described using the example of a support. To shift the loading magazine, the shifting device must be activated on each support.

The screws 2 must be used in alternating positions depending on the shifting positions. Several drill holes are intended for this.

1. Press the emergency stop button. ➚ *"Press the emergency stop button" on page 46*.
2. Switch off the compressed air supply. ➚ *"Switch the supply of compressed air on/off" on page 112*



3. Loosen the screws 2 and remove.
4. Pull and hold the locking pin 3.
5. Shift the loading magazine up to the stop.
6. Release the locking pin 3.
7. Insert and tighten the screws 2.
8. Switch on the compressed air supply. ➚ *"Switch the supply of compressed air on/off" on page 112*
9. Unlock the emergency stop button. ➚ *"Make the loading magazine ready for operation after the emergency stop" on page 46*
10. Acknowledge the error message using the CLR button.

Performing a reference run

If the drive of the loading magazine is moved manually in switched-off condition, it causes the position of the PLC control unit to be lost. In this case, a reference run must be performed.

1. Press the ☰ button.
2. *'SETTINGS → Service settings → Position diagnosis"*
3. Press the ⚙ button.
4. Press the Reference run button.
   ➥ The status display on the button flashes yellow. The reference run is performed. The status display on the button turns green. The reference run is ended.

9 Faults

9.1 Fault messages

Display the current fault message

The current fault message is shown in the upper area of the control panel.

Delete the current fault message

→ Press the CLR button.

Display of pending fault messages in the fault list

1. → Press the ☰ button.
2. → *‘DIAGNOSIS → Fault list”*

Delete fault messages in the fault list

1. → Press the ☰ button.
2. → *‘DIAGNOSIS → Fault list”*

Delete an error message:

1. → Click on error message.
2. → Delete the error message with the Quittieren button.

Delete all error message:

1. → Click on error message.
2. → Delete the error message with the Quittieren (Alle) button.

Access the fault history

1. → Press the ☰ button.
2. → *‘DIAGNOSIS → Fault list”*
3. → Press the Historie button.

Display the position of the current fault on the loading magazine

1. → Press the ☰ button.
2. → *‘DIAGNOSIS → Fault list”*
3. → Press the Störungshilfe button.

9.2 Fault table

Fault message and possible cause

Fault message of the loading magazine	Possible cause	Switch / position
Axis 1 fault, code: xx	The servo drive issues a fault message.	
Starting switch -B7 not in home position -KK5/B7	The starting switch is not back in its home position. ■ Air flow disrupted ■ Solenoid valve -KK5 not working	Starting switch not in the home position. Switch -B7 not actuated.
Starting switch -B7 not in the home position -KK9/B7	The starting switch is not back in its home position. ■ Air flow disrupted ■ Solenoid valve -KK9 not working	Starting switch not in the home position. Switch -B7 not actuated.
Press upon not correct; Pos. material draw-off not reached	The clamping sleeve was not pressed, or not pressed completely, onto the material bar. ■ Feed force for press upon too low. ■ Incorrect clamping sleeve. ■ New clamping sleeve.	Position Position draw off has been reached.
Storage empty! No new bar reloaded -B80	There is no material bar in the lateral material storage.	Switch -B80 not actuated.
Diameter setting of channel -M3	The monitoring time has expired. The diameter setting was not performed. The desired value of the channel diameter setting does not agree with the actual value.	
Diameter setting of separation M4/B8	The monitoring time has expired. The diameter setting was not performed. The desired value of the separation diameter setting does not agree with the actual value.	
Motor speed controller not ready for operation -TA1/K3	Fault on the drive motor speed controller.	
Guide channel not closed; Check guide channel -KK01/B6/B26/B28	The guide channel is not closed. ■ Solenoid valve -KK01 not working. ■ Air flow disrupted.	Switch -B6 or -B26 not actuated.
Opening – closing of guide channel not correct -KK1/KK01/B5/B6/B26/B28	Guide channel not opened or closed correctly. ■ Solenoid valve -KK1 or -KK01 not working. ■ Air flow disrupted.	Switch -B5, -B6, or -B26 not actuated.
No stop in the lathe	Caution selection First insert To stop set! The material bar was not stopped by an end stop in the working area of the lathe.	

Fault message of the loading magazine	Possible cause	Switch / position
No return of remnant -B13	Remnant remains in the lathe. The material gripper did not grab any remnant when removing the remnant. ■ The lathe collet does not open correctly. The remnant fell out of the clamping sleeve when returning. The material gripper did not grab any remnant when removing the remnant. ■ Clamping sleeve pressure too low.	Switch -B13 was actuated.
No new bar in guide channel -B13	The material gripper does not grab any material bars when drawing on ■ No material bar was loaded from the lateral material storage.	Switch -B13 was actuated.
No air pressure! -B11 Check air pressure min. 5 bar	The compressed air is too low, or is lacking, on the maintenance unit. ■ Air supply disturbed	Switch -B11 not actuated.
Magazine not in start position; Start position step 1,15,17 or 19	The loading magazine is not in one of the possible starting positions: step 1, step 15, step 17 or step 19.	
Material on the lateral storage -B80	Material bars are located in the lateral material storage.	Switch -B80 actuated.
Material bar loaded in test run	Test mode active. In test mode, there must be no material bars on the lateral material storage.	
Max fill level of the loading magazine lubricant container reached	The maximum fill level of the lubricant container was reached.	
Motor protection -F1 tripped! -M1/F1 Check -M1, switch -F1 on	The drive motor of the loading magazine was overloaded.	Motor protection switch -F1 was triggered.
Motor protection -F2 tripped! -M2/F2 Check -M2, switch -F2 on	The motor of the oil pump was blocked or overloaded.	Motor protection switch - F2 was triggered.
Motor overload switch F3 triggered! check -M3/F3 -M3, activate F3	Drive motor of the pilgrim step separation was overloaded.	Motor protection switch -F3 was triggered.
Neg.software end position was overrun. Release with manual forward function	The negative software stop was overrun.	
Emergency Stop lathe	The emergency stop button of the lathe was actuated.	
Emergency Stop loading magazine -S69	The emergency stop button on the loading magazine was actuated.	

Fault message of the loading magazine	Possible cause	Switch / position
Pilgrim step separation not in position / not empty - B83/B81/B82	The pilgrim step separation is not in position. ■ Pilgrim step separation was lowered without authorization. ■ Pilgrim step separation was raised without authorization. ■ The pilgrim step separation cycle was interrupted.	
Pos.software end position was overrun. Release with manual return function	The positive software stop was overrun.	
Profibus/Profinet - No live signal from the lathe	The connection of Profibus / Profinet to the machine tool is defective.	
Relay tumbler -K225	Malfunction of the channel lock module. Relay -K225 not working.	
Remnant jammed in clamping sleeve -B13	The remnant was not correctly extracted from the clamping sleeve and is still in the gripping area. The material gripper closes to check the remnant ejection and then grabs the available remnant. ■ The clamping sleeve pressure is not right. ■ The blades of the material gripper are worn. ■ The pressure of the material gripper is too low. The remnant did not fall correctly into the remnant bin and is still in the gripping area. The material gripper closes to check the remnant ejection and then grabs the remaining remnant. ■ The remnant flap is oily. The remnant remains stuck on the remnant flap.	Switch -B13 was not actuated.
Remant flap not closed - KK010/B17	The remnant flap does not close. ■ Solenoid valve -KK010 does not switch. ■ Air flow disrupted.	Switch -B17 not actuated.
Remnant to long	The "Maximum remnant length" function is active. The length of the remnant exceeds the entered value.	
Pushing signal not ok; Check signal from lathe	The signal "collet open" is transferred by the lathe in an unstable way to the loading magazine (the signal bounces). ■ Defective connection ■ Relay worn (on the lathe side)	

Fault message of the loading magazine	Possible cause	Switch / position
Sensor of the pilgrim step separation support contaminated -B83	■ The light reflection for the stable detection of a material bar is not sufficient. ■ Sensor head (light guide) of switch -B83 is damaged or dirty.	
Signal sliding-fixed headstock lathe mode does not match shifting device -B71/B76	The external signal of the machine tool (long or short turning mode) does not agree with the position of the shifting device.	
Collet in the lathe closed	Caution selectionDraw on bar with first insert set! The collet of the lathe is not open. First insert cannot be performed. The collet position signal is not available in manual mode.	
Collet closed too long	Collet monitoring time expired.	
Collet opened too long	Collet monitoring time expired.	
Bar has been pushed back	Caution Max. bar return active. The material bar was moved back past the set value when closing the collet. ■ Lathe clamping system not OK.	
Part follow-up too short	Caution Min. part length follow-up active. The entered value was not reached when pushing the material bar. ■ Feed force too low. ■ The collet signal is unstable.	
Part follow-up too long	Caution Max. part length follow-up active. The entered value was exceeded when pushing the material bar. ■ End stop in the lathe overrun.	
Cover not closed -B76/B77/B78/B79/K20/K21	The cover (guide channel cladding) or the lid of the steady is not closed.	Switch -B71, -B76, -B77, -B78, or -B79 not actuated.
Shifting device -B71/B76	The shifting device is in a non-permitted position.	Switch -B71 and -B76 not actuated.
Pusher not swung in correctly -KK08/B23	Pusher incorrectly swung in. ■ Solenoid valve -KK08 does not switch. ■ Air flow disrupted.	Switch -B23 does not switch.

Fault message of the loading magazine	Possible cause	Switch / position
Pusher out of position	Caution Part length internal or Part length external active. The pusher was moved during processing. ■ Vibrations to the material bar. ■ Lathe clamping system not OK. ■ Brake not switched on. ■ Braking force too low.	
Z-axis collision	The entered value for rotary encoder B4 was not met.	
Monitoring time motor expired	The moving signal is constantly on. The motor pushes against resistance. ■ Problem with the lathe work flow.	
The monitoring time of motor -M3 pilgrim step separation has expired -B81	The motor did not end the single cycle after approx. 10 seconds.	Switch -B81 does not switch.
Monitoring time bar change expired; Fault at bar change	The bar change was unable to be performed correctly. Monitoring time expired.	

9.3 Service

Service contact details

Service telephone no.	+49 9392 801 801
Telephone no. of the headquarters	+49 9392 801 0
Fax	+49 9392 801 220
Email	info@fmb-machinery.de

9.4 Technical problems

Behavior of the loading magazine in the event of a power failure

In the event of a power failure, the operation of the loading magazine is interrupted. The pressurisation of the pneumatic valves is interrupted. All parameters are saved and are available again once the power supply is reestablished.

Material bar stuck in the guide channel

It may be the case that the material bar does not lie completely in the guide channel when the guide channel is closed, and becomes stuck. This is caused by the usually bad material quality or an incorrect setting of the separation device. The correct procedure to loosen a stuck material bar depends on different factors. If the material bar is stuck, please contact FMB. ➚ *"Service contact details" on page 119*.

10 Index

R

S

T

U

V

FMB Maschinenbaugesellschaft mbH & Co. KG

Paul-Hohe-Straße 1

97906 Faulbach

Telefon: +49 9392 801 0
Service: +49 9392 801 801
Fax: +49 9392 801 220

Mail: info@fmb-machinery.de
Web: www.fmb-machinery.de

Ersatzteilliste
Spare parts list

turbo RS 3-38 Serie 1

Rückmeldenummer ab: 2153428

FMB zeichnet sich durch die Umsetzung kundenspezifischer Wünsche aus. Deshalb sind viele Standard-Baugruppen durch individuelle Anpassungen oder drehmaschinenbezogen modifiziert. Abweichende Ersatzteile für Anbauten oder Umbauten müssen daher über unseren Ersatzteilvertrieb ermittelt werden.

Achtung ! Angaben für Ersatzteilbestellung:

- **Magazintyp**
- **Magazinnummer**
- **Baujahr**
- **Bezeichnung**
- **Ident-Nummer**

FMB is characterized by the implementation of customer-specific requirements. Therefore, many standard modules are modified by individual adjustments or lathes related. Differing parts for attaching or modifications must therefore be determined from our spare parts sales.

Attention ! Data for spare parts orders:

- **Magazine type**
- **Magazine No.**
- **Year of construction**
- **Designation**
- **Ident No.**

Redaktionsschluss: 15.06.2023
Editorial deadline: 15.06.2023

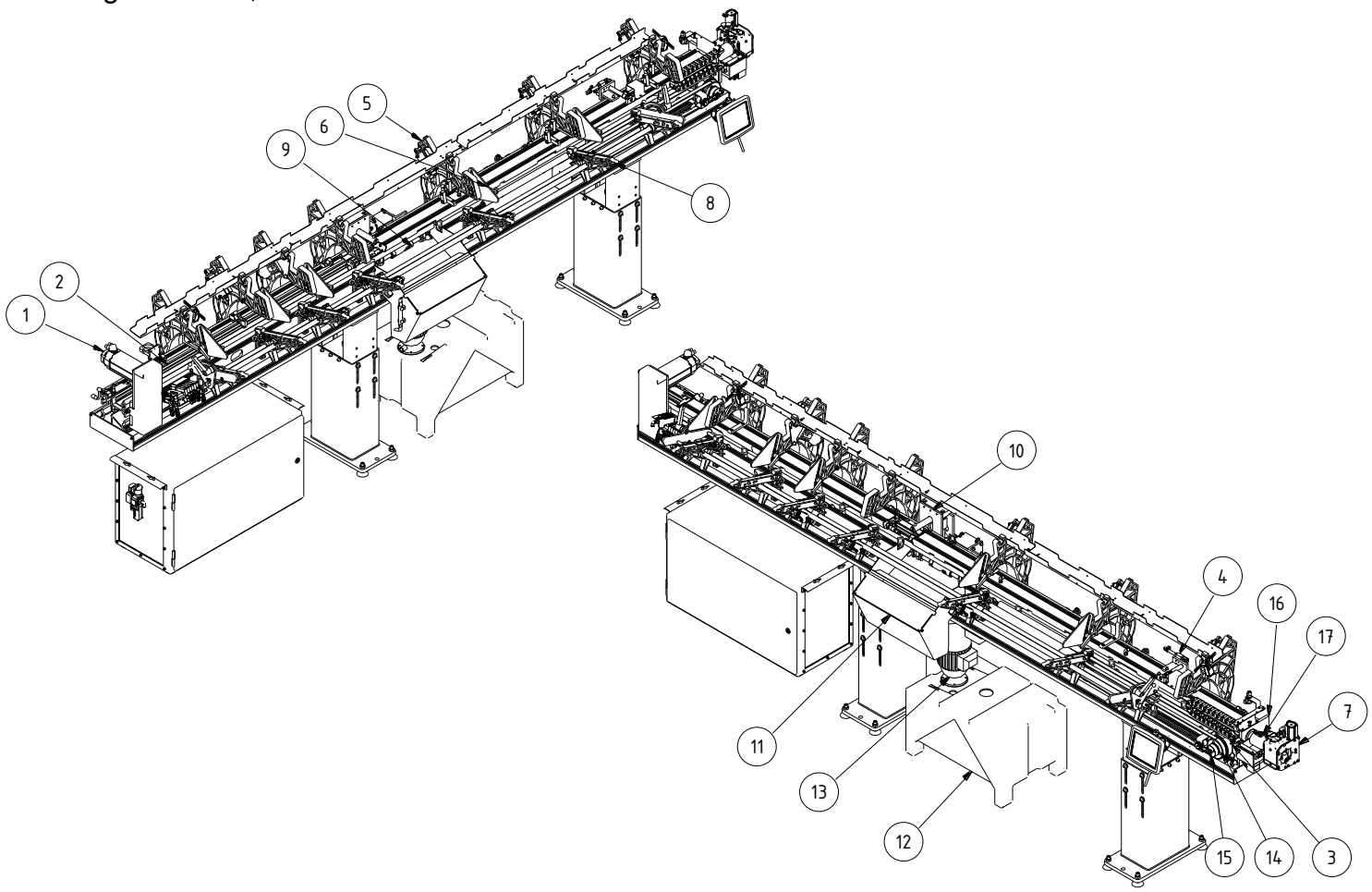
Inhaltsverzeichnis
Contents

FMB turbo RS 3-38

Abbildung / Drawing Variante A;D

Grundaufbau / Basic construction

Abbildung Variante / Drawing Variant A;D

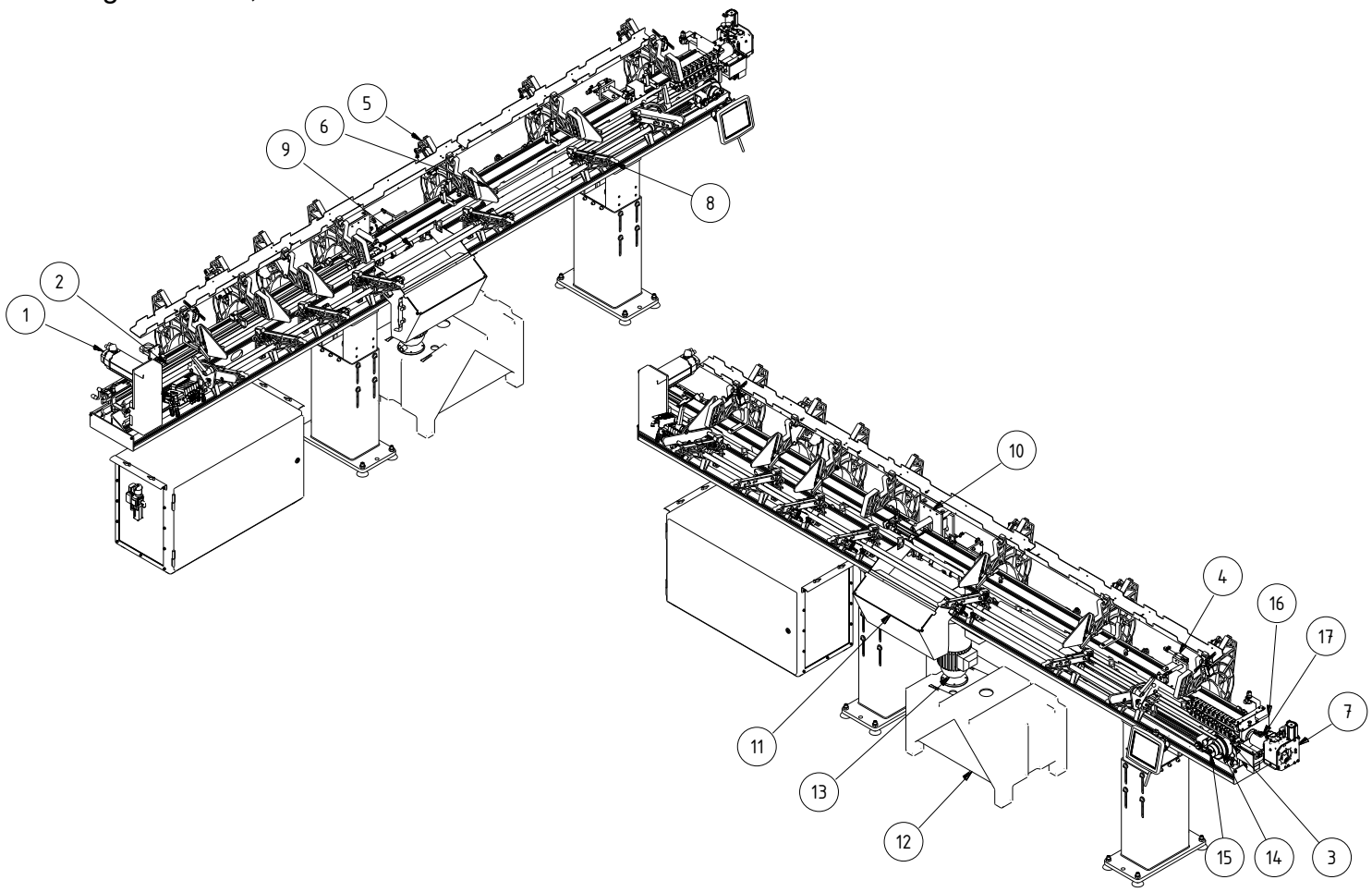


Grundaufbau / Basic construction

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
1	100044100	Antrieb	Drive	
2		Zahnriemen 2200 VST 1466 VST 1666 VST 1866	Toothed belt 2200 Pusher 1466 Pusher 1666 Pusher 1866	
	100098427 100098976 200011117			
		Zahnriemen 3200 VST 1466 VST 1666 VST 1866	Toothed belt 3200 Pusher 1466 Pusher 1666 Pusher 1866	
	100076623 100060659 100078162			
		Zahnriemen 3800 VST 1466 VST 1666 VST 1866	Toothed belt 3800 Pusher 1466 Pusher 1666 Pusher 1866	
	100085366 200008475 100075650			
		Zahnriemen 4200 VST 1466 VST 1666 VST 1866	Toothed belt 4200 Pusher 1466 Pusher 1666 Pusher 1866	
	100078650 200008471 200008474			
		Zahnriemen 6200 VST 1466 VST 1666 VST 1866	Toothed belt 6200 Pusher 1466 Pusher 1666 Pusher 1866	
	100100904 100102150 200011877			
3	2051-648	Lager vorne	Bearing front	
4	100059025 100075136	Anfahrschalter Variante A;D Anfahrschalter Variante B;C	Starting switch Variant A;D Starting switch Variant B;C	
5	längenabhängig dependent on length	Kanalöffner	Channel opener	
6	2055-060	Niederhalter	Holding-down device	
7	100082275 100077069 100077530 100082276	Lünette D26 Variante A;D Lünette D26 Variante B;C Lünette D38 Variante A;D Lünette D38 Variante B;C	Steady D26 Variant A;D Steady D26 Variant B;C Steady D38 Variant A;D Steady D38 Variant B;C	

Grundaufbau / Basic construction

Abbildung Variante / Drawing Variant A;D

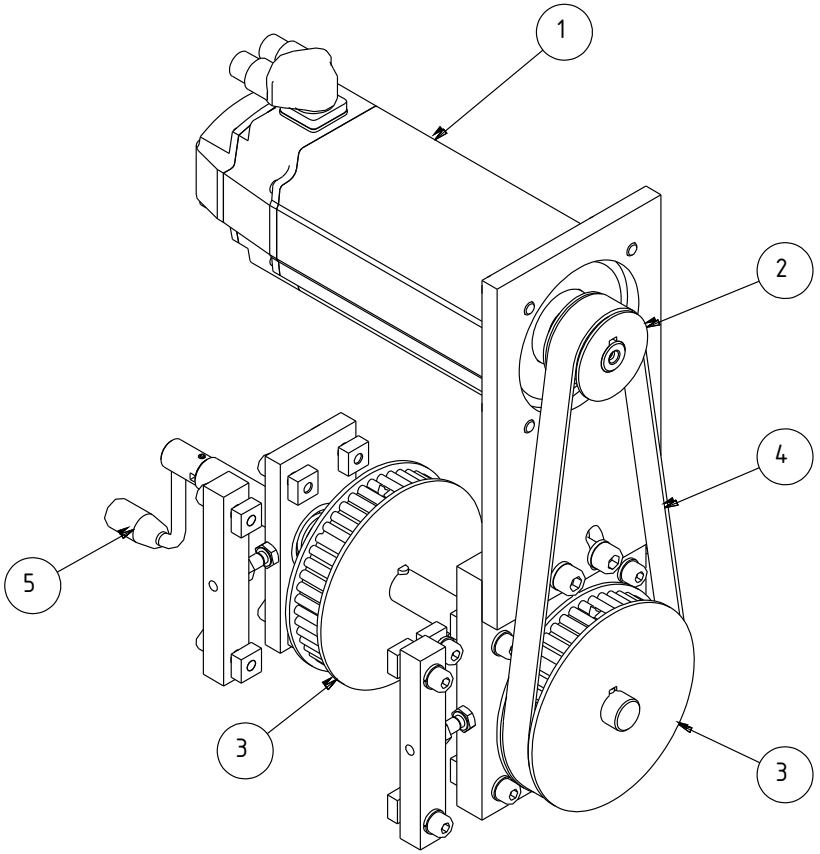


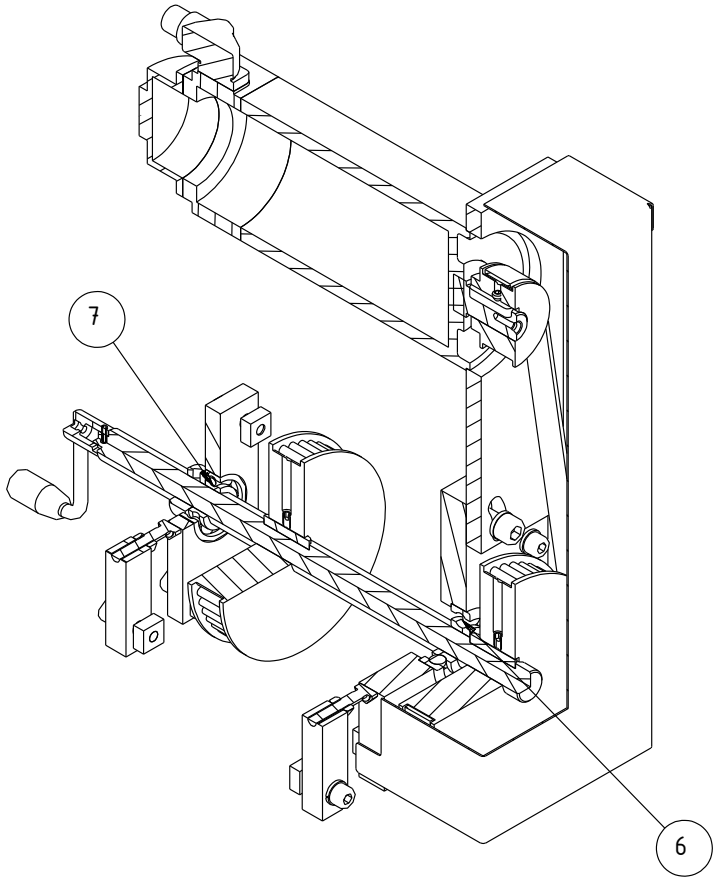
Grundaufbau / Basic construction

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
8	längenabhängig dependent on length	Seitliche Auflage A;D Seitliche Auflage B;C	Lateral material storage A;D Lateral material storage B;C	
9	100072011 100082121	Reststückklappe Variante A;D Reststückklappe Variante B;C	Remnant flap Variant A;D Remnant flap Variant B;C	
	100083017 100083049	Reststückklappe 800 Variante A;D Reststückklappe 800 Variante B;C	Remnant flap Variant 800 A;D Remnant flap Variant 800 B;C	Länge / length 6200
10	2074-975 2074-493	Greifer Variante A;D Greifer Variante B;C	Gripper Variant A;D Gripper Variant B;C	
11	100049340	Reststückbehälter kpl.	Remnant bin compl.	
	100049992	Reststückbehälter 800 kpl.	Remnant bin 800 compl.	Länge / length 6200
12	2035-428	Ölbehälter	Oil reservoir	
13	2041-038	Tauchpumpe	Submerged pump	
14	100059040	Synchroneinrichtung	Synchronized device	
	100098408	Synchroneinrichtung	Synchronized device	Länge / length 2200
15	200008719	Sensor Synchroneinrichtung	Sensor, synchronized device	
16	100073316 100075129	Abstützung Führungsmodul Variante A;D Abstützung Führungsmodul Variante B;C	Support, guide module Variant A;D Support, guide module Variant B;C	
17	100075672 100076176 100061159 100075123	Adapterset D26 Variante A;D Adapterset D26 Variante B;C Adapterset D38 Variante A;D Adapterset D38 Variante B;C	Adapter set D26 Variant A;D Adapter set D26 Variant B;C Adapter set D38 Variant A;D Adapter set D38 Variant B;C	

Antrieb / Drive

1000044100





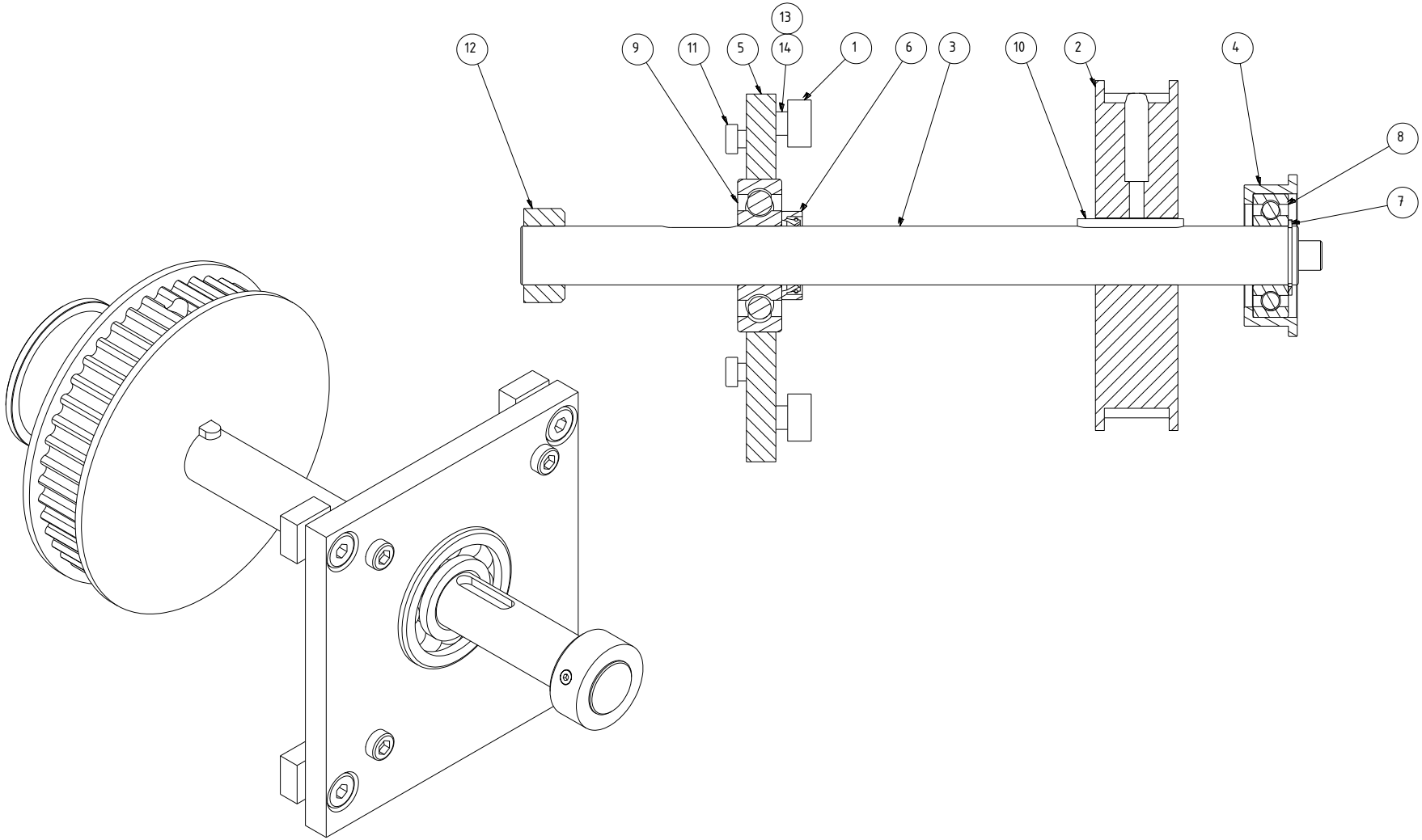
Antrieb / Drive

1000044100

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
1	200004100	Servomotor	Servomotor	
	200006125	Servomotor mit Bremse	Servomotor with brake	-M1 (Option)
2	2034-836	Synchronscheibe z=20	Synchronized disk Z=20	
3	2034-844	Zahnscheibe Z 48-8M 20	Synchronized disk Z=48	
4	2047-772	Zahnriemen	Toothed belt	
5	2050-793	Gerätekurbel	Hand crank	
6	1095-641	Rillenkugellager 20x52x15	Grooved ball bearing 20x52x15	DIN 625
7	0469-238	Rillenkugellager 20x42x12	Grooved ball bearing 20x42x12	DIN 625

Lager vorne / Bearing front

2051-648



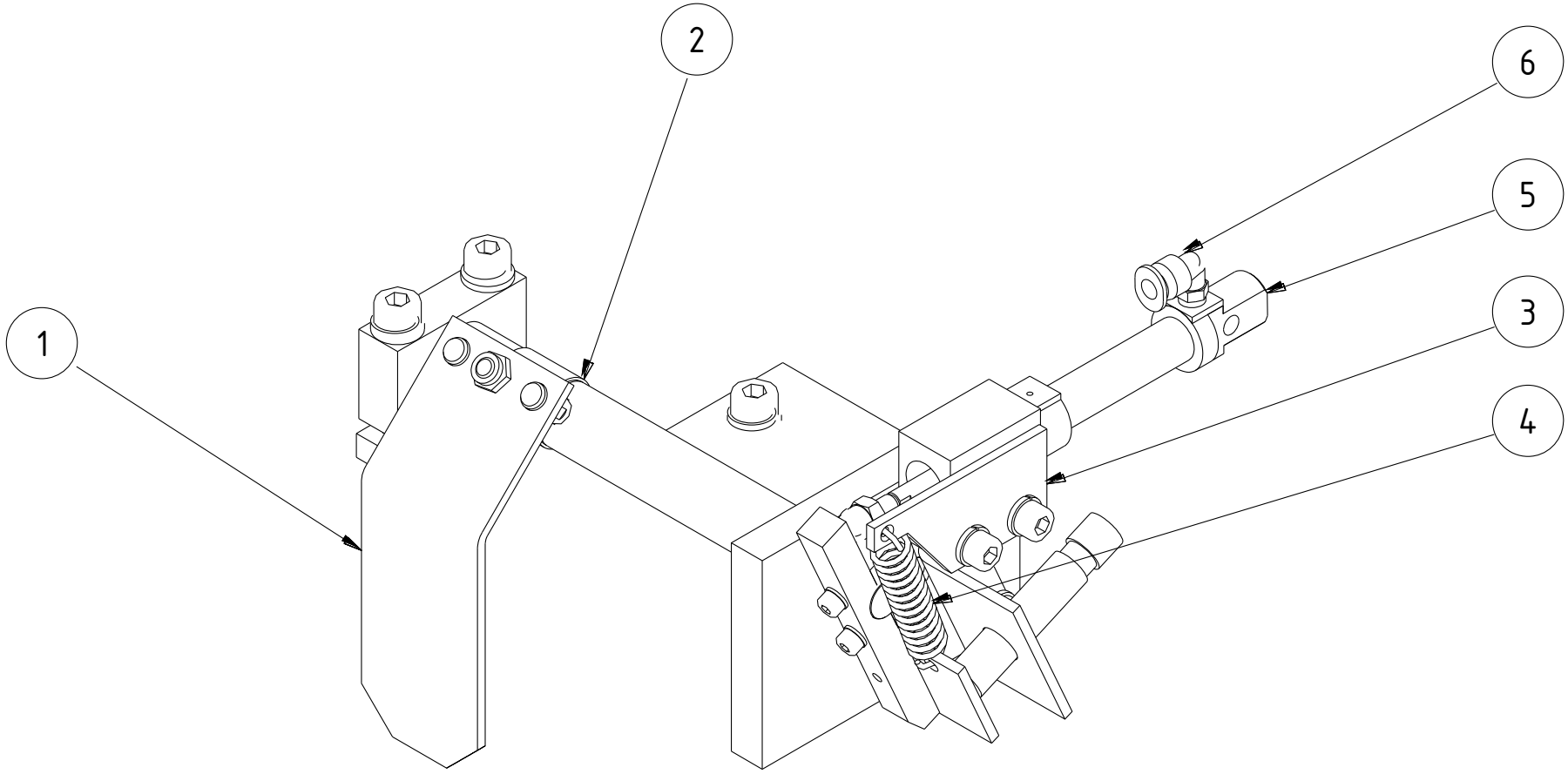
Lager vorne / Bearing front

2051-648

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
1	2001-188	Vierkantmutter M8 - 16x16x8	Square nut M8 - 16x16x8	
2	2050-925	Zahnscheibe Z44	Toothed disk Z44	
3	2050-926	Welle	Shaft	
4	2051-272	Einsatz für Kugellager	Insert for ball bearing	
5	2051-351	Grundplatte	Base plate	
6	2029-202	Radial-Wellendichtring	Rotary shaft seal	DIN 3760
7	0024-694	Sicherungsring A20x1,2	Retaining ring A20x1,2	DIN 471
8	0469-238	Rillenkugellager 20x42x12	Grooved ball bearing 20x42x12	DIN 625
9	1095-641	Rillenkugellager 20x52x15	Grooved ball bearing 20x52x15	DIN 625
10	0096-245	Passfeder 6x6x36	Feather key 6x6x36	DIN 6885
11	0313-025	Zylinderschraube M6x12	Cheese head screw M6x12	DIN 7984
12	1112-554	Stellring A20,2 +0,1	Adjusting ring A20,2 +0,1	DIN 705
13	2000-387	Federring A8	Spring washer A8	DIN 7980
14	2000-373	Zylinderschraube M8x16	Cheese head screw M8x16	DIN 7984

Anfahrschalter komplett / Starting switch complete

Variante / Variant A;D: 100059025 (Zeichnung/Drawing)
Variante / Variant B;C: 100075136



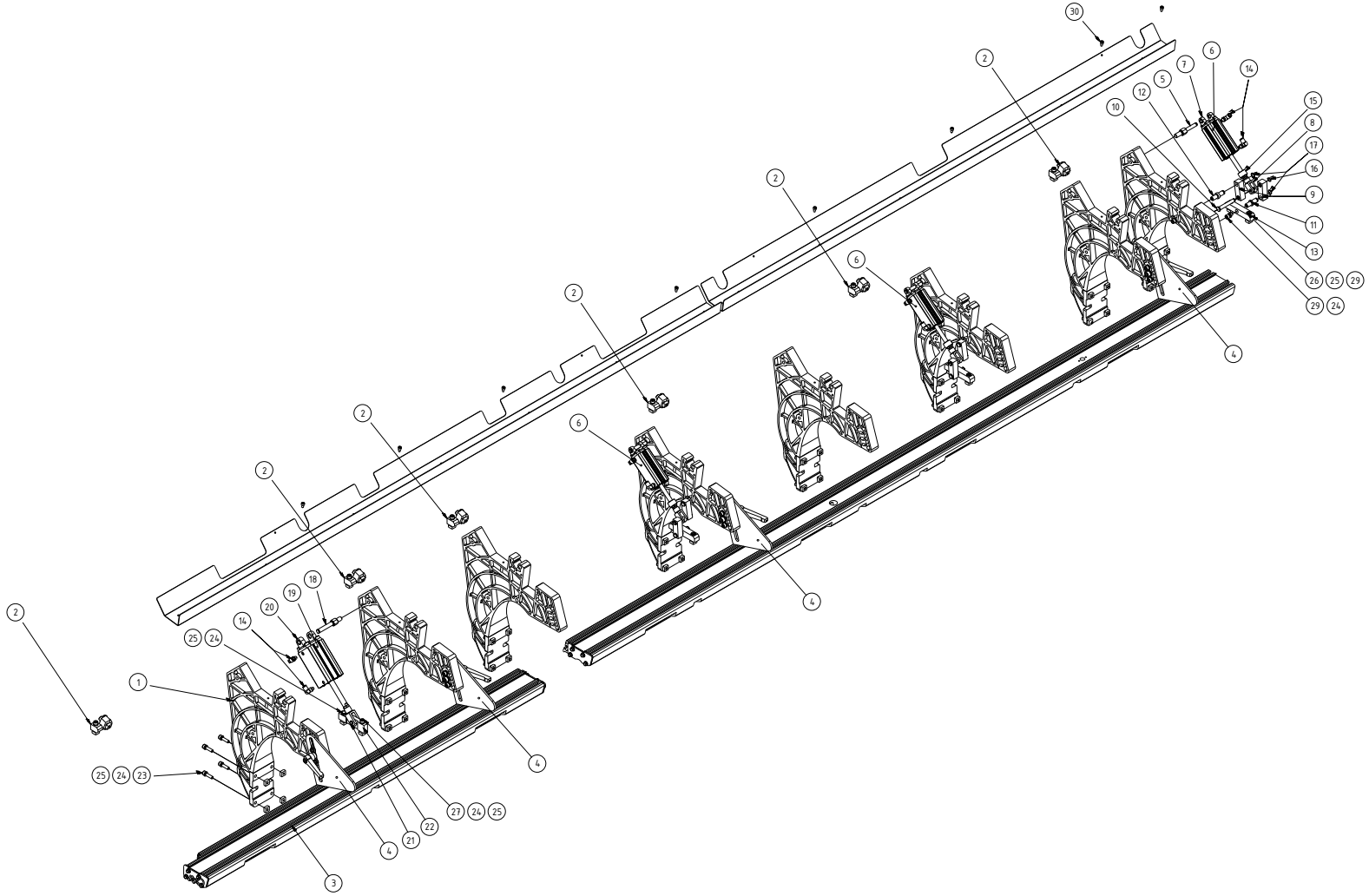
Anfahrschalter komplett / Starting switch complete

Variante / Variant A;D 100059025
Variante / Variant B;C 100075136

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
1	100059031	Anfahrschalterfahne	Flag for starting switch	
2	2051-671	Federklammer D20	Spring anchor D20	
3	2027-034	Federlasche	Spring shackle	
4	2027-033	Zugfeder 1,6x12x43x14	Tension spring 1,6x12x43x14	
5	2030-646	Zylinder	Cylinder	
6	2038-348	Steckverschraubung	Plug-in screwing	

Kanalöffner / Channel opener

Zeichnung Variante / Drawing Variant A;D

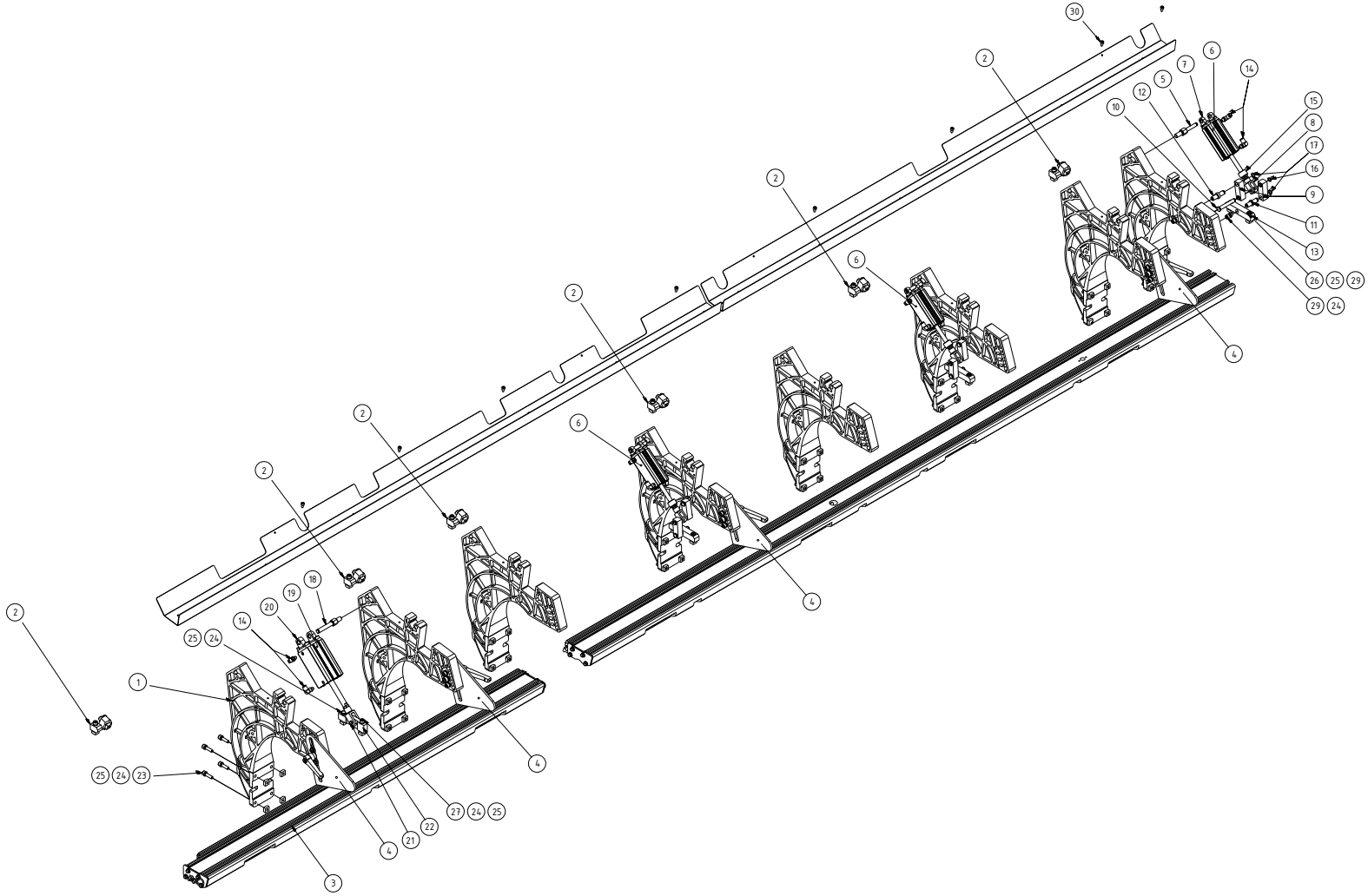


Kanalöffner / Channel opener

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
1	2051-372	Lagerbock	Bearing block	
2	2050-770	Scharnier	Hinge	
3	2051-812 2050-956 100060793 100075158	Kanaldeckel hinten A;D Hub 400 Kanaldeckel hinten B;C Hub 400 Kanaldeckel hinten A;D Hub 600 Kanaldeckel hinten B;C Hub 600	Cover rear A;D stroke 400 Cover rear B;C stroke 400 Cover rear A;D stroke 600 Cover rear B;C stroke 600	
4	2055-060	Niederhalter komplett	Holding down device complete	
5	2050-662	Achsbolzen für Zylinderbefestigung	Bolt	
6	2055-058	Zylinder	Cylinder	
7	2056-579	Schwenkflansch	Flange	
8	2001-382	Gabelkopf	Fork head	DIN 439
9	2050-763	Kniehebellasche	Bracket	
10	2050-765	Drehgelenkbolzen	Bolt	
11	2035-200	Achsbolzen	Bolt	
12	2055-760	Achsbolzen	Bolt	
13	2050-764	Schließleiste	Locking strip	
14	2038-346	Steckverschraubung	Plug-in screwing	
15	2052-602	Buchse 25x12,2x16	Bush 25x12,2x16	
16	0024-635	Sicherungsring 10x1,0	Retaining ring 10x1,0	DIN 471
17	0026-638	Sicherungsring 12x1,0	Retaining ring 12x1,0	DIN 471
18	2052-599	Achsbolzen	Bolt	
19	2055-059	Zylinder	Cylinder	
20	2035-479	Schwenkflansch	Slewing flange	

Kanalöffner / Channel opener

Zeichnung Variante / Drawing Variant A;D

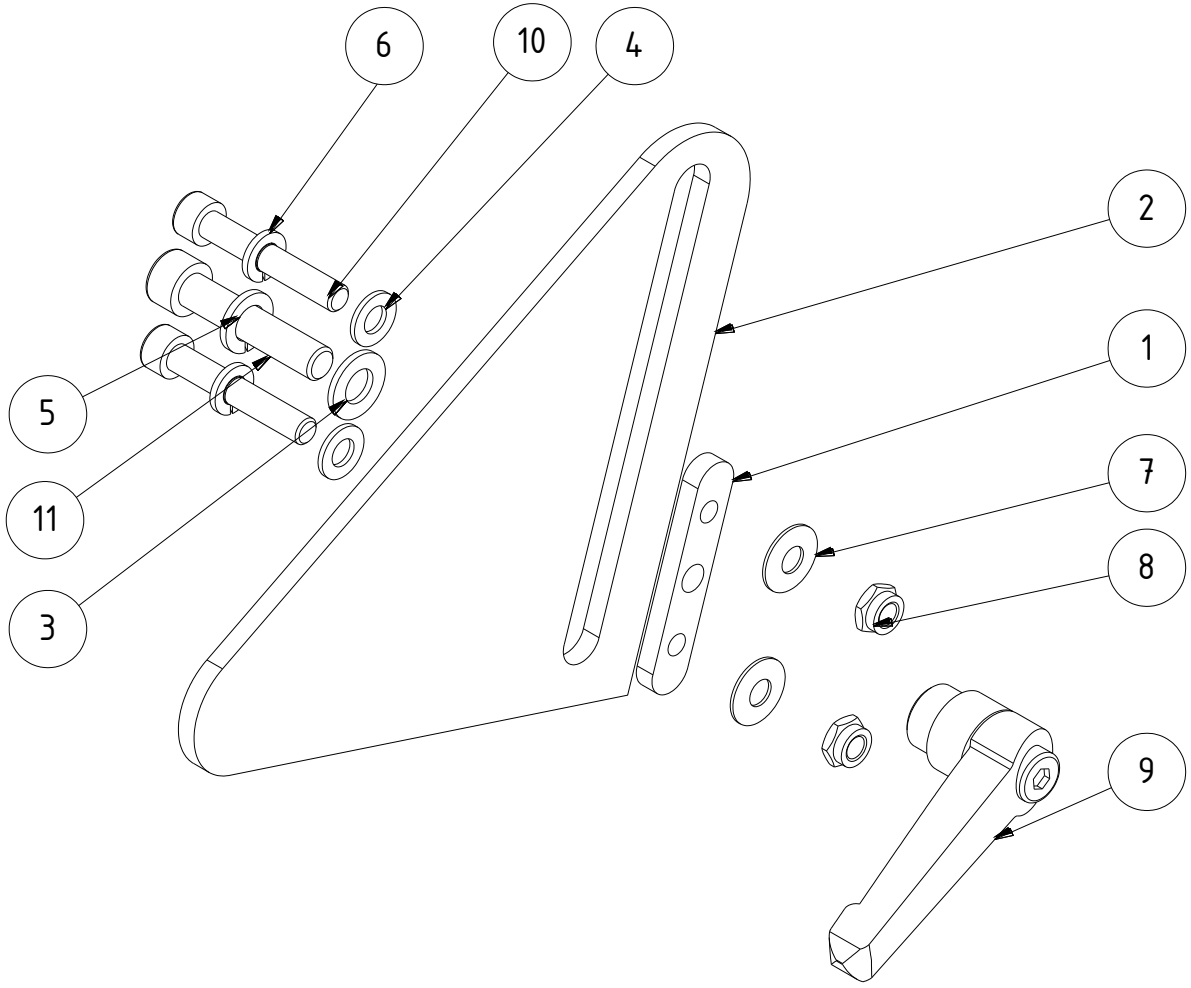


Kanalöffner / Channel opener

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
21	2012-991	Gelenkkopf	Joint head	
22	100071192	Leiste für Zylinder	Strip for cylinder	
23	0302-678	Zylinderschraube M8x30	Cheese head screw M8x30	ISO 4762-8-8
24	0292-869	Federring B 8	Spring washer B 8	DIN 127
25	2001-188	Vierkantmutter M8 - 16x16x8	Square nut M8 - 16x16x8	
26	0387-320	Zylinderschraube M8x25	Cheese head screw M8x25	ISO 4762-8-8
27	2000-360	Zylinderschraube M8x45	Cheese head screw M8x45	DIN 912
28	nicht vorhanden not existend			
29	0302-597	Zylinderschraube M8x16	Cheese head screw M8x16	DIN 912
30	0302-368	Zylinderschraube M6x10	Cheese head screw M6x10	DIN 912
	2055-054	Sicherungsbolzen	Bolt	
	2011-646	Kugelkette	Ball chain	
	2011-647	Schließe 3.6 mm für Kugelkette	Closer 3.6 mm for ball chain	
	2011-648	Ring 16 mm	Ring 16 mm	

Niederhalter / Holding-down device

2055-060



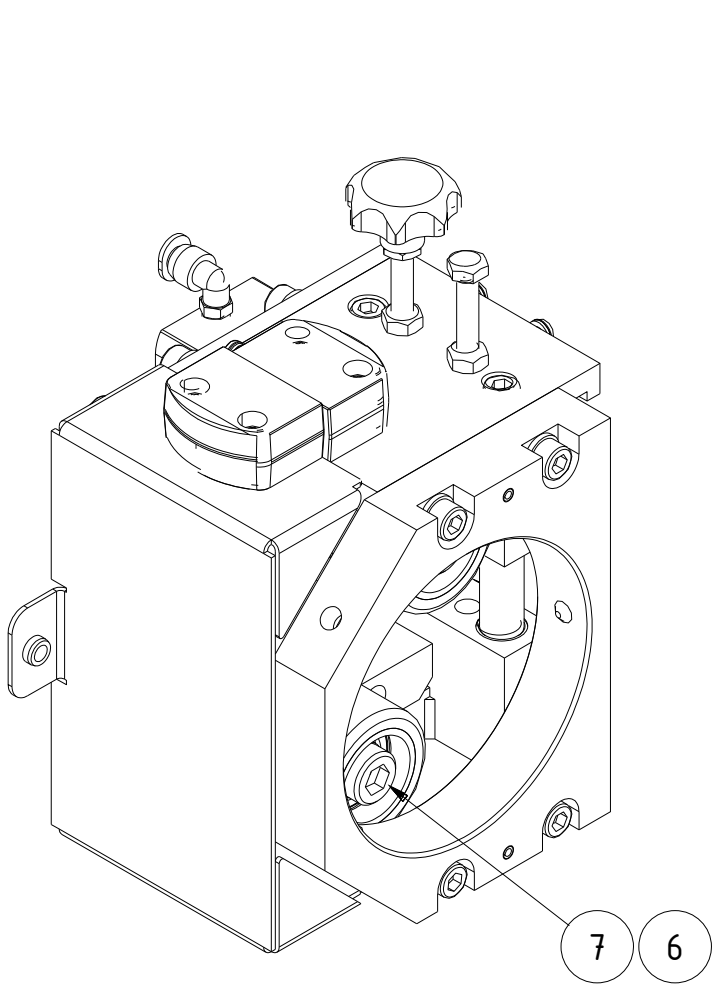
Niederhalter / Holding-down device

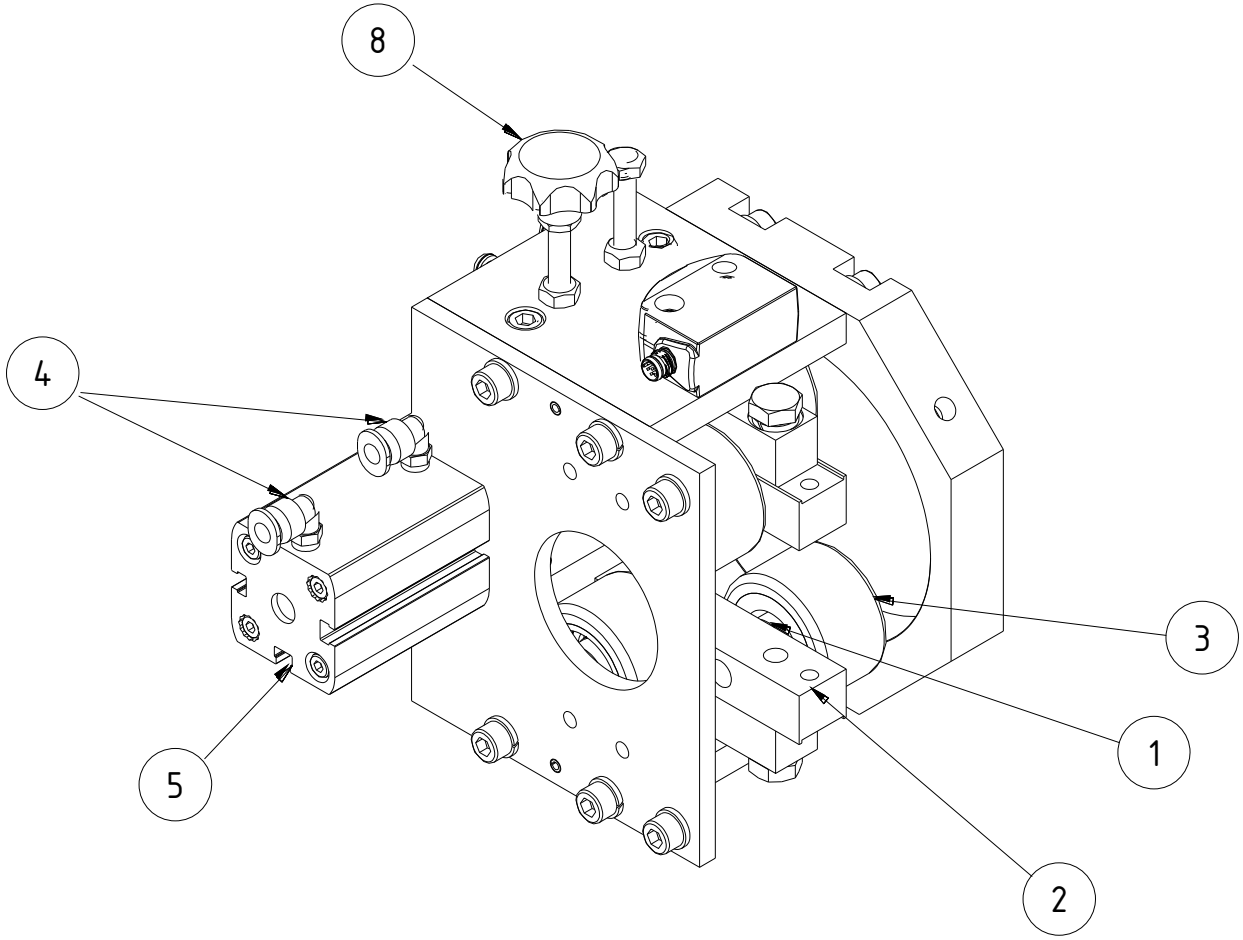
2055-060

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
1	2054-726	Niederhalterführung	Guidance for holding-down device	
2	2055-825	Niederhalter	Holding-down device	
3	2000-403	Scheibe A10,5	Washer A10,5	DIN 125
4	0292-362	Scheibe A8,4	Washer A8,4	DIN 125
5	0292-877	Federring B10	Spring washer B10	DIN 127
6	0292-869	Federring B8	Spring washer B8	DIN 7980
7	2055-759	Tellerfeder 8,2x20x1	Cup spring 8,2x20x1	DIN 2093
8	0666-998	Sechskantmutter M8	Hexagonal nut M8	DIN 985
9	2054-483	Klemmhebel	Clamping lever	
10	0302-716	Zylinderschraube M8x50	Cheese head screw M8x50	ISO 4762
11	4000-725	Zylinderschraube M10x50	Cheese head screw M10x50	ISO 4762

Lünette D26 / Steady rest D26

100082275 Variante/Variant A;D
100077069 Variante/Variant B;C





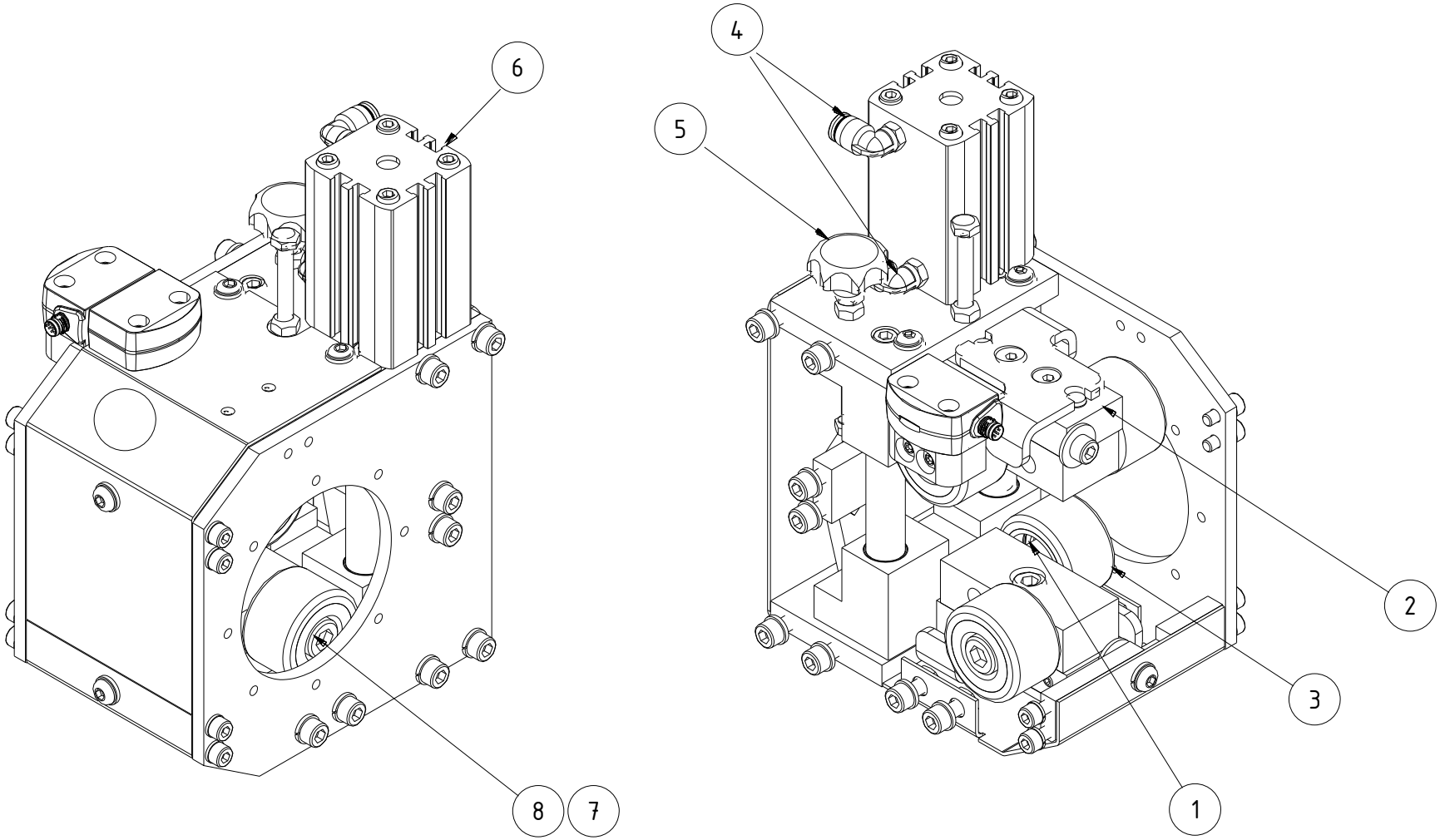
Lünette D26 / Steady rest D26

100082275 Variante/Variant A;D
100077069 Variante/Variant B;C

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
1	2058-235	Distanz f. Rolle	Distace for roller	
2	2065-355	Halter f. Rollen	Holder for roller	
3	2058-243	Rolle	Roller	
4	2038-348	Steckverschraubung	Plug-in screwing	
5	2065-358	Zylinder	Cylinder	
6	2031-007	Scheibe	Washer	DIN 25201
7	2001-999	Zylinderschraube M10x30	Cheese head screw M10x30	DIN 6912
8	100077703	Sterngriff	Star grip	

Lünette D38 / Steady rest D38

100077530 Variante/Variant A;D
100082276 Variante/Variant B;C



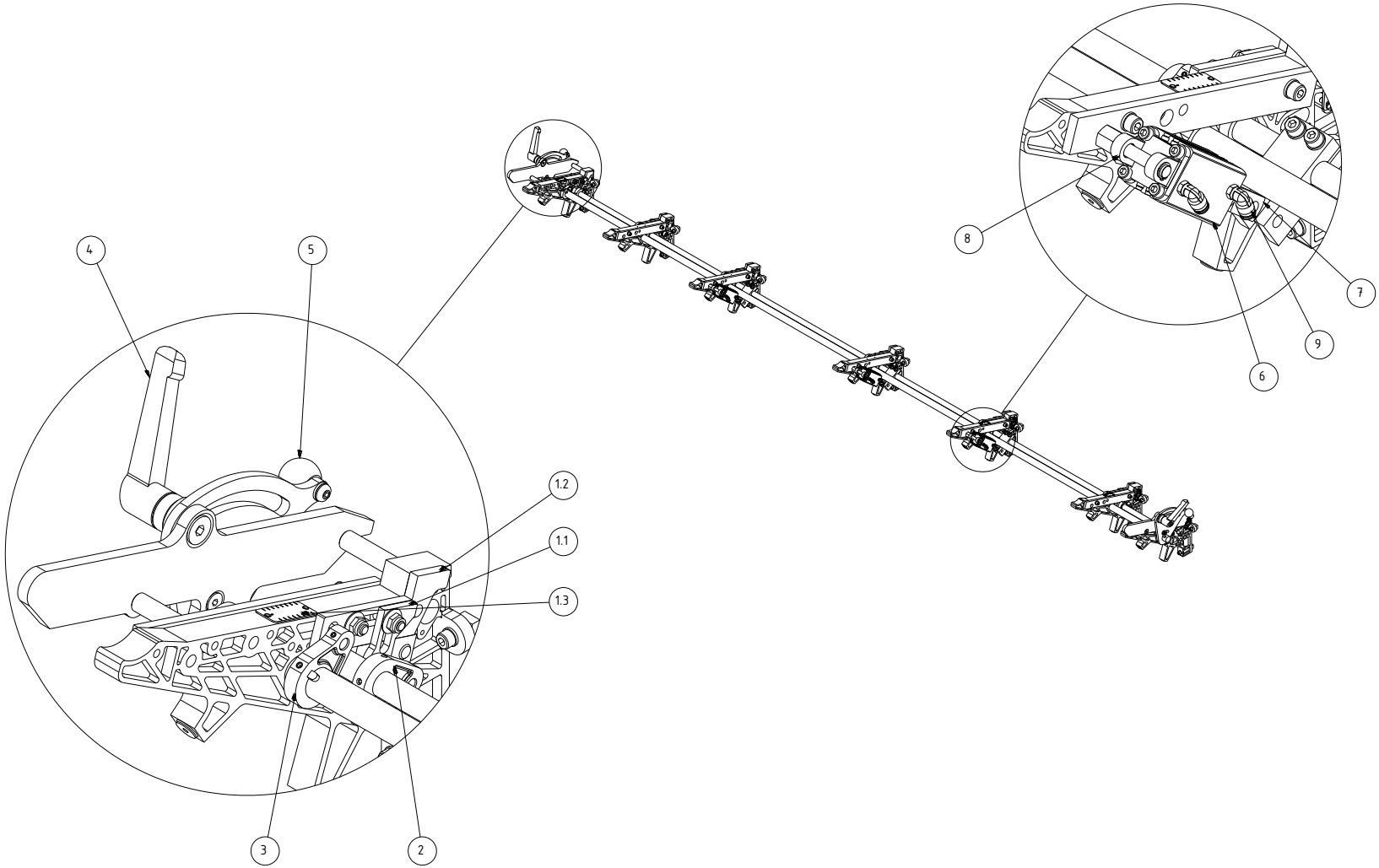
Lünette D38 / Steady rest D38

100077530 Variante/Variant A;D
100082276 Variante/Variant B;C

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
1	2058-235	Distanz f. Rolle	Distace for roller	
2	100077531	Führung	Guidance	
3	2058-243	Rolle	Roller	
4	2038-346	Steckverschraubung	Plug-in screwing	
5	100077703	Sterngriff	Star grip	
6	2055-066	Zylinder	Cylinder	
7	2031-007	Scheibe	Washer	DIN 25201
8	2001-999	Zylinderschraube M10x30	Cheese head screw M10x30	DIN 6912

Seitliche Materialauflage / Lateral material storage

Zeichnung Variante / Drawing Variant A;D

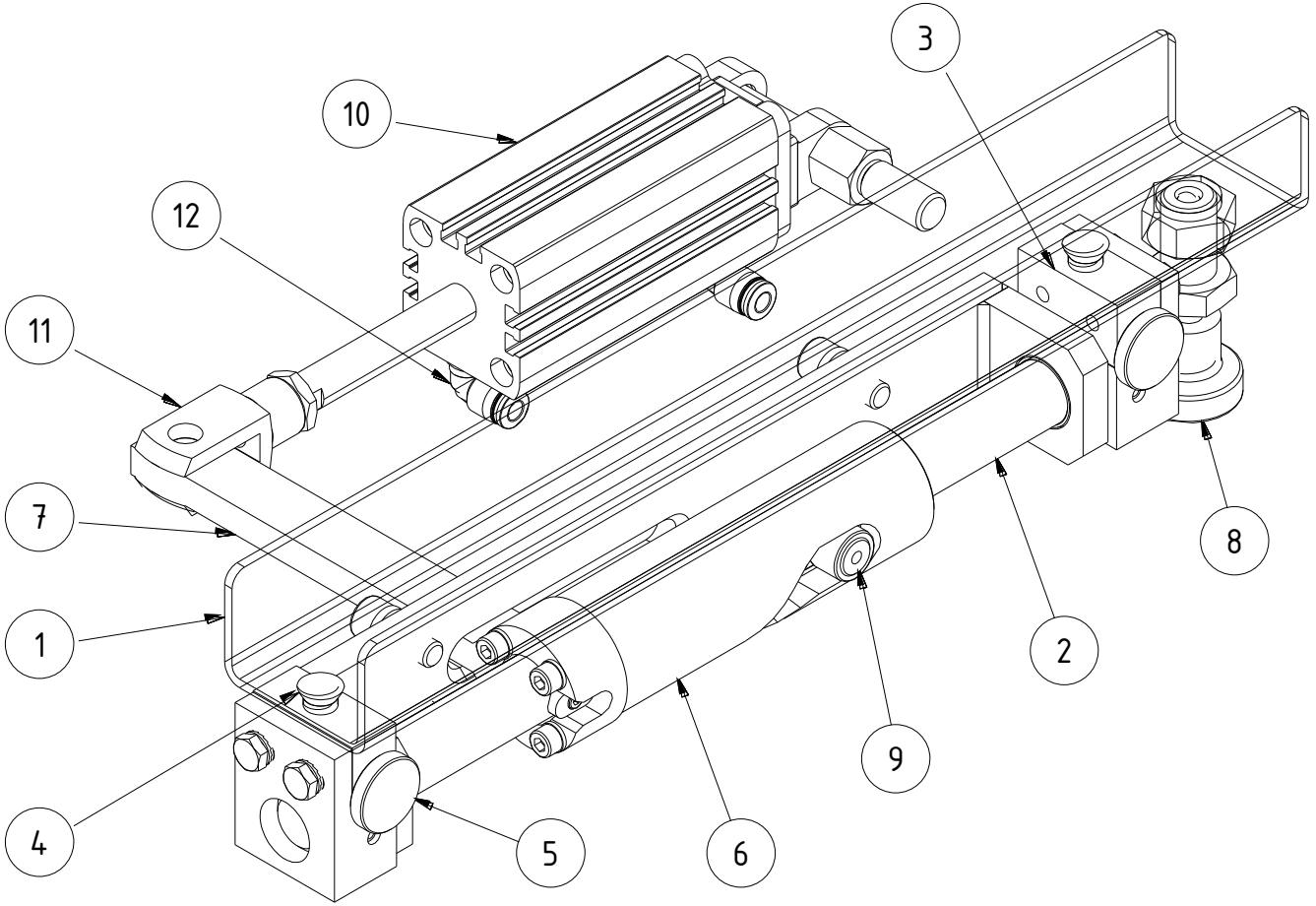


Seitliche Materialauflage / Lateral material storage

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
1	2054-875 2054-876	Auflagebock vormontiert mit Anschlag A;D Auflagebock vormontiert mit Anschlag B;C bestehend aus:	Bearing support premounted with stop A;D Bearing support premounted with stop B;C Consisting of:	
1.1	2050-881	Stößel an Vereinzelung	Tappet on separation	
1.2	2055-919	Anschlag der Vereinzelung	Stop of separation	
1.3	2055-067	Skala	Scale	
2	10050779	Hebel komplett	Lever complete	
3	2054-571	Hebel D25 komplett sv	Lever D25 complete, side reversed	
4	2053-377	Klemmhebel	Clamping lever	
5	2041-158	Kugelknopf	Ball lever	
6	2055-066	Zylinder	Cylinder	
7	2001-382	Gabelkopf	Fork head	
8	2056-579	Schwenkflansch	Slewing flange	
9	2038-346	Steckverschraubeung	Plug-in screwing	
		Zusätzlich bei Länge 6200	Additionally at length 6200	
	2068-971	Kupplung D40x20x100	Coupling D40x20x100	
	2027-596	Kupplung D25	Coupling D25	
	2060-336	Stützplatte	Support plate	

Reststückklappe / Remnant flap

Variante / Variant A;D: 100072011 (Zeichnung/Drawing)
Variante / Variant B;C: 100082121



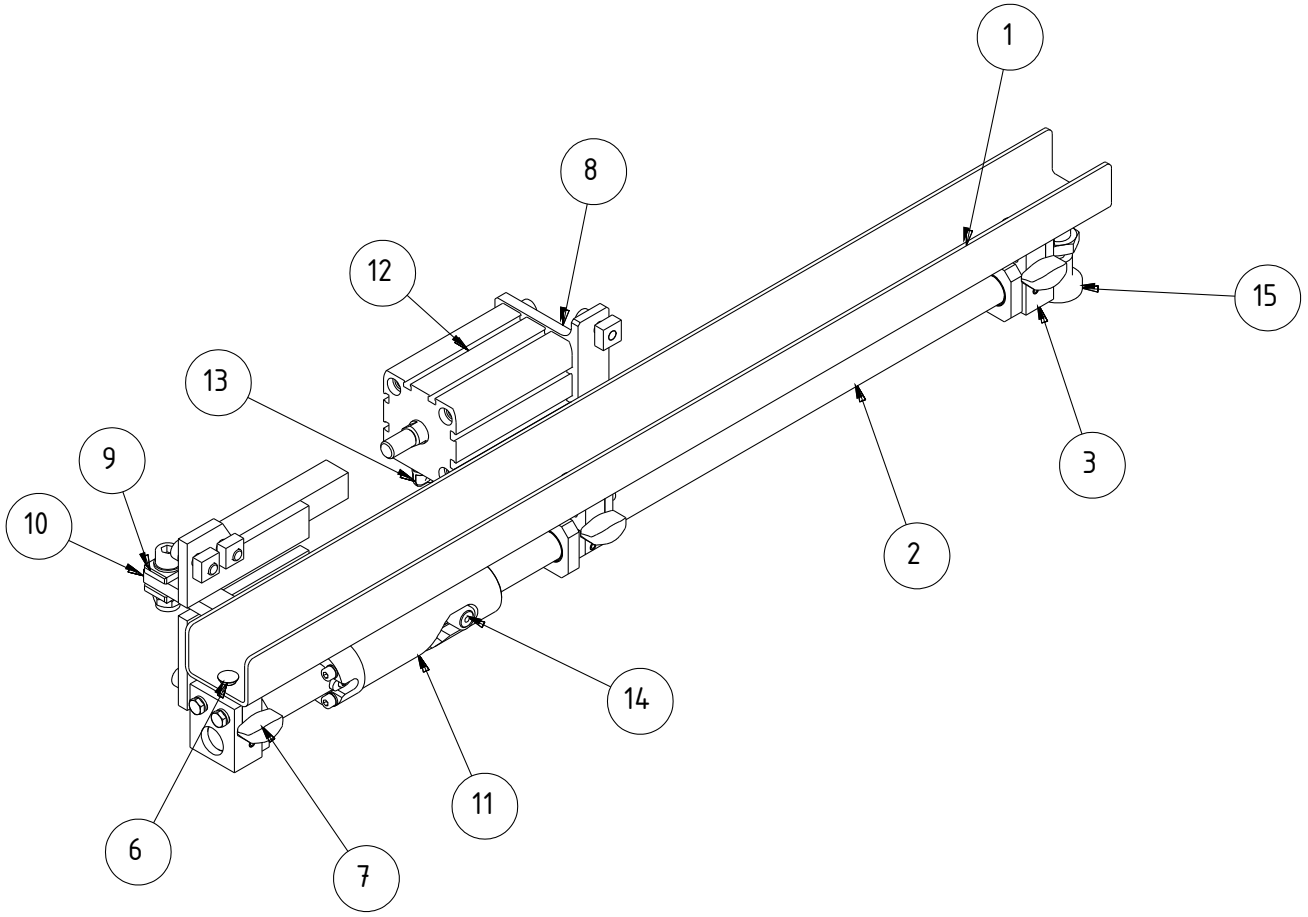
Reststückklappe / Remnant flap

Variante / Variant A;D: 100072011
Variante / Variant B;C: 100082121

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
1	100070996	Rinne	Groove	
2	2052-935	Welle	Shaft	
3	100072032	Verstellklotz	Adjusting block	
4	100072033	Kegelsicherung	Taper lock	
5	100071214	Rändelschraube	Knurled thumb srew	
6	2051-796 2050-670	Schiebehülse A;D Schiebehülse B;C	Sliding sleeve A;D Sliding sleeve B;C	
7	2050-669	Mitnehmer	Carrier	
8	2050-673	Rastbolzen	Stop bolt	
9	2050-672	Kurvenrolle	Cam roller	
10	2056-577	Zylinder	Cylinder	
11	2001-382	Gabelkopf	Fork head	
12	2038-346	Steckverschraubung	Plug-in screwing	

Reststückklappe 800 / Remnant flap 800

Variante / Variant A;D: 100083017 (Zeichnung/Drawing)
Variante / Variant B;C: 100083049



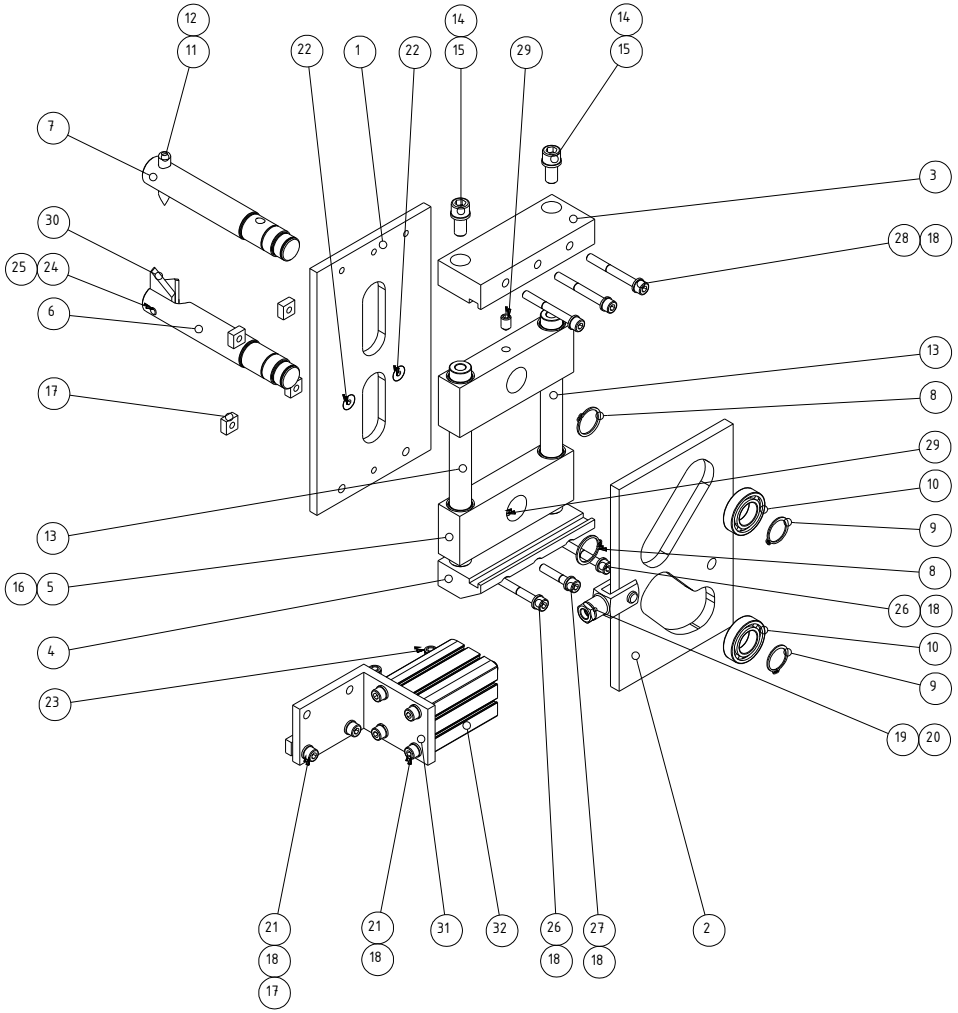
Reststückklappe 800 / Remnant flap 800

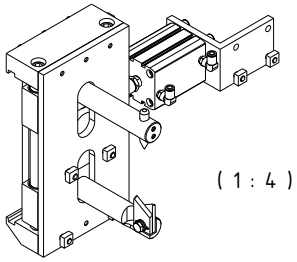
Variante / Variant A;D: 100083017
Variante / Variant B;C: 100083049

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
1	100083013	Rinne	Groove	
2	2060-193	Welle	Shaft	
3	100072031	Schwenkklotz geteilt	Swivel block split	
4	100082933	Schwenkklotz geteilt 600/800	Swivel block split 600/800	
5	100072032	Verstellklotz	Adjusting block	
6	100072033	Kegelsicherung	Taper lock	
7	100071214	Rändelschraube	Knurled thumb srew	
8	2060-958 2060-957	Winkel Zylinder A;D Winkel Zylinder B;C	Angle cylinder A;D Angle cylinder B;C	
9	2060-959	Gabelkopf verlängert	Fork head extended	
10	2050-669	Mitnehmer	Carrier	
11	2051-796 2050-670	Schiebehülse A;D Schiebehülse B;C	Sliding sleeve A;D Sliding sleeve B;C	
12	2058-185	Zylinder	Cylinder	
13	2038-346	Steckverschraubung	Plug-in screwing	
14	2050-672	Kurvenrolle	Cam roller	
15	2050-673	Rastbolzen	Stop bolt	

Greifer / Gripper

Variante / Variant A;D: 2074-975
Variante / Variant B;C: 2074-493





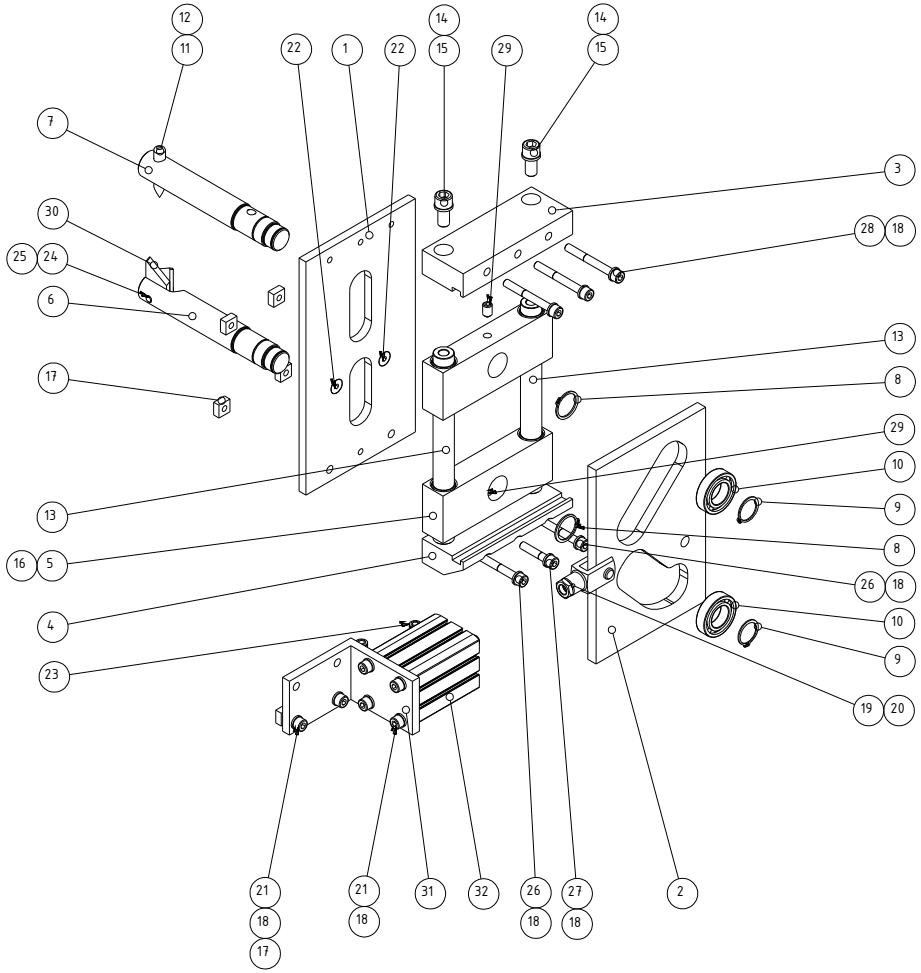
Greifer / Gripper

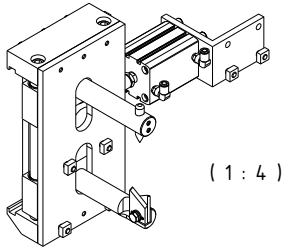
Variante / Variant A;D: 2074-975
Variante / Variant B;C: 2074-493

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
1	2050-948	Grundplatte	Base plate	
2	2050-946	Kulissenplatte	Guide plate	
3	2054-253	Führungsleiste oben	Guide gib, top	
4	2050-947	Führungsleiste unten	Guide gib bottom	
5	2050-412	Halter für Greiferarm	Holder for gripper arm	
6	2051-480	Greiferarm unten	Gripper arm, bottom	
7	2051-479	Greiferarm oben	Gripper arm, top	
8	2050-415	Sicherungsring A28	Retaining ring A28	DIN 471
9	2000-510	Sicherungsring A25	Retaining ring A25	DIN 471
10	2027-118	Rillenkugellager 25x47x12	Grooved ball bearing 25x47x12	DIN 625
11	1324-063	Messer oben	Blade, top	
12	0304-050	Gewindestift M8x10	Set screw M8x10	DIN 916 - 45 H
13	2050-949	Führungsstange	Guide bar	
14	2037-505	Scheibe 12	Washer 12	DIN 25201
15	2043-639	Zylinderschraube M12x25	Cheese head screw M12x25	DIN 912 - 10.9
16	2050-416	Glycodur-Buchse 22x25x30	Glycodur bush 22x25x30	
17	2001-188	Vierkantmutter M8 - 16x16x8	Square nut M8 - 16x16x8	
18	0292-869	Federring B8	Spring washer B8	DIN 127
19	2000-016	Gabelkopf	Fork head	DIN 439
20	2004-949	Sechskantmutter M10x1,25	Hexagonal nut M10x1,25	DIN 934
21	0387-320	Zylinderschraube M8x25	Cheese head screw M8x25	ISO 4762 – 8-8
22	0305-979	Senkschraube M8x20	Countersunk screw M8x20	DIN 933
23	2038-346	Steckverschraubung	Plug-in screwing	

Greifer / Gripper

Variante / Variant A;D: 2074-975
Variante / Variant B;C: 2074-493





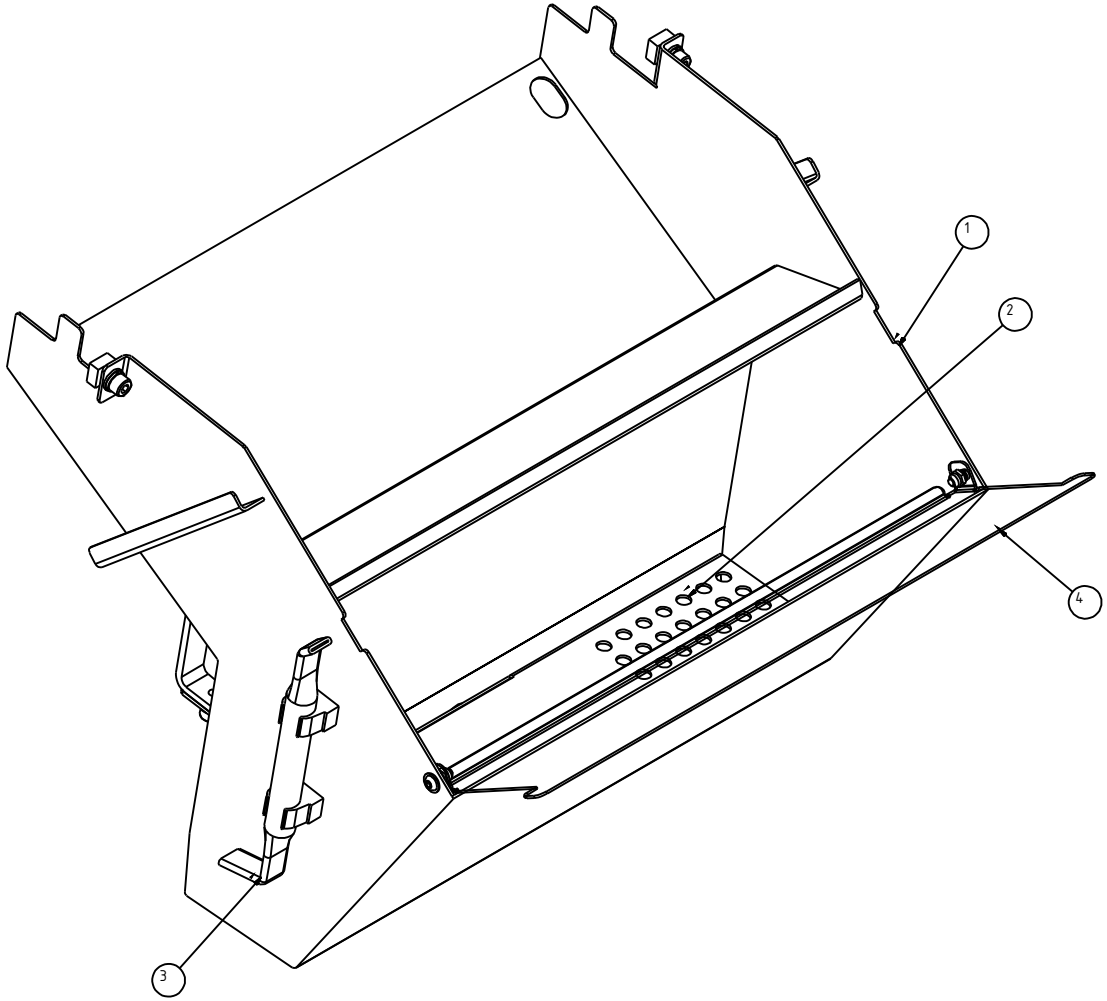
Greifer / Gripper

Variante / Variant A;D: 2074-975
Variante / Variant B;C: 2074-493

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
24	2000-364	Sechskantschraube M8x25	Hexagonal screw M8x25	DIN 933 8-8
25	0292-362	Scheibe A8,4 ST	Washer A8,4 ST DIN 125	DIN 125
26	2001-128	Zylinderschraube M8x55	Cheese head screw M8x55	ISO 4762
27	0302-694	Zylinderschraube M8x40	Cheese head screw M8x40	DIN 912 - 8-8
28	0302-740	Zylinderschraube M8x70	Cheese head screw M8x70	DIN 912 - 8-8
29	2052-391	Gewindestift M10x16	Set screw M10x16	DIN 914
30	1324-055	Messer, unten	Blade, bottom	
31	2074-494	Haltewinkel	Angle	
32	2058-131	Zylinder	Cylinder	

Reststückbehälter komplett / Remnant bin complete

100049340



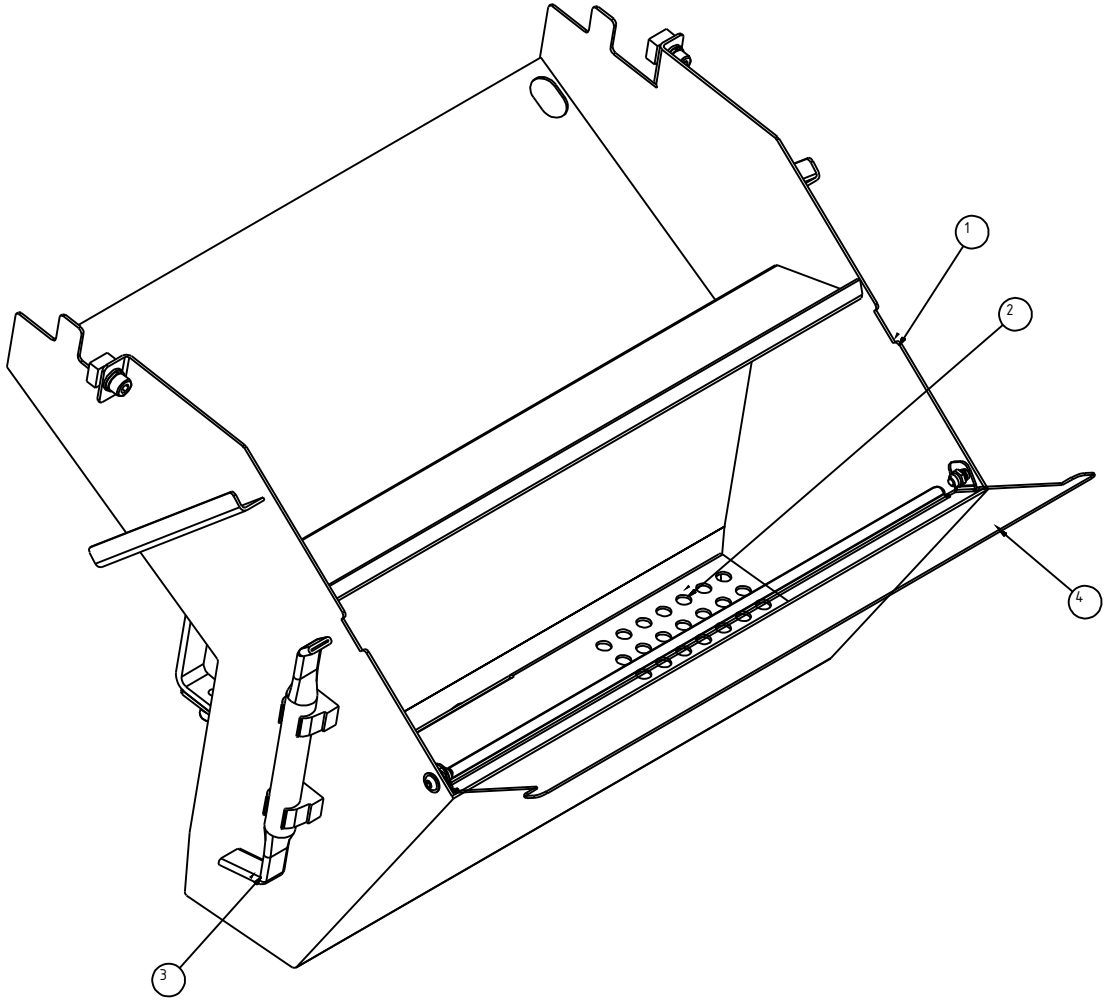
Reststückbehälter komplett / Remnant bin complete

100049340

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
1	2050-732	Reststückbehälter	Remnant bin	
2	2050-733	Abtropfblech	Drip plate	
3	2051-669	Einlagenwerkzeug komplett	Insert tool complete	
4	100045693	Deckel	Cover	

Reststückbehälter komplett / Remnant bin complete

100049340
100049992 Länge / length 4200/6200 800 mm



Reststückbehälter komplett / Remnant bin complete

100049340

Pos. Item	Ident-Nr. Ident. no.	Bezeichnung	Designation	Kommentar Remarks
1	2050-732	Reststückbehälter	Remnant bin	
2	2050-733	Abtropfblech	Drip plate	
3	2051-669	Einlagenwerkzeug komplett	Insert tool complete	
4	100045693	Deckel	Cover	

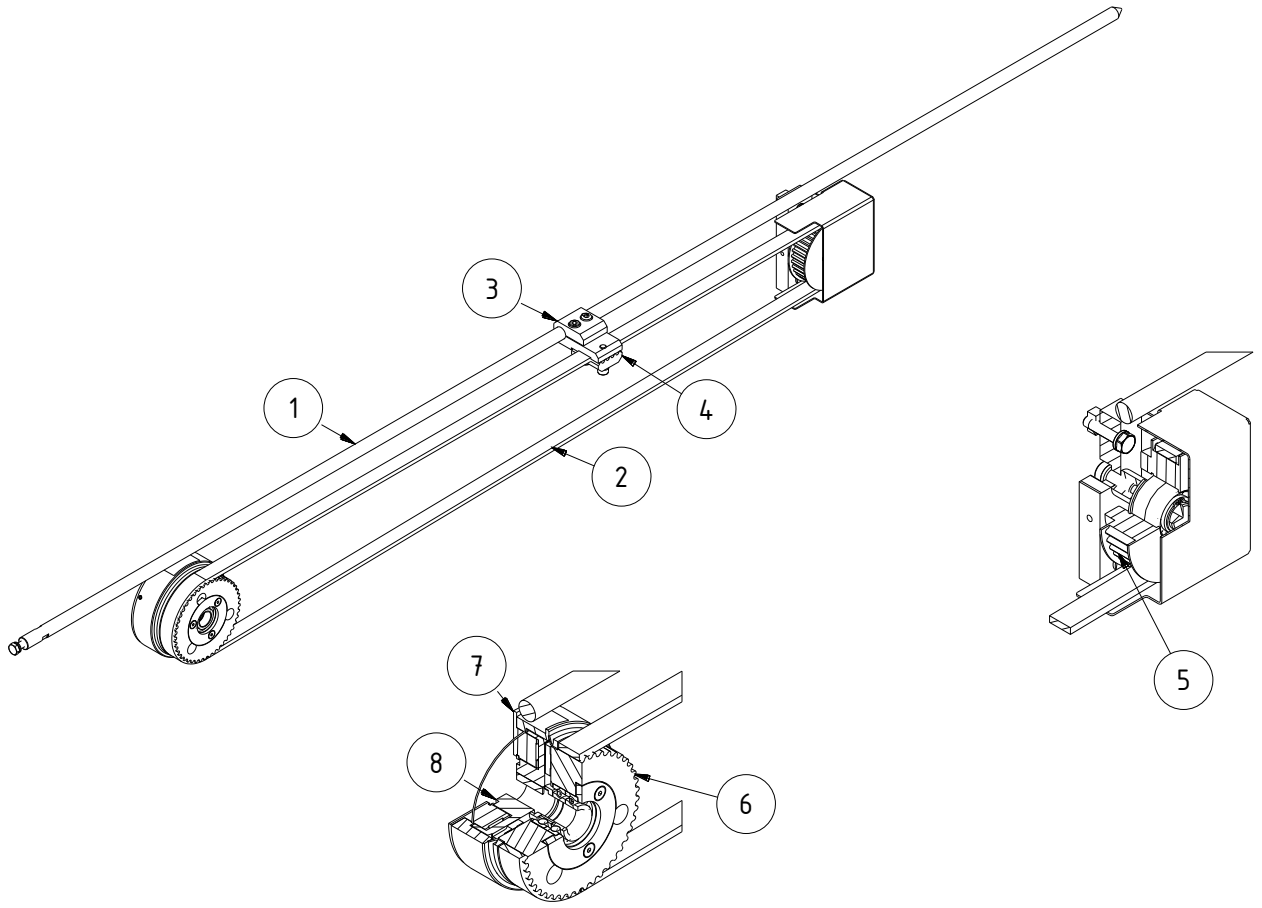
Reststückbehälter 800 komplett / Remnant bin 800 complete

100049992 Länge / length 4200/6200

Pos. Item	Ident-Nr. Ident. no.	Bezeichnung	Designation	Kommentar Remarks
1	2060-373	Reststückbehälter	Remnant bin	
2	2050-734	Abtropfblech	Drip plate	
3	2051-669	Einlagenwerkzeug komplett	Insert tool complete	
4	10004996	Deckel	Cover	

Synchroneinrichtung / Synchronized device

100059040
100098408 Länge/length 2200 Hub/stroke 400
100098903 Länge/length 2200 Hub/stroke 600



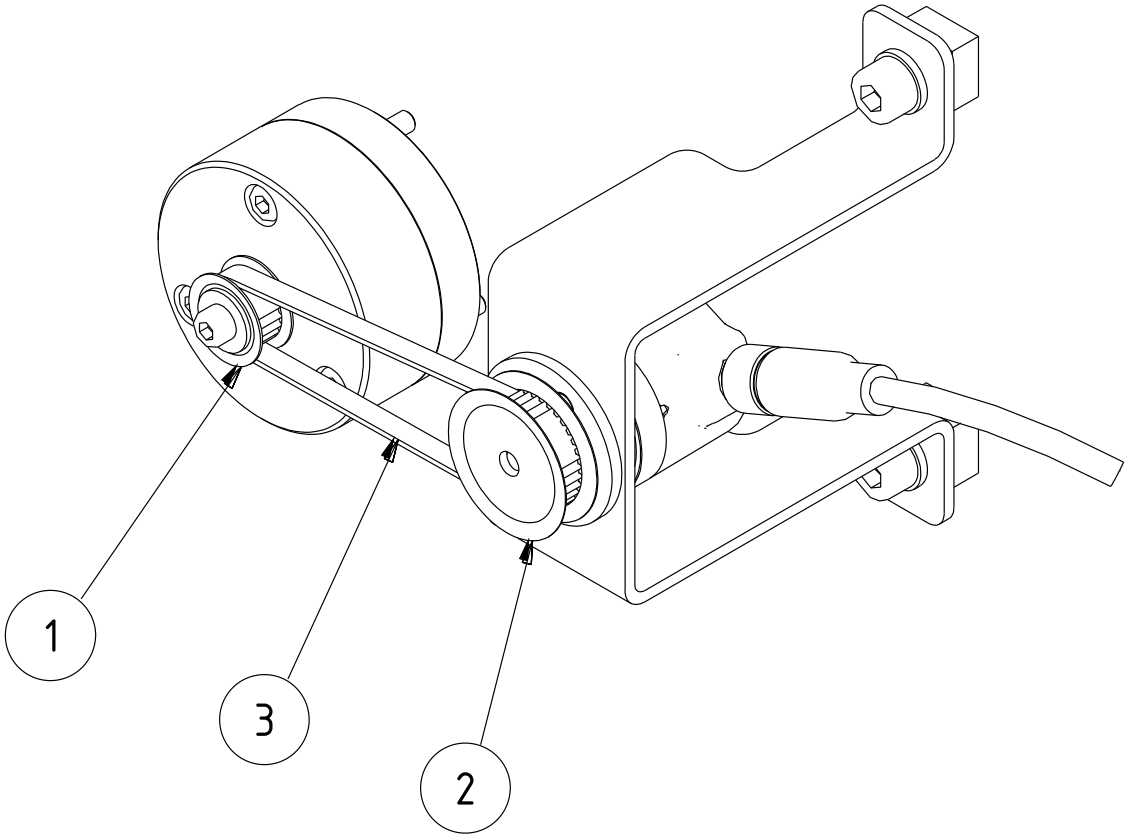
Synchroneinrichtung / Synchronized device

100059040
100098408 Länge/length 2200 Hub/stroke 400
100098903 Länge/length 2200 Hub/stroke 600

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
1	2030-195	Synchronstange	Synchronized bar	
2	100060295 100098154 100098904	Zahnriemen Zahnriemen 2200 Hub 400 Zahnriemen 2200 Hub 600	Toothed belt Toothed belt 2200 stroke 400 Toothed belt 2200 stroke 600	
3	2051-605	Mitnehmer für Synchronstange	Carrier for synchronized bar	
4	2035-080	Spannplatte	Clamping plate	
5	100044200	Umlenkrad komplett	Deflection wheel complete	
6	2055-542	Zahnscheibe Z44	Toothed disk Z44	
7	2000-197	Magnetteil Gr. 10	Magnetic part	
8	2000-195	Rotor Gr. 10	Rotor	

Sensor Synchroneinrichtung / Sensor Synchronized device

200008719



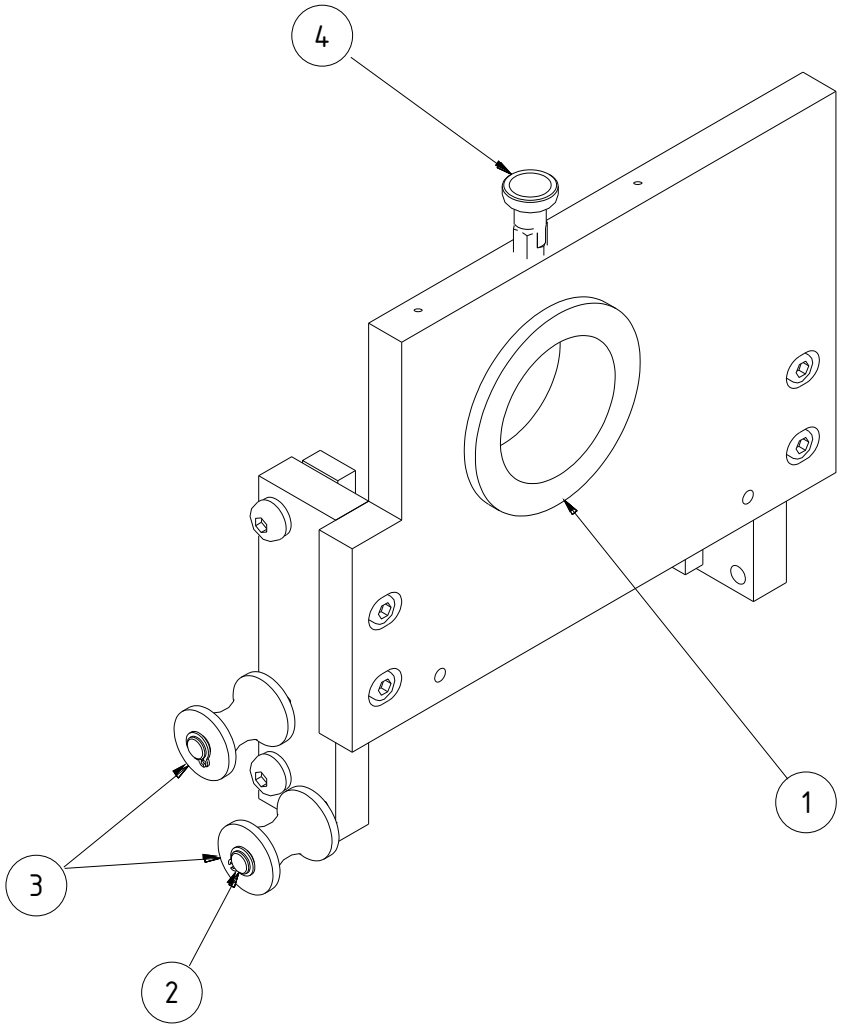
Sensor Synchroneinrichtung / Sensor Synchronized device

200008719

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
1	2069-696	Zahnscheibe Z22	Toothed disk Z22	
2	2070-054	Zahnscheibe Z36	Toothed disk Z36	
3	2069-692	Zahnriemen	Toothed belt	

Abstützung Führungsmodul / Support guide module

Variante / Variant A;D: 100073316 (Zeichnung / Drawing)
Variante / Variant B;C: 100075129



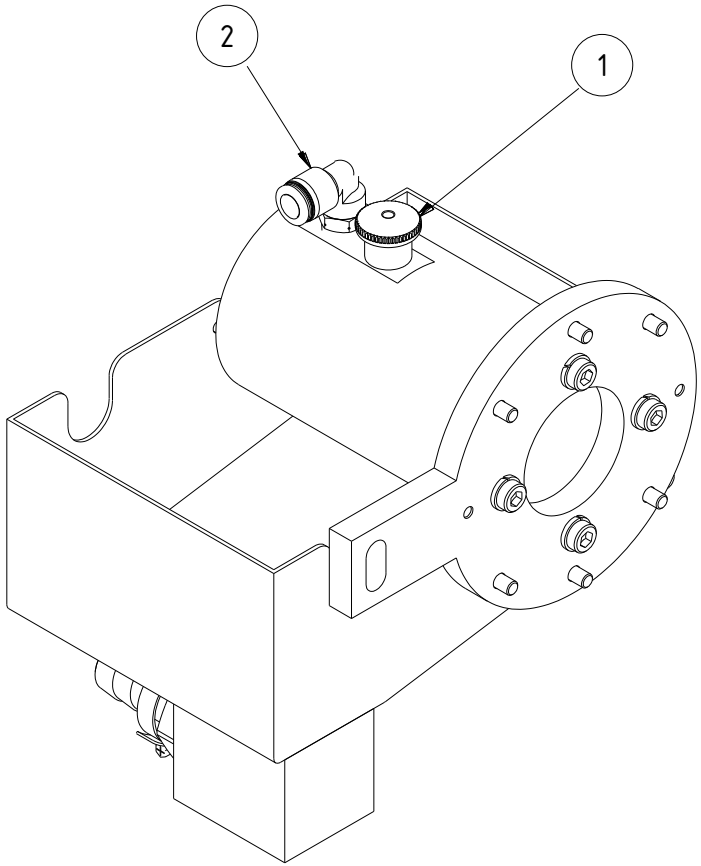
Abstützung Führungsmodul / Support guide module

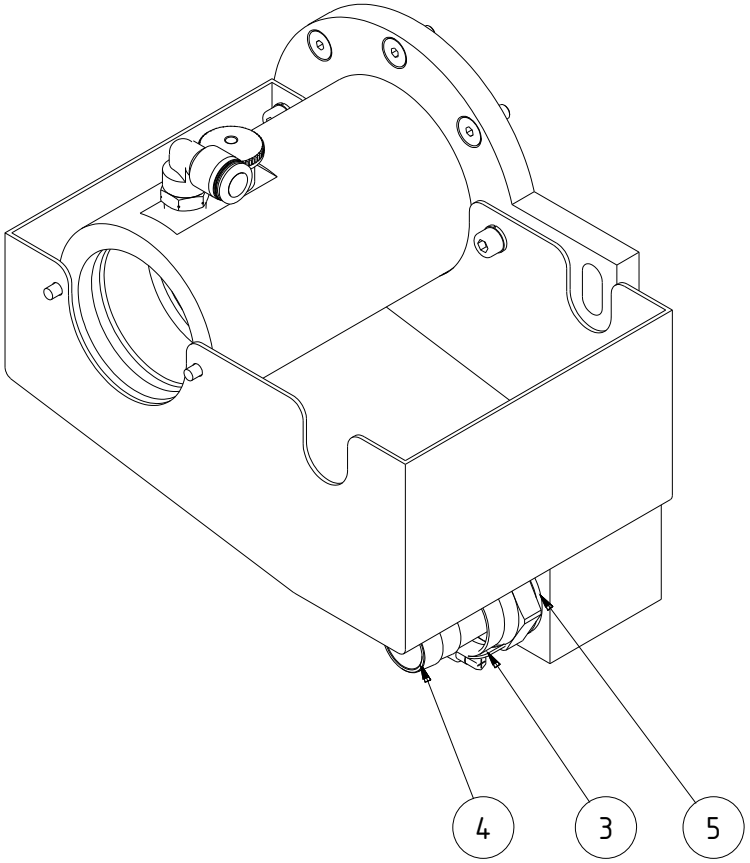
Variante / Variant A;D: 100073316
Variante / Variant B;C: 100075129

Pos. Item	**Ident-Nr.** Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** Remarks
1	100066230	Führungsbuchse	Guide bush	
2	100074318	Stehbolzen	Bolt	
3	100073710	Rolle	Roller	
4	100007948	Rastbolzen	Stop bolt	

Adapterset / Adapter set

100061159





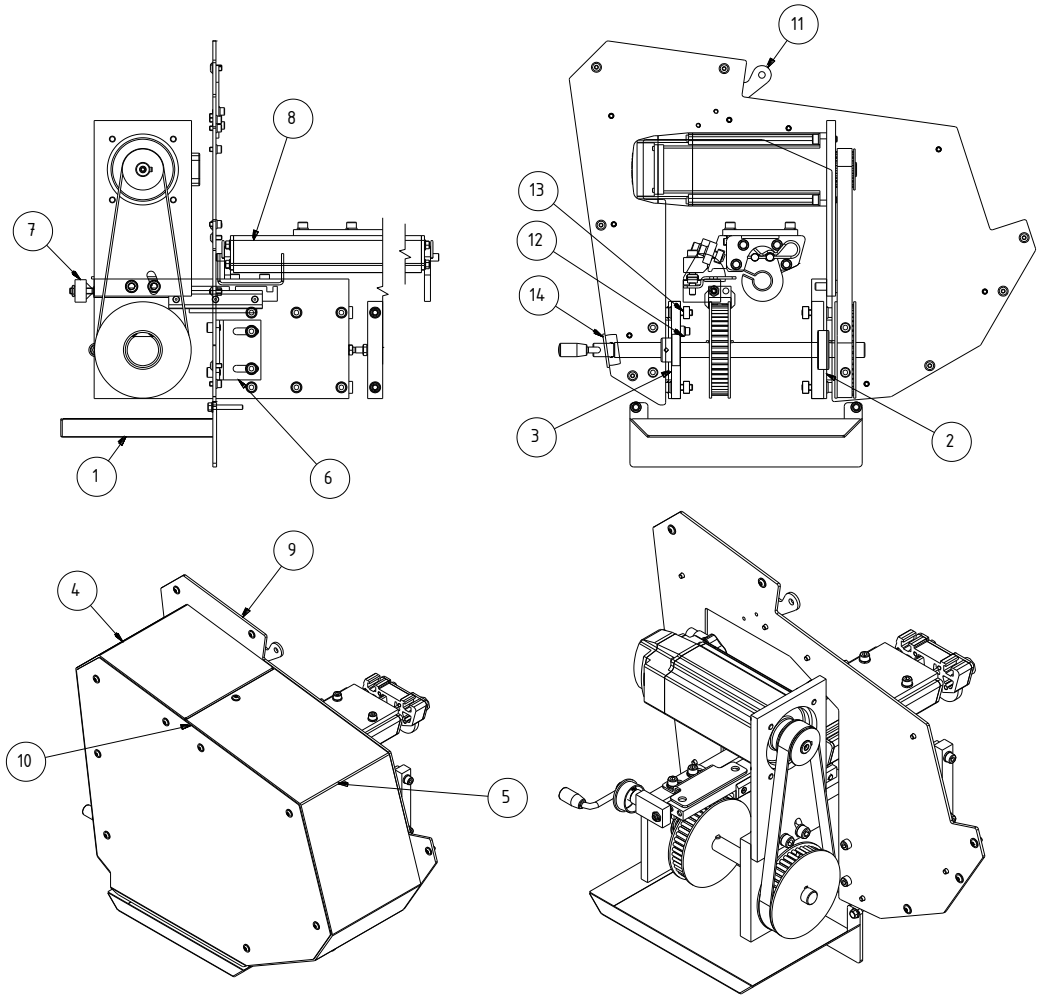
Adapterset / Adapter set

100061159

Pos. Item	Ident-Nr. Ident. no.	Bezeichnung	Designation	Kommentar Remarks
1	100091280	Miniraster	Mini-grid	
2	2044-374	Steckverschraubung	Plug-in-screwing	
3	2002-055	Schlauchschelle	Hose clip	
4	2001-674	Schlauchtülle R3/4"	Hose nozzle R3/4"	
5	100103525	Schlauch	Hose	

Umbausatz – Vorschubstange 1666 Hub 400 / Vorschubstange 1866 Hub 600
Retrofit kit – Pusher 1666 stroke 400 / Pusher 1866 stroke 600

Vorschubstange 1666 Hub 400 / Pusher 1666 stroke 400:	Variante/Variant A;D	200008352 – 3200	Variante/Variant B;C	200008354 – 3200
Vorschubstange 1866 Hub 600 / Pusher 1866 stroke 600:	Variante/Variant A;D	200008353 – 3200	Variante/Variant B;C	200008355 – 3200



Umbausatz – Vorschubstange 1666 Hub 400 / Vorschubstange 1866 Hub 600
Retrofit kit – Pusher 1666 stroke 400 / Pusher 1866 stroke 600

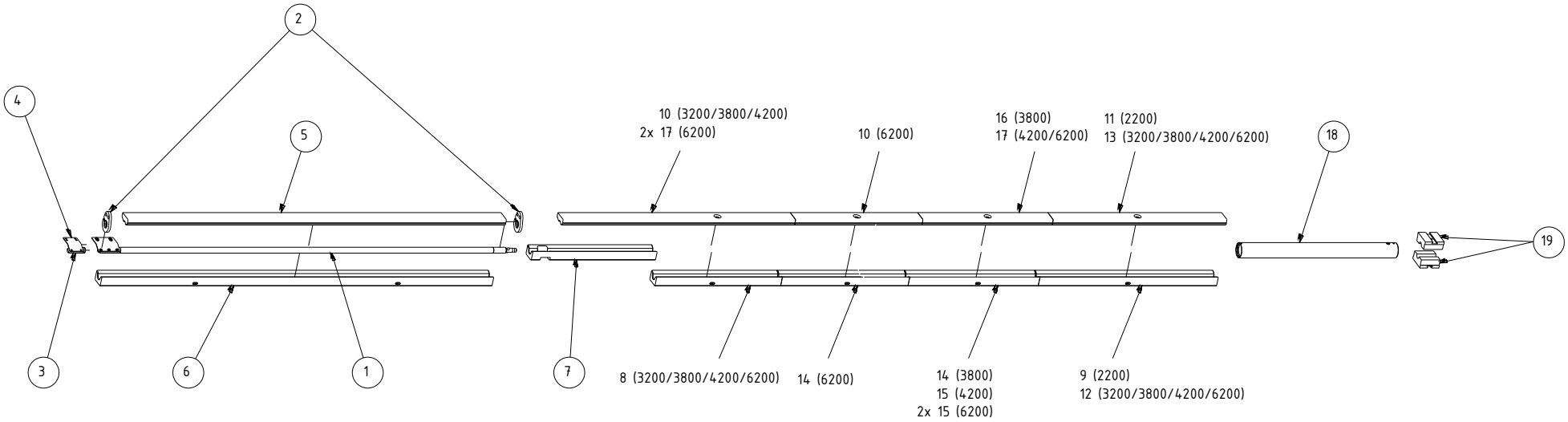
Länge/length 2200:	Vorschubstange 1666 Hub 400 / Pusher 1666 stroke 400:	Variante/Variant A;D: 200011111	Variante/Variant B;C: 200011112
	Vorschubstange 1866 Hub 600 / Pusher 1866 stroke 600:	Variante/Variant A;D: 200011113	Variante/Variant B;C: 200011114
Länge/length 3200:	Vorschubstange 1666 Hub 400 / Pusher 1666 stroke 400:	Variante/Variant A;D: 200008352	Variante/Variant B;C: 200008354
	Vorschubstange 1866 Hub 600 / Pusher 1866 stroke 600:	Variante/Variant A;D: 200008353	Variante/Variant B;C: 200008355
Länge/length 3800:	Vorschubstange 1666 Hub 400 / Pusher 1666 stroke 400:	Variante/Variant A;D: 200010417	Variante/Variant B;C: 200010418
	Vorschubstange 1866 Hub 600 / Pusher 1866 stroke 600:	Variante/Variant A;D: 200010481	Variante/Variant B;C: 200010482
Länge/length 4200:	Vorschubstange 1666 Hub 400 / Pusher 1666 stroke 400:	Variante/Variant A;D: 200008472	Variante/Variant B;C: 200008473
	Vorschubstange 1866 Hub 600 / Pusher 1866 stroke 600:	Variante/Variant A;D: 200010444	Variante/Variant B;C: 200010444

Pos. Item	Ident-Nr. Ident. no.	Bezeichnung	Designation	Kommentar Remarks
1	2054-385	Deckel mit Wanne	Top with basin	
2	2068-888 2068-886	Platte Vorderseite A;D Platte Vorderseite B;C	Plate front A;D Plate front B;C	
3	2054-380	Platte Rückseite	Plate rear	
4	2056-002	Abdeckblech Rückseite	Sheet rear	
5	2056-003	Abdeckblech Vorderseite	Sheet front	
6	2054-376	Haltewinkel 40x 60x80	Angle 40x60x80	
7	2054-382	Anschlag für Schlitten	Stop for carriage	
8	2054-615 2054-616	Kanaldeckel verlängert A;D Kanaldeckel verlängert B;C	Cover extended A;D Cover extended B;C	
9	2068-889	Stirnblech hinten	Sheet rear	
10	2074-376 2074-377	Stirnblech hinten A;D Stirnblech hinten B;C	Sheet rear A;D Sheet rear B;C	
11	2054-386	Haltelasche	Bracket	
12	2055-995	Leiste 5x14x40	Gib 5x14x40	
13	2054-564	Nutenstein M8/3x - 8x16x150	Tenon block M8/3x - 8x16x150	
14	2044-508	Verschlussstopfen D40	Stopple D40	

Pos. Item	Ident-Nr. Ident. no.	Bezeichnung	Designation	Kommentar Remarks
15	100098976 200011117 100060659 100078162 200008475 100075650 200008471 200008474 200011877 200011882	Zahnriemen VST 1666 Hub 400 – 2200 Zahnriemen VST 1866 Hub 600 – 2200 Zahnriemen VST 1666 Hub 400 – 3200 Zahnriemen VST 1866 Hub 600 – 3200 Zahnriemen VST 1666 Hub 400 – 3800 Zahnriemen VST 1866 Hub 600 – 3800 Zahnriemen VST 1666 Hub 400 – 4200 Zahnriemen VST 1866 Hub 600 – 4200 Zahnriemen VST 1666 Hub 400 – 6200 Zahnriemen VST 1866 Hub 600 – 6200	Toothed belt pusher 1666 stroke 400 – 2200 Toothed belt pusher 1866 stroke 600 – 2200 Toothed belt pusher 1666 stroke 400 – 3200 Toothed belt pusher 1866 stroke 600 – 3200 Toothed belt pusher 1666 stroke 400 – 3800 Toothed belt pusher 1866 stroke 600 – 3800 Toothed belt pusher 1666 stroke 400 – 4200 Toothed belt pusher 1866 stroke 600 – 4200 Toothed belt pusher 1666 stroke 400 – 6200 Toothed belt pusher 1866 stroke 600 – 6200	

Umrüstsätze / Capacity adjustment sets

Abbildung / Drawing



***Hinweis:**
Die Materialführungen der Lünette (19) und das Führungsmodul (18) sind ebenfalls durchmesserabhängig. Diese sind nicht im Umrüstsatz enthalten und müssen separat bestellt werden.

***Note:**
The guide jaws (19) and the guide module (18) are also diameter-dependent. These are not included in the capacity adjustment set and must be ordered separately.

Umrüstsätze / Capacity adjustment sets

Pos.	Bezeichnung Designation
1	Vorschubstange Pusher
2	Hubplatte Lifting plate
3	Schieber Short pusher
4	Fahne Schieber Flag short pusher
5	Einlage hinten unten 1450 / 1650 Insert rear bottom 1450 / 1650
6	Einlage hinten oben 1400 Insert rear top 1400
7	Einlage unten (Reststückklappe) Insert bottom (remnant flap)
8	Einlage vorne unten 765 Insert front bottom 765
9	Einlage vorne unten 400 / 220 Insert front bottom 400 / 220
10	Einlage vorne oben 1160 Insert front top 1160

Pos.	Bezeichnung Designation
11	Einlage vorne oben 800 / 605 Insert front top 800 / 605
12	Einlage vorne unten 660 / 460 Insert front bottom 660 / 460
13	Einlage vorne oben 643 / 443 Insert front top 643 / 443
14	Einlage vorne unten 600 / 643 Insert front bottom 600 / 643
15	Einlage vorne unten 1000 Insert front bottom 1000
16	Einlage vorne oben 600 / 643 Insert front top 600 / 643
17	Einlage vorne oben 1000 Insert front top 1000
18	Führungsmodul / Guide module
19	Materialführung / Guide jaw

***Hinweis:**
Die Materialführungen der Lünette (19) und das Führungsmodul (18) sind ebenfalls durchmesserabhängig. Diese sind nicht im Umrüstsatz enthalten und müssen separat bestellt werden.

***Note:**
The guide jaws (19) and the guide module (18) are also diameter-dependent. These are not included in the capacity adjustment set and must be ordered separately.

Umrüstsätze 1466 Hub 400 / Capacity adjustment sets 1466 stroke 400

Umrüstsatz komplett Capacity adjustment set complete	2200	3200	3800	4200	6200
D07/1466 AD	200010927	200008218	200010388	200008452	200011830
D07/1466 BC	200010928	200008219	200010389	200008453	200011831
D10/1466	200010929	200008220	200010390	200008454	200011832
D12/1466	200010930	200008221	200010391	200008455	200011833
D13/1466	200010931	200008222	200010392	200008456	200011834
D15/1466	200010932	200008223	200010393	200008457	200011835
D16/1466	200010933	200008224	200010394	200008458	200011836
D18/1466	200010934	200008225	200010395	200008459	200011837
D20/1466	200010935	200008226	200010396	200008460	200011838
D22/1466	200010936	200008227	200010397	200008461	200011839
D23/1466	200010937	200008228	200010398	200008462	200011840
D25/1466	200010938	200008229	200010399	200008463	200011841
D26/1466	200010939	200008230	200010400	200008464	200011842
D28/1466	200010940	200008231	200010401	200008465	200011843
D30/1466	200010941	200008232	200010402	200008466	200011844
D32/1466	200010942	200008233	200010403	200008467	200011845
D34/1466	200010943	200008234	200010404	200008468	200011846
D36/1466	200010944	200008235	200010405	200008469	200011847
D38/1466	200010945	200008236	200010406	200008470	200011848

Umrüstsätze 1666 Hub 400 / Capacity adjustment sets 1666 stroke 400

Umrüstsatz komplett Capacity adjustment set complete	2200	3200	3800
D07/1666 AD	2000010946	200008549	100010388
D07/1666 BC	2000010947	200008550	100010389
D10/1666	2000010948	200008551	100010390
D12/1666	2000010949	200008552	100010391
D13/1666	2000010950	200008553	100010392
D15/1666	2000010951	200008554	100010393
D16/1666	2000010952	200008555	100010394
D18/1666	2000010953	200008556	100010395
D20/1666	2000010954	200008557	100010396
D22/1666	2000010955	200008558	100010397
D23/1666	2000010956	200008559	100010398
D25/1666	2000010957	200008560	100010399
D26/1666	2000010958	200008561	100010400
D28/1666	2000010959	200008562	100010401
D30/1666	2000010960	200008563	100010402
D32/1666	2000010961	200008564	100010403
D34/1666	2000010962	200008565	100010404
D36/1666	2000010963	200008566	100010405
D38/1666	2000010965	200008567	100010406

Umrüstsätze 1666 Hub 600 / Capacity adjustment sets 1666 stroke 600

Umrüstsatz komplett Capacity adjustment set complete	2200	3200	3800	4200	6200
D07/1666 AD	200011061	200007958	200010462	200010424	200011849
D07/1666 BC	200011062	200007959	200010463	200010425	200011850
D10/1666	200011063	200007960	200010464	200010426	200011851
D12/1666	200011064	200007961	200010465	200010427	200011852
D13/1666	200011065	200007962	200010466	200010428	200011853
D15/1666	200011066	200007963	200010467	200010429	200011854
D16/1666	200011067	200007964	200010468	200010430	200011855
D18/1666	200011068	200007965	200010469	200010431	200011856
D20/1666	200011069	200007957	200010470	200010432	200011857
D22/1666	200011070	200007966	200010471	200010433	200011858
D23/1666	200011071	200007967	200010472	200010434	200011859
D25/1666	200011073	200007968	200010473	200010435	200011860
D26/1666	200011074	200007969	200010474	200010436	200011861
D28/1666	200011076	200007970	200010475	200010437	200011862
D30/1666	200011078	200007971	200010476	200010438	200011863
D32/1666	200011079	200007972	200010477	200010439	200011864
D34/1666	200011081	200007973	200010478	200010440	200011865
D36/1666	200011086	200007974	200010479	200010441	200011866
D38/1666	200011091	200007975	200010480	200010442	200011867

Umrüstsätze 1866 Hub 600 / Capacity adjustment sets 1866 stroke 600

Umrüstsatz komplett Capacity adjustment set complete	2200	3200	3800	4200
D07/1866 AD	200011093	200008572	200010483	200010445
D07/1866 BC	200011094	200008573	200010484	200010446
D10/1866	200011095	200008574	200010485	200010447
D12/1866	200011096	200008575	200010486	200010448
D15/1866	200011097	200008576	200010487	200010449
D18/1866	200011098	200008577	200010488	200010450
D20/1866	200011099	200008578	200010489	200010451
D22/1866	200011100	200008579	200010490	200010452
D25/1866	200011101	200008580	200010491	200010453
D28/1866	200011102	200008581	200010492	200010454
D30/1866	200011103	200008582	200010493	200010455
D32/1866	200011104	200008583	200010494	200010456
D34/1866	200011105	200008584	200010495	200010457
D36/1866	200011106	200008585	200010496	200010458
D38/1866	200011107	200008586	200010497	200010459

Materialführungen / Material guide jaws

Lünette steady	Materialführung Guide jaw	Ident-Nr. Ident-No.	zu verarbeitender Materialdurchmesser Diameter of material to be machined
D26	D2,5	2065-394	1,5 mm – 2 mm
D26	D04	2065-395	2 mm – 3 mm
D26	D06	2065-396	3 mm – 5 mm
D26	D07	2065-397	5 mm – 6 mm
D26	D08	2065-398	6 mm – 7 mm
D26	D10	2065-399	7 mm – 9 mm
D26	D12	2065-400	9 mm – 11 mm
D26	D13	2064-401	11 mm -12 mm
D26	D14	2065-402	12 mm -13 mm
D26	D15	2065-403	13 mm -14 mm
D26	D17	2065-404	14 mm -16 mm
D26	D19	2065-405	16 mm -18 mm
D26	D20	2065-406	18 mm -19 mm
D26	D22	2065-407	19 mm – 21 mm
D26	D24	2065-408	21 mm – 23 mm
D26	D27	2065-409	23 mm – 26 mm

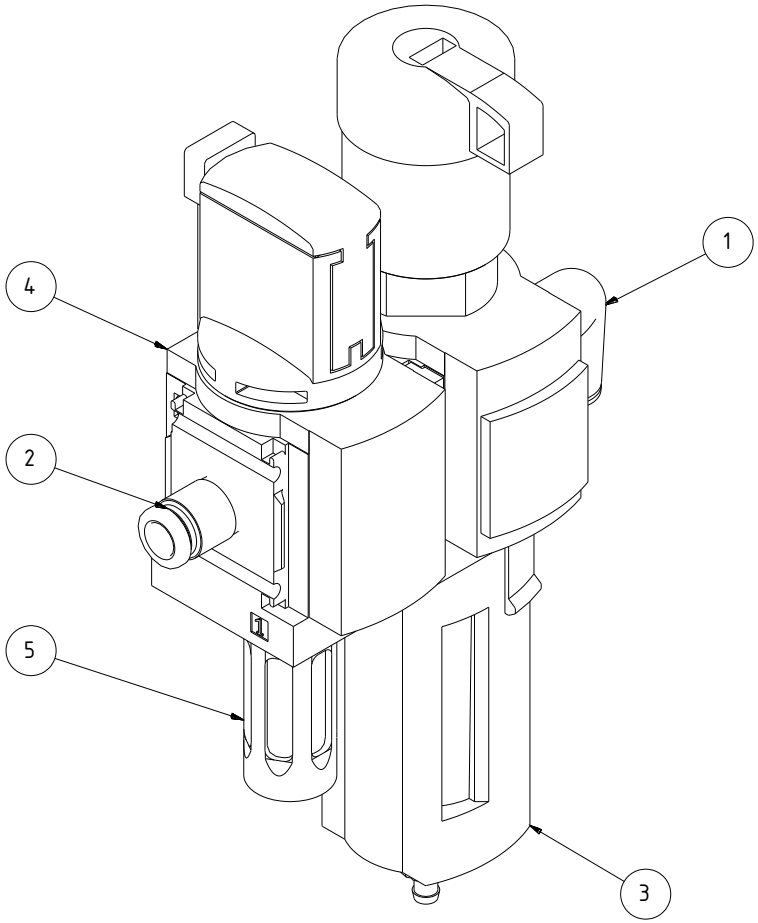
Lünette steady	Materialführung Guide jaw	Ident-Nr. Ident-No.	zu verarbeitender Materialdurchmesser Diameter of material to be machined
D38	D07	2021-764	3 - 6 mm
D38	D10	2021-765	6 - 9 mm
D38	D12	2053-000	9 - 11 mm
D38	D13	2053-195	11 - 12 mm
D38	D15	2021-766	12 - 14 mm
D38	D16	2027-704	14 - 15 mm
D38	D18	2044-040	15 - 17 mm
D38	D20	2021-767	17 - 19 mm
D38	D22	2027-705	19 - 21 mm
D38	D25	2021-768	21 - 24 mm
D38	D26	2053-196	24 - 25 mm
D38	D28	2030-119	25 - 27 mm
D38	D30	2021-769	27 - 29 mm
D38	D32	2023-714	29 - 31 mm
D38	D34	2024-758	31 - 33 mm
D38	D35	2021-770	33 - 34 mm
D38	D36	2024-970	34 - 35 mm
D38	D37	2053-911	35 - 36 mm
D38	D38	2060-512	36 - 37 mm

Führungsmodul / Guide module

	Lademagazinvariante Loading magazine variant	Hub / stroke 400		Hub / stroke 600	
	Führungsmodul Guide module	Hub / stroke 400		Hub / stroke 500	Hub / stroke 600
Ø		Ident Nr. Ident-No		Ident Nr. Ident-No	Ident Nr. Ident-No
D07		200008093		200007993	200007803
D10		200008094		200007994	200007804
D12		200008095		200007995	200007805
D13		200008096		200007996	200007806
D15		200008097		200007997	200007807
D16		200008098		200007998	200007808
D18		200008099		200007999	200007809
D20		200008100		200008000	200007810
D22		200008101		200008001	200007811
D23		200008102		200008002	200007812
D25		200008103		200008003	200007813
D26		200008104		200008004	200007814
D28		200008105		200008005	200007815
D30		200008106		200008006	200007816
D32		200008107		200008007	200007817
D34		200008108		200008008	200007818
D36		200008109		200008009	200007819
D38		100076440		200008010	100071540

Wartungseinheit / Maintenance unit

200005229



Wartungseinheit / Maintenance unit

200005229

Pos. Item	Ident-Nr. Ident. no.	Bezeichnung	Designation	Kommentar Remarks
1	2067-008	Steckverschraubung	Plug-in screwing	
2	2068-343	Steckverschraubung	Plug-in screwing	
3	2079-894	Filter-Regelventil	Filter-regulator unit	
4	200004160	Einschaltventil	On/Off valve	
5	2074-205	Schalldämpfer	Silencer	

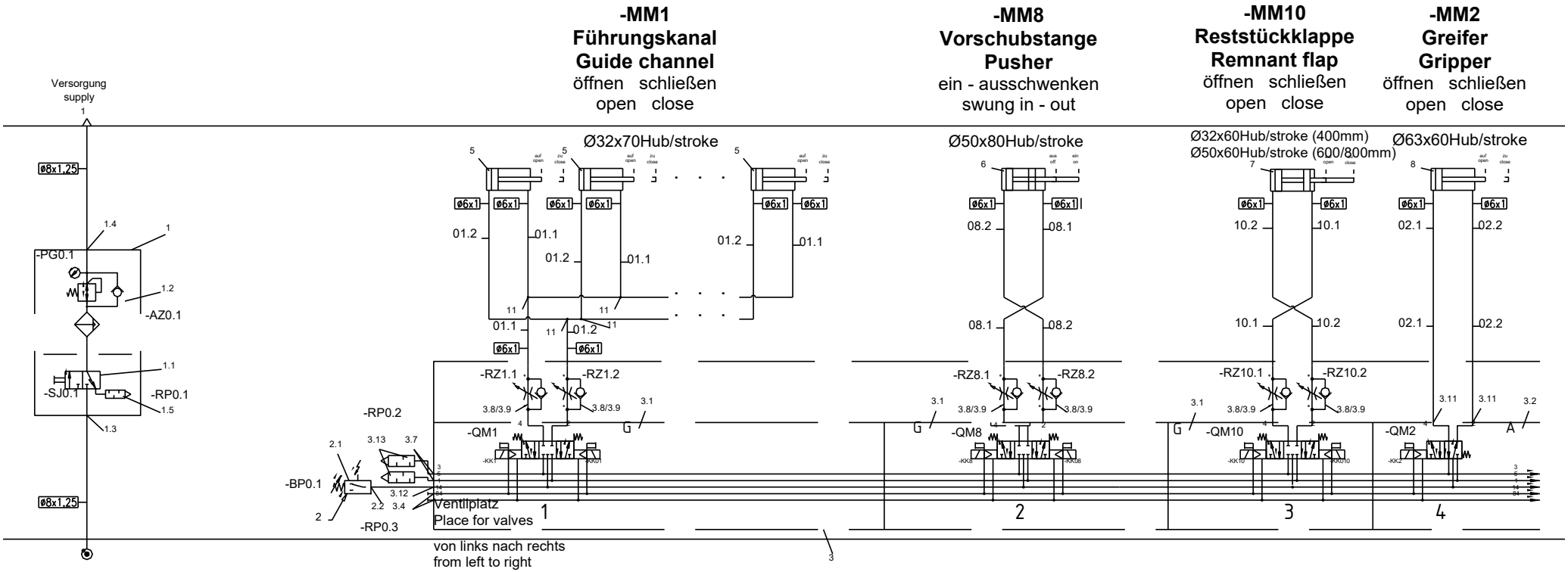
Pneumatikplan / Pneumatic diagram

Betriebsmittelkennzeichnung / Equipment marking

Kennzeichnung Marking	Bezeichnung	Designation
AZ	Wartungseinheit	Maintenance unit
MM	Pneumatikzylinder, Pneumatikmotor	Pneumatic cylinder, pneumatic motor
BG	Näherungsschalter, Endschalter	Proximity switch, limit switch
PG	Anzeigeninstrument, Manometer	Inicator, manometer
BP	Druckschalter	Pressure switch
QM	Wegeventil, Schnellentlüftungsventil	Directional control valve, quick exhaust valve
GQ	Druckluftquelle, Kompressor	Pneumatic source, compressor
QN	Druckreduzierventil	Pressure reducuction valve
GS	Druckluftöler	Pneumatik oiler
RP	Schalldämpfer	Silencer
HQ	Filter	Filter
RZ	Drossel-Rückschlagventil	One-way restrictor
KH	Signalverknüfung	Signal connecting
SJ	Handbetätigtes Ventil	Manual ventil

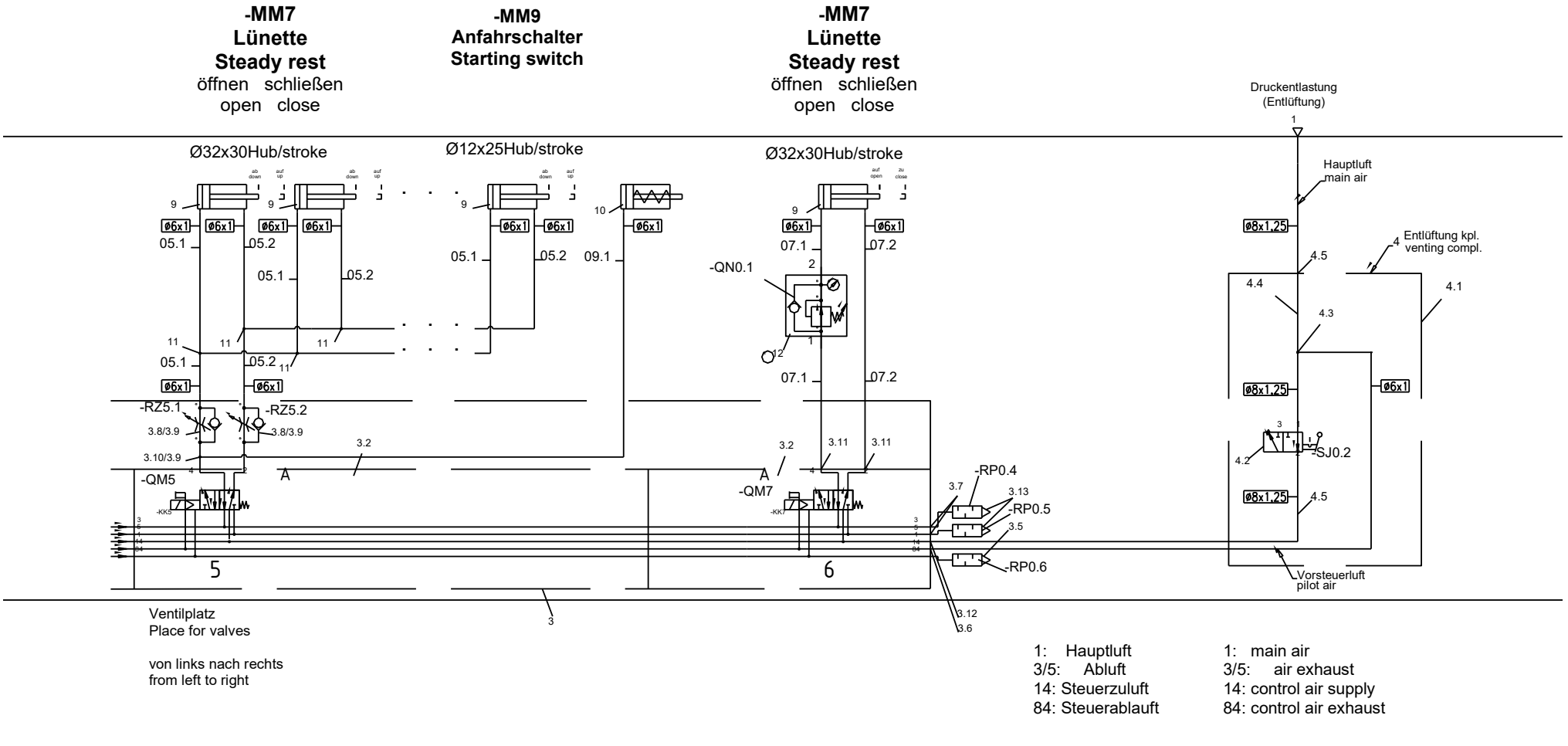
Seite 1 / Page 1

20007836



1: Hauptluft	1: main air
3/5: Abluft	3/5: air exhaust
14: Steuerzuluft	14: control air supply
84: Steuerablauft	84: control air exhaust

Seite 2 / Page 2



1: Hauptluft	1: main air
3/5: Abluft	3/5: air exhaust
14: Steuerzuluft	14: control air supply
84: Steuerablauft	84: control air exhaust

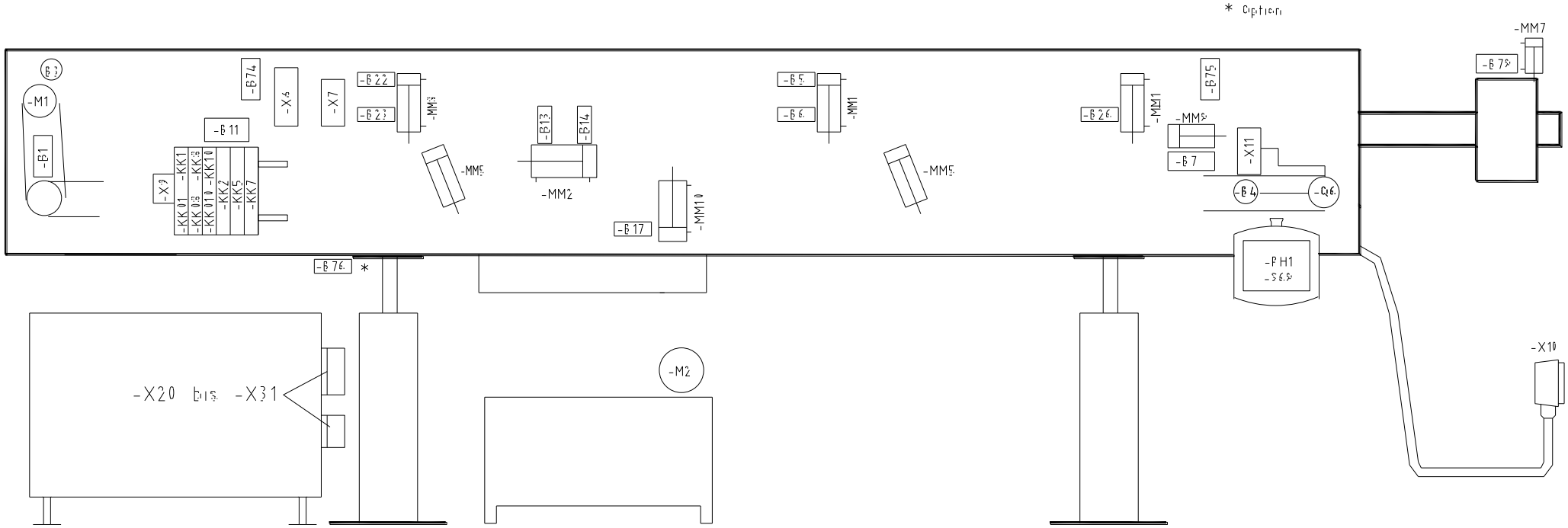
Pneumatikteile / Pneumatic parts

Pos. Item	Ident-Nr. Ident no	Bezeichung/Typ	Designation/Type	
1	200005229	Wartungseinheit komplett bestehend aus:	Maintenance unit complete consisting of:	
1.1	200004160	Einschaltventil	Switch on valve	
1.2	2079-894	Filter-Regelventil	Filter-regulator valve	
1.3	2068-343	Steckverschraubung	Plug-in screwing	
1.4	2067-008	Steckverschraubung	Plug-in screwing	
1.5	2074-205	Schalldämpfer	Silencer	
2	100049628	Druckschalter koplett bestehend aus:	Pressure switch consisting of:	
2.1	2058-325	Druckschalter	Pressure switch	
2.2	2068-343	Steckverschraubung	Plug-in screwing	
3	100073627	Ventilinsel 7-fach	Valve terminal 7-fold	
3.1	100042337	Magnetventil 5/3	Solenoid valve 5/3	
3.2	2080-203	Magnetventil 5/2	Solenoid valve 5/2	
3.3	2080-255	Schilderträger	Label holder	
3.4	2079-425	Blindstopfen	Filler plug	
3.5	2080-293	Schalldämpfer	Silencer	
3.6	2038-348	Steckverschraubung	Plug-in screwing	
3.7	100008518	L-Verschraubung	L-screwing	
3.8	2057-797	Drosselrückschlagventil	One-way restrictor	
3.9	2080-257	Dichtscheibe	Sealind disk	
3.10	2057-830	Steckverschraubung	Plug-in screwing	
3.11	2057-833	Steckverschraubung	Plug-in screwing	
3.12	100053646	Steckverschraubung	Plug-in screwing	
3.13	2001-420	Schalldämpfer	Silencer	

Pneumatikteile / Pneumatic parts

Pos. Item	Ident-Nr. Ident no	Bezeichung/Typ	Designation/Type	
4	100074799 100048698	Entlüftung komplett A;D Entlüftung komplett B;C bestehend aus:	Venting complete A;D Venting complete B;C consisting of:	
4.1	100074802 100047929	Halteblech für Absperrventil A;D Halteblech für Absperrventil B;C	Retaining plate for Shut-off valve A;D Retaining plate for Shut-off valve B;C	
4.2	100046626	Absperrventil	Shut-off valve	
4.3	2049-120	Steckverbindung	Plug-in connector	
4.4	2058-876	Steckhülse	Plug-in sleeve	
4.5	2057-799	Steckverbindung	Plug-in connector	
5	2055-058	Zylinder (Führungskanal)	Cylinder (Führungskanal)	-MM1
6	2055-059	Zylinder (Vorschubstange)	Cylinder (Pusher)	-MM8
7	2056-577	Zylinder (Reststückklappe 400 mm)	Cylinder (Remnant flap 400 mm)	-MM10
	2058-185	Zylinder (Reststückklappe 600/800/1100 mm)	Cylinder (Remnant flap 600/800/1100 mm)	-MM10
8	2058-131	Zylinder (Greifer)	Cylinder (Gripper)	-MM2
9	2055-066	Zylinder (Lünette)	Cylinder (Steady rest)	-MM7
		Zylinder (Vereinzelung)	Cylinder (Separation)	-MM5
10	2030-646	Zylinder (Anfahrschalter)	Cylinder (Starting switch)	-MM9
11	2038-351	Steckverbindung	Plug-in connector	
12	2040-874	Druckregelventil	Pressure regulator	

Elektroteile / Electrical parts
Lademagazin / Loading magazine



Elektroteile / Electrical spare parts
Lademagazin / Loading magazine

Ident-Nr. Ident. no.	Bezeichnung	Designation	Kommentar Remarks
2018-648	Näherungsschalter	Proximity switch	-B1
2023-003	Näherungsschalter	Proximity switch	-B7
2035-221	Näherungsschalter	Proximity switch	-B5,-B6,-B13,-B14,-B17,-B22,-B23
2079-304	Näherungsschalter	Proximity switch	-B26
100049628	Druckschalter 0,5-8 bar	Pressure switch 0,5-8 bar	-B11
2042-872	Sensorleitung mit Stecker M12	Sensor lead with plug M12	für/for-B1
2042-579	Sensorleitung mit Stecker M12	Sensor lead with plug M12	für/for-B7
2042-582	Sensorleitung mit Stecker M12	Sensor lead with plug M12	für/for -B5,-B6,-B13,-B14,-B22,-B23
2063-956	Sensorleitung mit Stecker M12	Sensor lead with plug M12	für/for-B74
2063-957	Sensorleitung mit Stecker M12	Sensor lead with plug M12	für/for-B75
2076-151	Sensorleitung mit Stecker M12 8-polig	Sensor lead with plug M12 8-pol.	für/for-B79
2043-173	Verschlusskappe Port M12	Sealing cap Port M12	X6 Steckplatz/place X7 Steckplatz/place
200005144	Stecker mit Leitung für Druckschalter	Plug with lead for pressure switch	an/on -B11
200004100	Servomotor mit Geber	Servomotor with encoder	-M1 mit/with -B3
200006125	Servomotor mit Geber und Bremse	Servomotor with encoder and brake	-M1 mit/with -B3 (Option)
2070-052	Drehgeber (Option)	Encoder (option)	-B4
2041-038	Ölförderpumpe	Oil feed pump	-M2
1099-051	Magnetkupplung	Magnetic clutch	-Q6
2063-973	Aktor-Sensor-Box 4-fach mit 24 poligem Stecker	Aktor-Sensor-Box 4-fold with plug 24 pol.	X7
200003073	Anschlussleitung kpl. für Ventilblock 25pol.	Lead complete for valve block 25pol.	X9

Lademagazin / Loading magazine

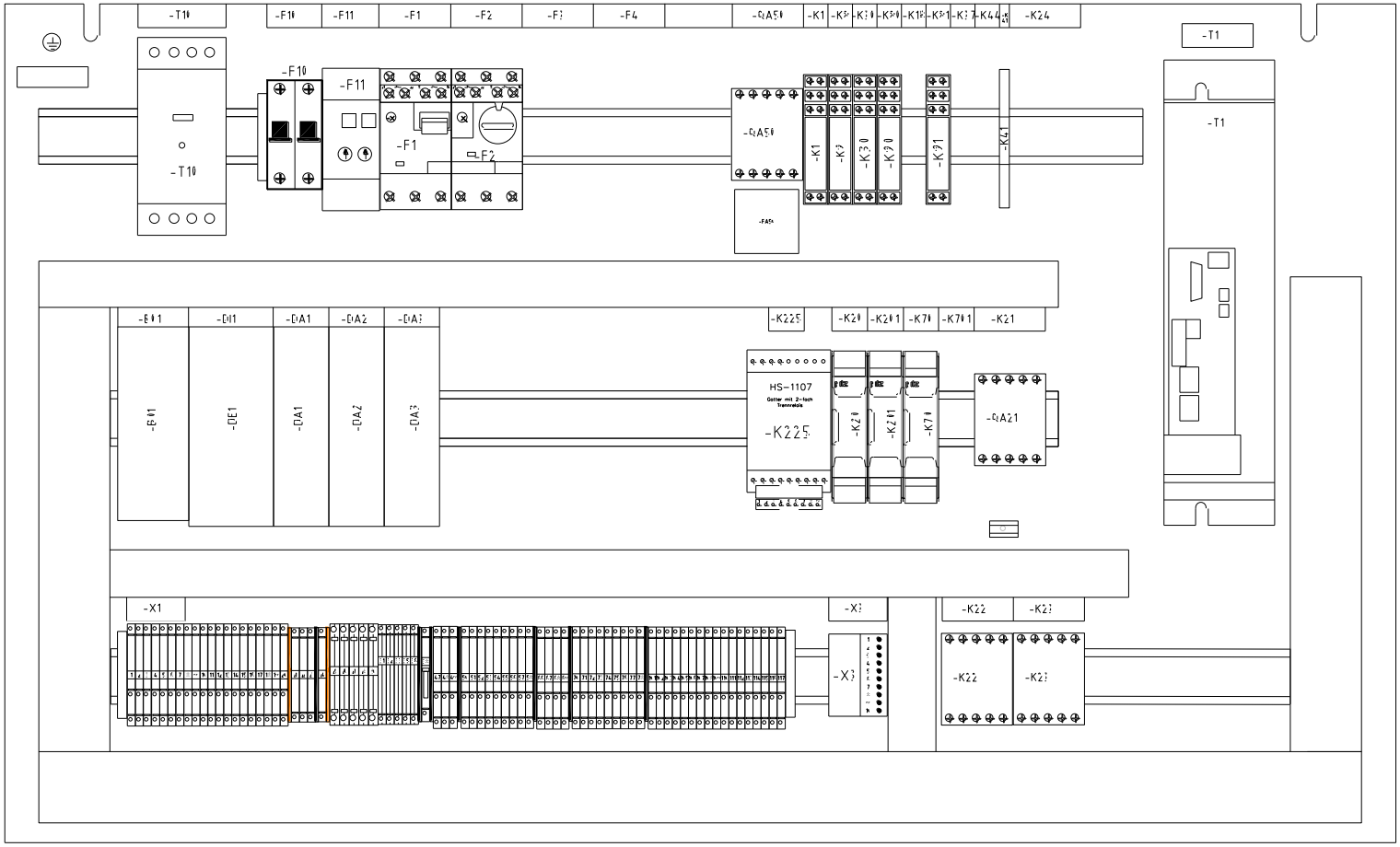
Ident-Nr. Ident. No.	Bezeichnung	Designation	Kommentar Remarks
2042-920	Aktor-Sensor-Box mit 24 poligem Stecker	Aktor-Sensor-Box with plug 24 pol.	X6
2036-784	Funkenlöschglied	Protection relay	zu -Q6 / to -Q6
2063-952	Sicherheitsschalter T5C 236-02 Z-ST	Safety switch T5C 236-02 Z-ST	-B74,-B75
2063-953	Sicherheitsschalter T3C 236-02 Z-ST	Safety switch T3C 236-02 Z-ST	-B74,-B75
2068-440	Sicherheitsschalter AZ 16-03 zvk	Safety switch AZ 16-03 zvk	-B76
2051-354	Betätiger AZ 16-02 zvk / AZ 15/16-B1	Actuator AZ 16-02 zvk / AZ 15/16-B1	-B76
200004353*1 Schmersal	Sicherheitssensor RSS260-1	Safety sensor RSS260-1	-B79 (-B70 Option)
100060288*1 Schmersal	Betätiger RST 260-1	Actuator RST 260-1	für/for -B79
200009636*2 Sick	Sicherheitssensor STR1-SAXM0AC8S02	Safety sensor STR1-SAXM0AC8S02	(alternatives Bauteil/alternative component) -B79
200009637*2 Sick	Betätiger STR1-XAS	Actuator STR1-XAS	(alternatives Bauteil/alternative component) für/for -B79
2078-480	Y-Adapter 8polig	Y-adapter 8pin	-X79
2078-481	Abschlussstecker	Terminating plug	-X80
2078-482	Sensorleitung M12 auf M12 8p 1m	Sensor lead M12 to M12 8p 1m	-WD700
200001213	Sensorleitung M12 auf M12 8p 2m	Sensor lead M12 to M12 8p 2m	-WD790
200004101	Leistungskabel 5m	Power cable	für/for -B79
200004102	Geberkabel 5 m	Cable for encoder	between -T1 and -B3 zwischen -T1 und -B3
200004038	Profibusleitung	Profibus lead	-WG10 (Option)
200004853	Pofinetleitung	Profinet lead	-WG10 (Option)

*Sicherheitssensor und Betätiger *1 oder *2 ausschließlich gemeinsam ersetzen, da die Funktion sonst nicht gewährleitstet ist.
*Replace the safety sensor and actuator *1 or *2 exclusively together, otherwise the function is not guaranteed.

Elektroteile / Electrical spare parts

Schalttafel / Switch board

Abbildung beispielhaft – siehe Elektroschaltplan! / Drawing exemplary – see electrical circuit diagram!



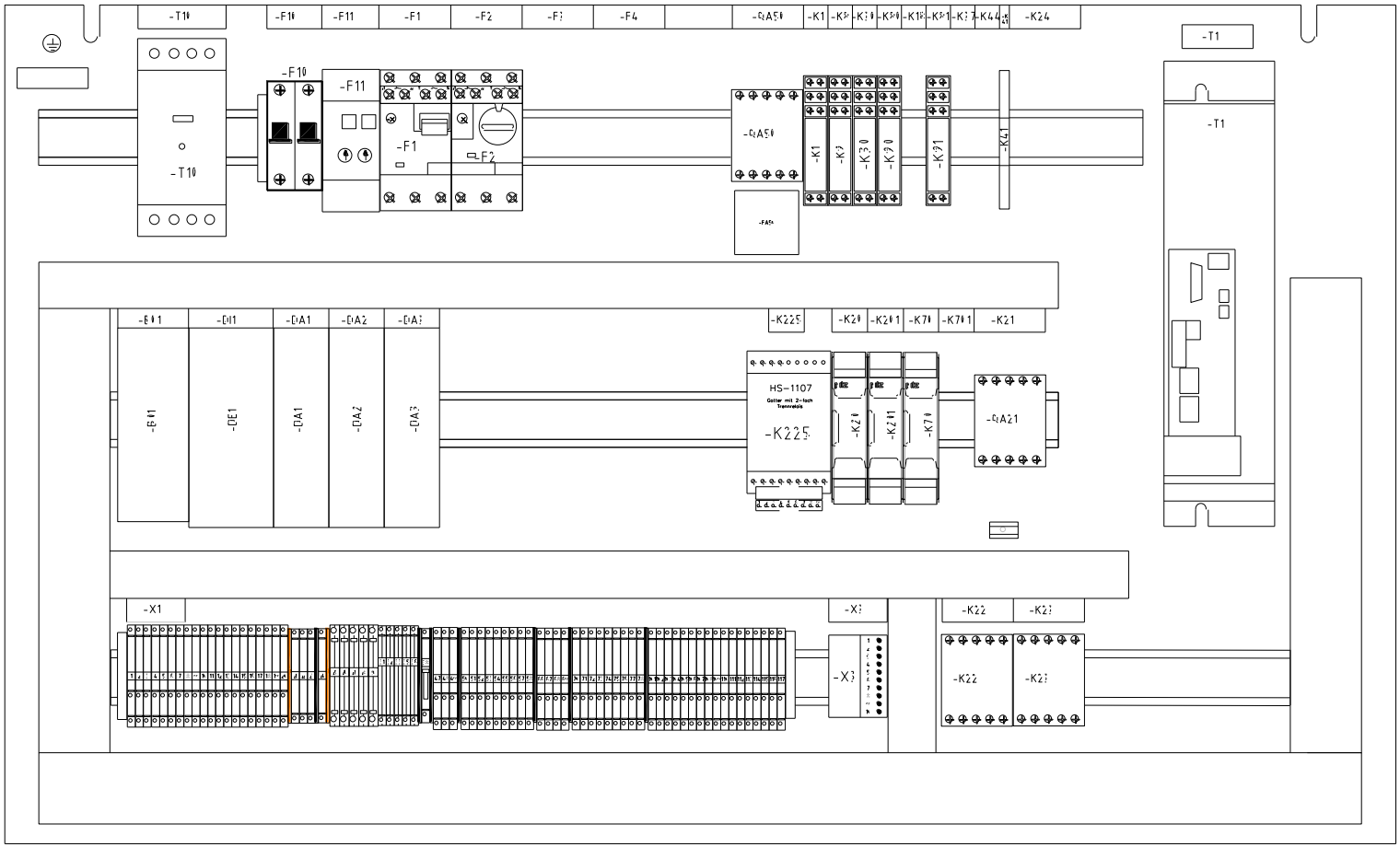
Elektroteile / Electrical spare parts
Schalttafel / Switch board

Ident-Nr. Ident. no.	Bezeichnung	Designation	Kommentar Remarks
200004090	Kompaktumrichter HCS01.1E	Compact converter HCS01.1E	-T1
200004091	Kompaktumrichter HCS01.1E Multi Ethernet	Compact converter HCS01.1E Multi Ethernet	-T1 (Option)
200004092	Kompaktumrichter HCS01.1E Profibus	Compact converter HCS01.1E Profibus	-T1 (Option)
200000735	Programm-Modul micro SD-Karte	Program module micro SD-card	für/for -T1
200004094	Sercos Buskoppler Interface	Sercos Buskoppler Interface	-BO1
200004095	Eingangskarte 32E Interface	Input card 32E Interface	-DI1
200004097	Ausgangskarte 16A Interface	Output card 16A Interface	-DA1
200004098	Ausgangskarte 8A Interface	Output card 8A Interface	-DA2; -DA3
2063-649	Ethernet-Kabel Sercos III 1 m	Ethernet-cable Sercos III 1 m	zwischen -T1 und -BO1 between -T1 and - BO1
200005997 oder / or 200005995	Schütz 24V DC 3H 1Ö Schütz 24V DC 3H 1S	Contactor 24V DC 3H 1Ö Contactor 24V DC 3H 1S	-QA50,-QA21 auftragsbez./as per order -K22 auftragsbez./as per order -K22
2037-095 oder / or 2037-094	Schütz 24V DC 3H 1Ö DILEEM-01-G Schütz 24V DC 3H 1S	Contactor 24V DC 3H 1Ö DILEEM-01-G Contactor 24V DC 3H 1S	auftragsbez./ as per order -K23 auftragsbez./as per order -K23
2037-096	Hilfsschalterblock 22 DILEM	Auxiliary switch block 22 DILEM	auftragsbez. -K23 as per order -K23
2071-375* Pilz	Not-Aus Schaltgerät PNOZs4 C 24 VCD	Safety relay PNOZs4 C 24 VCD	-K20,-K70
200009625* Phoenix	Not-Aus Schaltgerät PSR-MC45	Safety relay PSR-MC45	(alternatives Bauteil/alternative component) -K20,-K70
2071-376	Sicherheitsrelais Erweiterungsgerät	Emergency-Stop extension device	-K201; K701
2049-124	Optokopplermodul 24V DC 2A	Opto-electronic coupler 24V DC 2A	-K41
2020-946	Relais 2WE 5A 40529024	Relay 2WE 5A 40529024	-K1,-K9,-K9.1,-K1.1,-K30, -K37

Elektroteile / Electrical spare parts

Schalttafel / Switch board

Abbildung beispielhaft – siehe Elektroschaltplan! / Drawing exemplary – see electrical circuit diagram!



Schalttafel / Switch board

Ident-Nr. Ident. no.	**Bezeichnung**	**Designation**	**Kommentar** **Remarks**
2025-516	Relaisfassung 95.95.3	Casing for relay 95.95.3	für Relais for relay
2025-517	Modul mit LED und Freilaufdiode 99.80.9.024.90	Module with LED and recovery diode 99.80.9.024.90	für Relais for relay
2004-401	Hilfsschütz220V 3TH 8262 OAMO	Auxiliary contactor 3TH 8262 OAMO	auftragsbez. -K91 as per order -K91
2004-403	RC-Entstörglied 3TX 6406 OG	RC-screening unit 3TX 6406 OG	auftragsbez. -K91 as per order -K91
200004802	Modul Kanalzuhaltung	Module channel locking	-K225
0943-304	Sicherungsautomat 2x4A	Automatic cut-out 2x4A	-F10
2076-869	Elektronische Sicherung 1,2,4,6A	Electronic fuse 1,2,4,6A	-F11
0942-480	Sicherungsautomat 6A	Automatic cut-out 6A	auftragsbez.-F4 as per order -F4
200006003	Motorschutzschalter 0,6-1A	Motor protection switch 0,6-1A	-F2 bei Betriebsspannung 400-460V -F2 for 400-460V machines
200006004	Motorschutzschalter 1-1,6A	Motor protection switch 1-1,6A	-F2 bei Betriebsspannung 200-230V -F2 for 200-230V machines
200006006	Motorschutzschalter 4-6,3A	Motor protection switch 4-6,3A	-F1
200006007	Hilfsschalter	Auxiliary switch	für/for -F1, -F2
200002455	Netzteil 24V 5A	Power supply 24V 5A	-T10
2001-368	Motorentstörglied RC 3/022-400 BU	Motor screening unit RC 3/022-400 BU	-FA50
200004037	Profibus Adapter	Profibus adapter	-X40 (Option)

Elektroteile / Electrical spare parts
Bedientableau / Control panel

Ident. Nr. Ident- no.	Bezeichnung	Designation	Kommentar Remarks
200004149	Bedientableau PH1 HGT835 mit Kabel 10 m	Control panel PH1 HGT835 with cable 10 m	-PH1
200004150	Bedientableau PH1 HGT835 mit Kabel 13,5 m	Control panel PH1 HGT835 with cable 13,5 m	-PH1

Turbo RS 3-38 Standard Edge

Btr.Spn.: 3x200V~ 50/60Hz

Blatt-Nr.:	Inhalt	contents	contenu
1/1063	Zeichnungs Aufstellung	index of plans	index des plans
1.1/1063	Zeichnungs- Aufstellung	index of plans	Index des planes
2/00	Kennzeichnung d.Betriebsmittel	marking of the electrical equipment	Repêrage des matières consommables
3/1063	Schnittstelle Standard Edge	interface standard edge	Interface standard edge
4/00	Schnittstelle	interface	Interface
5/00	Erdung	grounding	Mise à la terre
6/01	Hauptstromkreis Motoren	main circuits motors	Ciruits principaux des moteurs
7/00	Steuerspannung	control voltage	Tensions de commande
8/00	Steuerung	control	Commande
9/00	Not-Halt	emergency stop	Arrêt d´urgence
10/00	Überwachung Verkleidung	check covering	chèque couvrant
11/00	Überwachung Verkleidung	check covering	chèque couvrant
12/00	Eingangskarte KF10 IX200.0-7	input-card KF10 IX200.0-7	Plaque d`entrée KF10 IX200.0-7
13/00	Eingangskarte KF10 IX201.0-7	input-card KF10 IX201.0-7	Plaque d`entrée KF10 IX201.0-7
14/01	Eingangskarte KF11 IX202.0-7	input-card KF11 IX202.0-7	Plaque d`entrée KF11 IX202.0-7
15/03	Eingangskarte DE1 IX203.0-7	input-card DE1 IX203.0-7	Plaque d`entrée DE1 IX203.0-7
16/00	Ausgangskarte KF20 QX200.0-7	output-card KF20 QX200.0-7	Plaque de sortie KF20 Q200.0-7
17/00	Ausgangskarte KF20/21 QX201.0-7	output-card KF20/21 QX201.0-7	Plaque de sortie KF20/21 QX201.0-7
18/00	Ausgangskarte KF21 QX202.0-7	output-card KF21 QX202.0-7	Plaque de sortie KF21 Q202.0-7
19/00	Ausgangskarte KF22 QX203.0-7	output-card KF22 QX203.0-7	Plaque de sortie KF22 QX203.0-7
20/08	Synchronkupplung	synchronisation clutch	Accouplement synchronsiation
21/00	Eingangskarte KF10/KF11 IX204.0-7	input-card KF10/KF11 IX204.0-7	Plaque d`entrée KF10/KF11 IX204.0-7
22/00	Ausgangskarte KF22 QX204.0-3	input-card KF22 QX204.0-3	Plaque d`entrée KF22 QX204.0-3
70/02	Schalttafel	switch board	Tableau de distribution

Aenderung	Datum	Name	Datum	10.01.23	index of plans / index des plans	FMB MASCHINENBAU	Zeichnungs Aufstellung	turbo RS 3-38 Serie 1
			Bearb	Straub				Blatt 1/1063
			Gepr.	Straub				10431_003
			Norm	DIN5	Urspr / Ers.f.	Ers.d.		Blatt 1 / Folge 1.1

Turbo RS 3-38 Standard Edge

Btr.Spn.: 3x200V~ 50/60Hz

Klemmenanschlußplan / connection diagramm / Plan de raccord

Blatt-Nr.:	Inhalt	contents	Contenu
40/00	X6 Schalter	X6 switch	X6 Interrupteur
41/00	X6 Schalter	X6 switch	X6 Interrupteur
42/00	X7 Schalter Sicherheit	switch safety	Interrupteur
43/00	X25 Schalter Verschiebeeinrichtung	switch shifting device	Interrupteur
44/00	X31 Schalter Sicherheit	switch safety	Interrupteur
45/00	X9 Magnetventile	X9 solenoid valves	X9 Vannes
46/00	X9 Magnetventile	X9 solenoid valves	X9 Vannes
48/00	Motoren	encoder -B4 / rotation B/C	Convertisseur -B4
49/00	Geber -B4 / Umschaltung B/C	motors	Moteurs
51/00	PH1 Bedientableau	PH1 control panel	PH1 Tableau de commande
60/00	Geräteanordnung	device arrangement	Disposition des appareils

				Datum	10.01.23	index of plans Index des planes	FMB MASCHINENBAU	Zeichnungs-Aufstellung	turbo RS 3-38 Serie 1
				Bearb	Straub				
				Gepr.	Straub				Blatt 1.1/1063 — 10431_003 — Blatt 1.1 / Folge 2
	Aenderung	Datum	Name	Norm	DIN5	Urspr	Ers.f.	Ers.d.	

Kennzeichnung der Betriebsmittel nach DIN EN 81346 Teil 2
Marking of the electrical equipment by DIN EN 81346 part 2

Vorzeichenermittelung durch Angabe des Aspekttyps:

= Funktion wird nicht verwendet
+ Ort wird nicht verwendet
- Produkt wird verwendet
andere Aspekte wird nicht verwendet

Identification of prefix in consideration of aspect-typs:

= function is not used
+ place is not used
- product is used
different aspects is not used

Darstellung Referenzzeichen/description of signifier:

-	K	F	1
Vorzeichen / prefix	Klasse / category	Unterklasse / subsection	Nummer / number

2. Kennbuchstabe/code letter
1. Kennbuchstabe/code letter

Objektklassen:

B für Drehgeber, Näherungs- u. Positionsschalter
C für Kondensator
F für Sicherungen, Motorschutz- u. Leitungsschutzschalter
FA für Varistorbaustein, Motorentstörbaustein
K für Relais, Hilfsschütze, Optokoppler
KF für CPU, Eingangs- u. Ausgangsmodule, Analogmodul
KH für Ventilblock
KK für Magnetventile
M für Motor
MM für Pneumatikzylinder
P für Leuchtmelder, Ziffernanzeige
PH für Textdisplay
Q für Magnetkupplungen
QA für Lastschütze
QL für Magnetbremse
R für Widerstand
S für Tast-, Wahl- und Steuerschalter
T für Transformator, Gleichspannungsnetzteil
TA für DC/DC-Drehzahlsteller
TB für Gleichrichter
TF für Verstärkermodul
W für Sensorleitung
WD für Netzanschlußleitung, Leitung Klemmengehäuse
WE für Erdungsleiter, Potentialausgleich
WG für Datenleitung, Steuerleitung
X für Klemmleisten, Steckverbinder

catergory of objekts:

B for encoder, proximity- and position switches
C for capacitor
F for fuse, motor-circuit switch, wire safety switch
FA for varistorelement,
K for relay, auxiliary relay, optoelectronic coupler
KF for CPU, Input- u. Outputmodule, analog module
KH for valve block
KK for solenoid valves
M for motor
Q for pneumatic cylinders
P for signal lamp, digital display
PH for text display
Q for electro-magnetic clutch
QA for power contactor
QL for magnetic brake
R for resistor
S for push button, selector- and control switch
T for transformator an DC-power supply
TA for DC/DC-speed regulator
TB for transformator rectifier
TF foramplifier module
W for sensor wire
WD for power lead, cable of terminal box
WE for ground- and potential equalization wire
WG for data- and control wire
X for connector block and plug-in connector

Darstellung Referenzzeichen-Satz/description of signifier-block:

-	T	1	-	F	1
Objekt / object			Teilobjekt / part of object		

Darstellung Referenznummer zur besonderen Kennzeichnung der Objektzugehörigkeit/description of signifier with specific identification mark:

-	K	K	1		1.Objekt 1 / 1.object 1
-	K	K	0	1	2.Objekt 1.1 / 2.object 1.1

Drahtquerschnitte / wire cross sections	
×	1.5mm² schwarz/black
○	1.0mm² violett/violet
／	1.0mm² blau/blue
□	0.75mm² blau/blue
◇	0.5mm² blau/blue

Nummer:

Zur Unterscheidung von Betriebsmitteln mit gleichem Buchstaben im Teil "Objektklassen".

Bezeichnung der Anschlüsse an Geräten und Klemmleisten (wird nur in Verbindung mit dem Referenzzeichen angewendet).

To differenciate the system - elements having the same letter in the part "class of objects".

Marking of the connections of equipment and terminal strip block (is only used with sign of reference).

Aderkennzeichnung nach DIN EN 60204-1; 2006-06:

Hauptstromkreis	:schwarz/BK 1.5mm²
24V AC Steuerstromkreis	:rot/RD 1mm²
24V DC Steuerstromkreis	:blau/BU 1mm²
Fremdspannung	:violett/VT 1mm²

Wire marking by DIN EN 60204-1: 2006-06:

main circuit	: black/BK 1.5mm²
control circuit 24V AC	: red/RD 1mm²
control circuit 24C DC	: blue/BU 1mm²
external voltage	: violet/VT 1mm²

				Datum	01.06.22	marking of the electrical equipment Repêrage des matiêres consommables	FMB MASCHINENBAU
				Bearb	D.Beck		
				Gepr.	D.Beck		
	Aenderung	Datum	Name	Norm	DIN5	Urspr / Ers.f. / Ers.d.	

Kennzeichnung d.Betriebsmittel

turbo RS 3-38 Serie 1

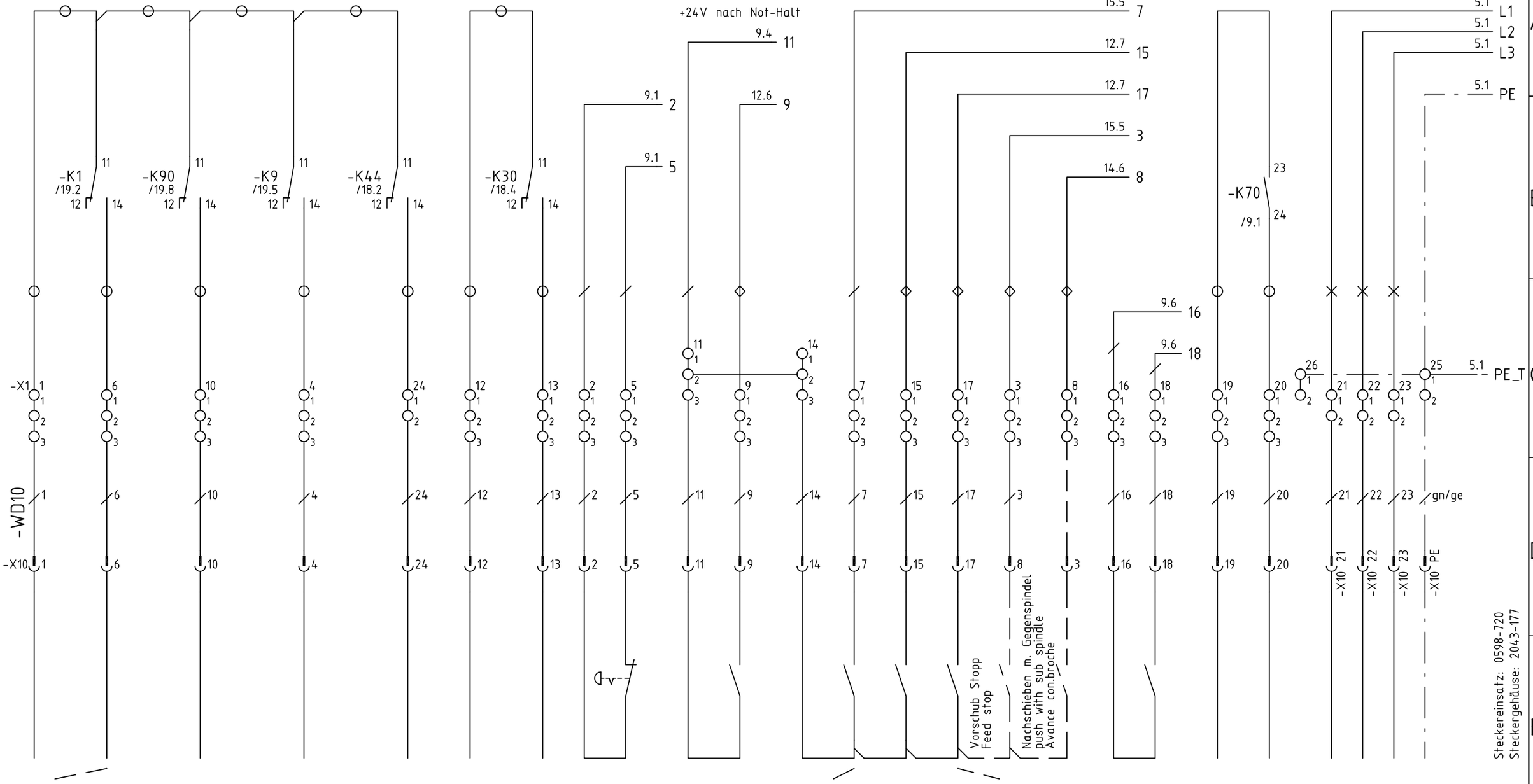
Blatt 2/00 | 10431_003 | Blatt 2 | Folge 3

FMB - Lademagazin
FMB - Loading magazine

Klemmleiste
Schaltschrank

24 polige
Steckverbindung

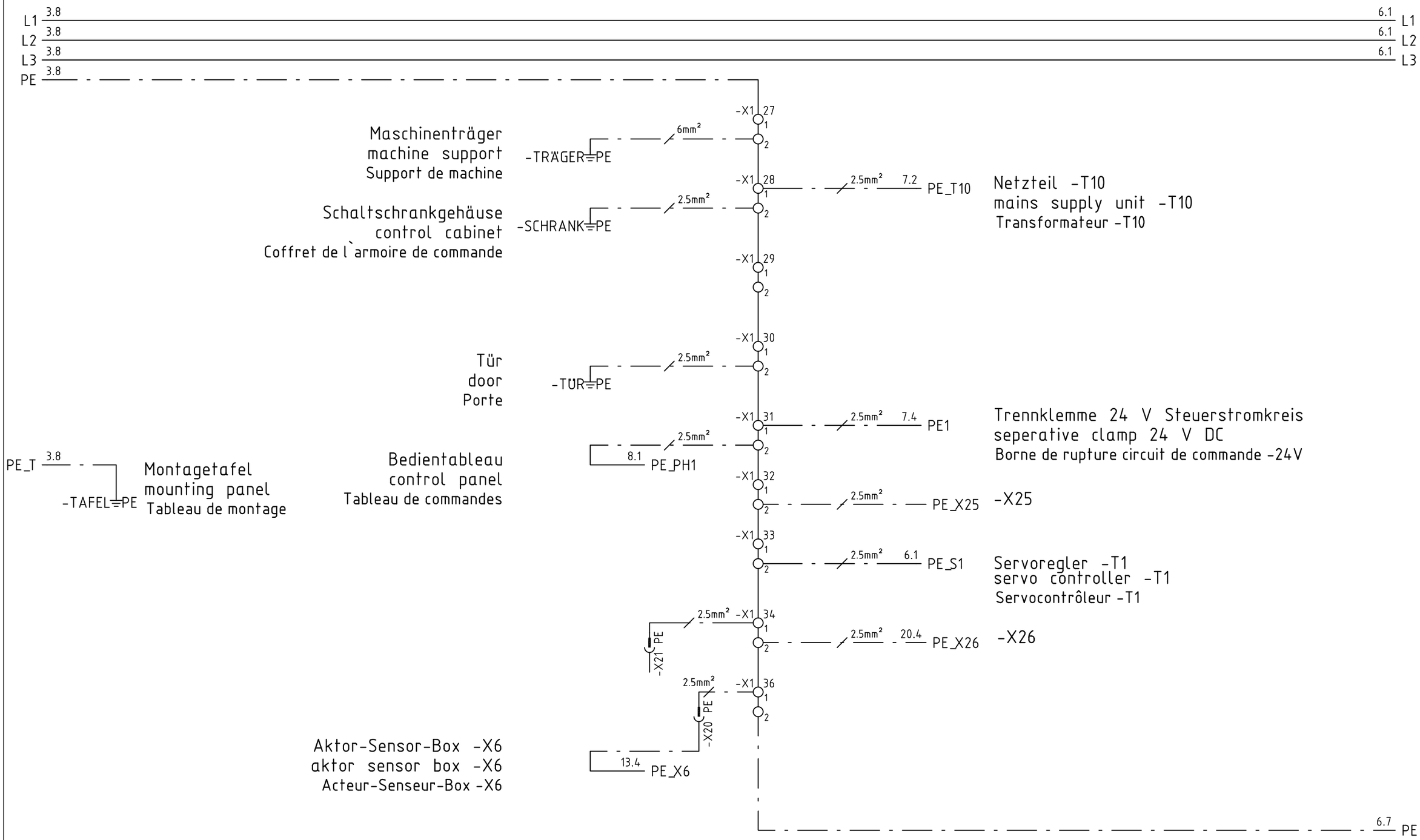
Drehmaschine
Lathe



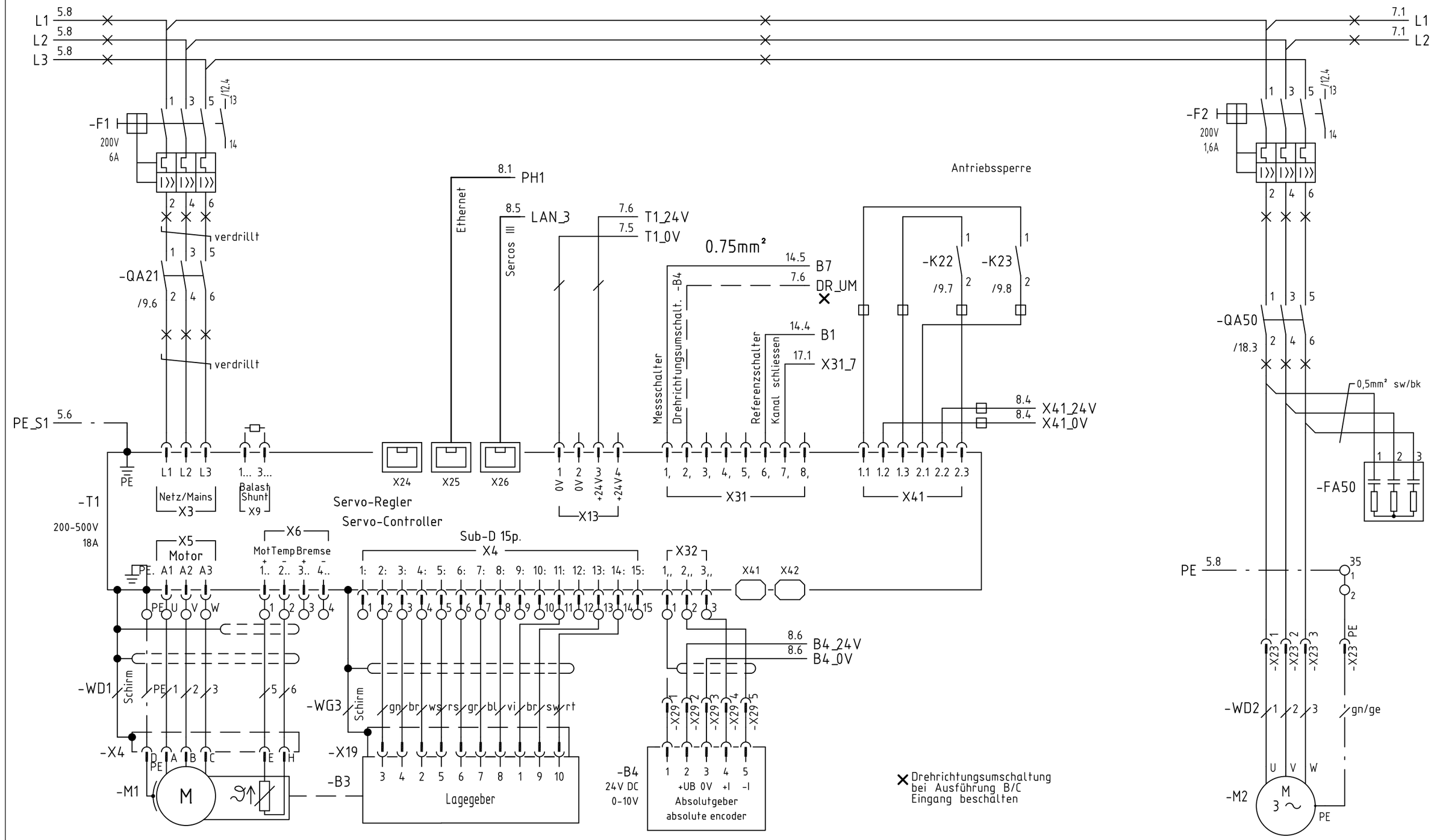
Stangenwechsel Ende	Automatik ein	Stangenende	Nachschieben	keine Störung	Not - Halt	Freigabe	Lademagazin	Zyklus	Spannzange	Schutztür	Not - Halt	Betriebsspannung 3x400V
Programm start	Lademagazin betriebsber.	Programm stopp	OK	Lademagazin	Drehmaschine	Automatikbetrieb	ein	Ende	geöffnet	geschlossen	Lademagazin	50/60 Hz,PE Absicherung:3x10A
bar change end	automatic mode on	bar end	push OK	no fault	emergency stop	release	loading magazine	end	collet open	safety door	emergency stop	operating voltage
program start	magazine ready for work	program stop		loading magazine	lathe	magazine	automatic mode	of cycle		closed	Loading magazine	fuse protection : 3x10A
Fin du Changement de	Automatique	Fin de barre	Pousser OK	Aucun	Arrêt d`urgence	Libération du	Embarreur	Fin de cycle	Despos. de	Porte	Arrêt d`urgence	tension de service
barres,Programme start	on	Programme stop		défaut	tour automatique	mode automat.	on	Départ chang.	serrage ouvert	coulissant fermé	Embarreur	

			Datum	10.01.23	interface standard edge	FMB MASCHINENBAU	Schnittstelle Standard Edge	turbo RS 3-38 Serie 1
			Bearb	Straub	Interface standard edge			
			Gepr.	Straub			Blatt 3/1063	10431_003 Blatt 3 Folge 4
Aenderung	Datum	Name	Norm	DIN5	Urspr	Ers.f.	Ers.d.	

				Datum	07.06.22	Schnittstelle interface Interface	FMB MASCHINENBAU	Schnittstelle	turbo RS 3-38 Serie 1
				Bearb	Straub				
				Gepr.	Straub				Blatt 4/00 — 10431_003 — Blatt 4 / Folge 5
	Aenderung	Datum	Name	Norm	DIN5	Urspr / Ers.f.	Ers.d.		

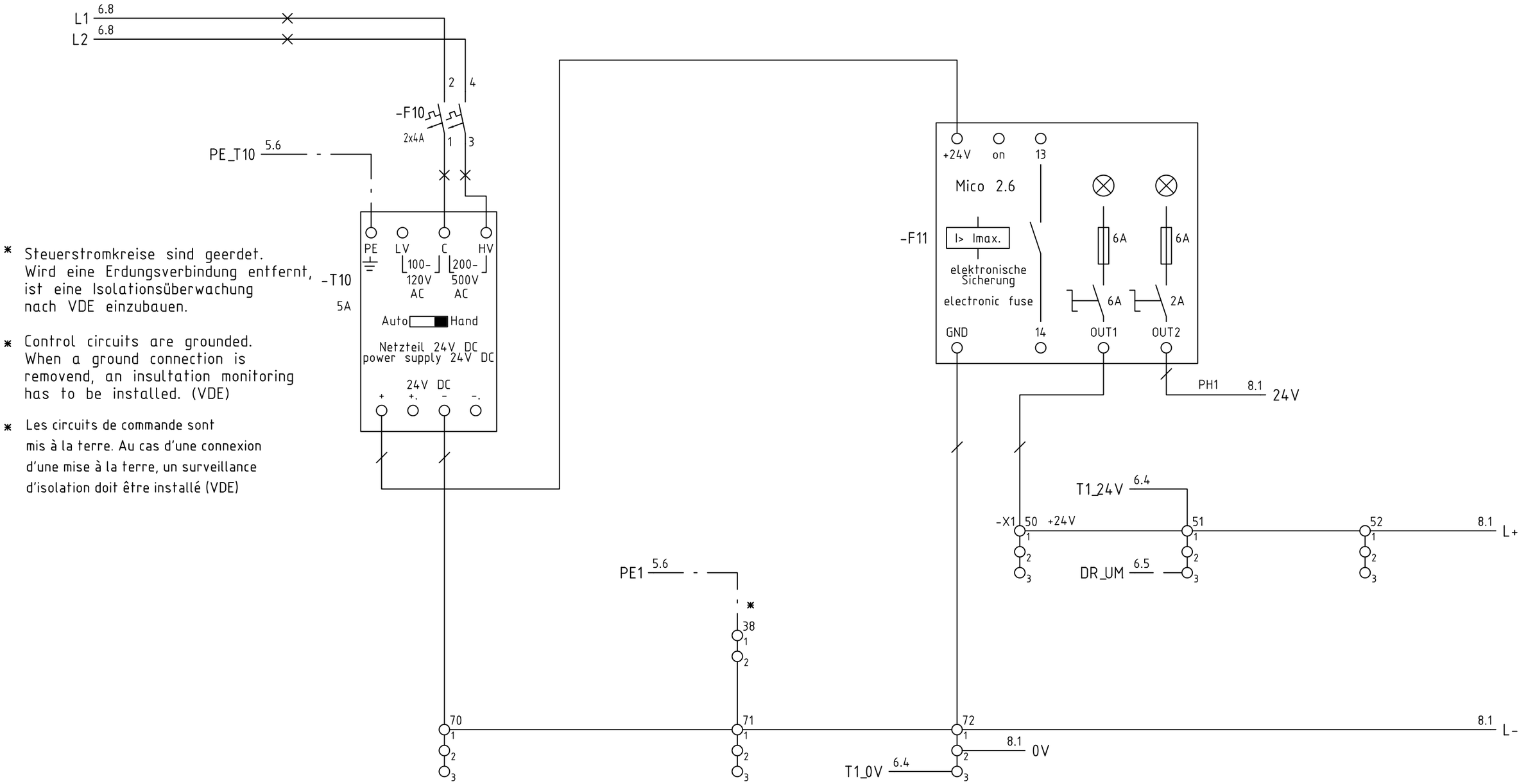


				Datum	07.06.22	grounding Mise à la terre	FMB MASCHINENBAU	Erdung	turbo RS 3-38 Serie 1
				Bearb	Straub				
				Gepr.	Straub				Blatt 5/00 — 10431_003 — Blatt 5, Folge 6
	Aenderung	Datum	Name	Norm	DIN5	Urspr	Ers.f.	Ers.d.	



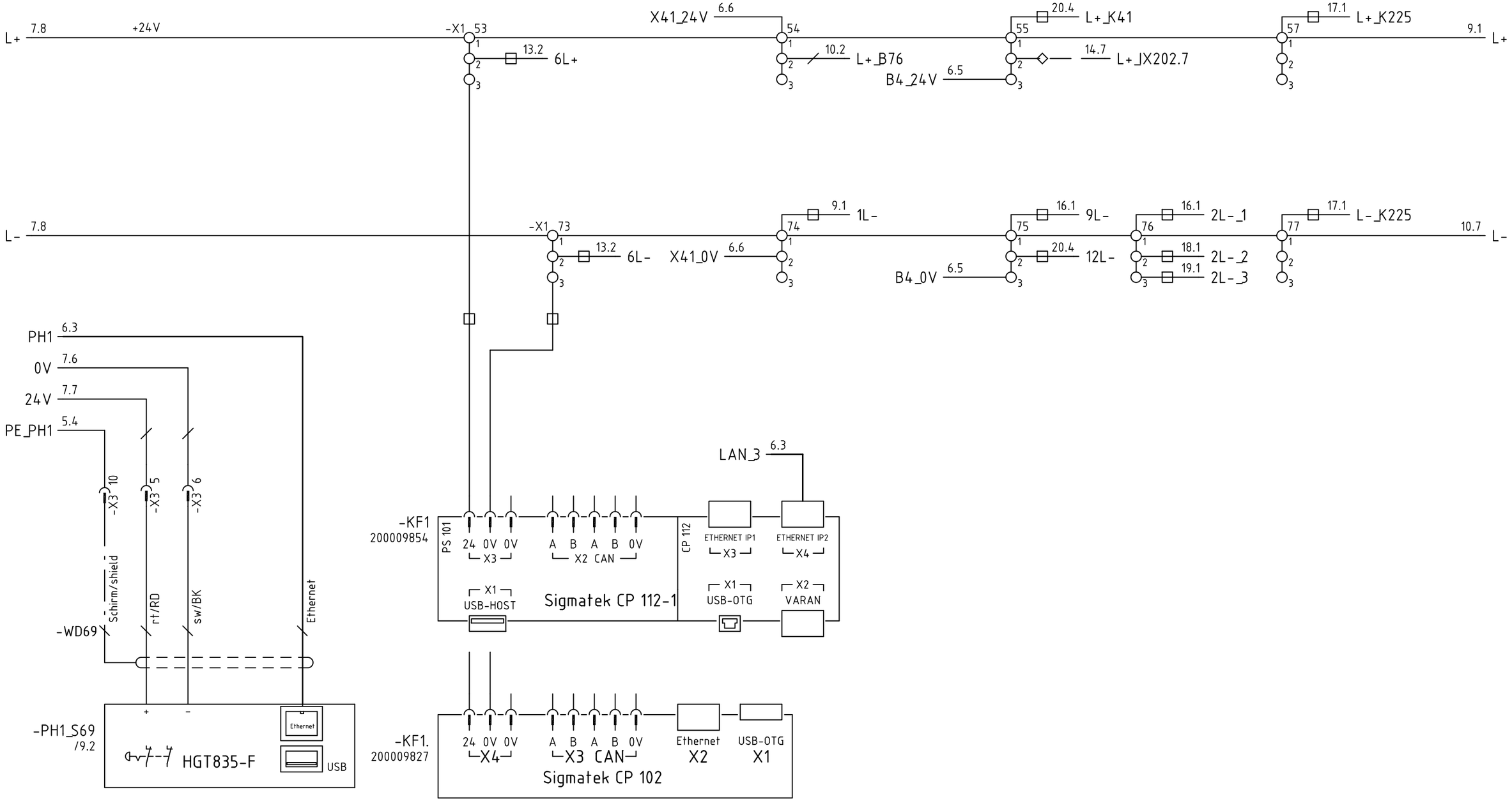
Antriebsmotor	Geber	Geber Wegerfassung Spindelstock	Ölpumpe
		Weg Lünette	0,37KW 200-230V 1,6A
driving motor	encoder	encoder distance headstock / steady	oil-pump
moteur d'entraînement	convertisseur	convertisseur	pompe à huile

			Datum	01.06.22	main circuits motors Ciruits principaux des moteurs	FMB MASCHINENBAU	Hauptstromkreis Motoren
			Bearb	D.Beck			turbo RS 3-38 Serie 1
			Gepr.	D.Beck			Blatt 6/01 — 10431_003 — Blatt 6, Folge 7
Aenderung	Datum	Name	Norm	DIN5	Urspr / Ers.f.	Ers.d.	



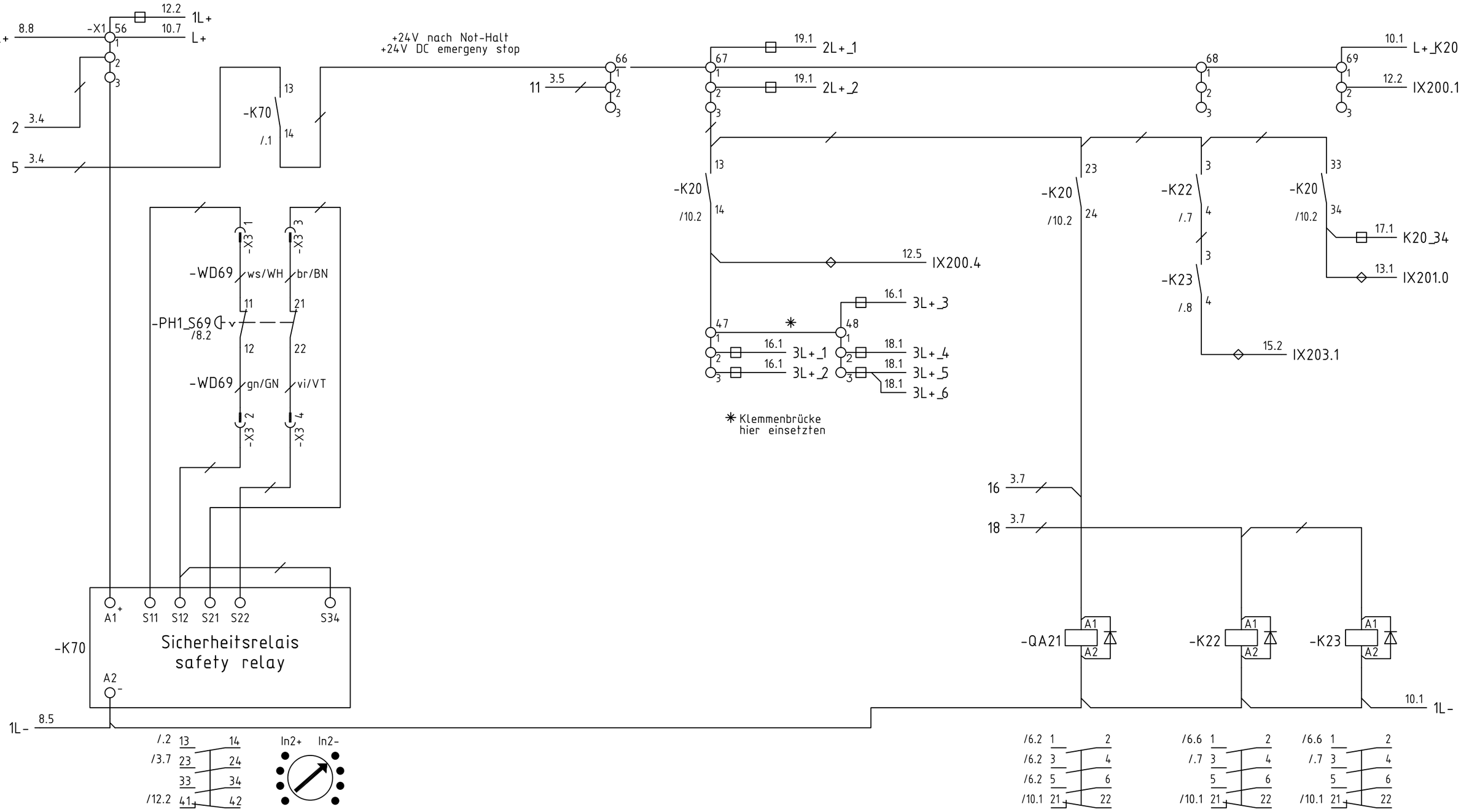
	-F11 OUT1	-F11 OUT2
Steuerspannung 24V-	24V DC für	24V für PH1
	SPS / E- A-Karten	
control voltage 24V DC	24V DC for Control / I / O	24V for control panel
Tension de commande 24V-	24V- for commande	24V- for tabelau de commande

				Datum	01.06.22	control voltage Tensions de commande	FMB MASCHINENBAU	Steuerspannung
				Bearb	D.Beck			turbo RS 3-38 Serie 1
				Gepr.	D.Beck			Blatt 7/00 — 10431_003 — Blatt 7 / Folge 8
	Aenderung	Datum	Name	Norm	DIN5	Urspr / Ers.f.	Ers.d.	



Bedientableau	TCP-Koppler
	CP 112-1 alternativ CP 102
control panel	TCP-coupler
Tableau de commande	CP 112-1 or CP 102

			Datum	10.01.23	control Commande	FMB MASCHINENBAU	Steuerung
			Bearb	Straub			turbo RS 3-38 Serie 1
			Gepr.	Straub			Blatt 8/00 — 10431_003 — Blatt 8 / Folge 9
Aenderung	Datum	Name	Norm	DIN5	Urspr	Ers.f. / Ers.d.	



Not - Halt
emergency stop
Arrêt d´urgence

Freigabe Motor
release motor
Libération moteur

Antriebssperre 1
drive barrier 1
Barrière d´entraînement 1

Antriebssperre 2
drive barrier 2
Barrière d´entraînement 2

✳ Klemmenbrücke hier einsetzten

				Datum	10.01.23	emergency stop Arrêt d´urgence	FMB MASCHINENBAU	Not-Halt
				Bearb	Straub			
				Gepr.	Straub			
Aenderung	Datum	Name	Norm	DIN5	Urspr	Ers.f.	Ers.d.	

turbo RS 3-38 Serie 1

Blatt 9/00 | 10431_003 | Blatt 9 | Folge 10

L+_B76 8.5

L+_K20 9.8

-B76

* Wenn Schalter nicht eingebaut, Brücke einlegen!

* If switch not used, connecting contacts with wire

Option Verschiebeeinrichtung -B76 Verschiebeeinrichtung in Position

Option shifting device -B76 shifting device in position

-X25 1 3 5

-WD76 1 3 5

* *

Option -B76 11 21 31

12 22 32

-WD76 2 4 6

-X25 2 4 6

13.6 IX201.6

-X26 5 7

-WD7 5

-X7 6 8

-X7 2:1 2:3

11 21

-B74

12 22

-X7 2:2 2:4

-X7 7 9

-X7 11 13

-X7 3:1 3:3

-B75 11 21

12 22

-X7 3:2 3:4

-X7 12 14

-WD7 6 8

-X26 6 8

L+ 9.2 -X1 58 1 2 3

-X31_8 11.1 X79_8

-X31_7 11.1 X79_7

-X31_6 11.1 X79_6

-X31_5 11.1 X79_5

-X31_4 11.1 X79_4

-X31_3 11.1 X79_3

-X31_2 11.1 X79_2

-X31_1 11.1 X79_1

L- 8.8 -X1 78 1 2 3

-K22 21 22 /9.7

-K23 21 22 /9.8

-QA21 21 22 /9.6

-K20 Sicherheitsrelais safety relay

A1+ S11 S12 S21 S22 S34 A2-

1L- 9.8 18.2 1L-

/9.4 13 14

/9.6 23 24

/9.8 33 34

41 42

In2+ In2-

-B74	-B75
Verkleidung geschlossen	Verkleidung geschlossen
Schalter hinten	Schalter vorne
cover closed	cover closed
switch in the rear	switch in front

Verkleidung geschlossen

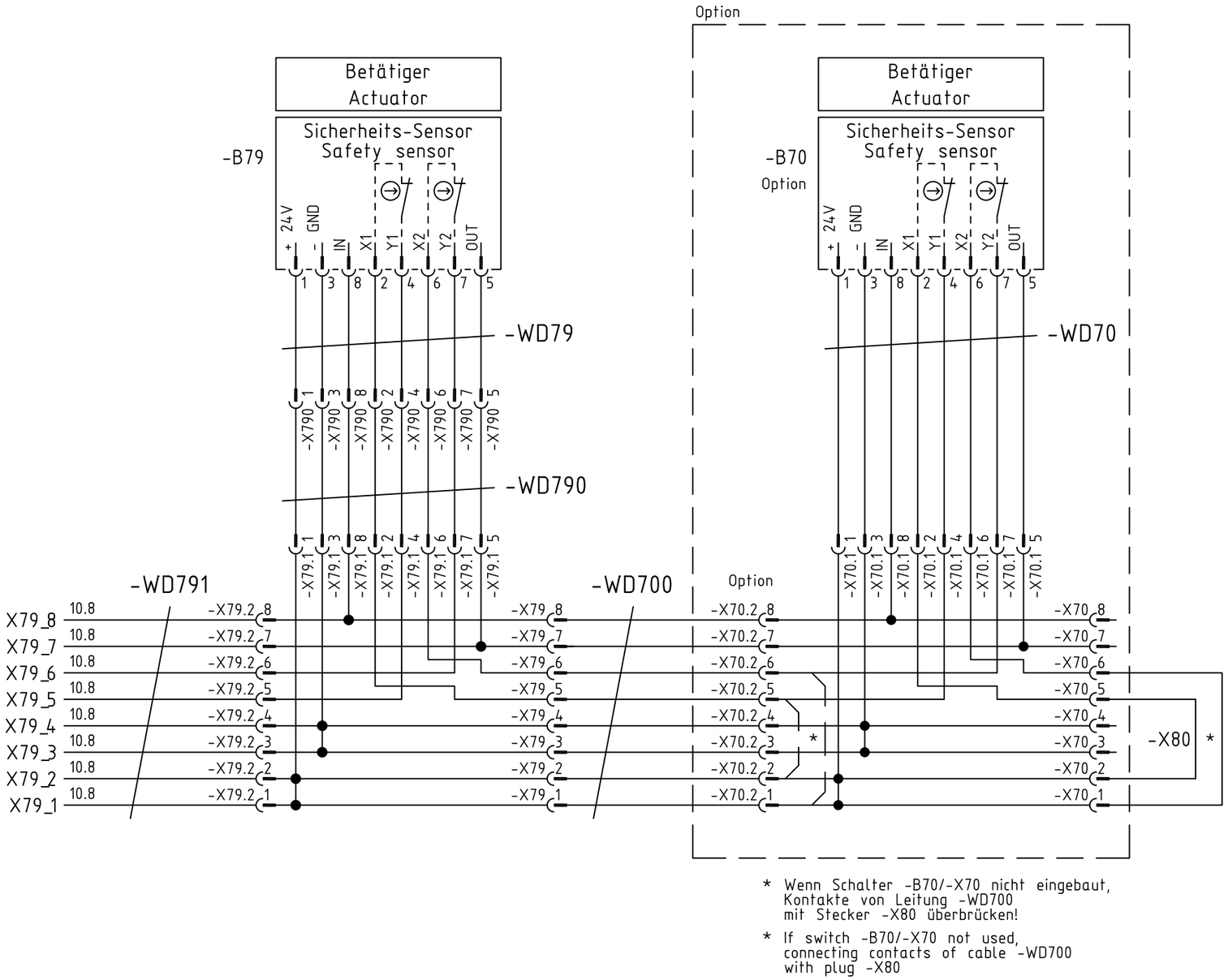
cover closed

Carénage fermé

				Datum	13.06.22	check covering chèque couvrant	FMB MASCHINENBAU	Überwachung Verkleidung
				Bearb	Straub			
				Gepr.	straub			
Aenderung	Datum	Name	Norm	DIN5	Urspr	Ers.f.	Ers.d.	

turbo RS 3-38 Serie 1

Blatt 10/00 | 10431_003 | Blatt 10 Folge 11

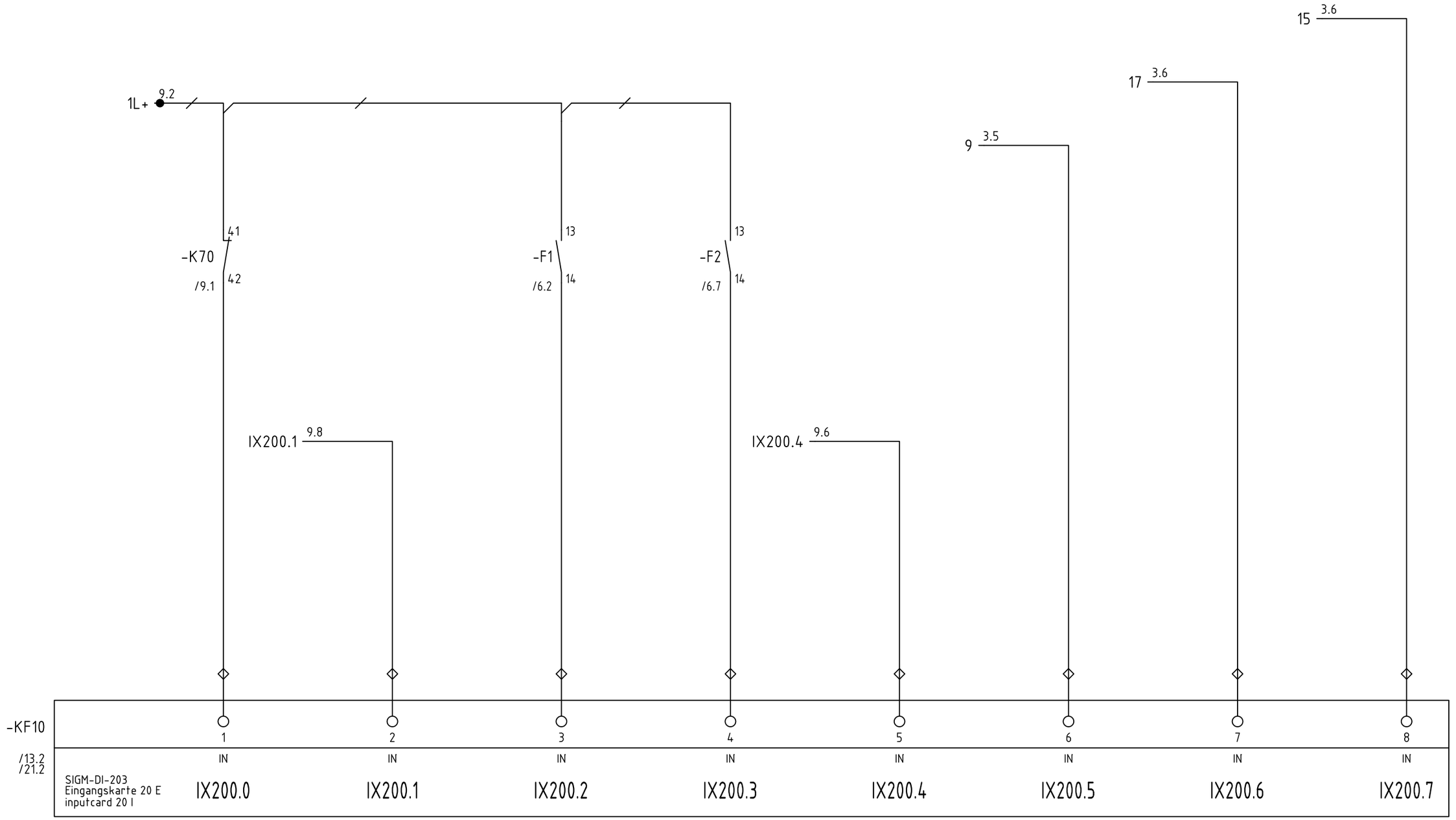


* Wenn Schalter -B70/-X70 nicht eingebaut,
Kontakte von Leitung -WD700
mit Stecker -X80 überbrücken!

* If switch -B70/-X70 not used,
connecting contacts of cable -WD700
with plug -X80

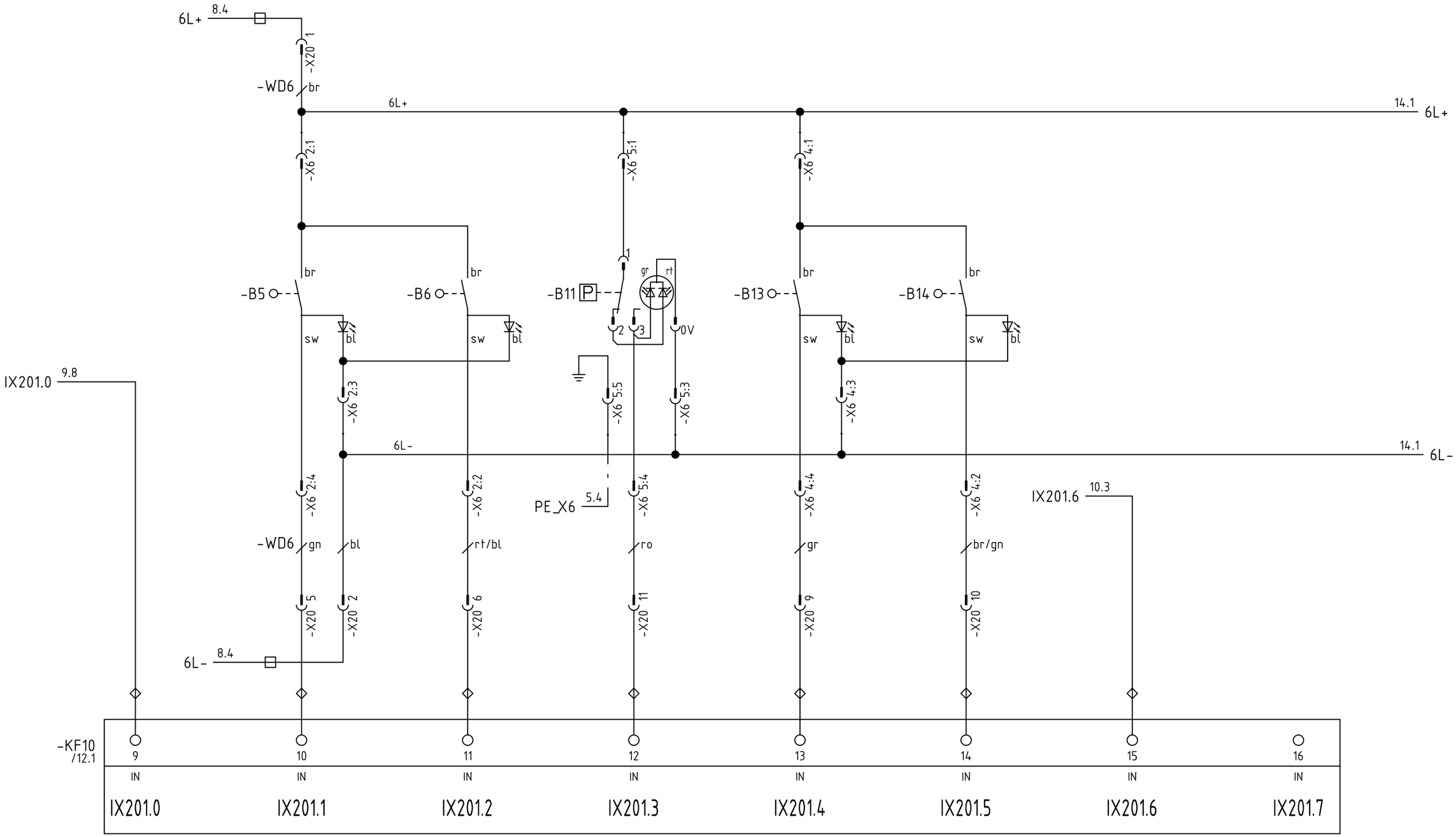
Option	
-B79	-B70
Verkleidung an Lünette	Verkleidung Adapterset
geschlossen	geschlossen
cover on steady closed	cover on steady closed

				Datum	02.06.22	check covering chèque couvrant		Überwachung Verkleidung	turbo RS 3-38 Serie 1
				Bearb	D.Beck		FMB MASCHINENBAU		
				Gepr.	D.Beck				Blatt 11/00 — 10431_003 — Blatt 11 / Folge 12
	Aenderung	Datum	Name	Norm	DIN5	Urspr	Ers.f.	Ers.d.	



Not - Halt	Not - Halt	Schutzschalter	Schutzschalter	Verkleidung	Freigabe	Spannzange	Zyklus Ende
Lademagazin		Antriebsmotor M1	Olpumpe M2	geschlossen	Automatikbetrieb	geöffnet	Stangenwechsel Start
emergency stop magazine	emergency stop	protective switch motor M1	protective switch oil-p.M2	cover closed	release magazine	collet opened	cycle end
Arrêt d´urgence Embarreur	Arrêt d´urgence	Disjoncteur moteur M1	Disjoncteur pompe M2	Carénage fermé	Libération du mode automat.	Pince de serrage ouvert	Fin de cycle

			Datum	01.06.22	input-card KF10 IX200.0-7 Plaque d´entrée KF10 IX200.0-7	FMB MASCHINENBAU	Eingangskarte KF10 IX200.0-7	turbo RS 3-38 Serie 1
			Bearb	D.Beck				
			Gepr.	D.Beck			Blatt 12/00	10431_003
Aenderung	Datum	Name	Norm	DIN5	Urspr	Ers.f.	Ers.d.	Blatt 12 Folge 13



-B76

Verkleidung	Führungskanal geöffnet	Führungskanal geschlossen	Druckschalter	Greifermesser	Greifermesser	Verschiebeeinrichtung
geschlossen	(Abfrage vorne)	(Abfrage vorne)		geschlossen	geöffnet	in Position
cover closed	guide channel opened	guide channel closed	pressure switch	gripper blades closed	gripper blades opened	shifting device
Carénage lunette fermé	Canal de guidage ouvert	Canal de guidage fermé	Interrupteur manométrique	Lames de preneur fermées	Lames de preneur ouvertes	in position

Aenderung	Datum	Name		
			Datum	01.06.22
			Bearb	D.Beck
			Gepr.	D.Beck
			Norm	DIN5

input-card KF10 IX201.0-7
Plaque d`entrée KF10 IX201.0-7

Urspr | Ers.f. | Ers.d.

FMB MASCHINENBAU

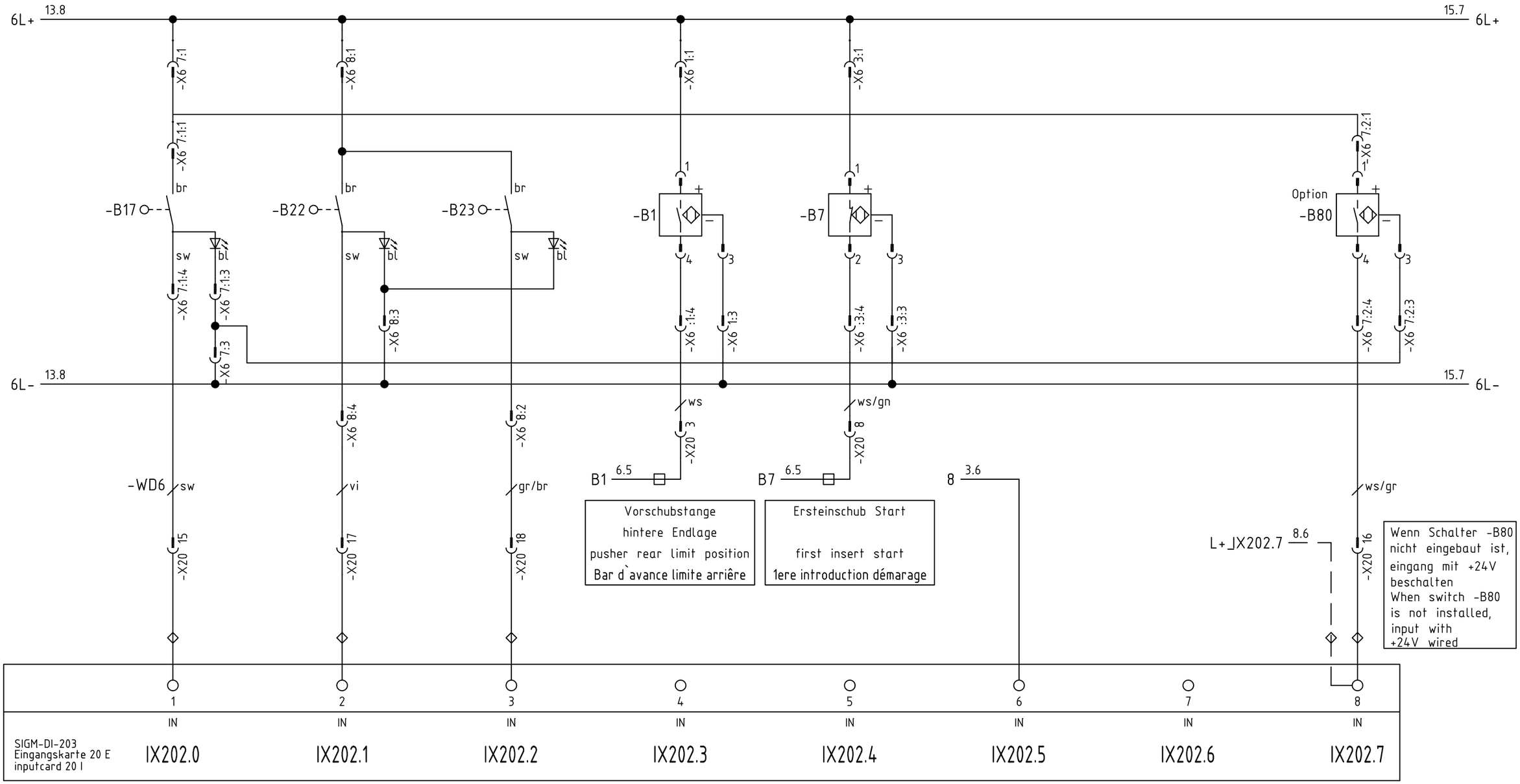
Eingangskarte
KF10 IX201.0-7

turbo RS 3-38 Serie 1

Blatt 13/00

10431_003

Blatt 13
Folge 14

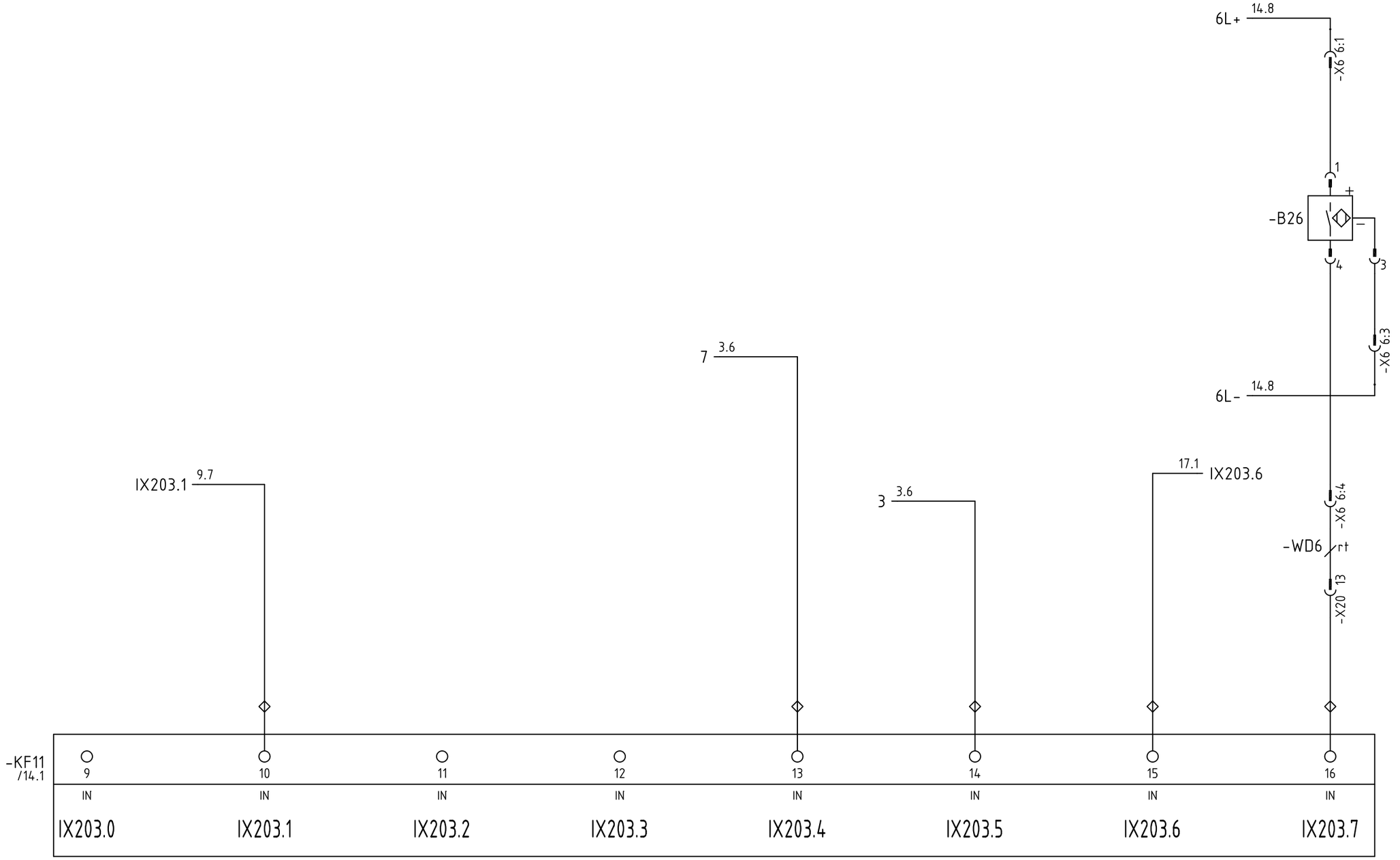


		Option	Option	Option		Option	
Reststückausfallklappe eingeschwenkt remnant flap swung in Volet résidus rentré fermé	Vorschubstange ausgeschwenkt pusher swung out Barre d`avance sortie	Vorschubstange im Kanal pusher in the channel Bar.d`avance rentrée,dans le canal	Vorlauf forward Avance	Rücklauf backward Retour	Nachschieben mit Gegenspindel push with sub spindle Introduction con.broche	Material auf Seitlicher-Auflage material on lateral storage	

				Datum	10.01.23	input-card KF11 IX202.0-7 Plaque d`entrée KF11 IX202.0-7	FMB MASCHINENBAU	Eingangskarte KF11 IX202.0-7
				Bearb	Straub			
				Gepr.	Straub			
Aenderung	Datum	Name	Norm	DIN5	Urspr	Ers.f.	Ers.d.	

turbo RS 3-38 Serie 1

Blatt 14/01 | 10431_003 | Blatt 14 Folge 15



Option

Kurzdrehmodus	Schutztür	reset	Automatik ein	Vorschub Stopp	Relais K225 aktiv	Führungskanal geschlossen	
	geschlossen		von Drehmaschine			(Abfrage hinten)	
short mode	door closed	reset	automatic mode on from lathe	feed stop	Relay K225 active	feed channel closed	
mode court	porte de protection fermé	reset	Automatique on de la tour	Avancement stop	Relais K225 actif	Canal de guidage fermé	

			Datum	10.01.23	input-card KF11 IX203.0-7 Plaque d`entrée KF11 IX203.0-7		
			Bearb	Straub			
			Gepr.	Straub			
Aenderung	Datum	Name	Norm	DIN5	Urspr	Ers.f.	Ers.d.

FMB MASCHINENBAU

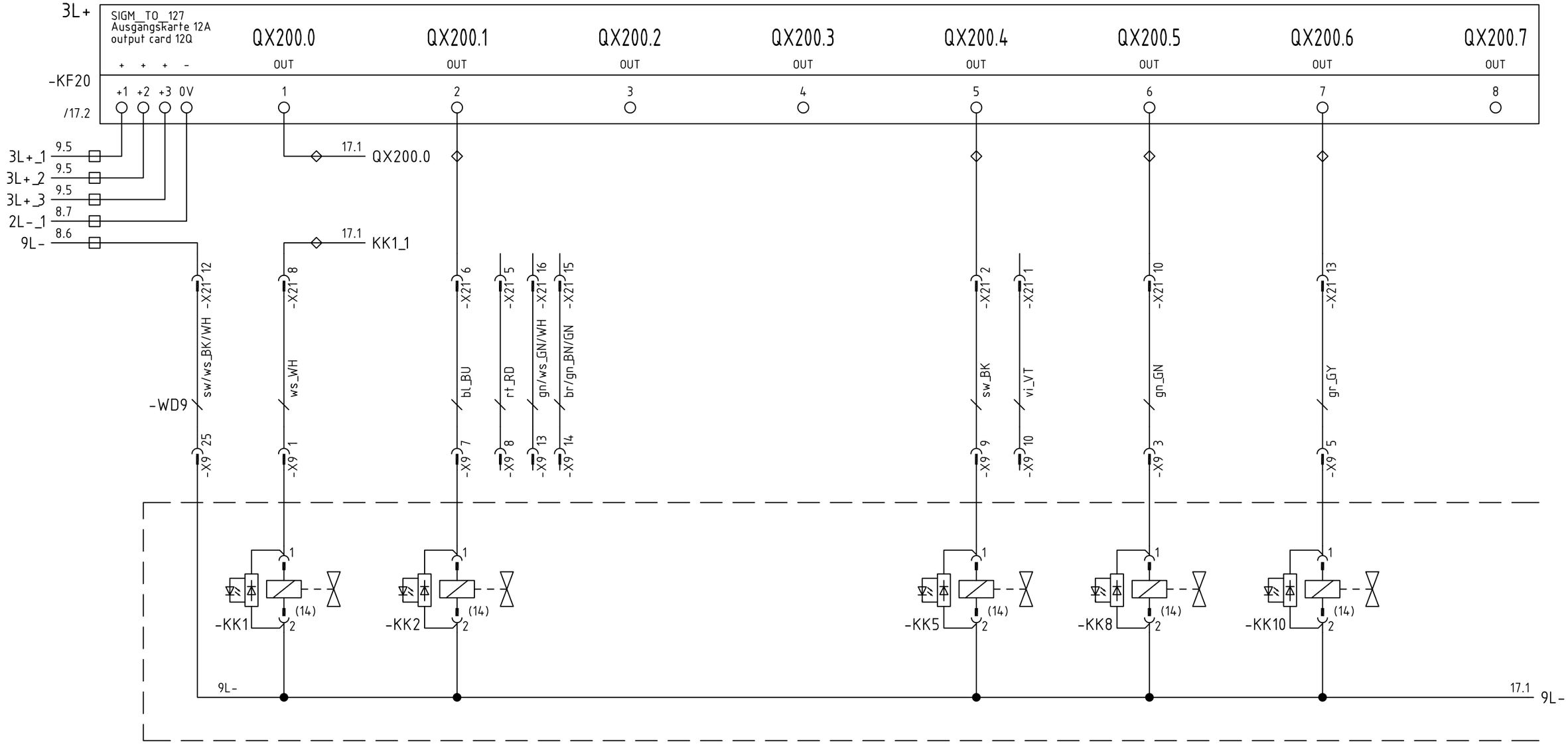
Eingangskarte
KF11 IX203.0-7

turbo RS 3-38 Serie 1

Blatt 15/03

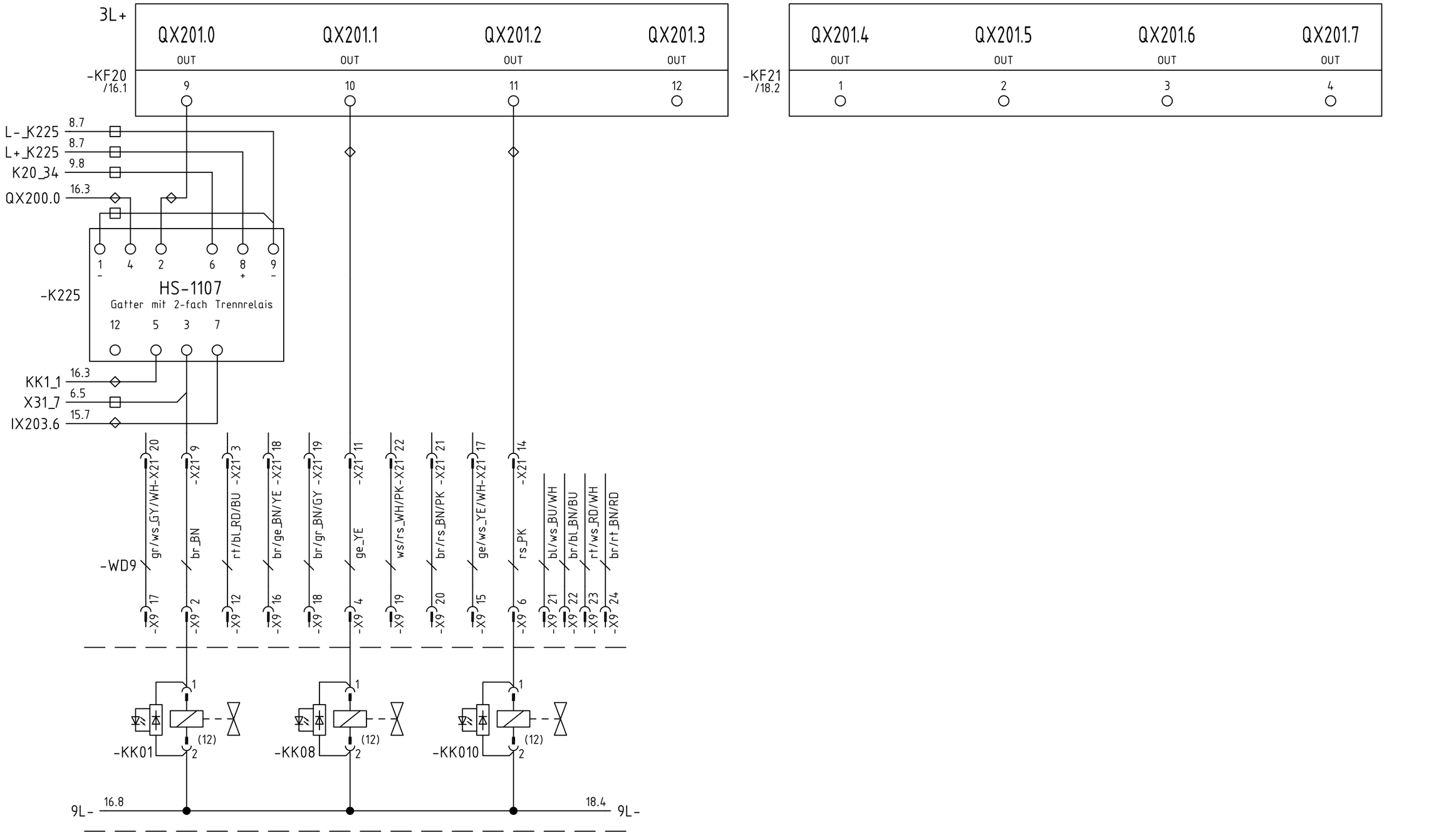
10431_003

Blatt 15
Folge 16



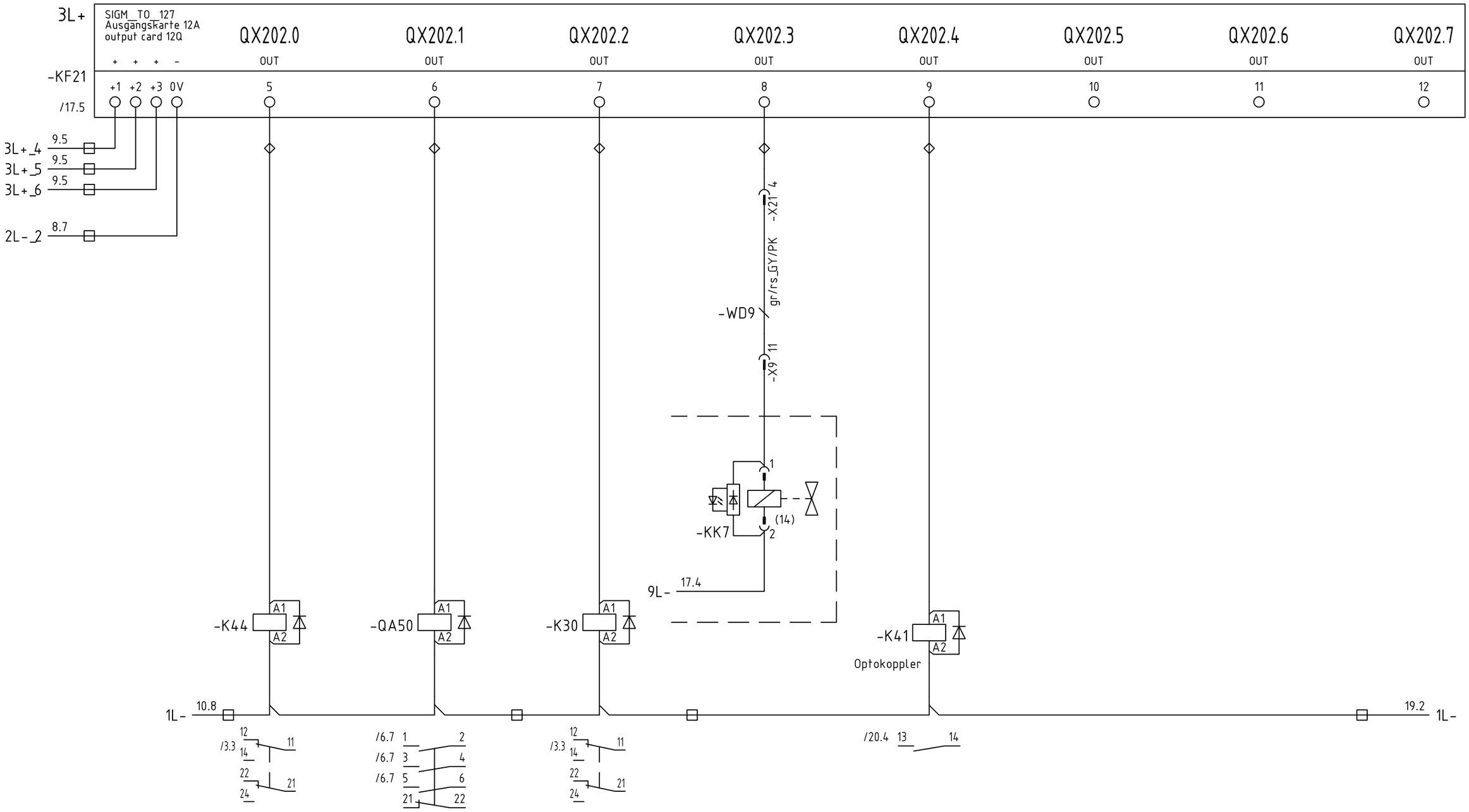
	Führungskanal	Greifermesser			Materialvereinzelung	Vorschubstange	Reststückklappe		
	öffnen	schliessen				ausschwenken	ausschwenken		
	guide channel open	gripper blades close			material separation	pusher swing out	remnant flap swing out		
	Ouvrir le canal guidáge	Fermer les lames du preneur			Séparation le matériau	Barre dávance sortir	volet des résidus sortir		

			Datum	01.06.22	output-card KF20 QX200.0-7 Plaque de sortie KF20 Q200.0-7	FMB MASCHINENBAU	Ausgangskarte KF20 QX200.0-7	turbo RS 3-38 Serie 1
			Bearb	D.Beck				
			Gepr.	D.Beck				Blatt 16/00
Aenderung	Datum	Name	Norm	DIN5	Urspr / Ers.f.	Ers.d.		10431_003
								Blatt 16 Folge 17



Option			
Führungskanal schliessen guide channel close Fermer le canal de guidage	Vorschubstange einschwenken pusher swing in Rentrer la barre d`avance	Restst\u00fcckklappe einschwenken remnant flap swing in Rentrer volet des résidus	Ölabblaseinrichtung oil discharge device Installation de vidange d´huile

				Datum	01.06.22	output-card KF20/21 QX201.0-7 Plaque de sortie KF20/21 QX201.0-7	FMB MASCHINENBAU	Ausgangskarte KF20/21 QX201.0-7
				Bearb	D.Beck			turbo RS 3-38 Serie 1
				Gepr.	D.Beck			Blatt 17/00 — 10431_003 — Blatt 17, Folge 18
Aenderung	Datum	Name		Norm	DIN5	Urspr / Ers.f.	Ers.d.	



Option

Nachschieben	Olpumpe	Störung	Lünette	Synchronkupplung
OK				
pushing OK	oil-pump	fault	steady	Synchronisation clutch
Indroduction	Pompe à huile	Défaut	Lunette	Accouplement synchronisation

Aenderung	Datum	Name		
			Datum	10.01.23
			Bearb	Straub
			Gepr.	Straub
			Norm	DIN5

output-card KF21 QX202.0-7
Plaque de sortie KF21 Q202.0-7

Urspr | Ers.f. | Ers.d.

FMB MASCHINENBAU

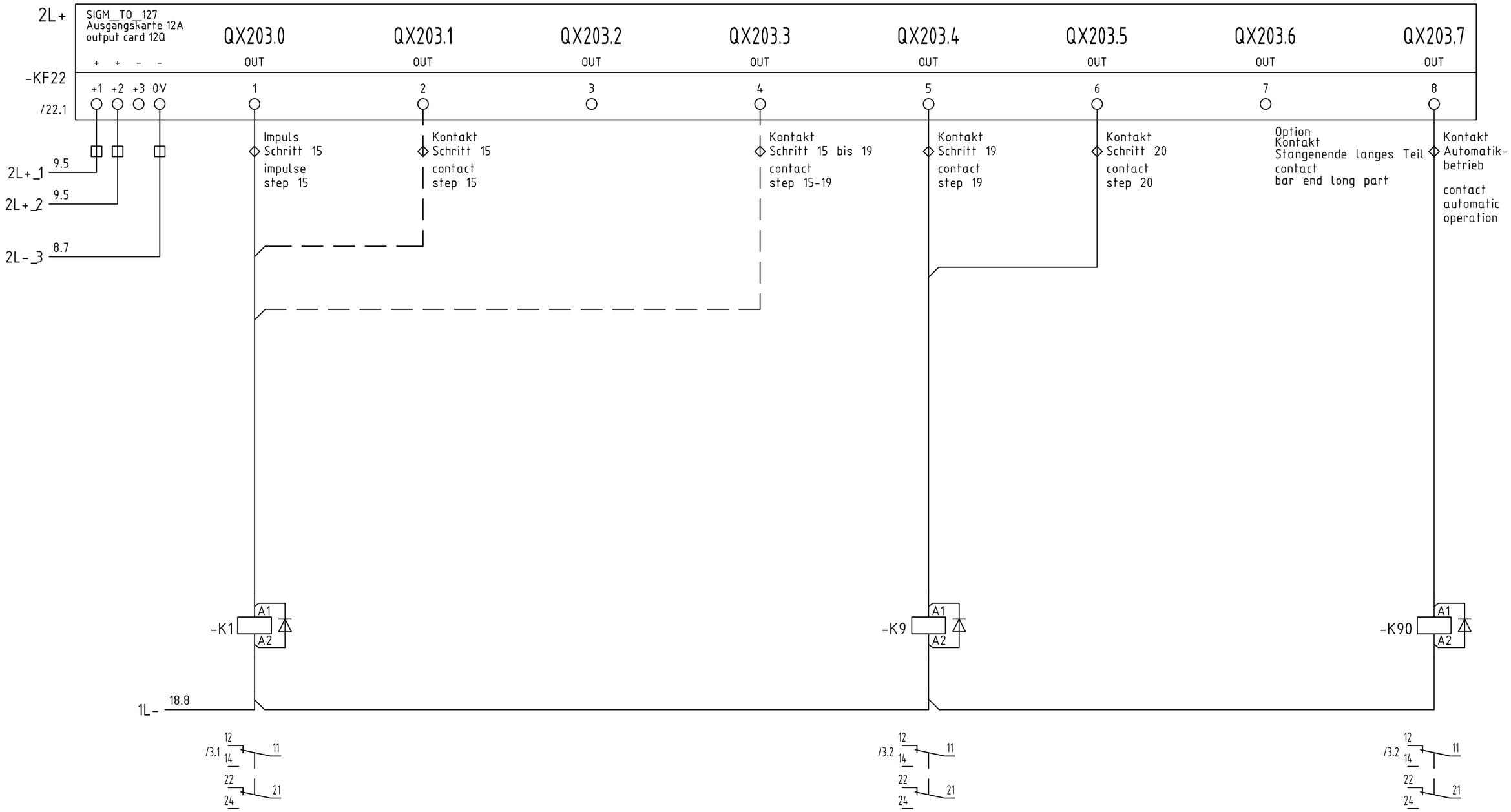
Ausgangskarte
KF21 QX202.0-7

turbo RS 3-38 Serie 1

Blatt 18/00

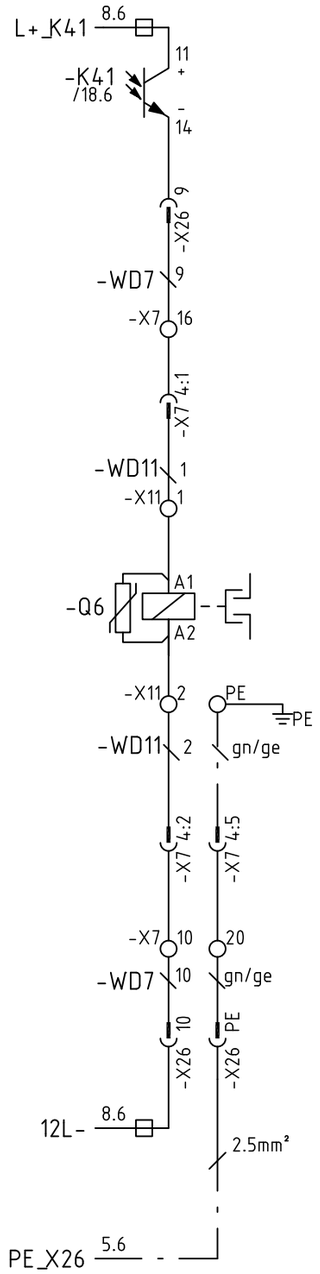
10431_003

Blatt 18
Folge 19



Option			
Stangenwechsel Ende	Kurzdreh Modus	Stangenende	Automatik Ein
Programm Start	short mode	Programm Stopp	
bar change end, program start		bar end, Program stop	automatic on
Fin du changement de barres, Programme start	mode courte	Fin de barre, Programme stop	Automatique on

				Datum	10.01.23	output-card KF22 QX203.0-7 Plaque de sortie KF22 QX203.0-7	FMB MASCHINENBAU	Ausgangskarte KF22 QX203.0-7
				Bearb	Straub			turbo RS 3-38 Serie 1
				Gepr.	Straub			Blatt 19/00 — 10431_003 — Blatt 19, Folge 20
Aenderung	Datum	Name	Norm	DIN5	Urspr	Ers.f.	Ers.d.	

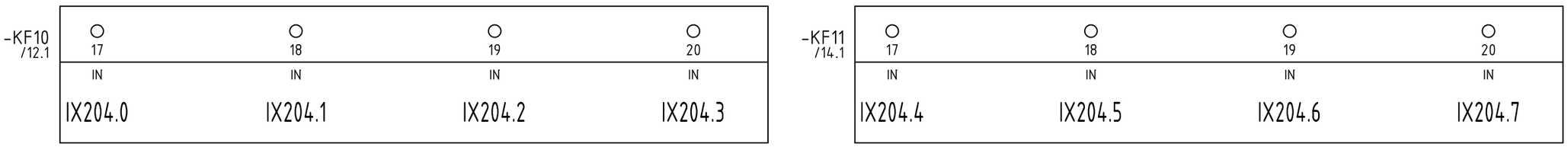


Synchronkupplung

synchronisation clutch

accouplement synchronisation

				Datum	01.06.22	synchronisation clutch Accouplement synchronsiation	FMB MASCHINENBAU	Synchronkupplung
				Bearb	D.Beck			turbo RS 3-38 Serie 1
				Gepr.	D.Beck			Blatt 20/08 — 10431_003 — Blatt 20, Folge 21
Aenderung	Datum	Name	Norm	DIN5	Urspr	Ers.f.	Ers.d.	



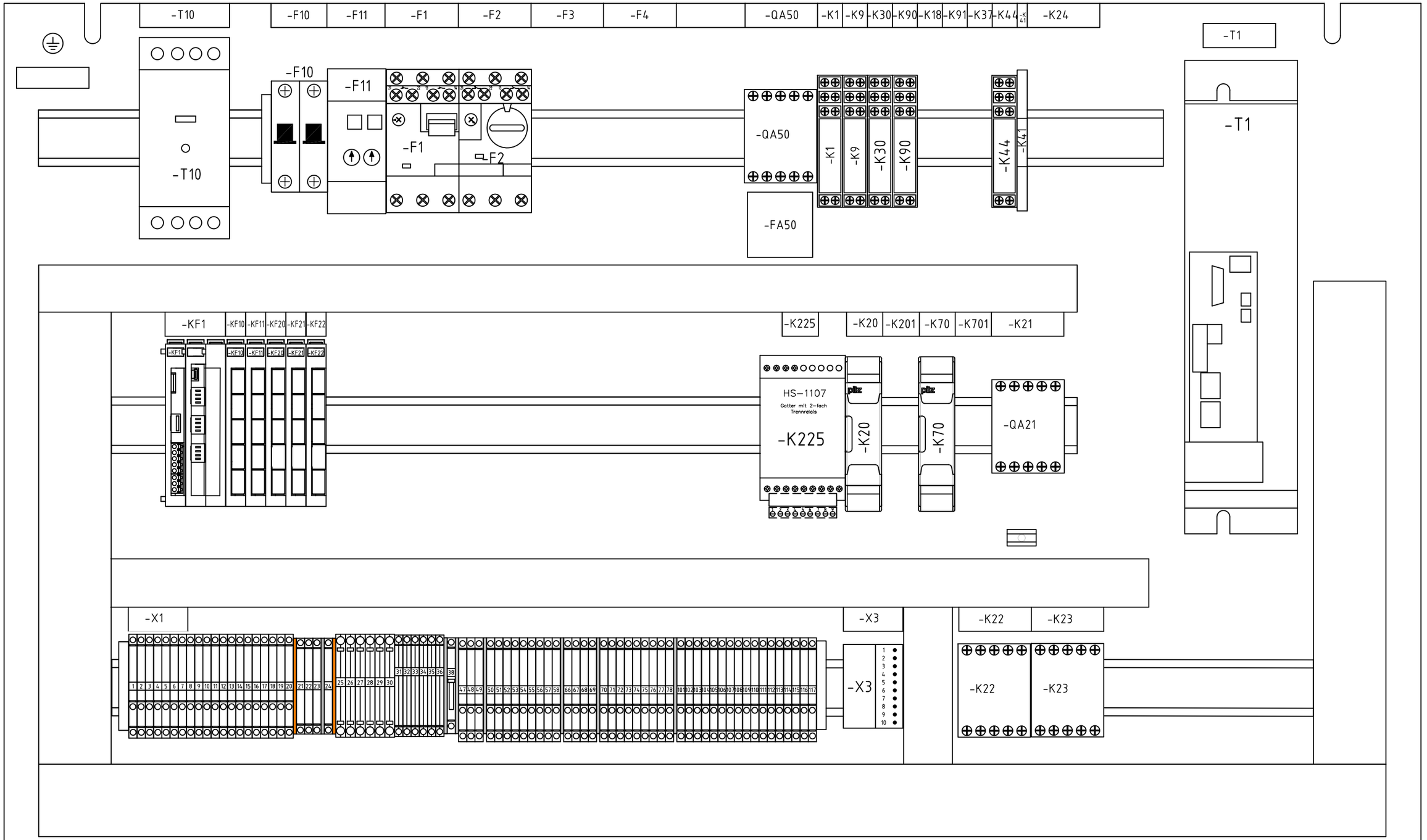
			Datum	01.06.22	input-card KF10/KF11 IX204.0-7 Plaque d`entrée KF10/KF11 IX204.0-7	FMB MASCHINENBAU	Eingangskarte KF10/KF11 IX204.0-7	turbo RS 3-38 Serie 1
			Bearb	D.Beck				
			Gepr.	D.Beck			Blatt 21/00	10431_003 Blatt 21 Folge 22
Aenderung	Datum	Name	Norm	DIN5	Urspr / Ers.f.	Ers.d.		

	QX204.0	QX204.1	QX204.2	QX204.3
	OUT	OUT	OUT	OUT
-KF22 /19.1	9 ○	10 ○	11 ○	12 ○

				Datum	01.06.22	input-card KF22 QX204.0-3 Plaque d`entrée KF22 QX204.0-3	FMB MASCHINENBAU	Ausgangskarte KF22 QX204.0-3
				Bearb	D.Beck			
				Gepr.	D.Beck			
	Aenderung	Datum	Name	Norm	DIN5	Urspr / Ers.f.	Ers.d.	

turbo RS 3-38 Serie 1

Blatt 22/00 | 10431_003 | Blatt 22 / Folge 70



				Datum	10.01.23	switch board Tableau de distribution		Schalttafel	turbo RS 3-38 Serie 1
				Bearb	Straub		FMB MASCHINENBAU		
				Gepr.	Straub				
	Aenderung	Datum	Name	Norm	DIN5	Urspr / Ers.f.	Ers.d.		Blatt 70/02 — 10431_003 — Blatt 70 / Folge