

# turbo 5-65 V

Operating instructions



Operating instructions

turbo 5-65V, series 2

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**Operating instructions**

3, en\_US  
Edge

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# 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 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.

#### 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.

#### Type and source of hazard

Consequences if the note is disregarded.

- Actions necessary to avert the hazard.

#### Warning Caution

**CAUTION**

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

**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 supplied, 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 62.
- 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 13.*
- 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 22.*
- 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

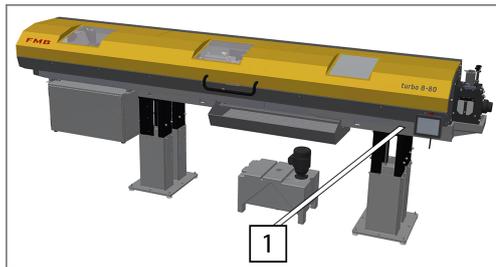
\*Extensive qualification in the assembly and start up of FMB products. Qualification is done by FMB.

\*\*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.

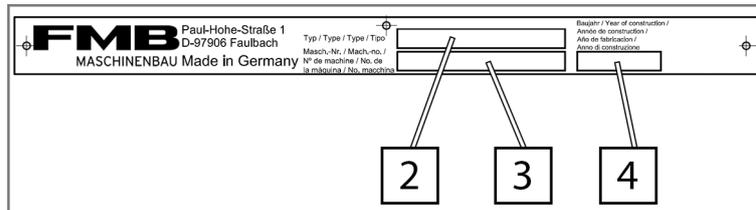
## 1.2 Information about the product

### Name plate



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

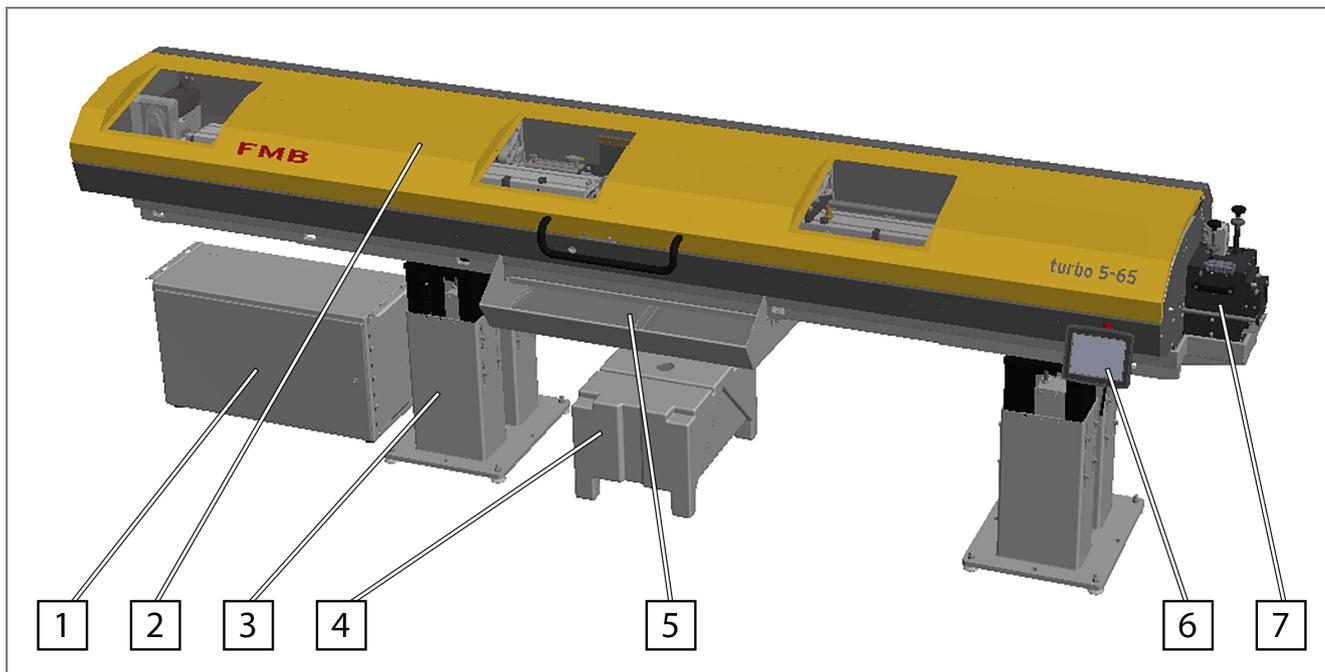
1.



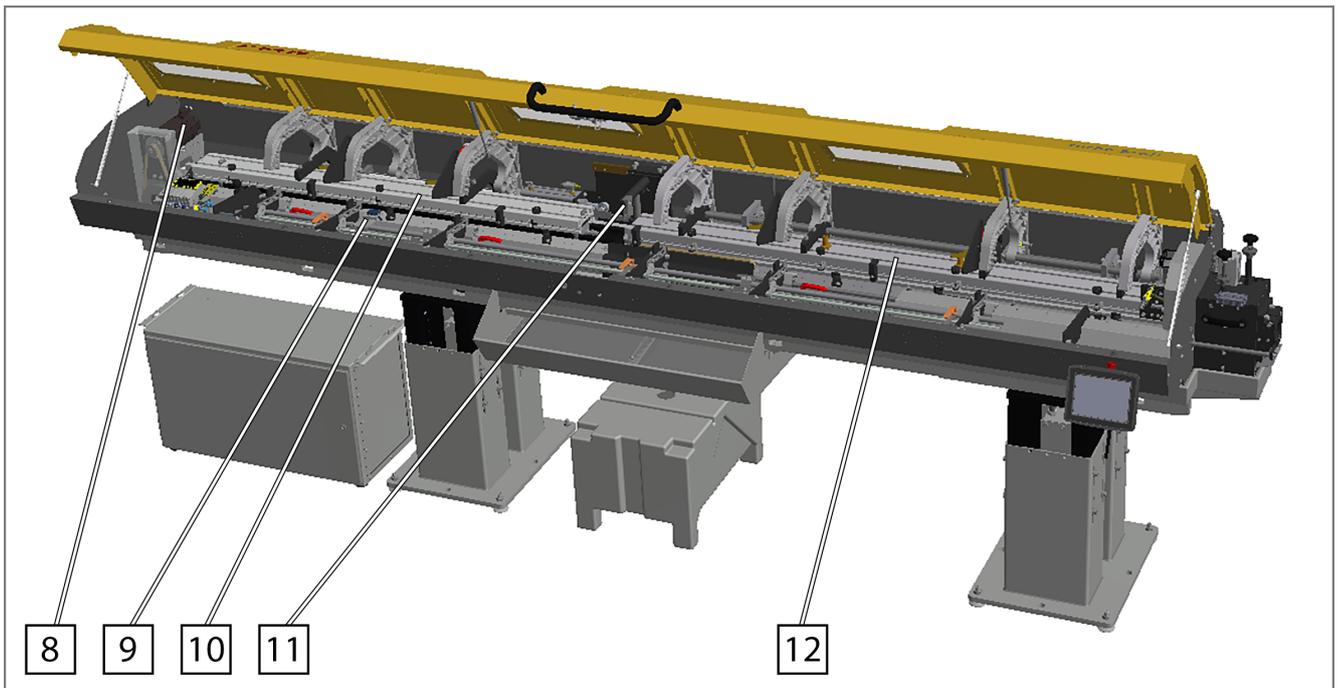
2	Types and lengths	3	Machine number
4	Year of construction		

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 lathe. The loading magazine works at the speed of the lathe and thereby allows the automatic loading of the lathe.

The material bar slides from the lateral material storage into the guide channel and is moved by the short pusher into the area of the material gripper. The material gripper closes and holds the material bar in position, until the clamping sleeve at the end of the pusher has been pushed onto the material bar. The material gripper opens and the pusher moves the material bar.

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

If the material bar has been used up and the last possible part has been made, the working process of the lathe is stopped. The collet of the lathe 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.

## Servo drive

The servo drive is a unit consisting of a control unit and a power unit which holds the memory card with the logic unit for the PLC program and the parameters for the drive. The condition of the drive and error reports can be viewed on a control panel.

## 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

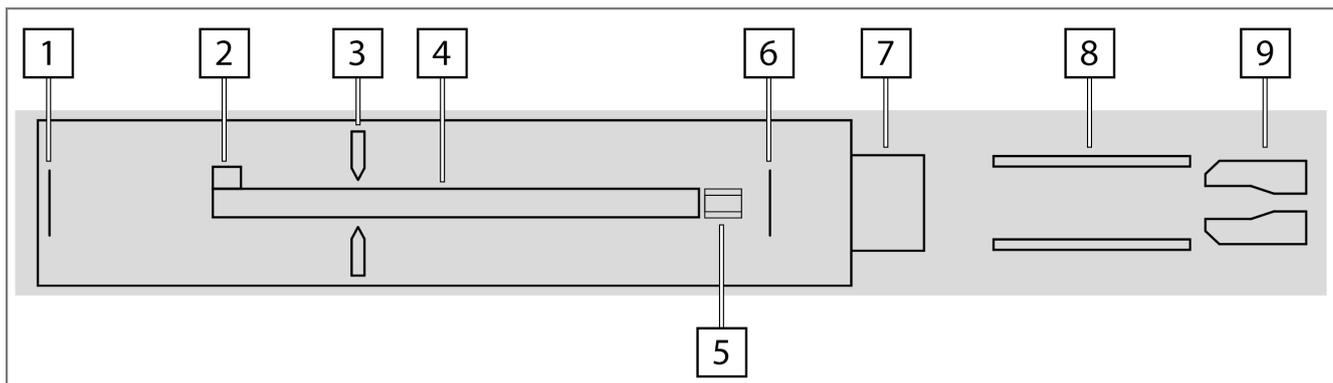
The synchronizing unit is only installed in loading magazines, which are intended for attaching to lathes with a moving headstock. The synchronizing unit ensures that the pusher of the loading magazine and the material bar also complete the traverse paths of the lathe headstock.

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.

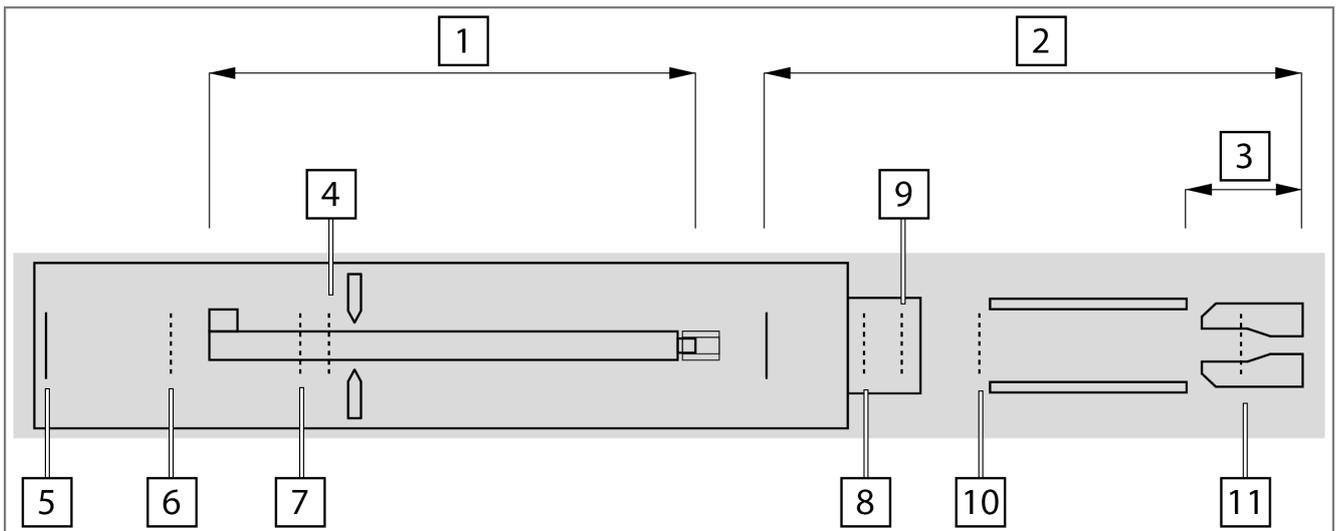
During the bar feed the drive of the loading magazine is switched on and the synchronization clutch is opened. The pusher is moved by the drive of the loading magazine. The material bar is pushed on.

## Layout of the components



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

Positions and traverse paths



1	Pusher length	The parameter <b>Pusher length</b> is measured from the back edge of the pusher to the front edge of the bearing insert.
2	Traverse path <b>First insert travel</b>	The first insertion is performed after changing the material bar. The traverse path of the <b>First insert travel</b> 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 <b>Travel interval on</b>	If the interval insert is active, an intermittent feed occurs in the area of <b>Travel interval on</b> .
4	Position draw off	In the position <b>Position draw off</b> the material gripper grabs the material bar.
5	Position rear limit	The maximum rear position, which the pusher can reach. The position <b>Position rear limit</b> is reached, when the remnant is removed or the pusher swings out.
6	Position storage	The position at which the short pusher takes on a new material bar. The pusher moves at high speed, and just before the position <b>Position storage</b> it brakes, takes the material bar with it and then accelerates again.
7	Limit pos. short pusher front position	The position at which the short pusher moves the material bar, so that the material gripper can grab the material bar.
8	Position open steady	During operation, the clamping sleeve must pass the steady. If the clamping device is in the <b>Position open steady</b> position, the steady is opened 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 close steady position, the steady closes.
10	Pos. reverse rotation return	When returning from the lathe's spindle, the pusher moves from the Pos. reverse rotation return position at high speed.
11	Position front limit	The maximum front position, which the pusher can reach. The clamping sleeve is just in front of the collet of the lathe. Using the value Position front limit and the value Part length 1 it is calculated when the last part is pushed.

## 1.3 Technical data

### Technical data of the loading magazine

Characteristic	Unit	Value
Material flow in the guide channel	mm	5 - 65
Bar length	mm	3200 / 3800 / 4200 / 6200 / 6400
Maximum feed force	N	750
Feed speed	mm/s	0 - 700
Feed speed	mm/s	0 - 1000
Return speed	mm/s	2000
Maximum remnant length	mm	530
Loading capacity of the lateral material storage	mm	240
Weight <sup>3</sup> Bar length 3200 mm	kg	1800
Weight <sup>3</sup> Bar length 3800 mm	kg	2100
Weight <sup>3</sup> Bar length 4200 mm	kg	2300
Weight <sup>3</sup> Bar length 6200 mm	kg	3000
Weight <sup>3</sup> Bar length 6400 mm	kg	3000
Weight <sup>3</sup> Bar length 7400 mm	kg	3600
Oil tank level Bar length 3200 mm to 4200 mm	l	80

Characteristic	Unit	Value
Oil tank level Bar length 6200 mm to 6400 mm	l	140
Supply of compressed air	bar	6 - 10
Compressed air consumed per loading process	l	approx. 17.5
Compressed air consumed per double stroke of the steady	l	approx. 1
Noise emission during the bar change	dB(A)	48 + / - 5
Operating voltage <sup>1, 4</sup>	V	200 / 400 / other types
Power requirement	KW	2.5
Nominal frequency <sup>2, 5</sup>	Hz	50 / 60
Control voltage	V	24

1) According to DIN EN 60204 (VDE 0113) the continuous operating voltage must lie within 100 % ± 10% of the mains 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 designed 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

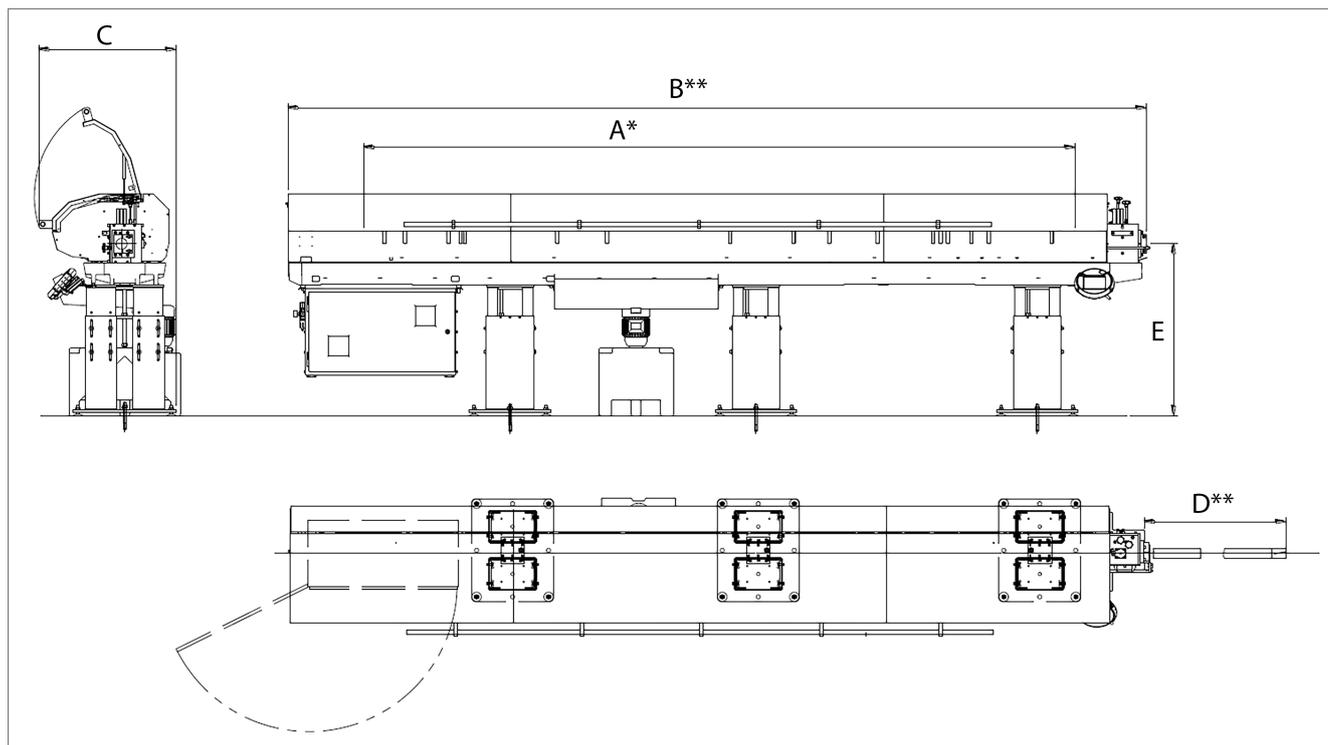
The lubricant used must comply with one of the following standards.

- DIN 51 517-2 CL 150,
- DIN 51 506 VBL 150,
- DIN ISO 3448 ISO VG 150.

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

Manufacturer	Type
Aral	Motanol HE 150
Mobil / Esso	Vacuoline 128
Shell	Morlina 150

## Dimensions of the loading magazine



\*Dimension A: Material bar length; \*\*Dimensions B and D: depending on the pusher

Pusher length	1650 mm	1900 mm	2100 mm
	B1	B2	B3
	D1	D2	D3

Loading magazine turbo 5-65	Dimensions in mm								
	A	B1	B2	B3	C	D1	D2	D3	E*
3200	3200	4416	4676	4876	890	1390	1640	1840	790
3200 XT	3200	4642	-	-		1345	-	-	-1470 set to

Loading magazine turbo 5-65	Dimensions in mm								
	3800	3800	5016	5276	5476		1390	1640	1840
4200	4200	5416	5676	5876					
6200	6200	7416	7618	7816					
6400	6400	7416	7618	7816	1390		1640	1840	
7400	7400	8416	8618	8816	1390		1640	1840	

\*On loading magazines with a shifting unit this value increases by 52.5 mm (842.5 mm - 1522.5 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

There is an emergency stop device on the loading magazine which complies with DIN EN 60204 (VDE 0113). The emergency stop button is attached to the control panel → *“Press the emergency stop button” on page 49.*

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 thereby the pusher cannot perform any more movements. The pressurization of all 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 lathe and has to be processed there in accordance with DIN EN 23125.

If the emergency stop button of the lathe 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 automatic mode, the cover can be opened in steps 16-19 for reloading (not possible with the bundle loader attached). Certain PLC outputs are switched off. The outputs for close channel, swing pusher and close remnant flap can still be used. The drive remains active. If the lid of the steady is removed, there is no power at certain outputs and the drive is shut down.

#### Safety door of the machine tool

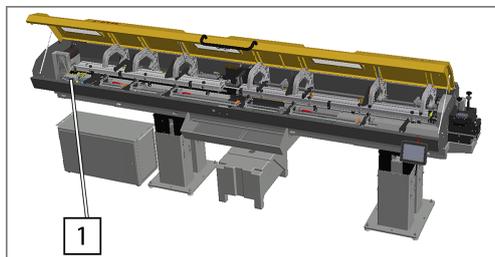
If the safety door of the machine tool is opened during operation, the drive of the loading magazine is shut down. It is not possible to move the pusher of the loading magazine if the safety door of the machine tool is open. A risk to people due to the pusher of the loading magazine being in the working 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. → *“Secure the guide channel with safety bolts” on page 81.*

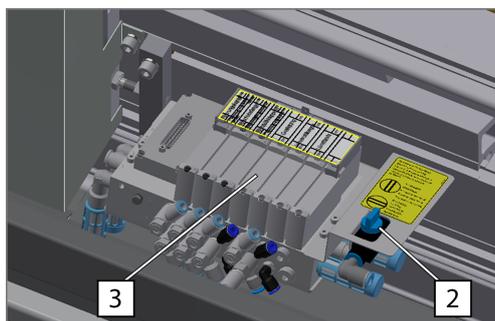
### Valve block



The valve block is in the **1** position 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, it is possible to store compressed air 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 valve **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 127.*

## 3 Transport

### 3.1 Prepare for transportation

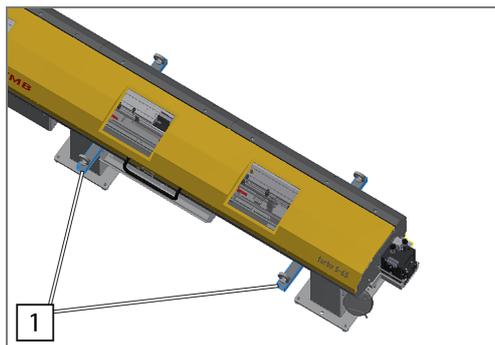
Prepare the loading magazine for transportation



*After raising the loading magazine, the pins extending out of the floor must be detached at ground level using suitable means, or removed from the floor.*

1. ➤ Completely remove any material bars. ➔ *“Removing the material bar from the loading magazine” on page 72 or ➔ “Draw off and eject the remnant” on page 72.*
2. ➤ Press the  button.
3. ➤ Access **SETUP**.
4. ➤ Move the pusher right to the back using the  button.
5. ➤ Leave the loading magazine at a standstill for at least 8 hours, to let the oil out.
6. ➤ Empty the oil tank of the loading magazine. ➔ *“Empty the oil tank of the loading magazine” on page 119.*
7. ➤ Turn off the main switch of the lathe.
8. ➤ Interrupt the electrical connection to the lathe (detach the plug-in connection).
9. ➤ Disconnect all the electrical connections from the loading magazine to the control cabinet.
10. ➤ Remove the plug for the oil pump on the control cabinet.
11. ➤ Dispose of the oil / cooling lubricant in accordance with the legal provisions.
12. ➤ Disconnect the connecting hoses for the oil feed and oil outlet.
13. ➤ Secure separate oil hose connections from losing residual oil.  
*i The oil tank must be transported separately.*
14. ➤ Depressurize the compressed air line to the loading magazine.
15. ➤ Switch off the supply of compressed air. ➔ *“Switch the supply of compressed air on/off” on page 120.*  
➔ The loading magazine is vented.
16. ➤ Secure the control cabinet to the beam ➔ *“Remove the control cabinet from / attach the control cabinet to the loading magazine” on page 35.*
17. ➤ 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 point for the transport beams **1** is on the underside of the loading magazine.

**Assembling the transport beams**



**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.

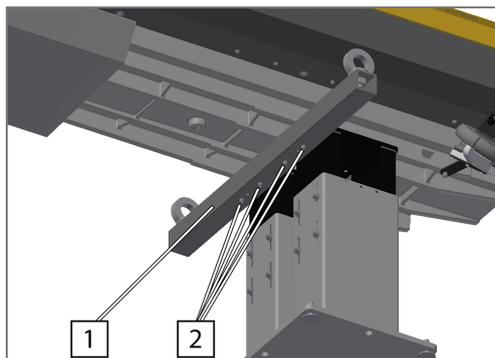
- Do not stay in the danger area.
- Only install transport beams for the purpose of crane transportation and then remove them directly.
- Observe the description about the assembly of transport beams in the operating instructions.



**Protruding transport beams**

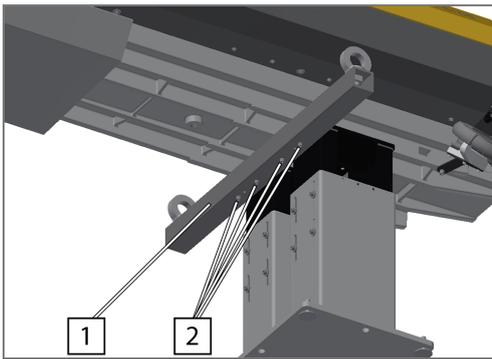
Personal injury because of impact due to protruding transport beams.

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



1. ➤ Position the **1** transport beams.
2. ➤ Insert and tighten **2** the screws.
3. ➤ Assemble the second transport beam in the same way.

## Removing the transport beams



1. ➤ Loosen and remove the screws [2].
2. ➤ Remove the transport beam [1].
3. ➤ Remove the second transport beam in the same way.

## Angle of inclination of the load attachment gear

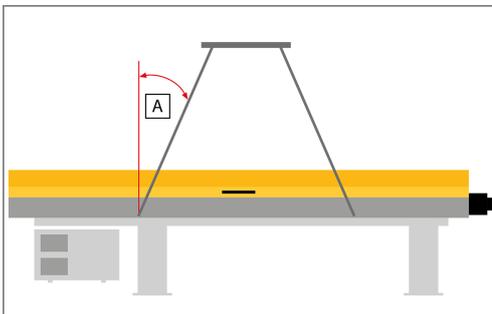


### Falling loading magazine

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

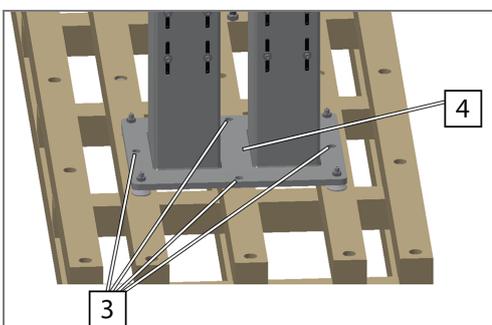
When lifting the loading magazine with the multi-chain load attachment gear, the specified maximum angle of the load attachment gear has to be observed. If this angle is exceeded, the attachments of the transport beams may break and the loading magazine could fall down.

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

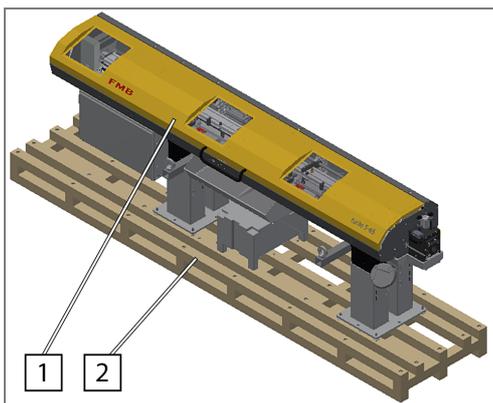


When using the multi-chain load attachment gear, the load attachment gear has to be chosen so that it does not exceed the angle of inclination of [A] 40°. Greater angles of inclination generate transverse forces, which the attachment of the transport beams is not designed for.

## Detach the loading magazine from the transport pallet



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



4. ➔ Raise the loading magazine 1 from the transport pallet using a crane 2 and place it down safely ➔ *“Transport the loading magazine with a crane” on page 22.*

1. ➔ Detach the oil tank from the transport pallet.
2. ➔ Lift the oil tank off the transport pallet using suitable hoisting gear.

**Attach the loading magazine to the transport pallet**

**i** *Attaching the loading magazine to the transport pallet is only intended to secure 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. The attachment to the transport pallet is not sufficient.*

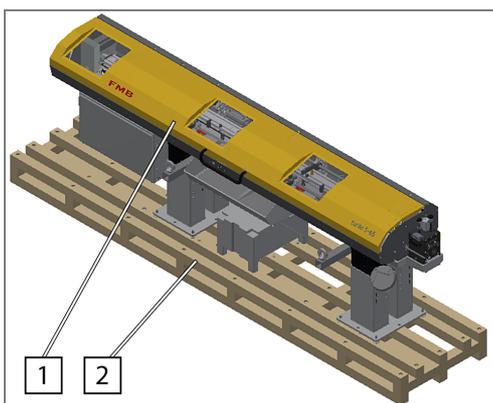
**i** *To attach the loading magazine to the transport pallet, fasteners must be used, which have been designed sufficiently.*

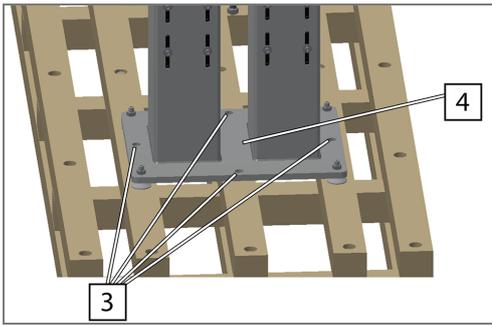
➔ Observe the weight of the transport pallet in the technical data. ➔ *“Technical data of the loading magazine” on page 12.*

1. ➔ Place the oil tank on the transport pallet using suitable hoisting gear.
2. ➔ Secure the oil tank against slipping.

1. ➔ Raise the loading magazine 1 onto the transport pallet with a crane 2. ➔ *“Transport the loading magazine with a crane” on page 22.*

2. ➔ Secure the loading magazine against tipping over.





3. → Drill through the attachment holes in the transport pallet [3].
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. → Attach the rest of the supports in the same way to the transport pallet.

## 3.2 Transporting the product

Transport the loading magazine with a crane

**⚠ DANGER**

If the loading magazine is hoisted with the transport pallet, it has to be ensured that the attachment screws of the pallet are designed in such a way to prevent the pallet coming loose from the loading magazine.

### 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 pallet, 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

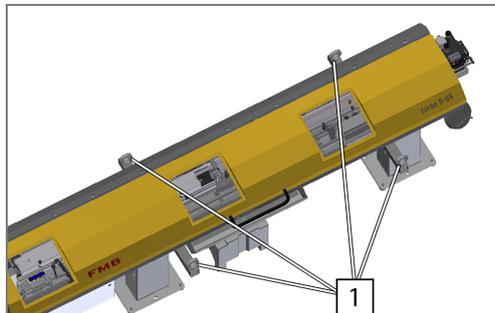
Personal injury due to squashing and impact by the falling control cabinet.

- 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. ➤ Attach suitable hoisting equipment to all four eyebolts 1 of the transport beams.
3. ➤ Hoist the loading magazine and set it down securely.
4. ➤ Remove the hoisting equipment on 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 with a 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 pallet, 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**

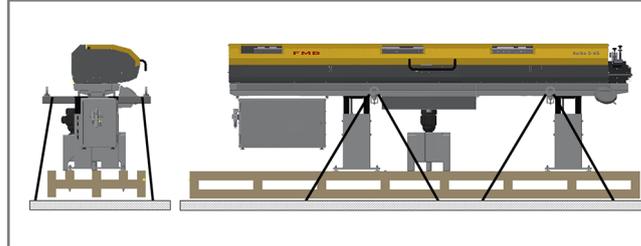
Personal injury due to squashing and impact by the falling control cabinet.

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

**⚠ DANGER****Falling oil tank**

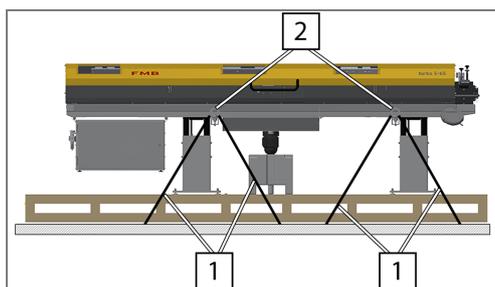
Personal injury due to squashing and impact by the falling oil tank.

- Do not stay in the danger area.
  - Secure the oil tank on the transport pallet against slipping.
1. Attach the loading magazine to a transport pallet → *“Attach the loading magazine to the transport pallet” on page 21.*
  2. Calculate the centre of gravity of the load.
  3. Place the forks of the fork-lift truck under the centre 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 → *“Detach the loading magazine from the transport pallet” on page 20.*

**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 → *“Attach the loading magazine to the transport pallet” on page 21.* 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 25.*

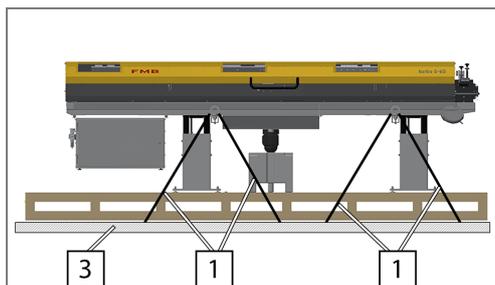
## Attach the loading magazine to the means of transport



**1.** Attach the loading magazine to a transport pallet → “Attach the loading magazine to the transport pallet” on page 21.

**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 → “Transport the loading magazine with a crane” on page 22 or → “Transporting the loading magazine with a fork-lift truck” on page 23.



**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 whole delivery is secured by a protective film against severe contamination.

- The loading magazine is screwed to the transport pallet.
- The oil tank is located on the transport pallet and is secured against slipping.
- The add-on set for attaching 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 against slipping on the transport pallet.

#### Unpacking the product

**Check the delivery:**

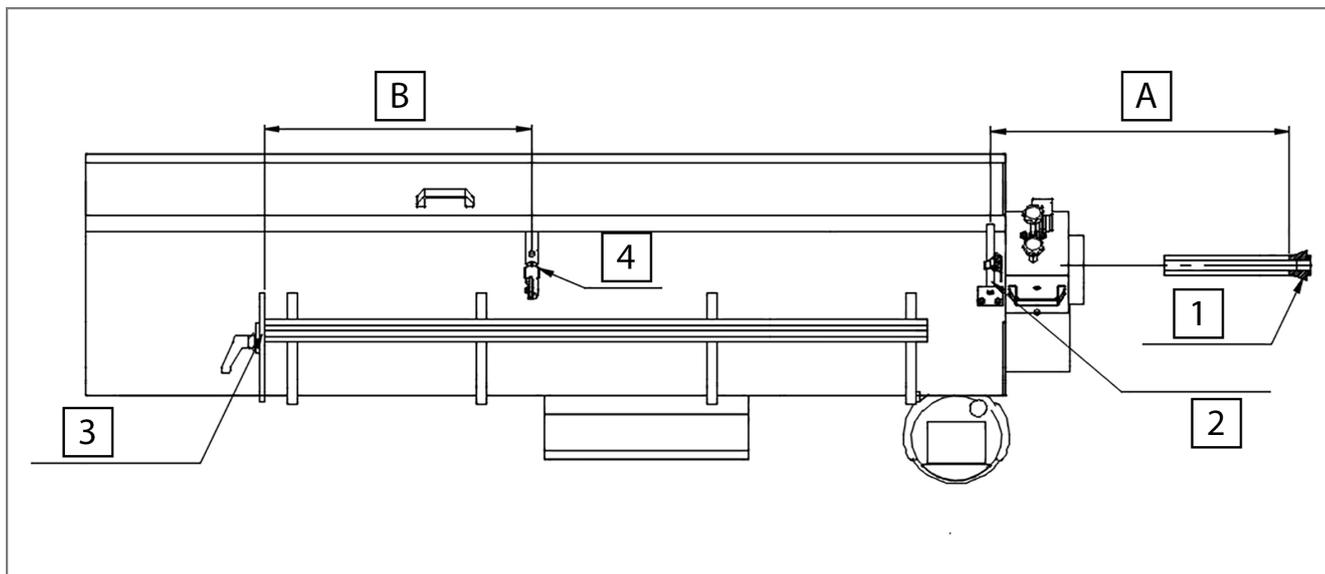
1.  Remove the protective film.
2.  Remove the add-on parts and equipment from the transport pallet.
3.  Take the add-on parts and equipment out of the remnant bin.
4.  Unpack the add-on parts and equipment.
5.  Check the delivery to make sure it is complete.

**Detach the delivery from the transport pallet:**

1.  Detach the oil tank from the transport pallet.
2.  Lift the oil tank off the transport pallet using suitable hoisting gear.
5.  Detach the loading magazine from the transport pallet.  
➤ *“Detach the loading magazine from the transport pallet” on page 20.*

## 4.2 Aligning

Calculate the distance of the loading magazine from the machine tool



Dimension **A**: Machine tool collet **1** to the starting switch of the loading magazine **2**.

Dimension **B**: Position of the loading magazine support **3** up to the material gripper of the loading magazine **4**.

The minimum distance of the loading magazine to the machine tool is calculated by dimension **A**. The dimension **A** must be greater than dimension **B**. Depending on that, the loading magazine must be as close as possible to the machine tool.

### Attachment to machine tools with fixed headstock:

1. ➤ Set up the loading magazine on the machine tool. ➔ "Setting up the loading magazine" on page 28.
2. ➤ Calculate dimension **A** with a tape measure.
3. ➤ Calculate dimension **B** with a tape measure.
4. ➤ Adjust the distance.

### 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**

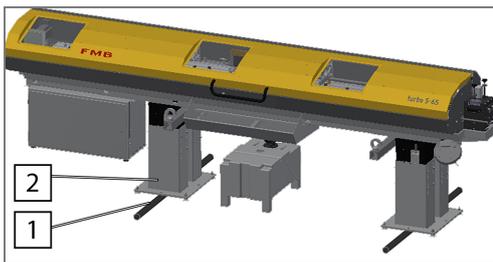
### Moving the whole loading magazine during set-up

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

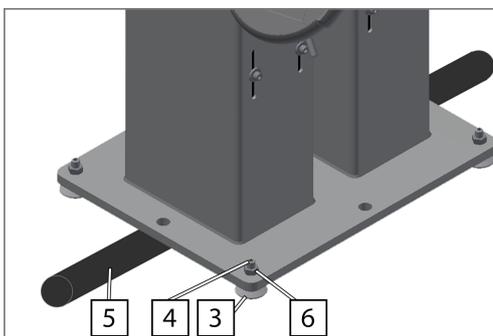
When setting up and aligning the loading magazine, the whole loading magazine has to be moved. People may be struck by the loading magazine or become stuck between the loading magazine and the lathe.

- Do not stay in the danger area.

For alignment, the loading magazine with 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 27.
5. Move the loading magazine along the round material bar and calculate the distance to the lathe.
6. Position the foot plates [3] under the set screws [4].
7. Turn the set screws [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 29*

### 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 end of the longer part <b>Part length 1</b> 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 <b>Part length internal</b> , <b>Part length external</b> and <b>Collet open</b> , fixed speed.
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 of the machine tool	Loading magazine action
Collet open	The feed equipment of the loading magazine has been 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.
The machine tool is ready for operation, automatic mode approved	The loading magazine can be switched to automatic mode (for this to happen, this contact must be active).

Signal of the machine tool	Loading magazine action
Loading magazine on (option)	Contact starts the automatic mode of the loading magazine.
Safety door closed	The feed movement through the loading magazine is only executed 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 (a push command), the next push is converted from Part length internal, and 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**

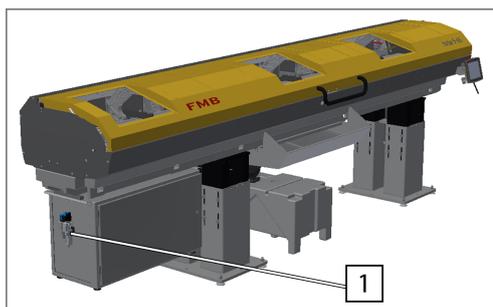
**Damaged wires or plugs**

**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.

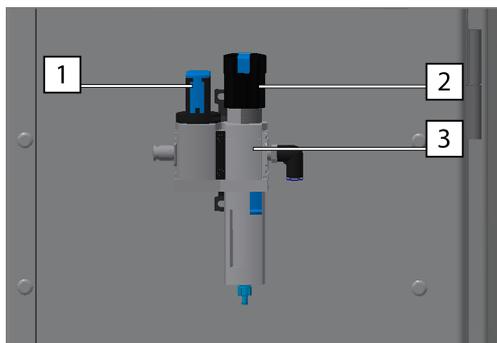
1. Turn off the machine tool before starting work on the main switch.
2. Check the electrical connection of the loading magazine and lathe. → "Electrical connection of the loading magazine and lathe" on page 28
3. Insert the main power supply cable of the loading magazine into the control cabinet of the lathe.
4. Check the input voltage of the loading magazine.
5. Insert the connecting pipe for the supply of compressed air of 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

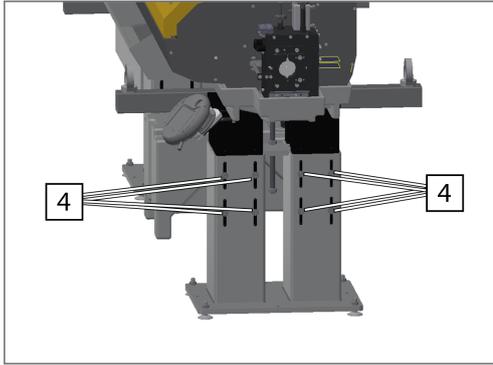
Cuts due to the sharp knives of the material gripper.

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

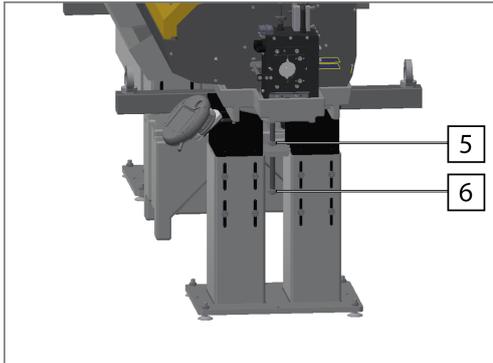
- Wear safety gloves.

→ 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 127.

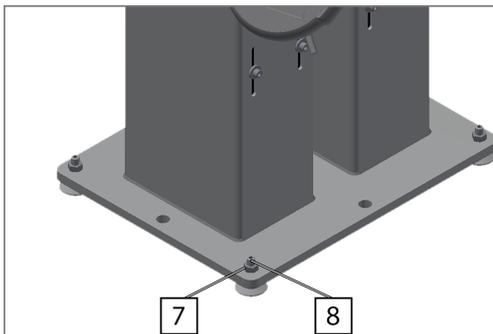
Correcting the height (in general):



1. ➤ Loosen the clamping screws [4].

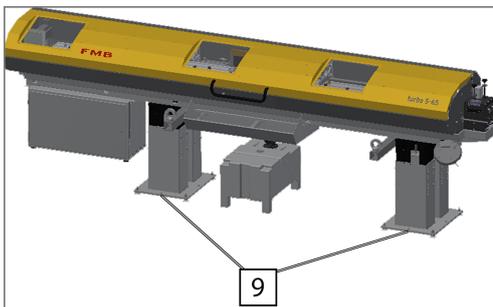


2. ➤ Loosen the lock nuts [5] of the threaded spindles [6].
3. ➤ Correct the height of the loading magazine with the threaded spindles [6].
4. ➤ Tighten the lock nuts [5] of the threaded spindles [6].
5. ➤ Tighten the clamping screws [4].



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:

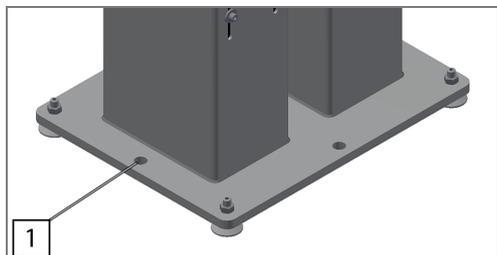
1. ➤ Apply the lever (e.g. crowbar) at the lifting points [9] and correct the side position.
2. ➤ Remove the optical alignment aids again.

**Attaching the loading magazine to the floor**



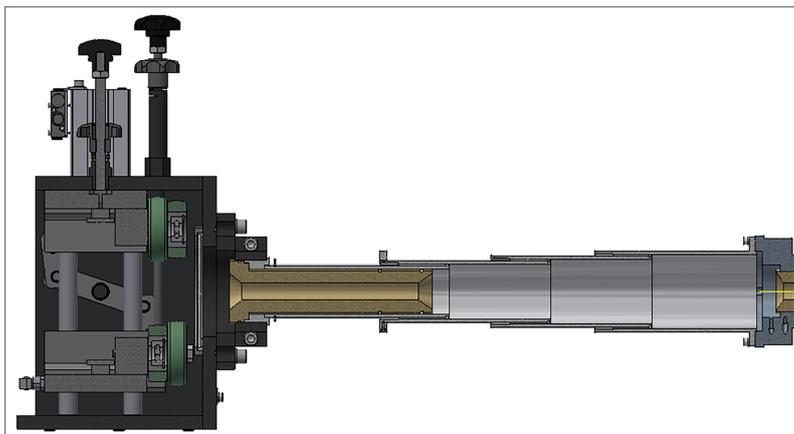
*The number of attachment points to be used depends on the condition of the floor and the equipment of the loading magazine. In the event of uncertainty, please consult FMB.*

**i** 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.



Telescopic tube

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.



For lathes with a moving headstock, the telescopic tube bridges the distance between the front end of the loading magazine and the spindle end of the lathe. It serves as a protective cover and prevents rotating parts coming out. The telescopic tube moves with the headstock of the lathe.

### Assembling the telescopic tube

**⚠ DANGER**

Moving components of the loading magazine and the machine tool  
**Personal injury due to squashing, impact or striking by movements of the loading magazine and the machine tool.**

When working on the unsecured interface (with the guide or telescopic tube detached) between the loading magazine and the machine tool, the extremities may become caught or stuck in the moving components of the loading magazine or machine tool.

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

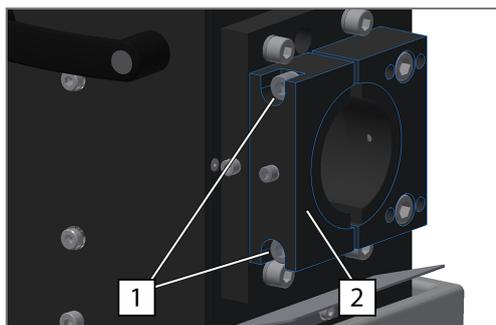
**⚠ CAUTION**

### Falling extension parts

Personal injury due to squashing and impact by the falling extension parts.

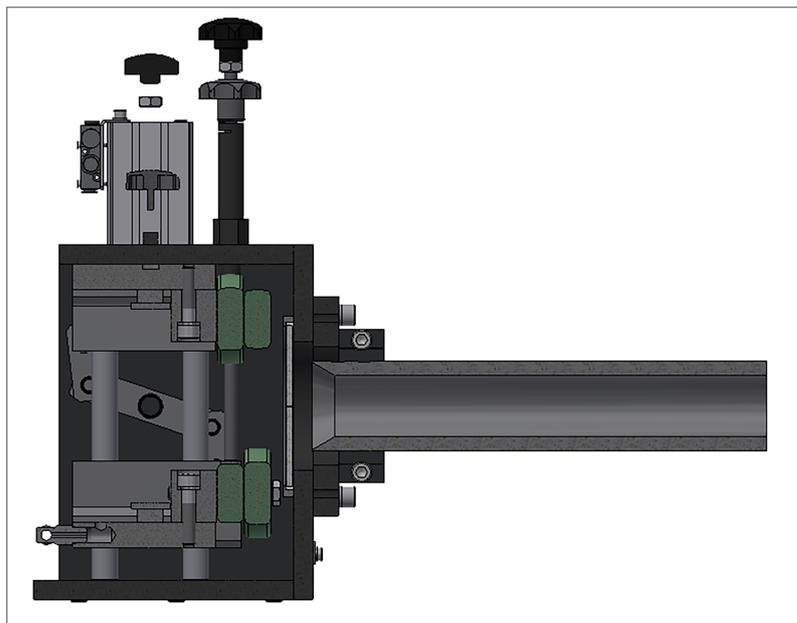
When setting up the loading magazine, various extension parts have to be assembled at the interfaces between the loading magazine and the machine tool. They might fall down and hit body extremities.

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



Guide tube

1. ➤ Loosen the screws [1].
  - ➔ The clamping piece [2] is detached.
2. ➤ Push the telescopic tube into the [2] clamping piece [2] to the depth of the clamping piece.
3. ➤ Tighten the [1] screws.



For lathes with a fixed headstock, the guide tube bridges the distance between the front end of the loading magazine and the spindle end of the lathe. It serves as a protective cover and prevents rotating parts coming out.

Assembling the guide tube

**⚠ DANGER**

Moving components of the loading magazine and the machine tool  
Personal injury due to squashing, impact or striking by movements of the loading magazine and the machine tool.

When working on the unsecured interface (with the guide or telescopic tube detached) between the loading magazine and the machine tool, the extremities may become caught or stuck in the moving components of the loading magazine or machine tool.

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

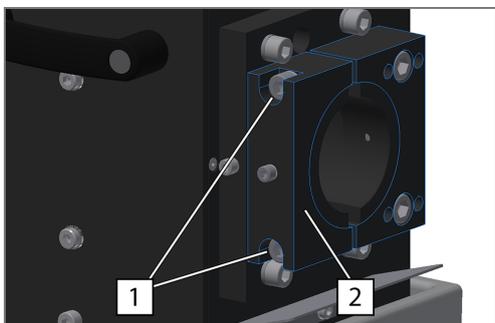
**⚠ CAUTION**

Falling extension parts

Personal injury due to squashing and impact by the falling extension parts.

When setting up the loading magazine, various extension parts have to be assembled at the interfaces between the loading magazine and the machine tool. They might fall down and hit body extremities.

- Raise and secure any add-on parts with suitable hoisting equipment.
1. → Calculate the distance of the loading magazine and the lathe.  
→ "Calculate the distance of the loading magazine from the machine tool" on page 27.
  2. → Adjust the length of the guide tube.
  3. → Loosen the screws [1].  
→ The clamping piece [2] is detached.
  4. → Push the guide tube into the [2] clamping piece [2] to the depth of the clamping piece.
  5. → Tighten the [1] screws.



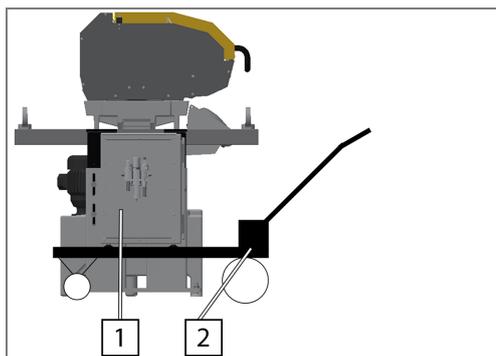
Remove the control cabinet from / attach the control cabinet to the loading magazine

**⚠ CAUTION**

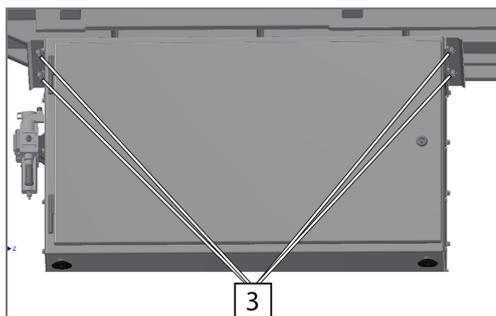
Falling control cabinet

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

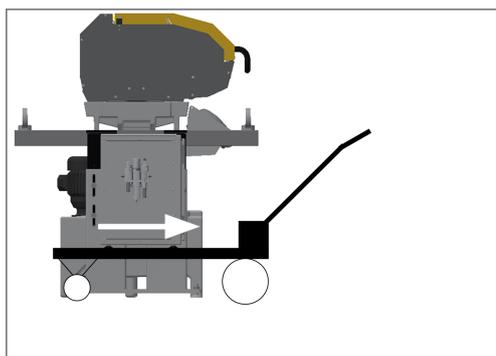
- Observe the description on removing and fastening the control cabinet from the loading magazine in the operating instructions.



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 place it on the hoisting equipment.
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**

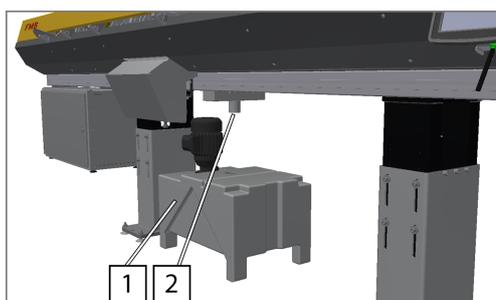
### Damaged wires or plugs

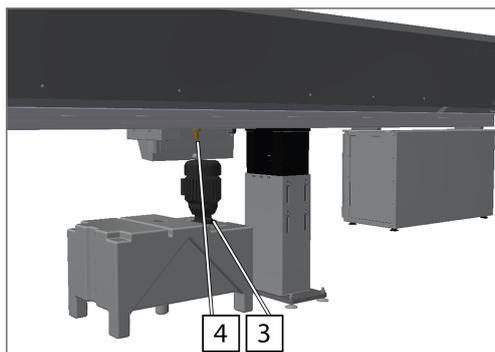
**Personal injury by electric shock due to damaged wires or plug-in connections.**

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

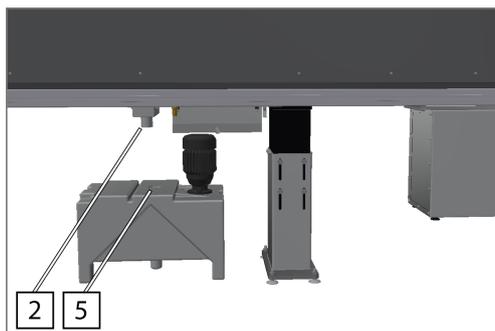
1. → Turn off the machine tool before starting work on the main switch.

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





3. ➤ Connect the pump outlet **3** and the oil feed **4** with 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 to the oil return hole **5**.
6. ➤ Insert the remaining end of the oil return tube onto 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 on 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 118.*

## 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**

### Set the value for First insert travel

1. ➤ Load a short material bar (approx. 1 m) ➤ *"Draw off remnant, eject it and draw on the new material bar" on page 74.*
2. ➤ Press the  button.
3. ➤ Access **SETUP**.
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 right up to the lathe guide sleeve using the  button.  
*i 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 moving 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. ➤ Click on the field **First insert travel**.  
 ➔ An input window opens.
14. ➤ Enter the value for **First insert travel**.  
 ➔ The value for **First insert travel** has been set.

## Set the value for Position front limit

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. ➤ Access **SETUP**.
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. ➤ Click on the field **Position front limit**.  
 ➔ 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** has been set.

## 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

**i** *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.

### Set the Position oilpump on / Position oil-pump off

**i** *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.*

1. → Press the  button.
2. → “**SETTINGS** → **Basic settings** → **Parameter**”
3. → Click on the field **Position oilpump on**.
  - An input field opens.
4. → Enter the value for Position oilpump on.
5. → Click on the field **Position oilpump off**.
  - An input field opens.
6. → Enter the value for Position oilpump off.

## 4.7 Pre-set parameters

### Enter the Pusher length

**i** *Information about **Pusher length**: → “Positions and traverse paths” on page 11.*

**i** *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 **Pusher length**.
  - An input field opens.
4. → Enter the value for Pusher length.

### Enter the Position storage

**i** *Information about **Position storage**: → “Positions and traverse paths” on page 11.*

**i** *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 storage**.
  - An input field opens.
4. → Enter the value for Position storage.

### Enter the Acceleration Acceleration Short pusher forward

**i** *The value **Acceleration Acceleration Short pusher forward** describes the speed at which the short pusher accelerates to the value **Speed Acceleration Short pusher forward**.*

**i** *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. Scroll to the next page using the button.
4. Click on the field Acceleration Acceleration Short pusher forward.
  - ➔ An input field opens.
5. Enter the value for Acceleration Acceleration Short pusher forward.

### Enter the Speed Acceleration Short pusher forward

**i** The value *Speed Acceleration Short pusher forward* describes the speed with which the short pusher moves to the value *Position storage* to take 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. Click on the field Speed Acceleration Short pusher forward.
  - ➔ An input field opens.
5. Enter the value for Speed Acceleration Short pusher forward.

### Enter the Limit pos. short pusher front

**i** For information about *Limit pos. short pusher front* please see: ➔ "Positions and traverse paths" on page 11.

1. Press the button.
2. "SETTINGS → Service settings → Position"
3. Click on the field Limit pos. short pusher front.
  - ➔ An input field opens.
4. Enter the value for Limit pos. short pusher front.

### Enter the Acceleration First insert low

**i** The value *Acceleration First insert low* describes the negative acceleration at which the pusher brakes to the *Speed First insert low*, before the spindle of the machine tool is passed.

**i** 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. Scroll to the next page using the button.
4. Click on the field Acceleration First insert low.
  - ➔ An input field opens.

5. Enter the value for Acceleration First insert low.

## Enter Speed First insert low

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

**i** 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

**i** Information about **Position open steady**: ➔ "Positions and traverse paths" on page 11.

**i** 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

**i** Information about **Position close steady**: ➔ "Positions and traverse paths" on page 11.

**i** 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 Pos. open steady lathe

**i** If a lathe steady is installed, the clamping sleeve must pass the lathe steady during operation. If the clamping sleeve is in the **Pos. open steady lathe** position, the lathe steady is opened to prevent damage.



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 Pos. open steady lathe.
  - ➔ An input field opens.
4. → Enter the value for Pos. open steady lathe.

#### Enter the Feed force for breaking function



The value *Feed force for breaking function* describes the force with which the pusher is held in position during the processing, so that it is not pushed back by the forces generated by the machine tool.



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

1. → Press the button.
2. → "SETTINGS → Service settings → Feed"
3. → Click on the field Feed force for breaking function.
  - ➔ An input field opens.
4. → Enter the value for Feed force for breaking function.

#### Enter the Acceleration Return from spindle



The value *Acceleration Return from spindle* return acceleration from the spindle describes the acceleration with which the pusher accelerates when returning from the tool machine spindle to reach the value *Speed Return from 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 Acceleration Return from spindle.
  - ➔ An input field opens.
4. → Enter the value for Acceleration Return from spindle.

#### 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

**i** 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**.

**i** 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 Acceleration Return high

**i** The value **Acceleration Return high** describes the acceleration with which the pusher accelerates when returning from the machine tool spindle, from the value **Speed Return from spindle** to the value **Speed Return high**.

**i** 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 **Acceleration Return high**.
  - ➔ An input field opens.
4. → Enter the value for Acceleration Return high.

## Enter the Speed Return high

**i** 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.

**i** 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 rear limit

**i** Information about **Position rear limit**: → “Positions and traverse paths” on page 11.

**i** 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 rear limit**.
  - ➔ An input field opens.
4. → Enter the value for Position rear limit.

## Enter the Position draw off

**i** Information about **Position draw off**: → “Positions and traverse paths” on page 11.

**i** 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

**i** This function is available as an option.

**i** 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

**i** This function is available as an option.

**i** 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.

## Set the pusher clamp position



*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 → Basic settings → Parameter"
3.  Scroll to the next page using the  button.
4.  Click on the field Pusher clamping in front on.
  - ➔ An input field opens.
5.  Enter the value for Pusher clamping in front on.
6.  Click on the field Pusher clamping in front off.
  - ➔ An input field opens.
7.  Enter the value for Pusher clamping in front off.
8.  Click on the field Pusher clamping rear on.
  - ➔ An input field opens.
9.  Enter the value for Pusher clamping rear on.
10.  Click on the field Pusher clamping rear off.
  - ➔ An input field opens.
11.  Enter the value for Pusher clamping rear off.

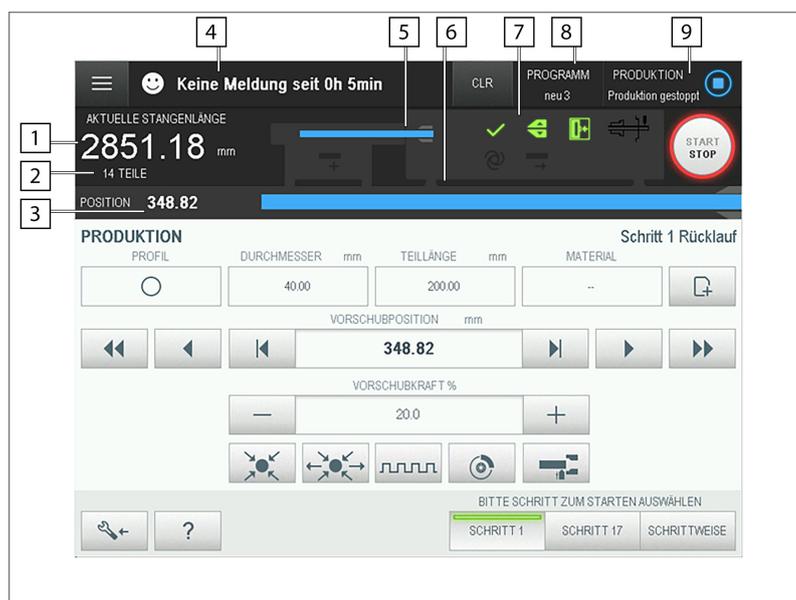
## 5 Control panel

### 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)

#### 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 50.

## Set the parts counter

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

**i** 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 50.

**i** 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.
	Part length external (optional)	Like 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.

Selection	Selection option	Description
	Part length external+w/o tension (optional)	Like Part length internal. Feed values are, however, provided by the lathe. Once the push command has been removed, the system is depressurized.

### Remnant gripper

**i** Depending on the diameter and length of the remnant, the remnant does not fall on the remnant flap. In this case the pusher can also feed the remnant.

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

**i** 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.
	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		
	Roller steady	During processing the roller steady is closed. When the pusher moves the roller steady is opened. As soon as the pusher is in the area of the roller steady, the roller steady closes and supports the pusher.
	Jaw steady	During processing the jaw steady is closed. When the pusher moves the jaw steady opens. As soon as the pusher is in the area of the jaw steady, the jaw steady remains open.
	Roller steady open at pusher	During processing the roller steady is closed. When the pusher moves the roller steady is opened. As soon as the pusher is in the area of the roller steady, the roller steady remains open.
	Jaw steady closed when pushing	During processing the jaw steady is closed. When the pusher moves the jaw steady opens. As soon as the pusher is in the area of the jaw steady, the jaw steady closes and supports the pusher.

## Steady lathe



*The lathe steady is located on the headstock of the lathe.*

Selection	Selection option	Description
Steady lathe	Roller steady	The steady is designed as a roller steady.
	Jaw steady	The steady is designed as a jaw steady.
	Jaw steady closed when pushing	for positioning

**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**

**i** 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).

**Pusher clamping**

**i** This function is available as an option.

Selection	Selection option	Description
Pusher clamping		
	Front + rear	The front and rear pusher clamp position is active.
	Front	The front pusher clamp position is active.
	Rear	The rear pusher clamp position is active.

## 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 54.*

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 59.*

### 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 54* or ➔ *“Editing a program” on page 54*.
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 54* or ➔ *“Editing a program” on page 54*.
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 54* or ➔ *“Editing a program” on page 54*.
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

**i** *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 54 or → “Editing a program” on page 54.
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

**i** *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 54 or → “Editing a program” on page 54.
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

**i** *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 54 or → “Editing a program” on page 54.
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

**i** *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 54 or → “Editing a program” on page 54.
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.

### Enter the Acceleration Part follow-up



The **Acceleration Part follow-up** is the acceleration with which the pusher moves the material bar.

1.  Open the program in the program editor.  “Creating a new program” on page 54 or  “Editing a program” on page 54.
2.  Click on the field **Acceleration**.
  - ➔ An input field opens.
3.  Enter the acceleration.
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 54 or  “Editing a program” on page 54.
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 54 or  “Editing a program” on page 54.
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 54 or  “Editing a program” on page 54.
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

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

**i** 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 54 or → “Editing a program” on page 54.
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

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

**i** 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 54 or → “Editing a program” on page 54.
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 54 or → “Editing a program” on page 54.
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 54 or → “Editing a program” on page 54.
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 the Acceleration First insert

**i** *Acceleration First insert is the acceleration with which the pusher moves a new material bar into the working area of the lathe.*

**i** *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 **Acceleration First insert**.
  - ➔ An input field opens.
4. ➤ Enter the value for Acceleration First insert.

### Enter Speed First insert

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

**i** *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.

## Enter the Correct. value after auto / door start

**i** 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.

**i** 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 Correct. value after auto / door start.
  - ➔ An input field opens.
4. Enter the value for Correct. value after auto / door start.

## Enter the Max. bar return

**i** 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.

**i** 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

**i** 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.

**i** 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

**i** 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.

**i** 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.

### Enter the Collet open delay

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

**i** 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

**i** 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.

**i** 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.

## Switch on/off the headstock position determination

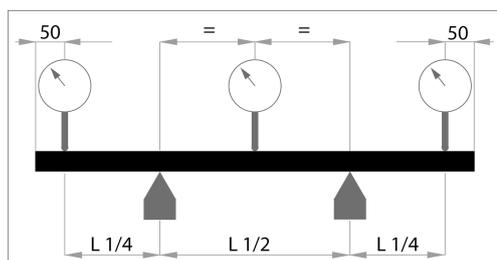


*This function is optional and is only available if the shaft encoder - B4 is installed.*

1. → Press the  button.
2. → “**SETTINGS** → **Service settings** → **Mode**”
3. → Click on the field **Rotary encoder -B4**.
  - A selection window opens.
4. → Click 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°.

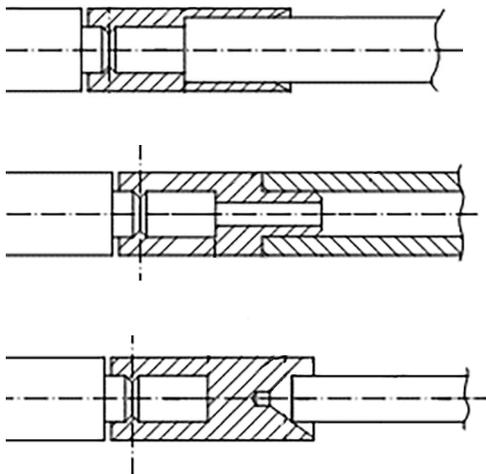
Requirements:

- 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 inserted 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 on 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.

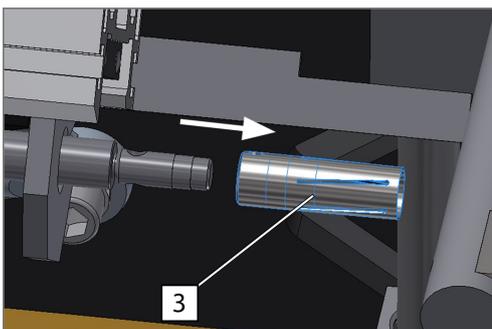
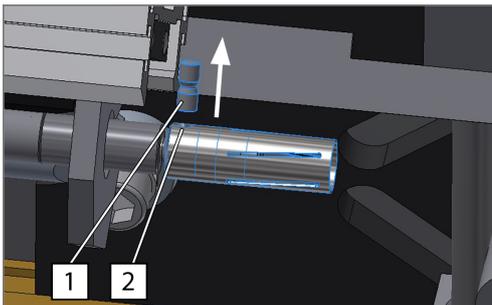
- Insert the safety bolts when working on the open guide channel. Observe the description in the operating instructions.

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:

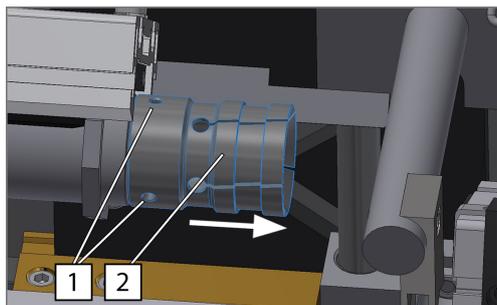
1. Press the  button.
2. Access **SETUP**.
3. Move the pusher right to the back using the  button.
4. Swing out the pusher with the  button.
5. Press the emergency stop button. → "Press the emergency stop button" on page 49.
6. Switch off the supply of compressed air. → "Switch the supply of compressed air on/off" on page 120
7. Where necessary, obtain release from the lathe to open the cover.
8. Open the cover.
9. Secure the guide channel with safety bolts. → "Secure the guide channel with safety bolts" on page 81
10. Push the cross pin  out of the hole in the direction indicated by the arrow .



11. Pull the clamping device  in the direction indicated by the arrow and take it out.
12. Raise 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 120
16. Unlock the emergency stop button. → "Make the loading magazine ready for operation after the emergency stop" on page 49
17. Swing in the pusher using the  button.
18. Acknowledge the error message by pressing the **CLR** button.

### Clamping device with a diameter of 25 mm and greater:

1. Press the  button.
2. Access **SETUP**.
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 49.*
6. ➤ Switch off the supply of compressed air. ➔ *“Switch the supply of compressed air on/off” on page 120*
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. ➔ *“Secure the guide channel with safety bolts” on page 81*
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. ➤ Raise 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 120*
16. ➤ Unlock the emergency stop button. ➔ *“Make the loading magazine ready for operation after the emergency stop” on page 49*
17. ➤ Swing the pusher in using the  button.
18. ➤ Acknowledge the error message by pressing 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 times, allow the multiple pushing of the material bar within one processing cycle of the lathe. By entering the corresponding feed values, the material bar can be pushed up to three times to different positions.

- Push part once: ➔ *“Set push part once:” on page 66*
- Push part twice: ➔ *“Set push part twice” on page 66*
- Push part three times: ➔ *“Set push part three times” on page 66*

## 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 54 or ➔ “Editing a program” on page 54.
2. Set the option **Part follow-up** to selection option **Part length internal**. ➔ “Set the Selection option Part follow-up” on page 57 or ➔ “Enter the selection option” on page 59.
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 **Feed 1** for the first processing. Then the material bar is moved to **Feed 2** for the second processing. The material bar is cut off at **Feed 2**.*

1. Open the program in the program editor. ➔ “Creating a new program” on page 54 or ➔ “Editing a program” on page 54.
2. Set the option **Part follow-up** to selection option **Part length internal**. ➔ “Set the Selection option Part follow-up” on page 57 or ➔ “Enter the selection option” on page 59.
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. Click on the field **Feed 2**.
  - ➔ An input field opens.
7. Enter the length of the second processing.
8. Save changes.

## Set push part three times



*The pusher moves the material bar three times per turned part in the working area of the lathe. The material bar is moved to **Feed 1** for the first processing. Then the material bar is moved to **Feed 2** for the second processing. Then the material bar is moved to **Feed 3** for the third processing. The material bar is cut off at **Feed 3**.*

1. Open the program in the program editor. ➔ “Creating a new program” on page 54 or ➔ “Editing a program” on page 54.

2.  Set the option **Part follow-up** to selection option **Part length internal**.  "Set the Selection option Part follow-up" on page 57 or  "Enter the selection option" on page 59.
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.  Click on the field **Feed 2**.
  -  An input field opens.
7.  Enter the length of the second processing.
8.  Click on the field **Feed 3**.
  -  An input field opens.
9.  Enter the length of the third processing.
10.  Save changes.

### Push the material bar with the sub-spindle of the lathe

**i** *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.*

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

1.  Enter the values for **Feed force for sub-spindle** and **Speed sub-spindle**.  "Enter Feed force for sub-spindle" on page 58 and  "Enter Speed sub-spindle" on page 58.
2.  Set the option **Part follow-up** to selection option **Collet open, fixed speed**.

### Process two different part lengths

**i** *This function is available as an option.*

**i** *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.*

**i** *With the fields **Feed 2 part 2** and **Feed 3 part 2** the parts of the second part length can also be pushed several times.*

1.  Open the program in the program editor.  "Creating a new program" on page 54 or  "Editing a program" on page 54.
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 68.*

## 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 Proameditor. *“Creating a new program” on page 54 or “Editing a program” on page 54.*
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

### Load 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.

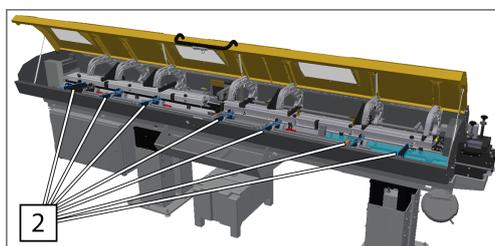
**WARNING**

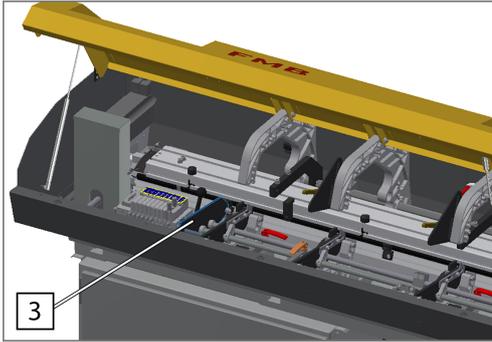
High weight of the material bar

Danger of squashing limbs when putting down the material bar.

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

1. Press the emergency stop button. *“Press the emergency stop button” on page 49.*
2. Switch off the supply of compressed air. *“Switch the supply of compressed air on/off” on page 120*
3. Where necessary, obtain release from the machine tool to open the cover.
4. Open the cover.
5. Store the material bar on the lateral material storage 2.





6. Move the material bar to the material stop 3.
7. Close the cover.
8. Switch on the compressed air supply. → "Switch the supply of compressed air on/off" on page 120
9. Unlock the emergency stop button. → "Make the loading magazine ready for operation after the emergency stop" on page 49
10. Acknowledge the error message by pressing the CLR button.
11. Make the machine tool ready for operation again.

## Report of the last material bar



*This function is available as an option.*

*If a signal light is built 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 74.

## Start/stop production

1. Observe the prerequisites for automatic mode → "Production" on page 70.
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 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	Description	Position
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	-

## 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. Swing out the pusher with the  button.
7. Open the guide channel with the  button.
8. Press the emergency stop button. ➔ *“Press the emergency stop button” on page 49.*
9. Switch off the supply of compressed air. ➔ *“Switch the supply of compressed air on/off” on page 120*
10. Where necessary, obtain release from the lathe to open the cover.
11. Open the cover.
12. Secure the guide channel with safety bolts. ➔ *“Secure the guide channel with safety bolts” on page 81*
13. 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.
14. Remove the material bar from the loading magazine via the lateral material storage.
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 120*

18. ➤ Unlock the emergency stop button. ➔ *“Make the loading magazine ready for operation after the emergency stop” on page 49*
19. ➤ Swing the pusher in using the  button.
20. ➤ Close the guide channel with the  button.
21. ➤ Acknowledge the error message by pressing the  button.

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

**i** *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.*

**i** *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.

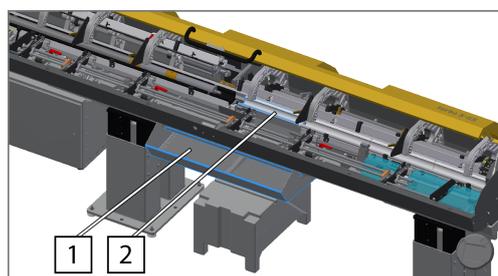
1. ➤ Press the  button.
2. ➤ Access **SETUP**.
3. ➤ Press the  button.

- ➔ 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 is located **1** under the loading magazine and is accessed 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**

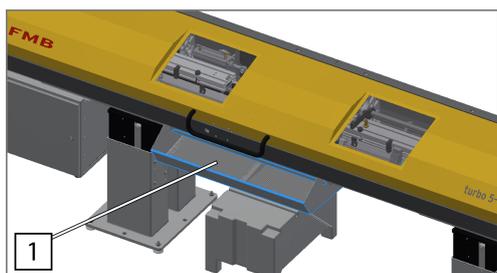
### Further ejection of remnants into the remnant bin

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 Steady lathe on/off

1. → Press the  button.

2. → Access **PRODUCTION**.

Switch on:

1. → Press the  button.

- ➔ The status display on the button turns green. The lathe steady is switched on.

Switch off:

1. → Press the  button.

- ➔ The status display on the button is off. The lathe steady 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. Access **SETUP**.

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.

### Separate the material bar

1. Press the  button.

2. Access **SETUP**.

1. Press and hold the  button.
  - ➔ The status display on the button turns green. The material bar is separated.
2. Release the  button.
  - ➔ The status display on the button is off. The separation is ended.

## 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. Access **SETUP**.

Swing out:

1. Press the  button.

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

Swing in:

1. Press the  button.

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

## Switching the pusher clamp on / off



*This function is available as an option.*

*The pusher clamp pushes onto the pusher from above and prevents the pusher tipping over.*

**Switch on:**

1. → Press the  button.
2. → Access **PRODUCTION**.
3. → Press the  button.
  - ➔ The status display on the button turns green. The pusher clamp is switched on.

**Switch off:**

1. → Press the  button.
2. → Access **PRODUCTION**.
3. → Press the  button.
  - ➔ The status display on the button is off. The pusher clamp is switched off.

**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 Conversion

### 7.1 General capacity adjustment

#### 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 127.*

The capacity adjustment set includes:

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

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 diagram. → *“Other applicable documents” on page 5.*

#### Move to the conversion position



*When the conversion position has been moved to, the front and rear guide channel is opened and the pusher swings out.*

1. → Press the  button.
2. → Access **SETUP**.
- Press the  button.
  - The status display on the button turns green. The conversion position is moved to (duration approx. 10s).

### 7.2 Guide channel

#### Adjusting the guide channel diameter

Adjusting the diameter sets the guide channel diameter to the entered value.

#### Adjust the guide channel diameter

1. → Press the  button.
2. → Press **DIAMETER**.
3. → Click on the field **Channel diameter**.
  - An input field opens.
4. → Enter the value.
5. → Press the **Set** button.
  - The guide channel diameter is set to the entered value.

Guide channel lifting device



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

The guide channel lifting device consists of several lifting devices depending on the length of the loading magazine. The lifting devices are pneumatically controlled and close on the set guide channel diameter, to guide the material bar during the feed of the bar. To allow the pusher to pass, the individual lifting devices open separately, as soon as the pusher comes into the area of the respective lifting device. It is possible to set the position at which the respective lifting device can be opened. ➔ *“Set the guide channel lifting device” on page 81.*

Set the guide channel lifting device

1. ➔ Press the button.
2. ➔ Press **DIAMETER**.
3. ➔ Click on the field **Lifting device 1**.  
➔ An input field opens.
4. ➔ Enter the value.
5. ➔ Depending on the length, enter the value for the rest of the lifting devices in the same way.

Secure the guide channel with safety bolts



**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.



**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.

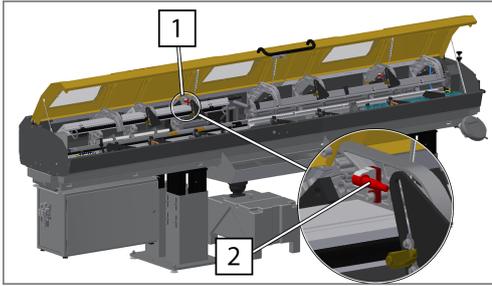


**Driven guide channel cover**

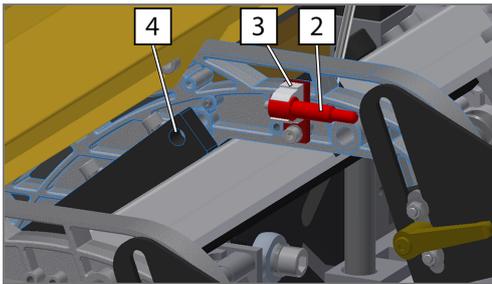
**Personal injury due to squashing and impact by the closing of the guide channel cover.**

**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 [2] are positioned on the bearing bracket [1]. The guide channel can open at the front, at the back or at the front and back. The safety bolt must secure the open position when working on the rear guide channel.



1. Press the  button.
2. Press **SETUP**.
3. Open the rear guide channel with the  button.
4. Press the emergency stop button. → *“Press the emergency stop button” on page 49.*
5. Switch off the supply of compressed air. → *“Switch the supply of compressed air on/off” on page 120*
6. Where necessary, obtain release from the lathe to open the cover.
7. Open the cover.
8. Remove the safety bolt [2] from the bracket [3].
9. Insert the safety bolt [2] into the hole [4] up to the stop.
  - The front guide channel is secured by a safety bolt.
10. After finishing work on the guide channel, remove the safety bolt [2] from the hole [4] and insert it into the bracket [3].
  - The guide channel is unlocked and can close again.
11. Close the cover.
12. Switch on the compressed air supply. → *“Switch the supply of compressed air on/off” on page 120*
13. Unlock the emergency stop button. → *“Make the loading magazine ready for operation after the emergency stop” on page 49*
14. Close the front guide channel with the  button.
15. Acknowledge the error message by pressing the  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 127*

## Changing the pusher

**⚠ 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

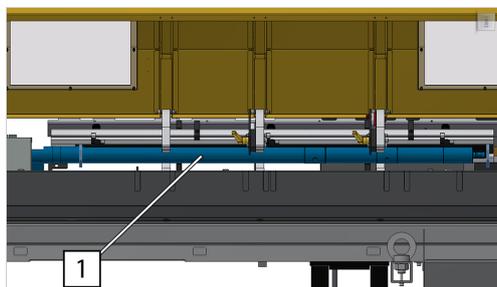
Personal injury due to squashing and impact by the closing of the guide channel cover.

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.

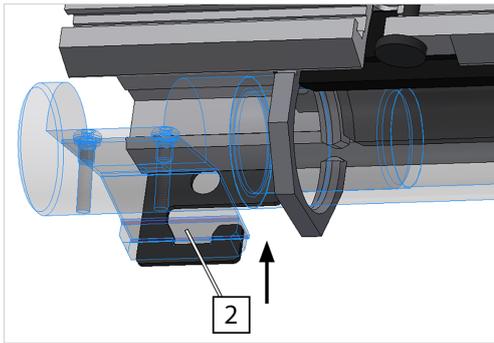


*A second person is required to exchange the pusher, to support the work.*

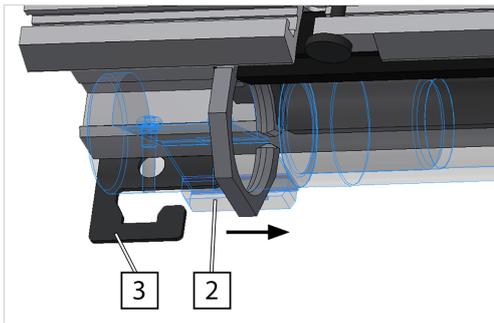


The pusher 1 can be accessed when the guide channel is open.

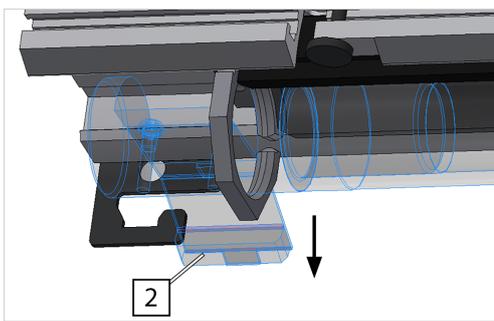
1. ➤ Press the button.
2. ➤ Press **SETUP**.
3. ➤ Move to the conversion position by pressing the button. ➤ *“Move to the conversion position” on page 80.*
4. ➤ Press the emergency stop button. ➤ *“Press the emergency stop button” on page 49.*
5. ➤ Switch off the supply of compressed air. ➤ *“Switch the supply of compressed air on/off” on page 120*
6. ➤ Where necessary, obtain release from the lathe to open the cover.
7. ➤ Open the cover.
8. ➤ Secure the guide channel with safety bolts. ➤ *“Secure the guide channel with safety bolts” on page 81.*



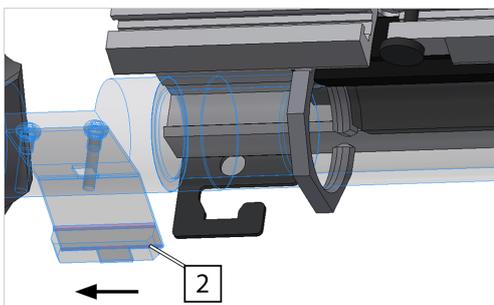
**9.** Turn and hold the flag **2** in the direction indicated by the arrow.



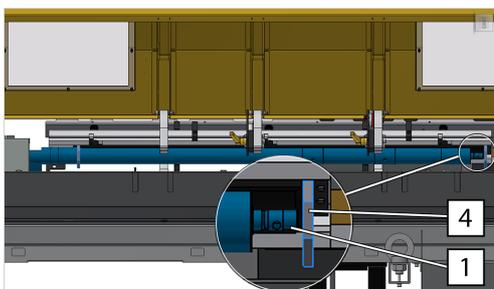
**10.** Push the flag **2** in the direction indicated by the arrow, out of the anti-turn device **3**.

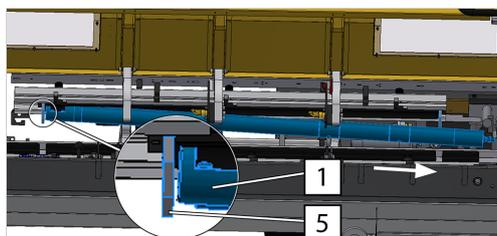
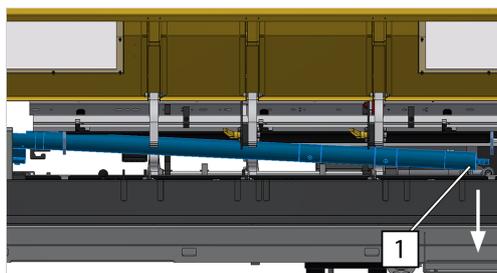


**11.** Turn the flag **2** in the direction indicated by the arrow.



**12.** Push the flag **2** in the direction indicated by the arrow, until the front end of the pusher **1** is no longer on the lifting plate **4**.





13. Move the front end of the pusher **1** in the direction indicated by the arrow.
14. Pull the rear end of the pusher **1** out of the lifting plate **5** in the direction indicated by the arrow.
15. Remove the pusher.
16. Attach the pusher in reverse order.
17. Remove the safety bolts in the guide channel.
18. Close the cover.
19. Switch on the compressed air supply. → *“Switch the supply of compressed air on/off” on page 120*
20. Unlock the emergency stop button. → *“Make the loading magazine ready for operation after the emergency stop” on page 49*
21. Swing the pusher in using the  button.
22. Close the guide channel with the  button.
23. Acknowledge the error message by pressing the  button.

## Changing the flag

### 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

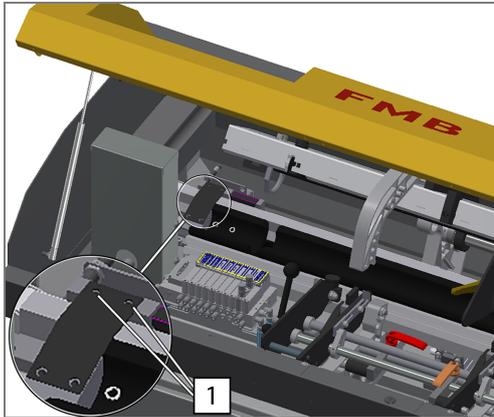
#### Driven guide channel cover

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.

1. Press the  button.
2. Press **SETUP**.
3. Move to the conversion position by pressing the  button. → *“Move to the conversion position” on page 80.*
4. Press the emergency stop button. → *“Press the emergency stop button” on page 49.*



5. ➤ Switch off the supply of compressed air. ➤ *“Switch the supply of compressed air on/off” on page 120*
6. ➤ Where necessary, obtain release from the lathe to open the cover.
7. ➤ Open the cover.
8. ➤ Secure the guide channel with safety bolts. ➤ *“Secure the guide channel with safety bolts” on page 81.*
9. ➤ Loosen and remove the screws 1 in the flag.
10. ➤ Remove the flag with the short pusher.
11. ➤ Install a new short pusher in reverse order.
12. ➤ Remove the safety bolts in the guide channel.
13. ➤ Close the cover.
14. ➤ Switch on the compressed air supply. ➤ *“Switch the supply of compressed air on/off” on page 120*
15. ➤ Unlock the emergency stop button. ➤ *“Make the loading magazine ready for operation after the emergency stop” on page 49*
16. ➤ Swing the pusher in using the  button.
17. ➤ Close the guide channel with the  button.
18. ➤ Acknowledge the error message by pressing the CLR button.

## Change 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

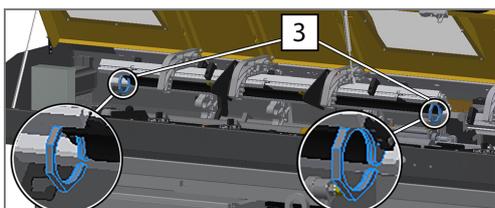
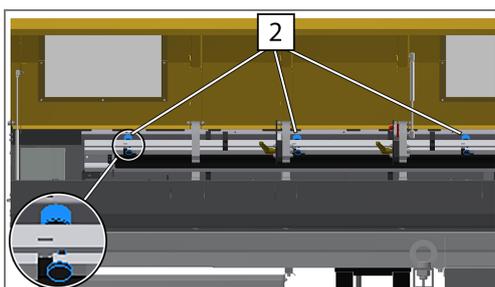
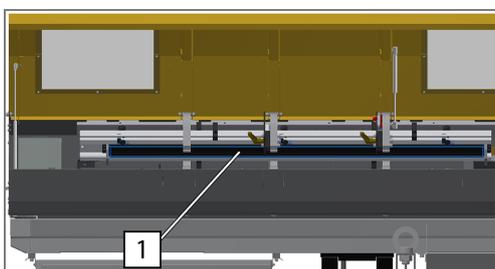
#### Driven guide channel cover

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.

1. Press the  button.
2. Press **SETUP**.
3. Move to the conversion position by pressing the  button.  
➔ "Move to the conversion position" on page 80.
4. Press the emergency stop button. ➔ "Press the emergency stop button" on page 49.
5. Switch off the supply of compressed air. ➔ "Switch the supply of compressed air on/off" on page 120
6. Where necessary, obtain release from the lathe to open the cover.
7. Open the cover.
8. Secure the guide channel with safety bolts. ➔ "Secure the guide channel with safety bolts" on page 81
9. Hold the insert  secure.



10. Turn the insert safeguard  a half rotation.
11. Remove the insert .
12. Position the new insert between the lifting plates .
13. Turn the insert safeguard  a half rotation.  
➔ The insert is secured.
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 120
17. Unlock the emergency stop button. ➔ "Make the loading magazine ready for operation after the emergency stop" on page 49
18. Swing the pusher in using the  button.
19. Close the guide channel with the  button.
20. Acknowledge the error message by pressing the  button.

## Changing the lifting plate

### 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.

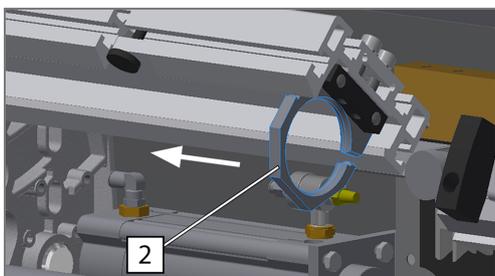
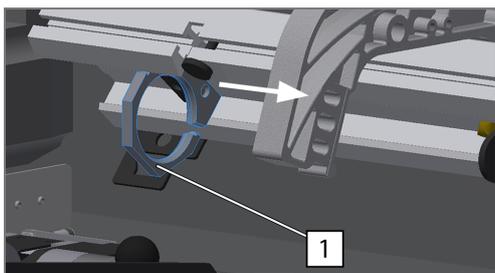
When working on the opened guide channel, the driven guide channel cover may squash extremities.

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



*The lifting plates are positioned on the upper guide channel. They can only be changed, if the top right guide channel insert is removed.*

1. Press the  button.
2. Press **SETUP**.
3. Move to the conversion position by pressing the  button.  
➔ "Move to the conversion position" on page 80.
4. Press the emergency stop button. ➔ "Press the emergency stop button" on page 49.
5. Switch off the supply of compressed air. ➔ "Switch the supply of compressed air on/off" on page 120
6. Where necessary, obtain release from the lathe to open the cover.
7. Open the cover.
8. Secure the guide channel with safety bolts. ➔ "Secure the guide channel with safety bolts" on page 81
9. Remove the upper right guide channel insert. ➔ "Change the insert of the top rear guide channel" on page 86.



10. ➤ Remove the upper right guide channel insert. ➔ *“Change the insert of the top rear guide channel” on page 86.*
11. ➤ Push the left lifting plate **1** in the direction indicated by the arrow and remove it.
12. ➤ Push the right lifting plate **2** in the direction indicated by the arrow and remove it.
13. ➤ Install new lifting plates in reverse order.
14. ➤ Install the upper right guide channel insert. ➔ *“Change the insert of the top rear guide channel” on page 86.*
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 120*
18. ➤ Unlock the emergency stop button. ➔ *“Make the loading magazine ready for operation after the emergency stop” on page 49*
19. ➤ Swing the pusher in using the  button.
20. ➤ Close the guide channel with the  button.
21. ➤ Acknowledge the error message by pressing the  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**

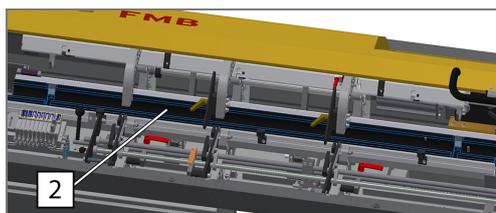
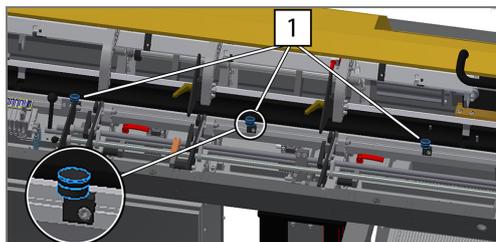
## Driven guide channel cover

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.

1. Press the  button.
2. Press **SETUP**.
3. Move to the conversion position by pressing the  button.  
➔ *“Move to the conversion position” on page 80.*
4. Press the emergency stop button. ➔ *“Press the emergency stop button” on page 49.*
5. Switch off the supply of compressed air. ➔ *“Switch the supply of compressed air on/off” on page 120*
6. Where necessary, obtain release from the lathe to open the cover.
7. Open the cover.
8. Secure the guide channel with safety bolts. ➔ *“Secure the guide channel with safety bolts” on page 81*
9. Pull the insert safeguards  up and remove them.



10. Remove the insert .
11. Install a new insert in reverse order.
12. Remove the safety bolts in the guide channel.
13. Close the cover.
14. Switch on the compressed air supply. ➔ *“Switch the supply of compressed air on/off” on page 120*
15. Unlock the emergency stop button. ➔ *“Make the loading magazine ready for operation after the emergency stop” on page 49*
16. Swing the pusher in using the  button.
17. Close the guide channel with the  button.
18. Acknowledge the error message by pressing the  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.

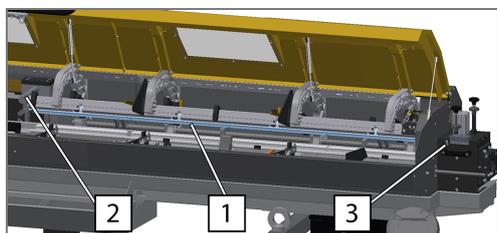
**⚠ CAUTION**

### Driven guide channel cover

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

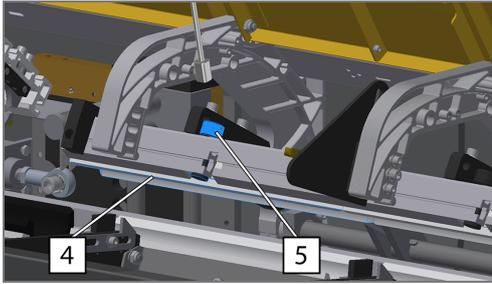
When working on the opened guide channel, the driven guide channel cover may squash extremities.

- 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 drive motor **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. Press **SETUP**.
3. Move to the conversion position by pressing the  button.
  - ➔ “Move to the conversion position” on page 80.
4. Press the emergency stop button. ➔ “Press the emergency stop button” on page 49.
5. Switch off the supply of compressed air. ➔ “Switch the supply of compressed air on/off” on page 120
6. Where necessary, obtain release from the lathe to open the cover.
7. Open the cover.
8. Secure the guide channel with safety bolts. ➔ “Secure the guide channel with safety bolts” on page 81



9. ➤ Hold the insert **4** secure.
10. ➤ Turn the insert safeguard **5** a half rotation.
11. ➤ Remove the insert **4**.
12. ➤ Install a new insert in reverse order.
13. ➤ Turn the insert safeguard **5** a half rotation.
  - ➔ The insert is secured.
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 120*
17. ➤ Unlock the emergency stop button. ➔ *“Make the loading magazine ready for operation after the emergency stop” on page 49*
18. ➤ Swing the pusher in using the  button.
19. ➤ Close the guide channel with the  button.
20. ➤ Acknowledge the error message by pressing the  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

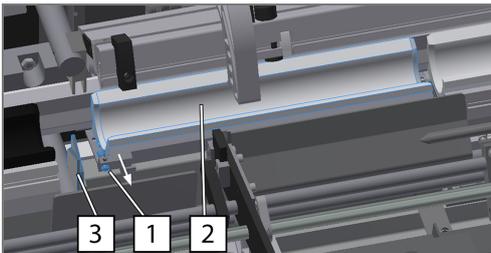
Personal injury due to squashing and impact by the closing of the guide channel cover.

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

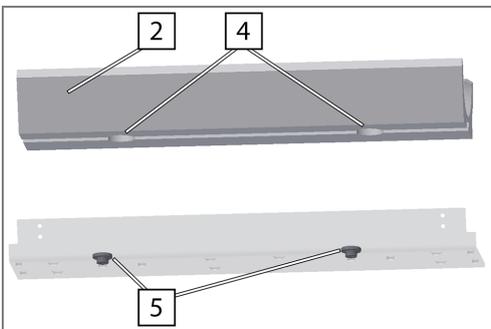
- Insert the safety bolts when working on the open guide channel. Observe the description in the operating instructions.

1. ➤ Press the  button.
2. ➤ Press **SETUP**.
3. ➤ Move to the conversion position by pressing the  button.
  - ➔ *“Move to the conversion position” on page 80.*

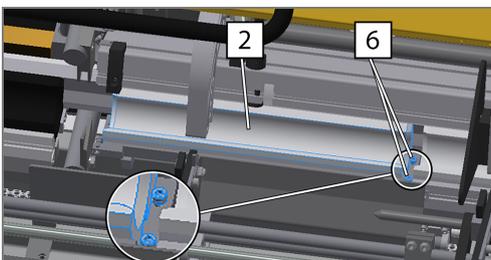
4. ➤ Press the emergency stop button. ➔ *“Press the emergency stop button” on page 49.*
5. ➤ Switch off the supply of compressed air. ➔ *“Switch the supply of compressed air on/off” on page 120*
6. ➤ Where necessary, obtain release from the lathe to open the cover.
7. ➤ Open the cover.
8. ➤ Secure the guide channel with safety bolts. ➔ *“Secure the guide channel with safety bolts” on page 81*



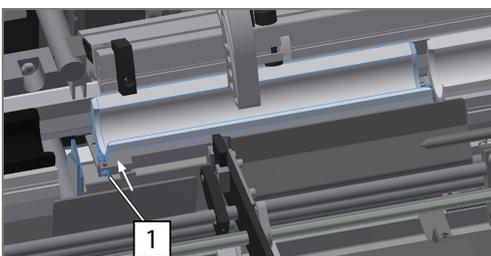
9. ➤ Move the insert safeguard **1** in the direction indicated by the arrow.
10. ➤ Push the insert **2** approx. 1 cm towards the material gripper **3**.
11. ➤ Remove the insert **2** from above.



12. ➤ Place the new insert **2** with holes **4** onto the insert pegs **5**.



13. ➤ Push the insert **2** onto the stop screw **6**.



14. ➤ Move the insert safeguard **1** in the direction indicated by the arrow.
  - ➔ The insert is secured.
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 120*
18. ➤ Unlock the emergency stop button. ➔ *“Make the loading magazine ready for operation after the emergency stop” on page 49*
19. ➤ Swing the pusher in using the  button.
20. ➤ Close the guide channel with the  button.
21. ➤ Acknowledge the error message by pressing the  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.

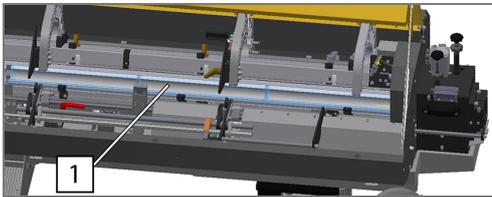
### CAUTION

#### Driven guide channel cover

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

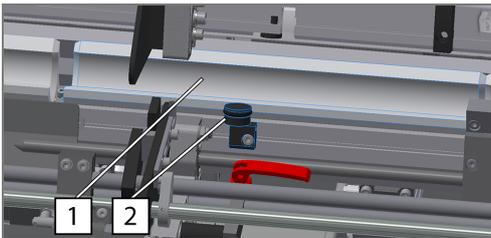
When working on the opened guide channel, the driven guide channel cover may squash extremities.

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



The lower front guide channel 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. Press **SETUP**.
3. Move to the conversion position by pressing the  button.  
➔ "Move to the conversion position" on page 80.
4. Press the emergency stop button. ➔ "Press the emergency stop button" on page 49.
5. Switch off the supply of compressed air. ➔ "Switch the supply of compressed air on/off" on page 120
6. Where necessary, obtain release from the lathe to open the cover.
7. Open the cover.
8. Secure the guide channel with safety bolts. ➔ "Secure the guide channel with safety bolts" on page 81



9. ➤ Pull the insert safeguard 1 up and remove it.
10. ➤ Remove the insert 2.
11. ➤ Install a new insert in reverse order.
12. ➤ Remove the safety bolts in the guide channel.
13. ➤ Close the cover.
14. ➤ Switch on the compressed air supply. ➤ *“Switch the supply of compressed air on/off” on page 120*
15. ➤ Unlock the emergency stop button. ➤ *“Make the loading magazine ready for operation after the emergency stop” on page 49*
16. ➤ Swing the pusher in using the  button.
17. ➤ Close the guide channel with the  button.
18. ➤ Acknowledge the error message by pressing the CLR button.

## 7.3 Reduction

Attach/detach the reduction insert of the telescopic tube

 **DANGER**

Moving components of the loading magazine and the machine tool  
Personal injury due to squashing, impact or striking by movements of the loading magazine and the machine tool.

When working on the unsecured interface (with the guide or telescopic tube detached) between the loading magazine and the machine tool, the extremities may become caught or stuck in the moving components of the loading magazine or machine tool.

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

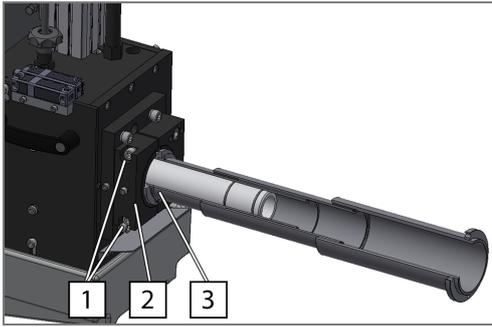
***i***

*The reduction insert of the telescopic tube is related to the diameter and is changed when converting the loading magazine to a different diameter. The reduction insert of the telescopic tube is part of the capacity adjustment set.*

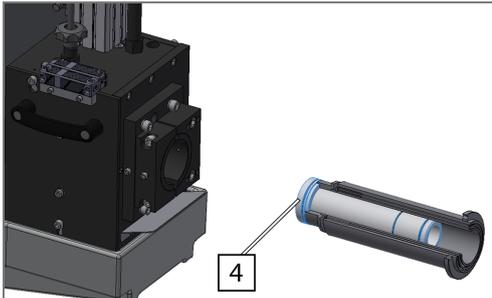
There must be sufficient space between the lathe and loading magazine to remove the reduction insert from the telescopic tube. This can be achieved by moving the headstock of the lathe or by shifting the loading magazine with the shifting device (optional).

Removal

1. ➤ Press the emergency stop button. ➤ *“Press the emergency stop button” on page 49.*
2. ➤ Switch off the supply of compressed air. ➤ *“Switch the supply of compressed air on/off” on page 120*



3. ➤ Loosen the screws **1**.
  - ➔ The clamping piece **2** is detached.
4. ➤ Push the telescopic tube **3** towards the lathe.



5. ➤ Remove the reduction insert **4** by hand from the telescopic tube **3**.

### Installation

1. ➤ Move the reduction insert **4** up to the end stop in the telescopic tube **3**.
2. ➤ Reattach the telescopic tube to the loading magazine.
  - ➔ "Assembling the telescopic tube" on page 33
3. ➤ Switch on the compressed air supply. ➔ "Switch the supply of compressed air on/off" on page 120
4. ➤ Unlock the emergency stop button. ➔ "Make the loading magazine ready for operation after the emergency stop" on page 49
5. ➤ Acknowledge the error message by pressing the **CLR** button.

### Install/remove the reduction shells

**⚠ DANGER**

#### Moving components of the loading magazine and the machine tool

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

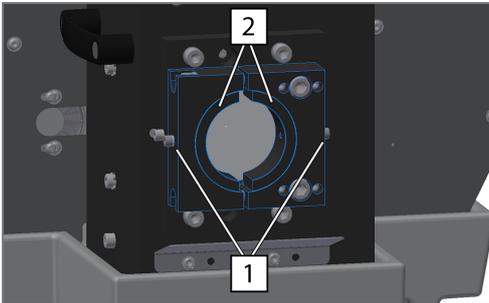
When working on the unsecured interface (with the guide or telescopic tube detached) between the loading magazine and the machine tool, the extremities may become caught or stuck in the moving components of the loading magazine or machine tool.

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

**i**

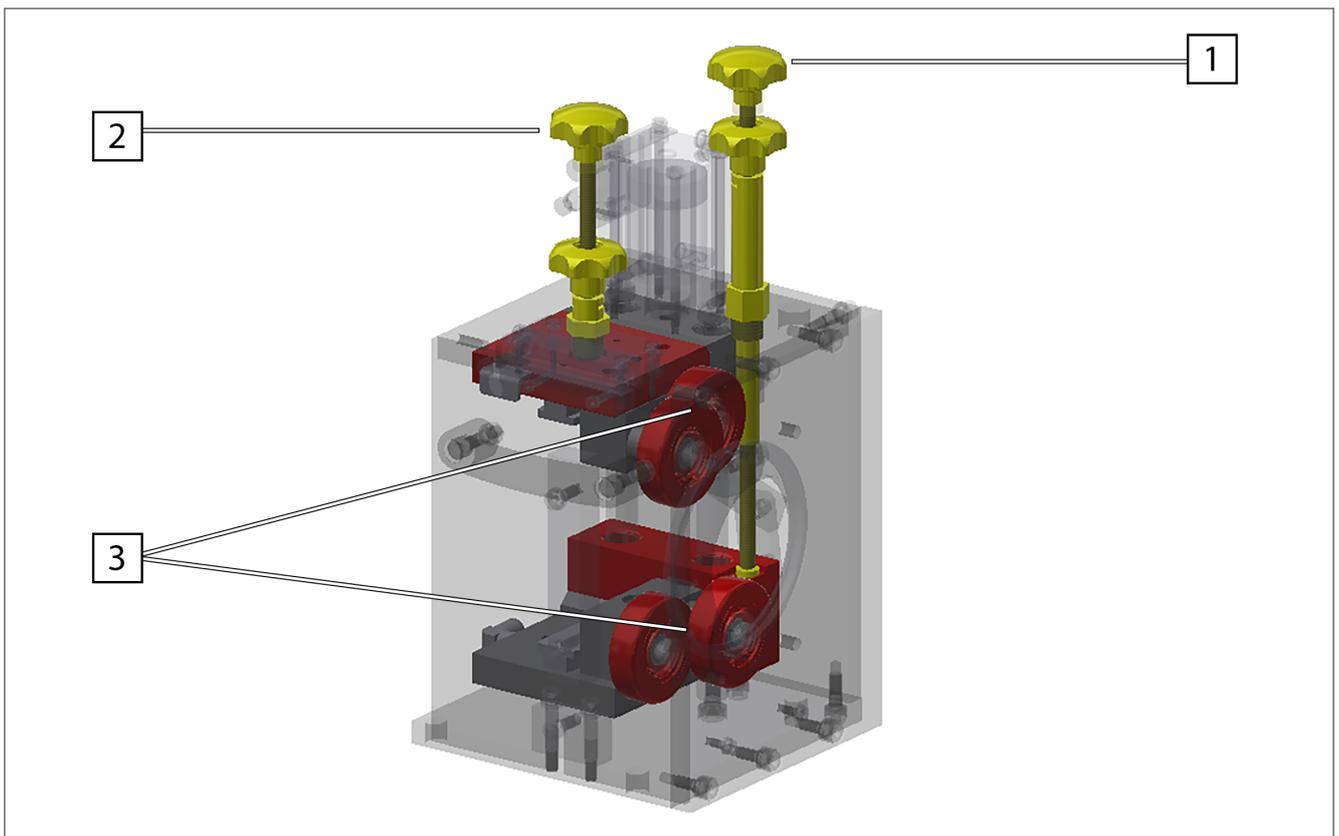
The diameter of the clamping piece can vary. If the reduction shells are installed, guide and telescopic tubes with an outer diameter of 70 mm are attached. If the reduction shells are not installed, guide and telescopic tubes with an outer diameter of 90 mm are attached.

1. ➤ Press the emergency stop button. ➔ *“Press the emergency stop button” on page 49.*
2. ➤ Switch off the supply of compressed air. ➔ *“Switch the supply of compressed air on/off” on page 120*
3. ➤ Loosen and remove the screws [1].
4. ➤ Remove the reduction shells [2].
5. ➤ Attach the reduction shells in reverse order.
6. ➤ Switch on the compressed air supply. ➔ *“Switch the supply of compressed air on/off” on page 120*
7. ➤ Unlock the emergency stop button. ➔ *“Make the loading magazine ready for operation after the emergency stop” on page 49*
8. ➤ Acknowledge the error message by pressing the  button.



## 7.4 Steady

### Steady



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 end stop [1] limits the material guide [3] when being closed. The end stop [2] limits the material guide [3] when being opened  
 ➔ *“Adjust the steady to the material bar diameter” on page 98.*

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] are completely unscrewed and have no function ➔ *“Adjusting the steady flexibly to the material bar diameter” on page 99.*

## Moveable steady

On some lathes with a moving headstock, it is possible to install a moveable steady. The moveable steady is attached to the headstock of the lathe and improves the vibrational and guiding characteristics of the material bar.

Extensions have to be clarified in advance with FMB. ➔ *“Service contact details” on page 127.*

## Adjust the steady to the material bar diameter

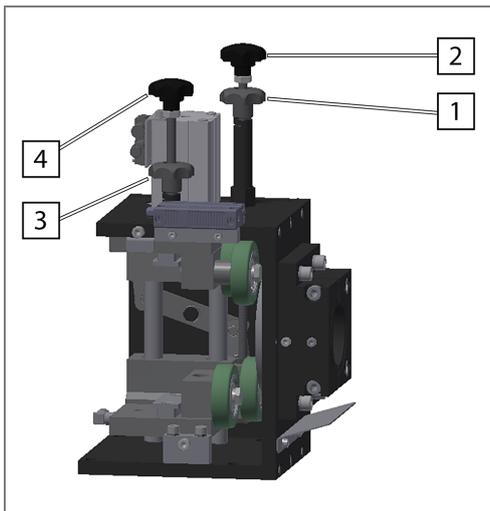
**i** *The steady can be used as a roller steady or a jaw steady. Depending on the application, rollers or jaws have to be installed to guide the material.*

**i** *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 screws [2].

The path of the rollers when the steady is opened is set with the stop screws [4]. This is only necessary in the event of pusher vibrations ➔ *“Guide the pusher with the steady” on page 100.* In all other cases, the stop screw [4] is completely unscrewed, so that the steady opens fully in 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 74.*
2. ➔ Set the **selection Steady**, Selection option **Jaw steady**.  
 ➔ *“Enter the selection option” on page 59.*



3. ➤ Press the button.
4. ➤ Press **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 .
7. ➤ Turn the stop screw to the left, until the stop screw is completely unscrewed.
8. ➤ Open the steady with the button.
  - ➔ The status display on the button is off. The steady is open.
9. ➤ Turn the stop screw to the right, until you feel resistance.
10. ➤ Tighten the lock nut
  - ➔ The end stop for the open position is set
11. ➤ Loosen the lock nut .
12. ➤ Turn the stop screw to the left, until the stop screw is completely unscrewed.
13. ➤ Move the material bar into the lathe with 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 to the right, until you feel resistance.
  - ➔ The stop screw is touching the end stop.
17. ➤ Open the steady with the button.
  - ➔ The status display on the button is off. The steady is open.
18. ➤ Turn the stop screw two revolutions to the right.
19. ➤ Tighten the lock nut
  - ➔ The end stop for the closed position is set.
20. ➤ **When used as a roller steady:** set **selection Steady**, Selection option **Roller steady**. ➔ "Enter the selection option" on page 59.
21. ➤ **When used as a jaw steady:** set **selection Steady**, Selection option **Jaw steady**. ➔ "Enter the selection option" on page 59.

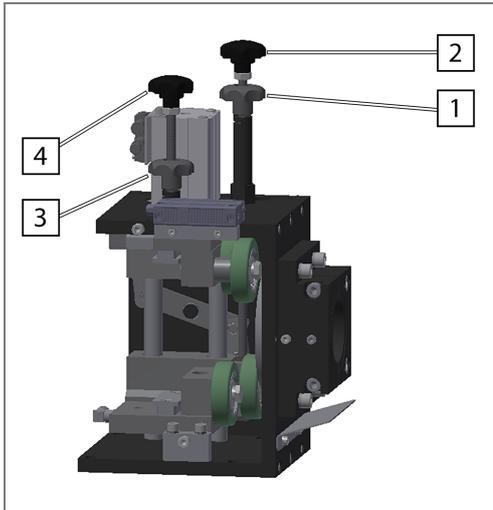
### Adjusting the steady flexibly to the material bar diameter



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**.



1. ➤ Set the **selection Steady**, Selection option **Jaw steady**.  
➔ "Enter the selection option" on page 59.
2. ➤ Press the button.
3. ➤ Press **SETUP**.
4. ➤ Close the steady by pressing the button.  
➔ The status display on the button turns green. The steady is closed.
5. ➤ Set the operating pressure of the pressure control valve on the steady to approx. 3.5 bar.
6. ➤ Open the steady with the button.  
➔ The status display on the button is off. The steady is open.
7. ➤ Loosen the lock nut **1**.
8. ➤ Turn the stop screw **2** to the left, until the stop screw **2** is completely unscrewed.
9. ➤ Close the steady by pressing the button.  
➔ The status display on the button turns green. The steady is closed.
10. ➤ Turn the stop screw **2** to the right, until you feel resistance.
11. ➤ Tighten the lock nut **1**.  
➔ The end stop for the closed position is set.
12. ➤ Loosen the lock nut **3**.
13. ➤ Turn the stop screw **4** to the left, until the stop screw **4** is completely unscrewed.
14. ➤ Open the steady with the button.  
➔ The status display on the button is off. The steady is open.
15. ➤ Turn the stop screw **4** to the right, until you feel resistance.
16. ➤ Tighten the lock nut **3**.  
➔ The end stop for the open position is set
17. ➤ **When used as a roller steady:** set **selection Steady**, Selection option **Roller steady**. ➔ "Enter the selection option" on page 59.
18. ➤ **When used as a jaw steady:** set **selection Steady**, Selection option **Jaw steady**. ➔ "Enter the selection option" on page 59.

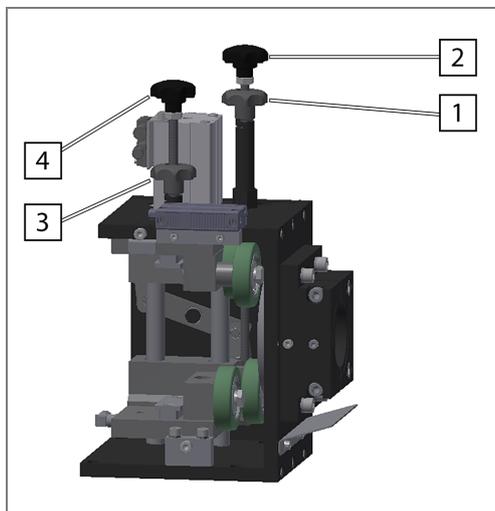
## Guide the pusher with the steady



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

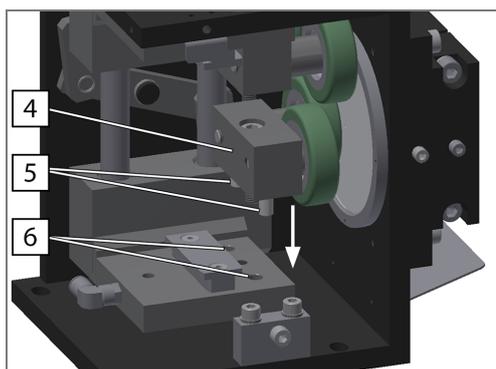
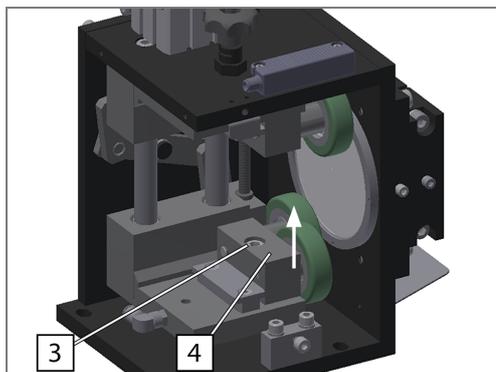
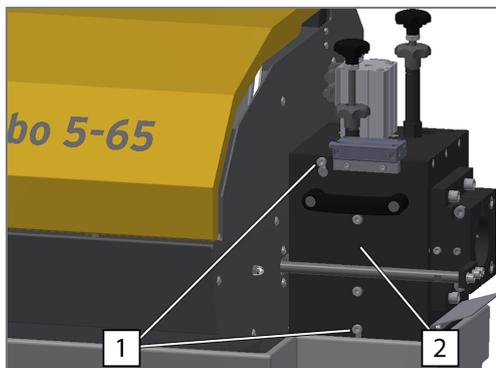


To be able to manually open and close the steady, the following setting must be made for the duration of the set-up process, regardless of the later use: **selection Steady**, Selection option **Jaw steady**.



1. Set the **selection Steady**, Selection option **Jaw steady**.  
➔ "Enter the selection option" on page 59.
2. Press the button.
3. Press **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 **1**.
6. Turn the stop screw **4** to the left, until the stop screw **4** is completely unscrewed.
7. Open the steady with the button.  
➔ The status display on the button is off. The steady is open.
8. Move the pusher into the lathe with 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: set the selection Steady**, Selection option **Roller steady**. ➔ "Enter the selection option" on page 59.
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** two revolutions to the left.
16. Tighten the lock nut **3**.  
➔ The end stop for the open position is set
17. Open the steady with the button.  
➔ The status display on the button is off. The steady is open.
18. **When used as a roller steady: set selection Steady**, Selection option **Roller steady**. ➔ "Enter the selection option" on page 59.
19. **When used as a jaw steady: set selection Steady**, Selection option **Jaw steady**. ➔ "Enter the selection option" on page 59.

## Attaching/detaching the rollers of the steady

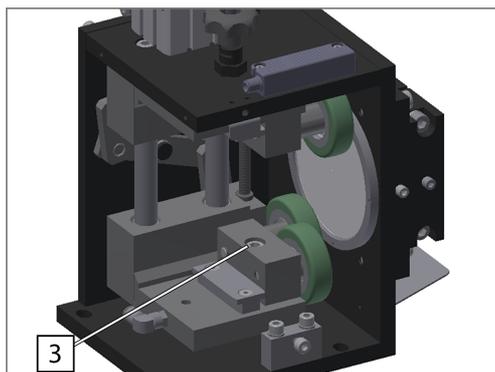


Detaching the rollers:

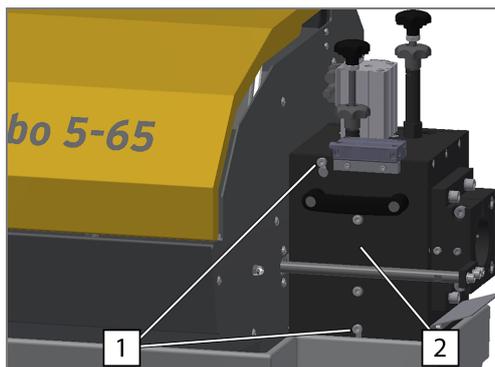
1. ➔ Press the emergency stop button. ➔ *“Press the emergency stop button” on page 49.*
2. ➔ Switch off the supply of compressed air. ➔ *“Switch the supply of compressed air on/off” on page 120*
3. ➔ Loosen the screws [1].
4. ➔ Remove the lid [2].
5. ➔ Loosen the screw [3].
6. ➔ Remove the roller holder [4] in the direction indicated by the arrow.
7. ➔ Remove the upper roller of the steady in the same way.

Attaching the rollers:

1. ➔ Position the roller holder [4] with the dowels [5] in the holes [6].



- 2. ➤ Tighten the 3 screw.
- 3. ➤ Attach the upper roller of the steady in the same way.

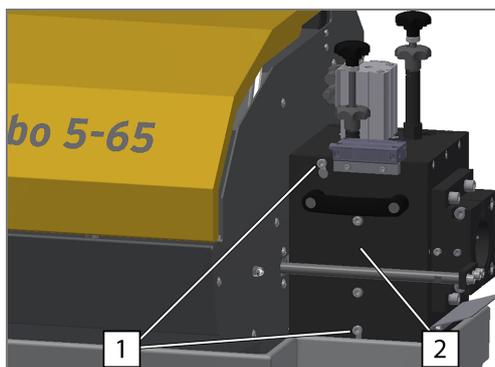


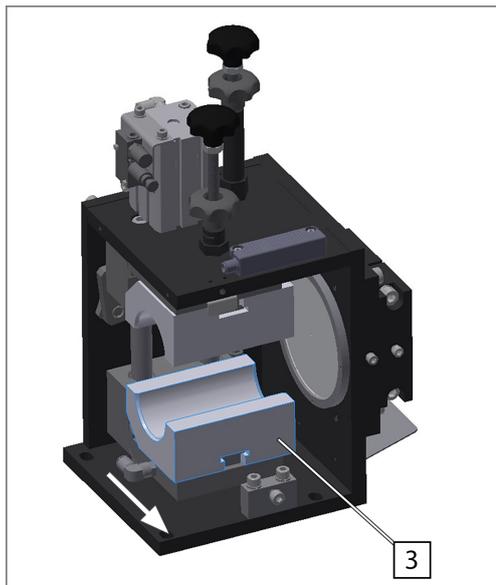
- 4. ➤ Attach the lid 2.
- 5. ➤ Tighten the 1 screws.
- 6. ➤ Switch on the compressed air supply. ➤ *“Switch the supply of compressed air on/off” on page 120*
- 7. ➤ Unlock the emergency stop button. ➤ *“Make the loading magazine ready for operation after the emergency stop” on page 49*
- 8. ➤ Acknowledge the error message by pressing the CLR button.

**Attaching/removing the jaws of the steady**

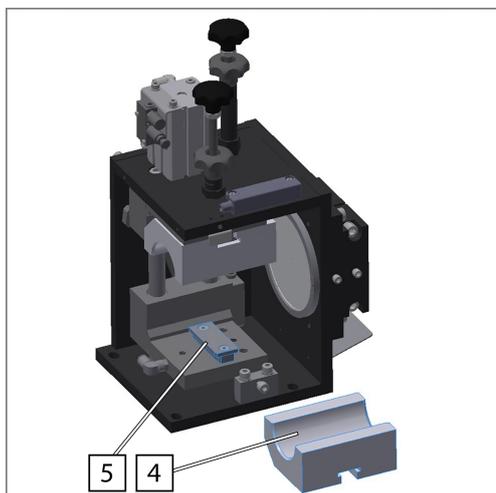
Detaching the jaws:

- 1. ➤ Press the emergency stop button. ➤ *“Press the emergency stop button” on page 49.*
- 2. ➤ Switch off the supply of compressed air. ➤ *“Switch the supply of compressed air on/off” on page 120*
- 3. ➤ Loosen the screws 1.
- 4. ➤ Remove the lid 2.



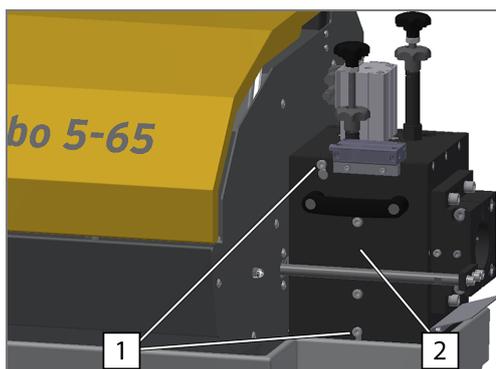


5. → Push the jaws [3] in the direction indicated by the arrow and remove them.
6. → Remove the upper jaw of the steady in the same way.



Attaching the jaws:

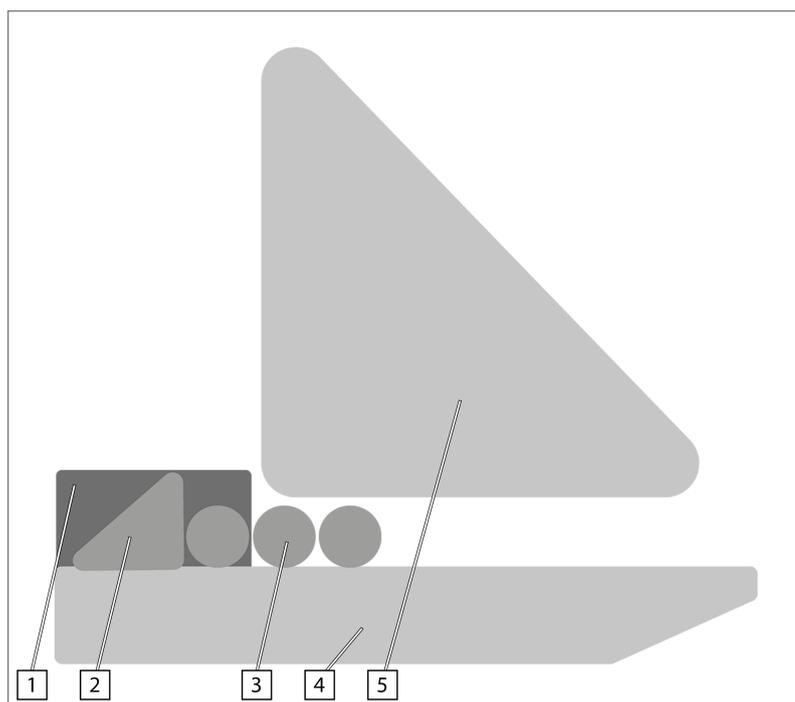
1. → Push the jaw [4] onto the guide [5].
2. → Attach the upper jaw of the steady in the same way.



3. → Attach the lid [2].
4. → Tighten the [1] screws.
5. → Switch on the compressed air supply. → *“Switch the supply of compressed air on/off” on page 120*
6. → Unlock the emergency stop button. → *“Make the loading magazine ready for operation after the emergency stop” on page 49*
7. → 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.

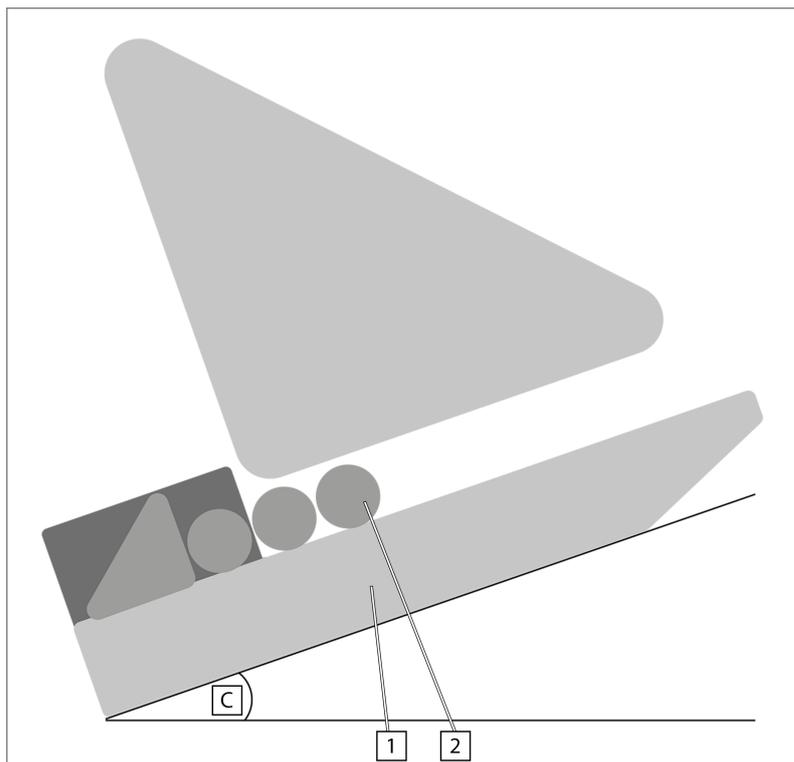
The separation device consists of the lateral material storage, the ejectors, the end stop of the ejectors and the holding-down device.

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

## The angle of the lateral material storage



The angle  $\square C$  of the lateral material storage guarantees that the material bars shift.

The following applies for the angle  $\square C$ :

- Small multi-sided material = large angle
- Large round material = small angle.

## Setting the angle of the lateral material storage

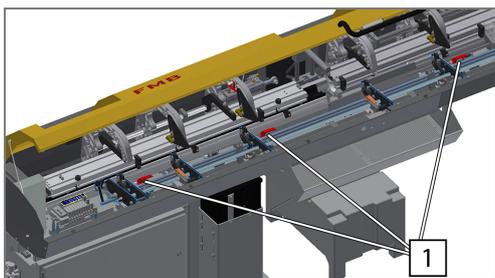
**⚠ WARNING**

### Falling material bar

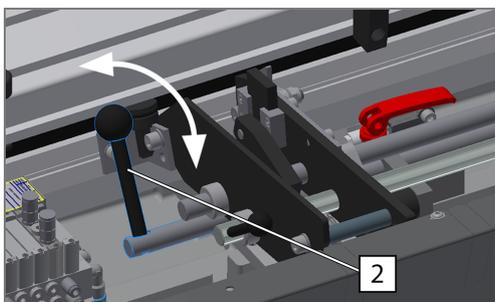
Personal injury due to squashing and impact as a result of a falling material bar.

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. 1. Press the emergency stop button. → "Press the emergency stop button" on page 49.
  2. 2. Switch off the supply of compressed air. → "Switch the supply of compressed air on/off" on page 120
  3. 3. Where necessary, obtain release from the lathe to open the cover.
  4. 4. Open the cover.



5. ➤ Loosen the taper spanner **1**.



6. ➤ Move the handle **2** in the direction indicated by the arrow, and set the angle of the lateral material storage.

7. ➤ Close the taper spanner **1**.

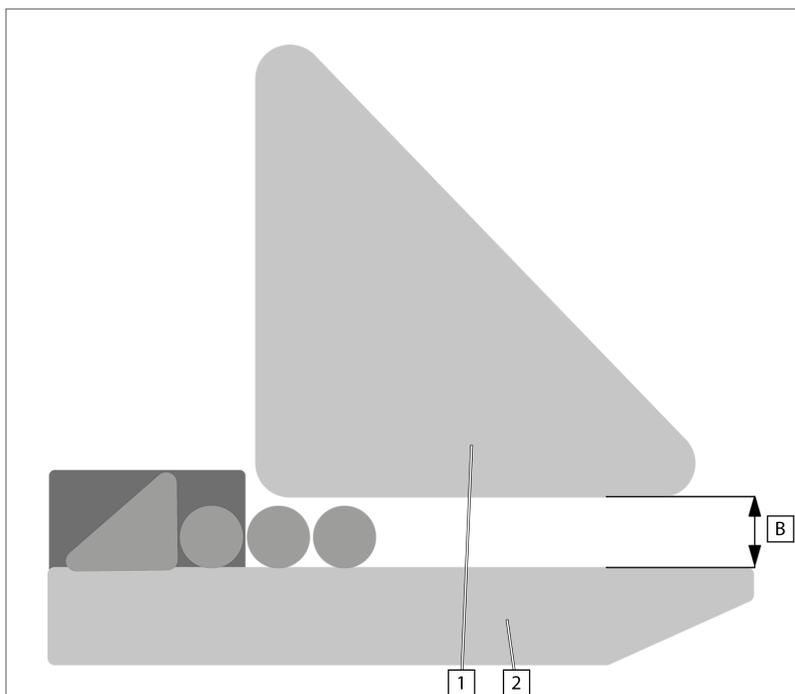
8. ➤ Close the cover.

9. ➤ Switch on the compressed air supply. ➔ *“Switch the supply of compressed air on/off” on page 120*

10. ➤ Unlock the emergency stop button. ➔ *“Make the loading magazine ready for operation after the emergency stop” on page 49*

11. ➤ Acknowledge the error message by pressing the **CLR** button.

**The 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 following applies:

- The diameter of the current material bar to be processed + 1 mm.
- For material bar diameters of over 40 mm the holding-down devices are no longer needed. The holding down devices must be moved right to the top, as otherwise a collision with the material bar is possible.

## Setting the height of the holding-down device

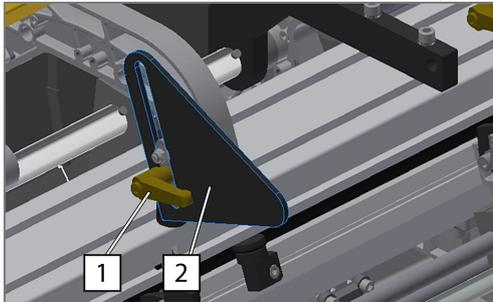
**⚠ WARNING**

### Falling material bar

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

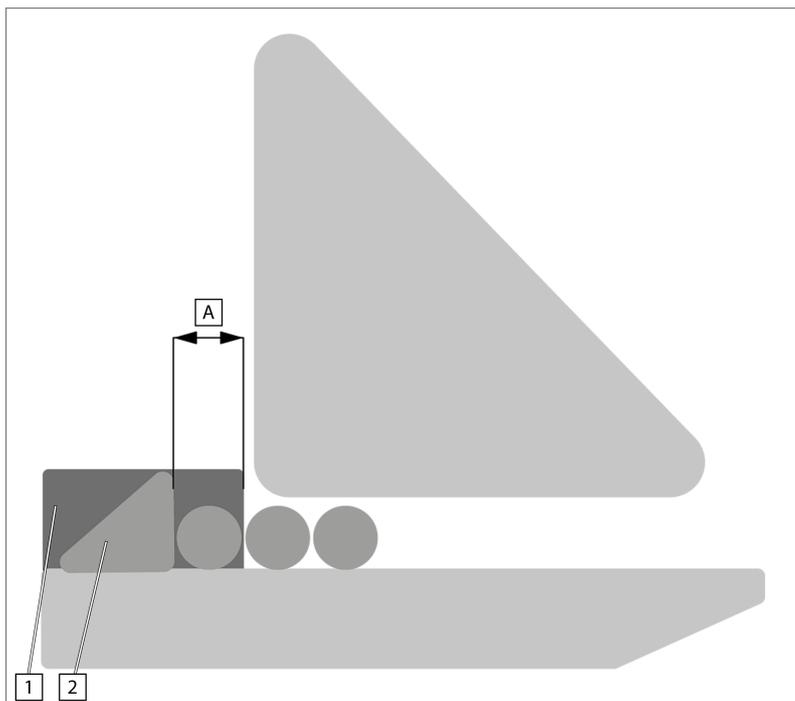
Material bars which are located on the lateral material storage, may fall down during conversion work.

- 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 49.*
2. ➤ Switch off the supply of compressed air. ➔ *“Switch the supply of compressed air on/off” on page 120*
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 120*
11. ➤ Unlock the emergency stop button. ➔ *“Make the loading magazine ready for operation after the emergency stop” on page 49*
12. ➤ Acknowledge the error message by pressing 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.
- With material bar diameters of over 40 mm the end stop of the ejectors is set to the maximum 40 mm.

## Setting the end stop of the ejectors

1. → Press the  button.
2. → Press **DIAMETER**.
3. → Click on the field **Separation diameter**.
  - ➔ An input field opens.
4. → Enter the value.
5. → Press the **Set** button.
  - ➔ The end stop of the ejectors is set by the entered value.

## 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			110
	Check the synchronizing unit belt	X			111
	Check the belts of the diameter setting	X			112
	Lubricate the worm gear of the diameter setting	X			113
	Replace the relay insert in the control cabinet		X		115
	Check the blades of the material gripper	X			116
	Check the lubricant in the oil tank			X	118

#### 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 127.*

1. Press the emergency stop button. → "Press the emergency stop button" on page 49.

2. ➤ Switch off the supply of compressed air. ➔ *“Switch the supply of compressed air on/off” on page 120*
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 120*
10. ➤ Unlock the emergency stop button. ➔ *“Make the loading magazine ready for operation after the emergency stop” on page 49*
11. ➤ Acknowledge the error message by pressing the  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 127.**

1. ➤ Press the emergency stop button. ➔ *“Press the emergency stop button” on page 49.*
2. ➤ Switch off the supply of compressed air. ➔ *“Switch the supply of compressed air on/off” on page 120*
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 120*
10. ➤ Unlock the emergency stop button. ➔ *“Make the loading magazine ready for operation after the emergency stop” on page 49*
11. ➤ Acknowledge the error message by pressing the  button.

## Check the belts of the diameter setting

### 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

**Moving components of the loading magazine without a safety cover**

**Personal injury due to squashing and impact due to freely-accessible, driven components of the loading magazine.**

With maintenance work on the loading magazine, it may be necessary for technical reasons to remove screwed-on safety covers. Screwed in safety covers are not electrically locked. That means that the loading magazine is not automatically shut down when these safety covers are removed, and driven components may still move.

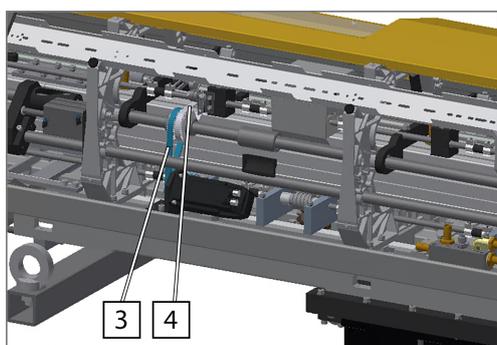
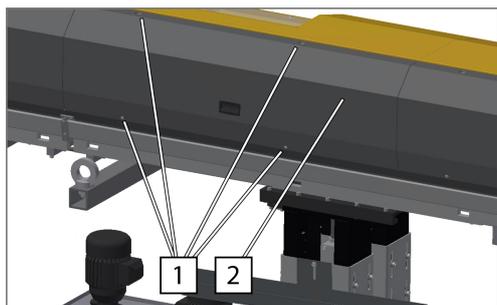
- Before removing safety covers, press the emergency stop button.
- After the end of the maintenance work, reattach the safety covers directly.
- Maintenance work is only to be performed if the person holds the respective qualification described in these operating instructions.



*Condition of the diameter setting belt:*

*If the diameter setting belt has cracks or is missing teeth, the diameter setting belt must be replaced. Contact FMB. ➔ “Service contact details” on page 127.*

1. ➤ Turn off the machine tool at the main switch.



2. ➤ Press the emergency stop button. ➔ *“Press the emergency stop button” on page 49.*
3. ➤ Loosen and remove the screws [1].
4. ➤ Remove the back wall [2].
5. ➤ Check the condition: Check the belt [3] visually for cracks and missing teeth.
6. ➤ Check the condition: Check the belt [4] visually for cracks and missing teeth.
7. ➤ Put the back wall [2] into position.
8. ➤ Insert and tighten [1] the screws.
9. ➤ Turn on the machine tool at the main switch.
10. ➤ Unlock the emergency stop button. ➔ *“Make the loading magazine ready for operation after the emergency stop” on page 49*

Lubricate the worm gear of the diameter setting

**⚠ 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**

**Moving components of the loading magazine without a safety cover**

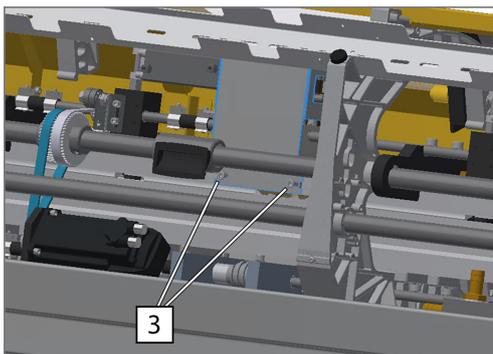
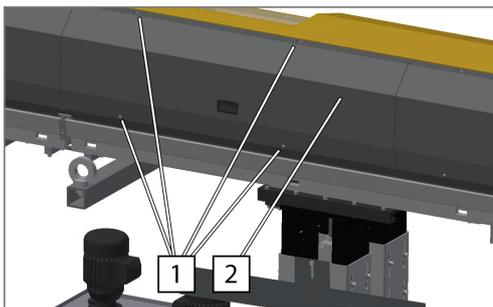
Personal injury due to squashing and impact due to freely-accessible, driven components of the loading magazine.

With maintenance work on the loading magazine, it may be necessary for technical reasons to remove screwed-on safety covers. Screwed in safety covers are not electrically locked. That means that the loading magazine is not automatically shut down when these safety covers are removed, and driven components may still move.

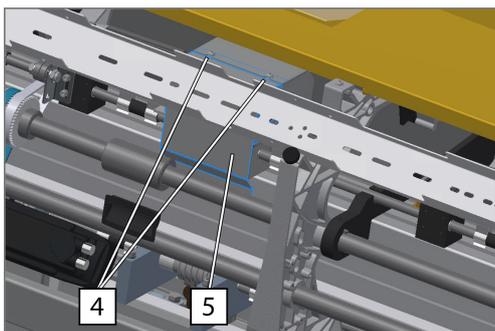
- Before removing safety covers, press the emergency stop button.
- After the end of the maintenance work, reattach the safety covers directly.
- Maintenance work is only to be performed if the person holds the respective qualification described in these operating instructions.



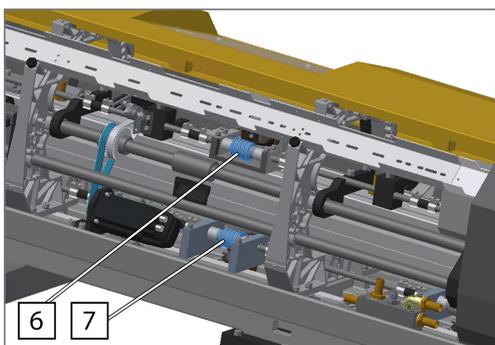
*The number of worm gears depends on the length of the loading magazine. During maintenance, all the worm gears are always to be lubricated.*



1. Turn off the machine tool at the main switch.
2. Press the emergency stop button. → "Press the emergency stop button" on page 49.
3. Loosen and remove the screws [1].
4. Remove the back wall [2].
5. Loosen and remove the screws [3].



- 6. ➤ Loosen and remove the screws [4].
- 7. ➤ Remove the metal sheet [5].



- 8. ➤ Lubricate the worm gear [6].
- 9. ➤ Lubricate the worm gear [7].
- 10. ➤ Assemble in reverse order.
- 11. ➤ Turn on the machine tool at the main switch.
- 12. ➤ Unlock the emergency stop button. ➤ *“Make the loading magazine ready for operation after the emergency stop” on page 49*

Replace the relay insert in the control cabinet



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 127.*

- 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 49.*
2.  Switch off the supply of compressed air.  *“Switch the supply of compressed air on/off” on page 120*
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.  *“Replacing the blades of the material gripper” on page 117.*
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 120*
11.  Unlock the emergency stop button.  *“Make the loading magazine ready for operation after the emergency stop” on page 49*
12.  Acknowledge the error message by pressing the  button.

Replacing 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.

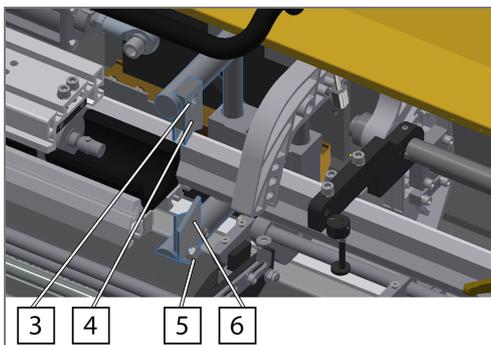
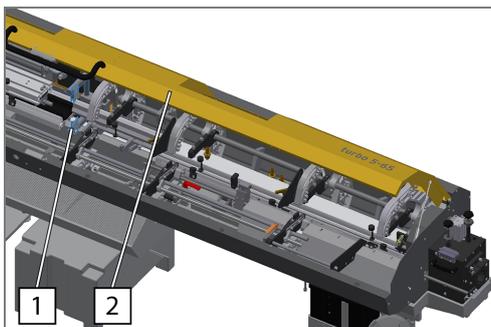
**⚠ CAUTION**

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 49.
2. Switch off the supply of compressed air. → "Switch the supply of compressed air on/off" on page 120
3. Where necessary, obtain release from the machine tool to open the cover.
4. Open the cover [2].
5. Turn off the machine tool at the main switch.
6. Loosen and remove the screw [3].
7. Change the upper blade [4].
8. Insert and tighten the screw [3].
9. Loosen and remove the screw [5].
10. Change the blade [6].
11. Insert the screw [5] and tighten hand-tight.
12. Close the cover.
13. Switch on the compressed air supply. → "Switch the supply of compressed air on/off" on page 120
14. Unlock the emergency stop button. → "Make the loading magazine ready for operation after the emergency stop" on page 49
15. Turn on the machine tool at the main switch.
16. Acknowledge the error message by pressing the **CLR** button.
17. Close the material gripper with the button **+**.
18. Press the emergency stop button. → "Press the emergency stop button" on page 49.

19. ➤ Switch off the supply of compressed air. ➔ *“Switch the supply of compressed air on/off” on page 120*
20. ➤ Open the cover.
21. ➤ Turn off the machine tool at the main switch.
22. ➤ Check whether the material gripper is aligned with the pusher.
23. ➤ Correct the alignment of the pusher and the material gripper, where applicable using the lower blade.
24. ➤ Tighten the 5 screw.
25. ➤ Close the cover.
26. ➤ Switch on the compressed air supply. ➔ *“Switch the supply of compressed air on/off” on page 120*
27. ➤ Unlock the emergency stop button. ➔ *“Make the loading magazine ready for operation after the emergency stop” on page 49*
28. ➤ Turn on the machine tool at the main switch.
29. ➤ 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 119.*

## 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.

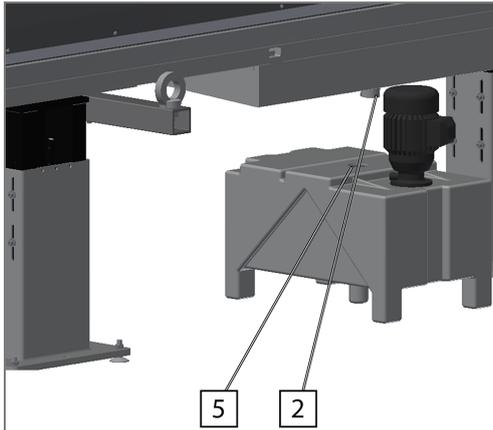
- Remove leaking fuel immediately.
- Observe the description in the operating instructions about filling / emptying the oil tank.
- Only fill fuel in the intended containers.



Observe the oil tank level.



Observe the stated types of oil.



1. ➤ Press the emergency stop button. ➔ “Press the emergency stop button” on page 49.
2. ➤ Switch off the supply of compressed air. ➔ “Switch the supply of compressed air on/off” on page 120
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 120
9. ➤ Unlock the emergency stop button. ➔ “Make the loading magazine ready for operation after the emergency stop” on page 49
10. ➤ Acknowledge the error message by pressing the **CLR** button.

**Empty the oil tank of the loading magazine**



**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.



**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.



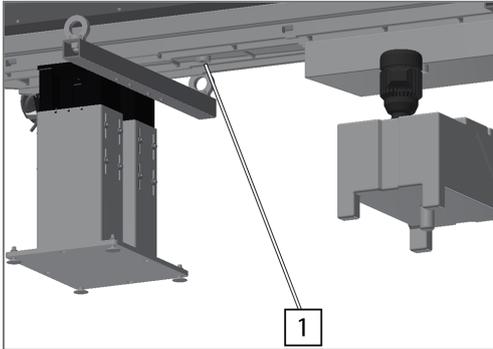
Observe the oil tank level. ➔ “Technical data of the loading magazine” on page 12.



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 118.

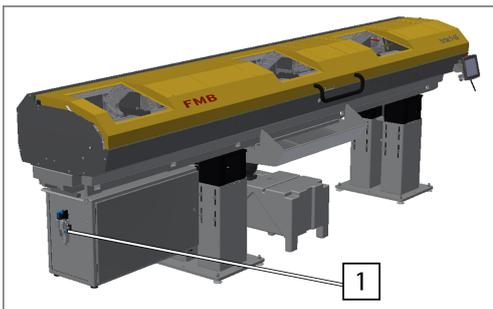


To empty the oil tank, a suitable pump has to be used.

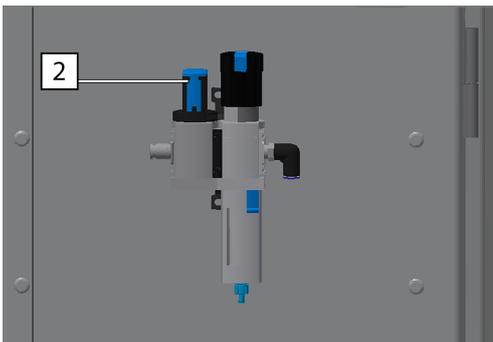


1. ➔ Press the emergency stop button. ➔ *“Press the emergency stop button” on page 49.*
2. ➔ Switch off the supply of compressed air. ➔ *“Switch the supply of compressed air on/off” on page 120*
3. ➔ Turn off the machine tool at the main switch.
4. ➔ Prepare a suitable container with sufficient capacity 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 120*
13. ➔ Unlock the emergency stop button. ➔ *“Make the loading magazine ready for operation after the emergency stop” on page 49*
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.



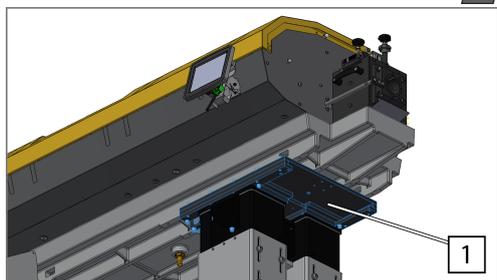
➔ Switch the supply of compressed air on/off at the knob 2.

## 8.2 Auxiliary equipment

### Shifting the loading magazine



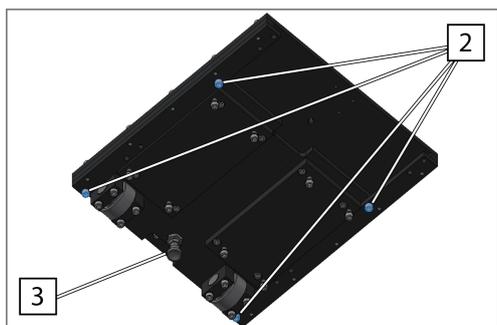
*This function is available as an option.*



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 49.
2. ➤ Switch off the supply of compressed air. ➔ “Switch the supply of compressed air on/off” on page 120
3. ➤ Loosen and remove the screws **2**.
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 **2** the screws.
8. ➤ Switch on the compressed air supply. ➔ “Switch the supply of compressed air on/off” on page 120
9. ➤ Unlock the emergency stop button. ➔ “Make the loading magazine ready for operation after the emergency stop” on page 49
10. ➤ Acknowledge the error message by pressing 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  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  button.

Delete all error message:

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

Access the fault history

1. → Press the  button.
2. → “*DIAGNOSIS* → *Fault list*”
3. → Press the  button.

Display the position of the current fault on the loading magazine

1. → Press the  button.
2. → “*DIAGNOSIS* → *Fault list*”
3. → Press the  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.	

Fault message of the loading magazine	Possible cause	Switch / position
Starting switch -B7 not in home position -KK5/B7	The starting switch is not back in its home position. <ul style="list-style-type: none"> <li>■ Air flow disrupted</li> <li>■ Solenoid valve -KK5 not working</li> </ul>	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. <ul style="list-style-type: none"> <li>■ Air flow disrupted</li> <li>■ Solenoid valve -KK9 not working</li> </ul>	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. <ul style="list-style-type: none"> <li>■ Feed force for press upon too low.</li> <li>■ Incorrect clamping sleeve.</li> <li>■ New clamping sleeve.</li> </ul>	The position <b>Position draw off</b> was not 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 diameter setting channel 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 diameter setting separation 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. <ul style="list-style-type: none"> <li>■ Solenoid valve -KK01 not working.</li> <li>■ Air flow disrupted.</li> </ul>	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. <ul style="list-style-type: none"> <li>■ Solenoid valve -KK1 or -KK01 not working.</li> <li>■ Air flow disrupted.</li> </ul>	Switch -B5, -B6 or -B26 not actuated.
No stop in the lathe	Warning selection <b>First insert To stop set!</b> The material bar was not stopped by an end stop in the working area of the lathe.	
No return of remnant -B13	Remnant remains in the lathe. The material gripper did not grab any remnant when removing the remnant. <ul style="list-style-type: none"> <li>■ The lathe collet does not open correctly.</li> </ul>	Switch -B13 was actuated.

Fault message of the loading magazine	Possible cause	Switch / position
	The remnant fell out when when returning from the clamping sleeve. The material gripper did not grab any remnant when removing the remnant. <ul style="list-style-type: none"> <li>■ Clamping sleeve pressure too low.</li> </ul>	
No new bar in guide channel -B13	The material gripper does not grab any material bars when drawing on <ul style="list-style-type: none"> <li>■ No material bar was loaded from the lateral material storage.</li> </ul>	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. <ul style="list-style-type: none"> <li>■ Air supply disturbed</li> </ul>	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 on the loading magazine was actuated.	
Pilgrim step separation not in position / not empty - B83/B81/B82	The pilgrim step separation is not in position.	

Fault message of the loading magazine	Possible cause	Switch / position
	<ul style="list-style-type: none"> <li>■ Pilgrim step separation was lowered.</li> <li>■ Pilgrim step separation was raised without authorization.</li> <li>■ The pilgrim step separation speed was interrupted.</li> </ul>	
Pos.software end position was overrun. Release with manual return function	The positive software stop was overridden.	
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	<p>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.</p> <ul style="list-style-type: none"> <li>■ The clamping sleeve pressure is not right.</li> <li>■ The blades of the material gripper are worn.</li> <li>■ The pressure of the material gripper is too low.</li> </ul> <p>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.</p> <ul style="list-style-type: none"> <li>■ The remnant flap has been lubricated. The residue remains stuck on the remnant flap.</li> </ul>	Switch -B13 was not actuated.
Remnant flap not closed - KK010/B17	<p>The remnant flap does not close.</p> <ul style="list-style-type: none"> <li>■ Solenoid valve -KK010 does not switch.</li> <li>■ Air flow disrupted.</li> </ul>	Switch -B17 not actuated.
Pushing signal not ok; Check signal from lathe	<p>The signal "collet open" is transferred by the lathe in an unstable way to the loading magazine (the signal bounces).</p> <ul style="list-style-type: none"> <li>■ Defect connection</li> <li>■ Relay worn (on the lathe side)</li> </ul>	
Sensor of the pilgrim step separation support contaminated -B83	<ul style="list-style-type: none"> <li>■ The light reflection for the stable detection of a material bar is not sufficient.</li> <li>■ Sensor head (light guide) of switch B83 is damaged or dirty.</li> </ul>	
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.	

Fault message of the loading magazine	Possible cause	Switch / position
Collet in the lathe closed	Warning <b>Draw on bar with first insert set!</b> 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	Warning <b>Max. bar return</b> active. The material bar was moved back past the set value when closing the collet. <ul style="list-style-type: none"> <li>■ Lathe clamping system not OK.</li> </ul>	
Part follow-up too short	Warning <b>Min. part length follow-up</b> active. The entered value was not reached by pushing the material bar. <ul style="list-style-type: none"> <li>■ Feeding force too low.</li> <li>■ The collet signal is instable.</li> </ul>	
Part follow-up too long	Warning <b>Max. part length follow-up</b> active. The entered value was not exceeded by pushing the material bar. <ul style="list-style-type: none"> <li>■ End stop in the lathe not exceeded.</li> </ul>	
Cover not closed - B76/B77/B78/B79/K20/K21	The cover (of the guide channel) 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. <ul style="list-style-type: none"> <li>■ Solenoid valve -KK08 does not switch.</li> <li>■ Air flow disrupted.</li> </ul>	Switch -B23 does not switch.
Pusher out of position	Warning <b>Part length internal</b> or <b>Part length external</b> active. The pusher was moved during the processing. <ul style="list-style-type: none"> <li>■ Vibrations to the material bar.</li> <li>■ Lathe clamping system not OK.</li> <li>■ Brake not switched on.</li> <li>■ Braking force too low.</li> </ul>	
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. <ul style="list-style-type: none"> <li>■ Problem with the lathe work flow.</li> </ul>	

Fault message of the loading magazine	Possible cause	Switch / position
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 127.*



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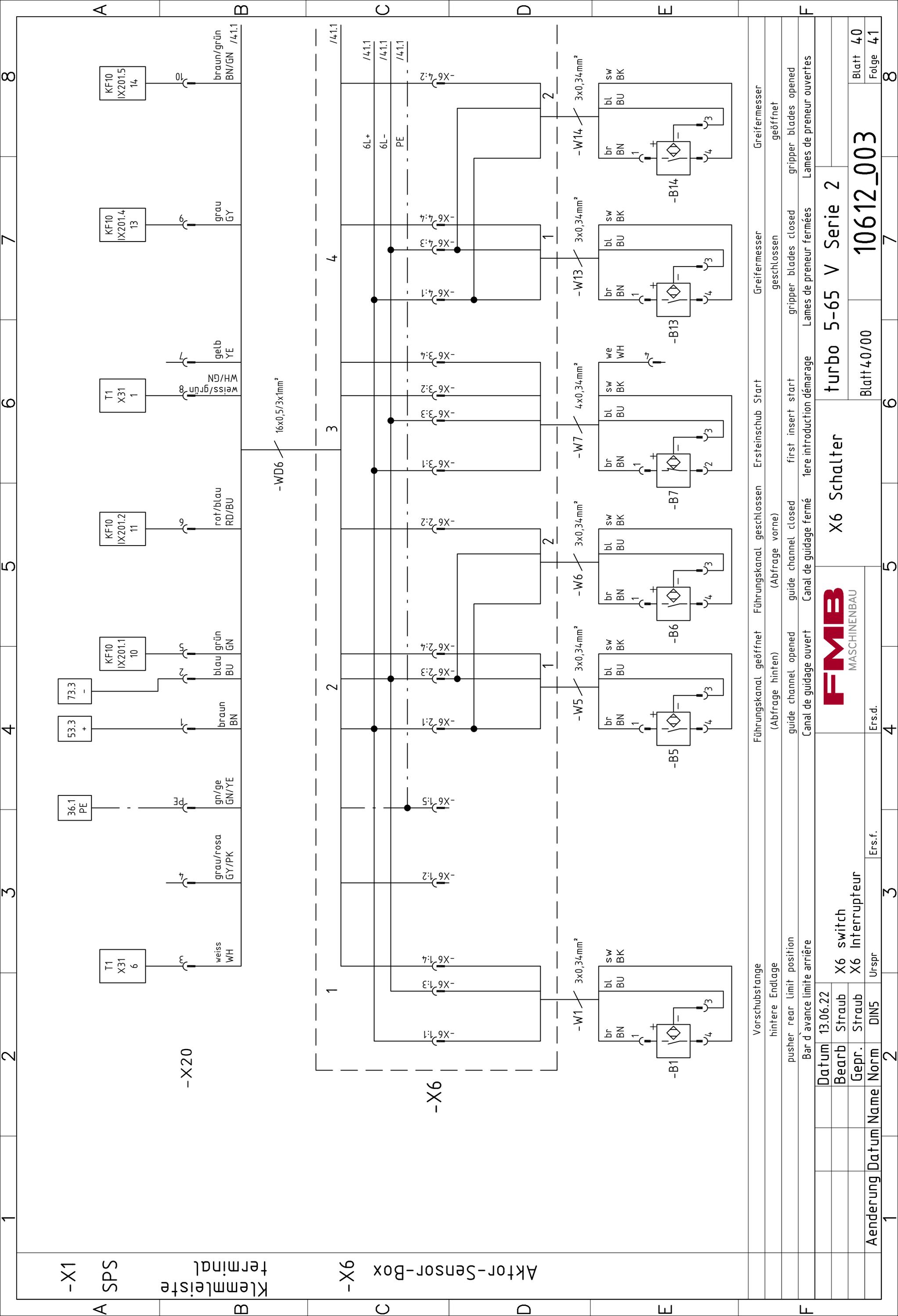
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X6 Schalter

turbo 5-65 V Serie 2

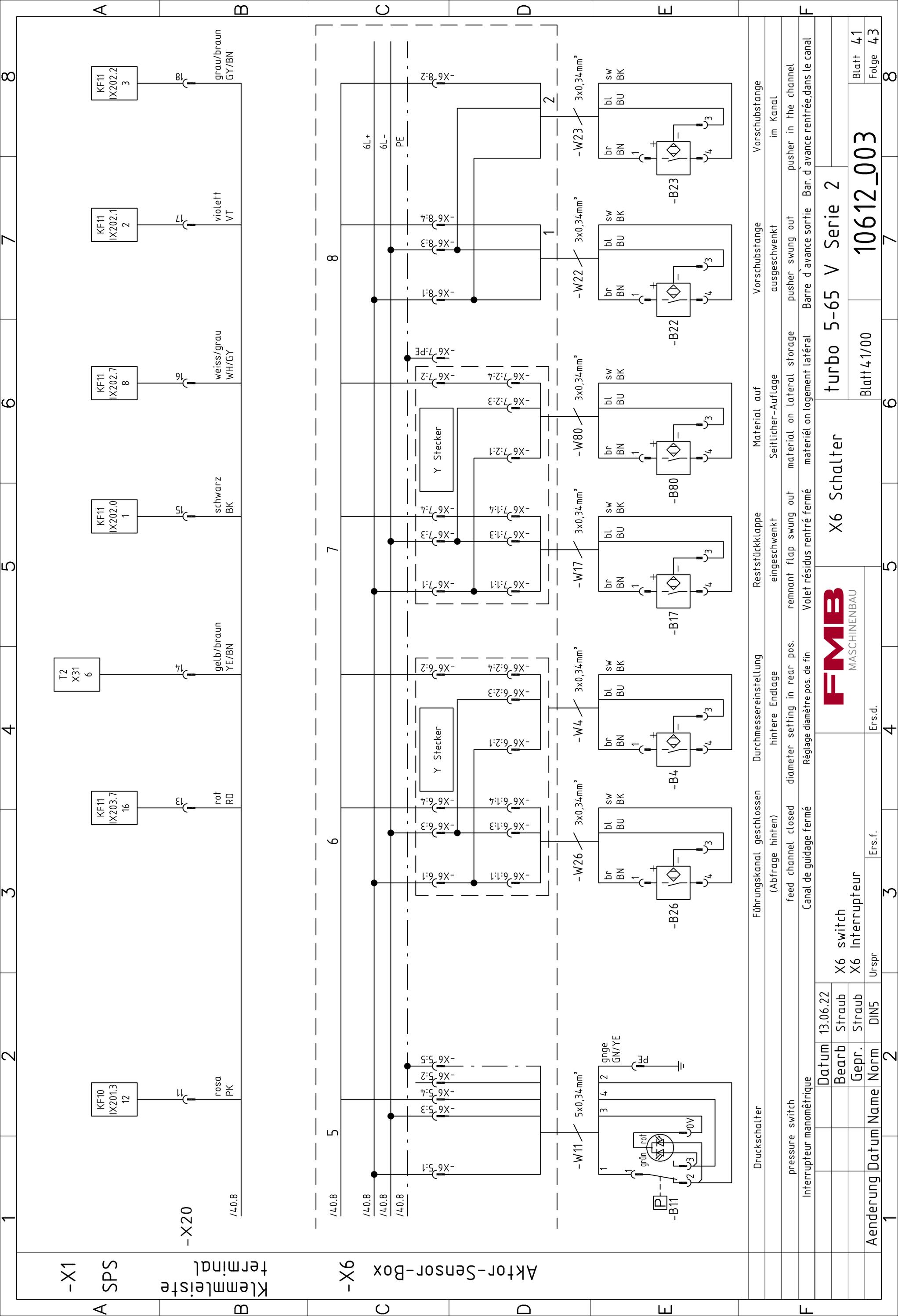
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10612\_003

Blatt 40  
Folge 41

Vorschubstange hintere Endlage	Führungskanal geöffnet (Abfrage hinten)	Führungskanal geschlossen (Abfrage vorne)	Ersteinschub Start	Greifermesser geschlossen	Greifermesser geöffnet
pusher rear limit position Bar d'avance limite arrière	guide channel opened Canal de guidage ouvert	guide channel closed Canal de guidage fermé	first insert start	gripper blades closed	gripper blades opened

Datum	13.06.22	X6 switch		Lames de preneur ouvertes	
Bearb	Straub	X6 Interrupteur		Lames de preneur fermées	
Gepr.	Straub	X6 Interrupteur		Lames de preneur fermées	
Aenderung	Datum	Name	Norm	turbo 5-65 V Serie 2	
1	2	3	4	Blatt 40/00	
			Ers.f.	10612_003	
			Urspr	Blatt 40	
			DIN5	Folge 41	



-X1  
SPS  
Klemmleiste  
terminal

-X6  
Aktor-Sensor-Box

Druckschalter  
pressure switch  
interrupteur manométrique

Führungskanal geschlossen  
(Abfrage hinten)  
feed channel closed  
diameter setting in rear pos.  
Canal de guidage fermé

DurchmesserEinstellung  
hintere Endlage  
remnant flap swung out  
Volet résidus rentré fermé

Reststückklappe  
eingeschwenkt  
material on lateral storage  
matériel on logement latéral

Vorschubstange  
ausgeschwenkt  
pusher swung out  
Barre d'avance sortie

Datum  
13.06.22

Bearb  
Straub

Gepr.  
Straub

Norm  
DIN5

Urspr  
Ers.f.

Urspr  
Ers.d.

Urspr  
Ers.f.

Urspr  
Ers.f.

Urspr  
Ers.f.

Urspr  
Ers.f.

Aenderung  
1

X6 switch  
X6 Interrupteur

turbo 5-65 V Serie 2

X6 Schalter

Blatt 41/00

10612\_003

Blatt 41  
Folge 43

2

3

4

5

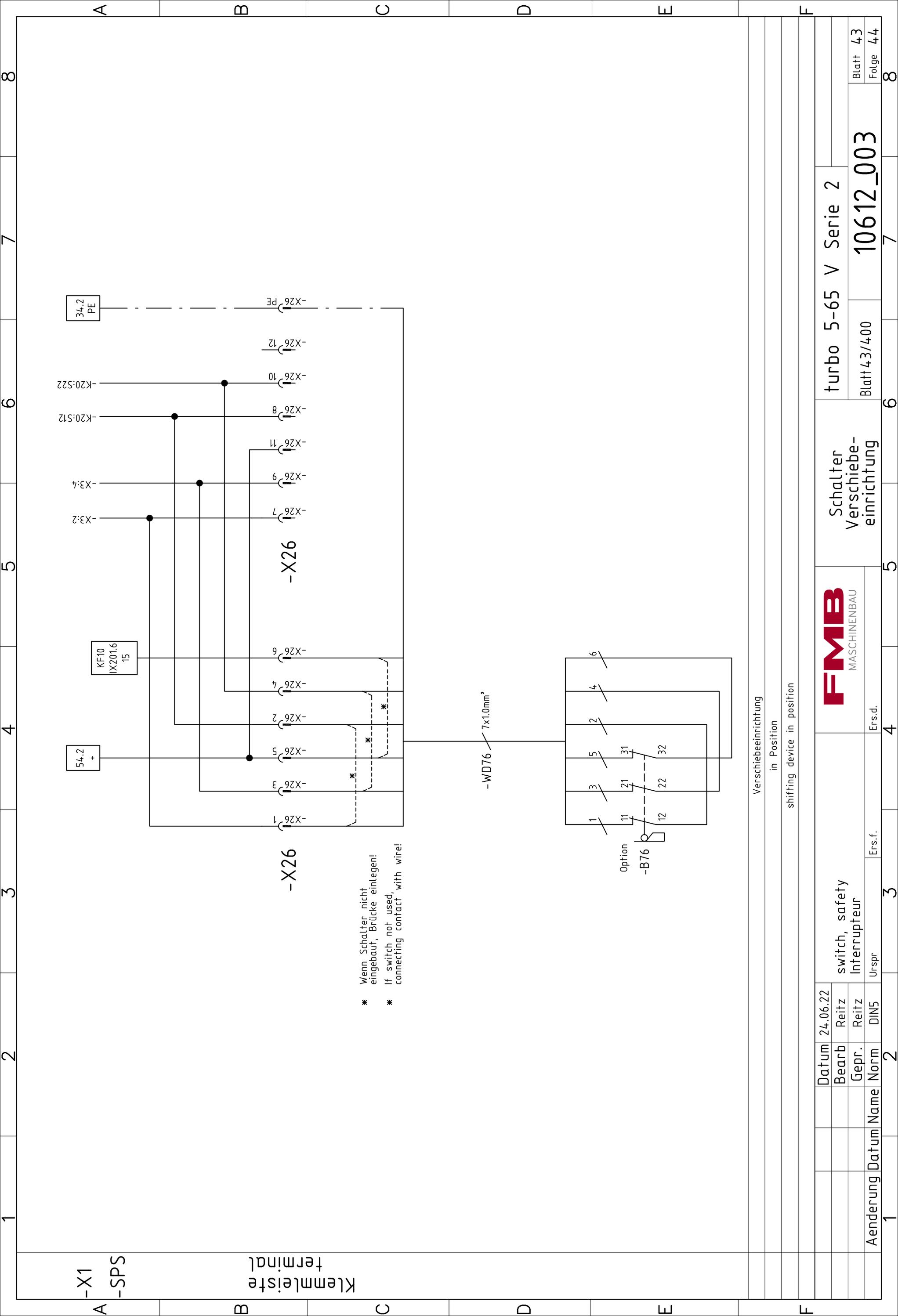
6

7

8

8

8



-X1  
-SPS

Klemmleiste  
terminal

- \* Wenn Schalter nicht eingebaut, Brücke einlegen!
- \* If switch not used, connecting contact with wire!

-WD76 7x1.0mm<sup>2</sup>

Option  
-B76

Verschiebeeinrichtung  
in Position  
shifting device in position

Datum 24.06.22		switch, safety		turbo 5-65 V Serie 2		Blatt 43	
Bearb	Reitz	Interrupteur		Blatt 43/400		Folge 44	
Gepr.	Reitz	Ursp		10612_003			
Aenderung	Datum	Name	Norm	DIN5	Ers.f.	Ers.d.	
1	2	3	4	5	6	7	8



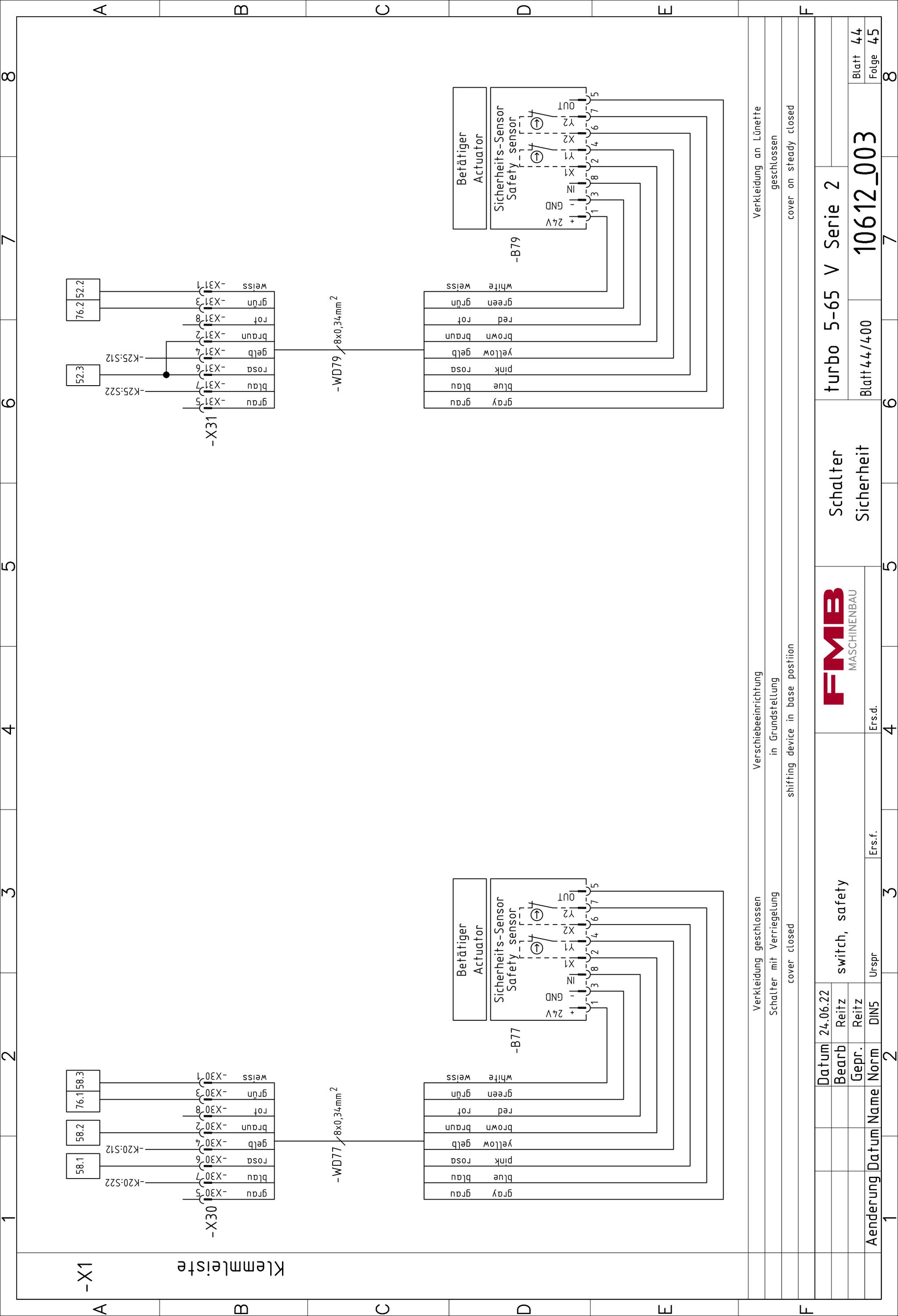
Schalter  
Verschiebe-  
einrichtung

turbo 5-65 V Serie 2

Blatt 43  
Folge 44

10612\_003

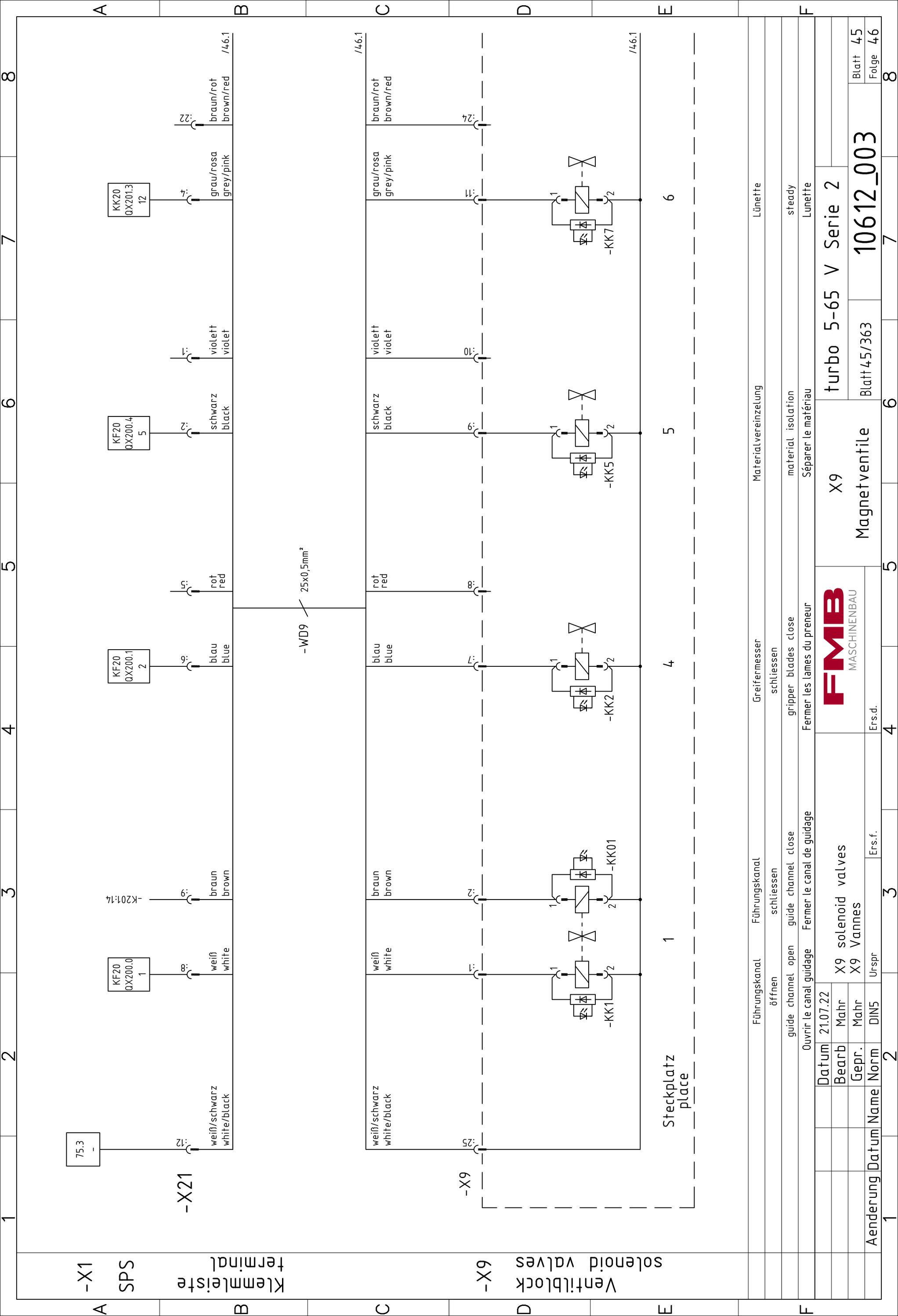
8



Verkleidung an Lünette  
geschlossen  
cover on steady closed

Verschiebeeinrichtung  
in Grundstellung  
shifting device in base position

turbo 5-65 V Serie 2		Schalter Sicherheit		FMB MACHINENBAU		10612_003		Blatt 44 Folge 45	
Datum	24.06.22	Bearb	Reitz	Gepr.	Reitz	DIN5	Urspr	Ers.f.	Ers.d.
Aenderung	Datum	Name	Norm	switch, safety		switch, safety		Blatt 44 Folge 45	



-X1 SPS Klemmleiste terminal

-X9 solenoid valves

Führungskanal öffnen  
guide channel open  
Ouvrir le canal guidage

Greifermesser schliessen  
gripper blades close  
Fermer les lames du preneur

Führungskanal schliessen  
guide channel close  
Fermer le canal de guidage

Materialvereinzlung  
material isolation  
Séparer le matériau

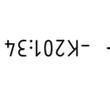
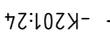
Lünette  
Lunette

Datum	21.07.22	X9 solenoid valves		turbo 5-65 V Serie 2		Blatt	45
Bearb	Mahr	X9 Vannes		Magnetventile		Folge	46
Gepr.	Mahr	Ers.f.		Blatt 45/363		10612_003	
Aenderung	Datum	Name	Norm	Urspr	Ers.f.		
1	2	3	4	5	6	7	8

-X1

SPS

Klemmleiste  
terminal



braun/gelb  
brown/yellow

braun/rosa  
brown/pink

blau/weiß  
blue/white

braun/blau  
brown/blue

rot/weiß  
red/white

/4.5.8

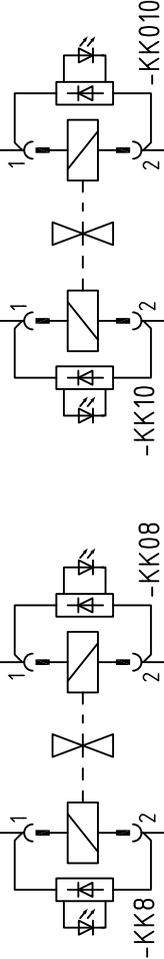
/4.7.1

/4.5.8

/4.7.1

-X9

Ventilblock  
solenoid valves



/4.5.8

/4.7.1

/4.5.8

/4.7.1

Steckplatz 2

3

/4.5.8

/4.7.1

Vorschubstange

Reststückklappe

ausschwenken  
pusher swing out

einschwenken  
remnant flap swing out

ausschwenken  
remnant flap swing in

einschwenken  
rennant flap swing in

Entlever la barre d'avance

Rentrer la barre d'avance

Sortir le volet des résidus

Rentrer le volet des résidus

Datum 21.07.22

Bearb Mahr

Gepr. Mahr

Aenderung Datum Name Norm

Urspr DIN5

X9 solenoid valves

X9 Vannes

Urspr

Ers.f.

Ers.d.

X9

Magnetventile

Blatt 46/363

10612\_003

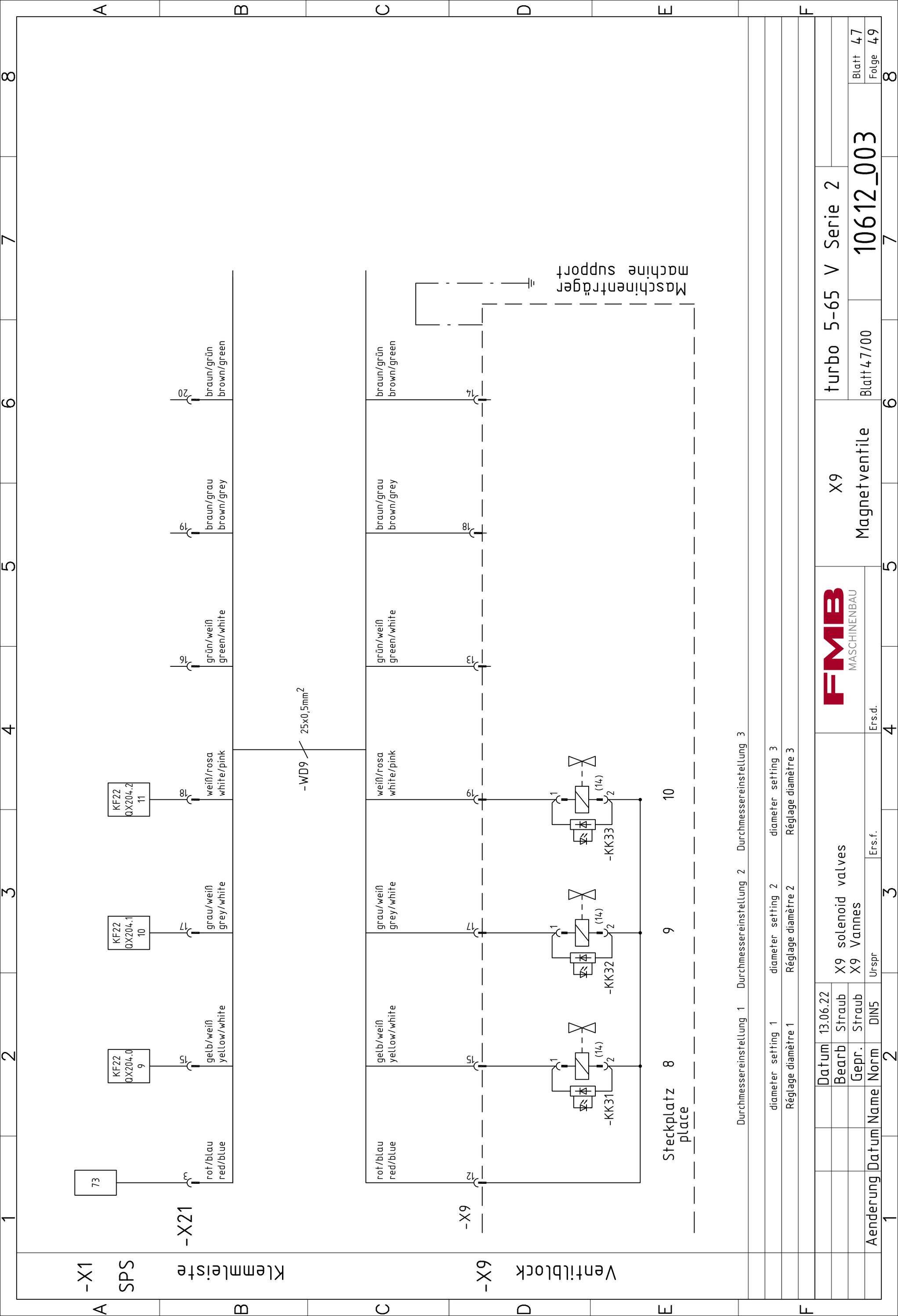
Blatt 46  
Folge 47

turbo 5-65 V Serie 2



MASCHINENBAU

X9



-X1  
SPS

-X21  
Klemmleiste

-X9  
Ventilblock

Steckplatz 8  
place

Durchmessereinstellung 1 Durchmesserinstellung 2 Durchmesserinstellung 3

diameter setting 1 diameter setting 2 diameter setting 3

Réglage diamètre 1 Réglage diamètre 2 Réglage diamètre 3

Datum	13.06.22
Bearb	Straub
Gepr.	Straub
Aenderung	DIN5
Name	Urspr
	Ers.f.
	Ers.d.

X9 solenoid valves  
X9 Vannes



X9  
Magnetventile

turbo 5-65 V Serie 2

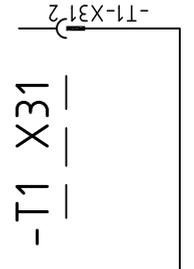
Blatt 47  
Folge 49

10612\_003

-X1  
-T1

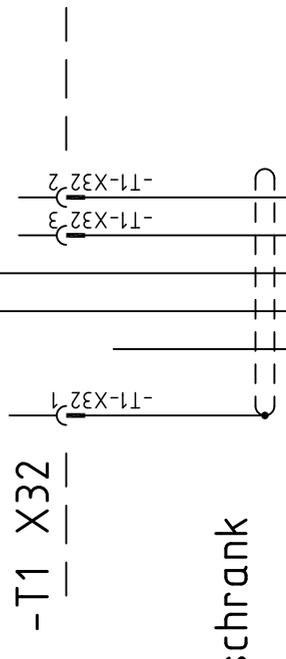
Klemmleiste  
terminal

51.3  
+

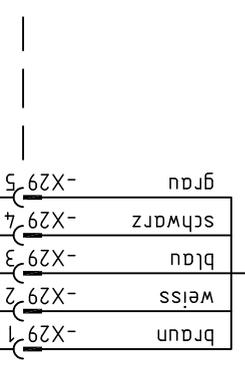


Schaltschrank

55.3 75.3  
+ -

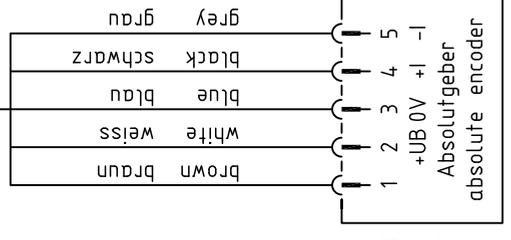


Schaltschrank



-X29

-WG8 5x0,34mm<sup>2</sup>



-B8  
24V DC  
0-10V  
Absolute encoder  
absolute encoder

Drehrichtungs Umschaltung:

bei Ausführung B/C

Eingang beschalten

version B/C

B/C

Geber Vereinzelung

Durchmessereinstellung

encoder material separation diameter setting

Encodeur séparation réglage diamètre

Aenderung	Datum	Name	Norm	DIN5	Urspr	Ers.f.	Ers.d.
1	13.06.22	Straub					
		Straub					

encoder -B8 / rotation B/C  
Convertisseur -B8



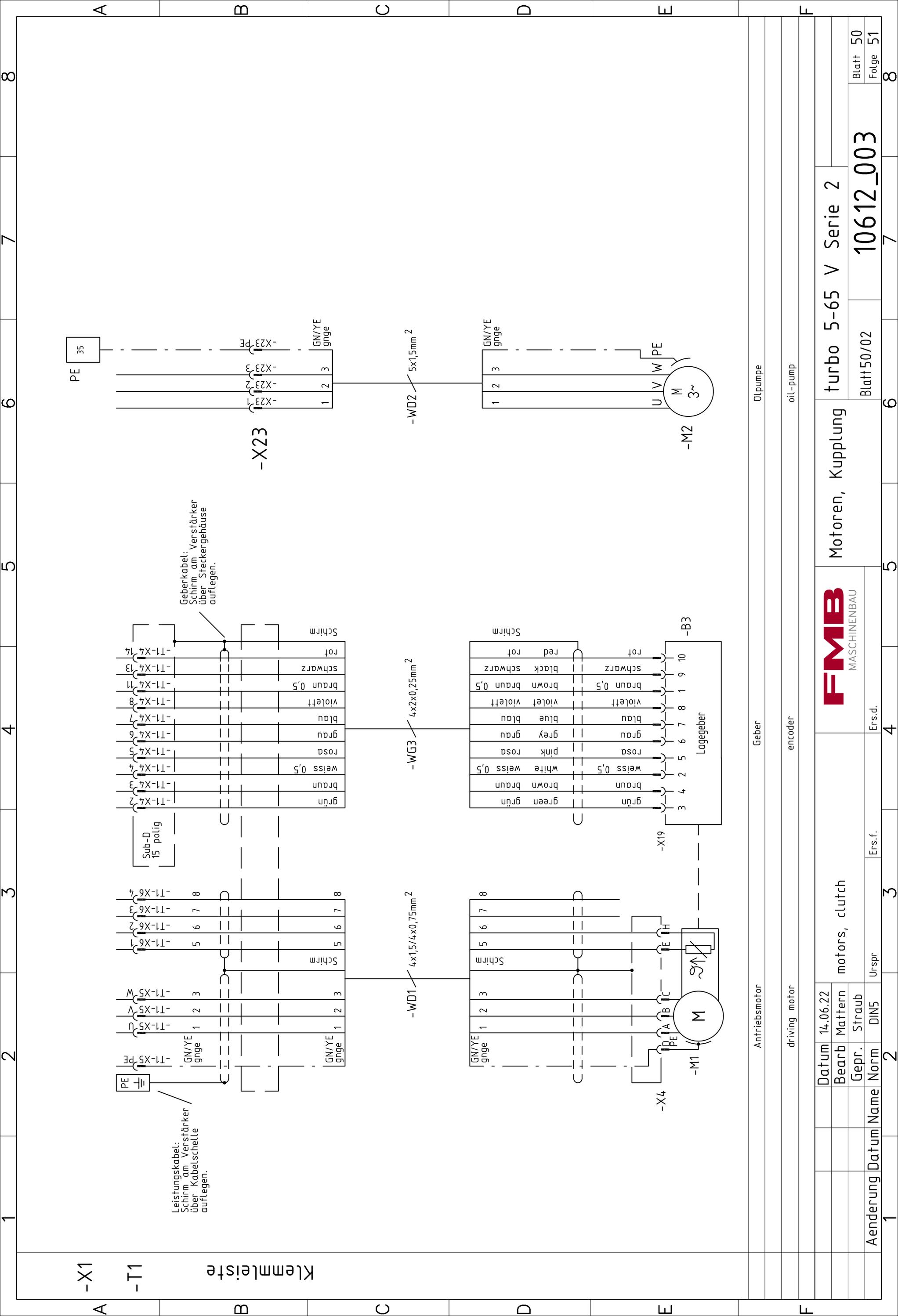
Geber -B8

Umschaltung B/C

turbo 5-65 V Serie 2

Blatt 49  
Folge 50

10612\_003



Ölpumpe

oil-pump

Geber

encoder

Antriebsmotor

driving motor

Motoren, Kupplung turbo 5-65 V Serie 2



Blatt50/02

10612\_003

Blatt 50

Folge 51

motors, clutch

Datum	14.06.22
Bearb	Mattern
Gepr.	Straub
Aenderung	DIN5
Norm	Urspr
Name	Ers.f.

1

2

3

4

5

6

7

8

-X1

-T1

Klemmleiste

Leistungskabel:  
Schirm am Verstärker  
über Kabelschelle  
auflegen.

Geberkabel:  
Schirm am Verstärker  
über Steckergehäuse  
auflegen.

Sub-D  
15 polig

-B3

-X19

-M1

-X4

-WD1 4x1,5/4x0,75mm<sup>2</sup>

-WG3 4x2x0,25mm<sup>2</sup>

-WD2 5x1,5mm<sup>2</sup>

-X23

-M2

PE 35

-X23 PE

GN/YE gänge

U V W PE

M 3~

GN/YE gänge

rot

schwarz

braun 0,5

violett

blau

grau

pink

rosa

weiss 0,5

braun

grün

rot

schwarz

braun 0,5

violett

blau

grau

pink

rosa

weiss 0,5

braun

grün

rot

schwarz

braun 0,5

violett

blau

grau

pink

rosa

weiss 0,5

braun

grün

rot

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braun 0,5

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weiss 0,5

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rosa

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rot

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braun 0,5

violett

blau

grau

pink

rosa

weiss 0,5

braun

grün

rot

schwarz

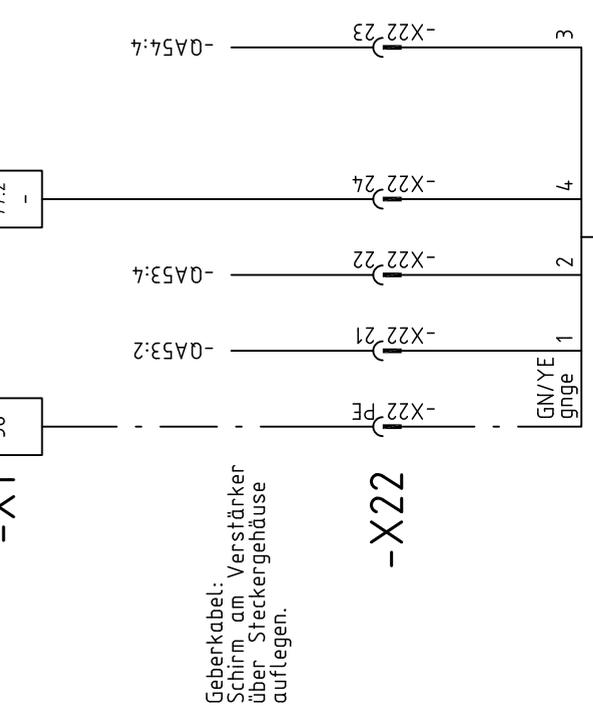
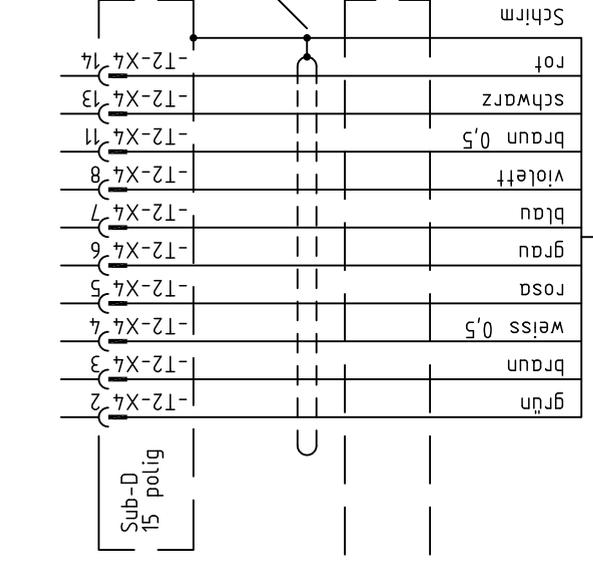
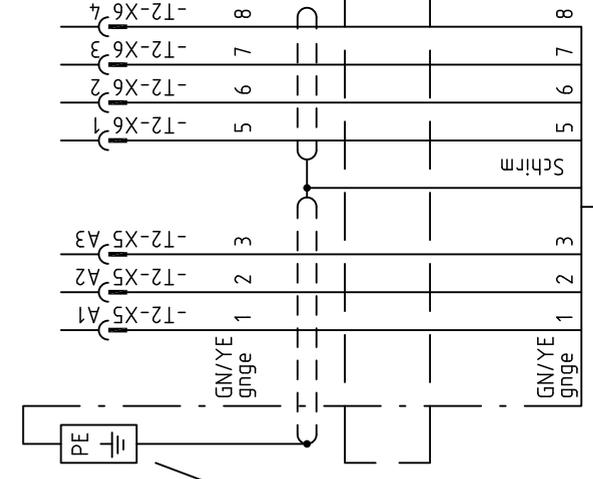
braun 0,5

violett

blau

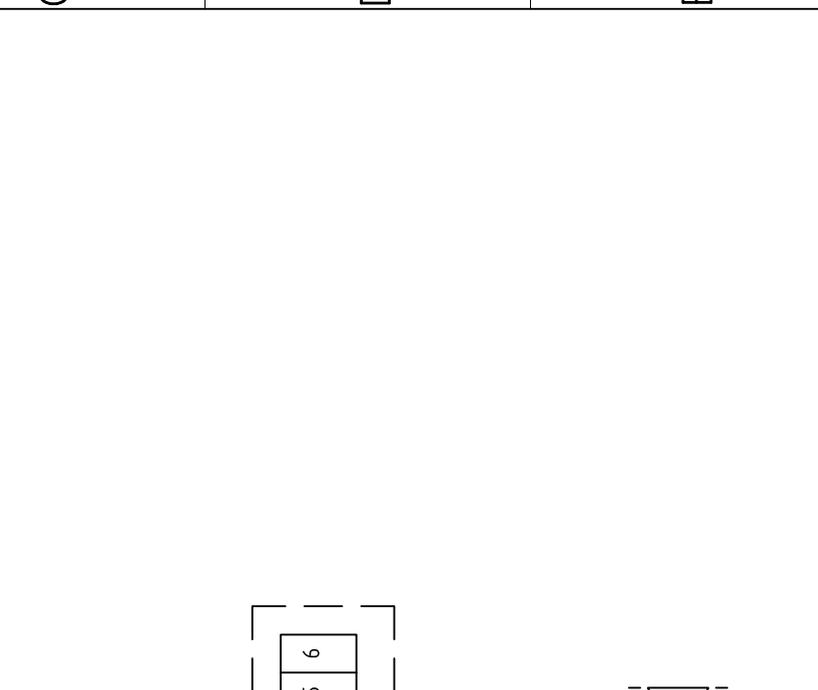
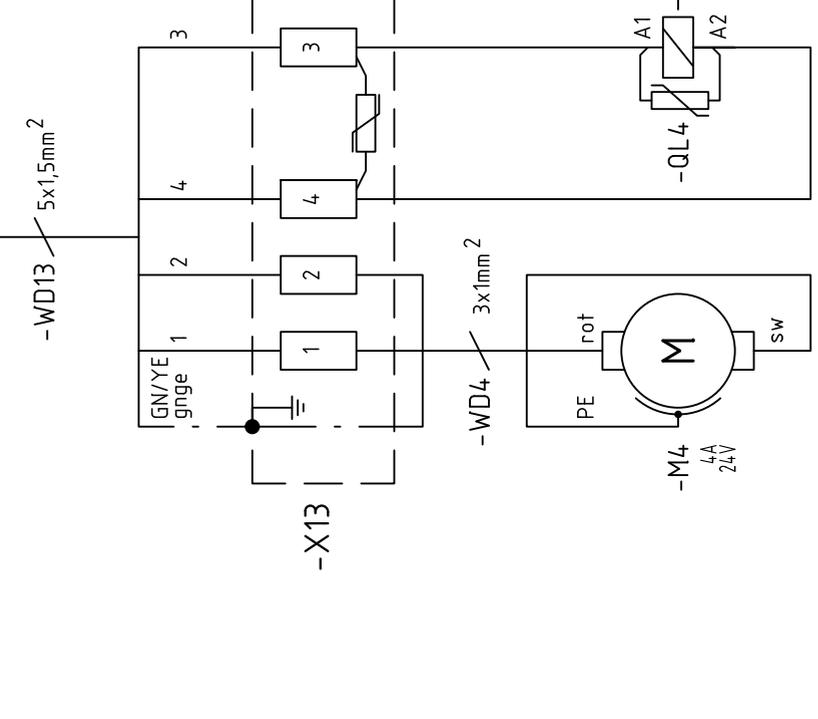
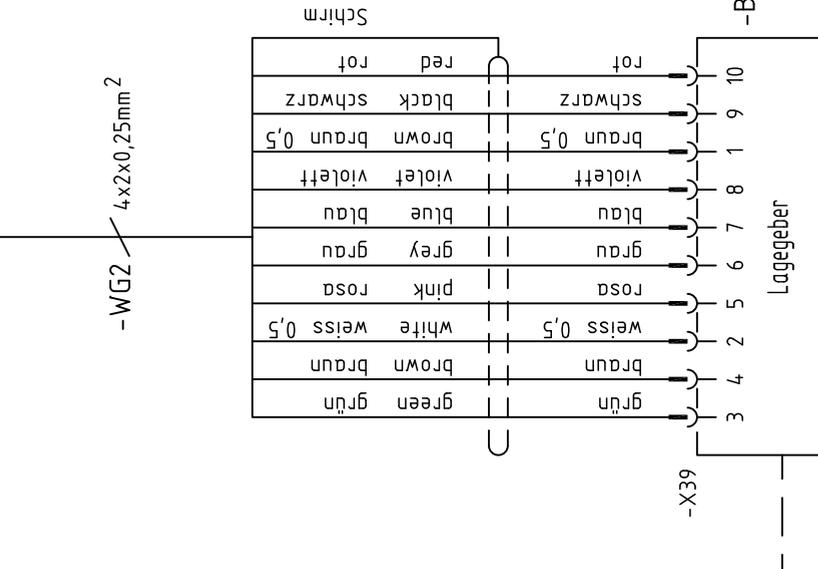
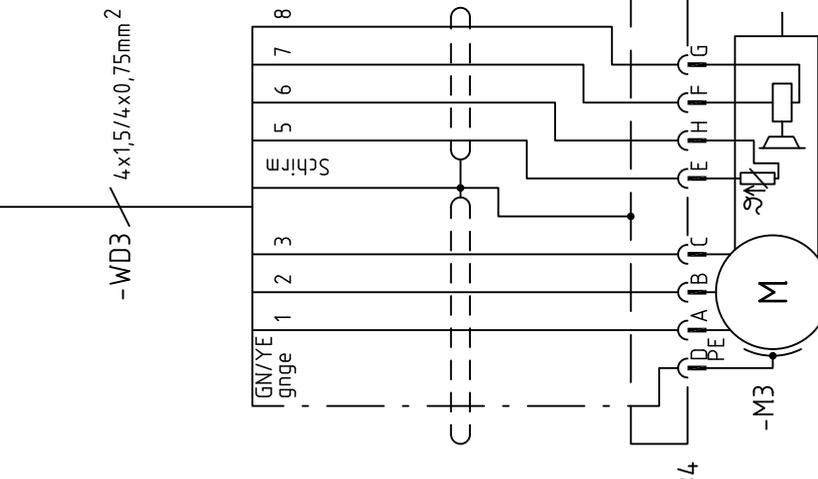
# Klemmleiste

-T2  
Leistungskabel:  
Schirm am Verstärker  
über Kabelschelle  
auflegen.



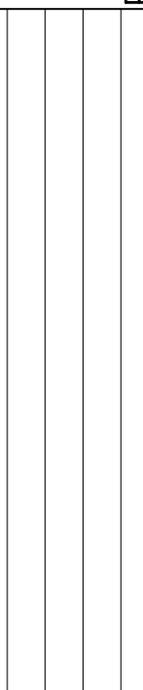
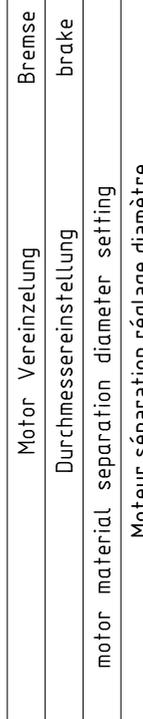
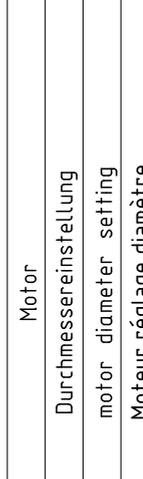
# Motor

-M3  
PE  
A  
B  
C  
E  
H  
F  
G



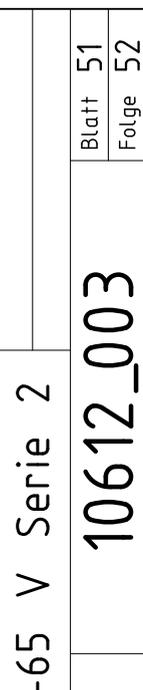
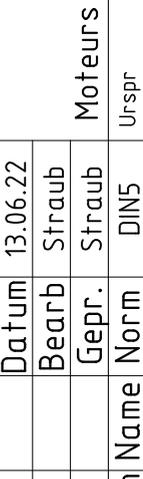
# Geber

Motor Vereinzelung  
Durchmessereinstellung



# Motoren

Motor Vereinzelung  
Durchmessereinstellung



turbo 5-65 V Serie 2		Blatt 51
Motoren		Folge 52
motors		10612_003
Blatt 51/00		

Motor Vereinzelung		Bremse
Durchmessereinstellung		brake
motor material separation diameter setting		
Moteur séparation réglage diamètre		

Datum 13.06.22		
Bearb Straub		
Gepr. Straub		
Motors		
Aenderung Datum Name Norm		DIN5 Urspr
Ers.f.		Ers.d.

FMB		
MASCHINENBAU		

Motor		
Durchmessereinstellung		
motor diameter setting		
Moteur réglage diamètre		

Encoder		
encoder		
motor material separation diameter setting		
Moteur séparation réglage diamètre		

Date		
Author		
Checked		
Motors		
Revision		
Created		

Date		
Author		
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Motors		
Revision		
Created		

Date		
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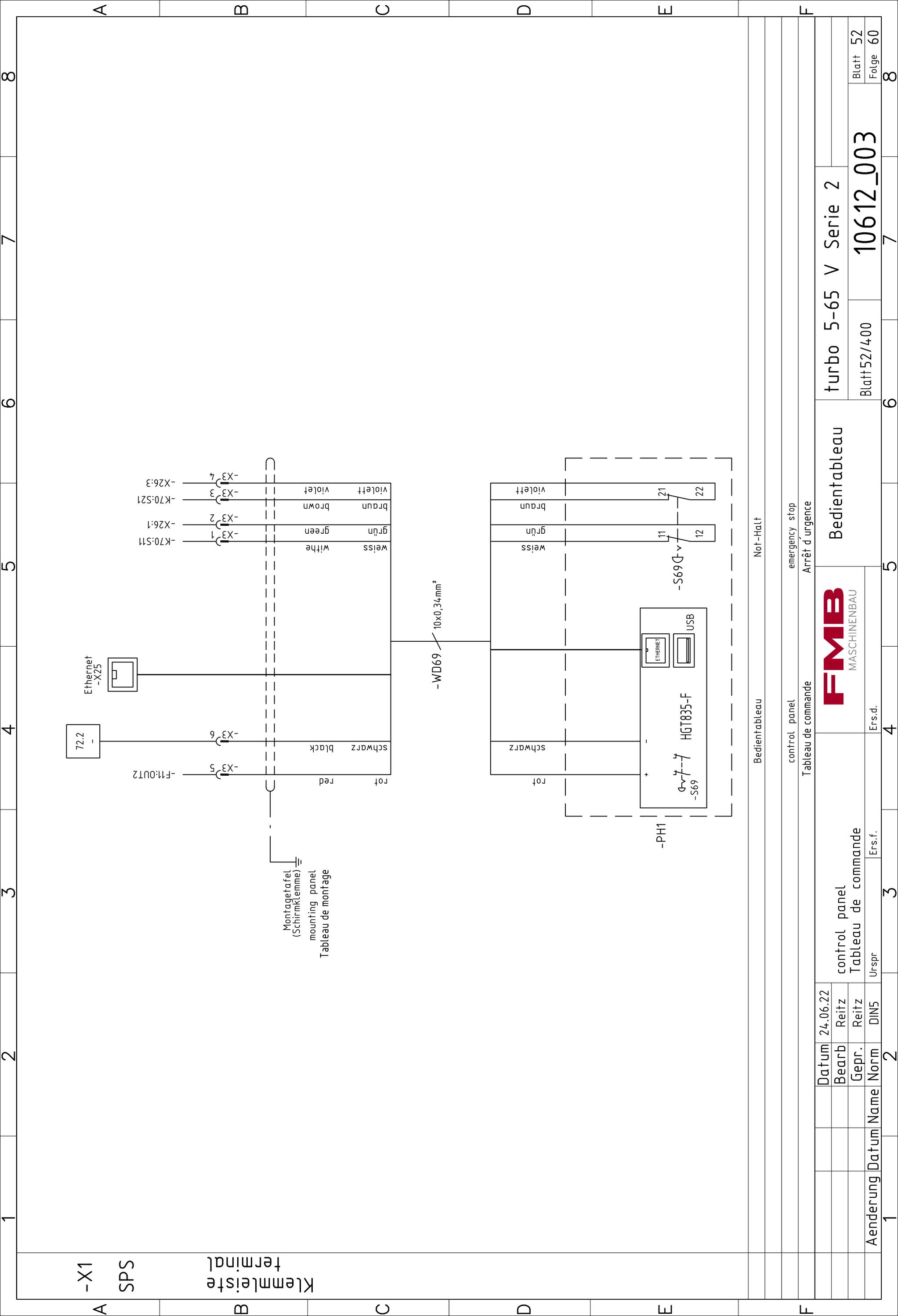
Date		
Author		
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Motors		
Revision		
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Motors		
Revision		
Created		

Date		
Author		
Checked		
Motors		
Revision		



-X1  
SPS

Klemmleiste  
terminal

72.2  
-

Ethernet  
-X25

-F11:OUT2

-K70:S11

-X26:1

-K70:S21

-X26:3

-X3:1

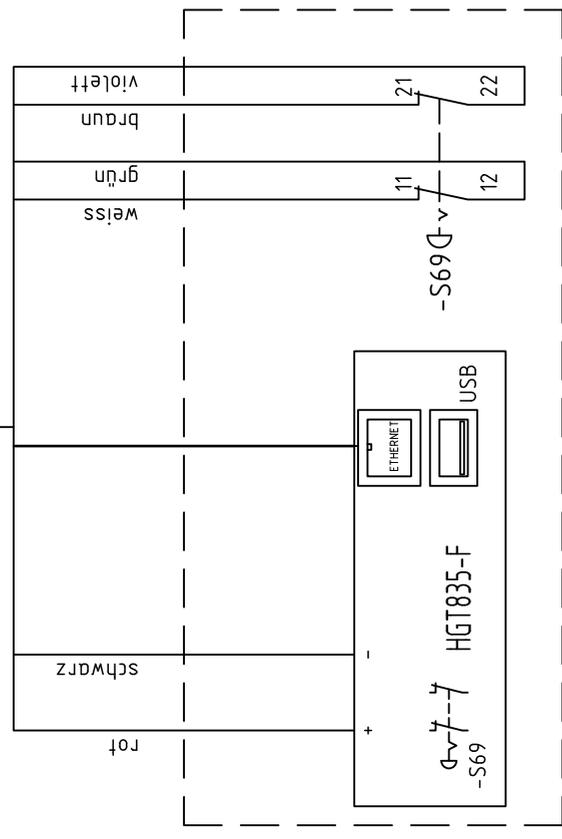
-X3:2

-X3:3

-X3:4

Montagetafel  
(Schirmklemme)  
mounting panel  
Tableau de montage

-WD69 10x0,34mm²



Bedientableau

Not-Halt

control panel

emergency stop

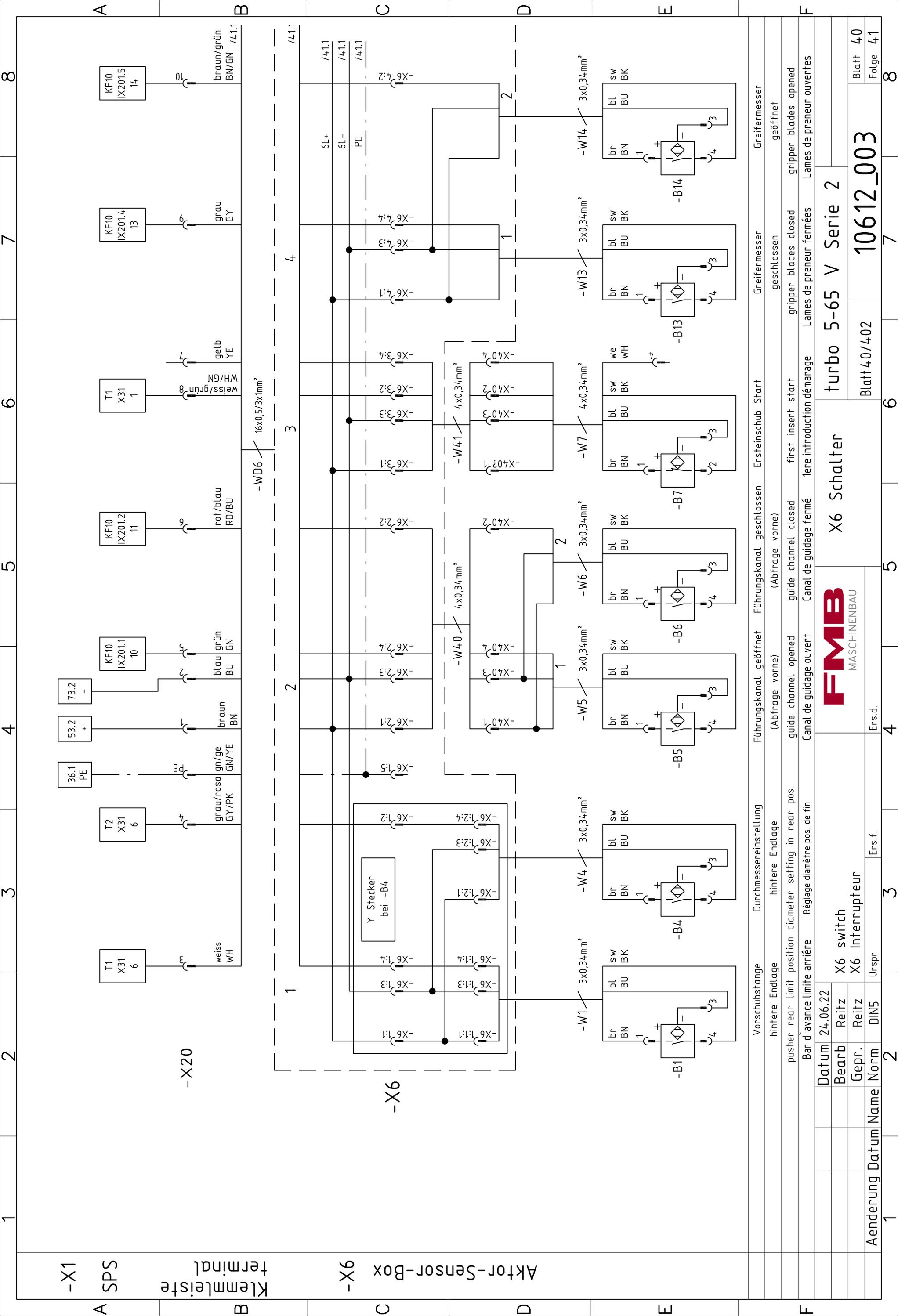
Tableau de commande

Arrêt d'urgence

Datum	24.06.22	control panel		turbo 5-65 V Serie 2		Blatt 52
Bearb	Reitz	Tableau de commande		10612_003		Folge 60
Gepr.	Reitz	Ers.f.		Blatt 52/400		
Aenderung	Datum	Name	Urspr			
1	2	3	4			

**FMB**  
MASCHINENBAU





-X1 SPS Klemmleiste terminal

-X6 Aktor-Sensor-Box

Vorschubstange hintere Endlage		DurchmesserEinstellung hintere Endlage		Führungskanal geöffnet (Abfrage vorne)		Führungskanal geschlossen (Abfrage vorne)		Ersteinschub Start		Greifermesser geschlossen	
pusher rear limit position diameter setting in rear pos.		Réglage diamètre pos. de fin		guide channel opened		guide channel closed		first insert start		gripper blades closed	
Bar d'avance limite arrière		Réglage diamètre pos. de fin		Canal de guidage ouvert		Canal de guidage fermé		1ere introduction démarage		Lames de preneur fermées	
Datum 24.06.22		X6 switch		turbo 5-65 V Serie 2		X6 Schalter		10612_003		Blatt 40	
Bearb Reitz		X6 Interrupteur		Ers.f.		Urspr		Ers.f.		Folge 41	
Gepr. Reitz		DIN5		Ers.f.		Urspr		Ers.f.		Folge 41	
Aenderung Datum/Name/Norm		Urspr		Ers.f.		Urspr		Ers.f.		Folge 41	

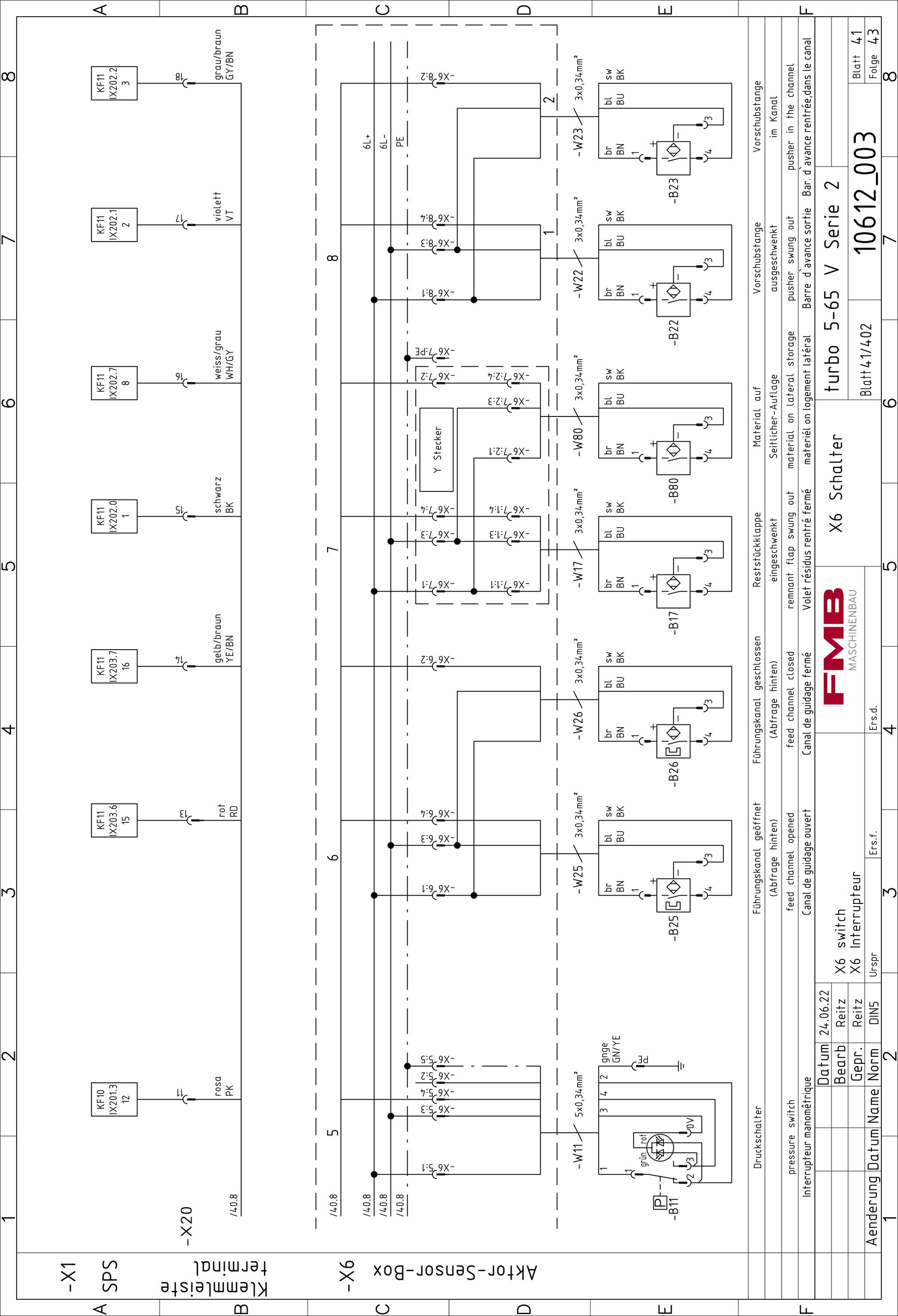


turbo 5-65 V Serie 2

10612\_003

Blatt 40

Folge 41



-X1  
SPS  
Klemmleiste  
terminal

grau/braun  
GY/BN  
violett  
VT  
weiss/grau  
WH/GY  
schwarz  
BK  
gelb/braun  
YE/BN  
rot  
RD  
rosa  
PK

-X6  
Aktor-Sensor-Box

6L+  
6L-  
PE  
6  
7  
8

-W11  
5x0,34mm<sup>2</sup>  
-B11  
grün  
rot  
00V  
gngne  
GN/YE  
PE

1  
2  
3  
4

Druckschalter  
pressure switch  
Interrupteur manométrique

1  
2  
3  
4

Führungskanal geöffnet  
(Abfrage hinten)  
feed channel opened  
(Abfrage hinten)  
Canal de guidage ouvert

eingeschwenkt  
remnant flap swung out  
Volet résidus rentré fermé

Führungskanal geschlossen  
(Abfrage hinten)  
feed channel closed  
Canal de guidage fermé

ausgeschwenkt  
pusher swung out  
Barre d'avance sortie

Material auf  
Seitlicher-Auflage  
material on lateral storage  
matériel on logement latéral

Vorschubstange  
im Kanal  
pusher in the channel  
Barre d'avance rentrée,dans le canal

Datum  
24.06.22

1  
2  
3  
4  
5  
6  
7  
8

Bearb  
Reitz

1  
2  
3  
4

Gepr.  
Reitz

1  
2  
3  
4

Aenderung  
Datum  
Name  
Norm  
Urspr

Ers.f.  
Ers.d.

X6 switch  
X6 Interrupteur

1  
2  
3  
4  
5  
6  
7  
8

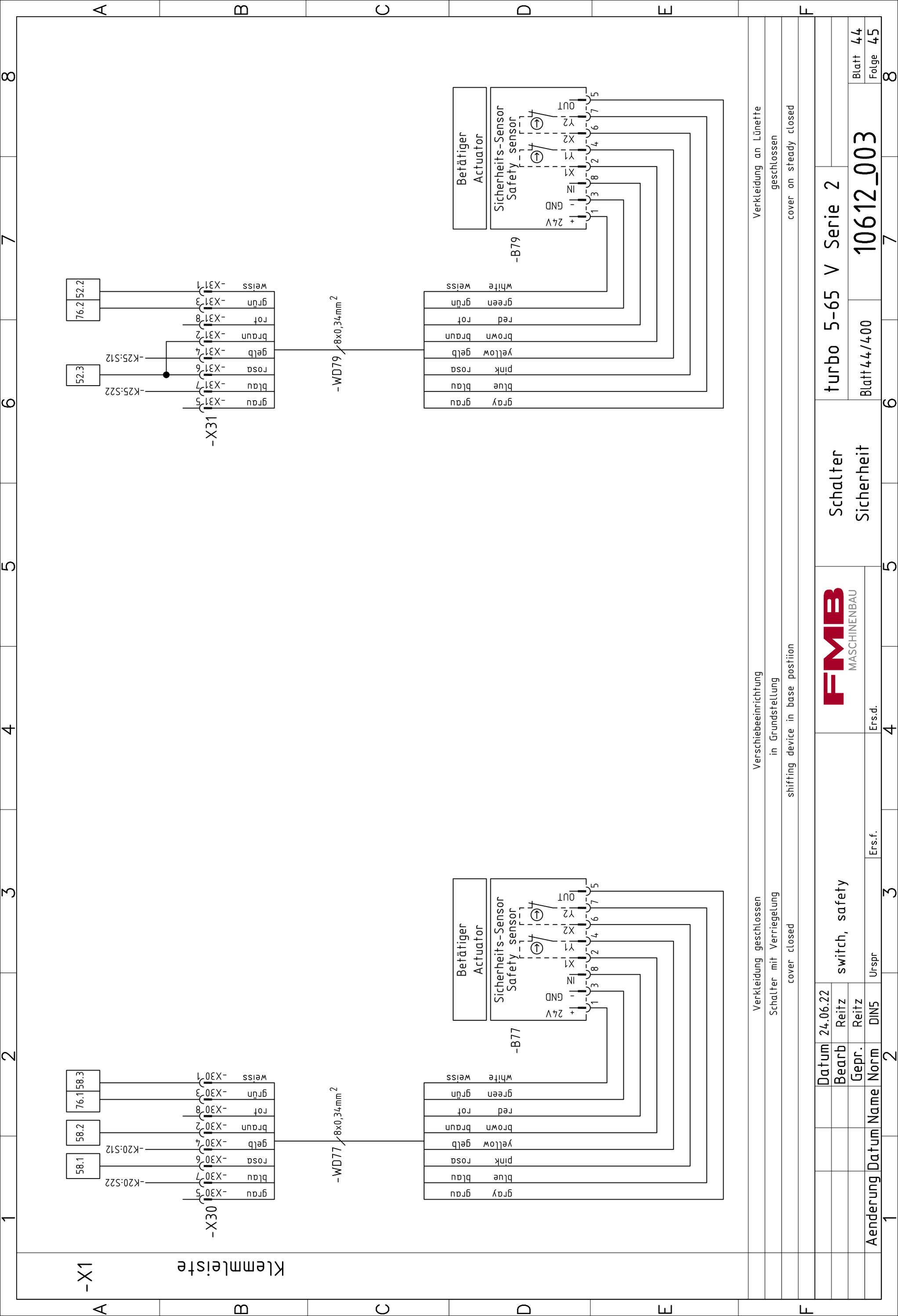
turbo 5-65 V Serie 2

Blatt 41/402  
10612\_003  
Blatt 41  
Folge 43

1  
2  
3  
4  
5  
6  
7  
8

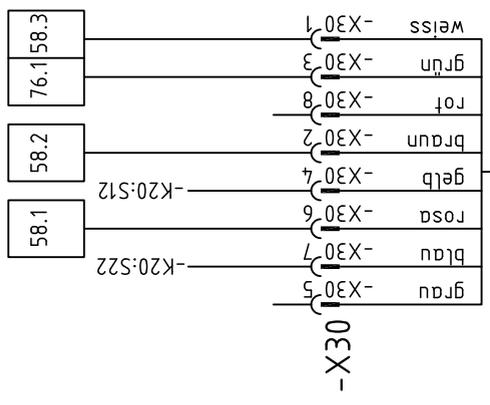
Druck  
1  
2  
3  
4



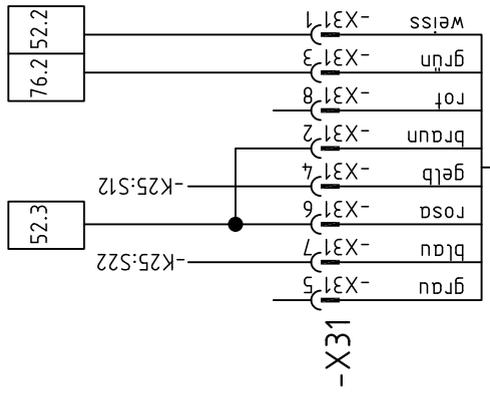
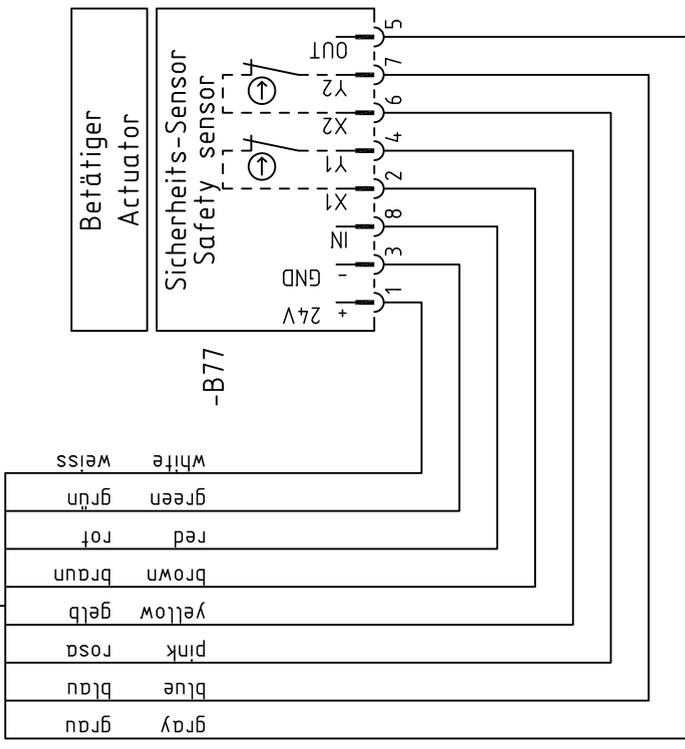


-X1

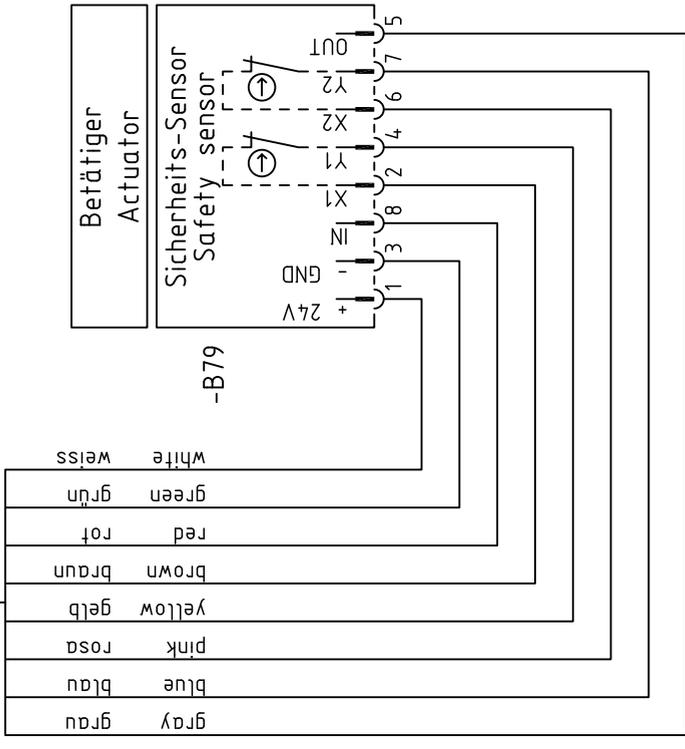
Klemmleiste



-WD77 / 8x0,34mm<sup>2</sup>



-WD79 / 8x0,34mm<sup>2</sup>



Verkleidung geschlossen  
Schalter mit Verriegelung  
cover closed

Verschiebeeinrichtung  
in Grundstellung  
shifting device in base position

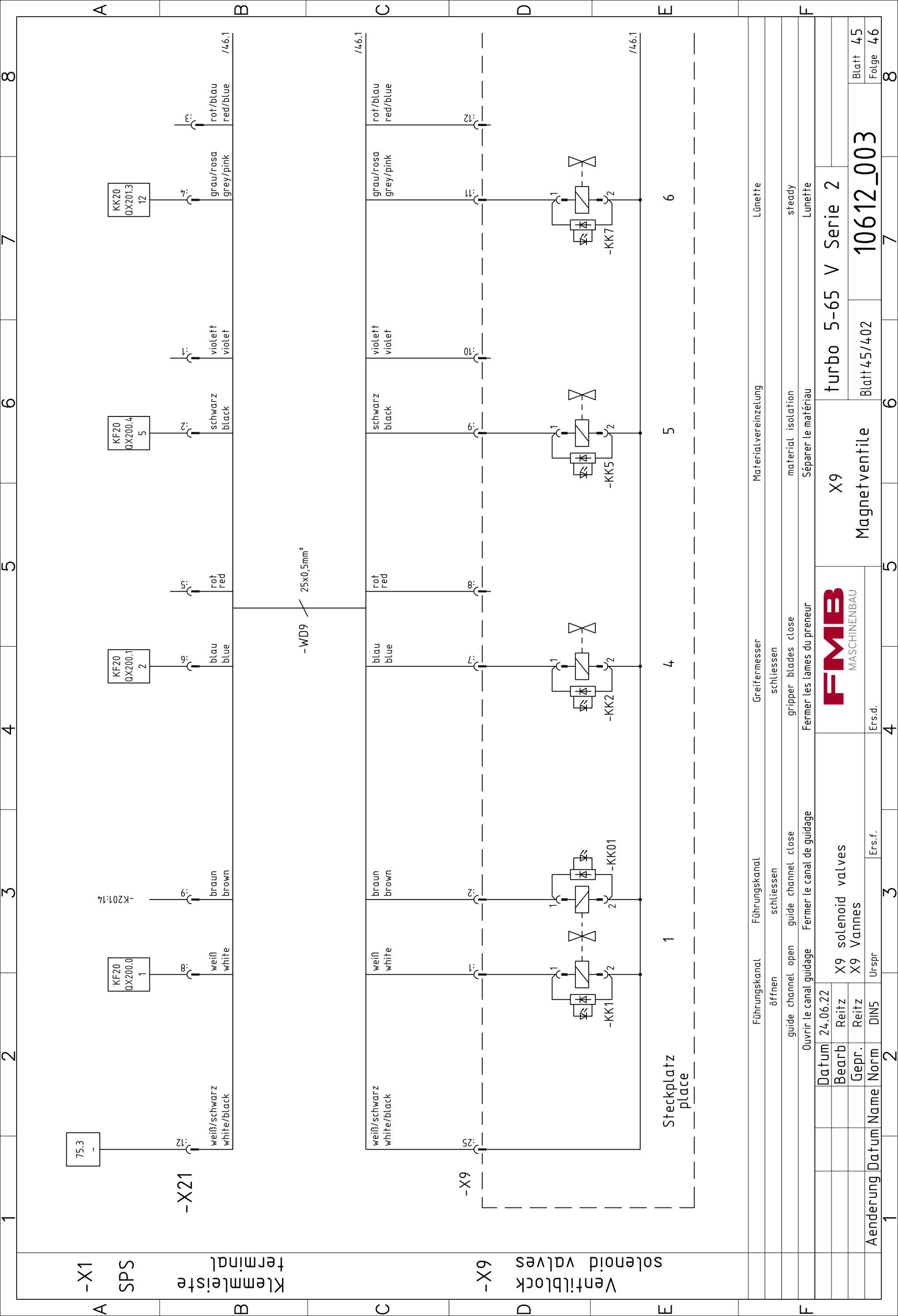
Verkleidung an Lünette  
geschlossen  
cover on steady closed

Aenderung	Datum	Name	Norm	DIN5	Urspr	Ers.f.	Ers.d.

Datum	24.06.22
Bearb	Reitz
Gepr.	Reitz

Schalter	turbo 5-65 V Serie 2
Sicherheit	Blatt 44/400

10612_003	Blatt 44
	Folge 45



-X1  
SPS  
Klemmleiste  
terminal

-X6  
Ventilblock  
solenoid valves

Steckplatz  
place

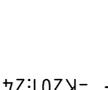
Führungskanal öffnen	Führungskanal schliessen	Greifermesser schliessen	Materialvereinzlung Lünette
guide channel open	guide channel close	gripper blades close	material isolation
Ouvrir le canal guidage	Fermer le canal de guidage	Fermer les lames du preneur	Séparer le matériau

Datum	24.06.22	X9 solenoid valves	turbo 5-65 V Serie 2	Blatt 45
Bearb	Reitz	X9 Vannes		Folge 46
Gepr.	Reitz			
Aenderung	DIN5	Urspr	10612_003	
		Ers.f.	Blatt 45/402	
		Ers.d.	Magnetventile	
			X9	

-X1

SPS

Klemmleiste terminal



braun/grün  
brown/green

braun/gelb  
brown/yellow

braun/grau  
brown/grey

braun/rosa  
brown/pink

/45.8

/47.1

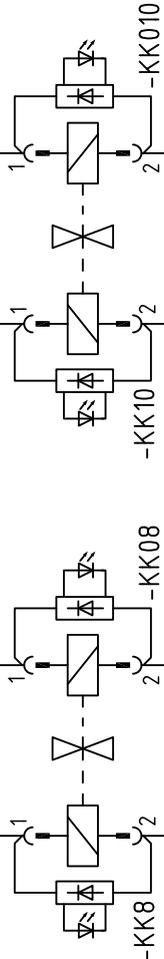
-WD9 25x0,5mm²

/45.8

/47.1

-X9

Ventilblock solenoid valves



/45.8

rosa pink

6

grau grey

5

gelb yellow

7

grün green

8

/45.8

braun/grün  
brown/green

braun/gelb  
brown/yellow

braun/grau  
brown/grey

braun/rosa  
brown/pink

14

16

18

20

/45.8

/47.1

Steckplatz 2 place

3

Vorschubstange

ausschwenken  
pusher swing out  
Rentrer la barre d'avance

einschwenken  
pusher swing in  
Rentrer la barre d'avance

ausschwenken  
remnant flap swing out  
Sortir le volet des résidus

einschwenken  
remnant flap swing in  
Rentrer le volet des résidus

Reststückklappe

Aenderung	Datum	Name	Norm	DIN5	Urspr	Ers.f.	Ers.d.

Datum	24.06.22
Bearb	Reitz
Gepr.	Reitz
Urspr	X9 Vannes
Ers.f.	X9 solenoid valves
Ers.d.	X9 solenoid valves

X9	Magnetventile
turbo 5-65 V Serie 2	Blatt 46/402
	10612_003
	Blatt 46
	Folge 47



1

2

3

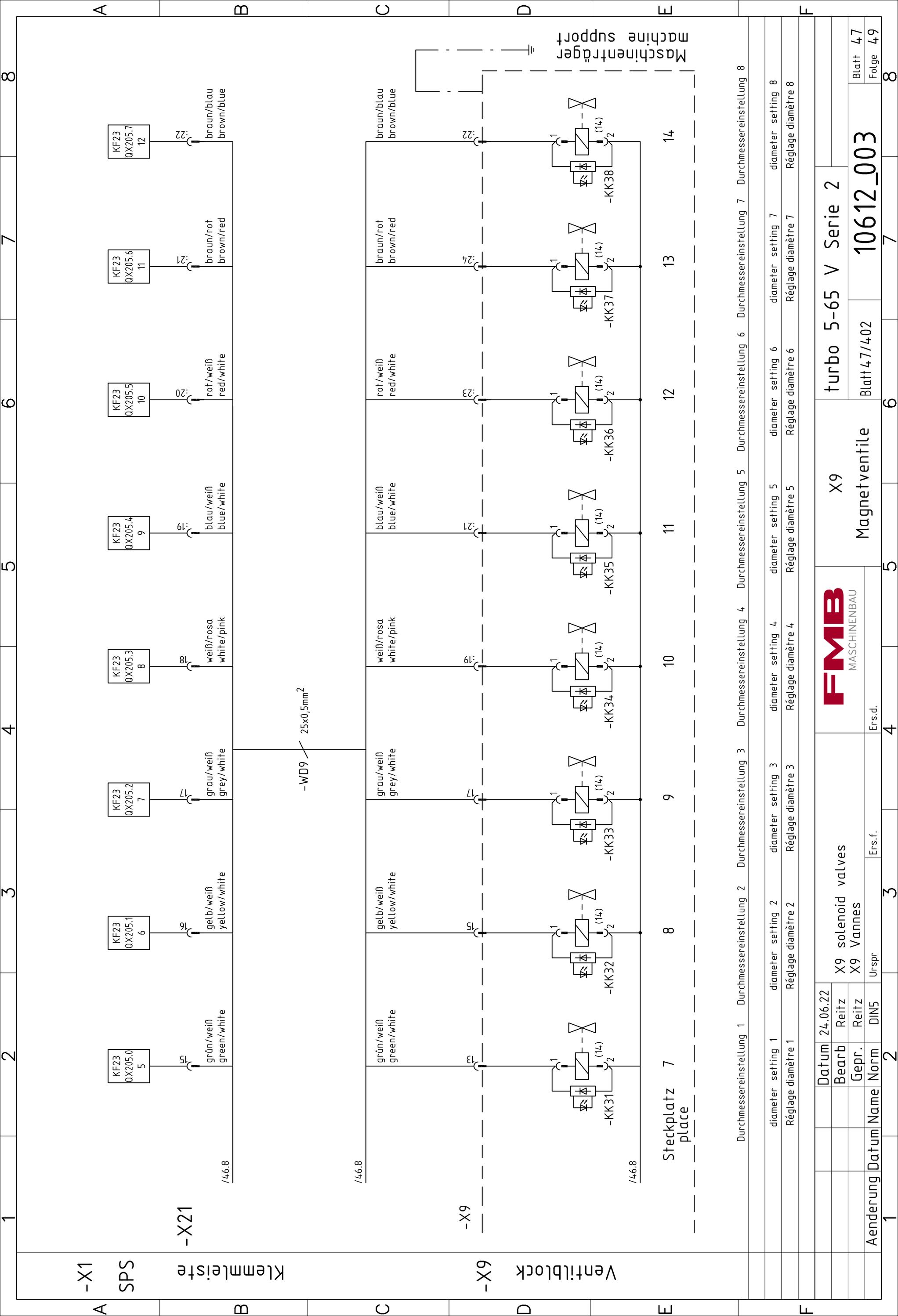
4

5

6

7

8



Durchmessereinstellung 1 Durchmesser Einstellung 1 Durchmessereinstellung 2 Durchmesser Einstellung 2 Durchmessereinstellung 3 Durchmesser Einstellung 3 Durchmessereinstellung 4 Durchmesser Einstellung 4 Durchmessereinstellung 5 Durchmesser Einstellung 5 Durchmessereinstellung 6 Durchmesser Einstellung 6 Durchmessereinstellung 7 Durchmesser Einstellung 7 Durchmessereinstellung 8 Durchmesser Einstellung 8

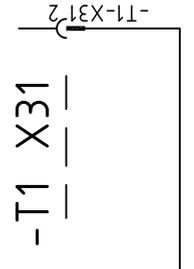
diameter setting 1 diameter setting 2 diameter setting 3 diameter setting 4 diameter setting 5 diameter setting 6 diameter setting 7 diameter setting 8  
 Réglage diamètre 1 Réglage diamètre 2 Réglage diamètre 3 Réglage diamètre 4 Réglage diamètre 5 Réglage diamètre 6 Réglage diamètre 7 Réglage diamètre 8

Datum		24.06.22		X9 solenoid valves		turbo 5-65 V Serie 2	
Bearb		Reitz		X9 Vannes		Blatt 47	
Gepr.		Reitz		Ers.f.		Folge 49	
Aenderung		Datum		Name		Urspr	
1		2		3		4	
				Magnetventile		10612_003	
				X9		Blatt 47/402	
				FMB		10612_003	
				MACHINENBAU		10612_003	

-X1  
-T1

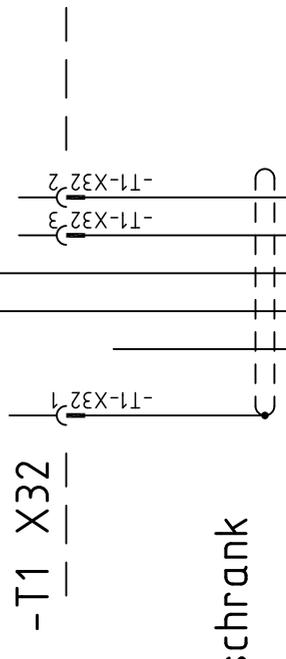
Klemmleiste  
terminal

51.3  
+

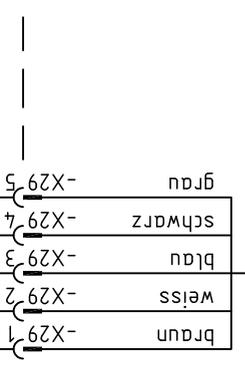


Schaltschrank

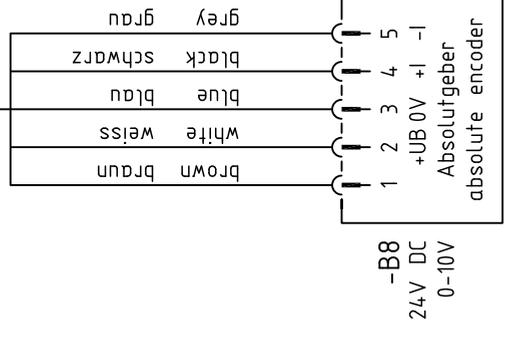
55.3 75.3  
+ -



Schaltschrank



-X29



Drehrichtungs Umschaltung:

bei Ausführung B/C

Eingang beschalten

version B/C

B/C

Datum	13.06.22
Bearb	Straub
Gepr.	Straub
Aenderung	Name
Datum	Norm
Name	DIN5
Urspr	DIN5
Urspr	DIN5
Urspr	DIN5

encoder -B8 / rotation B/C  
Convertisseur -B8

**FMB**  
MASCHINENBAU

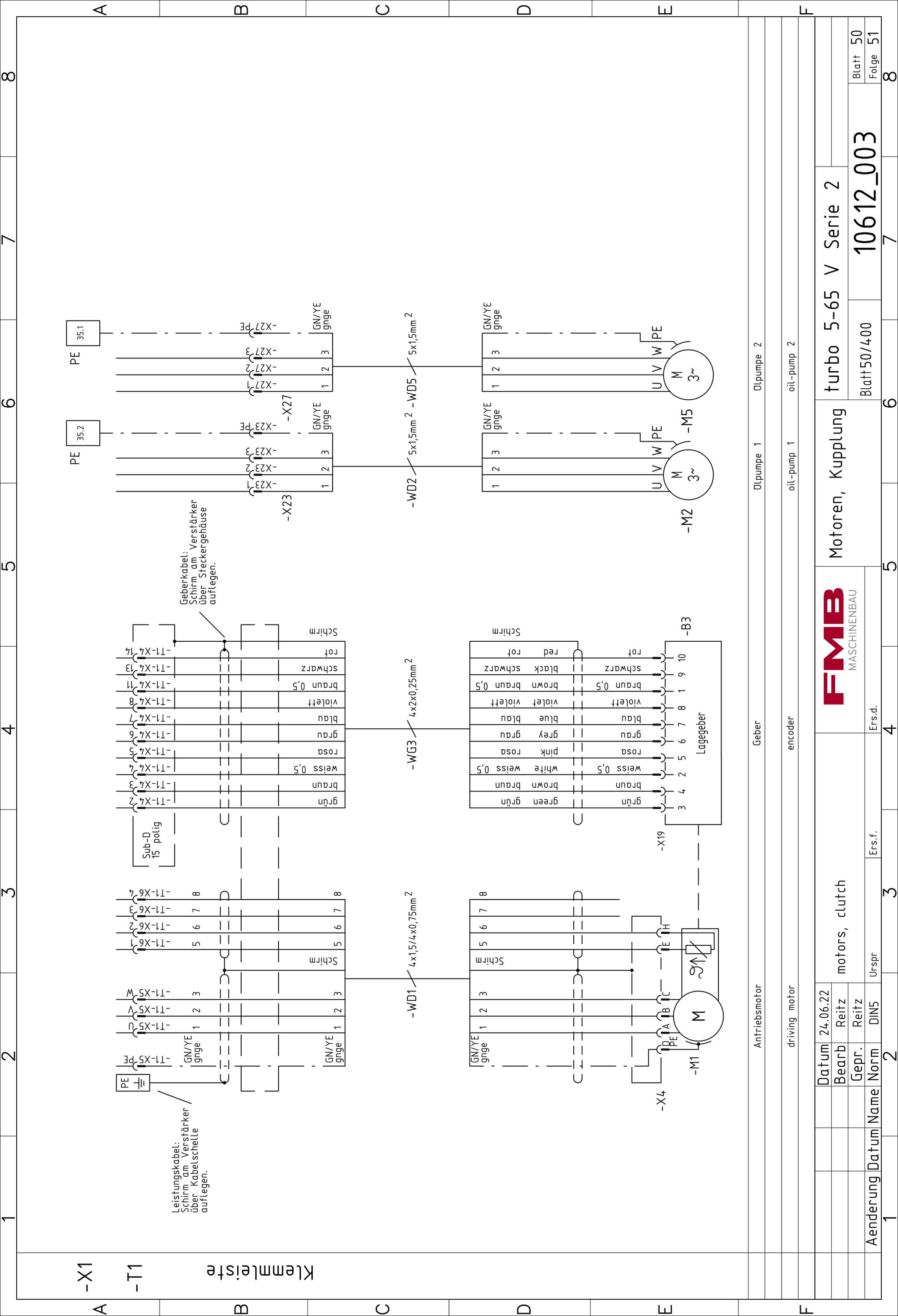
Geber -B8

Umschaltung B/C

turbo 5-65 V Serie 2

Blatt 49  
Folge 50

10612\_003



Leistungskabel:  
Schirm am Verstärker  
über Kabelschelle  
auflegen.

Gebetskabel:  
Schirm am Verstärker  
über Steckergehäuse  
auflegen.

Sub-D  
15 polig

turbo 5-65 V Serie 2

Blatt 50  
Folge 51

Blatt 50/400

10612\_003



Motoren, Kupplung

Datum	24.06.22
Bearb	Reitz
Gepr.	Reitz
Aenderung	DIN5

Ers.f.

Urspr

motors, clutch

Antriebsmotor

driving motor

Geber

encoder

Ölpumpe 1

oil-pump 1

Ölpumpe 2

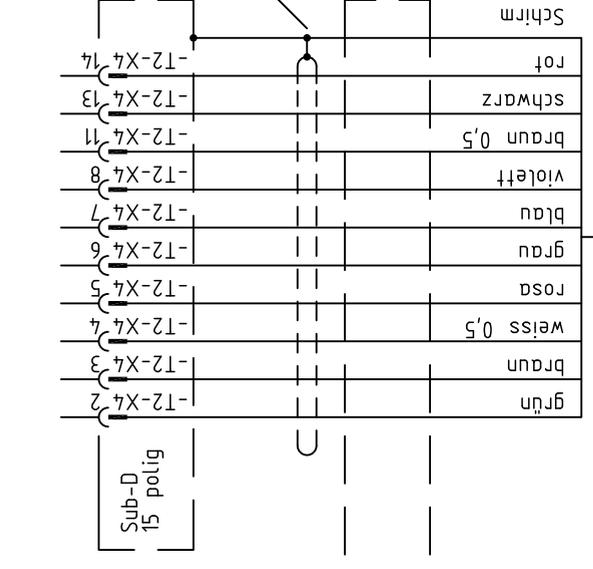
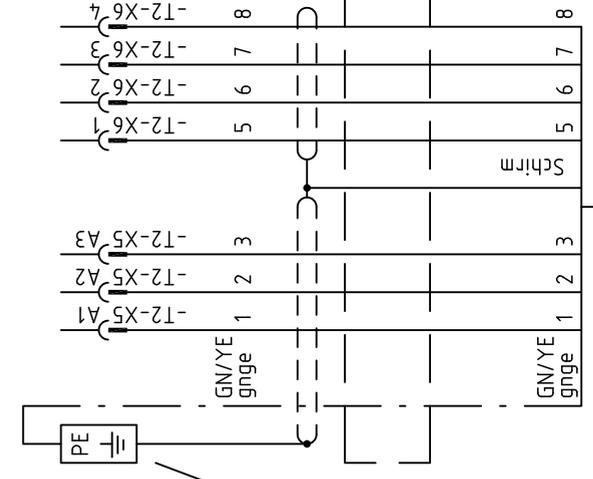
oil-pump 2

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

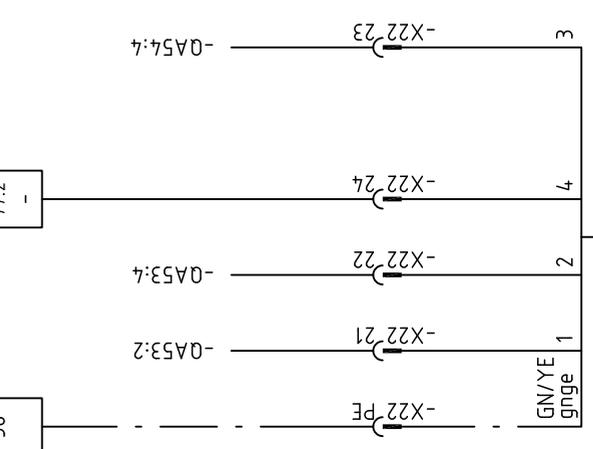
Blatt 50	8
Folge 51	8

# Klemmleiste

-T2  
Leistungskabel:  
Schirm am Verstärker  
über Kabelschelle  
auflegen.



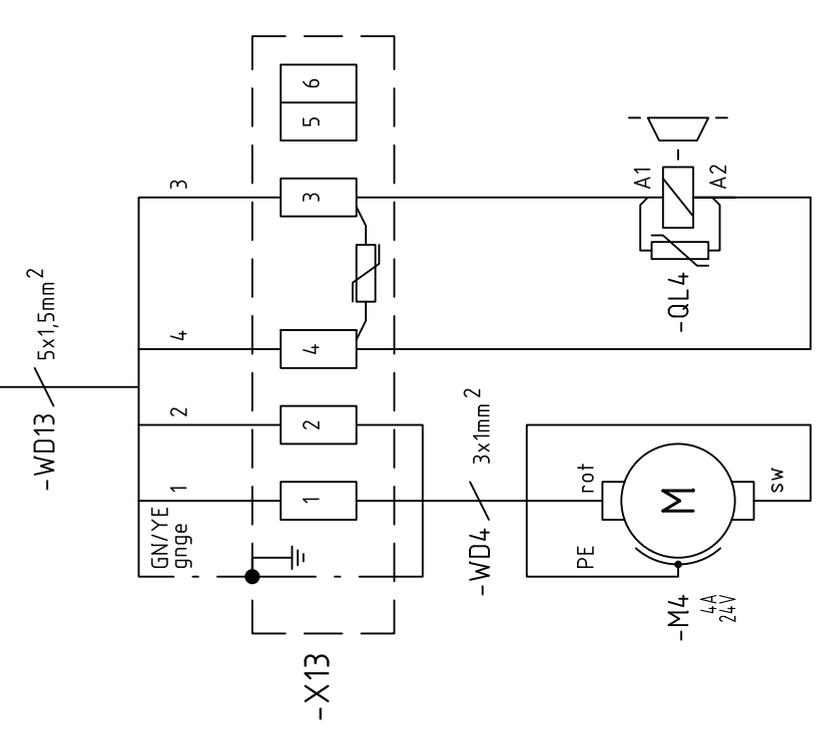
Geberkabel:  
Schirm am Verstärker  
über Steckergehäuse  
auflegen.



-WD3 4x1,5/4x0,75mm<sup>2</sup>

-WG2 4x2x0,25mm<sup>2</sup>

-WD13 5x1,5mm<sup>2</sup>



Motor  
Durchmessereinstellung  
motor diameter setting  
Moteur réglage diamètre

Geber  
encoder  
Encodeur

Motor Vereinzelung  
Durchmessereinstellung  
motor material separation diameter setting  
Moteur séparation réglage diamètre

Bremse  
brake

Datum		13.06.22	
Bearb		Straub	
Gepr.		Straub	
Aenderung		Name	
1	DIN5	Urspr	Motors
	Ers.f.		Ers.d.

Motor		turbo 5-65 V Serie 2	
Motoren		10612_003	
motors		Blatt51/00	
		Blatt 51	
		Folge 52	

Date		13.06.22	
Prep		Straub	
Appr		Straub	
Change		Name	
1	DIN5	Urspr	Motors
	Ers.f.		Ers.d.

Date		13.06.22	
Prep		Straub	
Appr		Straub	
Change		Name	
1	DIN5	Urspr	Motors
	Ers.f.		Ers.d.

Date		13.06.22	
Prep		Straub	
Appr		Straub	
Change		Name	
1	DIN5	Urspr	Motors
	Ers.f.		Ers.d.

Date		13.06.22	
Prep		Straub	
Appr		Straub	
Change		Name	
1	DIN5	Urspr	Motors
	Ers.f.		Ers.d.

Date		13.06.22	
Prep		Straub	
Appr		Straub	
Change		Name	
1	DIN5	Urspr	Motors
	Ers.f.		Ers.d.

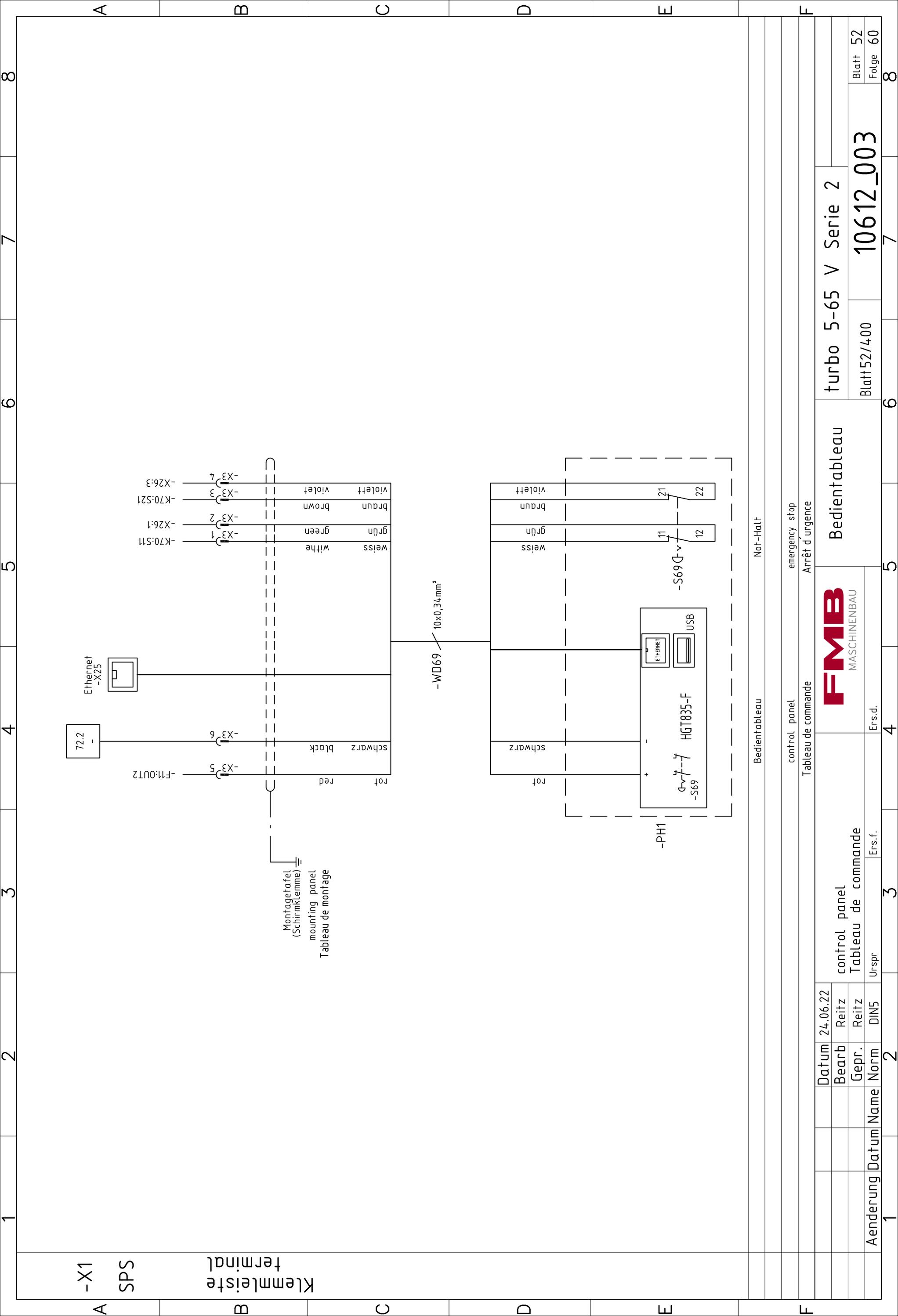
Date		13.06.22	
Prep		Straub	
Appr		Straub	
Change		Name	
1	DIN5	Urspr	Motors
	Ers.f.		Ers.d.

Date		13.06.22	
Prep		Straub	
Appr		Straub	
Change		Name	
1	DIN5	Urspr	Motors
	Ers.f.		Ers.d.

Date		13.06.22	
Prep		Straub	
Appr		Straub	
Change		Name	
1	DIN5	Urspr	Motors
	Ers.f.		Ers.d.

Date		13.06.22	
Prep		Straub	
Appr		Straub	
Change		Name	
1	DIN5	Urspr	Motors
	Ers.f.		Ers.d.

Date		13.06.22	
Prep		Straub	
Appr		Straub	
Change		Name	
1	DIN5	Urspr	Motors
	Ers.f.		Ers.d.



-X1  
SPS

Klemmleiste  
terminal

Montagetafel  
(Schirmklemme)  
mounting panel  
Tableau de montage

-WD69 10x0,34mm<sup>2</sup>

-PH1

9v7-7 HGT835-F  
-S69

ETHERNET  
USB

-S69 v

11 12

21 22

rot  
schwarz

weiss  
grün  
braun  
violett

weiss  
grün  
braun  
violett

-X3 1  
-X3 2  
-X3 3  
-X3 4

-K70:S11  
-X26:1  
-K70:S21  
-X26:3

-X3 5  
-X3 6

rot  
schwarz

-F11:OUT2

Bedientableau

Not-Halt

control panel

emergency stop

Tableau de commande

Arrêt d'urgence

Datum 24.06.22

Bearb Reitz

Gepr. Reitz

Norm DIN5

Urspr

control panel

Tableau de commande

Ers.f.

Ers.d.

**FMB**  
MASCHINENBAU

Bedientableau

turbo 5-65 V Serie 2

Blatt 52/400

10612\_003

Blatt 52

Folge 60

2

3

4

5

6

7

8

1

2

3

4

5

6

7

8

A

B

C

D

E

F

A

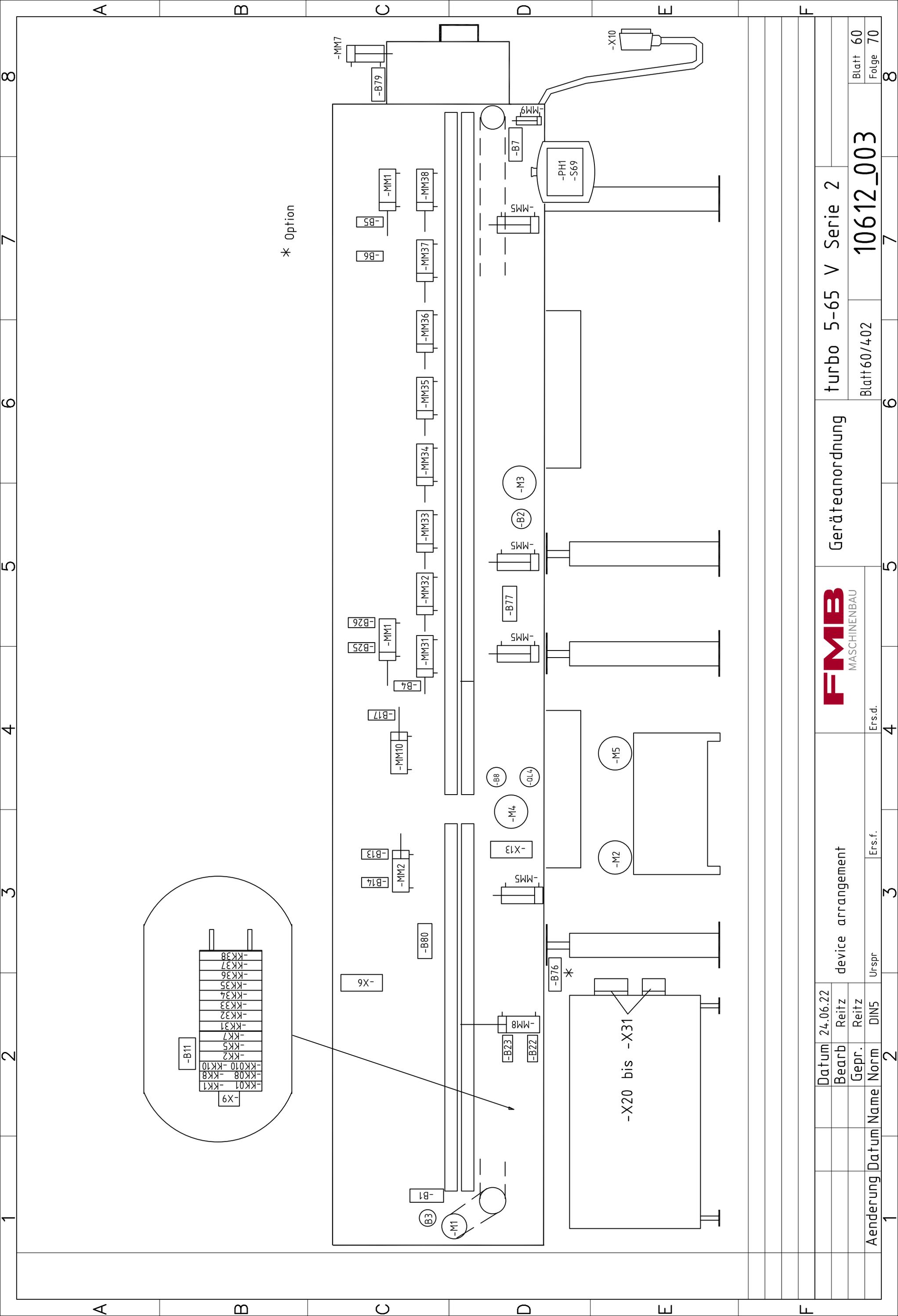
B

C

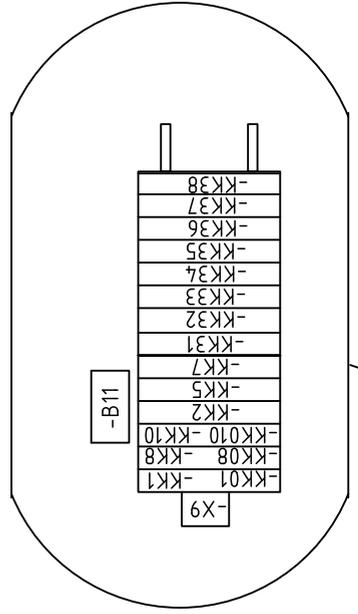
D

E

F



\* Option



turbo 5-65 V Serie 2



device arrangement

Datum 24.06.22

Aenderung Datum Name Norm

Blatt 60	10612_003	6	5	4	3	2	1
Folge 70				Ers.d.	Urspr		