Translation of the Original Operating Instruction
Eyeletting Machine

Model	**102 - 50**
Part no.	**706 - 0043**
Eyelet	**24 / 25**
☞	For future use, take note and keep on hand with the Eyeleter.

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Your help is important to us:

We endeavour to continuously improve our products and their design safety. This also includes the operating manual.

Please inform us about any deficiencies or errors that you may notice in relation to our products.

English edition, as of February 2021

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This manual has been printed on reduced-chlorine bleached, wood-free paper.

1 Table of contents

Table of contents

2 Introduction

2.1 Eyeletting machine equipment

- Operating manual
- Tool
- Foot switch (optional)

Note

The tool bag is included in the cardboard box which the eyeletting machine is delivered in.

2.2 Explanation of symbols

[1]	*Parts numbers detailed in the images are shown in squared parenthesis. The images can be found in the corresponding chapters. Subsequently detailed parts which are no longer listed will be taken as read.*
[7/6.3.1]	*In this example, component [7] is referred to in image (6.3.1).*
● / –	*Lists are marked by means of dots or indent markings for a paragraph.*
❋ / ✳	*These symbols are used to describe actions.*
★	*This symbol is used to identify actions that are described in a different section of the operating manual.*
⇒	*Arrows are used to identify automatic processes or situations that should adjust automatically.*

3 Safety regulations

3.1 Basic safety regulations

The eyeletting machine corresponds to the applicable safety regulations and standards. These are listed in the Declaration of Conformity in accordance with EC Machinery Directive 2006/42 EC.
Please also observe the national guidelines and laws as well as the accident prevention regulations, in particular:

- Electrical plants and equipment (VBG 4 in Germany)
- Power tools (VBG 5 in Germany)
- Riveting machines (VBG 13 in Germany)

Instruction

Individuals who are involved in the transport, installation, operation, maintenance, repair and disposal of the eyeletting machine must be instructed on how to perform these activities or have been trained specifically for these activities and know the potential hazards.
We recommend that you have participation in instruction sessions confirmed in writing by the personnel concerned. You can make use of the form in the appendix.

Operating manual

The operating manual

- is a component of the machine.
- must be provided when the machine is sold or hired out.
- must be stored near the machine in a location that is close to hand so it can be used regularly until the machine is disposed of.

Faults

- Never use the eyeletting machine if it is in a defective condition.
- Report faults or other damage to the individual in charge immediately.
- Safeguard the eyeletting machine against misuse or accidental use.
- Only qualified specialists are permitted to carry out repairs.
- Never bridge or bypass protective and safety equipment.
- Dismantled safety equipment must
  - be replaced before recommissioning and
  - checked to ensure that it is functioning correctly.

3.2 Intended use

- The eyeletting machine has been designed exclusively for inserting eyelets into unpunched paper stacks (documents / certificates).
- The eyeletting machine has been designed for the domestic and commercial sectors in accordance with EMC law.
- The level of immunity to interference is too low for the industrial sector – the machine could be destroyed.

Materials

Eyelet	Internal diameter of 3 mm to 6 mm
Paper stack	Certificates ; documents ; the height of the paper stack to be processed is based on the length of the eyelet

Any use that deviates from the conditions specified above will be considered an improper use.

Note

If the machine

- *is used incorrectly,*
- *is incorrectly maintained or*
- *is incorrectly operated,*

the manufacturer will accept no responsibility for any resulting damage. In this case, the user alone shall bear the risk.

Important

Only the eyelet type for which the machine was built can be processed. The eyelet feed with container, as well as possibly also cylinder and punch, must be adjusted so that other eyelets can be processed. Contact Customer Service at Hang for this purpose.

Examples of improper use

Riveting of:

- plastics,
- unpunched, metallic materials and
- textiles.

3.3 Safety information

 Warning	*Warning of impending danger which could lead to serious injury or death.*
 Caution	*Caution due to an impending risk which could lead to minor injuries. This signal word may also be used for warnings related to property damage.*
 Important	*For a possible situation which could lead to damage to the product or property in its vicinity.*
 Note	*Indicates usage notes and other useful information.*

3.4 Workstation

The worktop and chair must meet ergonomic requirements.
Subject to the scope of the work, the operator sits or stands freely in front of the eyeletting machine when loading the paper stack.

3.5 Authorised operators

Operation:	all individuals over the age of 16
Maintenance:	Skilled workers (e.g. industrial mechanics)
Repair:	
Mechanical system	Skilled workers (e.g. industrial mechanics)
Electrical system	Electrical specialists (e.g. industrial electricians)
Disposal:	Skilled workers

3.6 Emergency procedures

Press the toggle switch [7/6.2.1] and remove the mains plug.
Only ABC extinguishers may be used to extinguish fires involving the eyeletting machine.

3.7 Residual risks

The eyeletting machine is equipped with protective equipment.
However, the following residual risks are inevitable:

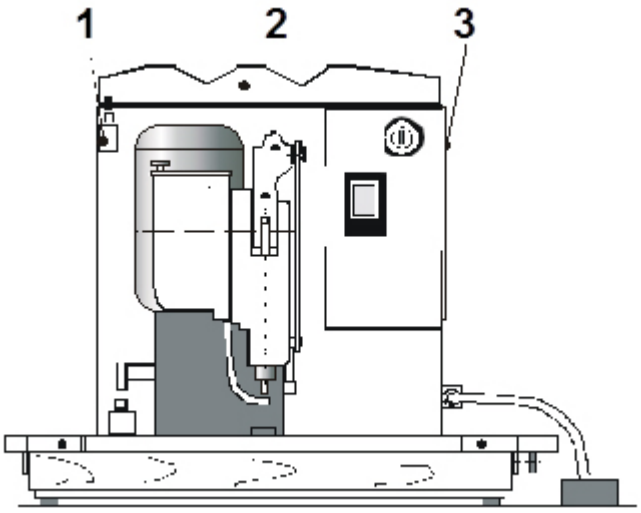


Image 3.7.1 Residual risks

Warning

***Risk of crushing** fingers with the tool.*

- *Only ever operate the eyeletting machine when the protective hood is completely closed [2].*
- *Never manipulate the safety limit switch [1].*

Warning

***Risk of crushing** fingers beneath the falling protective hood.*

- *Close the protective hood [2] in such a way that your fingers cannot become trapped in the housing.*

Warning

***Risk to life due to electric shock** when carrying out repairs on switches, cables or when the protective hood is open [3].*

- *Prior to performing repair work, set the toggle switch to "OFF" and remove the mains plug.*
- *These activities may be performed by a skilled electrician only.*

3.8 Protective equipment

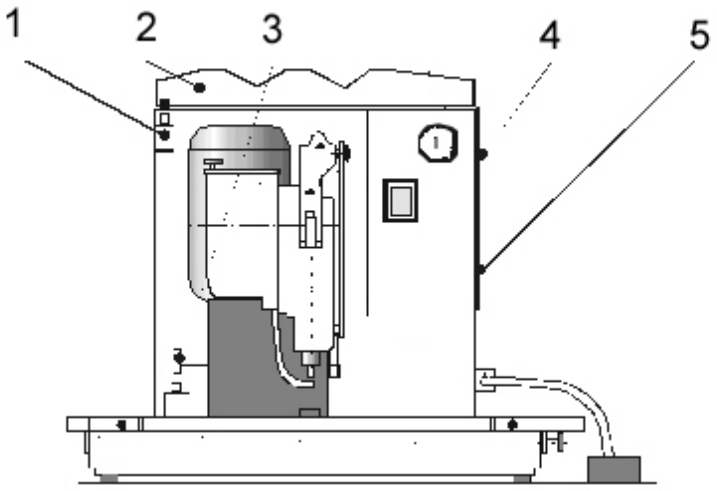


Image 3.8.1 Protective equipment

Pos.	Protective equipment	Function	Inspection
1	Safety limit switch	Prevents the gear motor from starting up when the protective hood is open. If the protective hood is opened, this causes the eyeletting machine to stop immediately.	Weekly functional inspection - Must be screwed down tightly at all times
2	Protective hood	Prevents access to the danger zone	Visual inspection - Must be closed at all times
3	Proximity switch	Switches the gear motor off after each work cycle.	Self-checking - Does not stop in the event of a defect - Overruns the stopping point (continuous operation)
4	Warning sign	“Danger of death from high voltage!”	Visual inspection - Must be present
5	Cover plate	Prevents life-threatening contact between live parts.	Visual inspection - Must be screwed down tightly

4 Transport and installation

4.1 Safety regulations


Warning

Risk of falling

This can result in serious injuries.

- *Please note the warnings on the overpack*
- *Carry out all the tasks taking into account the "Safety regulations" chapter.*
- *Always use suitable transport equipment.*

4.2 Damage during transport

- ❋ Check the cardboard box for external damage.
- ❋ Open the cardboard box.
- ❋ Check that the delivery is complete and undamaged, see the section “Equipment” in the “Introduction” chapter regarding this.
- ❋ If it is apparent that there is damage due to transport or the delivery is incomplete, report this to the forwarder or Hang immediately.

4.3 Interim storage

If the eyeletting machine has to be stored for an intermediate period, this should preferably be done in the original packaging. The following points apply to the storage space:

- Store only in dry, indoor rooms.
- Observe the chapter “Design and function - technical data”.

4.4 Installation

- ❋ First of all, carefully read the chapter “Safety information” and “Operation” of the operating manual.
- ❋ Place the eyeletting machine on a table or worktop.

  ⇒ The distance between the eyeletting machine and the mains socket must not exceed 2 m.

  ⇒ There must be enough space at the side to store the documents.

5 Design and function

5.1 Technical data

General data	
Space requirement L x W x H	500 mm x 540 mm x 355 mm
Working height	Dependent on the table height
Weight	36 kg
Cycle time	0.5 s
Riveting pressure	max. 0.2 t
Work area	
Internal diameter of eyelet	3 mm to 6 mm
Paper stack thickness	Depends on length of eyelet, however, max. 35 sheets (80 g/m²)
Radius max.	60 mm
Power supply	
Mains voltage	230 V
Frequency	50 Hz
Power consumption	200 W
Ambient conditions	
Storage temperature	-5 C° to +55 C°
Operating temperature	+5 C° to +40 C°
Installation site	Office premises protected against dew point, free of dust, horizontal and even
Working height	Min. 750 mm
Environmental impact	
Sound pressure level	71 dB(A) peak value as defined in EN CEN TC 198 WG 3 N 14 DEF - J.11.6 - KL 3

5.2 Structural design

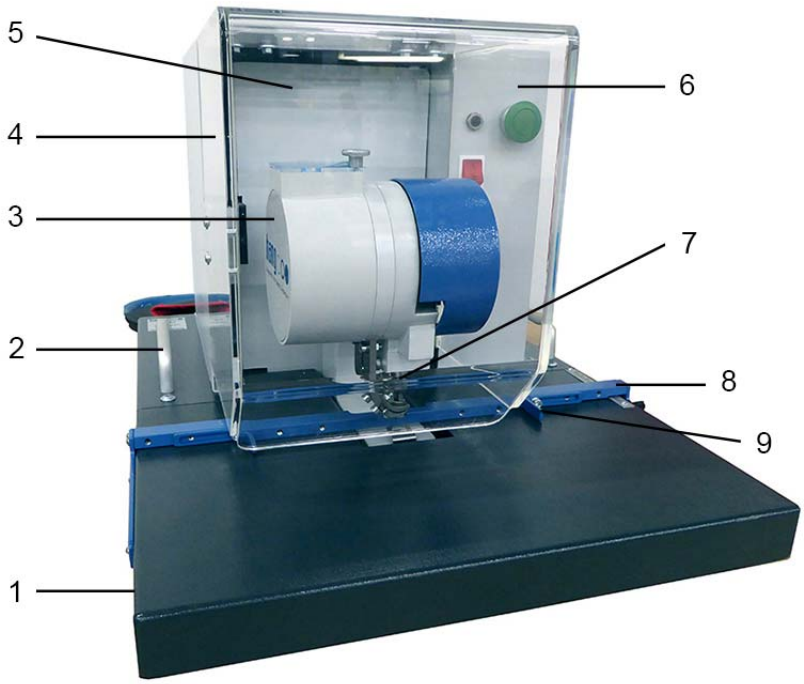


Image 5.2.1 Structural design of the eyeletting machine

Pos.	Structural component	Function
1	Table surface	Placement area for the paper stack to be punched
2	Handles	Attachment points for transportation without packing
3	Feeding device	Automatic feeding of eyelets
4	Protective hood	Guard
5	Gear motor (hidden)	Drives the eyeletting machine
6	Electrical system (switch box)	Controls the sequence of operations
7	Eyeletting tool	Takes up the eyelet and rivets the paper stack
8	Rear stop	Holds the paper stack in place
9	Lateral stop	Holds the paper stack in place

5.3 Function

- The eyelets are held in the storage container of the feeding device [3/5.2.1].
- This moves the eyelets out of the storage container in the correct position and into the feed channel. The eyelets are buffered in the feed channel and then fed to the eyeletting tool.
- The gear motor drives the crank handle which, together with the rod, moves the lever arm up and down.
- The lever arm is equipped with a strap and a gear segment.
- The strap transfers the force to the cylinder. At the other end of the cylinder is the upper punch with catch pin which presses in and rivets the eyelet.

5.3.1 Work procedure

⇒ The riveting process creates a non-detachable, frictional, load-bearing connection between the parts being joined (e.g. paper stack) by reshaping the eyelet.

⇒ Reshaping is carried out by pressing the tool onto the eyelet.

⇒ The upper punch introduces the eyelet and cuts through the paper stack.

⇒ The lower punch reshapes the lower end of the eyelet (see image below). The upper punch moves back and releases the eyelet connection.

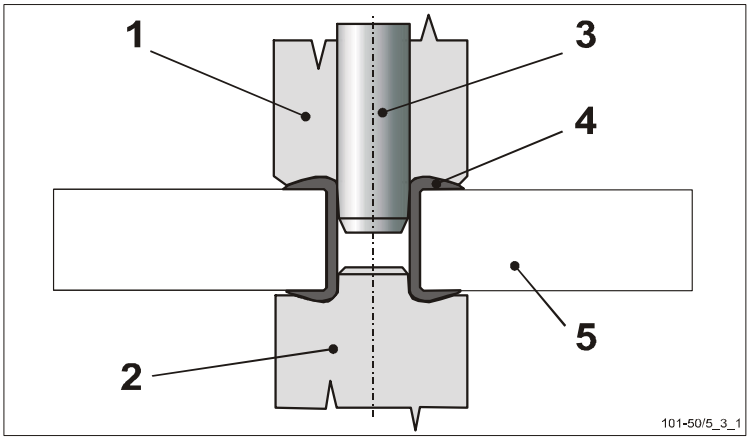


Image 5.3.1 Eyelet connection

1 Upper punch
2 Lower punch
3 Catch pin
4 Eyelet
5 Paper stack

6 Operation

6.1 Safety regulations

Warning

- *Check all of the safety equipment prior to initial commissioning.*
- *The eyeletting machine may only be operated by trained, instructed persons over the age of 16.*
- *Carry out a test run after each change to the settings.*
- *Carry out all the tasks taking into account the "Safety regulations" described in chapter 2.*

6.2 Controls

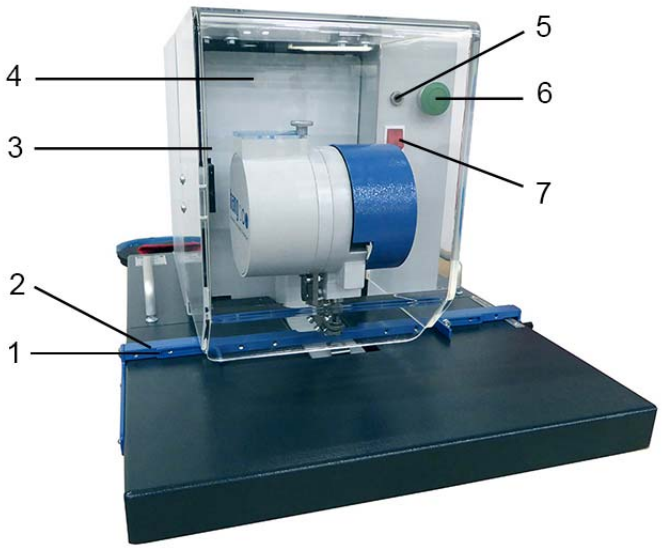


Image 6.2.1 Controls

Pos.	Control	Function
1	Lateral stop	Positions the paper stack for eye punching
2	Rear stop	Positions the paper stack for eye punching
3	Protective hood (pivoting)	Safeguards the hazard zone
4	Cover	
5	Palm button (fuse)	Protects the motor against an overload
6	Pushbutton	Triggers a work cycle
7	Toggle switch	"ON" and "OFF" switch

6.3 Preparation for operation

- Plug the eyeletting machine's mains plug into the socket.
- Fold the protective hood [3/6.2.1] up.
- Adjust the rear and lateral stop [1./6.2.1] [2/6.2.1] in such a way that the document is punched at the correct position.

6.3.1 Foot switch / manual operation

Note

If you are operating the eyeletting machine without a foot switch, you must connect the jumper [1] to the plug coupling [2] of the foot switch.

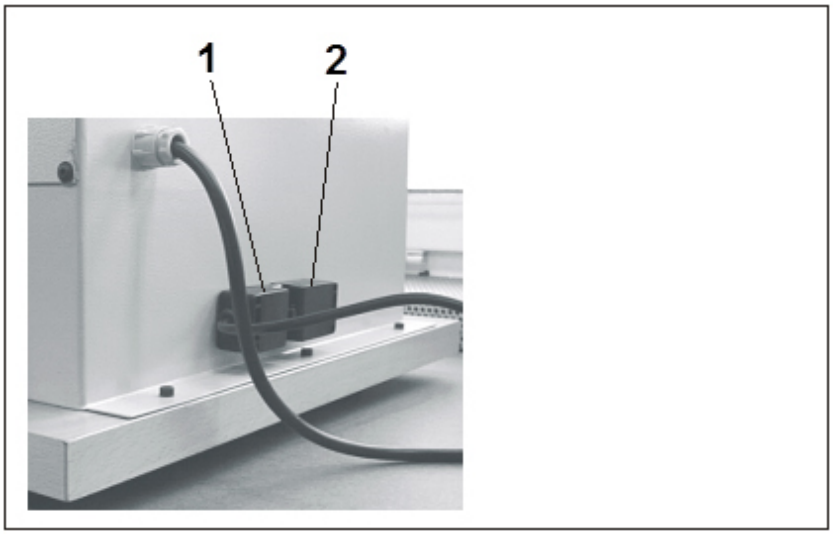


Image 6.3.1 Jumper for manual mode

6.3.2 Refilling with eyelets

Note

Ensure that there are eyelets available in the storage container at all times.

Only fill up with eyelets up to the bottom edge of the container axis.

- ❋ Fold the protective hood [3/6.2.1] up.
- ❋ Remove the knurled screw [2] and slide the cover plate [1] to the side.
- ❋ Fill the storage containers [3] no further than the container axis. Always use the specified eyelets.
- ❋ Close the filling port using the cover plate [1] and lock the cover plate with the knurled screw [2].
- ❋ Fold the protective hood [3/6.2.1] down.

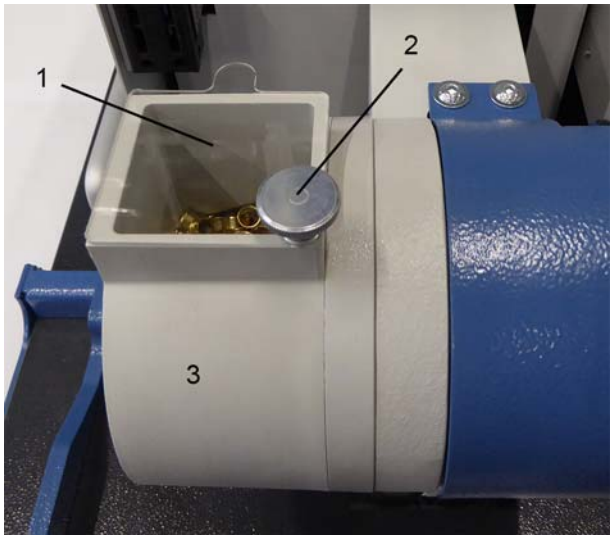


Image 6.3.2 Filling port for eyelet

6.4 Use during operation

6.4.1 Switching on

- ❋ Set the toggle switch [7/6.2.1] to "ON".
  ⇒ The control lamp in the toggle switch lights up.

6.4.2 Inserting eyelets

- ❋ Push the documents to be eyeletted against the stops [1/6.2.1] [2/6.2.1].
- ❋ Initiate the eyeletting process by pressing the pushbutton or the foot switch (optional).
  ⇒ A work cycle takes place automatically.

6.4.3 Switching off

Wait until the eyeletting machine has completed the operating cycle.

❋ Set the toggle switch [7/6.2.1] to "OFF".

“Switching off" as described above is sufficient for breaks, the end of the working day, weekends, and interruptions of work lasting up to a week.

❋ Pull the mains plug out of the mains outlet in the event of longer work interruptions.

6.4.4 In case of emergency

❋ Press the toggle switch [7/6.2.1] (e.g. in an "emergency stop situation" or during set-up).

⇒ The motor remains in an indefinite position.

❋ Press the pushbutton before starting work after set-up or fault removal.

⇒ The eyeletting machine moves to its home position.

6.5 Changing the riveting pressure

❋ Test the eye punch (as you would when “Introducing eyelets”).

If the pressure exerted by the punch is too high or too low, it will need to be recalibrated.

Warning

***Danger** from operational eyeletting machine.*

- *Risk of hand injuries.*
- *Set the toggle switch to "OFF" before commencing work.*
- *Secure the eyeletting machine against restarting (e.g. remove the mains plug).*

6.5.1 Setup

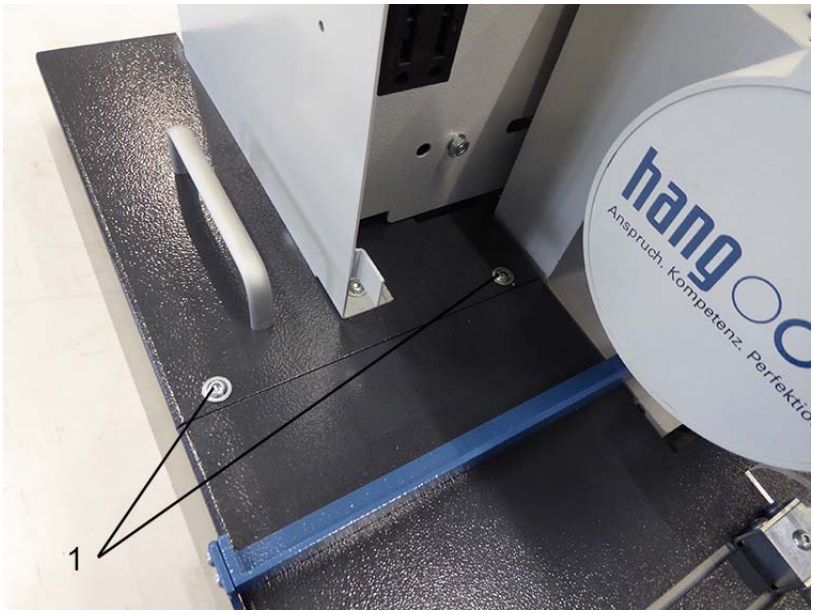
* Setup

“Switch off the eyeletting machine”

❋ Secure the eyeletting machine to prevent it from restarting (remove the mains plug).

❋ Pull the eyeletting machine forwards so it sits approximately 130mm beyond the edge of your work table.

❋ Fold the protective hood [3 / 6.2.1] up.



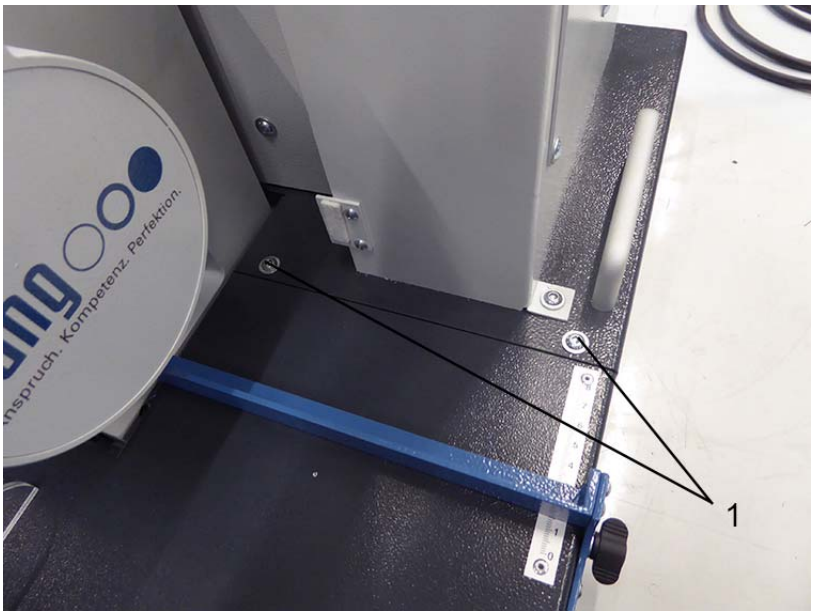


Image 6.5.1 Pressure setting

❋ Remove the four screws [1/6.5.1] using a hexagon key.

Image 6.5.2 Pressure setting

❋ Carefully pull the worktop [1/6.5.2] forwards, remove it and set it to one side.

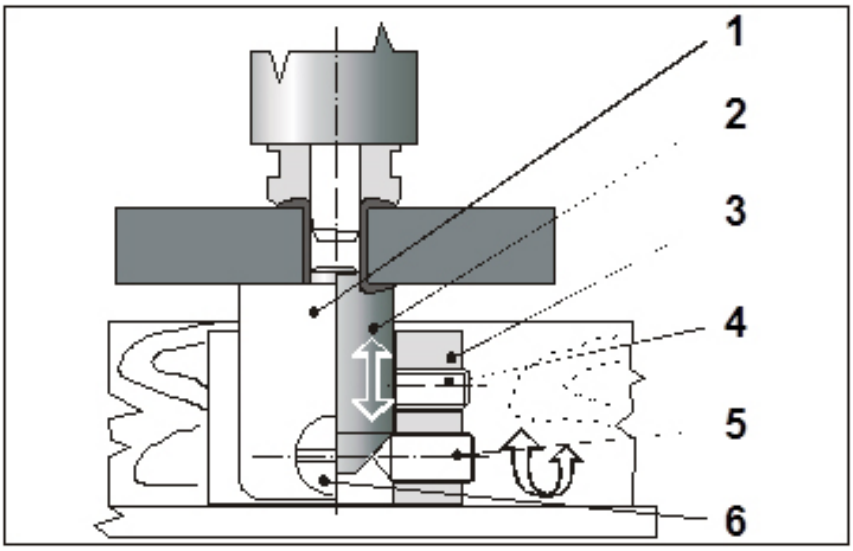


Image 6.5.3 Pressure setting

- Slacken the screw [4] on the lower punch.
- Turn the adjusting screw [5] relative to the length of the eyelet
  - To the right - lower punch moves upwards - riveting pressure increases.
  - To the left - lower punch moves downwards - riveting pressure decreases.
- Re-tighten the screw [4] on the frame [3].
- Close the protective hood and test the eye punch (follow the instructions in the “Operation” chapter).
- Reattach the worktop.

6.6 Adjusting the stops

6.6.1 Adjusting the rear stop

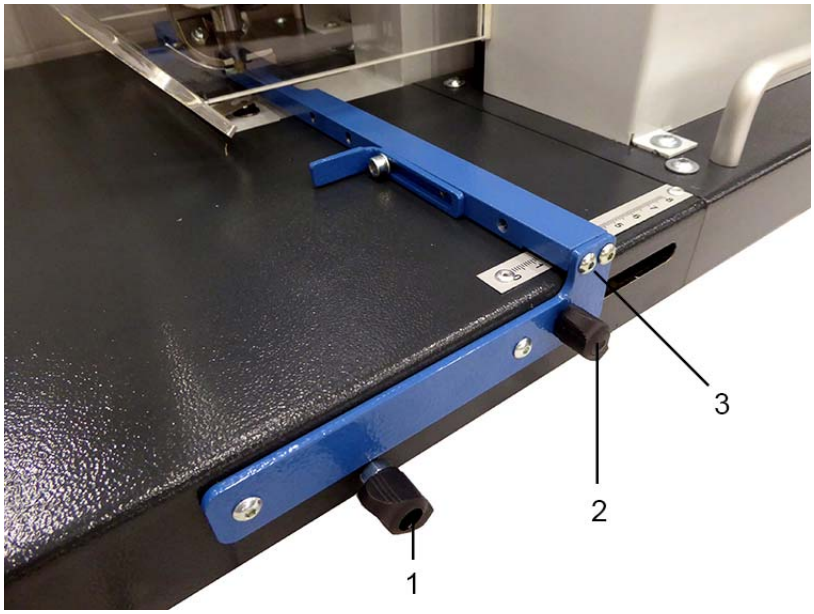


Image 6.6.1 Adjusting the rear stop

- Loosen the wing grip [2] and set the distance by sliding the rear stop [3] down using the wing grip [1].
- Then re-tighten the wing grip [2]

6.6.2 Adjusting the lateral stop

Image 6.6.2 Adjusting the lateral stop

- Loosen the Screw [1] and set the distance by sliding the side stop [2].
- Then re-tighten the Screw [2].

7 Maintenance

This chapter provides you with important information on maintaining the desired state and operational capability of the product.
This entails:

- Increasing the degree of utilisation by preventing downtime.
- Scheduling maintenance work.

7.1 Safety regulations

Warning

Maintenance work on the eyeletting machine must only be carried out by suitably trained personnel.

Follow all of the safety instructions listed in Chapter 3.

7.2 Maintenance and inspection list

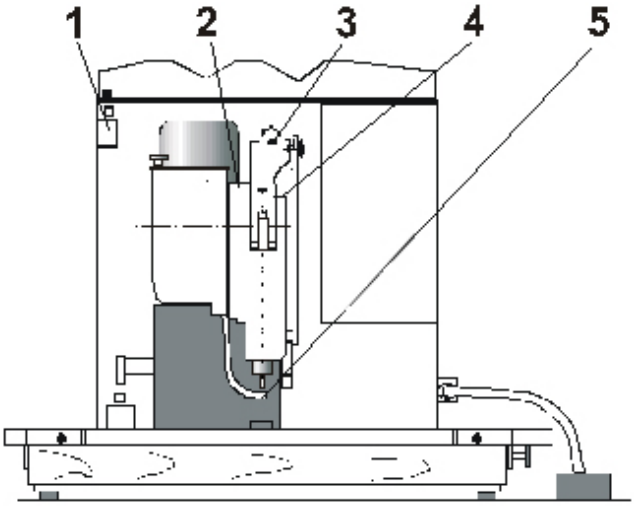


Image 7.2.1 Maintenance plan

Pos. no.	Maintenance interval (in operating hours)	Inspection point / maintenance information	Auxiliary materials (tab. below)
1	Daily prior to starting	Check that the components are functioning correctly as described in the "Protective and monitoring equipment" chapter.	
2	40 h	Oil gear segment	Oil (L-AN)
3	40 h	Oil bearing point	Oil (L-AN)
4	40 h	Oil cylinder guides	Oil (L-AN)
5	1 000 h	"Cleaning the feed channel", see paragraph 7.3	

7.2.1 Lubrication

Carry out the work for the first time or if you are unsure about the location of the lubrication points, refer to image 7.2.1 .
It informs you of the exact position of the lubrication points.

Recommended lubricants:

	Designation in accordance with DIN 51 502	ARAL	BP	ESSO	SHELL	MOBIL	DEA
Machine oil	L-AN	Dural MR 68	Energol EM 68	Coray 68	Carnea 68	Heavy Medium	Viscoma 68

Dispensing oil:

- Oil each of the lubrication points with one or two drops of oil.
- Remove the excess oil with a rag.
- Dispose of the cloth in an environmentally friendly manner.

Image 7.2.2 Lubrication points

7.3 Cleaning the feed channel

Important

The feed channel has been especially adjusted for the preferred eyelet type of the customer.

- *For this reason, do not unscrew the feed channel.*
- *Keep this feed free of oil and grease.*

★ “Switch off the eyeletting machine”, see Chapter “Operation – Switch off”

❋ Secure the eyeletting machine to prevent it from restarting (remove the mains plug).

❋ Remove the eyelets, see Chapter 9.3 “Emptying storage containers” here.

⇒ No eyelets [2] may be in the feed channel [1] during cleaning.

❋ Saturate a dry, clean, lint free cloth with cleaning solvent.

❋ Insert a small part of the cloth in the gaps of the feed channel, and then move it through the entire length of the feed area.

❋ Repeat the process several times until there are no more deposits to be seen on the cloth.

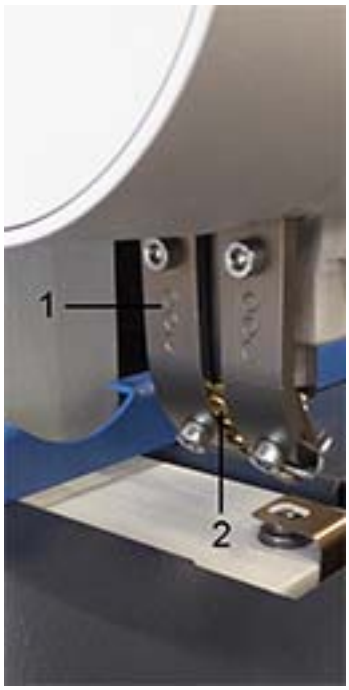


Image 7.3.1 Feed channel

8 Faults

This chapter describes all of the causes of faults we are aware of and how to rectify them.

Warning

Faults on the eyeletting machine must only be rectified by a mechanic or industrial electrician.

Follow all of the safety instructions listed in Chapter 1.

Pos.	Fault	Cause	Remedy
1	The eyeletting machine does not start up when pushbutton [6/6.2.1] is pressed	No power supply	❋ Check that the mains plug is connected or if the on-site fuse is defective.
		Motor overload	Motor protecting switch has tripped. Eliminate fault - see under pos. 3 -
		Protective hood is open	❋ Close the protective hood [3/6.2.1].
2	No eyelet in document	Eyelet storage container is empty	❋ Fill the storage container with the same type of eyelet in the manner detailed in the “Operation” chapter.
		Eyelet feed disrupted	See the chapter “Maintenance -Emptying storage containers”. ❋ Remove all deformed eyelets or other types of eyelet.
		Bristle disk is worn out	See the chapter “Repair - replacing the bristle disk”.
		Feed channel is contaminated	❋ Perform all of the instructions described in the chapter “Maintenance - Cleaning the feed channel”.
3	Jamming due to motor overload	Overly thick or unsuitable stack of documents	❋ Press the toggle switch [7/6.2.1]. ❋ Insert the screwdriver through the bore in the housing and into the screw slot. ❋ Turn the motor shaft until the eyeletting machine is no longer jammed. ❋ Remove the stack of documents from the tool.
4	Home position is overrun	Controller fault or defective limit switch	❋ Check the controller using the electrical system circuit diagram. ❋ Replace the proximity switch or remaster the proximity switch and cam on the drive unit.

9 Repairs

9.1 Safety regulations

Warning

*Dangerous if **personnel are not properly trained**.*
Death by electrical shock or very serious injuries can result.

- *Faults on the eyeletting machine must be rectified and repairs carried out only by an authorised mechanic or electrician.*
- *If components or modules are repaired or functional processes modified which are not described here, then the guarantee will be voided and Hang will accept no liability for the functional capability or safety of the eyeletting machine.*
- *Always switch the eyeletting machine off before beginning repair work and secure the eyeletting machine to prevent it from being switched back on (e.g. pull out the mains plug).*

Warning

*Danger due to inadequate **spare parts**.*
Severe injuries to the operating personnel. Malfunction or damage to the eyeletting machine possible.
Only ever use genuine Hang spare parts.

Carry out all the tasks taking into account the "Safety regulations" described in chapter 1.

9.2 Tool change

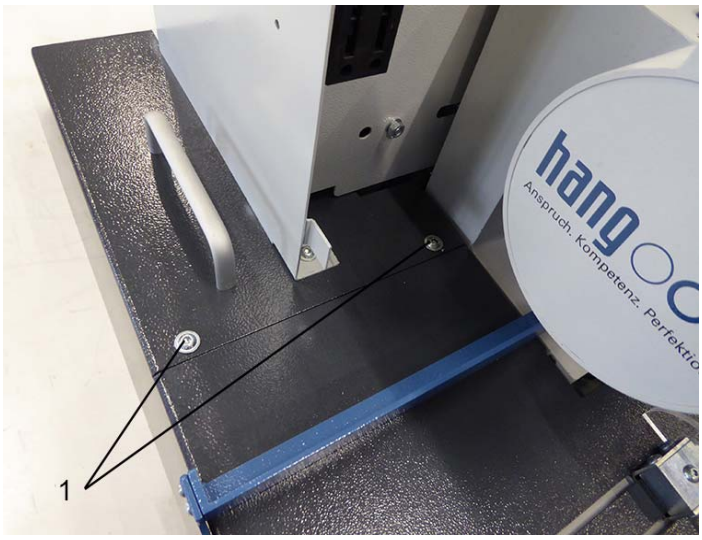
Important

Due to a lack of space, the lower punch must always be removed first when the tool is changed.

Removing the lower punch

* “Switch off the eyeletting machine"

- Secure the eyeletting machine to prevent it from switching on (remove the mains plug).
- Pull the eyeletting machine forwards so it sits approximately 130mm beyond the edge of your work table.
- Fold the protective hood [3/6.2.1] up.



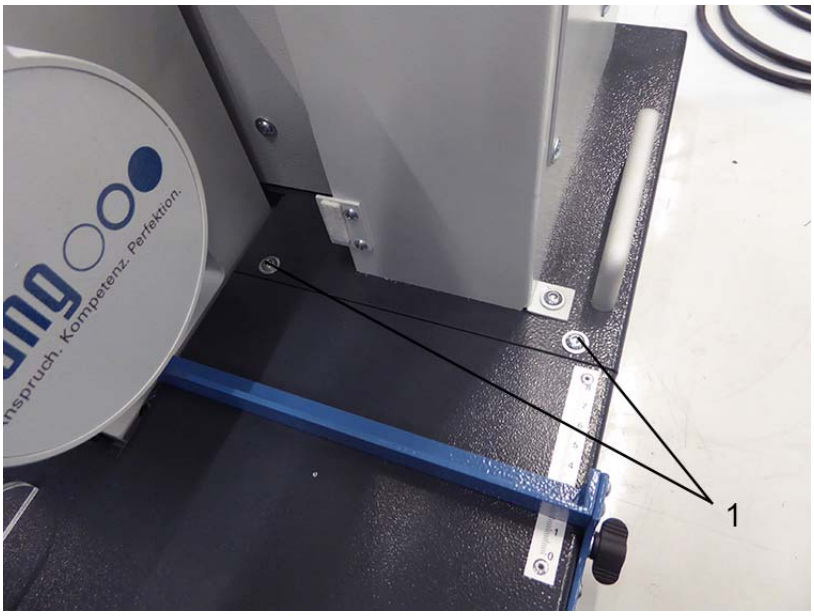


Image 9.2.1 Dismantling the lower punch

Remove the 4 screws [1/9.2.1] using a hexagon key.

Image 9.2.2 Dismantling the lower punch

- Carefully pull the worktop [1/9.2.2] forwards, remove it and set it to one side

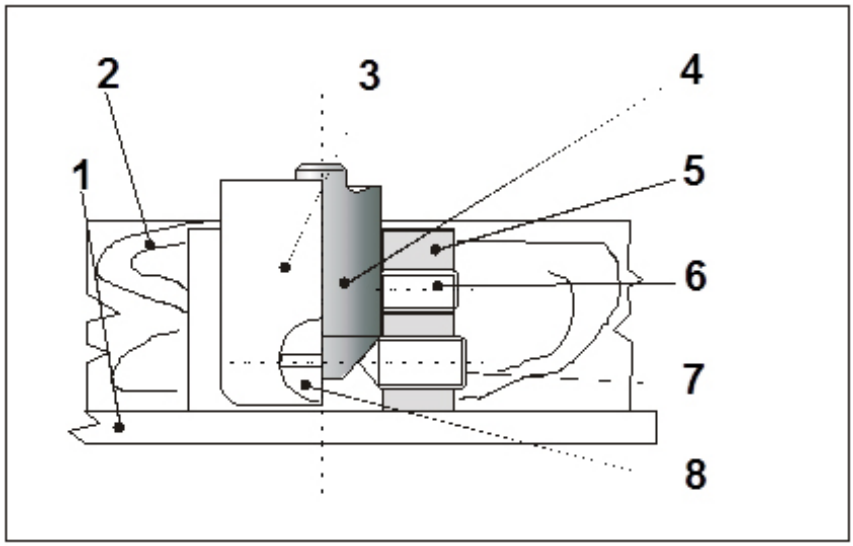


Image 9.2.3 Dismantling the lower punch

- Remove the screw [8/9.2.3] and swivel the wiper spring [3/9.2.3] to the side.
- Remove the screw [6/9.2.3] on the lower punch.
- Press the lower punch through the opening [3/9.2.2] and out of the locating borehole using a screwdriver.
- Reassemble the lower punch by carrying out the steps in reverse order.

Removing the upper punch

* Perform all the tasks listed above.

- Push the feed channel [1 / 7.3.1] to the side and unscrew the upper punch [2] using the 12mm open-end spanner.
- Remove the catch pin [3] from the cylinder [1].

Caution

Only ever replace the entire tool set and only ever use genuine Hang spare parts.

Installing the upper punch

- Screw in the new upper punch together with the catch pin into the cylinder by hand.
- Screw the upper punch tight using the 12mm open-end spanner.

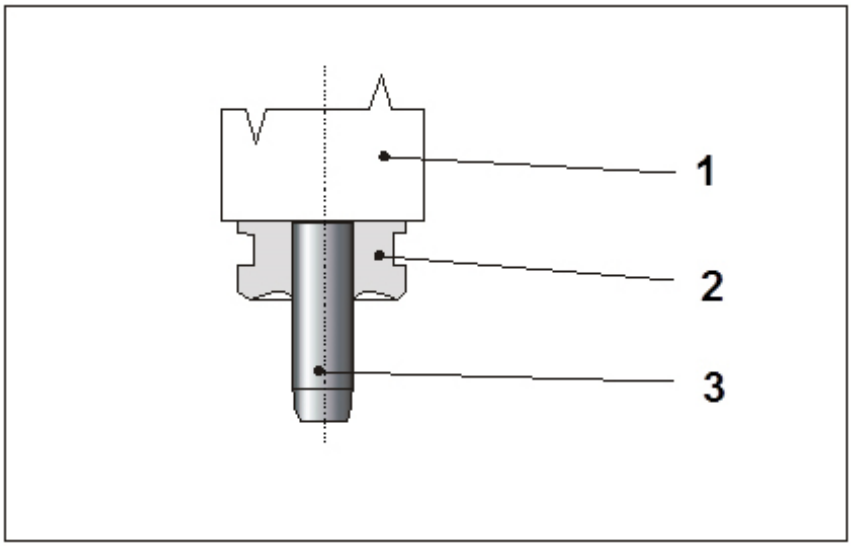


Image 9.2.4 Assembling the upper punch

9.3 Emptying storage containers

* “Switch off eyeletting machine" and safeguard it against being switched on again (unplug mains plug).

Note

Before removing the storage container [2] have a sufficiently large container at hand to catch the eyelets.

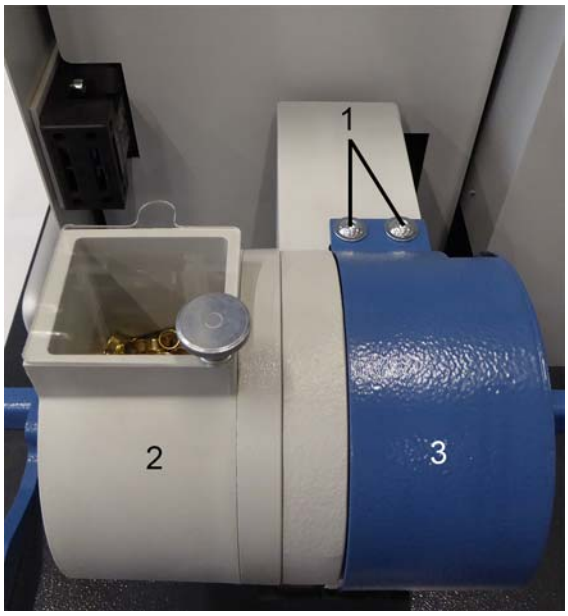
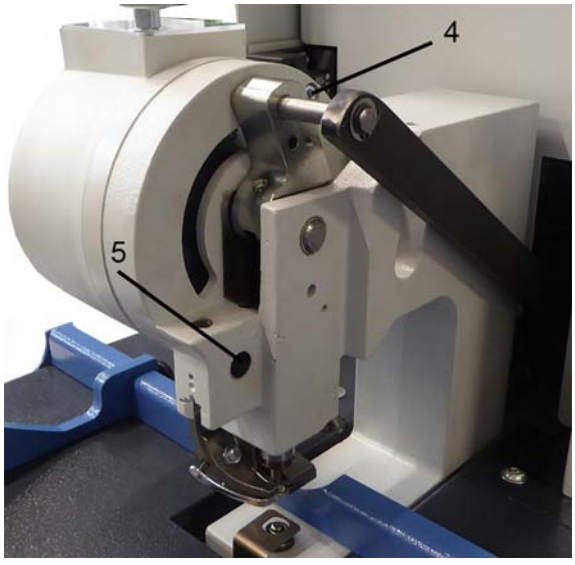
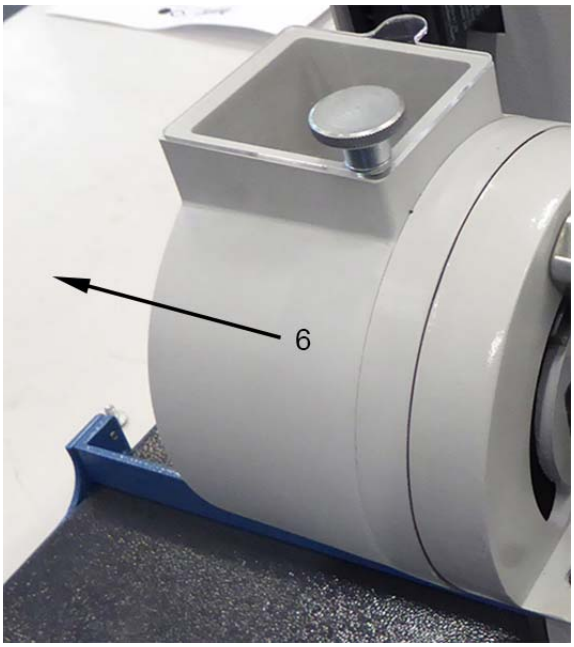


Image 9.3.1 Eyelet storage container

❋ Remove the two screws [1] and remove the cover [3].



❋ Loosen and remove screws [4] and [5].



- Carefully pull off the storage container [6] and catch the eyelets in the pre-prepared container.
- Remove the bristle disk [2/9.4.1] (as described in chapter 9.4 “Replacing the bristle disk”) and the remaining eyelets also from the feed channel.
- Separate out all of the defective eyelets.
- Reattach the bristle disk.
- Check the function of the bristle disk (the bristles must be long enough to prevent the eyelets from slipping through the housing of the storage container).
- Perform all of the tasks described in the chapter “Operation - Preparation for operation”.
- Switch the toggle switch [7/6.2.1] to "ON" and test the eye punch.

9.4 Changing the bristle disk

The purpose of the bristle disk is to direct the eyelets in the storage container into the sorting baffle.
The plastic bristles become worn after a long period of time meaning that the abovementioned task cannot be carried out properly.
This results in an increasing number of faults during the eyelet feed process meaning the bristle disk needs to be replaced.

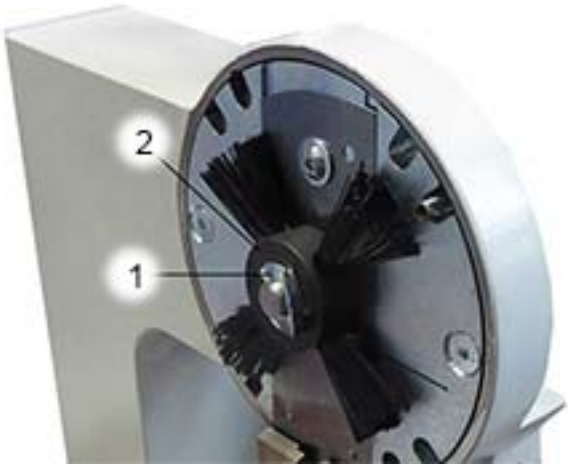


Image 9.4.1 Bristle disk

★ Perform all of the tasks described above in the chapter “Repair - Emptying storage containers”.

❋ Remove the safeguard [1].

❋ Pull off the bristle disk [2].

❋ Install in the opposite sequence.

10 Decommissioning - packaging

This chapter describes the correct procedure for decommissioning the eyeletting machine.

10.1 Safety regulations

Important

Carry out all the tasks taking into account the "Safety regulations" described in chapter 3.

10.2 Preparation for storage

Storage duration
< 4 weeks

- Use the toggle switch [7/6.2.1] to switch off the machine.
- Remove the mains plug.
- Thoroughly clean the machine.
- Remove any areas of corrosion on exposed parts and oil these using a rag.
- Wind the connecting cable up and place it on the table surface of the machine.
- If there is a foot switch, pull out the plug and wind up the cable.
- Place the machine in the cardboard box in which it was delivered.
- Tape the cardboard box up with adhesive tape.

Storage duration
> 4 weeks

- Perform all the tasks listed above.
- Pack the machine into a plastic film bag first of all and then add hygroscopic drying agent.
- Seal the plastic film bag in the cardboard box so that it is air-tight.

11 Disposal

This chapter describes the correct and environmentally friendly procedure for disposing of the eyeletting machine.

11.1 Safety regulations

Important

Only qualified personnel (mechanics - electricians) are permitted to disassemble the eyeletting machine.

Warning

Risk of fatal injury due to electric shock!
Incorrect disassembly could result in extremely serious injuries or even death.

- *Remove the mains plug before starting the disassembly process.*
- *The gear motor may only be disconnected by an electrician.*

Note

If disassembly is to take place at another location, refer first to the chapter "Decommissioning - packaging".

Carry out all of the tasks while adhering to the "Safety regulations" chapter.

11.2 Procedure

Note

Before starting the disposal process:

- *Contact the relevant waste management authority for information on the environmental compatibility, health risks and disposal options pertaining to the materials in question.*
- *Please contact Hang if this information is inadequate.*

Disposal

Separating out reusable materials

Separate metals, plastics and composite materials according to type and deliver for recycling.

Electrical scrap

Separate out cables, boards, switches and the electrical motor and dispose of these in an environmentally friendly manner.

12 List of images

13 List of abbreviations

The following abbreviations were used in the operating manual.

OM	Operating manual
e.g.	example
e.g.	for example
if app.	if applicable
EMC	Electromagnetic compatibility
Chap.	Chapter
L-AN	Brief description of a machine oil as per DIN 51 502.
Pos.	Position
Tab.	Table
VBG	German trade association regulations

14 Glossary

Term	Explanation
Waste	The punched out paper produced during the eyeletting process.
Stop rail	The adjustable rails that bring the paper stack to be punched (documents) into the desired position (lateral stop and rear stop).
Work cycle	Periodic work step for a complete eyelet insertion process (riveting process)
Adjustment	Necessary adjustments to the eyeletting machine to accommodate the paper format and eyelets prior to start-up.
Specialist electrician	A specialist electrician is a person who is able to evaluate possible risks associated with the tasks commissioned to him / her due to his / her specialist training, knowledge and experience, as well as knowledge of the applicable regulations.
Electric motor	Eyeletting machine drive
Limit switch	Input device of a control system.
Eccentric	Rotating part with off-centre rotating point (controls the lower punch movement)
Danger zone	Area of the eyeletting machine which presents an increased risk of injury.
Interlock switch	Signalling component which forwards an impulse to the control system at the end of a particular actuation path.
Grip hole	Hole in the folder spine into which the eyelet is rivetted; aids handling of the folder.
Toggle switch	Manually operated circuit breaker for the power supply to the eyeletting machine.
Upper punch	Upper section of the tool that creates the hole in the folder spine
Eyelet	Sheet metal or plastic ring that is rivetted into the paper stack. Connecting element (hollow rivet).
Complete eyeletting tool	Upper punch with catch pin and lower punch (rivets the eyelet in the paper stack).
Eyelet container	Container for eyelets (capacity approx. 200 to 400 pieces depending on size)
Rear stop	Stop on the table, restricts the position of the paper stack (documents) to be eyeletted in terms of depth (see also stop rails).
Service life	Operational endurance of the tool. The service life is reached when the increasing wear marks width on the tool surface reach the required roughness and the permitted tolerance can no longer be achieved.
Replacing the punch	Exchanging the worn parts of the eyeletting tool
Dew point	The dew point is the temperature where condensation from water vapour begins to condense as a result of cooling air without the water vapour content changing.
Table surface	Worktop onto which the paper stack is placed during the work procedure.
Lower punch	Lower section of the eyeletting tool.
Packaging	Cardboard box used to package the eyeletting machine.
Separation	Successive feeding of parts in a particular position.
Wearing parts list	Directory of eyeletting machine parts which are subject to wear after a certain number of operating hours and which must be replaced in order to guarantee full functional capability.
Maintenance intervals	Temporal intervals for regular checks and maintenance of the eyeletting machine
Tool set	Set of spanners and screwdrivers for installation and repair purposes (supplied as accessories along with the machine)
Feed channel	Chute (for eyelets) in which the individual eyelets are fed downwards into the tool.
Feed baffle	Device in the eyelet container that separates out and aligns the eyelets for transfer into the feed channel

15 Appendix

- Template for operating personnel
- Spare parts lists
- Template for ordering replacement parts
- Electrical parts lists
- Electrical circuit diagrams

Form for Operating Personnel

The knowledge of the operating personnel has been checked by a competent person (e.g. supervisor, safety representative) **prior to the start of work**.

It is recommended that the test be repeated every six months.

I herewith confirm that I have read and understood Chapters .... and Chapter 1 „Safety Precautions“ completely.

Date	Chapter	Last Name, First Name	Signature
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Jahnstrasse 82
73037 Göppingen
www.hang.de **Onlineshop: www.oesen-hang.de**
Fon: 07161/6005-0 **Fax: 07161/6005-78**

Company / Client:
Project: piccostar 102-50+60
Draw number:
Serial number:
Weight:

Name Eplan: 102-50+60_E-UL 110V
Type: 102-50 / 102-60
Controle voltage: 24 VDC
Assembled feed line: 1ph. 110V, 60Hz, 0,40kVA, H05VV-F 3x1,5m²
Fuse Protection 1x10A
Year:

Beginn of Project: 12.07.2017
Arranged 28.05.2019 About KK Number of pages 9

			Datum	28.05.2019				
			Bearb.	KK				
			Gepr		piccostar 102-50+60			
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Titel- / Deckblatt | = | + | Blatt 1 | Blatt 9

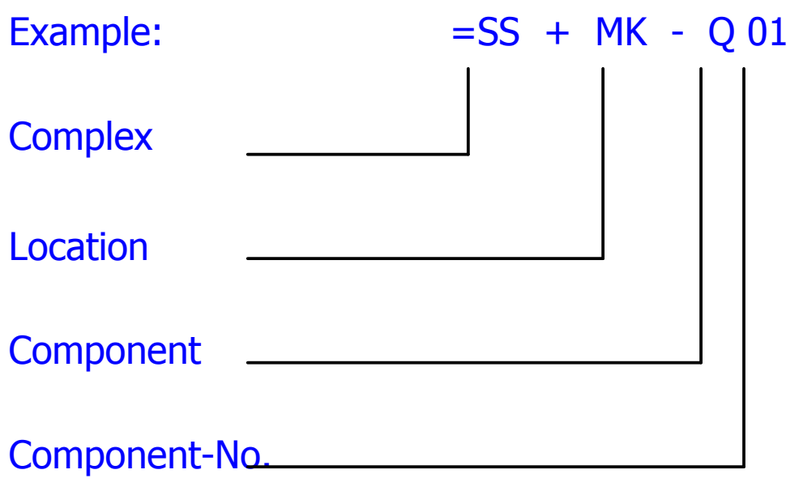
Circuit diagram

general information

Lead designation

L1/L2/L3 : Phase
T1/T2/T3 : Switched phase
N : Neutral
PE : Grounding
PEN : PEN-complete
L01+ : Control voltage 24VDC
L02- : Common 0V
L04+ : Power 24VDC Servo

Marking of electrical equipment



Lead designation

L1/L2/L3 Phase : orange (or)
T1/T2/T3 switched Phase : black (sw)
N Neutral : white (wh)
N1 switched neutral : white (wh)
PE/PEN Grounding : green/yellow (gn/ge)
Control Voltage 24VDC : dark blue (dbl)
Common 0V : dark blue/white (dbl/ws)
External voltage : orange (or)
Potential-free : violet (vt)
Analog Signal : white (ws)

component labeling

A : Electronic devices
B : Change of physikal element
C : Saveing of enegie
E : Initialisation of radiation energie
F : Directly protection
G : Assemble of energie
K : Initialisation of signals
M : Initialisation of mechanism energie
P : To bring out of informatioen
Q : Supervise switch of energie
R : Limitade of energie flow
S : Change mechanism to electric signal
T : Transmission of the same energie
U : Hold of elements
V : Execute of materials
W : Conduction of signals
X : Connecting of objects

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			Bearb.	KK				
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	Blatt	2
	Blatt	9

directory

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/1	Titel- / Deckblatt		28.05.2019	elektro	
/2	Gerneral Information E US		07.11.2018	elektro	X
/3	Inhaltsverzeichnis : /1 - =Report+STK/2		28.05.2019	elektro	
/20	Strukturkennzeichenübersicht		07.11.2018	elektro	
/50	Übersicht Montageplatte		28.05.2019	elektro	
=SS+MP/1	main circuit		28.05.2019	elektro	
=SS+MP/2	control circuit		23.01.2019	elektro	
=Report+STK/1	Artikelstückliste : IFM.IFS 204 - MOE.M22-K01		28.05.2019	elektro	
=Report+STK/2	Artikelstückliste : MOE.M22-K10 - WIE.ST18_4S		28.05.2019	elektro	

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= +

Blatt 3
Blatt 9

Structur indicator

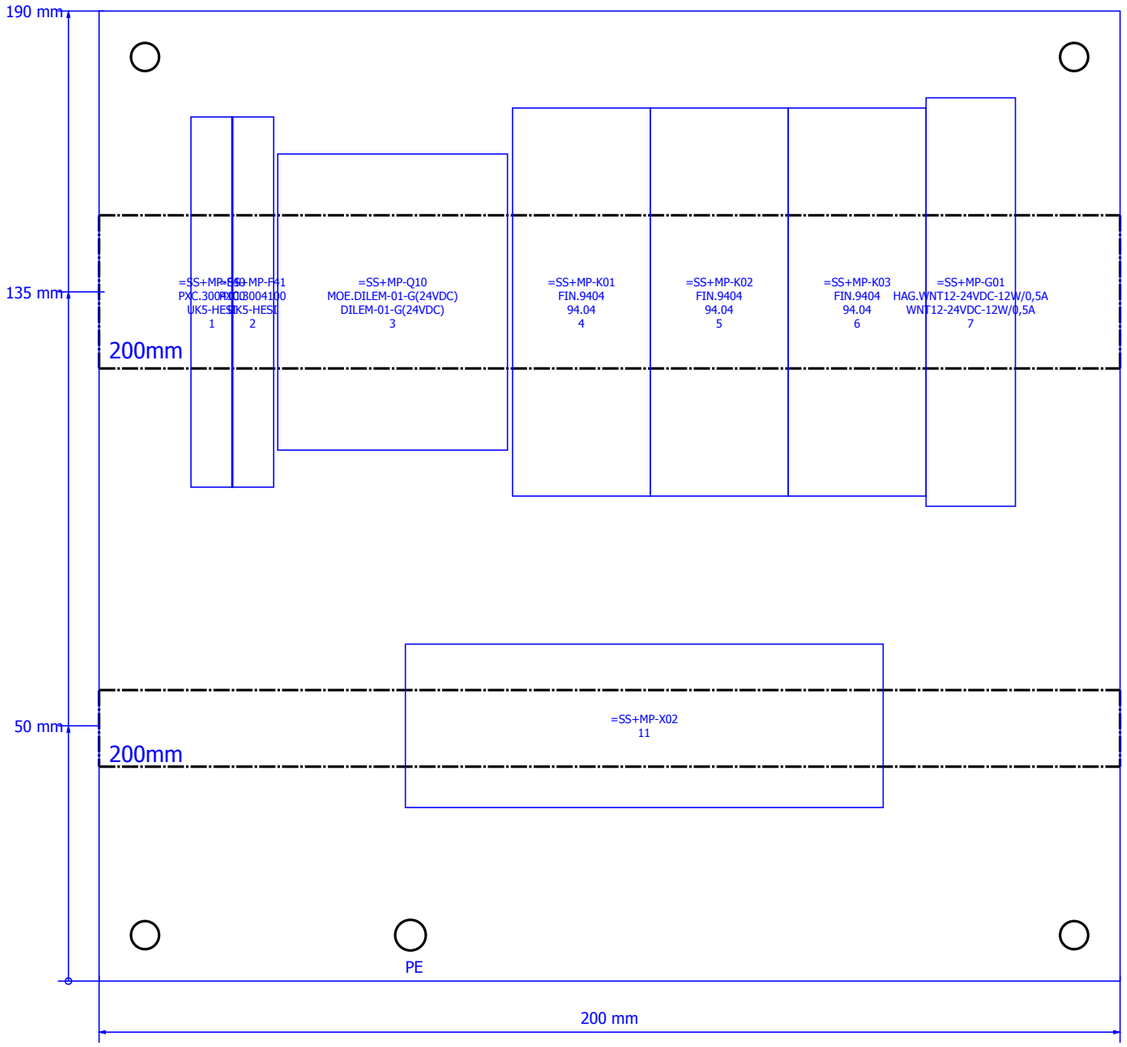
F24_001_E

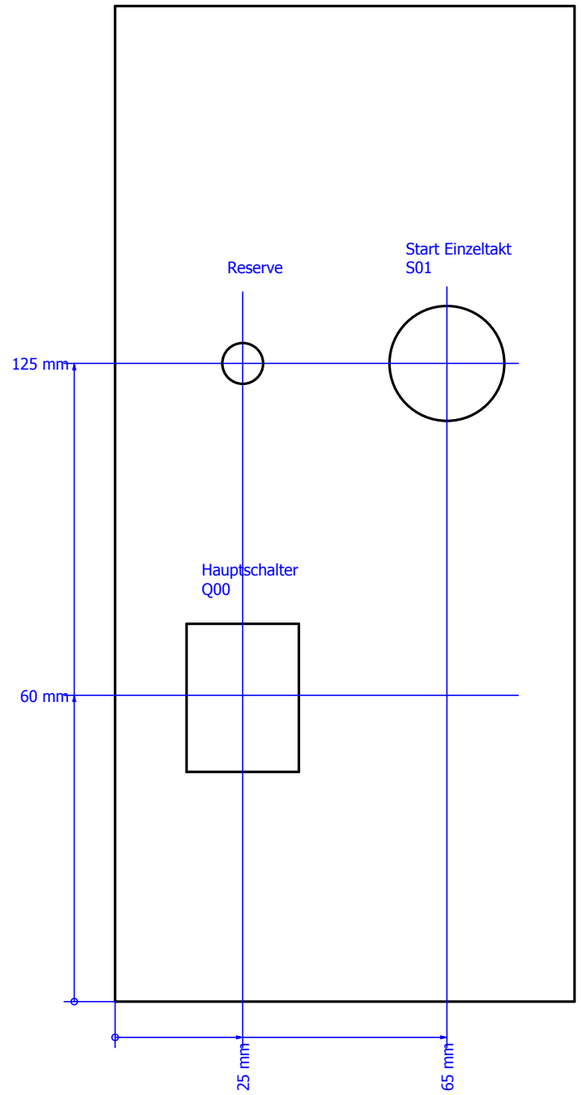
Complete name	Inscription	Structur inscription	Complete name	Inscription	Structur inscription
=SS	Anlage	Schaltschrank			
=Report	Anlage	Dokumentation			
=ST4	Anlage				
+MK	Einbauort	Maschinenkörper			
+MP	Einbauort	Montageplatte Schaltschrank			
+STK	Einbauort	Auswertung Stückliste			
+KBL	Einbauort	Auswertung Kabelplan			
+U02	Einbauort	Bendientableau			
+U01	Einbauort				
+U021	Einbauort				

Switch cabinet legend

Position	Denomination	Type	Text
1	F40	UK5-HESI	Versorgung
2	F41	UK5-HESI	
3	Q10	DILEM-01-G(24VDC)	Hauptschütz
4	K01	94.04	start Einzetlakt
5	K02	94.04	360° Endschalter
6	K03	94.04	Freigabe
7	G01	WNT12-24VDC-12W/0,5A	Versorgung Steuerspannung
11	X02		Geräteanschluß

-Schrank 1
Schaltschrank





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			Gepr		piccostar 102-50+60			Blatt 50
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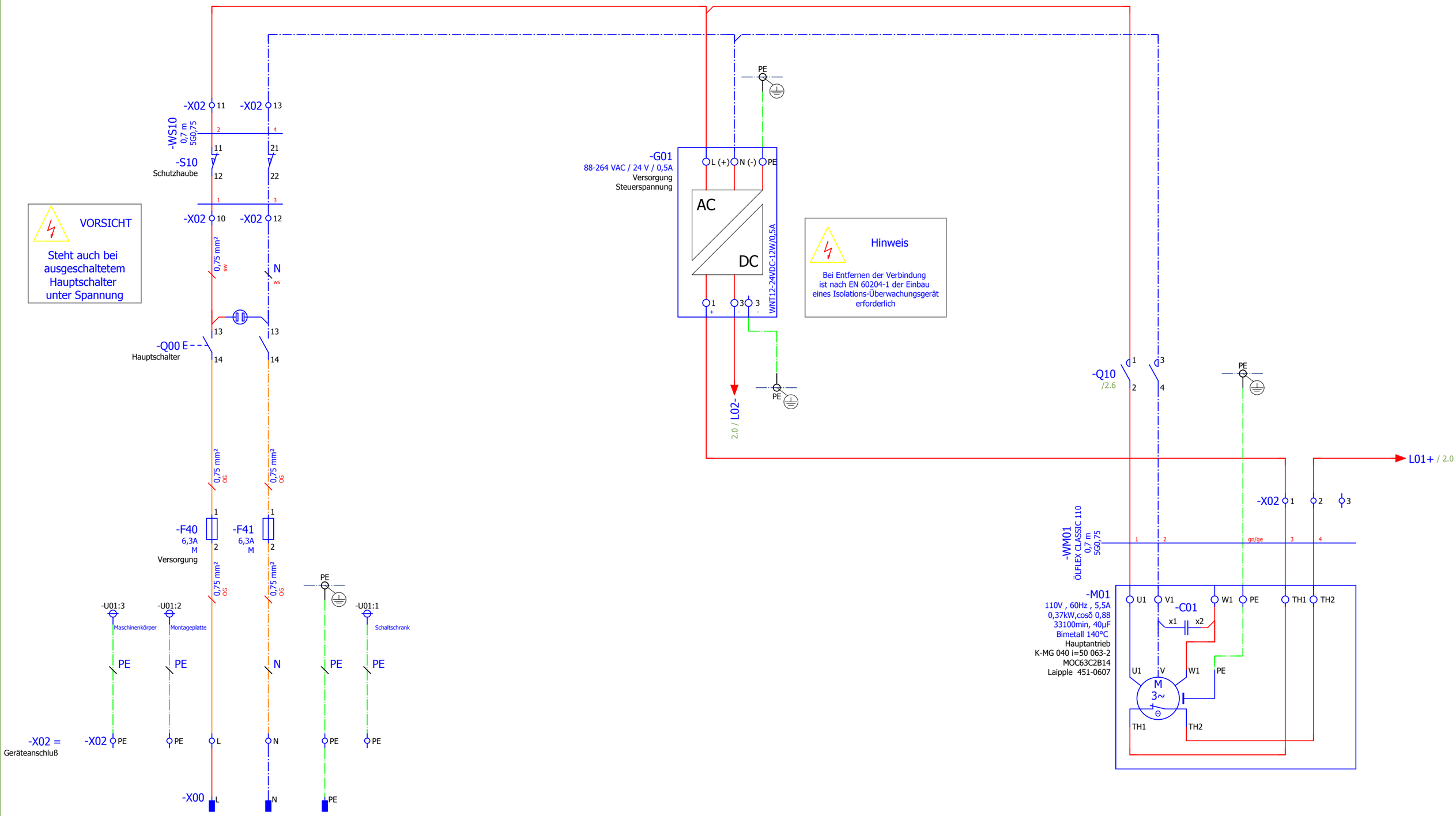

1ph. 110V, 60Hz, 0,40kVA, H05VV-F 3x1,5m²

power supply

main drive

=+/50

2

			Datum	28.05.2019			main circuit	= SS Schaltschrank
			Bearb.	KK				+ MP Montageplatte Schaltschrank
			Gepr		piccostar 102-50+60			Blatt 1
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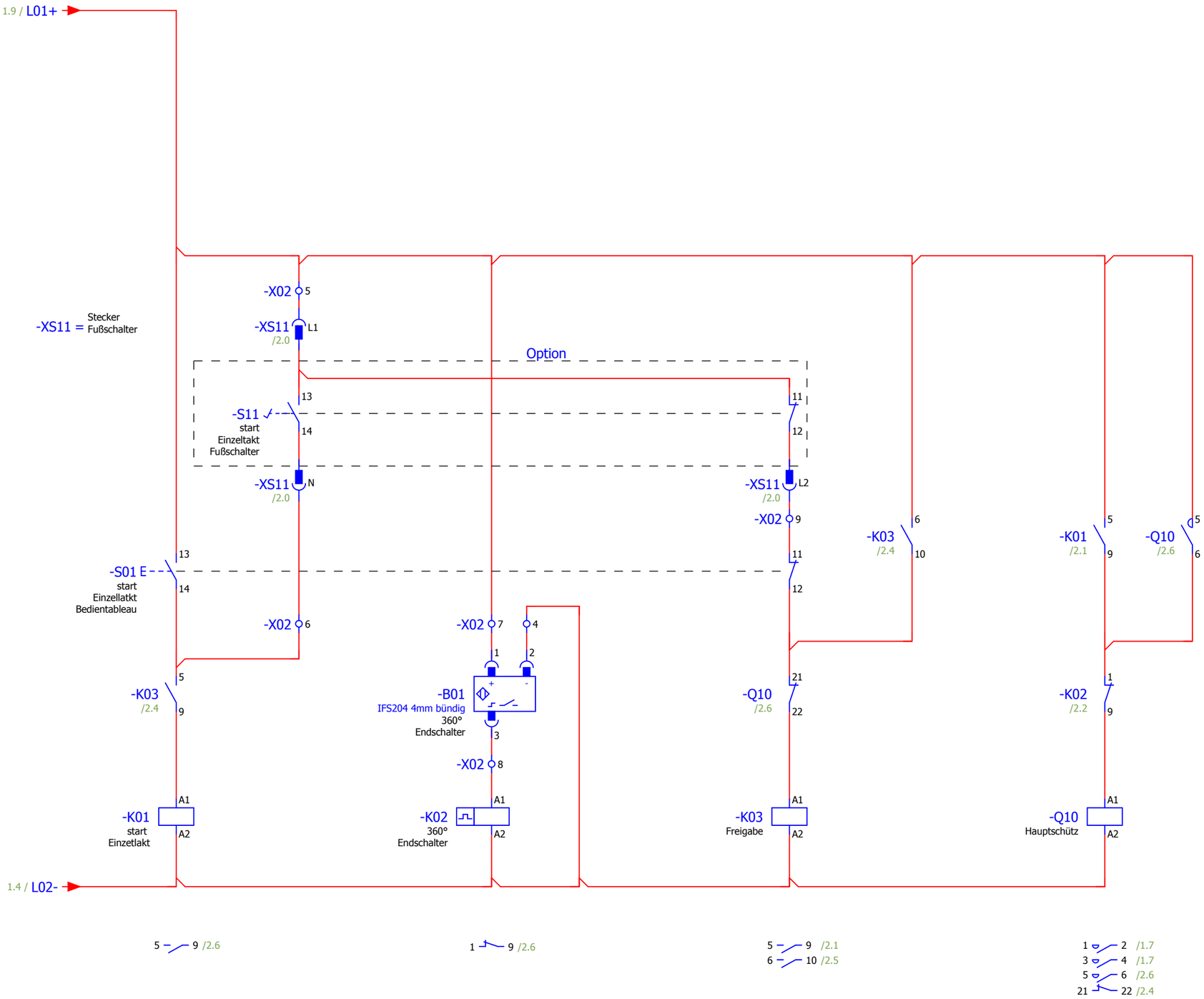

			Datum	23.01.2019	piccostar 102-50+60	hang Anspruch. Kompetenz. Perfektion.	Constantin Hang GmbH Maschinen-Produktion Jahnstrasse 82 73037 Göppingen
			Bearb.	KK			
			Gepr				
Änderung	Datum	Name	Urspr		Ersetzt durch	Ersetzt durch	

control circuit

= SS	Schaltschrank
+ MP	Montageplatte Schaltschrank
Blatt	2
Blatt	9

Parts list

F01_004_Hang_E

Name Connection diagram / Position	Number	Name	Type nummer Order number	Producer Provider	Article number Function	Position
=SS+MP-B01 =SS+MP/2.2	1	Näherungsschalter, bündig , S 417-0130	IFS 204 IFS 204	IFM IFM	IFM.IFS 204 360° Endschalter	
=SS+MP-B01 =SS+MP/2.2	1 Stück	Sensor-/Aktor-Kabel 417-0228	SAC-4P- 5,0-PUR/M12FR 1668247	Phoenix Contact Phoenix Contact	PXC.1668247 =	
=SS+MP-F40 =SS+MP/1.1	1 Stück	Sicherungs-Reihenklemme 413-0000	UK5-HESI 3004100	Phoenix Contact Phoenix Contact	PXC.3004100 Versorgung	
=SS+MP-F40 =SS+MP/1.1	2	G-Sicherungseinsatz 6,3A mittelträge 413-0021	G-Sicherung 6,3A G-Sicherung 6,3A	Löffelhardt Löffelhardt	Löf.G-Sicherung 6,3A =	
=SS+MP-F41 =SS+MP/1.1	1 Stück	Sicherungs-Reihenklemme 413-0000	UK5-HESI 3004100	Phoenix Contact Phoenix Contact	PXC.3004100	
=SS+MP-F41 =SS+MP/1.1	2	G-Sicherungseinsatz 6,3A mittelträge 413-0021	G-Sicherung 6,3A G-Sicherung 6,3A	Löffelhardt Löffelhardt	Löf.G-Sicherung 6,3A	
=SS+MP-G01 =SS+MP/1.4	1 Stück	Tragschienen Stromversorgung 491-0036	WNT12-24VDC-12W/0,5A 2478745	Hager Löffelhardt	HAG.WNT12-24VDC-12W/0,5A Versorgung Steuerspannung	
=SS+MP-K01 =SS+MP/2.1	1 Stück	Relais 24VDC 4W 425-0013	55.34 55.34.9.024.9024	Finder Löffelhardt	FIN.5534 start Einzetlakt	
=SS+MP-K01 =SS+MP/2.1	1 Stück	Relaissockel Serie 55 411-0035	94.04 94.04	Finder Löffelhardt	FIN.9404 =	
=SS+MP-K02 =SS+MP/2.1	1 Stück	Relais 24VDC 4W 425-0013	55.34 55.34.9.024.9024	Finder Löffelhardt	FIN.5534 360° Endschalter	
=SS+MP-K02 =SS+MP/2.2	1 Stück	Relaissockel Serie 55 411-0035	94.04 94.04	Finder Löffelhardt	FIN.9404 =	
=SS+MP-K02 =SS+MP/2.2	1 Stück	Zeitmodul 24VDC 425-0039	86.30 86.30.0.024.0000	Finder Löffelhardt	FIN.86.30 =	
=SS+MP-K03 =SS+MP/2.4	1 Stück	Relais 24VDC 4W 425-0013	55.34 55.34.9.024.9024	Finder Löffelhardt	FIN.5534 Freigabe	
=SS+MP-K03 =SS+MP/2.4	1 Stück	Relaissockel Serie 55 411-0035	94.04 94.04	Finder Löffelhardt	FIN.9404 =	
=SS+MP-Q00 =SS+MP/1.1	1	Wippenschalter beleuchtet rot 416-0079	924.096 AB6M-M1PW	Bachmann Löffelhardt	Bach.924.096 Hauptschalter	
=SS+MP-Q10 =SS+MP/2.6	1 Stück	Leistungsschütz, 3p+1Ö, 4kW/400V/AC3 421-0025	DILEM-01-G(24VDC) 010343	Moeller Löffelhardt	MOE.DILEM-01-G(24VDC) Hauptschütz	
=SS+MP-S01 =SS+MP/2.1	1 Stück	Pilzdrucktaste, grün, tastend, blanko 416-0123	M22-DP-G 216716	Moeller Löffelhardt	MOE.M22-DP-G start Einzellatkt	
=SS+MP-S01 =SS+MP/2.1	1 Stück	Frontbefestigungsadapter 417-0186	M22-A 216374	Moeller Löffelhardt	MOE.M22-A =	
=SS+MP-S01 =SS+MP/2.1	1 Stück	Kontaktelement, 1Ö, Frontbefestigung 416-0026	M22-K01 216378	Moeller Löffelhardt	MOE.M22-K01 =	

Parts list

F01_004_Hang_E

Name Connection diagram / Position	Number	Name	Type nummer Order number	Producer Provider	Article number Function	Position
=SS+MP-S01 =SS+MP/2.1	1 Stück	Kontaktelement, 1S, Frontbefestigung 416-0024	M22-K10 216376	Moeller Löffelhardt	MOE.M22-K10 start Einzellatkt	
=SS+MP-S10 =SS+MP/1.1	1	Sicherheitsendschalter 2 Ö 417-0087	AZ-16-02zvrk-M16 AZ-16-02zvrk-M16	Schmersal	SCHM.AZ-16-02zvrk-M16 Schutzhaube	
=SS+MP-S10 =SS+MP/1.1	1	Betätiger Sonderausführung B2 417-0059	AZ15/16 B2 KPL AZ15/16 B2 KPL	Schmersal	SCHM.AZ15/16 B2 KPL =	
=SS+MP-S11 =SS+MP/2.1	1	Fußschalter ohne Zuleitung 416-0006	FM1SU1L1 FM1SU1L1	ASA-Schaltertechnik GmbH ASA-Schaltertechnik GmbH	ASA.FM1SU1L1 start Einzeltakt	
=SS+MP-X02 =SS+MP/1.0	15 Stück	Durchgangsklemme 1,5 qmm 406-0175	MSB1,5 3244012	Phoenix Contact Phoenix Contact	PXC.MSB1,5 Geräteanschluß	
=SS+MP-X02 =SS+MP/1.0	3 Stück	Schutzleiterklemme 1,5 qmm 406-0176	MSB1,5-PE 3244151	Phoenix Contact Phoenix Contact	PXC.MSB1,5-PE =	
=SS+MP-X02 =SS+MP/1.0	1 Stück	Abschlußdeckel 406-0177	D-MZB1,5 3024177	Phoenix Contact Phoenix Contact	PXC.D-MZB1,5 =	
=SS+MP-X02 =SS+MP/1.0	1 Stück	USA-Stecker sw 3-pol 411-0230	910.179 0165938	Bachmann Löffelhardt	BACH.910-179 =	
=SS+MP-XS11 =SS+MP/2.0	1 Stück	Buchse 4pol. mit Verriegelung / Zugentlastung 416-0099	ST18_4B 1857512	Wieland Electric Löffelhardt	WIE.ST18_4B Stecker Fußschalter	
=SS+MP-XS11 =SS+MP/2.0	1 Stück	Steker 4pol. mit Verriegelung / Zugentlastung 416-0062	ST18_4S 1857548	Wieland Electric Löffelhardt	WIE.ST18_4S =	

			Datum	28.05.2019			Artikelstückliste : MOE.M22-K10 - WIE.ST18_4S	= Report	Dokumentation
			Bearb.	KK				+ STK	Auswertung Stückliste
			Gepr		piccostar 102-50+60				Blatt 2
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