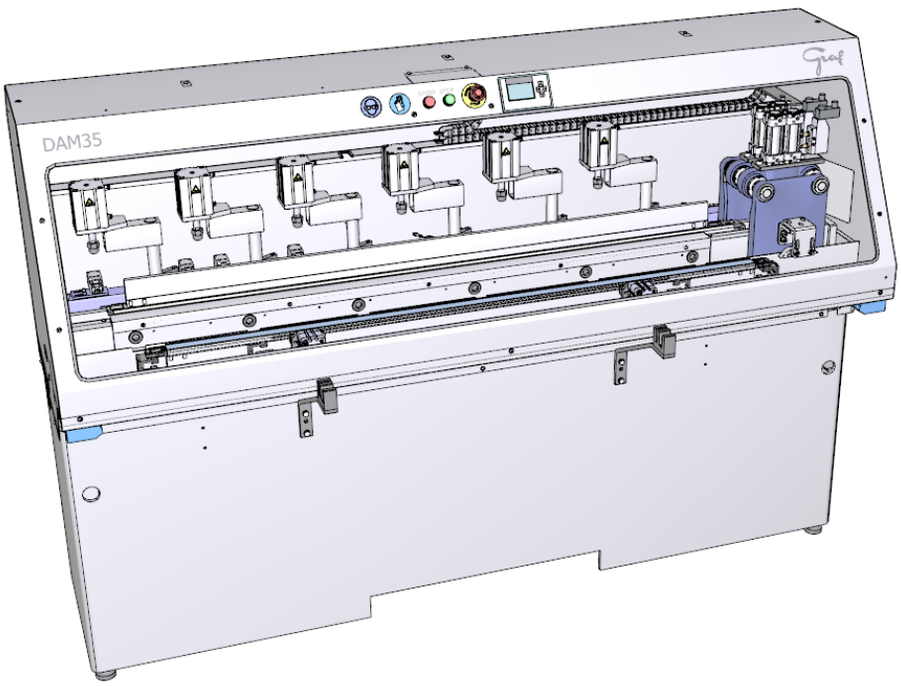

Scan QR-Code for digital manual

Translation of the original instructions

Flat clipping and stripping machine DAM 35

Manufacturer address

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Document history

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08.2023	V 1.00	FCT.swiss GmbH	Creation	C. Dratva
02.2024	V 1.1	FCT.swiss GmbH	Updated appendices Sr.1/M.2	R. Pfiffner
12.2024	V 1.2	FCT.swiss GmbH	Updated appendices Amended Section 5.4 Transport by crane	R. Pfiffner

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1 General information

1.1 Subject of these instructions

The flat clipping and stripping machine (DAM) described here (hereinafter referred to as the machine) was manufactured and marketed by Graf + Cie AG.

The term "manufacturer" as used in this document refers to the company Graf + Cie AG.

1.2 Target groups

In addition to the operating company, the target groups for these instructions include:

- Operating personnel – for operation and cleaning instructions
- Maintenance personnel – for troubleshooting and maintenance instructions
- Qualified personnel who have been entrusted by the operating company with carrying out inspections and maintenance on the machine.

1.3 Information about these instructions

1.3.1 General notes

These instructions include important information on handling the machine during installation, start-up and operation, maintenance and servicing as well as disassembly and disposal.

All the specified warnings and instructions must be observed before working on and with the machine in order to ensure safe, efficient operation in accordance with its intended use.

By observing them, the operating personnel can help to avoid hazards, minimise repair costs and downtime and increase the reliability and service life of the machine.

In addition, the applicable local accident prevention regulations and general safety regulations in the place where the machine is used must be observed.

Carefully read the instructions before starting any work. They are an integral part of the product and must be kept accessible to the relevant personnel at all times.

In addition to these instructions, the instructions for operating the installed components from the respective suppliers, which are included in the overall documentation, also apply. See chapter Other applicable documents [▶ 13].

➲ Observe the instructions contained in the documentation – in particular the warnings.

1.3.2 Notes on use

Instructions and system reactions

Work steps to be performed by the operating personnel are shown consecutively. The sequence of steps must be observed. The system's reactions to the respective actions by the operating personnel are marked with an arrow.

Example:

➢ Requirement

➲ Work step 1

⇨ Reaction to work step 1

Lists

Lists without a mandatory sequence of steps are shown as a list preceded by a bullet point.

Example:

- Item 1
  - Item 1, subitem A
- Item 2

Lists with a mandatory order are displayed as a list preceded by a number.

Example:

1. First
2. Second

References to chapters/pages

References to particular chapters in which procedures and instructions are described are shown as active links.

Example: (see chapter A [▶ 7]); the arrow with the number refers to the page number.

1.3.3 Notes on storage

These instructions are an integral part of the machine and must be kept in the immediate vicinity of the machine and be easily accessible to the relevant personnel at all times.

If the instructions are lost, a replacement set can be requested from the manufacturer. For contact details, see Manufacturer's information [▶ 13].

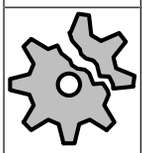
➲ If the machine is passed on to third parties, make sure that these instructions are also handed over.

1.3.4 Symbols used

Pictograms

The warnings used in these instructions are also provided with pictograms to clearly indicate the nature of the potential hazard.

The following pictograms are used:

Symbol	Meaning
General symbols	
	General information and useful advice on handling
	References to possible material damage
	Special notes on working safely

Symbol	Meaning
Warning symbols	
	General warning symbol
	Warning of electrical voltage
	Warning of pressurised parts
	Warning of injuries due to rotating components
	Warning of hand injuries

Symbol	Meaning
	Warning against environmental pollution

Symbol	Meaning
Mandatory signs	
	Use foot protection
	Use hand protection
	Use protective clothing
	Use safety goggles

1.3.5 Structure of the warnings

The warnings used in these instructions are introduced by signal words that indicate the extent of the hazard.
The warning symbol also indicates the type of hazard. The following warnings are used in these instructions:

Serious injuries or death

⚠DANGER

Danger to life!

Consequences in case of non-compliance...

▶ Notes on prevention

A warning of this danger level indicates an imminent dangerous situation.
If the dangerous situation is not avoided, it will result in death or serious injury.
Follow the instructions in this warning to avoid the risk of death or serious personal injury.

Serious injuries

⚠WARNING

Risk of injury!

Consequences in case of non-compliance...

▶ Notes on prevention

A warning with this danger level indicates a potentially dangerous situation.
If the dangerous situation is not avoided, it may result in death or serious injury.
Follow the instructions in this warning to avoid the possible risk of death or serious personal injury.

Minor injuries

⚠CAUTION

Personal injury caused by...

Consequences in case of non-compliance...

▶ Notes on prevention

A warning with this danger level indicates a potentially dangerous situation.
If the dangerous situation is not avoided, it may result in minor or moderate injuries.
Follow the instructions in this warning to avoid personal injuries.

Material damage

NOTICE

Material damage caused by...

Consequences in case of non-compliance...

▶ Notes on prevention

A warning with this danger level indicates possible material damage.

If the situation is not avoided, material damage may occur.

Follow the instructions in this warning to avoid material damage.

Note on working safely

SAFETY INSTRUCTIONS

Work safely when...!

Carry out all work in compliance with the safety instructions listed below:

▶ Notes on working safely

This note contains important information and instructions for working safely during the following steps.

Follow the instructions in this note to prevent accidents and injuries.

Notes and tips

NOTE

Note text...

A note indicates additional information that is important for further processing or which simplifies the described work step.

1.4 Liability disclaimer

All information and instructions provided in these instructions have been compiled by taking into consideration the applicable standards and regulations, our state-of-the-art technology and our many years of experience and knowledge.

We reserve the right to make technical changes as part of the further development of the machine described in these instructions. No claims can be derived from the data, figures and descriptions provided in these instructions.

The manufacturer assumes no liability for damage and malfunctions due to:

- Failure to observe these instructions
- Unintended use
- Use of untrained or insufficiently trained personnel
- Use of unauthorised equipment
- Faulty connection
- Preliminary work not included in the scope of supply and services
- Failure to use original spare parts and accessories
- Technical conversions and changes not agreed with the manufacturer
- Failure to carry out required maintenance work
- Performing welding work on the machine.

The manufacturer is liable for any errors or omissions on our part, excluding further claims, within the framework of our contractual warranty obligations.

1.5 Copyright protection

1.6 Manufacturer's information

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8640 Rapperswil
Switzerland

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Fax: +41 55 221 72 33

E-mail: info@graf-companies.com
Internet: www.graf-companies.com

1.7 Other applicable documents

In addition to the instructions provided in these instructions for the machine, the information contained in the information sources listed below must also be taken into consideration:

- Information on the signs on the machine
- Instructions for the components used
- Work instructions provided by the operating company
- Safety data sheets for auxiliary and operating supplies
- Local accident prevention regulations and regional regulations at the place where the machine is used
- Data sheets for the installed components

2 Safety

2.1 General information

This chapter provides important notes on all safety aspects in order to ensure optimum protection of the personnel as well as safe and smooth operation.

In addition to the general safety instructions provided in this chapter, additional safety instructions relevant to the corresponding chapter are provided in each handling chapter.

Hazards that may occur during a specific work step are described before the work step.

Knowledge of the safety and user instructions in these instructions forms the basis for safe handling and smooth operation of this machine. Failure to observe the warnings and handling instructions in these instructions may result in considerable danger.

➲ The listed warnings and instructions must be observed.

2.2 Intended use

The machine is designed for clipping and stripping flat clothings onto cast iron or aluminium card flats in accordance with the specifications set out in the technical data.

Any other use or use that goes beyond this is considered improper and is therefore not authorised.

No claims of any kind shall be accepted for damage resulting from incorrect use. These risks shall be borne solely by the operating company.

Foreseeable misuse

Any use of the machine for a purpose other than that specified above is considered improper.

Misuse occurs, for example, if

- the information in these instructions is not observed,
- the machine is not used as intended,
- the limits specified in the technical data are not observed,
- the machine is operated in an altered or faulty condition,
- the machine is operated with unauthorised media,
- the machine is used in an explosive environment.

2.3 Basic safety instructions

The machine was constructed in accordance with the EC Machinery Directive, the technological state of the art and the recognised safety rules.

Dangers and negative impacts can still occur when using the machine:

Observe the following safety instructions to ensure safe handling and smooth operation of this machine:

- Check all machine parts and components for external visible damage before starting the process. Do not operate a damaged machine.
- Only carry out cleaning, maintenance and repair work if the production process has already been stopped or terminated.
- Repairs to the machine must only be carried out by authorised qualified personnel. Improper repairs can result in considerable danger.
- Defective components must only be replaced with original spare parts. Only these parts will ensure that the safety requirements are satisfied.
- Observe the specified deadlines for recurring tests/inspections. In particular, this applies to protective devices and warning devices.
- The machine must only be operated by personnel qualified to do so.

2.4 Particular dangers/residual risks

Danger due to electric current!

Contact with live lines or parts can result in fatal injuries!

- Work on electrical equipment must only be carried out by a qualified electrician or by instructed personnel under the direction and supervision of a qualified electrician in accordance with the established rules of electrical engineering.
- Any defects found in electrical systems/components/equipment must be rectified immediately. If an existing, acute hazard is detected, the machine must not be used in a defective condition.
- Machine parts on which inspection, maintenance and repair work is carried out must – where required – be disconnected from the power supply. First check that the disconnected parts are free of voltage, then earth and short-circuit them and insulate adjacent live parts!
- If work on live parts is necessary, enlist the help of a second person who can switch off the main switch in case of an emergency. Cordon off the work area with a red and white safety chain and a warning sign. Only use insulated tools!
- Fuses must not be repaired or bypassed. Only use original fuses with the required amperage.
- If the insulation is damaged, immediately switch off the power supply and have repairs carried out.
- Perform checks according to the intervals for periodic tests and/or inspections specified in the instructions.
- Keep moisture away from live parts to prevent short circuits.

Danger from pressurised lines and equipment!

Pressurised lines and equipment can cause serious injuries.

- Maintenance and repair work on pressurised equipment may only be carried out by specially trained personnel.
- Before starting work on the equipment, switch off the machine, shut off the pressurised supply lines, secure the machine against restarting and depressurise the pressurised equipment. Observe the pressure accumulators. Completely drain them as well.
- Do not change the pressure settings beyond the maximum permissible values.
- Replace hose lines at regular intervals as part of preventive maintenance, even if no damage is visible.

Entanglement hazards on rotating components!

On rotating components, there is a risk of being caught and pulled in by the rotating component.

- The system must only be operated by instructed personnel.
- Do not remain in the hazardous areas when the machine is running.
- Safety devices must not be bypassed.

Danger of shearing and cutting injuries on parts and wire with sharp edges, such as sharp blades!

There is a danger of shearing and cutting injuries on parts and wire with sharp edges, such as sharp blades.

- The machine must only be operated by instructed personnel.
- Keep protective covers closed when the machine is running.
- Safety devices must not be bypassed.
- Only touch the flat clothings with gloves!

Danger due to contact with auxiliary and operating supplies!

The operating personnel are at risk of coming into contact with auxiliary and operating supplies.

- Wear the specified personal protective equipment.
- Observe the instructions in the safety data sheets for the hazardous substances.

Danger due to noise!

Noise in the working environment can result in hearing loss.

- The operating company must carry out and document noise level measurements in the working environment after commissioning the machine as well as after conversions and extensions. If the measured sound level exceeds 80 dB(A), the operating company must implement appropriate hearing protection measures.
- If the measured sound level exceeds
  85 dB(A), the operating company must prescribe appropriate hearing protection.

2.5 Emissions

The sound emission measured at the manufacturer's premises is < 80 dB(A).

Depending on local conditions, a higher emission sound pressure level may occur, which may result in noise-induced hearing loss.

The operating company is required to carry out a noise measurement on site.

- The operating company must provide hearing protection if the emission sound pressure level is > 80 dB(A).
- The operating company must prescribe hearing protection at an emission sound pressure level > 85 dB(A).
- In addition, measures must be taken according to the locally applicable legal requirements.

2.6 Responsibility of the operating company

Since the machine is used in the commercial sector, the operating company that owns the machine is subject to the legal obligations concerning occupational health and safety.

In addition to the safety instructions provided in these instructions, the safety, accident prevention and environmental protection regulations applicable to the operation of the machine must be observed.

The operating company must...

- inform itself about the applicable health and safety regulations. It must also carry out a risk assessment to identify any additional hazards arising from the specific working conditions at the machine operating site. In addition, it must implement this information in the form of instructions for operating the machine.
- carry out and document a noise level measurement after commissioning.
- secure danger points that arise between the machine and equipment provided by the customer.
- check whether the instructions it has drawn up correspond to the current status of the regulations during the entire time the machine is in use and adapt them if necessary.
- clearly define the responsibilities of the personnel responsible for installation, operation, maintenance and cleaning.
- ensure that all employees who handle the machine have read and understood the instructions. In addition, it must train the personnel at regular intervals and instruct them about the dangers posed by the machine.
- regularly check that the personnel work safely and are aware of the hazards while also complying with the instructions.
- ensure that these instructions and all other applicable regulations are accessible to the operating and maintenance personnel.
- define the machine operator's responsibility for the machine and allow the operator to reject instructions from third parties that do not comply with safety requirements.
- provide the relevant personnel with the necessary protective equipment.

In addition, the operating company is responsible for ensuring that the machine is always in a technically perfect condition. The following therefore applies:

The operating company must...

- ensure that these instructions and all other applicable regulations are accessible to the operating and maintenance personnel.
- check and document compliance with the specified cleaning and maintenance intervals.
- have all safety devices checked at regular intervals to ensure that they are functioning properly and are complete.

2.7 On-site requirements to ensure safe operation

In order to ensure the safe operation of the machine and its components at the operating site, the operating company must fulfil the requirements described below.

The operating company must...

- ensure the load-bearing capacity of the foundation and compliance with the prescribed ambient conditions.
- maintain sufficient clearance between the machine and other equipment provided by the customer.
- ensure sufficient lighting at the machine's operating site.
- ensure sufficient aeration and ventilation.
- take suitable fire protection measures.
- attach suitable warning signs and barriers at the installation site to indicate the hazards in the work area.

2.8 Personnel requirements

2.8.1 Personnel qualifications

Improper handling of the machine by insufficiently qualified personnel may result in substantial personal injury and damage to property.

➲ Ensure that all work is carried out by qualified personnel.

The following qualifications for different areas of activity are designated in these instructions:

Operator

- has been trained by the operating company to carry out the work assigned to them and informed of the potential hazards in the event of improper behaviour.

Fitter

- has the knowledge and experience required to safely set up the machine as well as the operator qualifications.

Specialised personnel

- have the necessary technical training, knowledge and experience, as well as knowledge of the pertinent regulations, to perform the work assigned to them and to independently recognise and prevent potential dangers.

A qualified electrician

- has the necessary technical training, knowledge and experience, as well as knowledge of the pertinent standards and regulations, to perform the work assigned to them and to independently recognise and prevent potential dangers. The qualified electrician is trained for the specific operating site in which they work and is familiar with the pertinent standards and regulations.

Technical qualified personnel

- Technical qualified personnel have the necessary technical training, knowledge and experience, as well as knowledge of the pertinent standards and regulations to perform work on mechanical, hydraulic and pneumatic equipment and to independently identify and avoid potential dangers. The technical qualified personnel are trained for the specific operating site in which they work and are familiar with the pertinent standards and regulations.

The operating company must ensure that all personnel who work on or with the machine can be expected to reliably perform their work. Individuals whose reaction time is impaired, e.g. by drugs, alcohol or medication, are not authorised to perform such work.

Personnel who are to be trained, instructed or who are undergoing general training may only work on the machine under the constant supervision of experienced personnel.

	NOTE
i	When selecting personnel, observe the applicable age and specific occupational regulations at the place where the machine is used.

2.8.2 Unauthorised personnel

Unauthorised personnel who do not meet the personnel requirements described above are not aware of the dangers in the work area.

- Keep unauthorised personnel away from the work area.
- If in doubt, address the personnel and direct them away from the work area.
- Stop work as long as unauthorised personnel are in the work area.

2.8.3 Instruction

The operating company must train the personnel at regular intervals.

	NOTE
	To ensure better tracking, document this training and have the participants sign a document confirming this.

2.9 Personal protective equipment

The authorised personnel must wear personal protective equipment when working to minimise health risks.

- Always wear the necessary protective equipment for the relevant task when working.
- Follow all instructions regarding personal protective equipment affixed in the work area.
- Comply with the safety requirements specified by the operating company.

Wear the following protective equipment when performing any work on the machine:

	Protective work clothing with low tensile strength
	Protective footwear with steel toe cap and oil-resistant safety sole

When carrying out special work, special protective equipment is also required. This equipment is specified separately in the individual chapters.

Wear the following additional protective equipment when carrying out special work on the machine:

	Safety goggles to protect the eyes from flying parts and liquids
	Work gloves to protect against injuries/burns

2.10 Safety devices on the machine

Missing or non-functioning safety devices can result in serious injuries.

- Only operate the machine if all safety devices are installed and functioning properly.
- Check that all safety and warning devices are functioning properly on a regular basis.

Dangerous points which cannot be eliminated by design are fitted with protective devices and marked by warning signs on the machine.

	***NOTE***
	For more information on the safety devices available on this machine, see the Position of the safety devices [▷ 34] chapter.

2.11 Signs on the machine

The warning/hazard signs are attached to the machine components to inform the operating personnel about hazards:

- Observe the warning/hazard signs on the machine components.
- Immediately replace lost, damaged or illegible warning/hazard signs.

	NOTE
	For more information on the position and design of the signs on the components of this machine, see the Information signs [▶ 35] chapter.

2.12 Prohibition of conversions and tampering

Conversions or modifications to the machine, in particular, removing or tampering with the safety devices, are prohibited.

In case of unauthorised conversions or modifications to the machine, the manufacturer's liability and warranty shall expire. This also applies to welding carried out on load-bearing parts.

The electromagnetic behaviour of the machine may be affected by additions or conversions of any kind. Therefore, no changes or additions should be made to the machine without consulting and obtaining the written consent of the manufacturer.

2.13 Spare parts

The use of wrong or faulty spare parts may result in damage, malfunctions or total failure of the machine and compromise safety.

- Only use original spare parts or spare parts approved by the manufacturer.

The manufacturer accepts no liability for damage resulting from the use of spare and wear parts that have not been approved by the manufacturer.

2.14 Auxiliary and operating supplies

Unauthorised auxiliary and operating supplies may result in damage, malfunctions or total failure of the machine and may compromise safety.

- Only use the auxiliary and operating supplies specified and approved by the manufacturer.

The manufacturer accepts no liability for damage resulting from the use of auxiliary and operating supplies that have not been approved by the manufacturer.

2.15 Accident prevention measures

Observe the following accident prevention instructions when operating the machine:

- Observe and comply with general and local accident prevention and environmental protection regulations.
- Check the machine for externally visible damage and defects at least once per shift. Immediately report any changes that have occurred (including operating behaviour changes) to the responsible office/person.
- If the machine is damaged, immediately shut it down and secure it to prevent reactivation.
- Only allow repair and/or maintenance work to be carried out by authorised specialised personnel.
- Before starting any cleaning, maintenance or repair work on the machine, disable the machine's control system. Then have the relevant parts of the system disconnected from the power supply by a qualified electrician and secured against being switched back on.
- Observe the prescribed intervals or those specified in the instructions for periodic tests/inspections. In particular, this applies to protective devices.
- Only use suitable maintenance tools.
- After repair work, reinstall all protective devices and check that the protective device functions properly.

2.16 Environmental protection

Incorrect handling of environmentally hazardous substances, in particular their incorrect disposal, may result in considerable damage to the environment.

- Observe the indicated disposal instructions.
- If environmentally hazardous substances are accidentally released into the environment, take appropriate steps immediately. In case of doubt, notify the competent local authority of the damage.

Operating supplies and untreated waste

The operating supplies used for operating the machine as well as the untreated waste contain substances that are harmful to the environment in some cases. They must not be released into the environment. They must be disposed of in accordance with the locally applicable regulations.

➲ Observe the manufacturer's specifications in the instructions for the machine.

Lubricants

Lubricants, such as greases and oils contain toxic substances. They must not be released into the environment. They must be disposed of by a specialist disposal company.

➲ Observe the manufacturer's specifications for the respective lubricants.

3 Technical data

3.1 General data

Specifications	Value	Unit
Type designation	DAM35	
Serial number	See type plate	
Year of manufacture	See type plate	
Approx. dimensions (L x W x H)	2110 x 800 x 1160	mm
Approx. weight	640	kg

3.2 Connection values

Specifications	Value	Unit
Operating voltage	3 x 400	V_{AC}
Mains frequency	50 - 60	Hz
Fuse		
Mains fuse	5	A
Pre-fuse	10	A
Pneumatic connection	6	Bar
Control voltage	24	V_{DC}

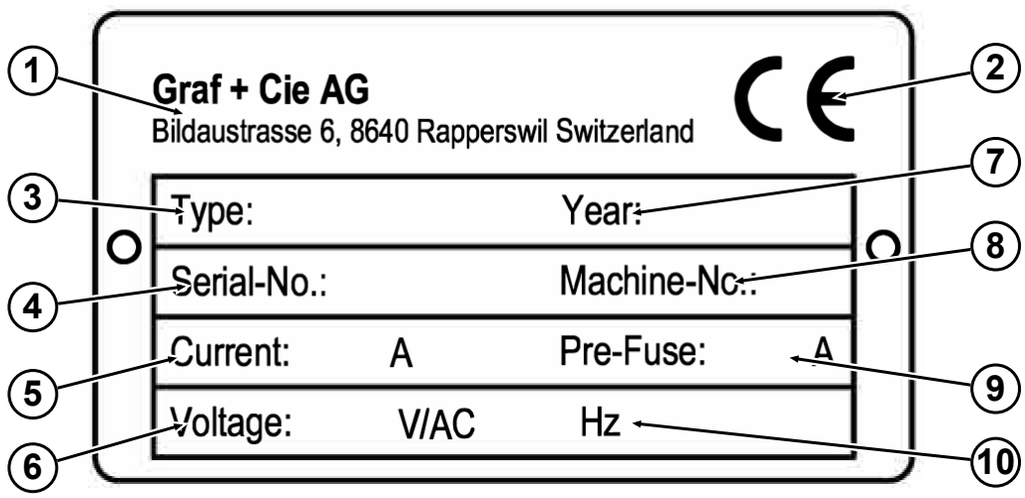
3.3 Ambient conditions

Specifications	Value	Unit
Ambient temperature range during operation	20 ... 30	°C
Maximum humidity during operation (non-condensing)	65	%

3.4 Equipment and operating supplies

Equipment	Name
Lubricating oil	Standard lubricating oil for carriages

3.5 Type plate



The type plate of the machine contains the following information:

Position	Field	Content
1	Manufacturer/authorised representative:	Graf+Cie AG, Bildaustrasse 6 8640 Rapperswil, Switzerland
2	CE	CE mark
3	Type	Type specification
4	Serial-No.	Machine serial number
5	Current (A)	Current intensity in A
6	Voltage (V/AC)	Voltage in V/AC
7	Year	Year of manufacture of the machine
8	Mach-No.	Machine number
9	Pre-Fuse (A)	Pre-fuse in A
10	Voltage (Hz)	Mains frequency in Hz

4 Design and function

4.1 General view

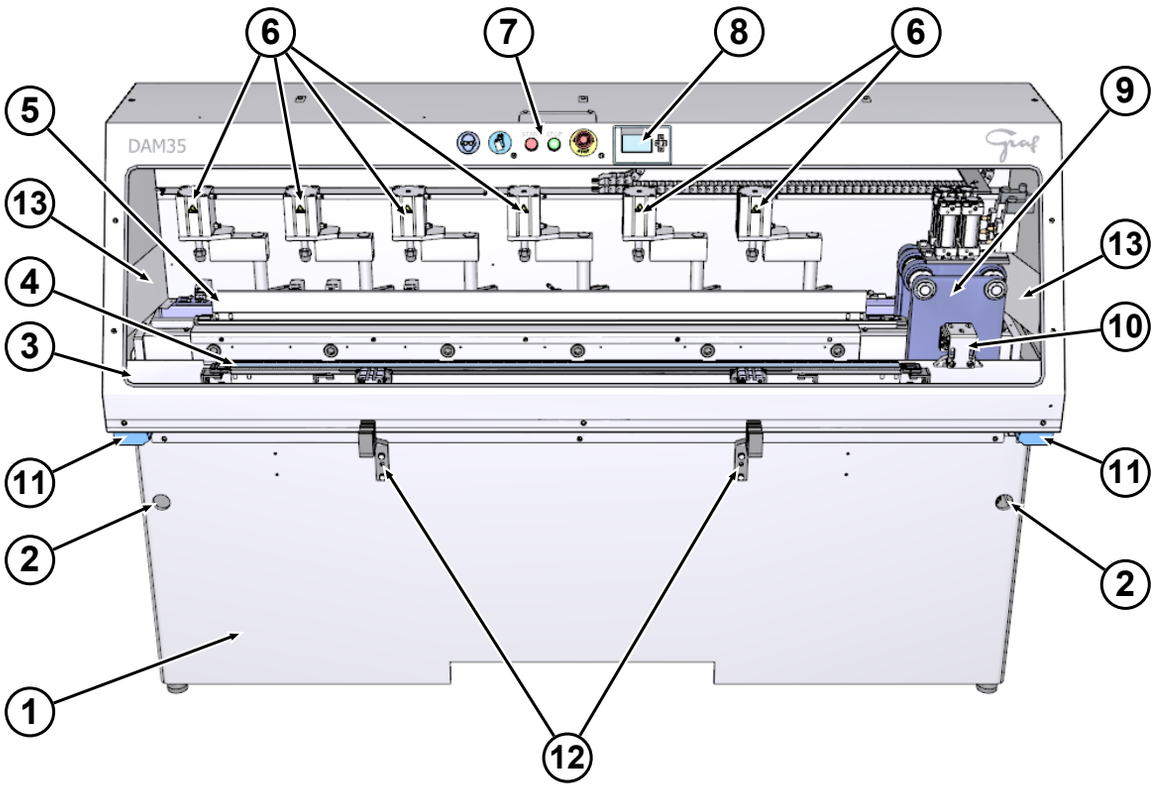


Fig. 1: General view of the machine

Item	Component	Function
1	Lower part	Transport and installation
2	Opening for transport bars	Transport aid
3	Main work area	Setting up and adjusting
4	Stripping area	To strip the flat clothing
5	Clipping area	To clip the flat clothing
6	Hold-down device	To press on the flat clothing
7	Control panel	Buttons for operation
8	Control	For selecting the operating mode and setting parameters
9	Clipping carriage	To clip the flat clothing on the card flat
10	Stripping wedge	To strip the flat clothing from the card flat
11	Collection container	Collecting the remnants after stripping the flat clothing
12	Flat supports	Intermediate storage of the card flat
13	Mirror	For monitoring the winding process

4.2 Functional description

This machine is used for clipping and stripping off flat clothings on cast iron or aluminium card flats for all card types and card widths.

The control unit can be used to select whether a flat clothing is to be clipped or stripped off.

To strip a flat clothing, the operator inserts the card flat to be processed into the stripping area of the machine and starts processing using the control panel. The carriage moves over the entire length of the card flat and strips the worn flat clothing off the flat bar with the stripping wedge. The side clips and the old card clothing can now be removed.

When clipping a new flat clothing, the operator inserts the flat bar into the front flat holder, attaches a new flat clothing to the flat bar by hand and inserts the flat bar with the clothing facing down into the clipping area of the machine. After processing has started, the lateral clamping of the flat bar is activated and the clipping rail moves to the left. When the start limit switch is reached and the delay time set on the control unit has expired, the pre-bending rollers and then the shaping rollers are first lowered, which bends the side clips of the flat clothing.

At the end of the flat bar, the pre-bending rollers are first lifted and then the shaping rollers are lifted. Finally, the carriage runs up to the appropriate limit switch for the selected length, briefly stops and changes direction, lowers the shaping rollers and firmly presses the side clips of the flat clothing onto the flat bar once again.

The machine can be retrofitted with card flats of different sizes and from different manufacturers.

For safety reasons, the main working area on the machine is equipped with a light grid that safely prevents any movement as long as the operator is working in the main work area. If the test cycle (intervention ON) is switched on in the machine control system, the light grid is switched off. This allows the flat and the position to be checked and corrected in safe mode before rolling it in.

4.3 Components for the stripping process

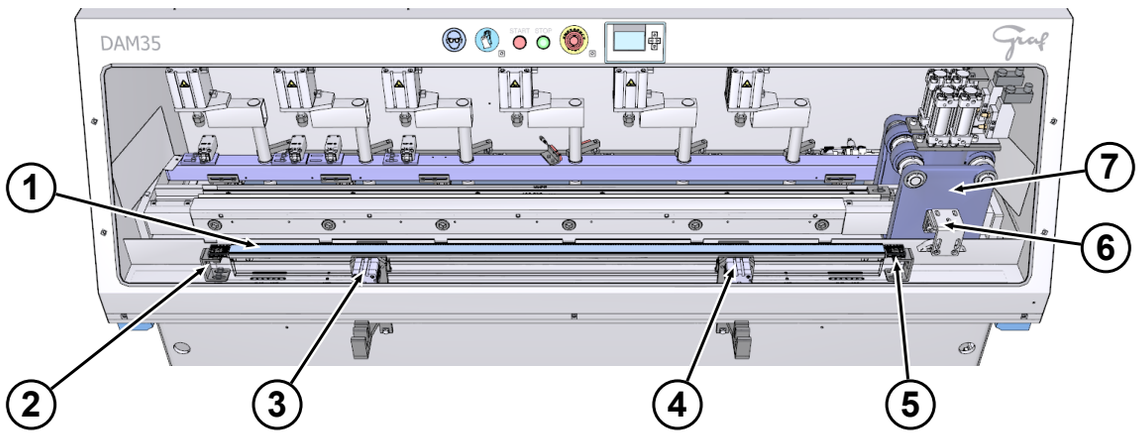


Fig. 2: Components for the stripping process

Item	Component	Function
1	Card flat	Card flat with used flat clothing
2	Support on left	To precisely position the card flat
3	Left clamping cylinder	Holding the flat
4	Right clamping cylinder	Holding the flat
5	Support on right	To precisely position the card flat
6	Stripping wedge	To strip the flat clothing from the card flat
7	Carriage	Stripping wedge drive

4.4 Components for the clipping process

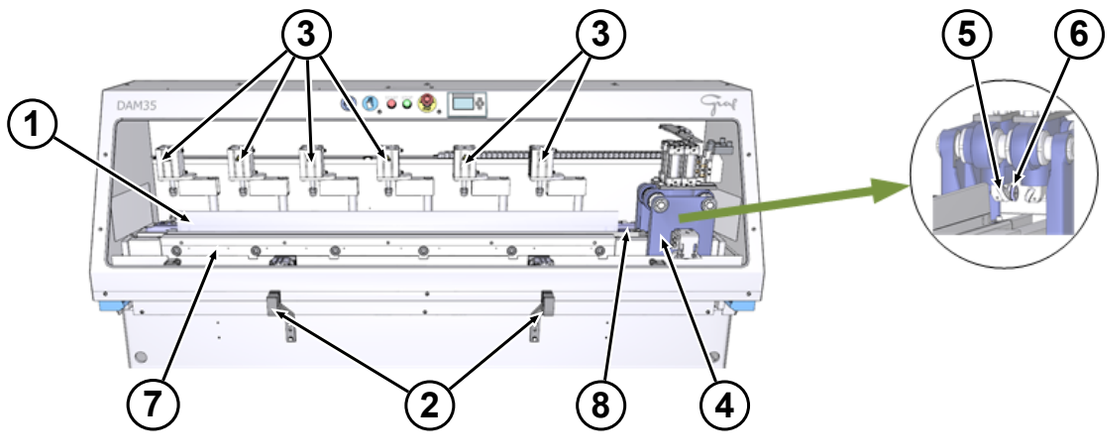
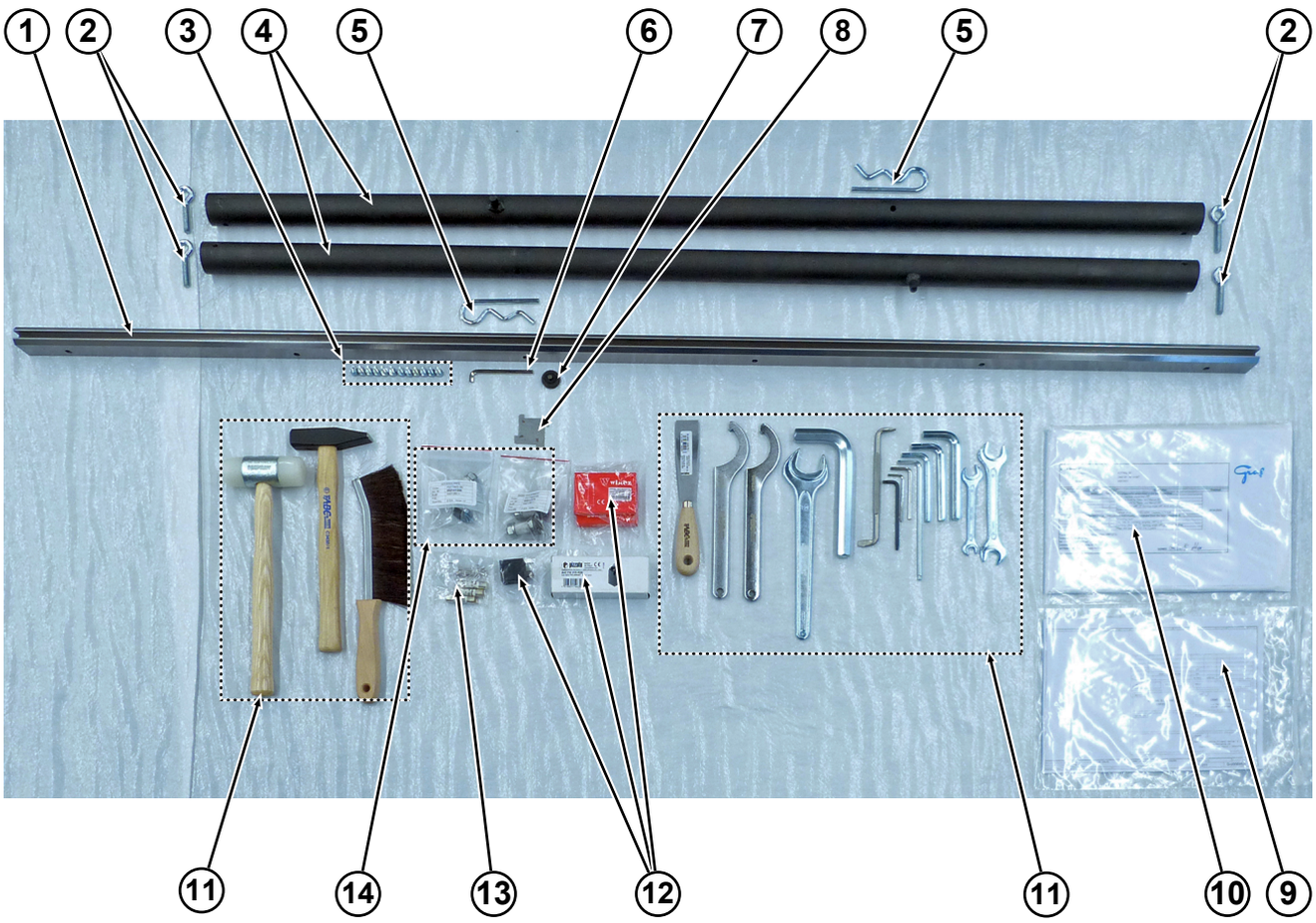


Fig. 3: Components for the clipping process

Item	Component	Function
1	Card flat	Card flat with the flat clothing to be clipped
2	Flat support	To prepare the flat
3	Hold-down device	Pressing the flat onto the flat clothing
4	Carriage	Bending the clips over the pre-bending and shaping rollers
5	Pre-bending rollers	To pre-bend the clips
6	Shaping rollers	To press on the clips
7	Clamping profile with insert rails	Fixing the flat
8	Stop	To precisely position the card flat

4.5 General overview of accessories



Item	Component/part
1	Clip rail
2	Ring bolts for transport
3	Fastening screws for clip rails
4	Transport bars
5	Safety cotter pins for transport bars
6	Allen key with short shank
7	Knurled nut
8	Gauge
9	Plans and drawings
10	Parts list

Item	Component/part
11	Assembly tools - Chisel - Open-end spanner - Allen key - Hammer - Hand brush
12	Limit switch
13	Fuses
14	Shaping rollers

4.6 Position of the safety devices

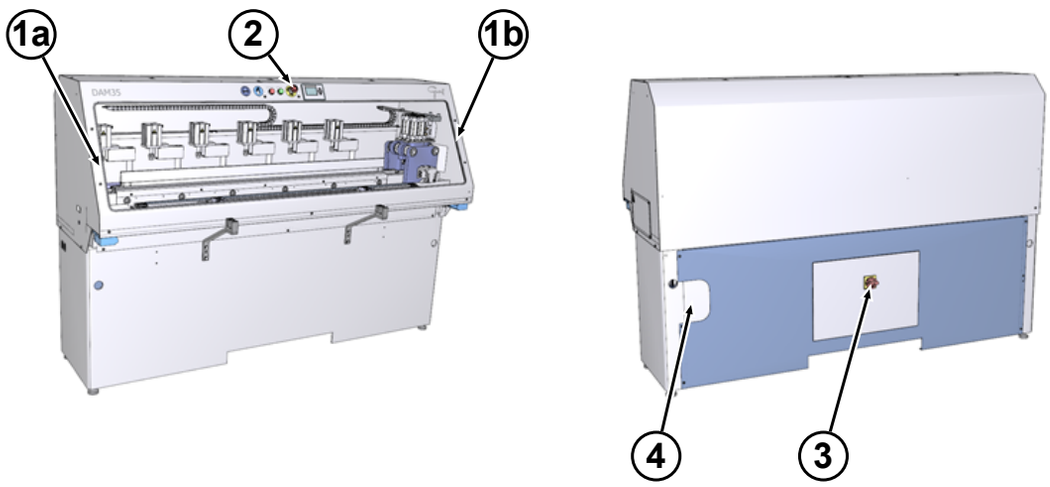


Fig. 4: Position of the safety devices

Item	Component	Function
1	Light grid	Stops all movements when reaching into the work area
2	EMERGENCY STOP	To shut down the machine in an emergency
3	Main switch	Lockable main switch
4	Compressed air main valve	Shuts off the compressed air

4.7 Information signs

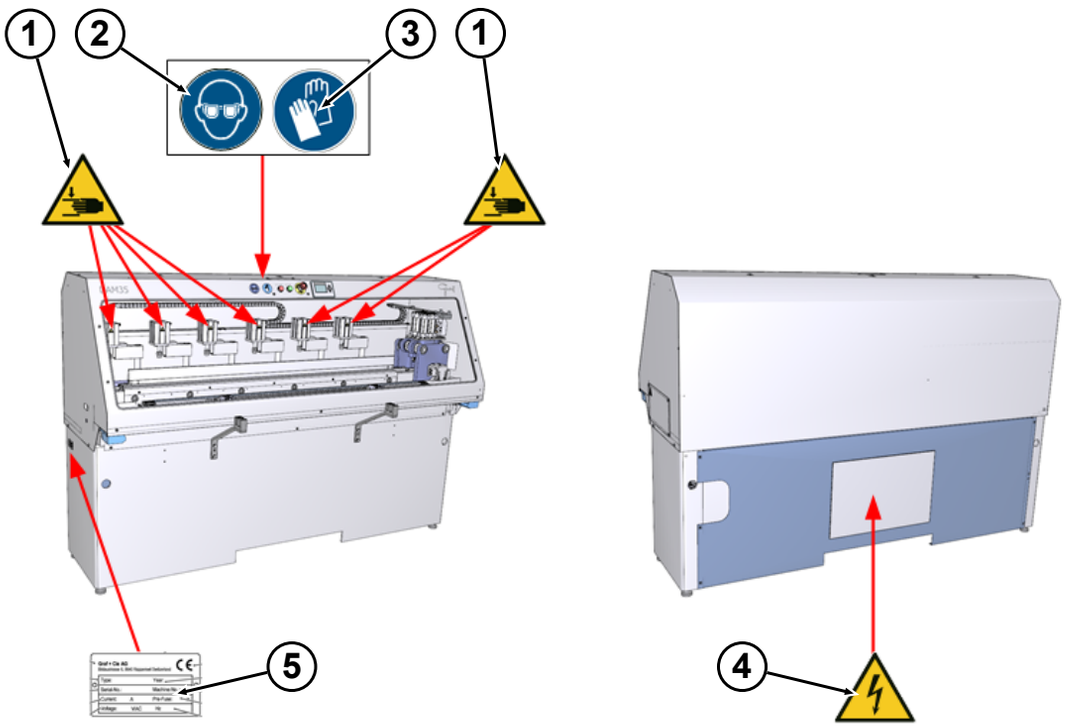


Fig. 5: Information signs on the machine

Item	Component/part
1	Warning of hand injuries
2	Information sign: use eye protection
3	Information sign: use hand protection
4	Warning of electrical voltage
5	Type plate For details of the type plate, see chapter Type plate [▶ 27].

4.8 Position of controls and displays

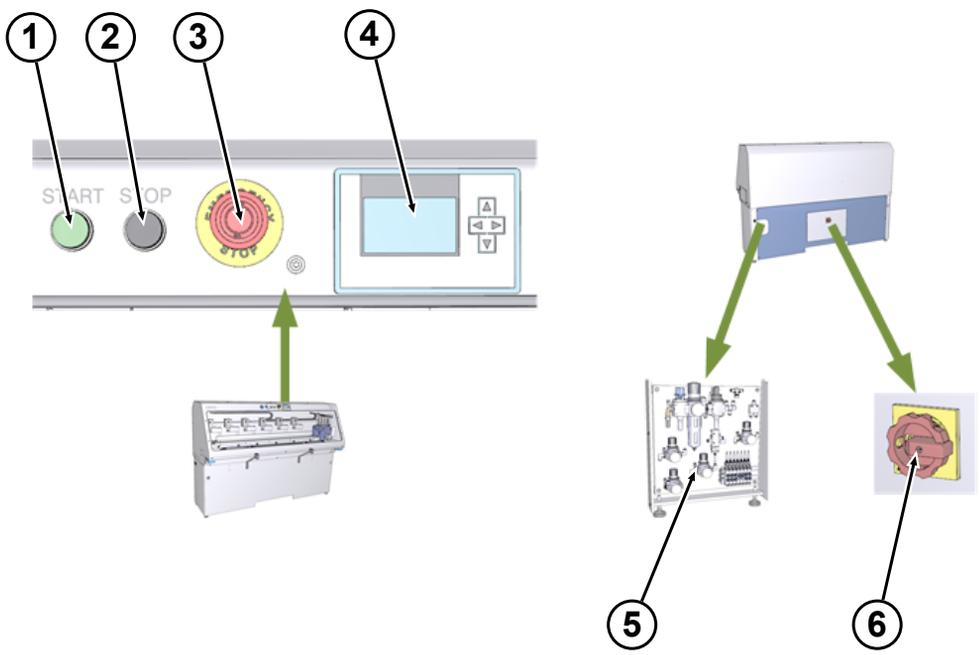


Fig. 6: Position of controls and displays on the machine

Item	Component	Function
1	"START" illuminated push button	Starts machine operation
2	"STOP" pushbutton	Stops machine operation
3	"EMERGENCY STOP" palm button	Sets the machine to a safe state
4	Control	For selecting the operating mode and setting parameters
5	Pneumatic plate	Switches compressed air on/off Sets the pressure values
6	Main switch	Switches the machine on/off

4.9 Position of the connections

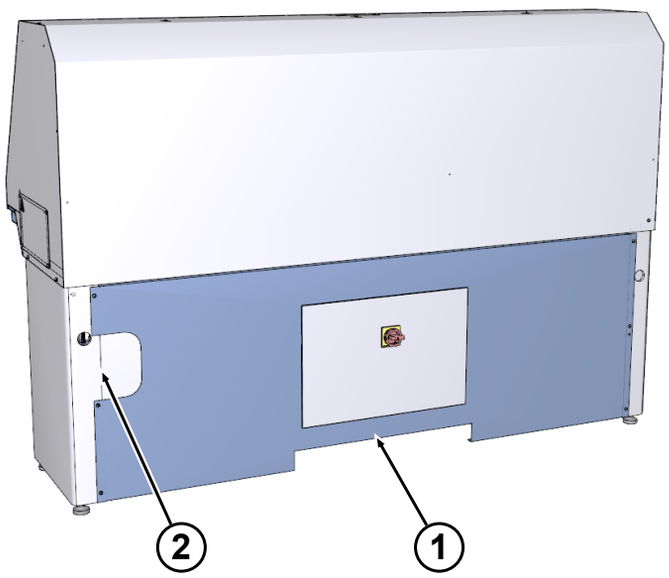


Fig. 7: Position of the connections

Item	Component	Function
1	Electrical supply line	Cable entry in switch cabinet
2	Compressed air connection	Hose connection

4.10 Description of the user interface

4.10.1 Control unit display and control panel

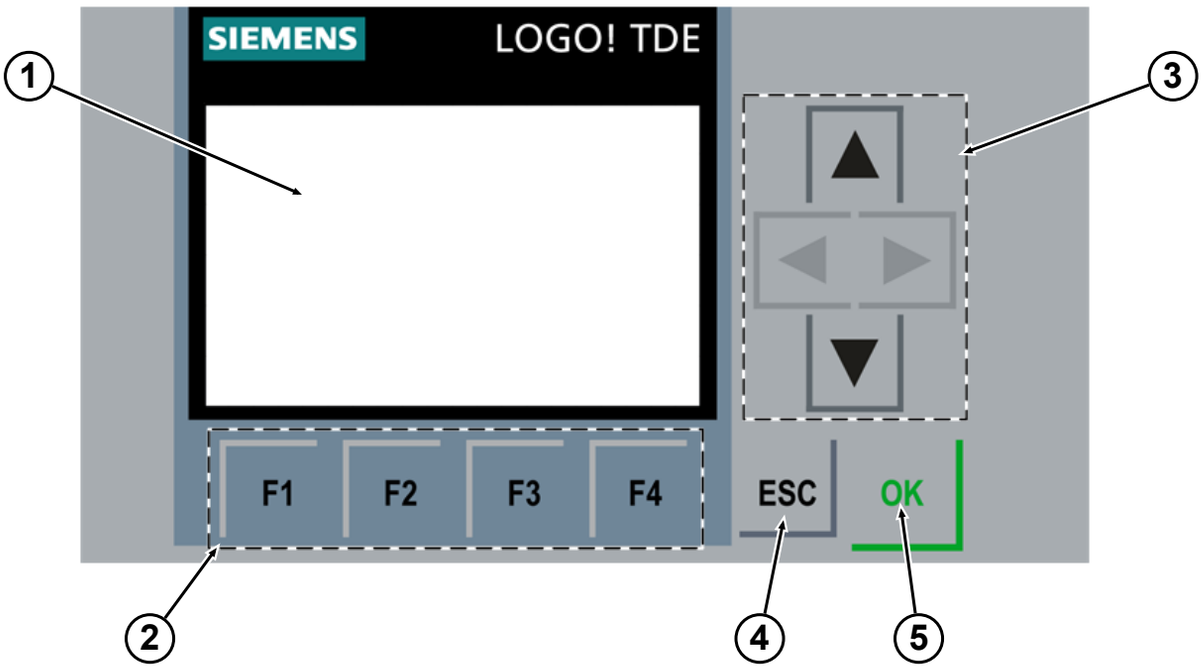


Fig. 8: Position of the connections

Item	Area	Function
1	Display area	Text display with backlighting
2	Function keys F1 - F4	To select the available functions
3	Arrow keys	Keys ◄/►/▲/▼ = Navigation between the setting parameters Keys ▲/▼ = Set the currently selected digit in edit mode Keys ◄/► = Change the currently selected digit
4	ESC key	Press briefly = Cancels the current entry without saving Press and hold = Switch on parameter selection
5	OK key	Switch on editing function for the field or accept the current entry and save it

4.10.2 Start screen

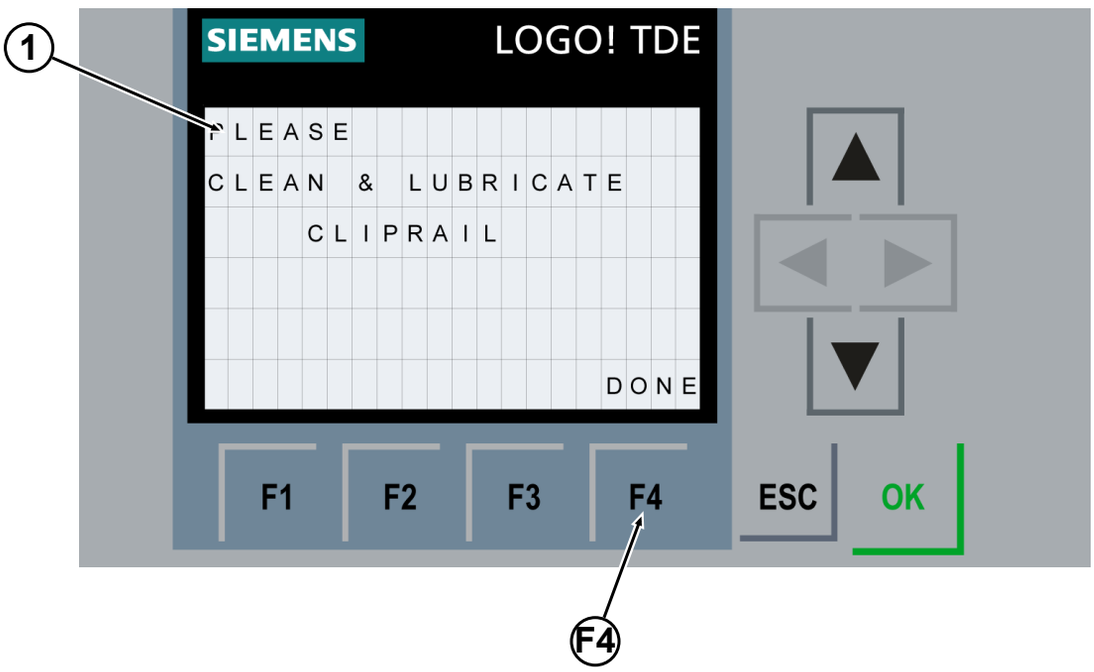


Fig. 9: Start screen after starting the machine

Item	Area	Function
1	"Please clean & lubricate clip rail" display	Text display "Please clean and lubricate the carriage's running surface"
F4	F4 function key	To confirm the execution

4.10.3 Clipping mode

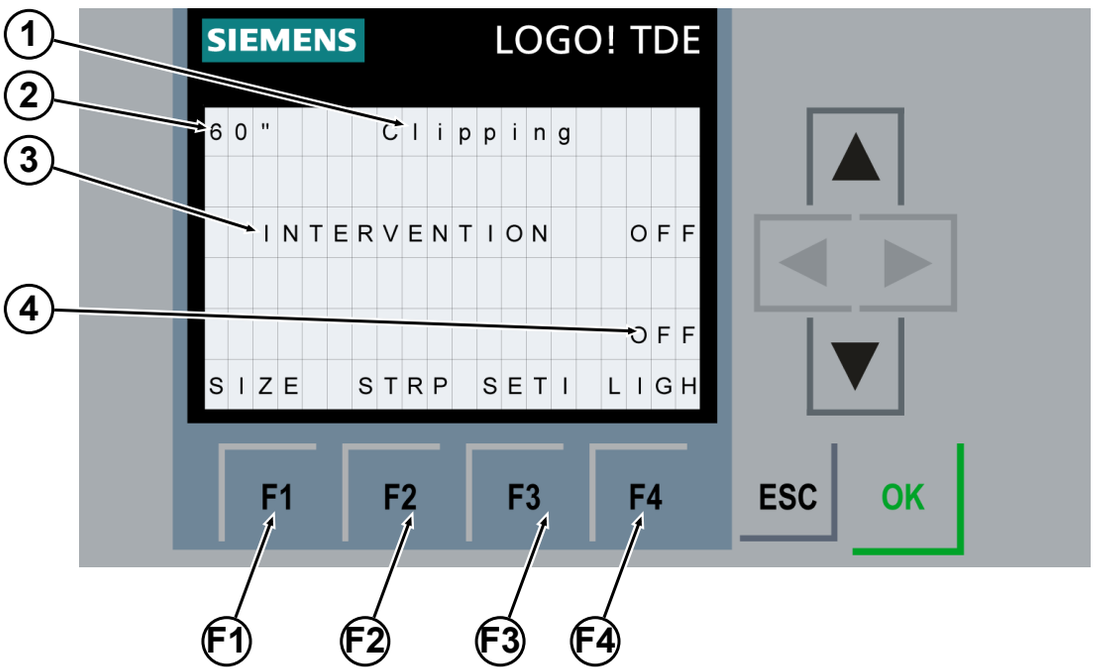


Fig. 10: Screen in Clipping mode

Item	Area	Function
1	Display in Clipping mode	Displays the selected Clipping mode
2	Displays the selected flat length	Possible display values are: 40", 48-54", 60"
3	Displays the setting for the program sequence	OFF = Automatic program sequence ON = Manual intervention option with the hammer and visual inspection, acknowledgement required to activate the automatic sequence
4	Displays the current status of the lighting	OFF = Lighting OFF ON = Lighting ON
F1	F1 function key	Switches between the 3 available lengths 40", 48-54", 60"
F2	F2 function key	Switches to the "Stripping" mode
F3	F3 function key	Switches to the service functions
F4	F4 function key	Switches the lighting in the machine on/off

4.10.4 Stripping mode

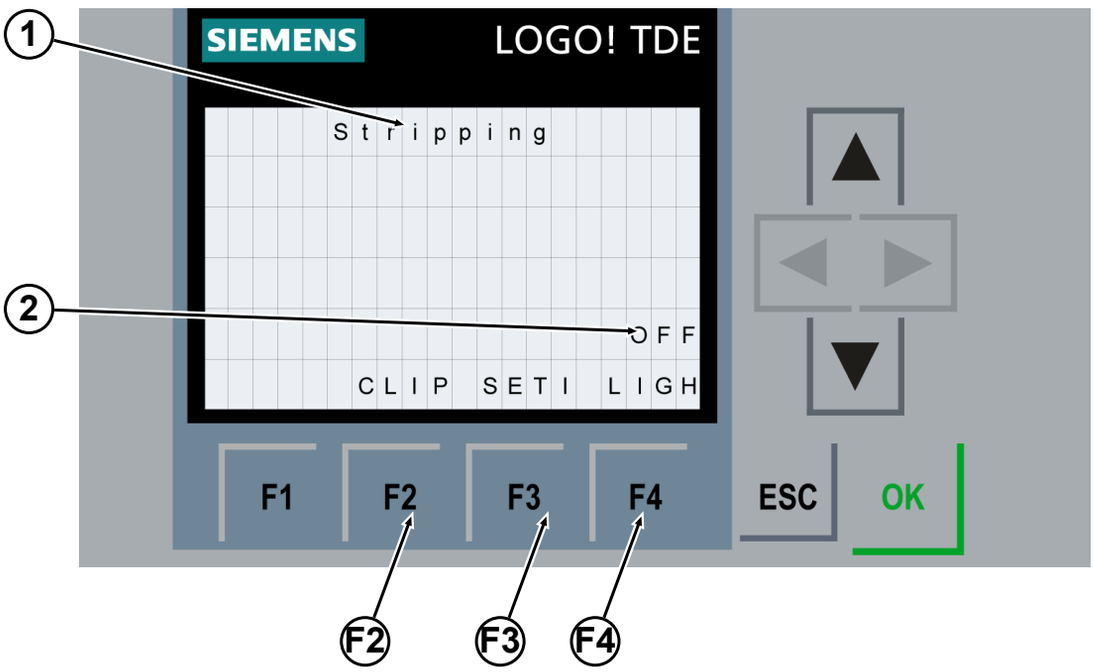


Fig. 11: Screen in Stripping mode

Item	Area	Function
1	Display in Stripping mode	Displays the selected Stripping mode
2	Displays the current status of the lighting	OFF = Lighting OFF ON = Lighting ON
F2	F2 function key	Switches to Clipping mode
F3	F3 function key	Switches to the service functions
F4	F4 function key	Switches the lighting in the machine on/off

4.10.5 Service page 1

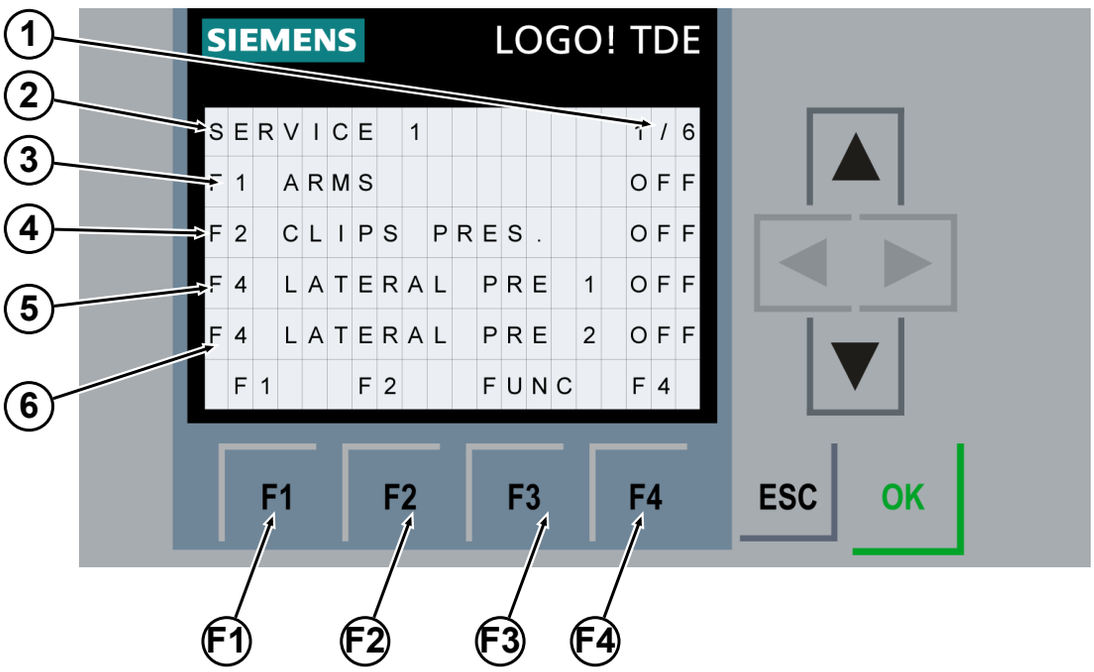


Fig. 12: Service page 1 of 6

Item	Area	Function
1	Number the service page	Display format is page X of Y
2	Name of the service page	For better referencing
3	Manual operation of hold-down device	To swivel the arm in and out
4	Manual operation of hold-down device	To lower/lift the hold-down device when the arm is swivelled out
5	Manual operation Clamping device level 1	Level 1 on/off
6	Manual operation Clamping device level 2	Level 2 on/off
F1	F1 function key	Perform action to swivel hold-down device
F2	F2 function key	Perform action to lower/lift hold-down device
F3	F3 function key	Switches to the next service page
F4	F4 function key	Execute action for clamping device First operation = level 1 Second operation = level 2 Third operation = off

4.10.6 Service page 2

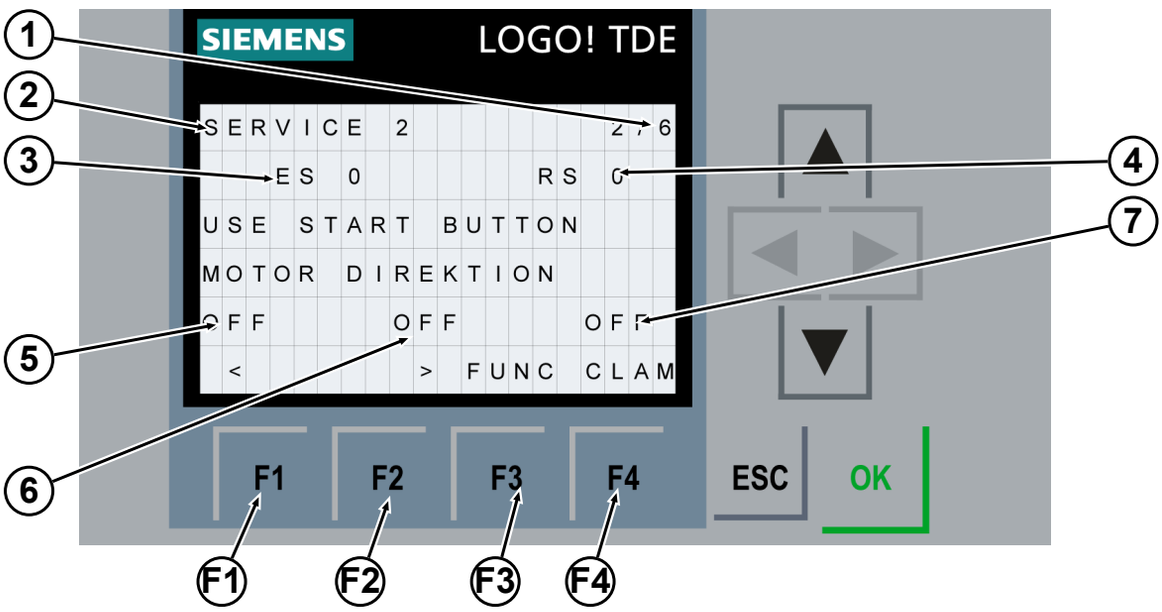


Fig. 13: Service page 2 of 6

Item	Area	Function
1	Number the service page	Display format is page X of Y
2	Name of the service page	For better referencing
3	Display status of front limit switch	Displays the status of the front limit switch 0: Limit switch not occupied 1: Limit switch occupied
4	Display status of rear limit switch	Displays the status of the rear limit switch 0: Limit switch not occupied 1: Limit switch occupied
5	Displays the left direction selection	When the "Start" push button is pressed, the carriage moves to the left as long as the "Start" push button is pressed
6	Displays the right direction selection	When the "Start" push button is pressed, the carriage moves to the right as long as the "Start" push button is pressed
7	Displays status of clamping device in the stripping position	Display ON or OFF
F1	F1 function key	Select the left direction
F2	F2 function key	Select the right direction
F3	F3 function key	Switches to the next service page
F4	F4 function key	Switch the clamping device on/off at the stripping position

4.10.7 Service page 3

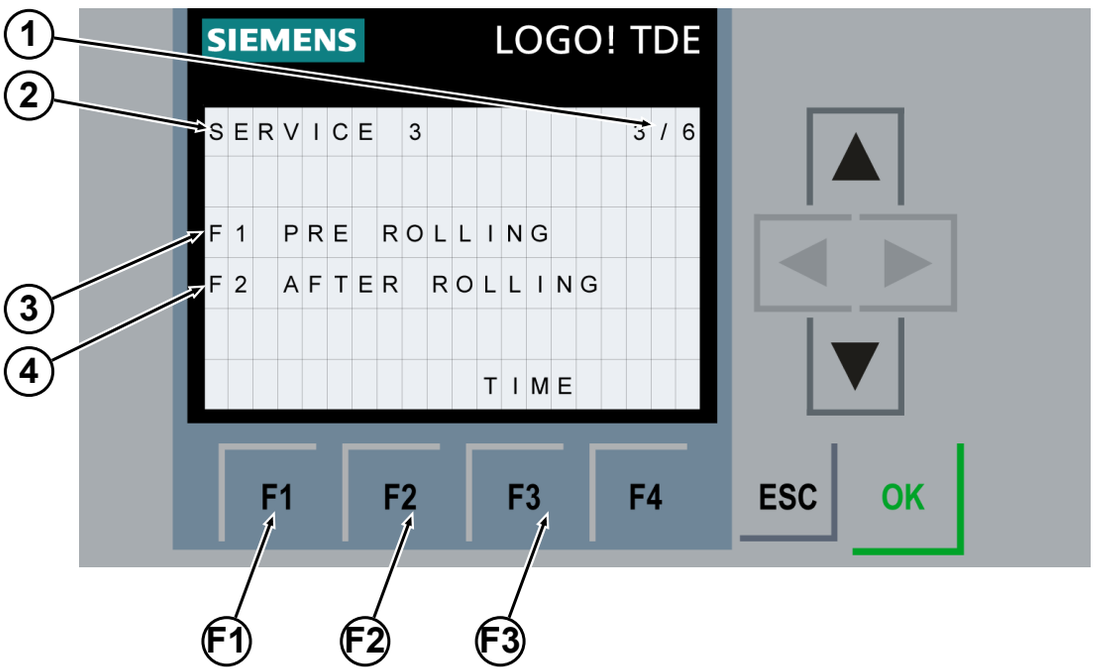


Fig. 14: Service page 3 of 6

Item	Area	Function
1	Number the service page	Display format is page X of Y
2	Name of the service page	For better referencing
3	Manual operation of pre-bending roller pneumatic cylinder	To lower/lift the pre-bending rollers
4	Manual operation of shaping roller pneumatic cylinder	To lower/lift the shaping rollers
F1	F1 function key	Execute action for pre-bending roller pneumatic cylinder
F2	F2 function key	Execute action for pneumatic cylinder shaping roller
F3	F3 function key	Switches to the next service page

4.10.8 Service page 4

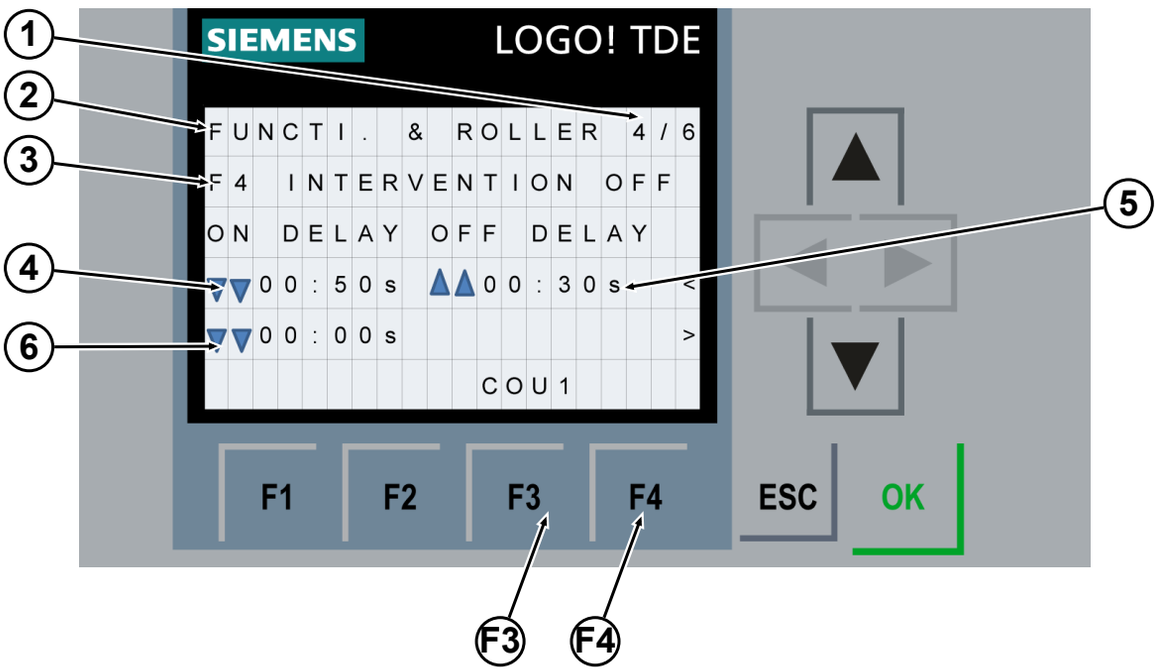


Fig. 15: Service page 4 of 6

Item	Area	Function
1	Number the service page	Display format is page X of Y
2	Name of the service page	For better referencing
3	Display for "INTERVENTION" mode	Displays whether the "INTERVENTION" mode is switched on or off
4	Delay parameter ON for shaping rollers in forward direction	Specification of the delay time in seconds until the shaping rollers will be lowered after the pre-bending rollers in the forward direction
5	Delay parameter OFF for shaping rollers in forward direction	Specification of the delay time in seconds until the shaping rollers will be lifted at the end of the flat after the pre-bending rollers in the forward direction
6	Delay parameter ON for shaping rollers in reverse direction	Specification of the delay time in seconds until the shaping rollers will be lowered at the end of the flat in the reverse direction
F3	F3 function key	Switches to the next service page
F4	F4 function key	Switch "INTERVENTION" mode on/off

4.10.9 Service page 5

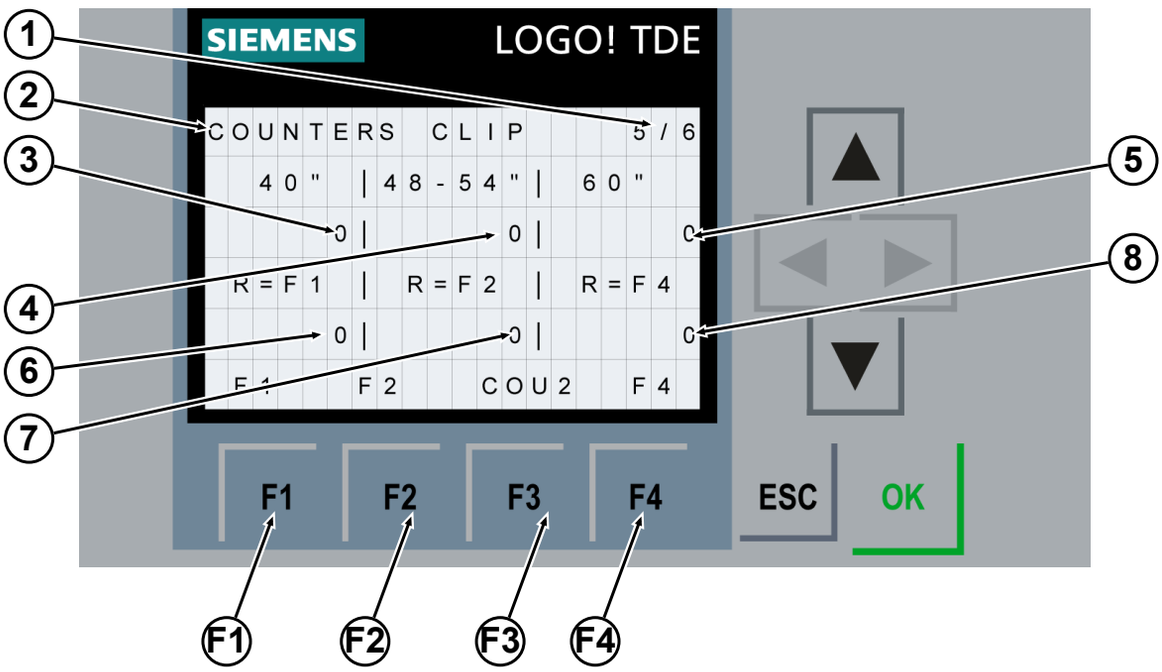


Fig. 16: Service page 5 of 6

Item	Area	Function
1	Number the service page	Display format is page X of Y
2	Name of the service page	For better referencing
3	Total counter for length of 40"	Total number of clipping processes for this length
4	Total counter for length of 48" - 54"	Total number of clipping processes for this length
5	Total counter for length of 60"	Total number of clipping processes for this length
6	Counter since reset for length of 40"	Number of clipping processes for this length since the last reset
7	Counter since reset for length of 48" - 54"	Number of clipping processes for this length since the last reset
8	Counter since reset for length of 60"	Number of clipping processes for this length since the last reset
F1	F1 function key	Reset counter for 40"
F2	F2 function key	Reset counter for 48" - 54"
F3	F3 function key	Switches to the next service page
F4	F4 function key	Reset counter for 60"

4.10.10 Service page 6

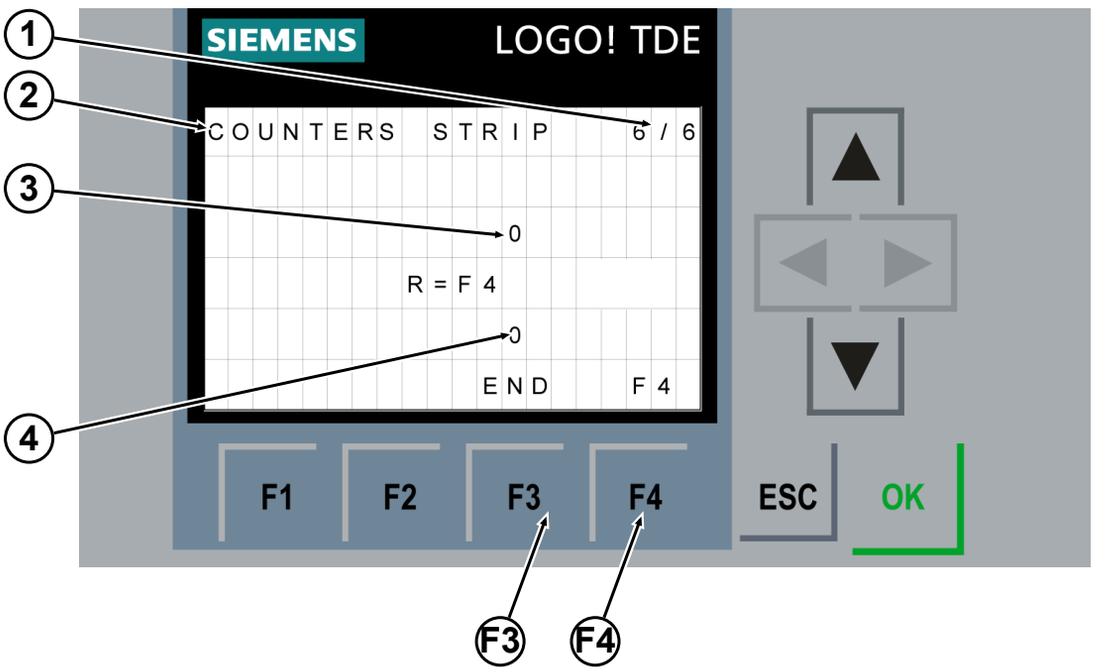


Fig. 17: Service page 6 of 6

Item	Area	Function
1	Number the service page	Display format is page X of Y
2	Name of the service page	For better referencing
3	Total counter	Total number of all stripping processes
4	Counter since reset	Number of stripping processes since the last reset
F3	F3 function key	Switches to the production page
F4	F4 function key	Reset counter

4.10.11 Error status

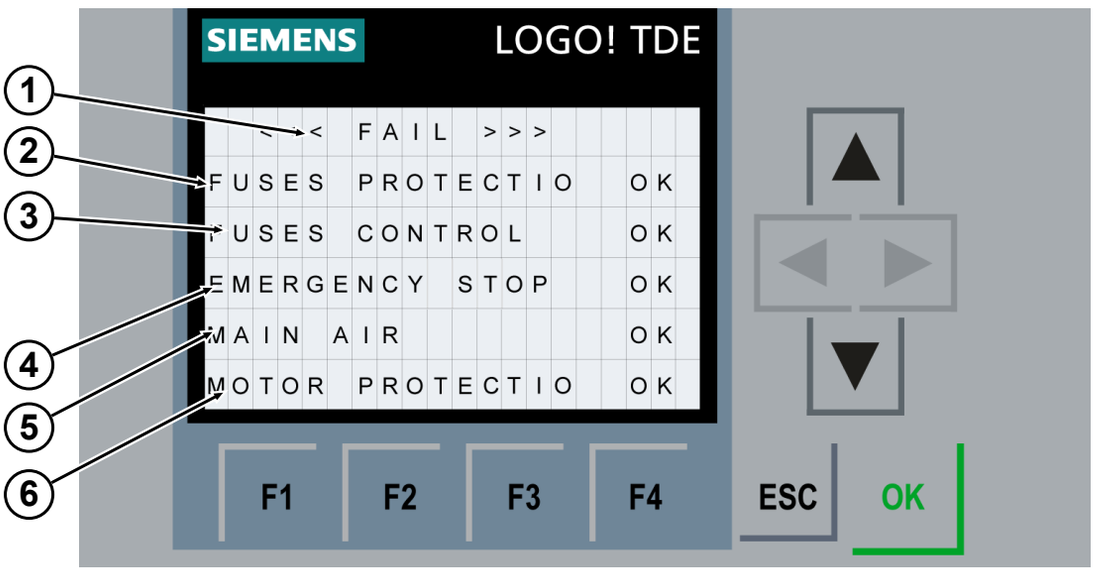


Fig. 18: Displays the current error status

Item	Area	Function
1	Heading of the page	The display backlighting changes to orange and red
2	FUSES PROTECTIO [Fuse monitoring of power section]	Displays whether a fuse in the power circuit has failed
3	FUSES CONTROL [Fuse monitoring of control]	Displays whether a fuse in the control circuit has failed
4	EMERGENCY STOP	Displays whether the EMERGENCY STOP button has been pressed
5	MAIN AIR [Compressed air supply]	Displays whether the compressed air supply has been switched off
6	MOTOR PROTECTIO [motor protection switch]	Displays whether the motor protection switch has switched off

4.10.12 Message page 1

This page is displayed if the "INTERVENTION" mode has been switched off. It can only be acknowledged after the timer (5 seconds) has expired.

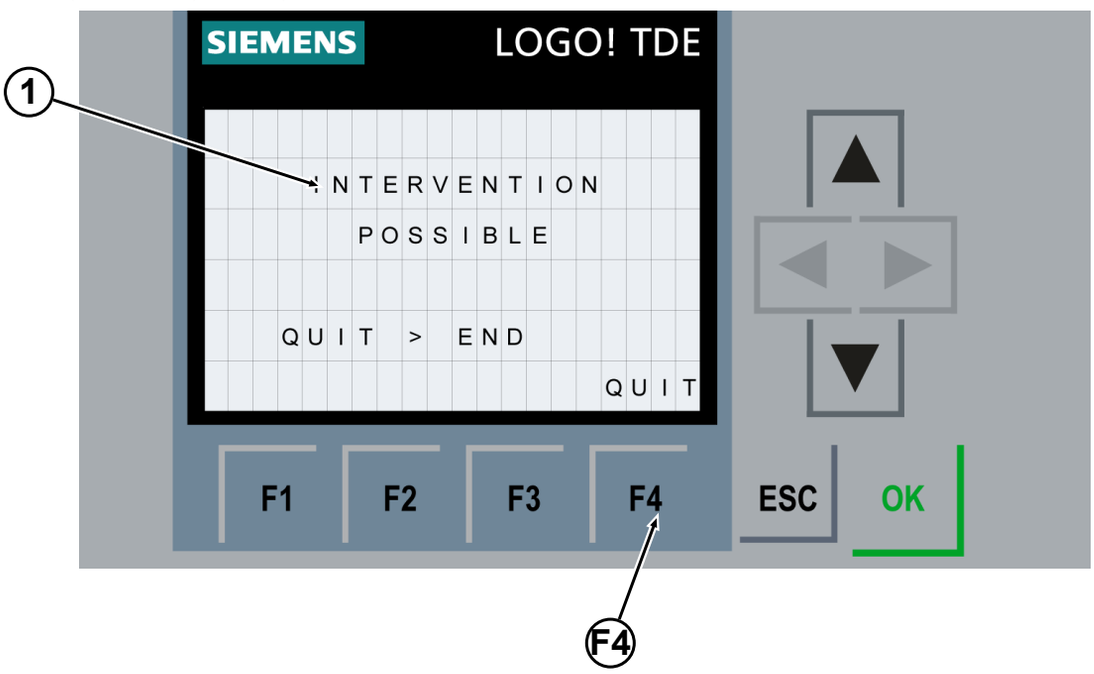


Fig. 19: Display to acknowledge manual intervention by the operator

Item	Area	Function
1	"INTERVENTION POSSIBLE" display	"Manual intervention possible" text display
F4	F4 function key	For confirmation after the manual intervention has been completed

4.10.13 Message page 2

This page is displayed when a button whose function is disabled for the operator is pressed

Press the ESC button to return to normal operation.

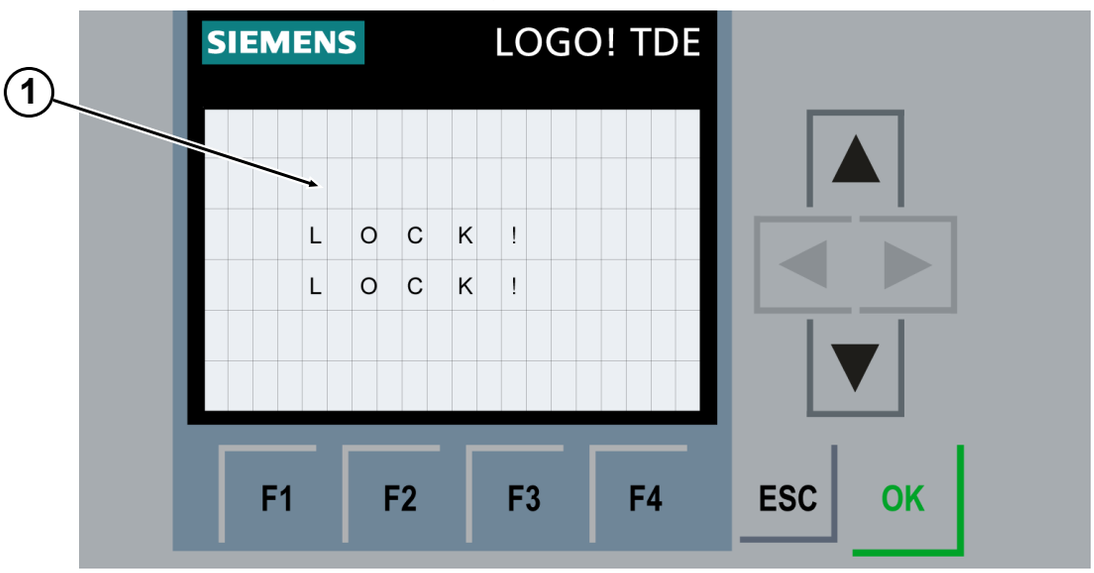


Fig. 20: Display if a function is currently not possible

Item	Area	Function
1	"LOCK!" display	"Locked" text display

4.10.14 Message page 3

This page is displayed if the drive is not in the end position.

The machine automatically moves to the start position when the light curtain is released.

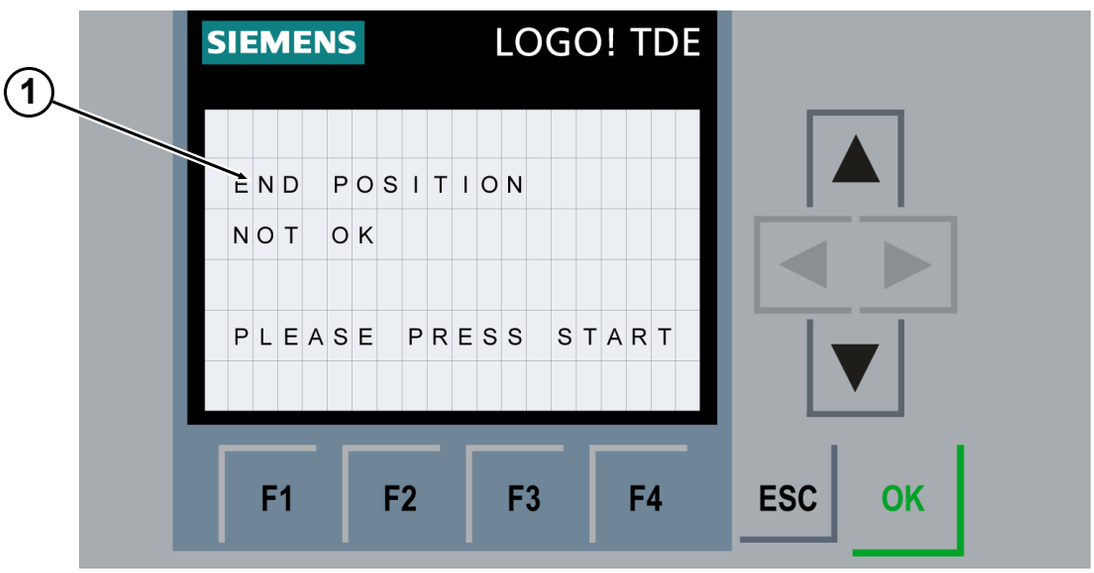


Fig. 21: Display if the correct end position has not been reached

Item	Area	Function
1	Display "END POSITION NOT OK" "PLEASE PRESS START"	Text display "End position is not OK" "Press START button"

4.10.15 Message page 4

This page is displayed after 80 machine cycles.

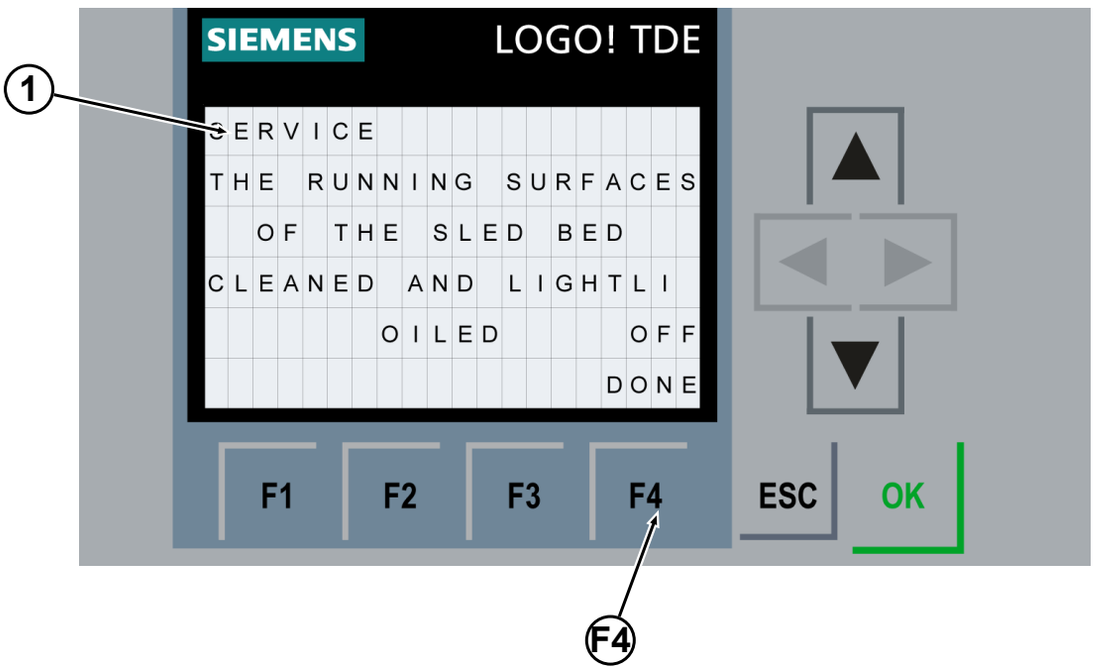


Fig. 22: Display requesting acknowledgement of the lubrication of the carriage bed by the operator

Item	Area	Function
1	Display "THE RUNNING SURFACES OF THE SLED BED CLEANED AND LIGHTLY OILED"	Text display as shown on left
F4	F4 function key	For confirmation after the activity is completed

5 Transport instructions

5.1 Safety Instructions

SAFETY INSTRUCTIONS

Work safely when transporting the machine!

Carry out all work in compliance with the safety instructions listed below:

- ▶ Observe the regulations listed in the Safety [▷ 14] chapter for all work on/with the machine and its components.
- ▶ Wear protective equipment according to the accident prevention regulations at the operating site.
- ▶ Carry out all operating steps according to the information provided in these instructions.
- ▶ Do not walk under or in front of moving loads.
- ▶ Do not leave lifted loads unattended.
- ▶ Make sure there is sufficient free space during transport.
- ▶ Use caution when lifting and setting down the machine.
- ▶ Make sure the work area is tidy and clean! Loose components and tools lying on top of each other or around are potential sources of accidents.

Observe the following safety instructions when transporting machine parts:

- The hoist operator must be authorised to do perform this task.
- Only use approved and tested load handling attachments.
- Wear personal protective equipment (protective gloves).
- Secure loose attachments before transport.
- Before lifting the machine parts, all personnel must leave the transport area.
- Ropes or chains must not be damaged and must have the corresponding load capacity.
- Ropes and chains must not be knotted.
- Ropes and chains must not touch sharp edges.
- Only attach ropes or chains to the designated attachment points.
- Do not use the attachment devices of individual machine parts (e.g. transport lugs) to transport other parts.
- Take into consideration the machine's centre of gravity before lifting and select the lifting point so that the machine's centre of gravity is below the lifting point. Attention: risk of tipping over!

5.2 About the packaging

Packaging/transport boxes

The machine's components are delivered packed in wooden crates suitable for shipment by sea.

Pictograms on the packaging

The transport boxes are marked with symbols and pictograms according to the contents. Always take symbols and pictograms on the crates into consideration.

5.3 Transport with pallet jack or forklift

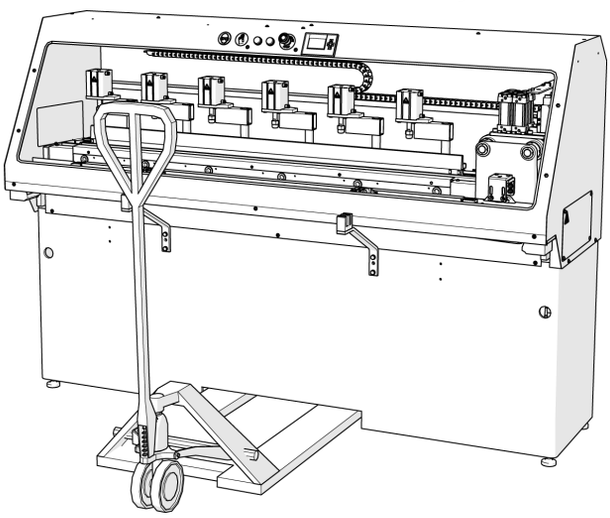


Fig. 23: Transport with pallet jack or forklift

Packages attached to pallets can be transported with a forklift under the following conditions:

- The forklift must be designed for the weight of the items to be transported.
- The item to be transported must be securely fastened to the pallet.

Personnel:

- Forklift operator

➲ Drive the forklift to position the tines under the machine.

➲ Move the tines in far enough that they protrudes on the opposite side.

➲ Make sure that the machine cannot tip when the centre of gravity is off-centre.

➲ Lift the machine and start the transport operation.

5.4 Transport by crane

⚠WARNING

Danger to life due to suspended loads!

Danger due to falling parts or uncontrolled, swinging parts.

- ▶ Never walk under suspended loads.
- ▶ Never attach lifting gear to protruding machine parts or to eyelets on attached components. Make sure that the lifting gear is securely fastened.
- ▶ Only use approved hoists and lifting gear with sufficient load-bearing capacity.
- ▶ Transport should only be carried out by trained personnel.
- ▶ Always take into consideration the machine's centre of gravity due to the risk of tipping over and select the attachment points accordingly.

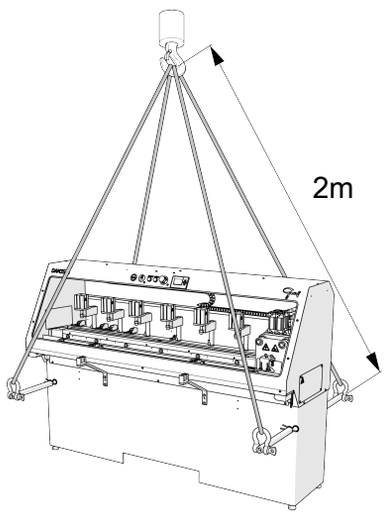


Fig. 24: Transport by crane

The transport boxes can be transported with a crane under the following conditions:

- The lifting gear must be designed for the weight.
- Minimum load-bearing capacity: 1500 kg.
- The crane operator must be authorised to carry out this work.
- The hoists must not touch the covers.
- The length of the sling from the crane hook to the bolt must be 2 metres.

Lift transport boxes or machines as follows:

➲ Insert the transport bars into the openings in the lower part of the machine (for positions, see the General view [▶ 28] chapter) and secure with the cotter pins.

➲ Attach the transport boxes or machine.

➲ Do not select a stop angle that is too flat.

➲ Make sure that ropes and straps, etc. are not twisted and that the transport boxes are securely fastened.

➲ Lift the transport boxes and start the transport.

5.5 Packaging disposal

Dispose of the packaging materials according to the local waste disposal regulations. If necessary, engage a disposal company to dispose of the packaging materials.

5.6 Information on interim storage

Observe the following regulations if machine parts must be stored before installation:

- Keep the machine parts in their packaging until assembly.
- Store the machine parts in a dry place, free of dust and protect them from direct sunlight.
- Observe the ambient conditions for the storage area specified in the technical data.
- Do not store the packages outdoors. In addition, make sure that the floor of the storage area is dry during storage.
- Prevent mechanical shocks and damage during storage.
- In case of extended storage, apply preservation measures and check the state of preservation at regular intervals.

	NOTE
	▶ The manufacturer accepts no liability for damage resulting from improper storage. ▶ Observe the additional information on storage and preservation in the documentation of the purchased parts.

6 Installation and initial commissioning

6.1 General information

	NOTE
	The machine components are fully installed and commissioned by the Graf + CIE AG service personnel.

6.2 Checking the direction of rotation:

➲ Connect the machine to the power supply.

➲ Switch on the main switch.

➲ Preselect the direction of movement for the carriage in the control unit.

➲ Move the carriage in inching mode and check the direction of movement.

⇨ Direction of movement corresponds to the preselected direction: connection is OK.

⇨ Direction of movement does not correspond to the preselected direction: have the rotating field changed by a qualified electrician.

6.3 Aligning the machine

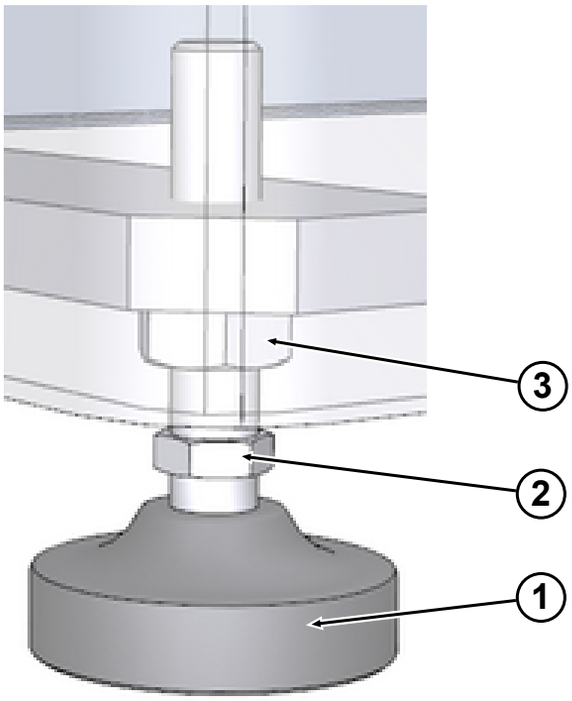


Fig. 25: Machine base

Proceed as follows to align the machine:

- ➲ Set up the machine at the specified location and read off the current alignment using a spirit level.
- ➲ Loosen the lock nut (3) on the machine base (1) to be adjusted and set the machine base to the desired height using an open-end spanner on the hexagonal nut (2).
- ➲ After the adjustment work is complete, tighten the lock nut (3).
- ➲ Repeat the procedure on the other machine bases until the machine is levelled.

7 Handling/operation

7.1 Safety Instructions

SAFETY INSTRUCTIONS

Work safely when operating the machine!

Carry out all work in compliance with the safety instructions listed below:

- Observe the regulations listed in the Safety [▶ 14] chapter for all work on/with the machine.
- Wear protective equipment according to the accident prevention regulations at the operating site.
- Carry out all operating steps according to the information provided in these instructions.
- Before starting work, make sure that all covers and safety devices are installed and functioning properly.
- Never disable safety devices during operation.
- Make sure the work area is tidy and clean! Loose components and tools lying on top of each other or around are potential sources of accidents.

7.2 Switching on the machine

7.2.1 Switching on the machine

Checks before switching the machine on

The following checks must be carried out before switching on the machine:

- The compressed air supply is available.
- The electrical connection has been established.
- All EMERGENCY STOP buttons are unlocked.

Switch-on procedure

Observe the following sequence when switching on the machine:

➲ Open the shut-off valve for the compressed air supply.

➲ Check the operating pressure on the pressure gauge (for the value, see Technical data [▶ 26]).

➲ Set the main switch of the machine to the I ON position.

➲ Wait for the control unit to start.

7.2.2 Switching off the machine

Observe the following sequence when switching off the machine:

➲ Complete the current work step.

➲ Remove the flat from the machine.

➲ Set the main switch of the machine to the 0 OFF position.

➲ Close the shut-off valve for the compressed air supply.

7.2.3 Shutting down the machine in an emergency

To shut down the machine:

➲ Press the EMERGENCY STOP button.

⇨ After pressing the EMERGENCY STOP button, the machine drives are immediately switched off and a fault is shown on the control unit display.

	NOTE
	Only press the EMERGENCY STOP button in an emergency.

Switching the machine back on after an emergency stop

Before switching the machine back on:

➲ Eliminate the cause of the emergency stop situation.

➲ Unlock the EMERGENCY STOP button.

➲ Restart the program sequence.

7.2.4 Acknowledging fault messages

Faults are indicated on the control unit display as soon as the cause of the fault is detected (see Error status [▶ 48]). Several errors can occur at the same time.

The error message is not acknowledged.

	NOTE
	Once the cause of the fault has been eliminated, the control unit display automatically switches back to the page previously displayed.

7.3 Operating modes

7.3.1 Overview

The machine can be operated in the following modes:

- Manual operation / single step
- Stripping
- Clipping

7.3.2 Manual operation / single step

The following functions can be performed in manual mode:

Function	Additional information
Switch the lighting on/off	Clipping mode [▶ 40] --> F4 or Stripping mode [▶ 41] --> F4
Move carriage	On the Service page 2 [▶ 43], preselect the direction and press and hold the "START" illuminated push button.
Activate/deactivate clamping in the stripping area	Service page 2 [▶ 43] --> F4
Activate/deactivate clamping in the clipping area	Service page 1 [▶ 42] --> F4 several times
Swivel hold-down device	Service page 1 [▶ 42] --> F1
Press on hold-down device	Service page 1 [▶ 42] --> F2
Lower/lift pre-bending rollers	Service page 3 [▶ 44] --> F1
Lower/lift shaping rollers	Service page 3 [▶ 44] --> F2

7.3.3 Setting the control unit parameters

Various parameters that affect the program sequence can be set on the control unit display.

Function	Additional information
Intervention (stop after hammering) ON/OFF	Service page 4 [▶ 45] --> F4
Delay time for lowering the shaping roller after the pre-bending roller in the forward direction	Service page 4 [▶ 45] --> Parameter ON DELAY 1
Delay time for lifting the shaping roller after the pre-bending roller in the forward direction	Service page 4 [▶ 45] --> Parameter OFF DELAY 1
Delay time for lowering the shaping roller after the pre-bending roller in the reverse direction	Service page 4 [▶ 45] --> Parameter ON DELAY 2

7.4 Setting up and adjusting

7.4.1 Adjusting flat supports

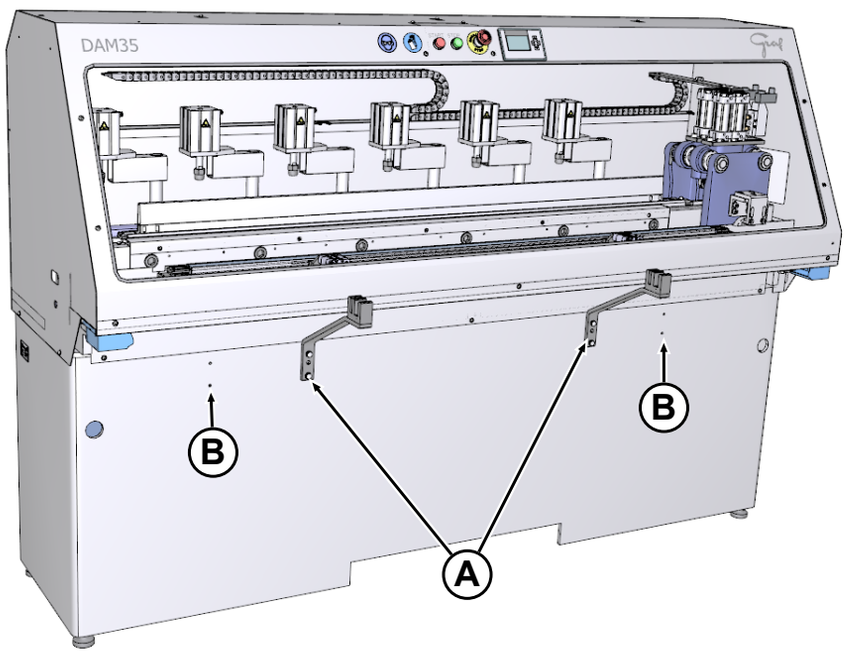


Fig. 26: Possible positions of the flat supports

Depending on the length of the flats to be processed, the flat supports must be mounted in different positions:

- Position A is suitable for flats with a length of 40" and for flats with a length of 48-54".
- Position B is ideal for flats with a length of 60".

➲ To convert the flat supports, loosen the screws on the brackets and reattach them in a different position.

	NOTE
	The plastic inserts of the flat supports can be changed to match the type of flat.

7.4.2 Setting up the stripping area

7.4.2.1 Setup procedure

The procedure for setting up the stripping area is described below. See also the Adjusting the stripping area to the flat type [▶ 66] chapter and the Adjusting the stripping wedge to the flat [▶ 67] chapter.

- ➲ Adjust the flat holder to the length of the flat.
- ➲ Insert the empty flat.
- ➲ Adjust the flat holder so that the surface of the flat protrudes approx. 0.5 to 1 mm beyond the upper edges of the clamping jaws of the clamping cylinders.
- ➲ Measure the distance between the top edge of the flat and the machine floor on both sides.
- ➲ Adjust the flat holders so that the height is the same on both sides.
- ➲ Move the holder of the stripping wedge to the top position.
- ➲ Activate the flat clamp (see the Service page 1 [▶ 42] chapter).
- ➲ Select the desired direction on service page 2 (see the Service page 2 [▶ 43]) chapter.
- ➲ Press and hold the Start button to move the carriage until the stripping wedge is positioned over the flat.
- ➲ Position the holder of the stripping wedge.
- ➲ Check the distance between the flat and the cutting edge using a feeler gauge.
- ➲ Press and hold the Start button to move the carriage to the left.
- ➲ Adjust the flat height on the left side if necessary.
- ➲ Move the carriage back to the right side and check the settings again.
- ➲ Repeat the process until the settings are correct.
- ➲ Deactivate the flat clamp (see the Service page 1 [▶ 42] chapter).

7.4.2.2 Adjusting the stripping area to the flat type

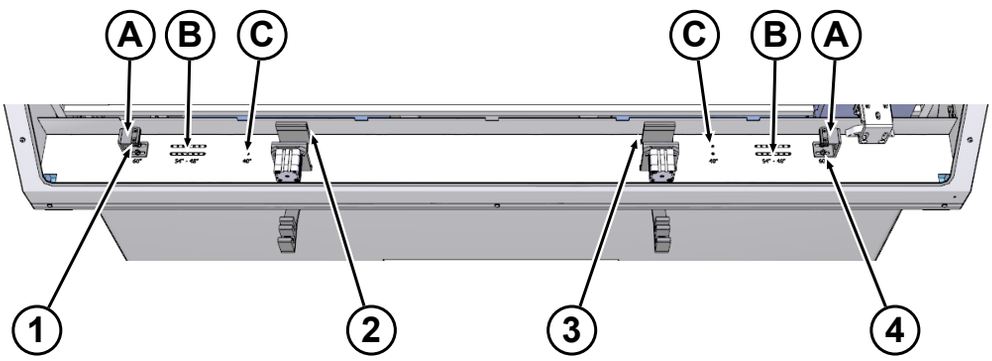


Fig. 27: Possible positions of the flat holders in the stripping area

Depending on the length of the flats to be processed, the flat holders (1, 4) must be fitted at different positions in the stripping area:

- Position A for flats with a length of 60".
- Position B for flats with a length of 48-54".
- Position C for flats with a length of 40".

➲ To convert the flat holders (1, 4), loosen the lower screws on the flat holders and reattach them in the desired position.

➲ Insert the empty flat into the stripping area and position the flat holders (1, 4) in the slotted holes so that the flat has little lateral play.

➲ Use the side screws on the flat holder to adjust the height of the flat holder. The top surface of the flat should protrude approx. 0.5 - 1 mm above the upper edges of the clamping jaws of the clamping cylinders (2, 3).

	NOTE
	The height of the flat must be set the same on both sides.

7.4.2.3 Adjusting the stripping wedge to the flat

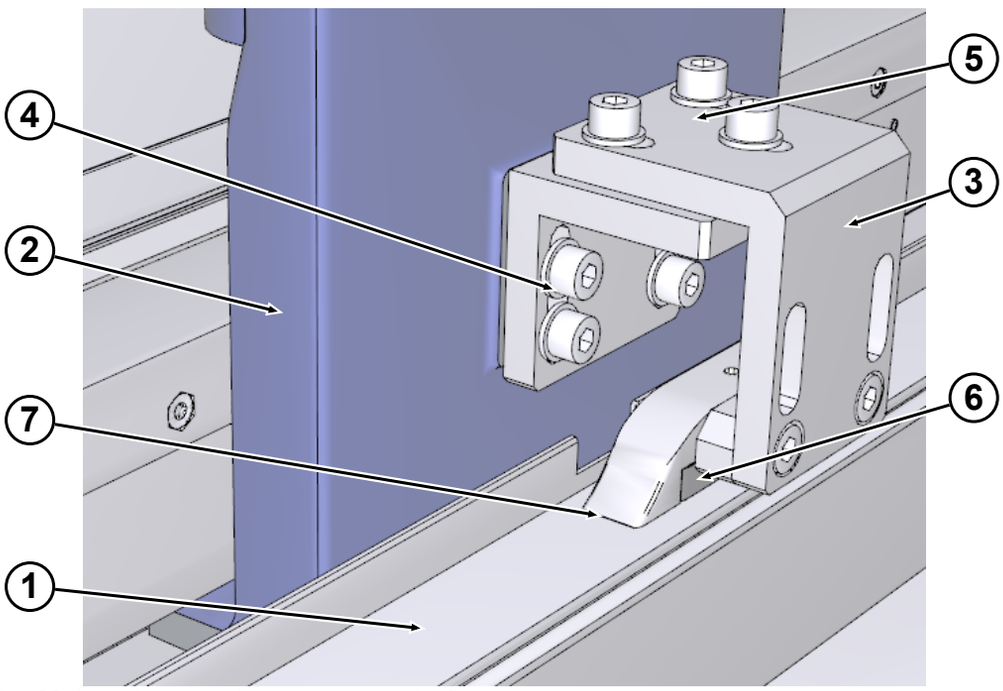


Fig. 28: Adjusting the stripping wedge to the flat

After adjusting the flat height in the stripping area, the stripping wedge must be adjusted to the upper edge of the flat.

Proceed as follows to adjust the stripping wedge to the flat:

- ➲ Place the empty flat (1) in the stripping area.
- ➲ Loosen the screws (4) on the holder (3) of the stripping wedge and fix the holder (3) in the highest position.
- ➲ Activate the clamping of the flat using the control unit display.
- ➲ Move the carriage (2) to the centre of the flap using the manual control.
- ➲ Loosen the screws (4) on the holder (3) of the stripping wedge and place the underside of the stripping wedge (6) on the top surface of the flat.
- ➲ In this position, tighten the screws (4) of the holder (3) on the carriage.
- ➲ Use a feeler gauge to check whether the distance (7) between the cutting edge of the stripping wedge and the surface of the flat is approx. 0.5 mm. If this is not the case, the stripping wedge is worn and must be replaced (see Check the stripping wedge [▶ 89]).
- ➲ Check whether the cutting edge of the stripping wedge (7) is centred on the width of the flat. If it is not, correct the lateral alignment of the stripping wedge with the screws (5).
- ➲ Move the carriage (2) back to the starting position using the manual control.
- ➲ Deactivate the clamping of the flat using the control unit display.

NOTICE

Possible damage to the flat and the machine

If the height of the flat is not set the same on both sides using the flat holders, the stripping wedge can drive into the surface of the flat and cause damage to the flat and the stripping wedge.

▶ Make sure that the height of the flat is set the same on both sides using the flat holders.

7.4.3 Setting up the clipping area

7.4.3.1 Adjusting the flat stop

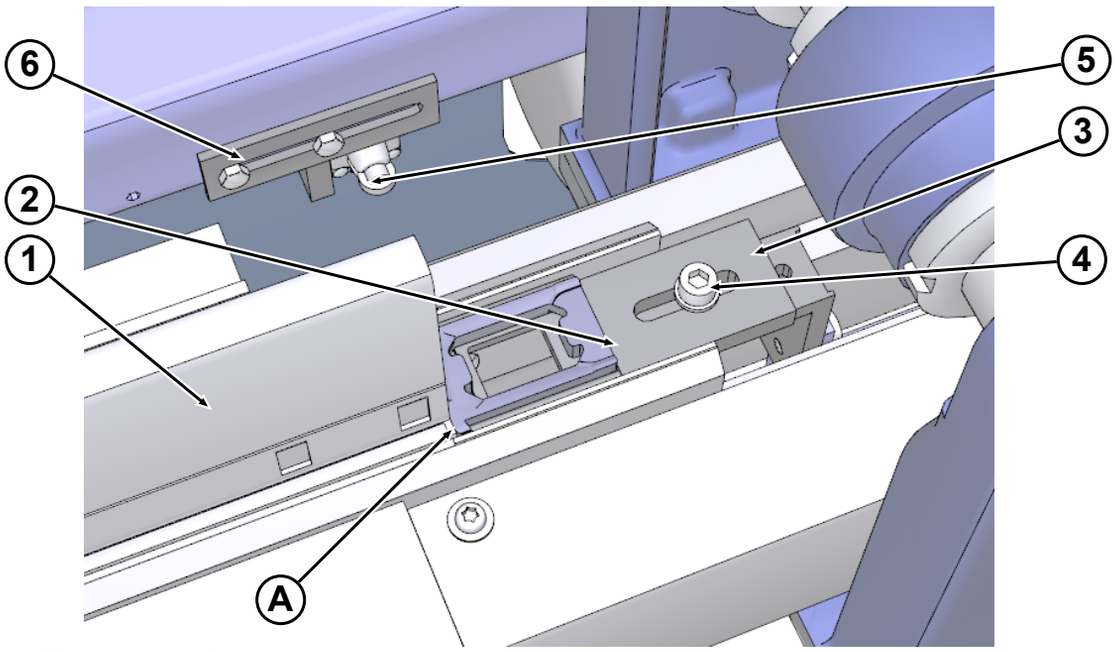


Fig. 29: Adjusting the flat stop in the clipping area

The position of the stop (3) and the position of the limit switch (5) determine the starting point (A) for lowering the pre-bending and shaping rollers. When the limit switch (5) is actuated by the carriage, the pneumatic cylinders of the pre-bending rollers are lowered via the control unit. This must be carried out at point (A) on the flat.

Adjusting the stop (3) on the right side of the clipping area ensures that the starting point (A) is approached consistently for the flats to be processed consecutively.

Proceed as follows to adjust the stop:

- ➲ Insert the flat with the flat clothing into the clipping area and place it against the stop (3).
- ➲ Carry out a test run and check whether the pre-bending rollers are lowered at point (A).
- ➲ If they are not, loosen the cylinder screw (4) and change the position of the stop in the desired direction.
- ➲ Tighten the cylinder screw (4) and carry out another test run.
- ➲ Repeat the procedure if necessary.

	NOTE
	The limit switch (5) is preset at the factory and only needs to be adjusted if special flats need to be processed. If the position of the limit switch (5) has been changed using the screws (6), both the position of the stop (3) and the delay times for the shaping rollers stored in the control unit must be reset.

7.4.3.2 Adjusting the pre-bending and shaping rollers to the flat width

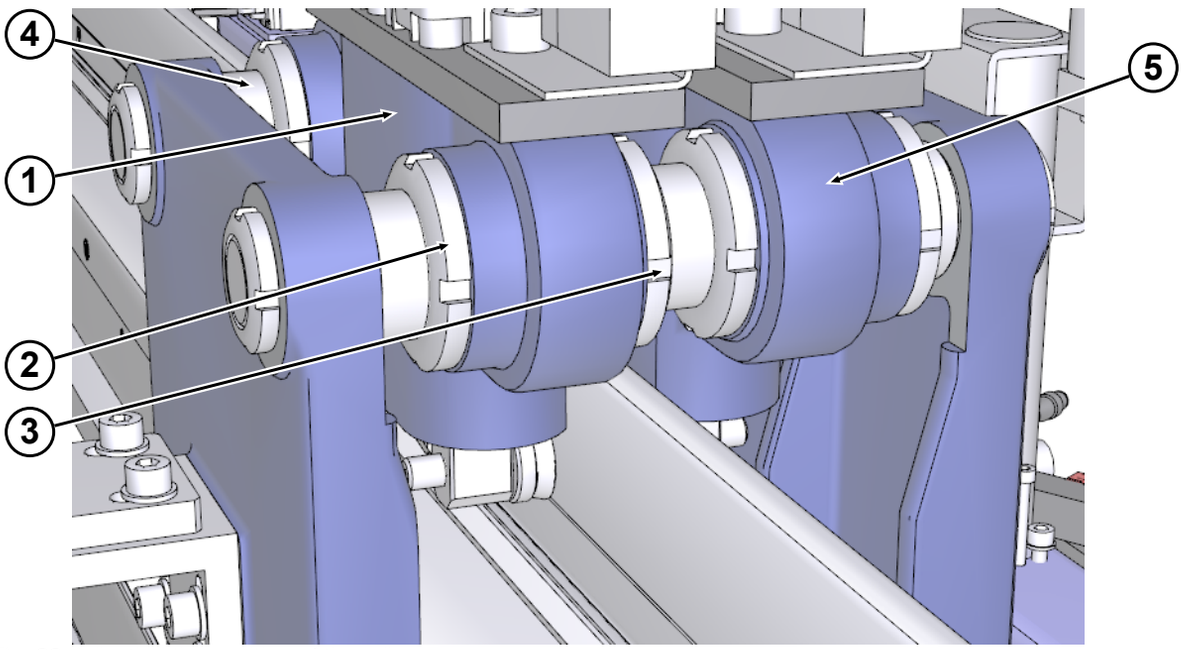


Fig. 30: Adjusting the position of the rollers

Depending on the flat type and width, the position of the pre-bending and shaping rollers must be readjusted.

Proceed as follows to adjust the rollers:

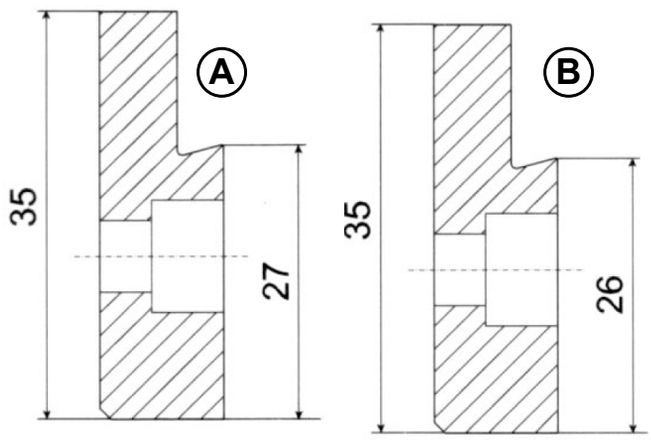
- ➲ Loosen the shaft nuts (2, 3) of both rollers on the front roller unit (1) using a hook spanner.
- ➲ Move the roller unit (1) in the desired direction.
- ➲ Tighten the shaft nuts (2, 3) of both rollers again.
- ➲ Try rolling in a short section and make any necessary corrections.
- ➲ Carry out the same procedure for the rear roller unit (5).

	NOTE
	The roller position is always set for both rollers on one side at the same time.

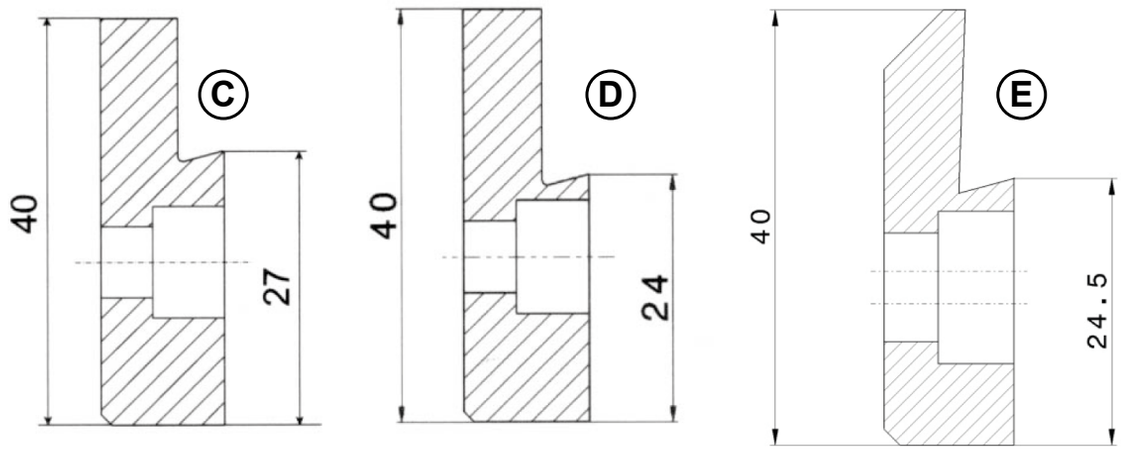
7.4.3.3 Selection of suitable clips and insert rails

7.4.3.3.1 Selection of the clips rails

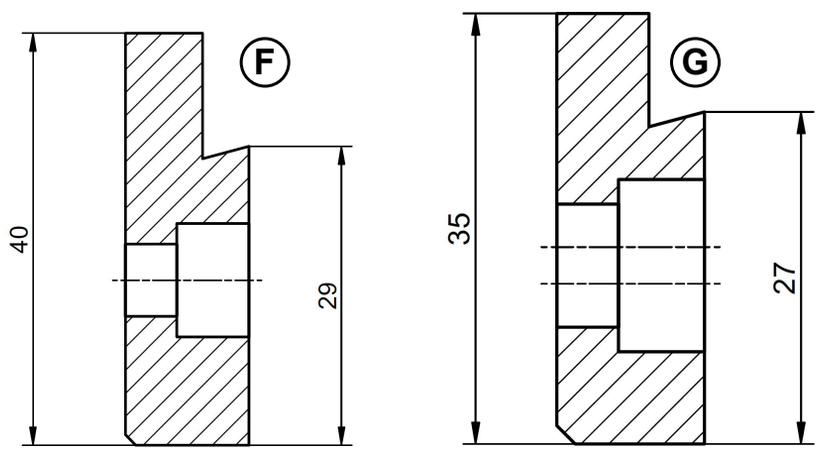
Flexible flat clothings



Item	Flat
A	Standard cast flat 40" 2x 00213152
B	Trützschler cast flat 40" 2x 00213357

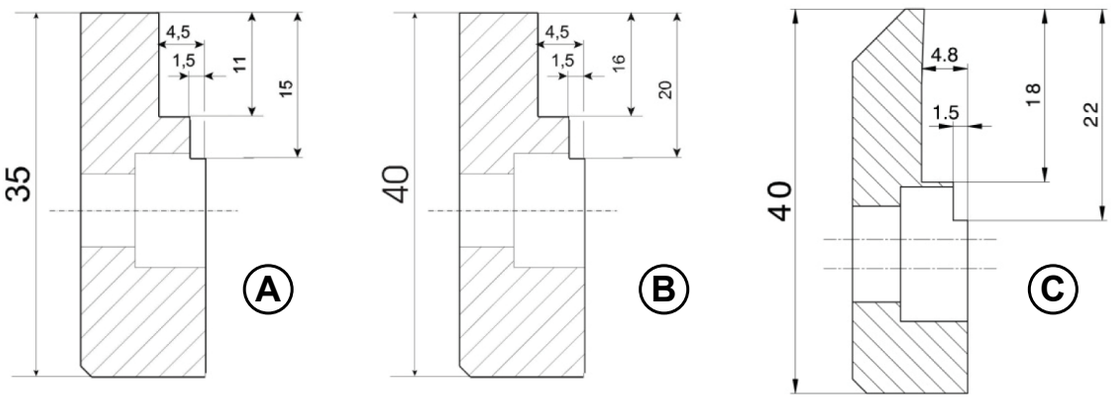


Item	Flat
C	Trützschler/China/Saurer/Lakshmi aluminium flat 40" 2x 00213431 / 60" 2x 00213767
D	Marzoli Alu-flat 40" 2x 00213546
E	Rieter/Marzoli Alu-flat 60" 1x 109.528 / 1x 109.529

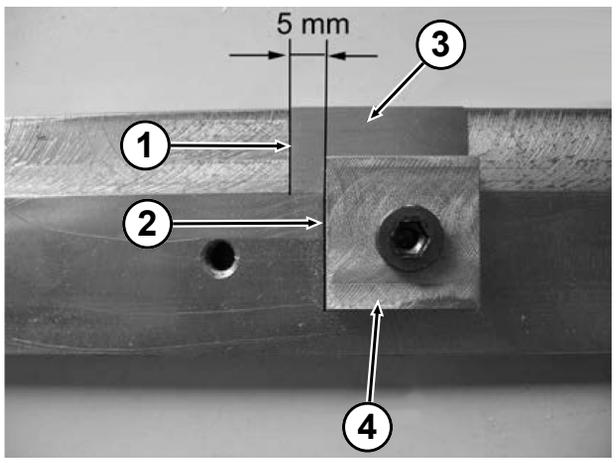


Item	Flat
F	Jingwei Qingdao JWF 1203 2x 00213775
G	Crosrol MK8 2x 00213897

Stationary flat clothings



Item	Flat
A	For clothings with a clip height of 15.8 / 16.8 mm (cast aluminium): 2x 00213503
B	For clothings with a clip height of 21.8 / 22.8 mm (alu): 2x 00213504
C	For clothings with a clip height of 22.8 mm (Rieter alu): 1x 002141158



- The clip rails for stationary flats or all-steel flats also have a stop with spacer plates.
- When installing the clip rails, the stops must be on the right side of the machine.
- The distance from the stop (4) to the spacer (3) is 5 mm.
- When inserting the flat bar, the clip (1) must be in contact with the plate.
- The clothing strip (2) is attached to the stop (4).

Proceed as follows to change the clip rails:

➲ Loosen the fastening screws using the Allen key with a short shank and unscrew them using the knurled nut. The tools are included in the scope of delivery (see the General overview of accessories [▶ 32] chapter).

➲ Remove the clip rail.
➲ Clean the retaining rails.
➲ Insert the desired clip rails.
➲ Screw in the fastening screws with the knurled nut and tighten using the Allen key.

7.4.3.3.2 Selecting the insert rails

	NOTE
	The insert rail must always be 8.5 mm narrower than the width of the flat bar with clips.

Example:
Flat with clips = 34.5 mm => insert rails = 26.0 mm
The following widths are available:

	Article no. for 60"
1 x 25 mm	00212250
2 x 1 mm	00212250I
1 x 0.5 mm	00212250II

7.4.3.4 Adjusting the width to the flat width

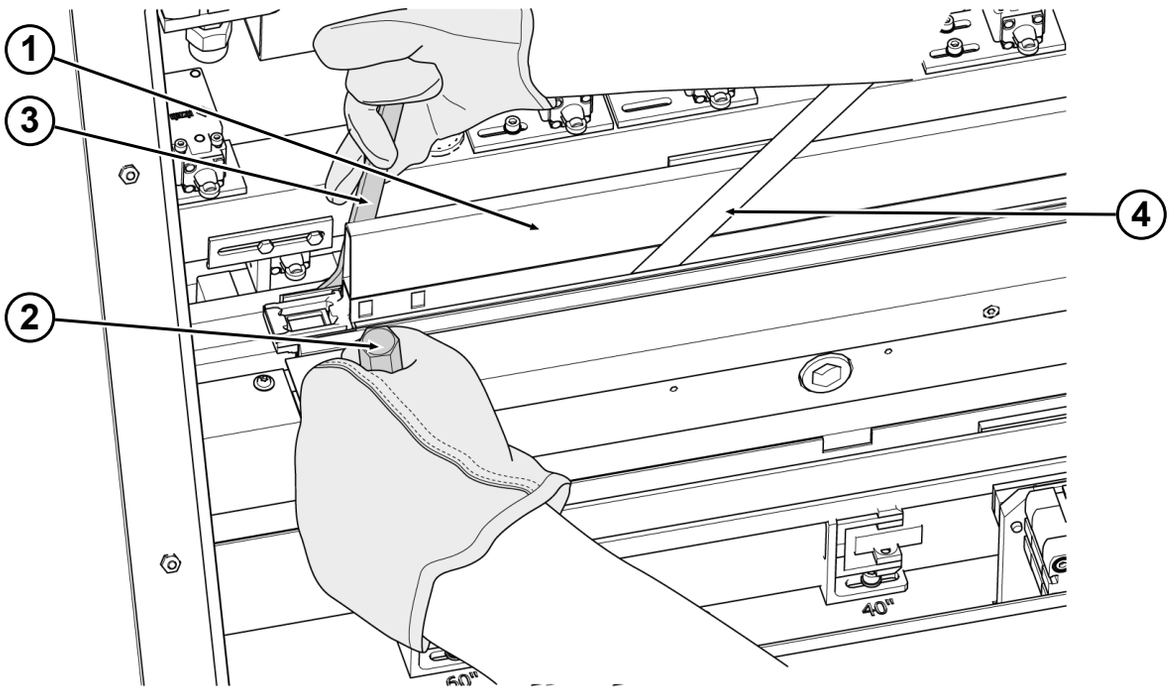


Fig. 31: Adjusting the width of the rails

Depending on the flat type and width, the width of the flat holder in the clipping area must be readjusted.

Proceed as follows to adjust the width:

➲ Insert the flat with flat clothing (1) into the flat holder.

⇨ If the flat with flat clothing is too wide, open all 6 cylinder screws of the flat holder using a suitable hexagon spanner (2) and open-end spanner (3).

➲ Slide feeler gauge 0.8 to 1 mm (4) between the flat cover and the insert rail.

➲ Use the hexagon spanner (2) to adjust the distance on all 6 screws so that the gap over the entire length of the flat holder corresponds to the dimension of the feeler gauge.

➲ Tighten all lock nuts with the open-end spanner (3).

7.4.3.5 Setting limit switches for end positions

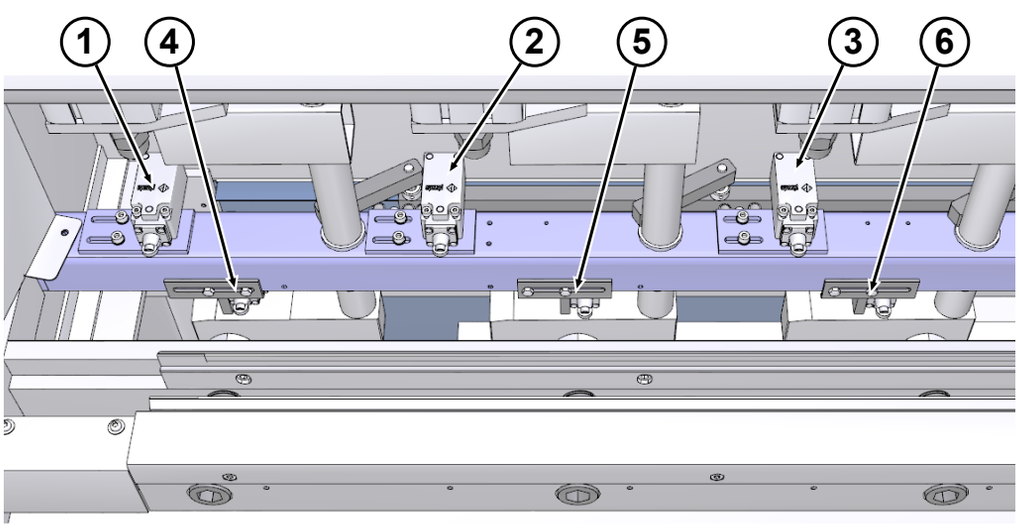


Fig. 32: Limit switch at the end of the carriage's travel range

The end of the carriage's travel range is determined by the limit switches (1, 2, 3).

The position at which the pre-bending rollers are lifted at the end of the travel range is determined by the limit switches (4, 5, 6).

- The pair of limit switches (1, 4) is responsible for flats with a length of 60".
- The pair of limit switches (2, 5) is responsible for flats with a length of 48 - 54".
- The pair of limit switches (3, 6) is responsible for flats with a length of 40".

Proceed as follows to adjust the limit switches:

➲ Loosen the screws on the holder of the corresponding limit switch until the limit switch with the holder can be moved.

➲ Slide the limit switch with the holder to the new position.

➲ Tighten the screws on the holder of the corresponding limit switch.

	NOTE
	Alternative fastening points are available for the wide adjustment range of the pair of limit switches for flats with a length of 48 - 54". In this case, completely remove the limit switch and holder and attach it to the alternative position.

7.4.3.6 Making fine adjustments

For making fine adjustments to the limit switch positions and the delay times for the shaping rollers (see the Service page 4 [▶ 45] chapter).

Several runs are required to carry out the fine adjustments correctly.

- ➲ Pre-position the pair of limit switches to their approximate positions.
- ➲ Insert the empty flat into the machine.
- ➲ Start the clipping process by pressing the START illuminated push button.
- ➲ Use the mirrors on the left and right edges of the machine to determine the exact time at which the pre-bending rollers are lowered at the beginning and lifted at the end.
  - ⇨ If the pre-bending rollers are lowered too late at the start (the clipping process is not carried out over the entire length): move the stop to the right.
  - ⇨ If the pre-bending rollers are lowered too early at the start (the rollers may be damaged): move the stop to the left.
  - ⇨ If the pre-bending rollers are lowered too late at the end (the rollers may be damaged): move the stop to the right.
  - ⇨ If the pre-bending rollers are lifted too early at the end (the clipping process is not carried out over the entire length): move the limit switch to the left.
- ➲ Repeat the process several times until the stop and limit switch are correctly positioned.
- ➲ Adjust the delay times for the shaping rollers on service page 4 until the shaping rollers are also working correctly.
- ➲ Document these times. If the format is changed without repositioning the limit switches, there is no need to reset these times. They can be applied.

7.5 Implementing the stripping process

Requirements for stripping

The following requirements must be met before the stripping process can be carried out:

- The flat supports on the front of the machine are mounted to match the length of the flat (see the Adjusting flat supports [▶ 64] chapter).
- The support brackets in the stripping area are mounted to match the flat length (see chapter the Adjusting the stripping area to the flat type [▶ 66] chapter).
- The support brackets in the stripping area are set to the height of the flat so that the flat is properly clamped (see the Adjusting the stripping area to the flat type [▶ 66] chapter).
- The stripping wedge is set to the height of an empty flat (see the Adjusting the stripping wedge to the flat [▶ 67] chapter).
- The carriage is in the right or left end position.
- The stripping area is cleaned.

Implementing the stripping process

SAFETY INSTRUCTIONS

Risk of injury

There is a risk of injury when performing the stripping process.

▶ Wear protective gloves and safety goggles.

Proceed as follows to carry out the stripping process:

➲ Insert the flat with the flat clothing into the stripping area so that the top parts of the flat rest properly on the supports.

➲ Activate the "Stripping" mode on the control unit (see the Stripping mode [▶ 41] chapter).

➲ Press the "START" illuminated push button on the control panel to start the stripping process.

➲ Wait until the carriage has stopped at the other end.

➲ Remove the side clips and the disconnected strip of the flat clothing from the machine and dispose of them separately.

➲ Remove the empty flat from the machine.

➲ Clean the stripping area using a hand brush. A collection container is provided on both sides of the machine to collect the waste.

7.6 Implementing the clipping process

Requirements for clipping

The following requirements must be met before the clipping process can be carried out:

- The flat supports on the front of the machine are mounted to match the length of the flat (see the Adjusting flat supports [▶ 64] chapter).
- The stop for the start of the flat is set to match the flat (see the Adjusting the flat stop [▶ 69] chapter).
- The limit switch for the end of the carriage travel range is set to match the flat length (see the Setting limit switches for end positions [▶ 75] chapter).
- The limit switch for lifting the pre-bending rollers at the end of the forward movement is set to match the length of the flat (see the Setting limit switches for end positions [▶ 75]chapter).
- The delay times for the delay of the shaping rollers are set correctly (see the Service page 4 [▶ 45]chapter).
- The clip and insert rails suitable for the flat type are installed (see the Selection of suitable clips and insert rails [▶ 71] chapter).
- The gap dimension for clamping the flat is set correctly (see the Adjusting the width to the flat width [▶ 74] chapter).
- The carriage is in the right end position.
- The clipping area is free of impurities.

Implementing the clipping process

SAFETY INSTRUCTIONS

Risk of injury

There is a risk of injury when performing the clipping process.

▶ Wear protective gloves and safety goggles.

Proceed as follows to carry out the clipping process:

➲ Insert an empty flat into the flat support at the front of the machine so that its sides are aligned correctly.

➲ Manually place the flat clothing onto the flat so that the clothing is an equal distance from the end of the flat at the front and rear. The tips of the flat clothing face forwards.

➲ Remove the prepared flat with the flat clothing from the flat support and insert it into the clipping area with the flat clothing facing down.

➲ Align the flat so that it lies properly against the right stop.

➲ Activate the "Clipping" mode on the control unit (see the Clipping mode [▶ 40] chapter).

➲ Press the "START" illuminated push button on the control panel to start the clipping process.

⇨ The side clamping of the flat is activated and the hold-down devices swivel in. The hammering process starts through the hold-down devices.

⇨ If the "INTERVENTION" parameter is set to "ON", the machine stops in the work sequence after the hold-down hammering process. The operator can now make corrections using a soft-face mallet. After the end of the operator intervention, the program sequence can be continued by acknowledging it on the control unit display

(see the Message page 1 [▶ 49] chapter).
If the "INTERVENTION" parameter is switched off, the machine continues the programme sequence without stopping.

⇨ The carriage moves to the left end of the flat. The pre-bending rollers and then the shaping rollers are successively lowered at the right end and lifted at the left end. When it reaches the left end position, it stops and moves back to the right starting position. Only the shaping rollers are lowered.

⇨ When the right starting position is reached, the carriage stops and the side clamping of the flat is released.

➲ Remove the processed flat from the machine.

7.7 Work after operation

Carry out the following activities after using the machine:

➲ Switch off the machine, see the Switching off the machine [▶ 61] chapter.

➲ Secure the machine against unintentional reconnection using a padlock.

➲ Clean the machine and surrounding area, see the Cleaning the machine [▶ 89] chapter.

8 Faults

8.1 Safety

SAFETY INSTRUCTIONS

Work safely while troubleshooting!

Carry out all work in compliance with the safety instructions listed below:

- Observe the regulations listed in the Safety [▷ 14] chapter for all work on/with the machine.
- All troubleshooting work must only be carried out by specialised personnel (see the Personnel requirements [▷ 21] chapter).
- Work on electrical systems must only be carried out by qualified electricians (see the Personnel qualifications [▷ 21] chapter).
- Wear protective equipment in accordance with the applicable accident prevention regulations when carrying out any troubleshooting work.
- Before starting work, switch off the electrical supply and secure it against being switched on again.
- Make sure there is sufficient assembly clearance before starting work.
- Make sure that the assembly area is tidy and clean! Loose components and tools lying on top of each other or around are potential sources of accidents.
- If parts have been removed or misaligned, make sure they are assembled correctly, reinstall all fastening elements and observe the screw tightening torques.
- Observe the instructions on environmental protection.

8.2 What to do in case of faults that pose a danger

In general, the following applies:

- In case of faults that pose an immediate danger to persons or property, switch off the machine immediately.
- Determine the cause of the fault.
- Notify the person in charge at the operating site of the fault.
- If it is necessary to enter danger zones or intervene in danger zones when carrying out troubleshooting work, secure the machine against being switched on again.
- Have the fault rectified by authorised specialised personnel.

8.3 Troubleshooting work

8.3.1 Carriage seized on the right side of the machine

➲ Switch off the machine's main switch and secure it against being switched on again.

➲ Remove the cover on the right side of the machine.

➲ Loosen the screws on the spindle bearing housing until the spindle can be turned manually on the toothed belt pulley (drive side).

➲ Turn the spindle until the carriage is at least 200 mm from the end position.

➲ Tighten the screws on the spindle bearing housing again and mount the cover again.

➲ Have the circuit breaker and fuse in the switch box checked by a qualified electrician. Replace defective fuses.

➲ Check the direction of rotation of the motor, see the Checking the direction of rotation: [▷ 58] chapter.

➲ Check the position of the limit switch and adjust the limit switch if necessary.

8.3.2 Faults in the electrical equipment

➲ Check the position of the main switch.

➲ Have the machine's electrical equipment checked by a qualified electrician.

8.3.3 Faults in the pneumatic system

➲ Check the compressed air supply to the machine.

➲ Make sure that the correct operating pressure (Technical data [▷ 26]) is set.

➲ Check the pneumatic system for leaks and eliminate them.

8.3.4 Interruption of the light grid

If the light curtain is interrupted during machine operation:

- The compressed air supply to the machine is switched off.
- All movements of the machine are stopped.
- The display flashes red.

To reset the machine:

➲ Make sure that the light grid is no longer interrupted.

➲ Switch to message page 1 (see the Message page 1 [▷ 49] chapter).

➲ Press function button F4 to acknowledge messages.

⇨ Machine moves to start position.

➲ Repeat the interrupted process.

8.3.5 Locking the control unit

For details, see the Message page 2 [▷ 50] chapter.

8.4 Measures after completing the troubleshooting work

After completing the troubleshooting work and before switching the unit back on, carry out the following measures:

- ➲ Tighten the screw connections that were previously loosened.
- ➲ Clean the running surfaces.
- ➲ Make sure that the safety devices and covers that were previously removed are properly installed again.
- ➲ Make sure that all tools and working materials used have been removed from the work area.
- ➲ Clean the work area and, if necessary, remove any substances that have escaped, such as liquids, processing materials or similar. Dispose of them in an environmentally friendly manner.
- ➲ Make sure that all safety devices are installed and functioning properly.

⚠DANGER

Danger due to premature restart!

When switching the unit on again, there is a risk of injury to persons who are inside or reaching into the danger zone.

▶ Before switching the unit back on, make sure that there are no other people in the danger zone or intervening in the danger zone.

9 Maintenance

9.1 Safety

SAFETY INSTRUCTIONS

Work safely when carrying out maintenance work!

Carry out all work in compliance with the safety instructions listed below:

- Observe the regulations listed in the Safety [▷ 14] chapter for all work on/with the machine.
- All maintenance work must only be carried out by specialised personnel (see the Personnel requirements [▷ 21] chapter).
- Work on electrical systems must only be carried out by qualified electricians (see the Personnel qualifications [▷ 21] chapter).
- Wear protective equipment in accordance with the applicable accident prevention regulations when carrying out any troubleshooting work.
- Before starting work, switch off the electrical supply and secure it against being switched on again.
- Make sure there is sufficient assembly clearance before starting work.
- Make sure that the assembly area is tidy and clean! Loose components and tools lying on top of each other or around are potential sources of accidents.
- If parts have been removed or misaligned, make sure they are assembled correctly, reinstall all fastening elements and observe the screw tightening torques.
- Observe the instructions on environmental protection.

9.2 Repairs

	NOTE
	Repairs to the machine and its components are not considered maintenance work and must only be carried out by trained technicians or service personnel from the manufacturer.

9.3 Maintenance intervals

9.3.1 Notes

The

- maintenance work prescribed on the following pages and
- the maintenance work on purchased components must be carried out in accordance with the corresponding documentation

to ensure safe and smooth operation of the machine.

The specified maintenance intervals are based on our many years of experience and knowledge. If excessive wear of wear parts is identified or if faults occur more frequently, the operating company must shorten the time between the maintenance intervals in an appropriate manner.

Keep a maintenance log to verify that the prescribed maintenance work has been carried out.

	NOTE
	The verification that the prescribed maintenance work has been carried out is a prerequisite for making any warranty claims.

9.3.2 Maintenance plan

Interval	Maintenance work	Description
Before each use	Check the function of all protective covers and safety devices	
Every 8 operating hours or after 80 cycles	Clean and oil the carriage bed	Cleaning the machine [▶ 89]
	Grease the spindle using a grease brush	
Every 150 operating hours	Relubricate the spindle bearing	Relubricate the spindle bearing [▶ 89]
As necessary	Check the stripping wedge	Check the stripping wedge [▶ 89]
	Check the pre-bending and shaping rollers	Checking the rollers [▶ 90]
	Check the metal heads on the hold-down devices	

9.4 Maintenance work

9.4.1 Cleaning work

9.4.1.1 General cleaning information

⚠WARNING

Risk of injury from sharp and pointed components!

Improper handling and working on/with pointed and sharp components can cause punctures and cuts.

▶ Wear protective gloves.

NOTICE

Material damage due to improper cleaning!

If the machine is not cleaned properly, moisture may come into contact with electronic components and damage them.

▶ Only clean the machine under the following conditions.

Clean the machine and the surrounding area under the following conditions:

- Do not use aggressive cleaning agents.
- Do not use high-pressure cleaners.
- Do not clean using water. Make sure that no moisture makes contact with electronic components.

9.4.1.2 Cleaning the machine

Carry out the following work to clean the machine

Carriage bed

Carry out this work if message page 4 (see the Message page 4 [▶ 52] chapter) is displayed after 80 machine cycles.

- ➲ Clean the running surfaces of the carriage bed using a soft, lint-free cloth.
- ➲ Lightly oil the running surfaces.

Stripping area

- ➲ Clean the stripping area using a hand brush.

Collection container

- ➲ Remove the collection container from the machine.
- ➲ Empty the collection container.
- ➲ Insert the collection container back into the machine.

9.4.2 Check the stripping wedge

- ➲ Check the cutting edge of the stripping wedge for wear.
- ➲ Check the distance between the bottom of the stripping wedge and the contact surface with the gauge.
- ➲ Replace the stripping wedge if it is worn or if the clearance is too low.

Replace the stripping wedge

- ➲ Loosen the two fastening screws.
- ➲ Remove the stripping wedge.
- ➲ Insert a new stripping wedge and tighten the two fastening screws.

9.4.3 Relubricate the spindle bearing

- ➲ Relubricate the lubricating nipple on the left side of the machine after downtime (prolonged) and decommissioning, etc. or at regular intervals in accordance with the Maintenance plan [▶ 87] chapter using a standard grease gun.
- ➲ Wipe off excess grease.

9.4.4 Checking the rollers

9.4.4.1 Checking pre-bending rollers and shaping rollers

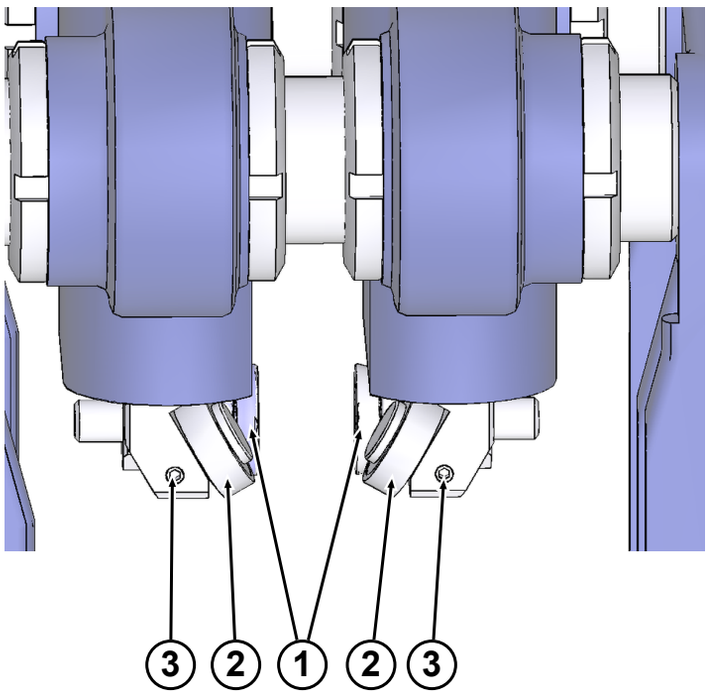


Fig. 33: Checking pre-bending rollers and shaping rollers

- ➲ Check the pre-bending rollers (2) for wear.
- ➲ Replace worn pre-bending rollers. For details on replacing the pre-bending rollers, see the Replacing pre-bending rollers [▶ 90] chapter.
- ➲ Check the shaping rollers (1) for wear.
- ➲ Replace worn shaping rollers. For details on replacing the shaping rollers, see the Replacing the shaping rollers [▶ 91] chapter.

9.4.4.2 Replacing pre-bending rollers

To replace the worn pre-bending rollers:

- ➲ Loosen the corresponding fastening screw (3).
- ➲ Remove the worn roller.
- ➲ Insert a new roller.
- ➲ Tighten the fastening screw.

9.4.4.3 Replacing the shaping rollers

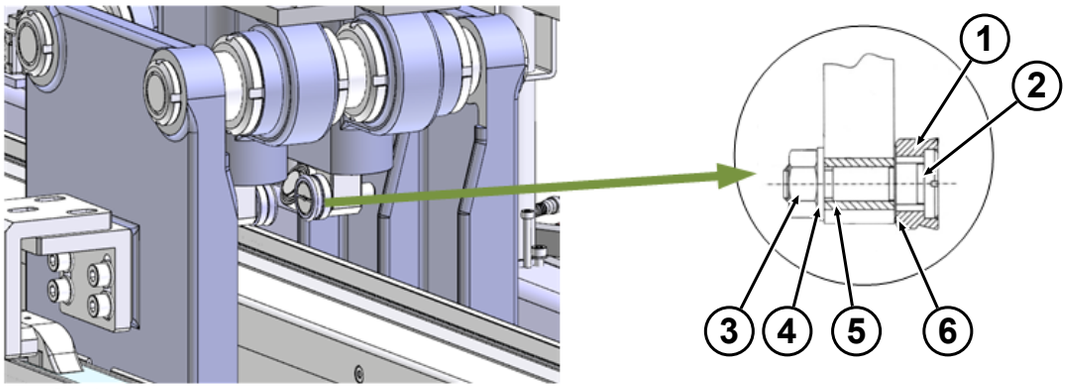


Fig. 34: Replacing the shaping rollers in the carriage

To replace the worn shaping rollers:

- ➲ Firmly hold the bearing bolt (2) and shaping roller (1) of the new roller together. Remove the nut (3), washer (4) and plastic sleeve (5). Do not remove the spacer disc (6).
- ➲ Place the prepared roller unit flat for subsequent installation with the roller facing down.
- ➲ Remove the nut (3) and washer (4) from the roller installed in the machine.
- ➲ Remove the entire roller unit together with the spacer disc (6), holding the entire unit together.
- ➲ Slide the plastic sleeve of the new roller over the end of the bolt and then secure the whole unit with the washer and nut.
- ➲ Push the bearing bolt (2) of the complete, new shaping roller unit into the hole in the roller holder and tighten it using the washer and nut.
- ➲ Repeat the procedure for the second shaping roller.

9.5 Measures after completing the maintenance work

After completing the maintenance work and before switching the machine on, carry out the following steps:

- ➲ Check that all the screw connections that were previously loosened are tight.
- ➲ Check that all the safety devices and covers that were previously removed are properly installed again. Clean the work area and, if necessary, remove any substances that have escaped, such as liquids, processing materials or similar.
- ➲ Make sure that all tools, materials and other equipment have been removed from the work area.
- ➲ Make sure that all the machine's safety devices are functioning properly.

⚠DANGER

Danger due to premature restart of the machine!

When switching the machine on again, there is a risk of injury to persons who are inside or reaching into the danger zone.

▶ Before switching the machine back on, make sure that there are no other people inside or reaching into the danger zone.

10 Disassembly and disposal

10.1 Safety

SAFETY INSTRUCTIONS

Work safely while disassembling and disposing of the machine!

Carry out all work in compliance with the safety instructions listed below:

- Observe the regulations listed in the Safety [▷ 14] chapter for all work on/with the machine.
- The disassembly work must only be carried out by specialised personnel (see the Personnel requirements [▷ 21] chapter).
- Work on electrical systems must only be carried out by qualified electricians (see the Personnel qualifications [▷ 21] chapter).
- Wear protective equipment according to local accident prevention regulations when carrying out any disassembly and disposal work.
- Before starting the disassembly work, switch off the electrical supply and permanently disconnect it.
- Make sure there is sufficient space before starting work.
- Make sure that the workplace is tidy and clean! Loose components and tools lying on top of each other or around are potential sources of accidents. Handle exposed parts with sharp edges with care.
- Disassemble the parts properly. Be aware of the high dead weight of some of the parts. Use hoists if necessary. Secure the parts so that they do not fall down or topple over.
- Incorrect handling of environmentally hazardous substances, in particular incorrect disposal, may result in considerable damage to the environment. If environmentally hazardous substances are accidentally released into the environment, take appropriate measures immediately and notify the competent local authority of the damage.

10.2 Decommissioning and disassembly

To decommission the machine:

- ➲ Switch off the power supply of the entire system and disconnect the system from the power supply.
- ➲ Disassemble the machine and its components.
- ➲ Store the machine and its components (see the Information on interim storage [▶ 57] chapter) or
- ➲ Disassemble the machine and its components in compliance with the applicable local health and safety and environmental protection regulations.

10.3 Disposal

NOTICE

Environmental damage from incorrect disposal!

Lubricants and other auxiliary supplies are subject to special waste treatment and must only be disposed of by authorised specialist companies! Disassembled components must be recycled:

- ▶ Scrap metals.
- ▶ Recycle plastic elements.
- ▶ Dispose of remaining components separated according to material properties. The local authorities or specialist disposal companies can provide information on environmentally-friendly disposal.

Pre-treat and dispose of components according to the following table:

Components	Pre-treatment	Disposal
Mechanical components	Clean	Scrap
Grease	Remove, clean	See safety data sheet
Oils	Drain, pump off	See safety data sheet

11 Annex

11.1 Declaration of Conformity

	NOTE
	The following pages contain a sample Declaration of Conformity [▶ 96]. The original Declaration of Conformity of the machine is supplied separately with the machine.

EC Declaration of conformity

Graf + Cie AG
Bildaustrasse 6
CH-8640 Rapperswil
T +41 55 221 71 11
F +41 55 221 72 33
www.graf-companies.com

Rapperswil,

Graf + Cie AG declare that the product:

Designation:
Type:

Serial No.:
Machine -No.:

fulfils the following relevant provisions:

2006/42/EC (EC Machinery Directive)
including their modifications

Reference to the harmonised standards:

EN 60204-1 Safety of machines – Electrical equipment of machines,
Part 1: General requirements

Responsible for the documentation: Quality Manager
Graf + Cie AG, Bildaustrasse 6, 8640 Rapperswil, Switzerland

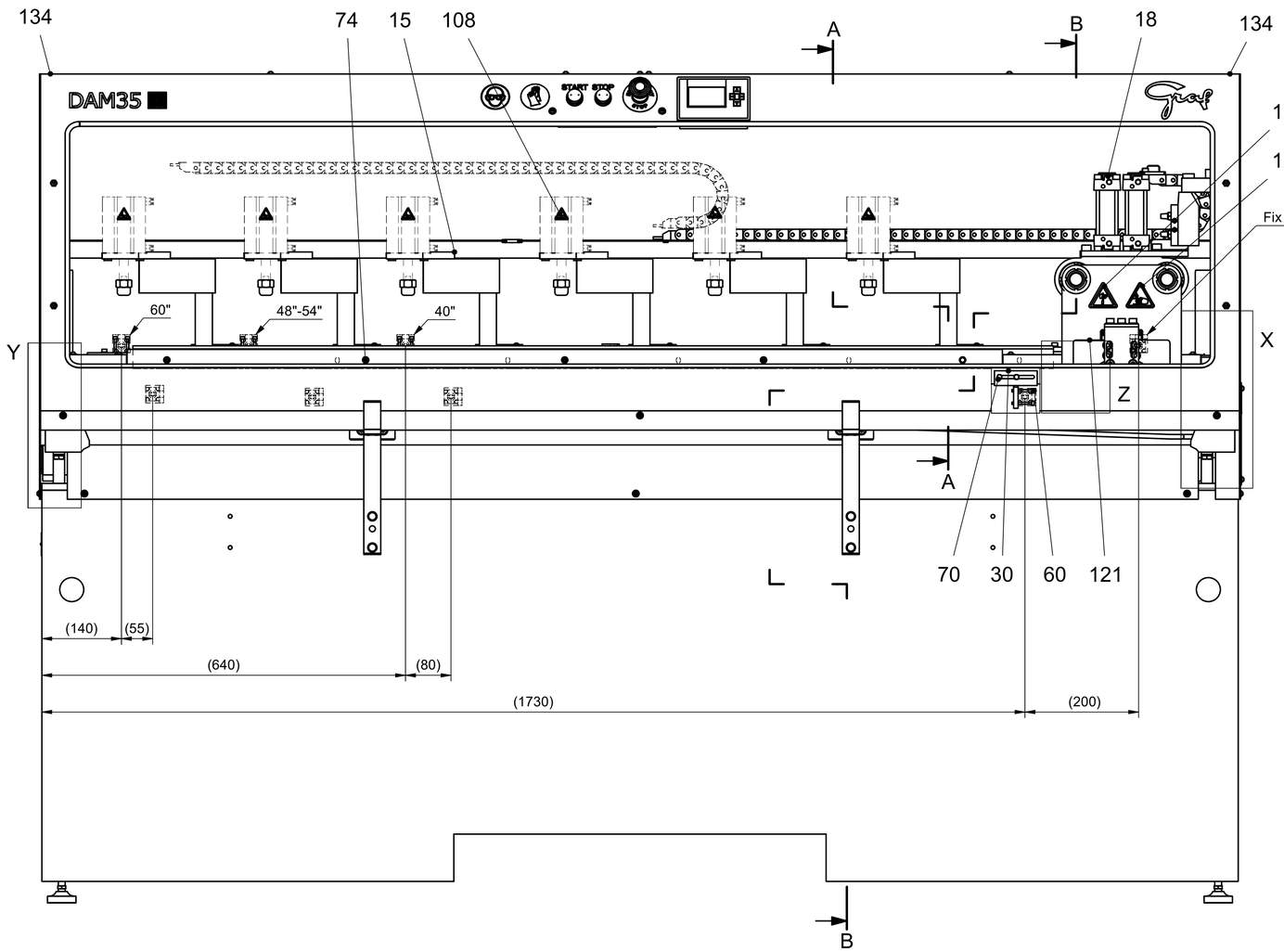
Graf + Cie AG

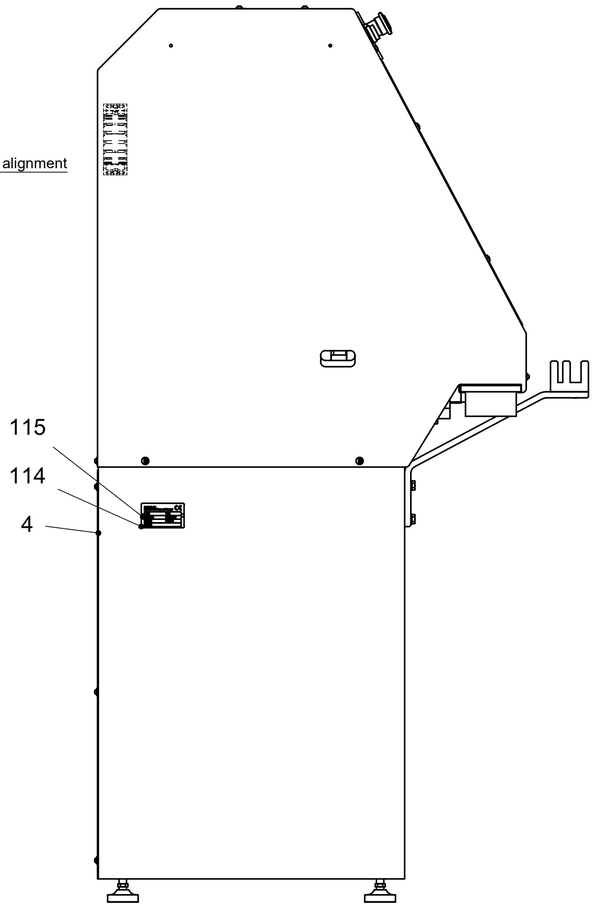
Managing Director Graf Group Head R&D

11.2 Plans, diagrams and other applicable documents

The following plans, diagrams and other applicable documents are an integral part of the overall documentation

1. Machine drawings and parts lists [▶ 98]
2. Spare parts list [▶ 109]
3. Electrical diagram [▶ 112]
4. Pneumatic diagram [▶ 127]





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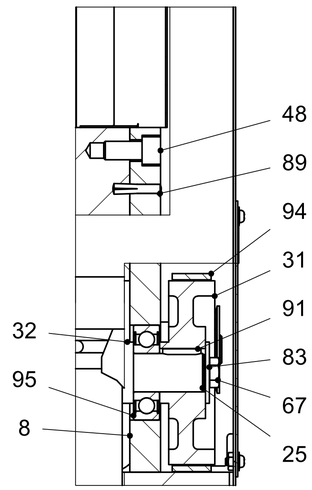

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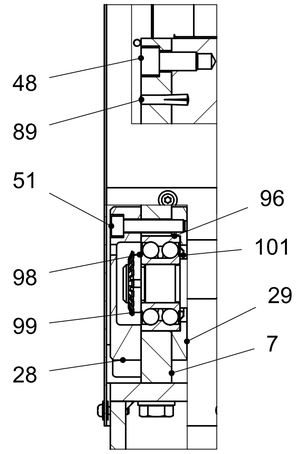

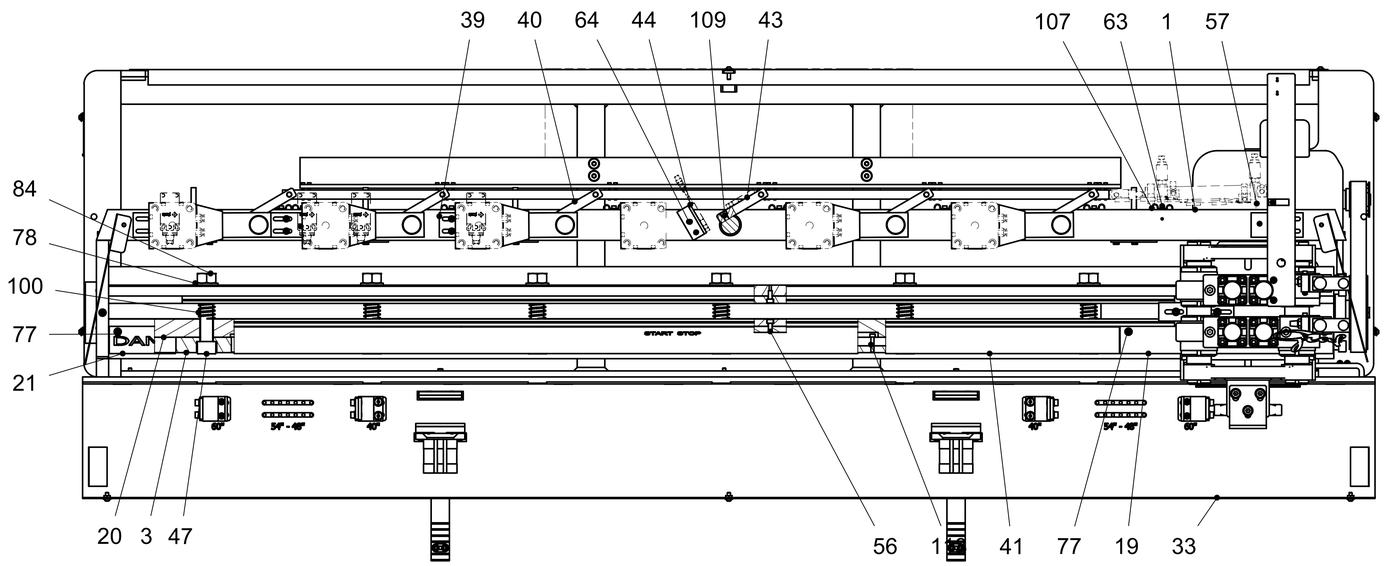

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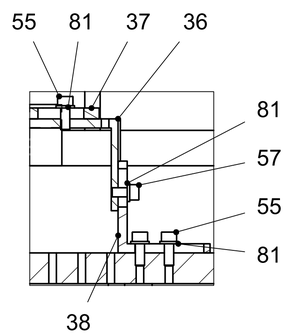
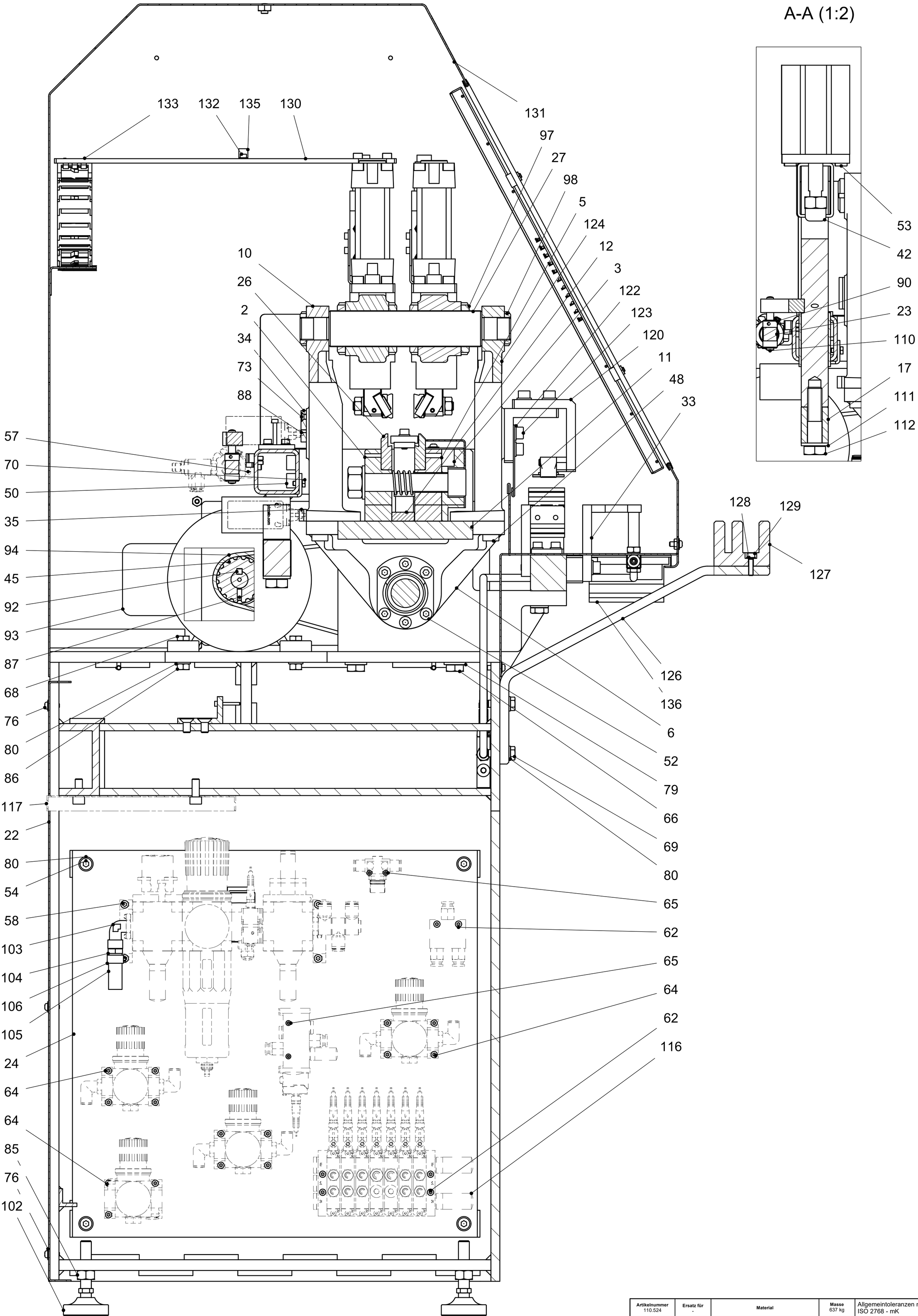


Artikelnummer 110.524	Ersatz für -	Material	Masse 637 kg	Allgemeintoleranzen nach ISO 2768 - mK	
DAM 35				Massstab 1:5	Gezeichnet 30.03.2023 chyf
					Geprüft 28.08.2023 chcd
Graf + Cie AG CH-8640 Rapperswil		Schutzvermerk: DIN ISO 16016 beachten (Refer to ISO 16016)	A1 Blatt 1/6	Zeichnungs-Nummer D-001309	Index 0

B-B (1:2)

A-A (1:2)



Artikelnummer 110.524	**Ersatz für** -	**Material**	**Masse** 637 kg	Allgemeintoleranzen nach ISO 2768 - mK	
DAM 35				**Massstab** 1:2	**Gezeichnet** 30.03.2023 chyf
					Geprüft 28.08.2023 chcd
Graf + Cie AG CH-8640 Rapperswil		Schutzvermerk: DIN ISO 16016 beachten (Refer to ISO 16016)	A1 Blatt 2/6	Zeichnungs-Nummer D-001309	Index 0

Pos.	Anz.	Bezeichnung	Lieferant	Zeichnung-Nr.	Artikel-Nr.
40	5	Schwenkhebel		21-4-0989	00214989
39	5	Platte		21-4-0902	00214902
38	1	Anschlag-Stütze		21-4-0893	00214893
37	1	Garnitur-Anschlag		21-4-0892	00214892
36	1	Deckel-Anschlag		21-4-0891	00214891
35	1	Kontaktgeber unten		21-4-0490	00214490
34	1	Kontaktgeber		21-4-0413	00214413
33	1	Deckelabreissvorrichtung		21-1-0205	00211205
32	1	Distanzring		21-4-0386	00214386
31	1	Zahnriemenscheibe		21-4-0385	00214385
30	4	Winkel		D-001580	110.950
29	1	Ring		21-4-0381	00214381
28	1	Deckel		21-4-0380	00214380
27	2	Spindel		21-4-0376	00214376
26	2	Clipsschiene	auf KA	-	-
25	1	KGT 32x5 Spindel mit Mutter		21-3-0760	00213760
24	1	PANNELLO DAM25/1		21-3-0544	00213544
23	1	Zugstange		21-3-0534	00213534
22	1	Verdeck hinten unten		D-001578	110.949
21	1	Verdeck links		21-3-0532	00213532
20	1	Schiene kurz		21-3-0531	00213531
19	1	Verdeck rechts		21-3-0509	00213509
18	1	Presskopf		21-3-0172	00213172
17	6	Klemmarm		21-3-0169	00213169
16	1	Angolare porta accordi		21-2-0264	00212264
15	6	Schwenkarm		21-2-0260	00212260
14	1	Einlage		21-2-0250	00212250I
13	1	Einlage		21-2-0250	00212250II
12	1	Einlage		21-2-0250	00212250
11	1	Grundplatte		21-2-0249	00212249
10	1	Seitenschild hinten		21-2-0244	00212244
9	1	Seitenschild vorn		21-2-0243	00212243
8	1	Deckplatte rechts		D-001577	110.948
7	1	Deckplatte links		D-001576	110.947
6	1	Schlitten-Unterteil		21-1-0175	00211175
5	1	Schiene lang		21-1-0138	00211138
4	1	Maschinenständer		D-001565	110.946
3	1	Zylinderschiene		21-1-0136	00211136
2	1	Schiene		21-1-0135	00211135
1	1	Tragrohr		D-001564	110.945

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80	12	Scheibe DIN 125 A-8-140 HV	BN 715	-	27100008
79	4	Scheibe DIN 125 A-12-140 HV	BN 715	-	27100012
78	6	Scheibe DIN 125 A-20-140 HV	BN 715	-	27100020
77	7	Linsenschraube eco-fix-M5x10-4.8	BN 5128	-	27222510
76	11	Linsenschraube eco-fix-M5x12-4.8	BN 5128	-	27222512
75	7	Linsenschraube eco-fix-M5x16-4.8	BN 5128	-	27222516
74	4	Senkschraube ISO 14581-M5x8-8.8	BN 4851	-	27170508
73	1	Senkschraube ISO 14581-M5x10-8.8	BN 4851	-	27170510
72	2	Senkschraube ISO 14581-M5x16-8.8	BN 4851	-	27170516
71	4	Senkschraube ISO 14581-M8x16-8.8	BN 4851	-	27170816
70	8	6kt-Schr ISO 4017-M5x10-8.8	BN 56	-	27000510
69	4	Sechskantschraube DIN 933-M8x25-8.8	BN 56	-	27000825
68	4	Sechskantschraube DIN 933-M8x30-8.8	BN 56	-	27000830
67	1	Sechskantschraube DIN 933-M10x16-8.8	BN 56	-	27001016
66	4	Sechskantschraube DIN 933-M12x35-8.8	BN 56	-	27001235
65	24	Zylinderschraube DIN 912-M3x25-8.8	BN 3	-	980203025
64	18	Zylinderschraube DIN 912-M4x10-8.8	BN 3	-	27020410
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62	6	Zylinderschraube DIN 912-M4x25-8.8	BN 3	-	27020425
61	8	Zylinderschraube DIN 912-M4x30-8.8	BN 3	-	27020430
60	7	Zylinderschraube DIN 912-M4x35-8.8	BN 4	-	27030435
59	8	Zylinderschraube DIN 912-M5x10-8.8	BN 3	-	27020510
58	4	Zylinderschraube DIN 912-M5x12-8.8	BN 3	-	27020512
57	3	Zylinderschraube DIN 912-M6x12-8.8	BN 3	-	27020612
56	12	Zylinderschraube DIN 912-M6x14-8.8	BN 3	-	27020614
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51	3	Zylinderschraube DIN 912-M8x40-8.8	BN 4	-	27030840
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49	11	Zylinderschraube DIN 912-M12x20-8.8	BN 3	-	27021220
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46	1	Zahnscheibe		21-4-1074	002141074
45	1	Zahnscheibe		60-4-0365	00604365
44	1	Halter Sicherheitsschalter hinten		21-4-1528	002141528
43	1	Schwenkhebel mit Sensor		21-4-1518	002141518
42	6	Presszapfen		21-4-1166	002141166
41	1	Schlauchabdeckung		21-4-1110	002141110
Pos.	Anz.	Bezeichnung	Lieferant	Zeichnung-Nr.	Artikel-Nr.

Artikelnummer 110.524	**Ersatz für** -	**Material**	**Masse**	Allgemeintoleranzen nach ISO 2768 - mK	

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Massstab	**Gezeichnet**	30.03.2023	chyf
	Geprüft	28.08.2023	chcd

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120	1	Keilhalter		21-3-0881	00213881
119	1	Spiegel rechts		D-001416	110.719
118	1	Spiegel links		D-001415	110.718
117	1	Elektroteile		D-000685	110.011
116	1	Pneumatikteile DAM25/1		D-000686	110.177
115	2	Halbrundkerbnägel ISO 8746-2.5x6-St	BN 893	-	27400256
114	1	Maschinenschild klein mit CE	Thomas	D.100.109	100.096
113	20	Zyl-Schr In-6kt ISO 4762-M5x25-8.8	BN 3	-	27020525
112	6	6kt-Schr ISO 4014-M16x65/38-8.8	BN 57	-	27011665
111	6	Scheibe ISO 7089-M16-140 HV-Stahl	BN 715	-	27100016
110	6	Zyl-Sti gehaertet geschl. ISO 8734-8h6x60-A-St	BN 858	-	27250860
109	6	Zyl-Schr In-6kt ISO 4762-M6x20-8.8	BN 3	-	27020620
108	6	Warnung vor Handverletzungen 3000371	Schärer	-	25910299
107	16	Befestigungsschelle Nr.21.572-ø8	Hausammann	-	27991000
106	1	Schlauchklemme ø11-17 Nr.40.532	Hausammann	-	27951617
105	1	Oelbeständiger Neoprenschlauch schwarz 40.506	Hausammann	-	27954008
104	1	Schlauchanschluss Nr.40.626	Hausammann	-	27950008
103	1	Einschraubwinkel G1/4" Nr.40.686	Hausammann	-	25295501
102	4	Schwingungsdämpfer 10250	Rosta	-	25600001
101	1	Nilos-Ring 3206 JV	SKF	-	26913206JV
100	6	Druckfeder DIN EN 10270-3 2.0x27x58-A2	BAUM	-	27420258
99	1	Sicherungsblech MB 5	SKF	-	26900MB5
98	5	Wellenmutter KM 5 M25x1.5	SKF	-	26900KM5
97	8	Wellenmutter KM 8	SKF	-	26900KM8
96	1	Schrägkugellager zweireihig ø62/25x25.4	SKF	-	263305
95	1	Rillenkugellager 6305-2RS ø25/ø62x17	SKF	-	2663052RS
94	1	Zahnriemen 255 L100	Uiker	-	2506255L100
93	1	Käfigmotor 0.75kW 1500U/min	auf KA	-	-
92	1	Passfeder DIN 6885-A 6x6x25	BN 870	-	2734060625
91	1	Passfeder DIN 6885-A 8x7x25	BN 870	-	2734080725
90	12	Stellring DIN 705 A-8-St	BN 868	-	27360008
89	4	Passkerbstift KS 2 DIN 1472-6x30-St	BN 883	-	27230630
88	1	Spannstift VSM 12785-3x10-St	BN 879	-	27270310
87	1	Gewindestift ISO 4026-M5x10-45H	BN 28	-	27300510
86	4	Sechskantmutter DIN 934-M8-8	BN 117	-	27060008
85	4	Sechskantmutter DIN 934-M12-8	BN 117	-	27060012
84	6	Sechskantmutter DIN 934-M20-8	BN 117	-	27060020
83	1	Scheibe Carosserie 10x40x2.5	BN 732	-	27111040
82	8	Scheibe DIN 125 A-5-140 HV	BN 715	-	27100005
81	4	Scheibe DIN 125 A-6-140 HV	BN 715	-	27100006

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136	2	Nachbearbeitung Sichtlagerkasten		D-001768	110.956
135	1	Befestigungsschelle 21.583	Hausammann	-	27991001
134	2	Schutzstopfen TL-4-073	BN 1095	-	27604073
133	2	Senkschraube ISO 14581-M3x8-8.8	BN 4851	-	27170308
132	1	Zylinderschraube DIN 912-M4x6-8.8	BN 3	-	27020406
131	1	Haube komplett		21-1-0198	00211198
130	1	Zuleitungshalter		21-3-0836	00213836
129	4	Zyl-Schr In-6kt ISO 4762-M5x20-8.8	BN 3	-	27020520
128	4	Scheibe ISO 7089-M5-140 HV-Stahl	BN 715	-	27100005
127	2	Deckelauflage Oben		21-4-1519	002141519
126	2	Deckelauflage		D-001579	110.911
125	1	Warnung vor Handverletzung 50mm	Schärer	-	25910300
124	1	Warnung vor spitzem Gegenstand 50mm	Schärer	-	110.957
123	4	Zyl-Schr In-6kt ISO 4762-M8x30-8.8	BN 3	-	27020830
122	4	Scheibe ISO 7089-M8-140 HV-Stahl	BN 715	-	27100008
121	1	Schutzblech		D-001667	110.955

Artikelnummer	Ersatz für	Material	Masse	Allgemeintoleranzen nach ISO 2768 - mK
110.524	-			

DAM 35

Massstab			
	Gezeichnet	30.03.2023	chyf
	Geprüft	28.08.2023	chcd

Graf + Cie AG
CH-8640 Rapperswil

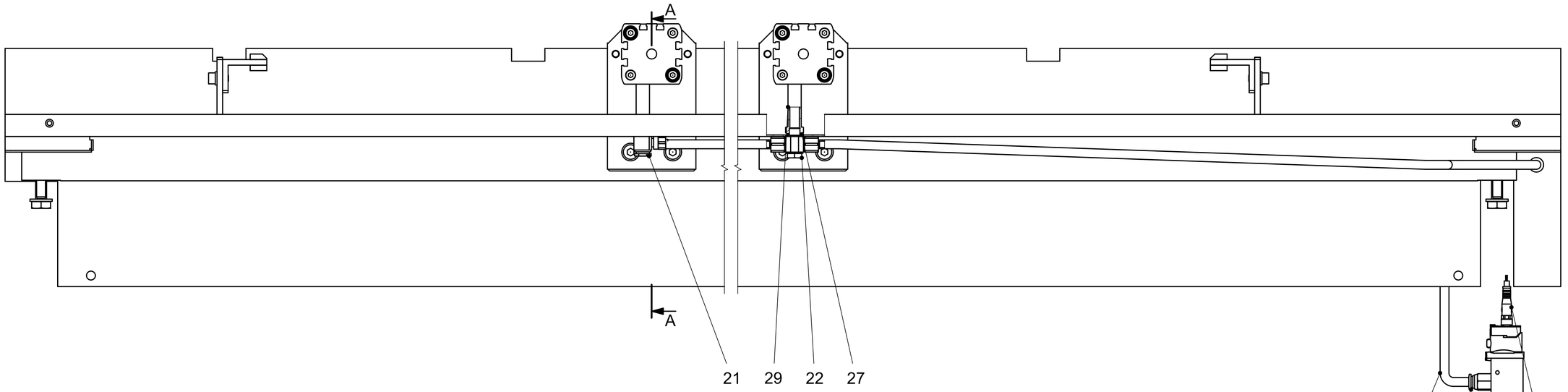
Schutzvermerk:
DIN ISO 16016 beachten
(Refer to ISO 16016)

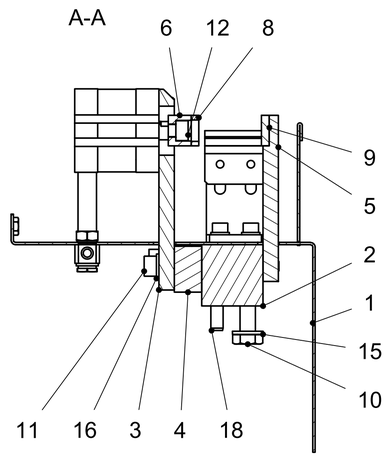
A4

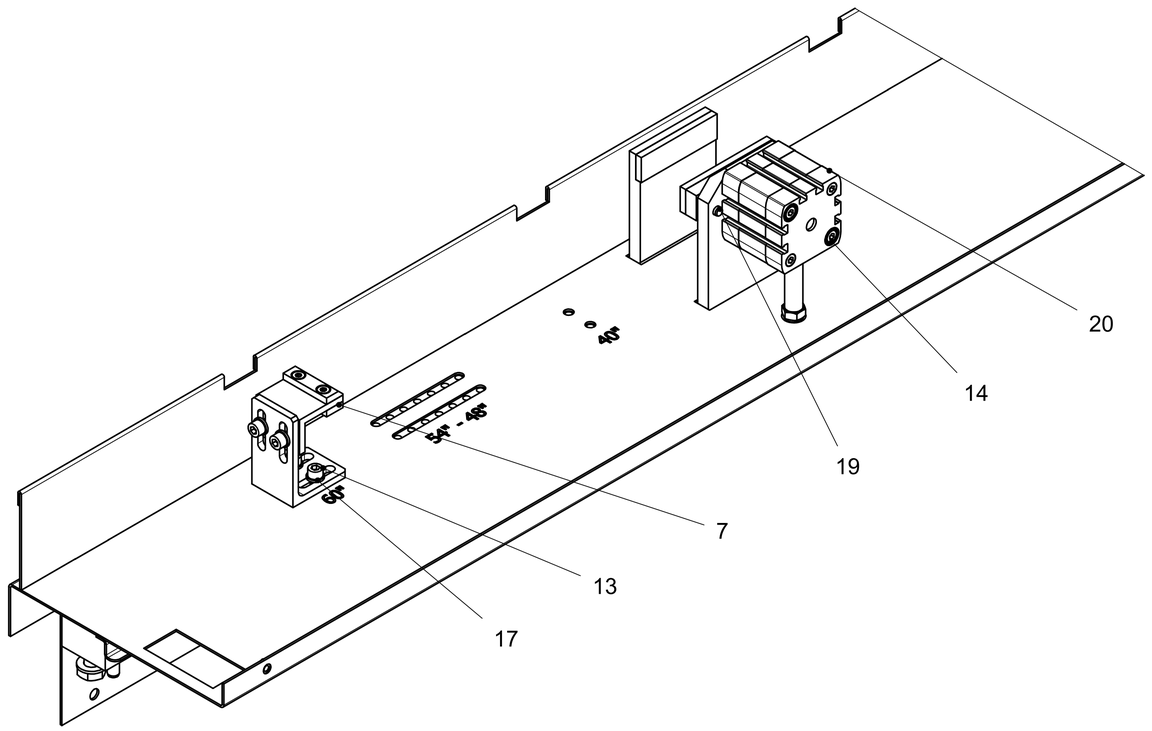
Blatt 6/6

Zeichnungs-Nummer
D-001309

Index
0







Pos.	Anz.	Bezeichnung	Lieferant	Zeichnung-Nr.	Artikel-Nr.
29	2	Verlängerung G1/8 1231851	Pneumax	-	110.747
28	1	Blindstopfen B-1/8 3568	Festo	-	81P800066
27	2	Dichtring O-1/8	Festo	-	81P818900
26	1	Verbindungsleitung NEBU-M8G3-K-2.5-LE3	Festo	-	903016600
25	1	Magnetventil VUVG-L14-M52-MT-G18-1R8L	Festo	-	81P802430
24	1	Steckverschraubung QS-1/8-8 153004	Festo	-	81P814007
23	1.930 m	Kunststoff-Schlauch Nr. 159666 PUN-8X1.25-BL	Festo	-	25295950
22	1	T-Schnellverschraubung TCK-1/8-PK-6-KU Nr.6264	Festo	-	25295202
21	1	L-Schnellverschraubung Nr. 6260 LCK-1/8-PK-6-KU	Festo	-	25295142
20	2	Kompaktzylinder AEN-40-10-I-P-A Nr.536419	Festo	-	81P802859
19	4	Zylinderstift DIN 6325-6 h6x24-St	BN 858	-	27250624
18	2	Zylinderstift DIN 6325-8 h6x30-St	BN 858	-	27250830
17	8	Scheibe DIN 125 A-6-140 HV	BN 715	-	27100006
16	4	Scheibe DIN 125 A-8-140 HV	BN 715	-	27100008
15	2	Scheibe DIN 125 A-10-140 HV	BN 715	-	27100010
14	8	Zylinderschraube DIN 912-M5x60-8.8	BN 4	-	27030560
13	8	Zylinderschraube DIN 912-M6x12-8.8	BN 3	-	27020612
12	2	Zylinderschraube DIN 912-M8x16-8.8	BN 3	-	27020816
11	4	Zylinderschraube DIN 912-M8x80-8.8	BN 4	-	27030880
10	2	Sechskantschraube DIN 933-M10x35-8.8	BN 56	-	27001035
9	2	Gummiprofil 20x5x70 Nr.10.2501.8353	Angst	-	25122025
8	2	Gummi-Einlage		21-4-0900,2	00214900
7	4	Anschlag		21-4-1524	002141524
6	2	Klemmstück		21-4-1523	002141523
5	2	Klemmbacke		21-4-1522	002141522
4	2	Distanzplatte		21-4-1521	002141521
3	2	Zylinder-Halter		21-4-1520	002141520
2	1	Balken		21-2-0369	00212369
1	1	Abdeckblech unten		21-1-0196	00211196

Artikelnummer 00211205	**Ersatz für** -	**Material**	**Masse** 26.13 kg	Allgemeintoleranzen nach ISO 2768 - mK

Deckelabreissvorrichtung

Massstab 1 : 2	**Gezeichnet**	10.05.2023	chyf
	Geprüft	28.08.2023	chcd

Graf + Cie AG
CH-8640 Rapperswil

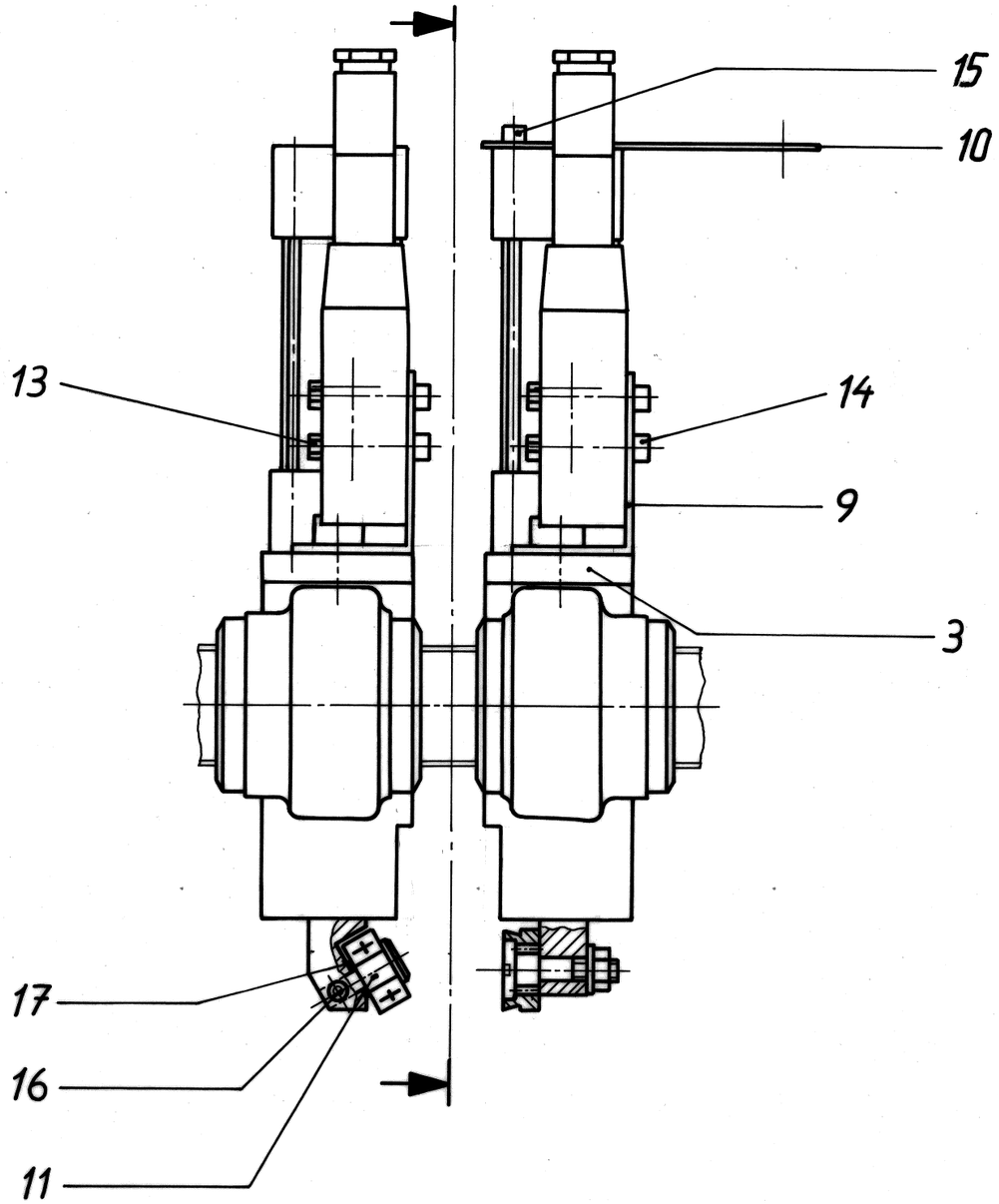
Schutzvermerk: DIN ISO 16016 beachten (Refer to ISO 16016)

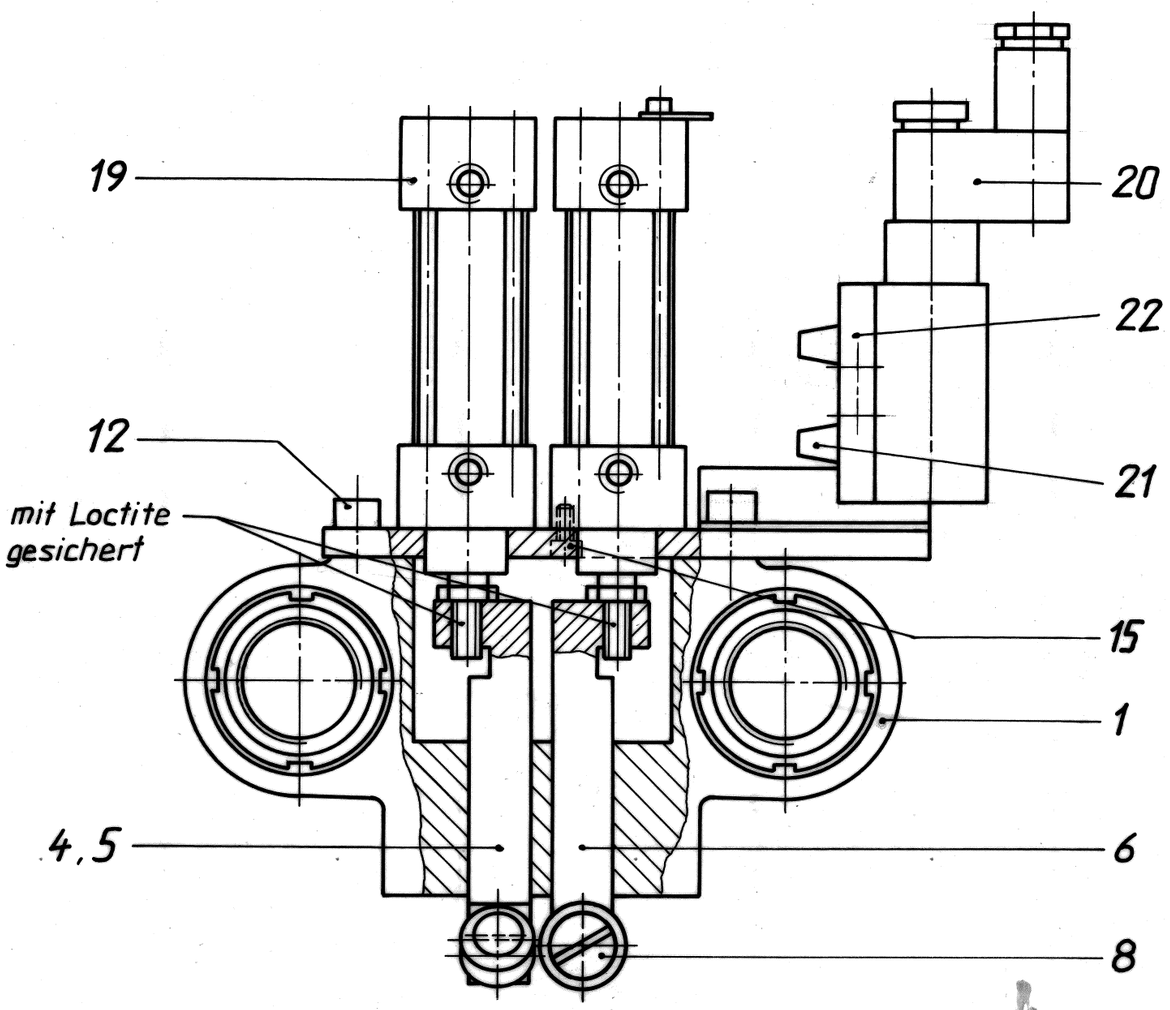
A1

Blatt 1/1

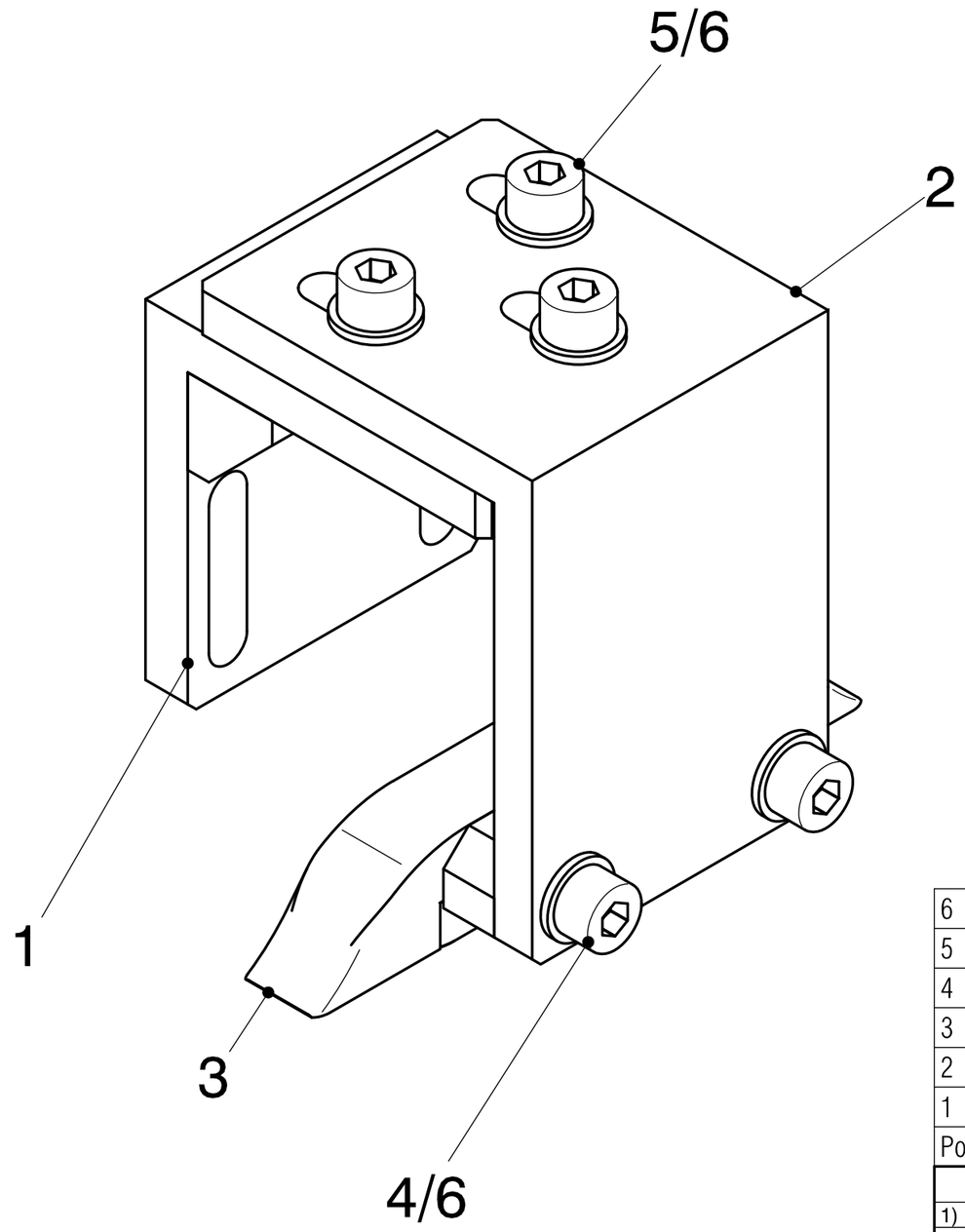
Zeichnungs-Nummer: 21-1-0205

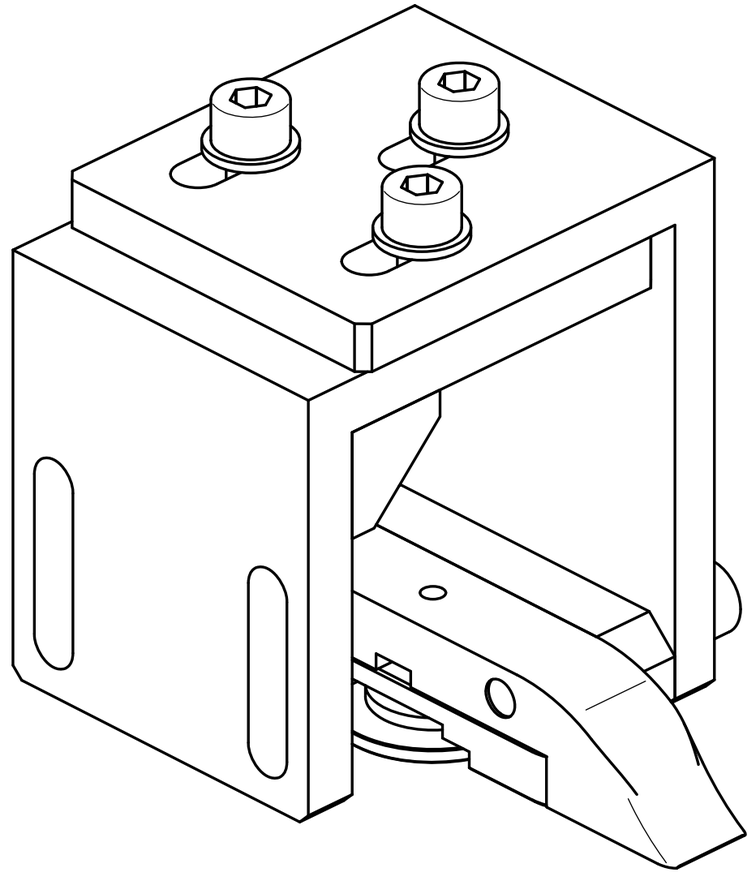
Index: 1





Stück		Gegenstand	Pos.	Werkstoff	VSM	Modell	Bemerkung
II	I	Aenderungen: 1) 2) 3) 4) 5)			Gehört zu Zeichnung 21-4-406 Ersetzt durch Ersatz für gl. Nummer Masse ohne Toleranz sind nach DIN 7168 "mittel" einzuhalten.		
		Presskopf mit Pneumatik DAM 10			Massstab 1:2	Gezeichnet 27.4.92 Ha. Geprüft Gesehen	
		Graf + Cie AG, Rapperswil			21-3- 172,6		





Pos.	Menge	Bezeichnung	Lieferant	Bemerkung
6	5	Scheibe DIN 125 A-8-140 HV	BN 715	27100008
5	3	Zylinderschraube DIN 912-M8x20-8.8	BN 3	27020820
4	2	Zylinderschraube DIN 912-M8x40-8.8	BN 3	27020840
3	1	Abreisskeil DAM25		21-4-1514
2	1	Winkel vorne		21-3-883
1	1	Winkel hinten		21-3-882

Änderungen:

1)		6)	
2)		7)	
3)		8)	
4)		9)	
5)		10)	

Gehört zu Zeichnung -
Ersetzt durch -
Ersatz für -

Allgemeintoleranzen nach ISO 2768 - mK

Keil mit Halter

DAM 25

Massstab	Gezeichnet	16.11.20	chyf
1:1	Geprüft	16.11.20	chcd

Graf + Cie AG
CH-8640 Rapperswil

Schutzvermerk:
ISO 16016 beachten
(Refer to ISO 16016)

21-3-881,0

			30				
			29				
			28				
			27				
			26				
			25				
			24				
			23				
	2	Anschlussplatte	22	FP 2021		NORGREN	25901000
	4	Schalldämpfer	21	WO 0021		NORGREN	25300006
	2	Elektroventil	20	SXE 9561-A80-00B		NORGREN	25300101
	4	Pneumatik-Hubzylinder	19	CA/8032A/M/40		NORGREN	25900064
	2	Bolzen	18				21-4-527
	2	Distanzscheibe	17	ϕ8/20x0.5			2746082005
	2	Gew-Sti In-6kt	16	M5x6	913		27300506
	18	Zyl-Schr In-6kt	15	M6x16	912		27020616
	4	Zyl-Schr In-6kt	14	M4x35	912		27030435
	4	6kt-Mu	13	M4	934		27060004
	4	Zyl-Schr In-6kt	12	M10x20	912		27021020
	2	Rillenkugellager	11	6000-2RS		SKF	2660002RS
	1	Zuleitungshalter	10				21-4-415
	2	Halter	9				21-4-377
	2	Formrolleneinheit	8	auf KA			00214....
			7				
	2	Führung	6				21-3-159
	1	Führung hinten	5				21-4-530
	1	Führung vorne	4				21-4-529
	2	Zylinderplatte	3				21-3-157
	1	Satz Zuleitungen	2				21-2-92
	2	Kopf	1				21-2-18
Stück		Gegenstand	Pos.	Werkstoff	VSM	Modell	Bemerkung

II	I	Aenderungen:				
		4)	06.02.84	Oe	9) 19.09.94	Ha
		5)	18.12.85	Oe	10)Nr. 267 15.02.95	FI
		6)	06.11.86	Oe	11)Nr.1536 21.01.02	RP
		7)	17.11.88	Oe	12)	
		8)	23.04.92	Ha	13)	

Gehört zu Zeichnung 21-3-172
Ersetzt durch
Ersatz für

Blatt 1/1

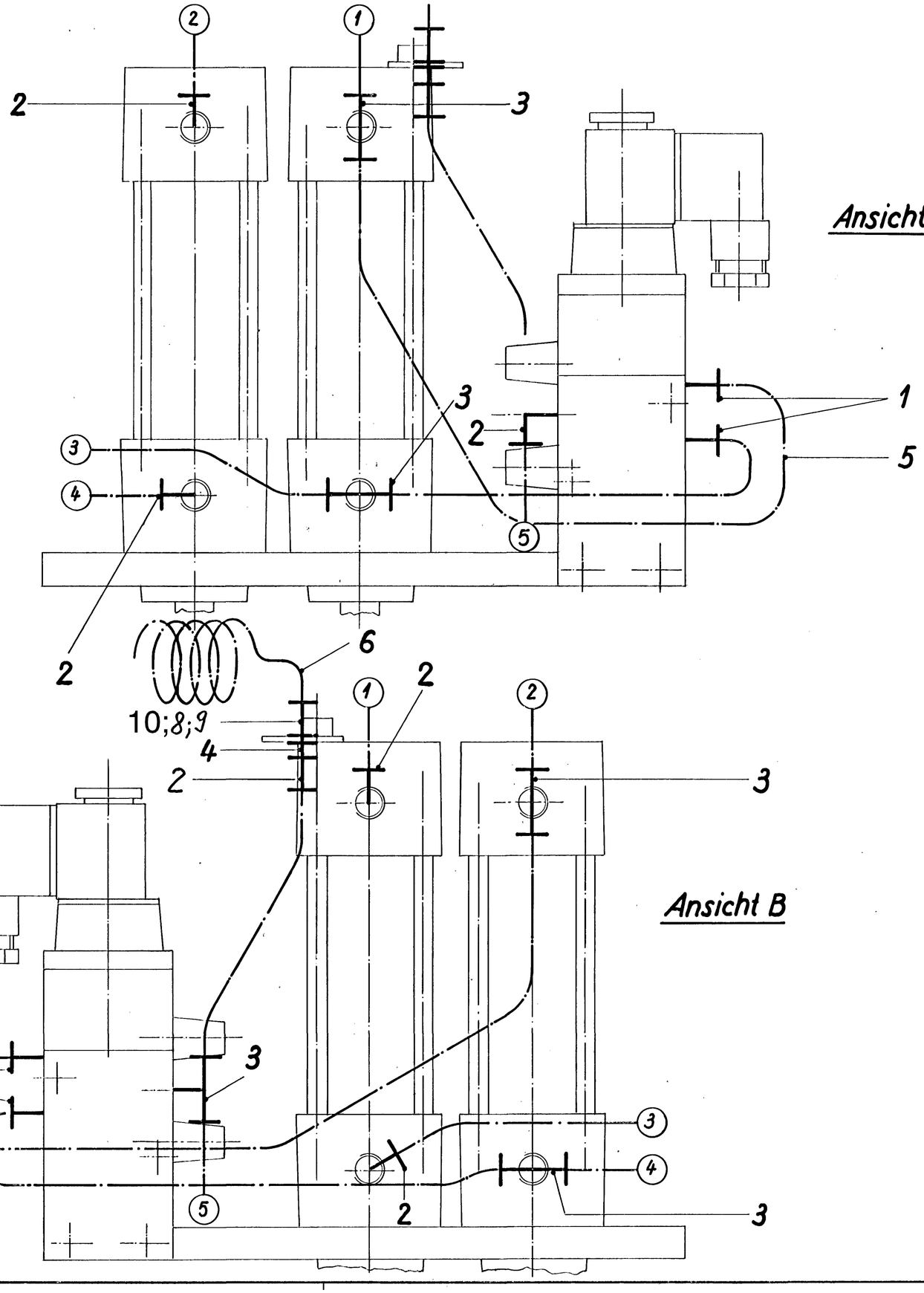
Presskopf

DAM10 / DAM20 / DAM25 / DAM30

Massstab %	Gezeichnet	19.09.94	Ha
	Geprüft	22.01.02	Gei

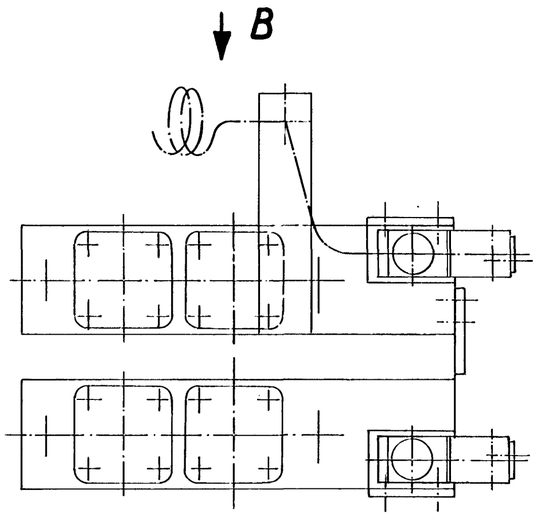
Graf + Cie AG, Rapperswil

21-4-406, 11



Ansicht A

Ansicht B



	1	Dichtring	10	0-1/4		FESTO	25299090
	1	Ger. Verschraubung	9	Typ CK-1/4-PK-6KU			25293402
	1	Anschluss mit In-Gew.	8	RB 1/4 Nr. 450			81P814150
	14	Dichtring	7	0-1/8		FESTO	81P818900
	1	Synflex-Spiralschlauch l=5m	6	6,5mm/1/4" Innengew.		IMHOF	25809012
	5m	Kunststoffschlauch	5	Typ PU-4-schwarz		FESTO	25295940
	1	Reduziernippel	4	38.625		HAUS	27970020
	5	T-Verschraubung	3	Typ TCK-1/8-PK-4-KU		FESTO	25295203
	6	Winkel-Verschraubung	2	Typ LCK-1/8-PK-4-KU		FESTO	25295140
	4	Ger.-Verschraubung	1	Typ CK-1/8-PK-4-KU		FESTO	25295050
Stück		Gegenstand	Pos.	Werkstoff	VSM	Modell	Bemerkung

II I

Aenderungen: 29.3.93 RP 2) Nr. 481 30.7.96 RP 3) Nr. 588 25.3.97 So
4) Nr. 2909 24.06.09 str

Ersetzt durch .....

Gehört zu Zeichnung: .....

Ersatz für .....

Grundsymbol, Formgebung freigestellt
Bearbeitung durch Spanabnahme
Spanabnahme nicht erlaubt

N12.....N1 Rauheitsklassen nach VSM 10230 und 10231

Maße ohne Toleranz sind nach DIN 7168 "mittel" einzuhalten.

Zuleitungen

zu Presskopf mit Pneumatik

Maßstab	Gezeichnet	28.1.80	Wili
1:1	Geprüft	26.06.09	np
1:2	Gesehen		

Graf & Cie AG, Rapperswil

21-2-92

4

Spare and wear parts DAM 35

Pos.	Qty	Item description	Item No.	Qty per machine
		Clipsschienen siehe Zeichnung D-001309 **Clip rails see drawing D-001309**		
26	1	Clipsschiene vorne für Rieter und Marzoli 60" Clip rail front for Rieter and Marzoli 60"	109.528	1
26	1	Clipsschiene hinten für Rieter und Marzoli 60" Clip rail back for Rieter and Marzoli 60"	109.529	1
26	1	Clipsschiene für Trützschler Aludeckel und Lakshmi LC333 Clip rail for Trützschler alu flats and Lakshmi LC333	00213431	2
26	1	Clipsschiene für Trützschler Gussdeckel Clip rail for Trützschler iron flats	00213357	2
26	1	Clipsschiene für diverse 40" Gussdeckel / Crosrol MK6 und MK7 Clip rail for various 40" iron flats / Crosrol MK6 and MK7	00213152	2
26	1	Clipsschiene für Marzoli Aludeckel 40" Clip rail for Marzoli alu flats 40"	00213546	2
26	1	Clipsschiene für Jinsheng Saurer JSC 326, JSC 328, SC6, Qingdao JWF1213, Zhengzhou JWF1204-120, JWF1206-120 und Lakshmi LC636 Clip rail for Jinsheng Saurer JSC 326, JSC 328, SC6, Qingdao JWF1213, Zhengzhou JWF1204-120, JWF1206-120 and Lakshmi LC636	00213767	2
26	1	Clipsschiene für Jingwei Qingdao JWF1203 Clip rail for Jingwei Qingdao JWF1203	00213775	2
26	1	Clipsschiene für Crosrol MK8 Clip rail for Crosrol MK8	00213897	2
		Diverses siehe Zeichnung D-001309 **Various see drawing D-001309**		
15	1	Schwenkarm Pivot arm	00212260	6
42	1	Presszapfen auf Zylinder Press pin on cylinder	002141166	6
94	1	Zahnriemen 255 L 100 toothed belt 255 L 100	2506255L100	1
93	1	Käfigmotor 0.75 kW 1500 U/min. Circuit squirrel cage motor 0.75 kW 1500 U/min.	29010438050	1
		Abreissvorrichtungen siehe Zeichnung 21-1-0205 **Stripping device see drawing 21-1-0205**		

	1	Deckelabreissvorrichtung komplett Stripping device complete	00211205	1
20	1	Kompaktzylinder AEN-40-10-I-P-A Compact cylinder AEN-40-10-I-P-A	81P802859	1
25	1	Magnetventil VUVG-L14-M52-AT-G18-1R8L Solenoid valve VUVG-L14-M52-AT-G18-1R8L	81P802430	1
		Presskopf / Formrollen siehe Zeichnung 21-3-172 **Forming rolls see drawing 21-3-172**		
8	1	Formrolleneinheit universell (bombiert) Forming rolls universal (cambered)	00214373	2
11	1	Vorbiegerolle /Rillenkugellager 6000-2RS Prebending rolls 6000-2RS	2660002RS	2
19	1	Pneumatik Hubzylinder RA/8032A/M/40 Pneumatic cylinder RA/8032A/M/40	25900064	4
20	1	Elektroventil SXE 6561-A80-00B Solenoid valve SXE 6561-A80-00B	25300101	2
21	1	Schalldämpfer T40C1800 Silencer T40C1800	25300006	4
-	1	Dichtungssatz zu Pneumatik Zylinder Sealing kit for air cylinder	25350010	-
		Keil mit Halter siehe Zeichnung 21-3-881 **Wedge and support see drawing 21-3-881**		
-	1	Keil mit Halter zu Abreissvorrichtung komplett Wedge and Support for stripping device complete	00213881	1
3	1	Abreisskeil komplett Wedge complete	002141514	1
		Kontrollvorrichtung siehe Zeichnung 50-1-500 **Control device see drawing 50-1-500**		
-	1	Kontrollvorrichtung komplett mit digitaler Messuhr Measuring beam complete with dial gauge digital	005041338	1
17	1	Digitale Messuhr mit Sender und Empfänger Dial gauge digital with transmitter and receiver	005043310	1
-	1	Digitale Messuhr mit Sender und Empfänger, Anbau-Gelenkstativ und Messteller Dial gauge digital with transmitter and receiver, articulated stand and measuring plate	005043336	1

-	1	Auflageplatten links und rechts für Rieter C80 Support plates left and right for Rieter C80	005043421	1
-	1	Auflageplatten links und rechts für Rieter C60 und C70 Support plates left and right for Rieter C60 and C70	005043261	1
-	1	Auflageplatten links und rechts für alle Kardentypen ausser Rieter 60" Support plates left and right for all card types except Rieter 60"	005043264	1
-	1	Auflageplatten links und rechts für Crosrol MK4, MK5, MK6, MK7 und MK8 Support plates left and right for Crosrol MK4, MK5, MK6, MK7 and MK8	005043503	1
-	1	Auflageplatte links für Lakshmi LC636 Left support plate for Lakshmi LC636	005032191	1
-	1	Auflageplatte rechts für Lakshmi LC636 Support plate right for Lakshmi LC636	005032192	1

Pneumatik siehe Zeichnung D-000686
Pneumatic see drawing D-000686

11	1	Spannmodul EV-20/180-5 (40" und 60" Maschine) Clamping module EV-20/180-5 (40" and 60" machine)	81P802823	3
33	1	Spannmodul EV-20/120-5 (60" Maschine zusätzlich) Clamping module EV-20/120-5 (60" machine additional)	81P802832	2
12	1	Kompaktzylinder doppeltwirkend ADN-63-50-A-P-A 39 K8 Compact cylinder ADN-63-50-A-P-A 39 K8	81P802841	1
13	1	Normzylinder DSNU-20-100-PPV-A Standard cylinder DSNU-20-100-PPV-A	25900182	1
16	1	Näherungsschalter SME-8M-DS-24V-K Proximity sensor SME-8M-DS-24V-K	25293154	2
17	1	Befestigungs-Bausatz SMBR-8-20 Mounting kit SMBR-8-20	25293155	2
18	1	Drossel-Rückschagventil GRLA-1/8-QS-6-RS-D One-way flow control valve GRLA-1/8-QS-6-RS-D	111.304	2
26	1	Steckverschraubung QSM-M5-6-I Push-in fitting QSM-M5-6-I	81P814005	5

Elektrisch siehe Zeichnung D-000685
Electrical see drawing D-000685

-	1	Endschalter Pizzato FM 515 Limit switch Pizzato FM 515	903016572	8
-	1	Sicherung 10A Fuse 10A	905013638	-
-	1	Sicherung 4A Fuse 4A	905013641	-

0	1	2	3	4	5	6	7	8	9

REV	DATE		DESIGNED	VERIFIED	APPROVED	
1	02/05/2023	AS-BUILT	BAT			
0	06/04/2023	ISSUED FOR CONSTRUCTION	BAT			

CONTRACT	DIAGRAM	PROJED	REGULATION
	GI001A23		

DESCRIPTION

WIRING DIAGRAM
DAM35

CUSTOMER

GRAF ITALIA
Via Zanica 47/49
24126 - BERGAMO

DESTINATION

DESIGNER

BUILDER

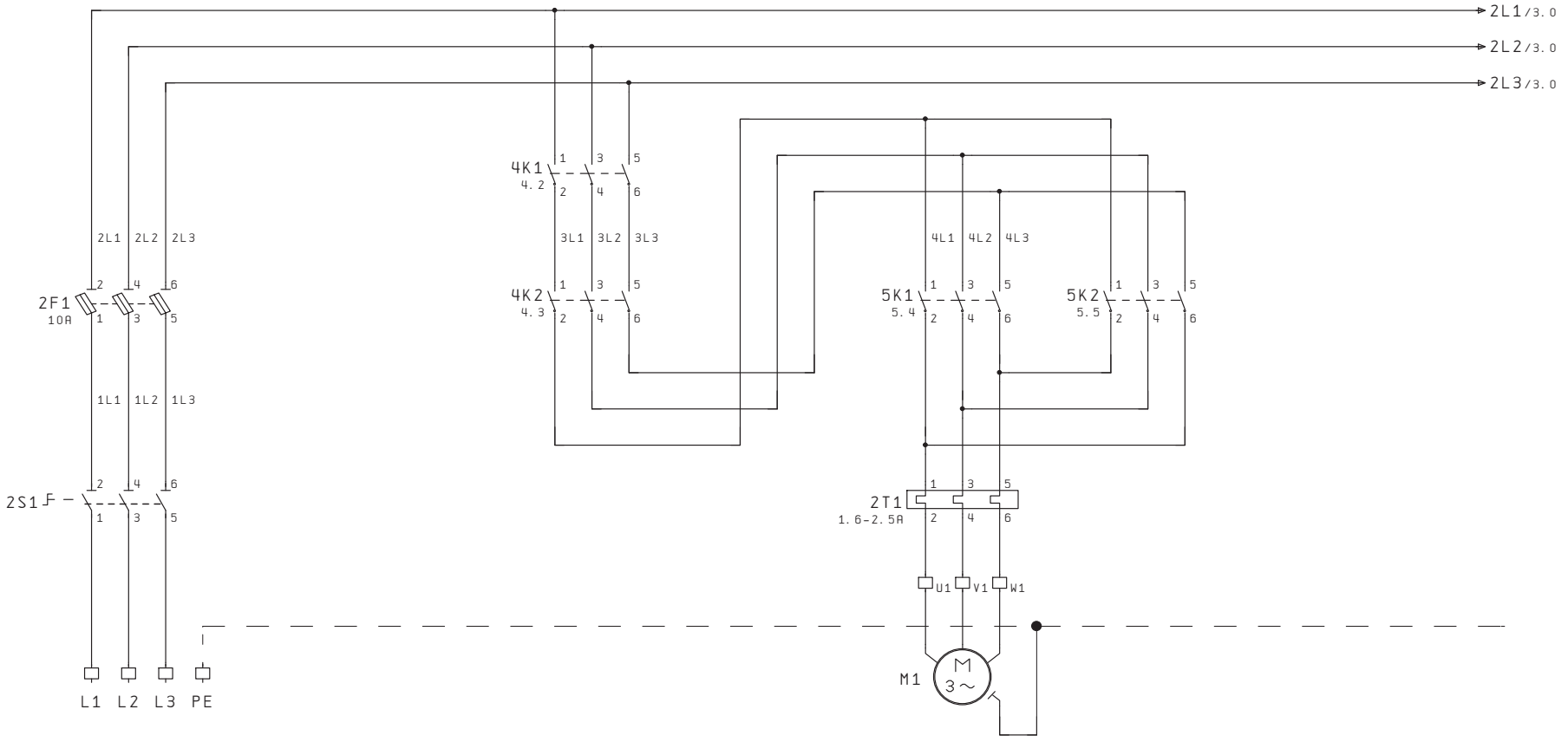
Elettromeccanica Frigeni Walter & C snc
Via Petrarca 19
24052 Azzano San Paolo - BERGAMO

2

			Data		MACHINE DAM35	GRAF ITALIA	WIRING DIAGRAM	GI001A23
			Diseg.					=
			Plot.	11. Mag. 2023				+
Modifiche	Data	Nome	Norm.					100.011

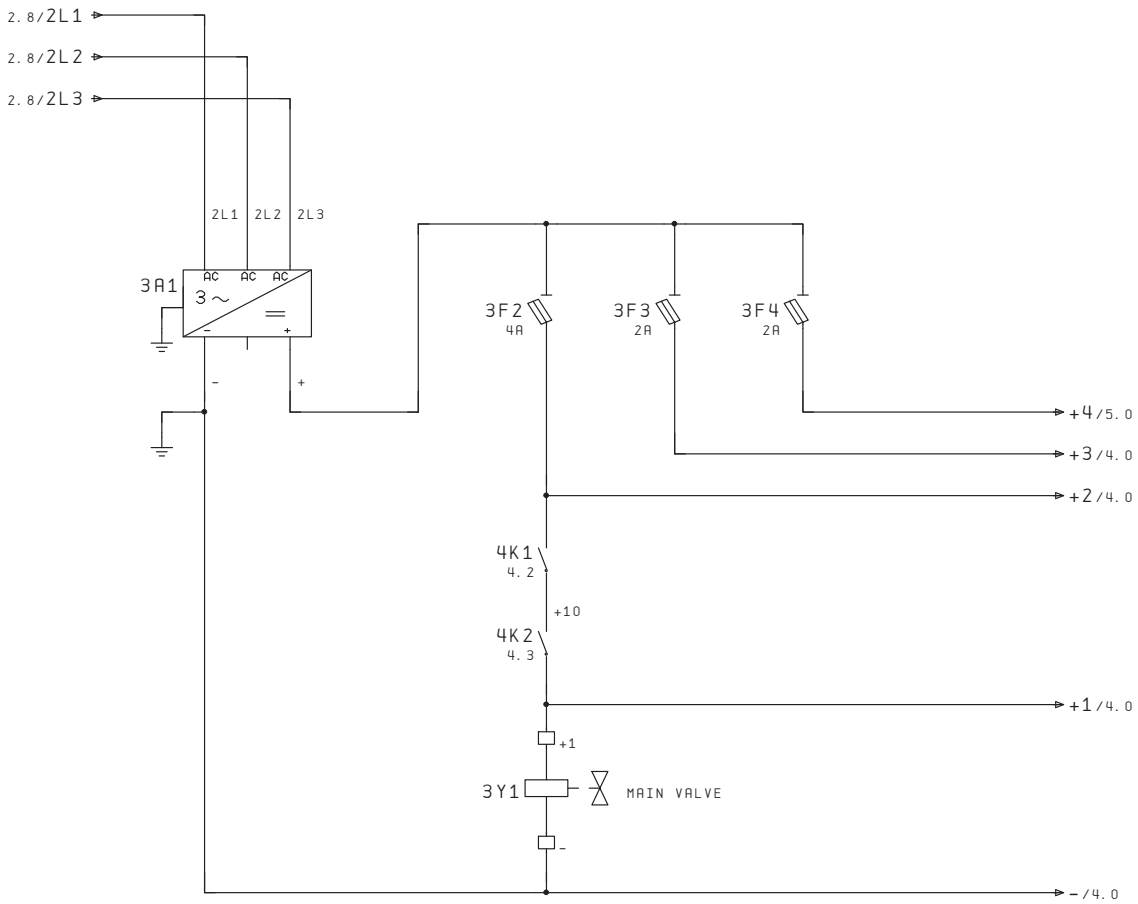
D-000685,0

Pag. 1
15



SUPPLY LINE
400V 50/60HZ

			Data		MACHINE DAM35	GRAF ITALIA	POWER CIRCUIT	GI001A23
			Diseg.					100.011
			Plot.	11. Mag. 2023				D-000685,0
Modifiche	Data	Nome	Norm.					Pag. 2 / 15



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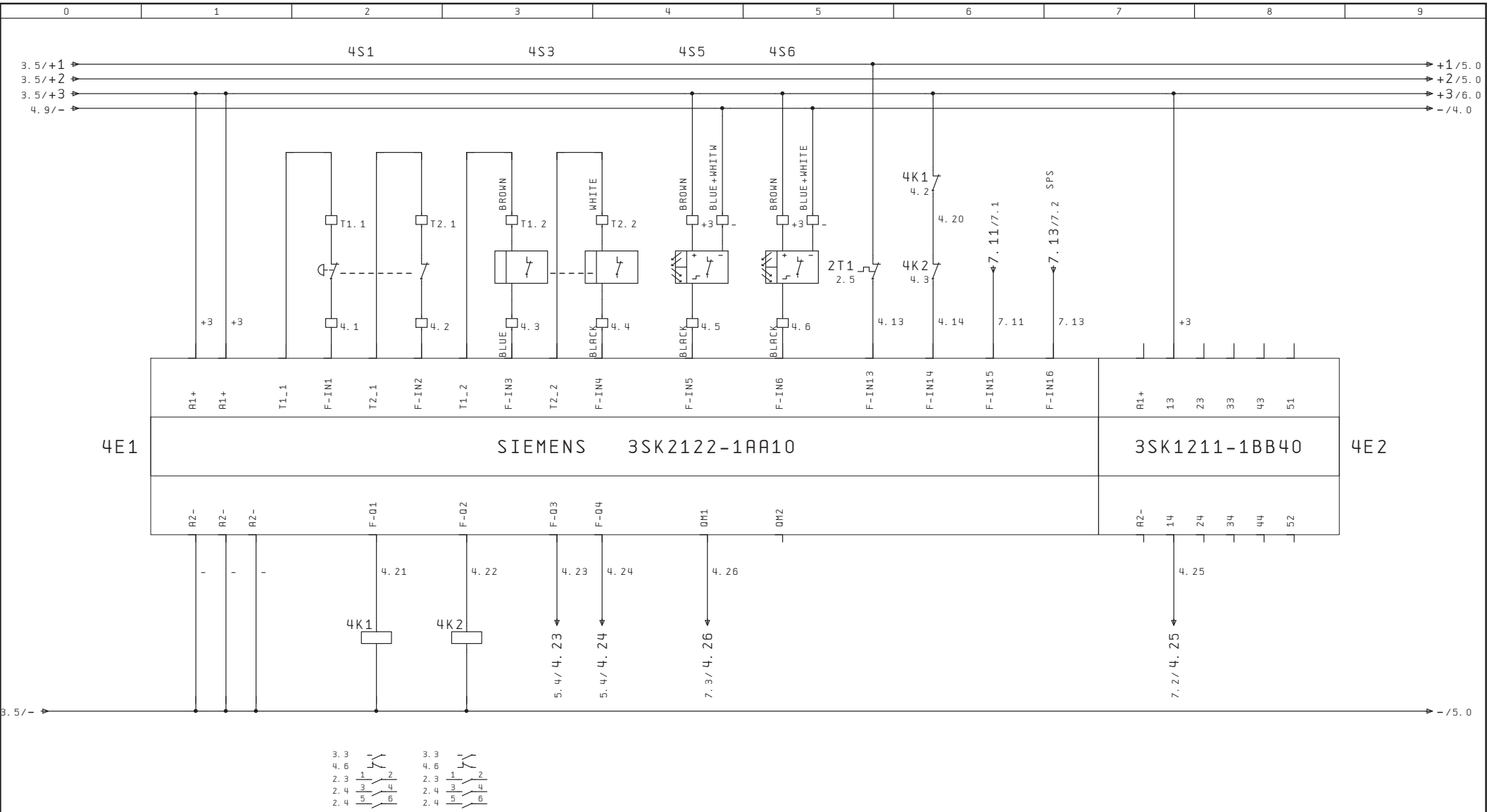
			Diseg.	123					+
			Plot.	11. Mag. 2023				100.011	D-000685,0
Modifiche	Data	Nome	Norm.						Pag. 3 / 15



3 5

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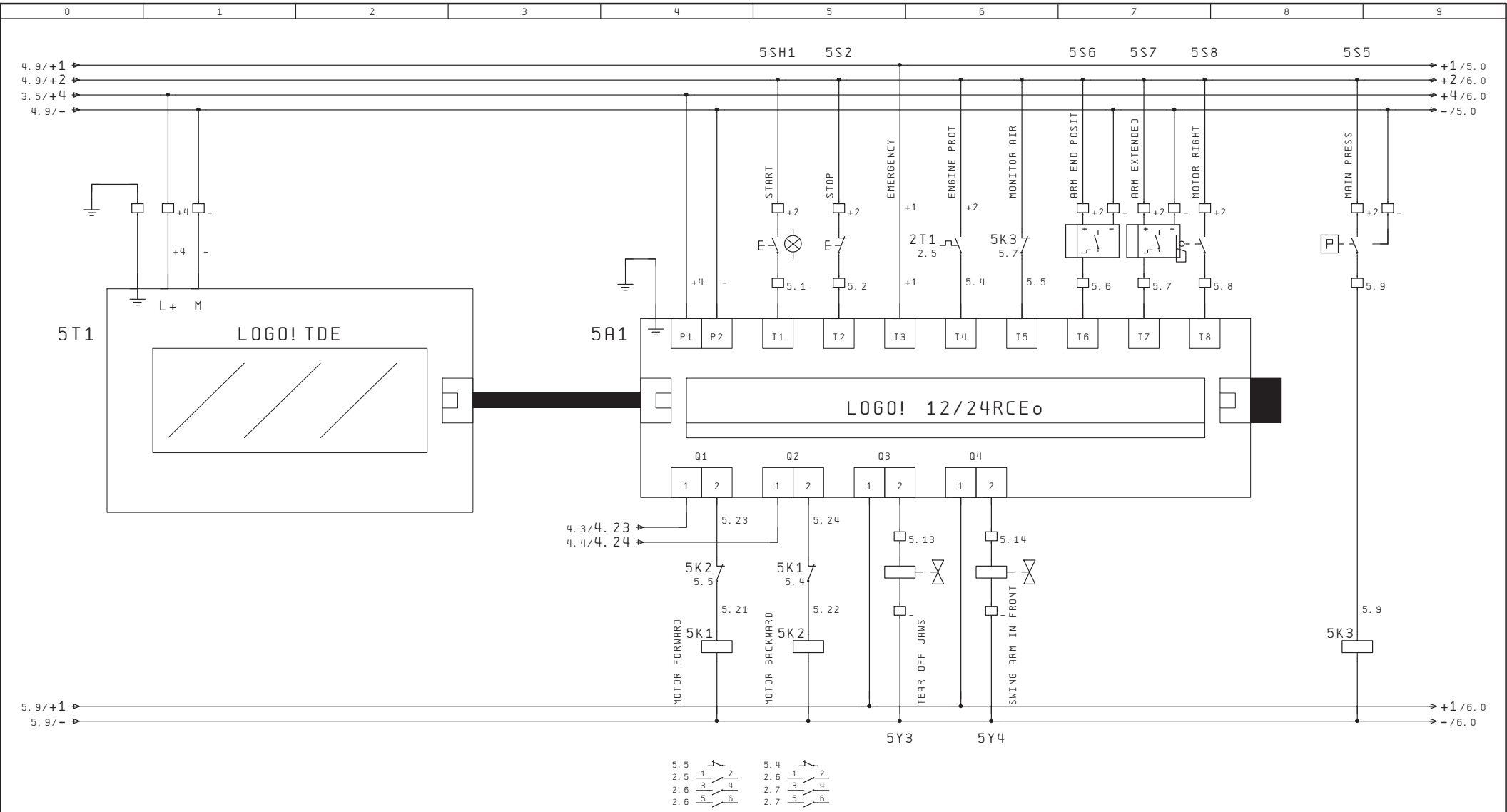
			Plot.	11. Mag. 2023				D-000685,0
Modifiche	Data	Nome	Norm.					Pag. 4 / 15



4 6

			Data		MACHINE DAM35	GRAF ITALIA	AUXILIARY CIRCUIT	GI001A23
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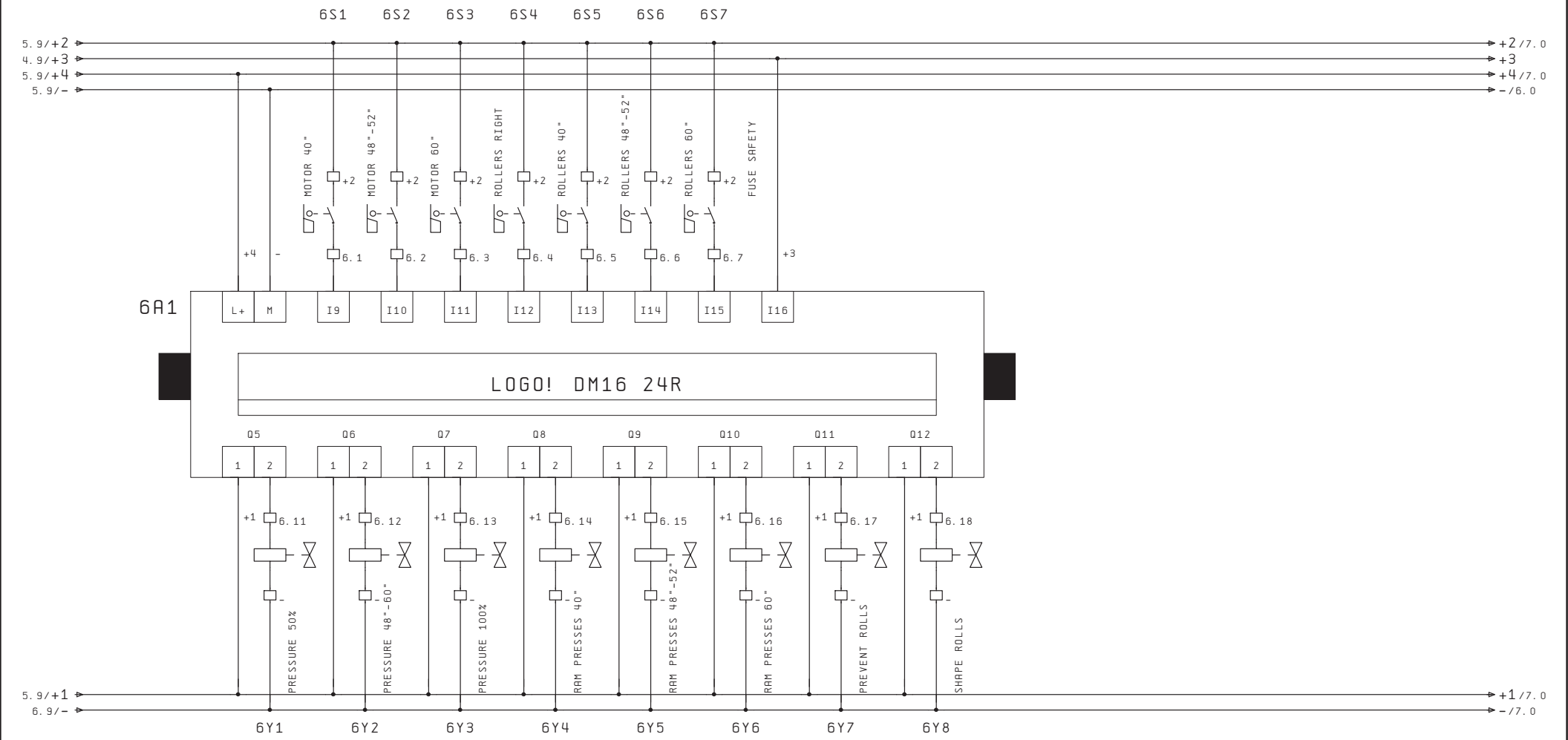
			Plot.	11. Mag. 2023				D-000685,0
Modifiche	Data	Nome	Norm.					Pag. 5 / 15



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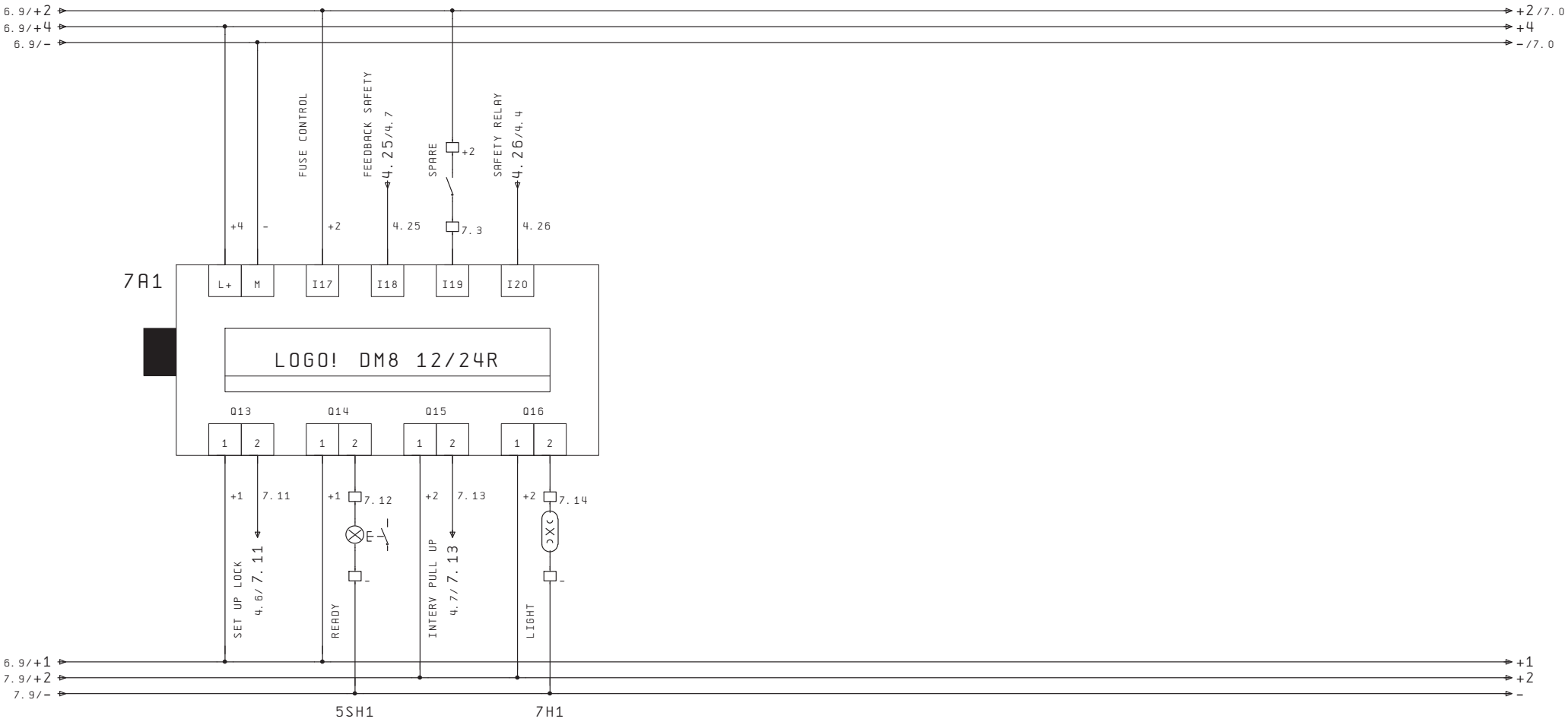
			Data		MACHINE DAM35	GRAF ITALIA	AUXILIARY CIRCUIT	GI001A23
			Diseg.	BAT				100.011
			Plot.	11. Mag. 2023				D-000685,0
Modifiche	Data	Nome	Norm.					Pag. 6 / 15



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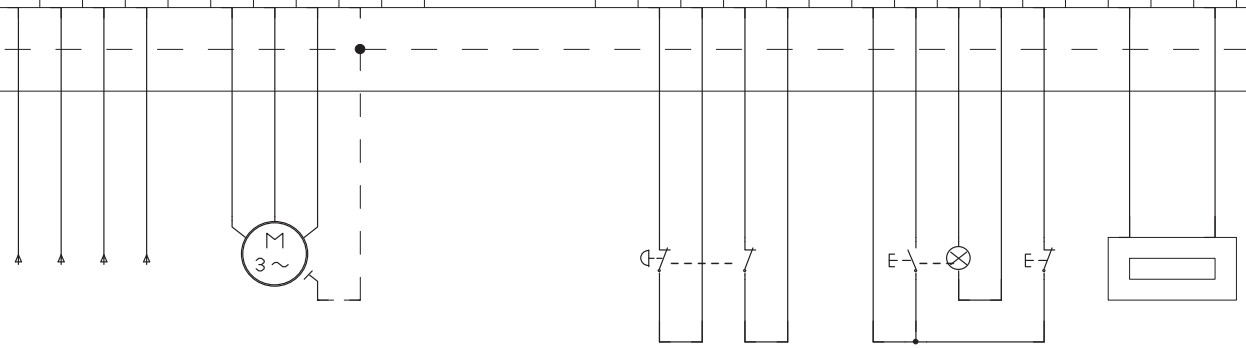
			Data		MACHINE DAM35	GRAF ITALIA	AUXILIARY CIRCUIT	GI001A23
			Diseg.	123				100.011
			Plot.	11. Mag. 2023				D-000685,0
Modifiche	Data	Nome	Norm.					Pag. 7 / 15

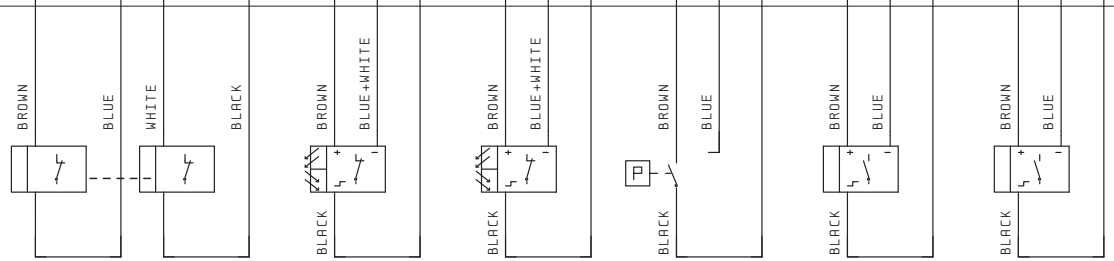
DESCRIPTION		LINE					MOTOR						EMERGENCY					START-STOP						DISPLAY				
TERMINAL																												
CABLE																												
SIGLE							M1						4S1					5SH1			5S2			5T1				
NUMBER		L1	L2	L3	PE		U1	V1	W1	PE			T1.1	4.1	T2.1	4.2		+2	5.1	7.12	-	5.2		+4		-			
BAR PE																												



7 9

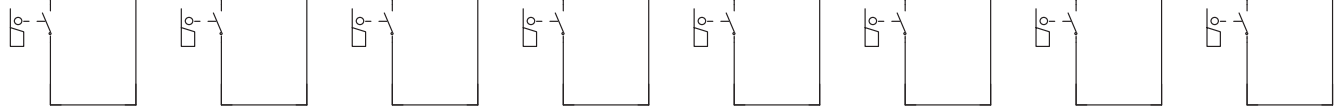
			Data		MACHINE DAM35	GRAF ITALIA	TERMINAL BLOCK	GI001A23	=
			Diseg.	BAT					+
			Plot.	11. Mag. 2023				100.011	D-000685,0
Modifiche	Data	Nome	Norm.						Pag. 8 / 15

DESCRIPTION	ARM SAFETY						LIGHT BARRIER						MAIN PRESS			ARM END POSITION			ARM EXTENDED			
TERMINAL																						
CABLE																						
SIGLE	4S3						4S5				4S6			5S5			5S6			5S7		
NUMBER	T1. 2		4. 3	T2. 2		4. 4	+3	-	4. 5		+3	-	4. 6	+2	-	5. 9	+2	-	5. 6	+2	-	5. 7
BAR PE																						



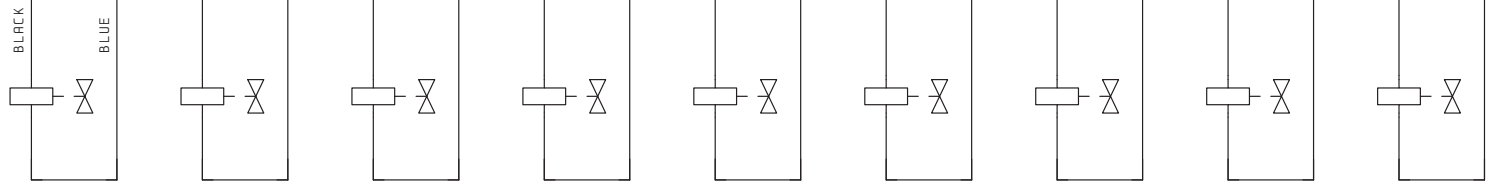
			Data		MACHINE DAM35	GRAF ITALIA	TERMINAL BLOCK	GI001A23
			Diseg.	BAT				100.011
			Plot.	11. Mag. 2023				D-000685,0
Modifiche	Data	Nome	Norm.					Pag. 9 / 15

DESCRIPTION	MOTOR RIGHT	MOTOR 40"	MOTOR 48"-52"	MOTOR 60"	ROLLERS RIGHT	ROLLERS 40"	ROLLERS 48"-52"	ROLLERS 60"
TERMINAL								
CABLE								
SIGLE	5S8	6S1	6S2	6S3	6S4	6S5	6S6	6S7
NUMBER	+2 5.8	+2 6.1	+2 6.2	+2 6.3	+2 6.4	+2 6.5	+2 6.6	+2 6.7
BAR PE								



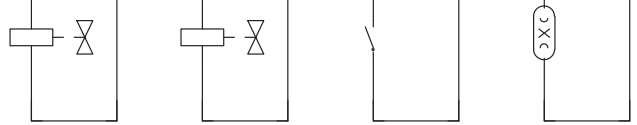
			Data		MACHINE DAM35	GRAF ITALIA	TERMINAL BLOCK	GI001A23
			Diseg.	BAT				100.011
			Plot.	11. Mag. 2023				D-000685,0
Modifiche	Data	Nome	Norm.					Pag. 10 / 15

DESCRIPTION	MAIN VALVE	TEAR OFF JAWS	SWING ARM IN FRONT	PRESSURE 50%	PRESSURE 48"-60"	PRESSURE 100%	RAM PRESSURE 40"	RAM PRESSURE 48"-52"	RAM PRESSURE 60"
TERMINAL									
CABLE									
SIGLE	3Y1	5Y3	5Y4	6Y1	6Y2	6Y3	6Y4	6Y5	6Y6
NUMBER	+1 -	5.13 -	5.14 -	6.11 -	6.12 -	6.13 -	6.14 -	6.15 -	6.16 -
BAR PE									



			Data		MACHINE DAM35	GRAF ITALIA	TERMINAL BLOCK	GI001A23
			Diseg.	BAT				100.011
			Plot.	11. Mag. 2023				D-000685,0
Modifiche	Data	Nome	Norm.					Pag. 11 / 15

DESCRIPTION	PREVENT ROLLS	SHAPE ROLLS	SPARE	LIGHT
TERMINAL				
CABLE				
SIGLE	6Y7	6Y8		
NUMBER	6.17 -	6.18 -	+2 7.3	7.14 -
BAR PE				



11 13

			Data		MACHINE DAM35	GRAF ITALIA	TERMINAL BLOCK	GI001A23
			Diseg.	BAT				100.011
			Plot.	11. Mag. 2023				D-000685,0
Modifiche	Data	Nome	Norm.					Pag. 12 / 15

SIGLE	DESCRIPTION	CONSTRUCTOR	CODE
	CASE	DKC	R5CE0462
2S1	DISCONNECTOR	SCHNEIDER	V0 + KCC1YZ + VZN17 + KZ32
2F1	FUSE HOLDER	SIEMENS	3NW7033
3A1	POWER SUPPLY	WEIDMULLER	1469530000
3F2	FUSE HOLDER	SIEMENS	3NW7013
3F3	FUSE HOLDER	SIEMENS	3NW7013
3F4	FUSE HOLDER	SIEMENS	3NW7013
4E1	SAFETY RELAY	SIEMENS	3SK2122-1AA10 + 3ZY1212-4GA01
4E2	SAFETY RELAY	SIEMENS	3SK1211-1BB40 + 3ZY1212-2DA00
4K1	CONTACTOR	SCHNEIDER	LC1D12BL
4K2	CONTACTOR	SCHNEIDER	LC1D12BL
5K1	CONTACTOR	SCHNEIDER	LC1D12BL
5K2	CONTACTOR	SCHNEIDER	LC1D12BL
2T1	THERMAL RELAY	SCHNEIDER	LR-D07
5K3	RELAY	OMRON	G2R-2-SNI-24DC + P2RFZ-08-E
5T1	TOUCH SCREEN	SIEMENS	6ED1055-4MH08-0BA1
5A1	LOGO 12/24 RCEo	SIEMENS	6ED1052-2HB08-0BA1
6A1	LOGO DM16 24R	SIEMENS	6ED1055-1NB10-0BA2
7A1	LOGO DM8 12/24R	SIEMENS	6ED1055-1MB00-0BA2
4S1	PUSH BUTTON	SCHNEIDER	ZB4-BS834 + ZB4-BZ104
5SH1	PUSH BUTTON	SCHNEIDER	ZB4-BW333 + ZB4-BZ101 + ZBV-B3
5S2	PUSH BUTTON	SCHNEIDER	ZB4-BA2 + ZB4-BZ102

			Data		MACHINE DAM35	GRAF ITALIA	COMPONENTS	GI001A23
			Diseg.	123				100.011
			Plot.	11. Mag. 2023				D-000685,0
Modifiche	Data	Nome	Norm.					Pag. 13 / 15

SIGLE	DESCRIPTION	CONSTRUCTOR	CODE
4S3	MAGNETIC SWITCH	SCHNEIDER	XCSDMC791L01M8 + XZCP0941L5
4S5	SAFETY BARRIER	SIK	C4MT-04814ABB03DE01207102 + BEF-3SHAEMKU22045835 + YF2A15-050VB5XLEAX2096240
4S6	SAFETY BARRIER	SIK	C4MT-04814ABB03DE01207102 + BEF-3SHAEMKU22045835 + YF2A15-050VB5XLEAX2096240
5S6	PROXIMITY	SCHNEIDER	XS1-08BLPAL5 (GRAF)
5S7	PROXIMITY	SCHNEIDER	XS1-08BLPAL5 (GRAF)
5S8	MECHANICAL SWITCH	PIZZATO	FM515-R28
6S1	MECHANICAL SWITCH	PIZZATO	FM515-R28
6S2	MECHANICAL SWITCH	PIZZATO	FM515-R28
6S3	MECHANICAL SWITCH	PIZZATO	FM515-R28
6S4	MECHANICAL SWITCH	PIZZATO	FM515-R28
6S5	MECHANICAL SWITCH	PIZZATO	FM515-R28
6S6	MECHANICAL SWITCH	PIZZATO	FM515-R28
6S7	MECHANICAL SWITCH	PIZZATO	FM515-R28
7H1	LIGHT	GIMAX	BLGPN4032400 + 3)CLC50

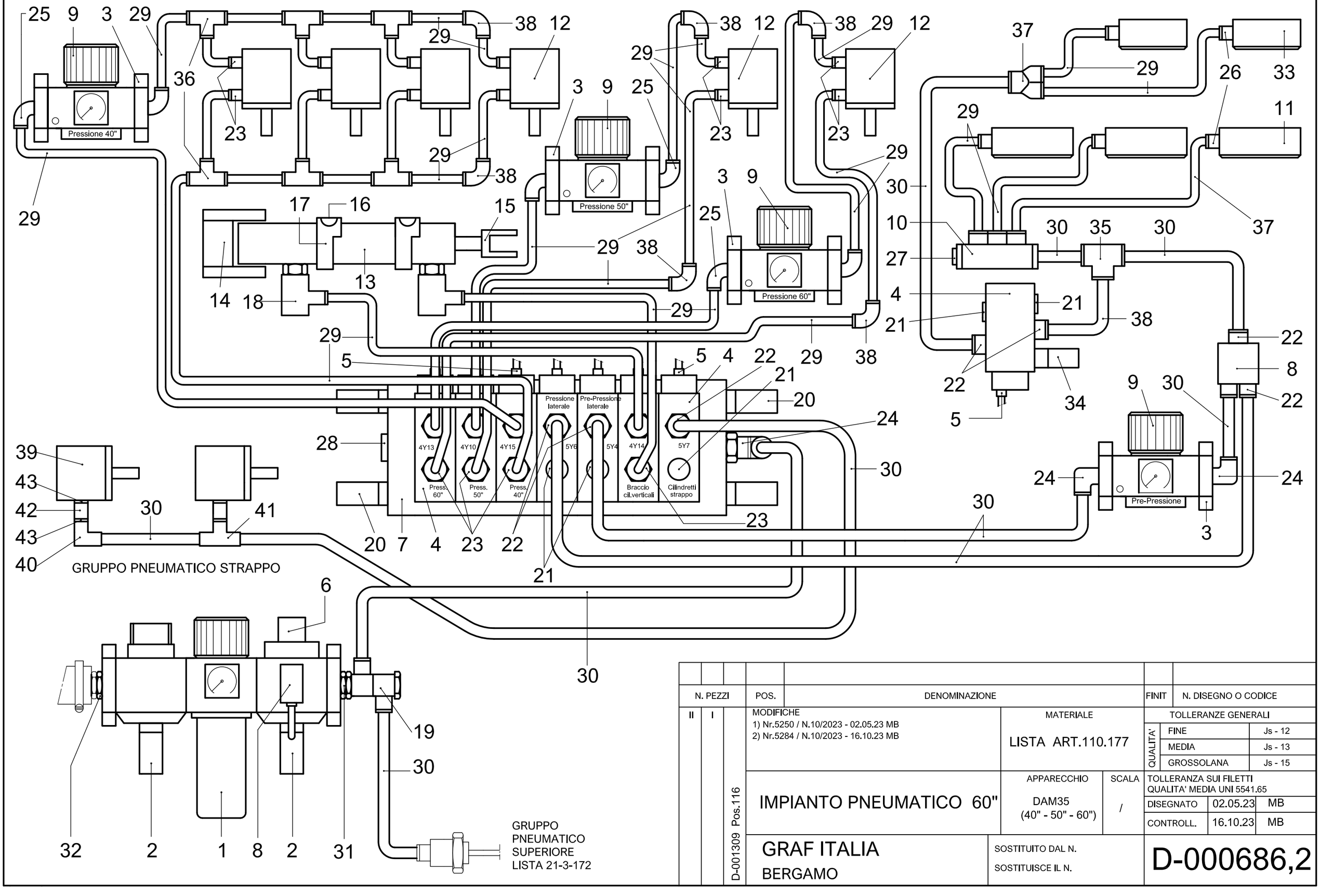
			Data		MACHINE DAM35	GRAF ITALIA	COMPONENTS	GI001A23
			Diseg.	123				100.011
			Plot.	11. Mag. 2023				D-000685,0
Modifiche	Data	Nome	Norm.					Pag. 14 / 15

0	1	2	3	4	5	6	7	8	9

DISPONIBLE

14

			Data		MACHINE DAM35	GRAF ITALIA	DISPONIBLE	GI001A23	=
			Diseg.	123					+
			Plot.	11. Mag. 2023				100.011	D-000685,0
Modifiche	Data	Nome	Norm.						Pag. 15 / 15



N. PEZZI		POS.	DENOMINAZIONE		FINIT	N. DISEGNO O CODICE
II	I		MODIFICHE 1) Nr.5250 / N.10/2023 - 02.05.23 MB 2) Nr.5284 / N.10/2023 - 16.10.23 MB	MATERIALE LISTA ART.110.177	TOLLERANZE GENERALI QUALITA' FINE Js - 12 MEDIA Js - 13 GROSSOLANA Js - 15	
		D-001309 Pos.116	IMPIANTO PNEUMATICO 60"	APPARECCHIO DAM35 (40" - 50" - 60")	SCALA /	TOLLERANZA SUI FILETTI QUALITA' MEDIA UNI 5541.65 DISEGNATO 02.05.23 MB CONTROLL. 16.10.23 MB
			GRAF ITALIA BERGAMO	SOSTITUITO DAL N. SOSTITUISCE IL N.		D-000686,2

	45			
	44			
	43	4	ANELLO DI TENUTA OR-1/8	O-1/8
	42	2	PROLUNGA M1/8-F1/8 L.51MM	RPX12318L51
6264	41	1	RACCORDO A T	TCK-1/8-PK-6KU
6260	40	1	RACCORDO A L	LCK-1/8-PK-6KU
536419	39	2	CILINDRO COMPATTO	AEN-40-10-I-P-A
130741	38	6	RACCORDO A INNESTO A L	QSL-6-100
130813	37	1	RACCORDO A INNESTO A Y	QSY-8-6-50
130803	36	6	RACCORDO A INNESTO A T	QST-6-100
130804	35	1	RACCORDO A INNESTO A T	QST-8-50
534219	34	1	SILENZIATORE	UC-1/8-50
13292	33	2	MODULO DI BLOCCAGGIO	EV-20/120-5
20907	32	1	RIDUZIONE CILINDRICA 1/2M - 1/4F	20907
20908	31	1	RIDUZIONE CILINDRICA 1/2M - 3/8F	20908
	30	13	TUBO IN PLASTICA	PUN-8x1,25-BL
	29	30	TUBO IN PLASTICA	PUN-6x1,0-BL
30153	28	1	TAPPO CON BRUGOLA + OR 1/4	30153
130701	27	1	TAPPO DI CHIUSURA	QSC-8H-50
132918	26	5	RACCORDO A INNESTO	QSM-M5-6-I-R-100
130731	25	6	RACCORDO A INNESTO A L	QSL-1/4-6-100
130732	24	3	RACCORDO A INNESTO A L	QSL-1/4-8-50
130675	23	20	RACCORDO A INNESTO	QS-1/8-6-100
130676	22	8	RACCORDO A INNESTO	QS-1/8-8-50
30152	21	5	TAPPO CON BRUGOLA + OR 1/8	30152
534220	20	4	SILENZIATORE	UC-1/4-20
	19	1	DISTRIBUTORE MULTIPLO	QSLV3-3/8-8
197581	18	2	REGOLATORE DI PORTATA UNIDIREZIONALE	GRLA-1/8-QS-6-RS-D
175095	17	2	KIT DI FISSAGGIO	SMBR-8-20
543862	16	2	SENSORE DI FINECORSA	SME-8M-DS-24V-K-2,5-OE
3111	15	1	FORCELLA	SG-M8
6059	14	1	SUPPORTO A CERNIERA	LBN-20/25
19239	13	1	CILINDRO A NORME	DSNU-20-100-PPV-A
536330	12	6	CILINDRO COMPATTO	ADN-63-50-A-P-A-39K8
13293	11	3	MODULO DI BLOCCAGGIO	EV-20/180-5
153204	10	1	DISTRIBUTORE MULTIPLO	QST3-8-6
529417	9	4	RIDUTTORE DI PRESSIONE	MS4-LR-1/4-D6-AS
6681	8	1	ELEMENTO OR	OS-1/8-B
	7	1	BLOCCHETTO DI COLLEGAMENTO	VABM-L1-14S-G14-7
	6	1	CONNETTORE M12 2,5M	M12-2,5M
541333	5	9	CAVO COLLEGAMENTO	NEBU-M8G3-K-2,5-LE3
574229	4	8	ELETTROVALVOLA	VUVG-L14-M52-AT-G18-1R8L
532184	3	8	SQUADRETTA DI FISSAGGIO	MS4-WP
	2	2	SILENZIATORE	U-1/2-B
8025359	1	1	COMBINAZIONE UNITA' DI MANUTENZIONE	MSB6-1/2:C3:J1:D14-WP
CODICE FESTO	POS.	Q.TA'	DENOMINAZIONE	ARTICOLO

D-001309 Pos.116

MODIFICHE
1) 5250 02.05.2023 yf / 10/2023 02.05.2023 MB
2) 5284 16.10.2023 yf / 34/2023 16.10.2023 MB
3) 5323 12.02.2024 rp / 03/2024 08.02.2024 MB

MATERIALE
ART.110.177
FESTO
PAGINA 1/1

TOLLERANZE GENERALI

QUALITA'		
	FINE	Js - 12
	MEDIA	Js - 13
	GROSSOLANA	Js - 15

GRUPPO PNEUMATICO

APPARECCHIO: DAM35
SCALA:

TOLLERANZE SUI FILETTI
QUALITA' MEDIA UNI 5541.65

DISEG	18.10.2023	MB
CONT	16.10.2023	MB

GRAF ITALIA
BERGAMO

SOSTITUITO DAL N.

SOSTITUISCE IL N.

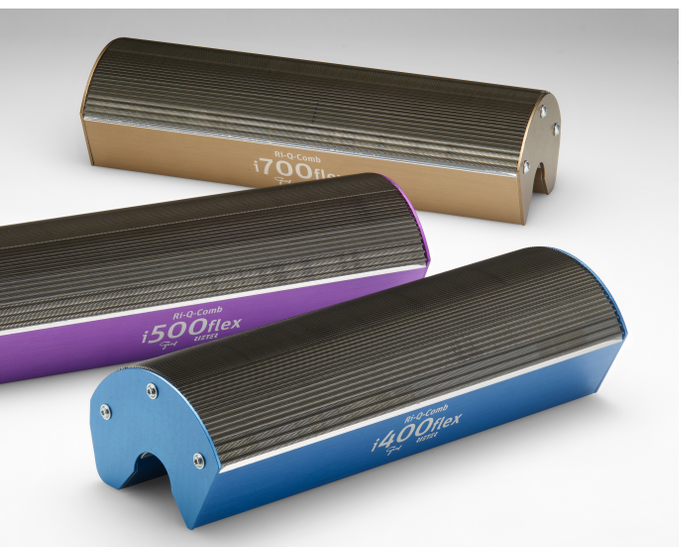
D-000686,3

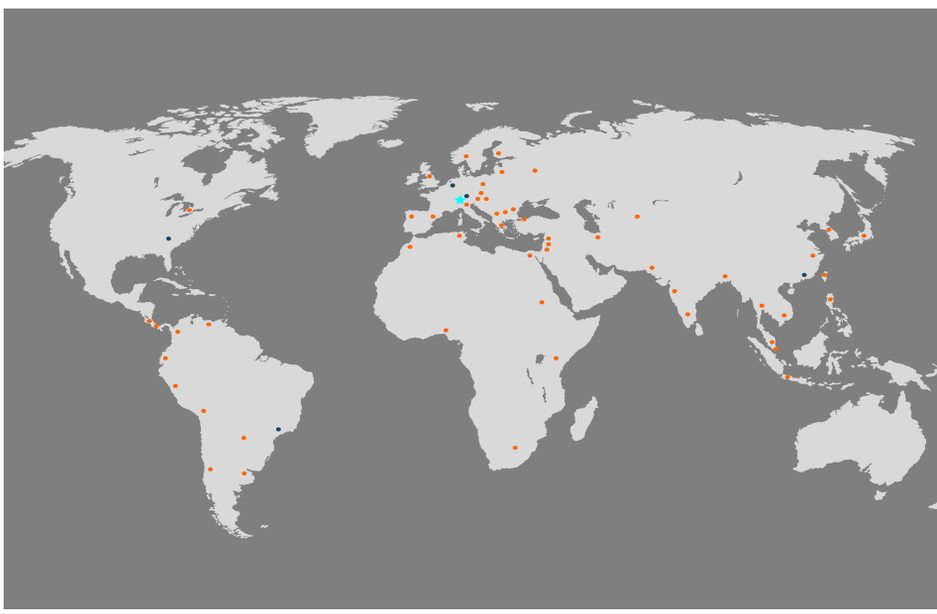
Keyword index

Keyword index

T

U





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