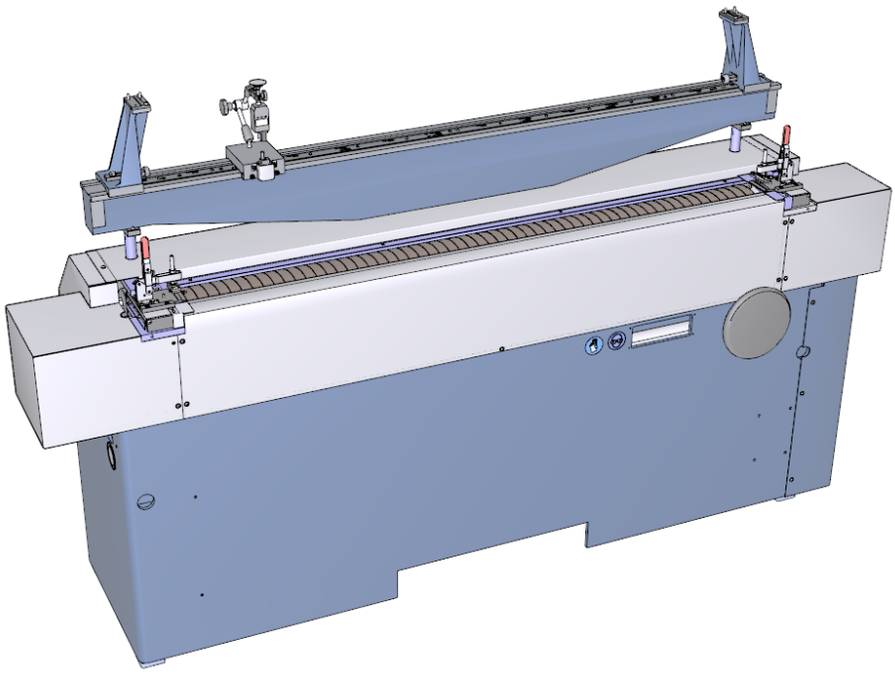

Scan QR-Code for digital manual

Translation of the original instructions

Flat grinding machine DSM 20/1

Manufacturer address

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1 General information

1.1 Subject of these instructions

The flat grinding machine 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].

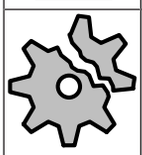
➲ If the machine is passed on to third parties, make sure that these instructions are also handed over.

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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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 measuring and grinding flat clothings for 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

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 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
	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 malfunctioning 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 [▷ 32] 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 Position of the signs [▶ 33] 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	DSM 20/1	
Serial number	See type plate	
Year of manufacture	See type plate	
Approx. dimensions (L x W x H)	2200 x 590 1420	mm
Approx. weight of basic machine	630	Kg
Approx. weight of the belt mounting device	46	Kg
Approx. weight of the transport bars	16	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
Control voltage	24	V_{DC}

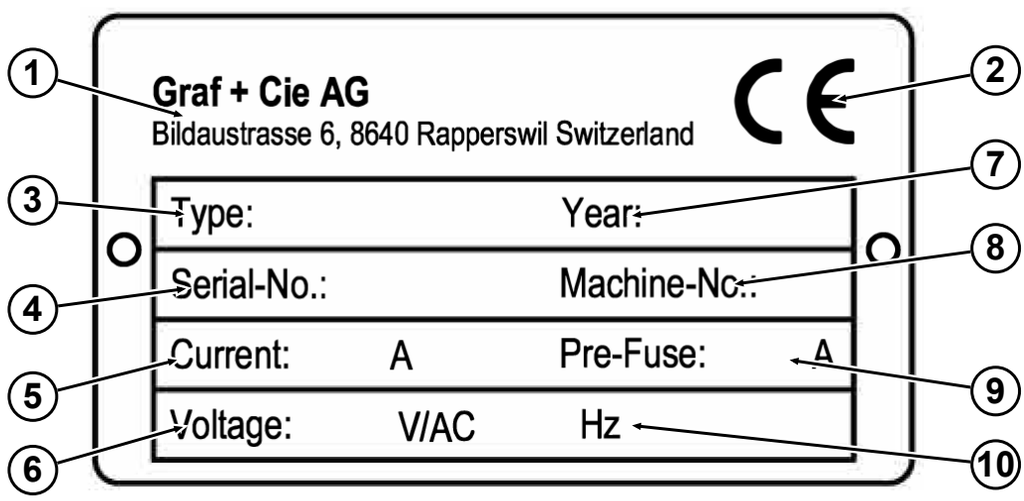
3.3 Ambient conditions

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 roller bearing
Grease	For chain and eccentric bracket
Machine oil	Oil with viscosity 9.5 E at 40 C for roller needle bearings
Gear oil	Oil with viscosity 9.5 E at 40 C for axial adjustment gears

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

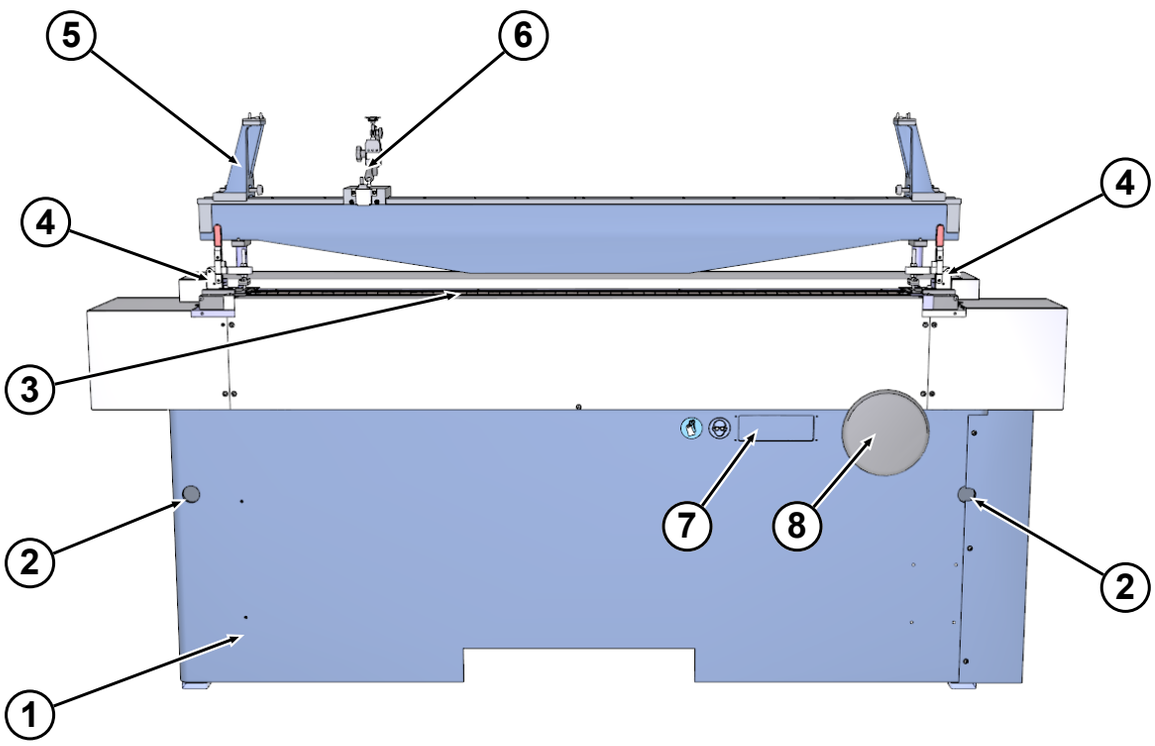


Fig. 1: General view of the machine

Item	Component	Function
1	Lower part	Transport and installation
2	Opening for transport bars	Transport aid
3	Grinding area	To grind the flat clothing
4	Quick release	To fix the card flat
5	Measuring area attachment	To measure the straightness of the flat clothings
6	Carriage with dial gauge	To measure at several points on the flat clothing
7	Control panel	Buttons for operation
8	Handwheel	To feed the grinding roller

4.2 Functional description

This machine is used to measure and grind flat clothings on cast iron or aluminium card flats outside the card.

To measure the flat clothings in a set, the operator places the card flat to be measured in the supports of the machine's measuring area attachment and uses the dial gauge to measure the deviations in shape and tolerance over the length of the flat at several positions. This procedure is repeated for all flats in a set. Any flats that are out of tolerance must be reworked.

When sanding a flat with a mounted flat clothing, the operator places the flat bar with the clothing facing down on the grinding plates of the grinding area and fixes it on both sides with the quick release.

The grinding roller is fitted with a grinding belt that is wound in a spiral. After adjusting the roller to the height of the clothing tips and setting the duration of the radial oscillation, the grinding roller can be started. Once the radial oscillation has stopped, the operator can, where necessary, increase the feed of the grinding roller using the handwheel and restart the oscillation.

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

4.3 Components for the measuring process

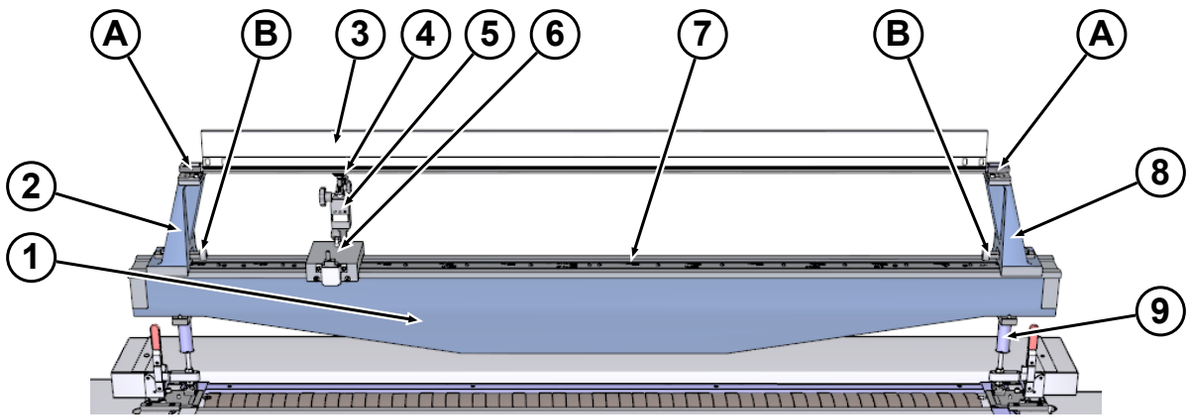


Fig. 2: Control device with card flat

Item	Component	Function
1	Control bar for the control device	Support and stability
2	Support bracket on left	To precisely position the card flat
3	Card flat	Card flat to be measured
4	Dial gauge plate	To scan the height
5	Digital dial gauge	Measures the height of the card flat
6	Carriage with radio transmitter	To move the dial gauge and transmit the measurement data by radio
7	Running surface with markings	Carriage running surface and marking of the measuring points
8	Support bracket on right	To precisely position the card flat
9	Control device support	The control device rests here on both sides.
A	Support plates	Support plates suitable for card type
B	Stops for measuring carriages	Limits the travel range of the measuring carriage

4.4 Components for the grinding process

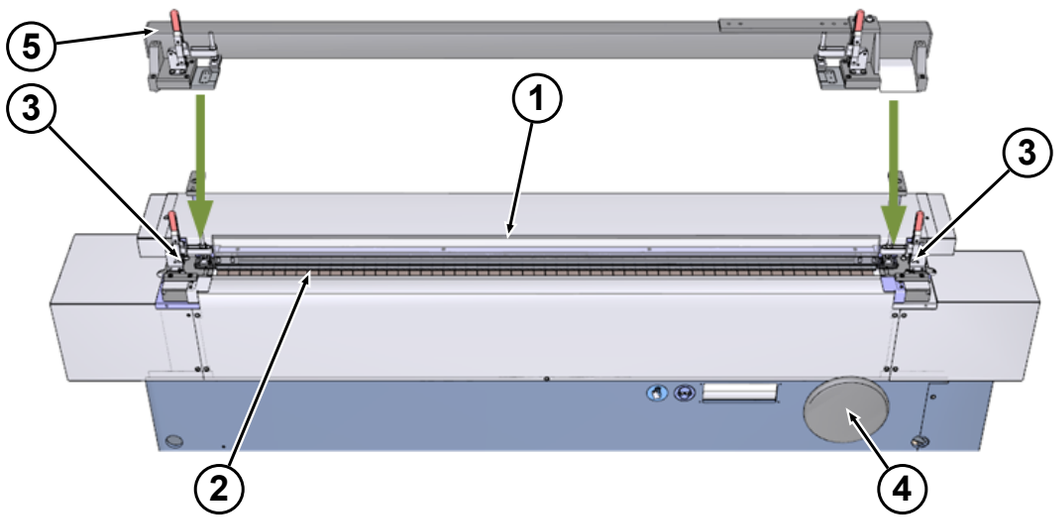
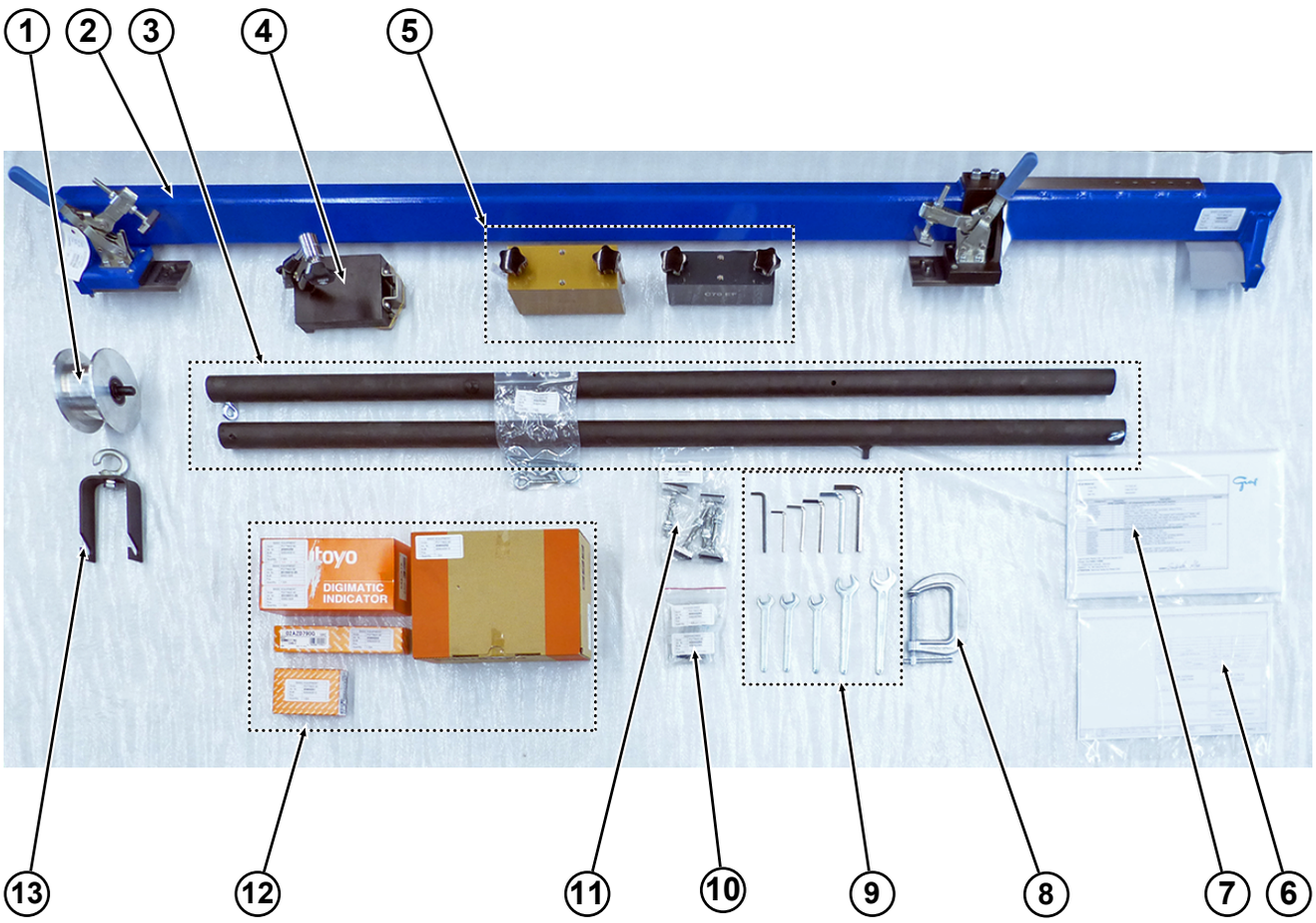


Fig. 3: Components for the grinding process

Item	Component	Function
1	Card flat	Card flat to be ground with flat clothing
2	Grinding roller with grinding belt	To grind the tips
3	Grinding plates, Quick release	Grinding plates suitable for the type of flat and clamping device for fixing the card flat
4	Handwheel	To feed the grinding roller
5	Grinding unit carrier	Grinding unit carrier for processing flat sizes smaller than 60"

4.5 General overview of accessories



Item	Component/part
1	Redirecting roller
2	Grinding unit carrier
3	Accessories for transporting the machine - Transport bars - Ring bolts - Safety cotter pins
4	Measuring carriage
5	Weights
6	Plans and drawings
7	Parts list
8	Screw clamp
9	Assembly tools - Open-end spanner -Allen key
10	Electrical fuses

Item	Component/part
11	Pressure piece for tensioner
12	Dial gauge
13	Bracket for weight

4.6 Position of the safety devices

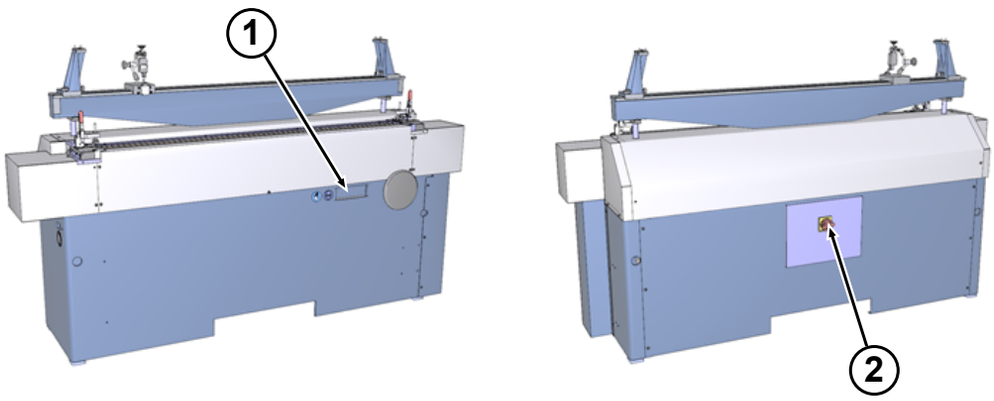


Fig. 4: Safety devices on the machine

Item	Component	Function
1	Emergency stop	To shut down the machine in an emergency
2	Main switch	Lockable main switch

4.7 Position of the signs

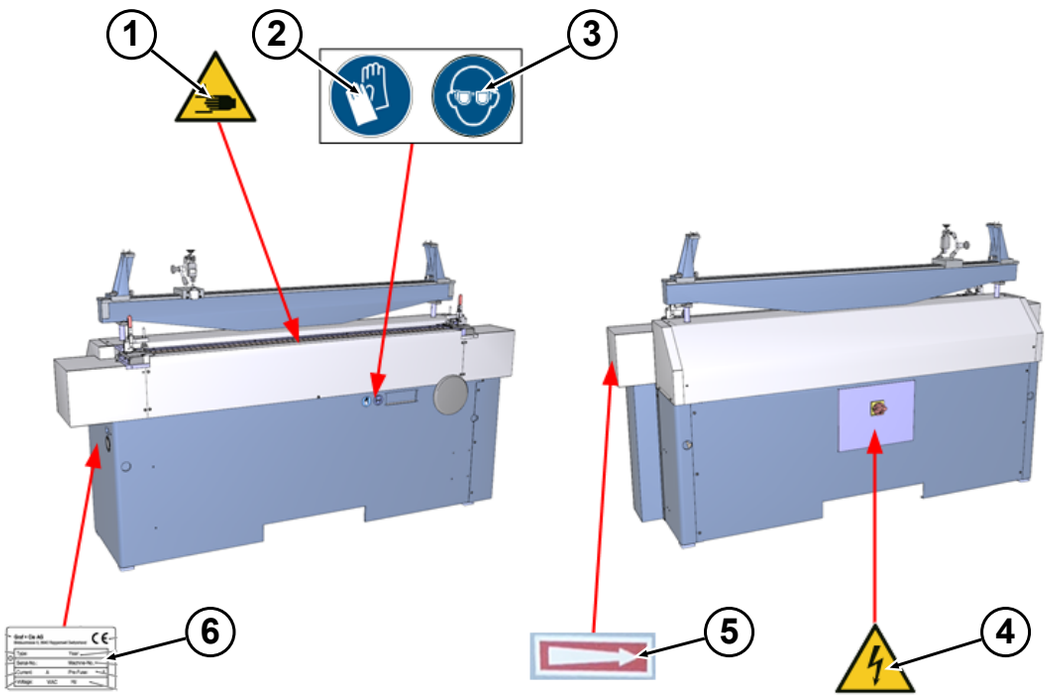


Fig. 5: Information signs on the machine

Item	Component/part
1	Warning of hand injuries
2	Information sign: use hand protection
3	Information sign: use eye protection
4	Warning of electrical voltage
5	Information sign: roller's direction of rotation
6	Type plate For details of the type plate, see the Type plate [▶ 25] chapter.

4.8 Position of the controls and displays

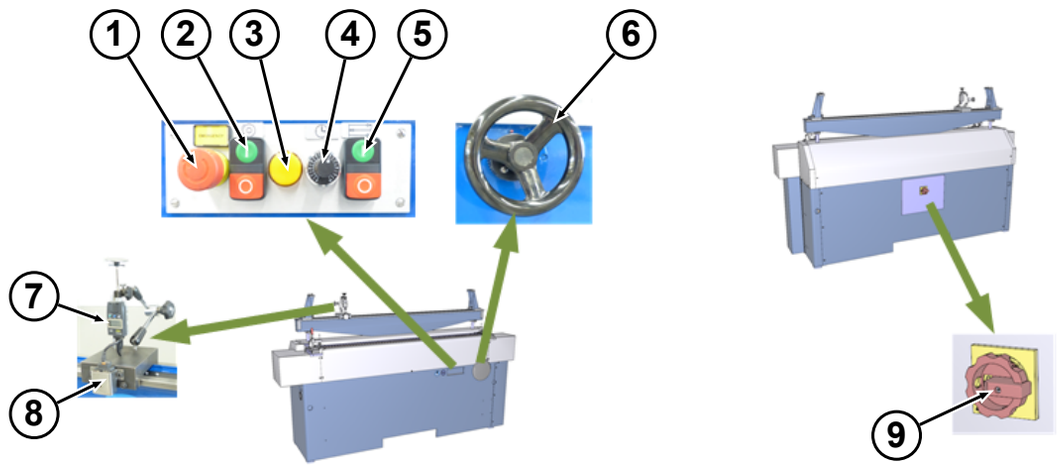


Fig. 6: Position of controls and displays on the machine

Item	Component	Function
1	"EMERGENCY STOP" palm button	Sets the machine to a safe state.
2	Grinding roller "ON/OFF" push button	To switch the rotary drive of the grinding roller on and off
3	Yellow" indicator light	Lights up when the machine is switched on
4	"Time preselection" potentiometer	Set the running time for the traversing drive
5	Traversing drive "ON/OFF" push button	To switch the rotary drive for the traversing drive on and off
6	"Feed" handwheel	To feed the grinding roller on the card flat
7	Dial gauge	Dial gauge operating buttons Zero position
8	Wireless transmission button	To transmit the current measured value by radio
9	Main switch	Switch the machine on/off

4.9 Position of the connections

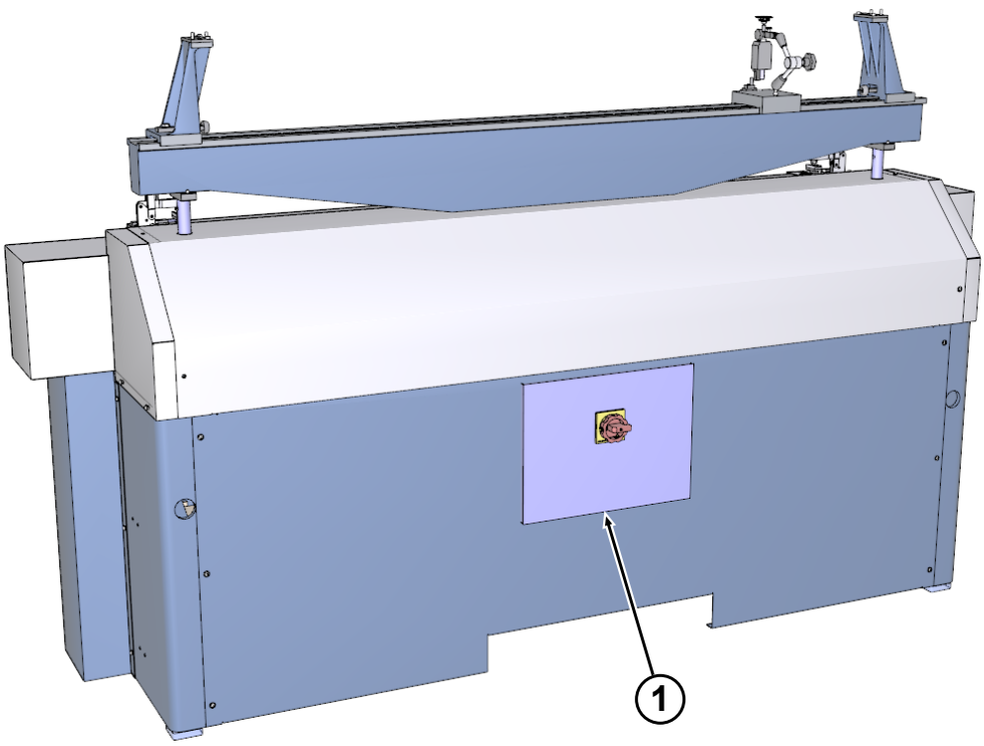


Fig. 7: Connections on the machine

Item	Connection	Configuration
1	Electrical supply line	Cable entry in switch cabinet

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

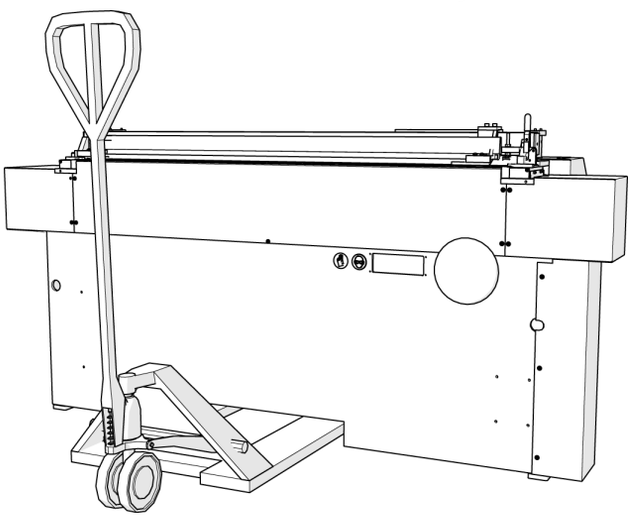


Fig. 8: Transport with pallet jack or forklift

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.

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.

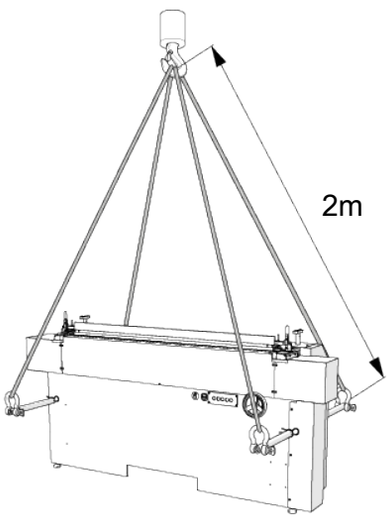


Fig. 9: Transport by crane

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 [▷ 26] 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.

➲ Switch on the drive of the grinding roller on the control panel.

➲ Check the direction of rotation of the grinding roller with the arrow on the right side of the machine.

⇨ The roller rotates in the direction of the arrow: the connection is OK.

⇨ The roller rotates in the opposite direction to the arrow: have the rotating field changed by a qualified electrician.

6.3 Aligning the machine

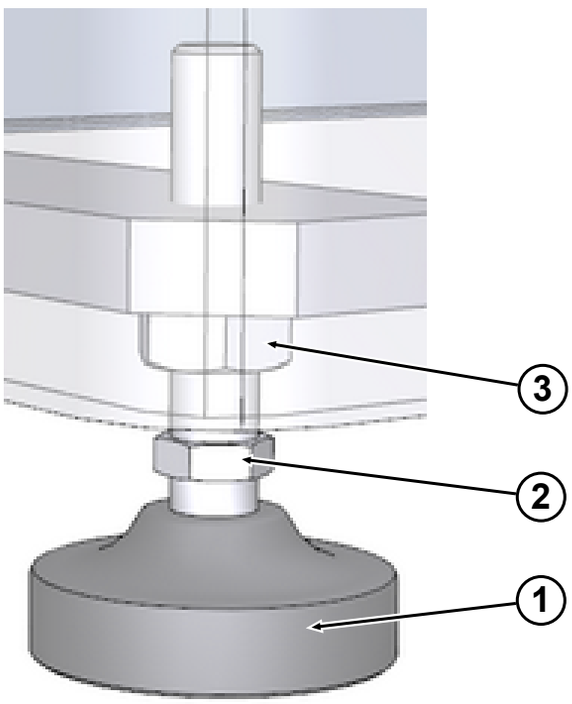


Fig. 10: Machine base

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 electrical connection has been established.
- All emergency stop buttons are unlocked.

Switch-on procedure

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

7.2.2 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.

7.2.3 Shutting down the machine in an emergency

➲ Press the EMERGENCY STOP button.

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

	NOTE
	Only press the EMERGENCY STOP button in an emergency.

Switching the machine back on after an emergency stop

➲ Eliminate the cause of the emergency stop situation.

➲ Unlock the EMERGENCY STOP button.

➲ Restart the drives.

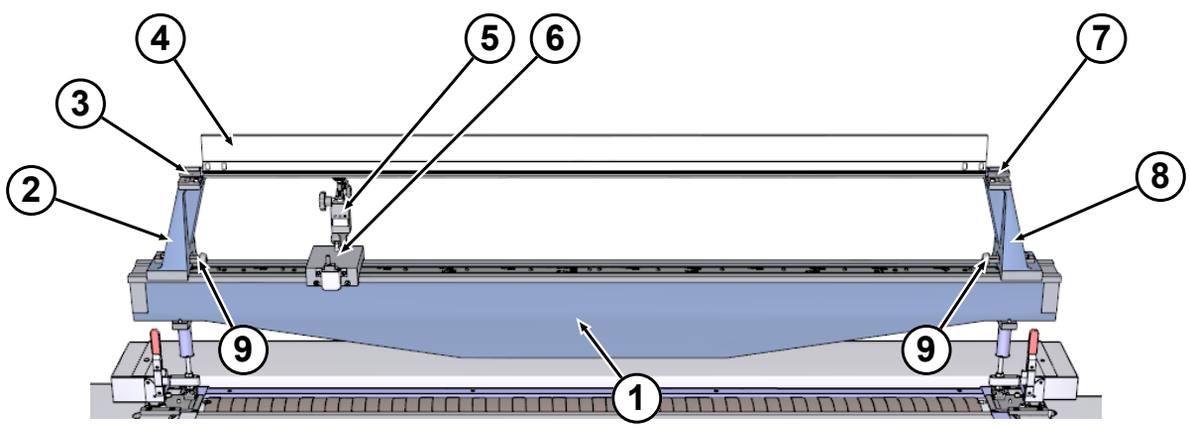
7.3 Operating modes

The machine can be used for the following operating modes:

- Series measurement of the card flats
- Grinding the flat clothings

7.4 Series measurement of the card flats

7.4.1 Preparing the control device



Before starting a series of measurements for a complete set of card flats, the control device must be set to the flat type.

Proceed as follows to adjust the control device to the flat type:

➲ If necessary, adjust the position of the support brackets (2) to the overall length of the flat (see the Adjusting the support brackets [▶ 46] chapter).

➲ Mount the support plates (3, 7) that match the flat type on both support brackets (2, 8). Each card type has different support plates for the measurement. The correct support plates are required to align the needling unit horizontally to the dial gauge.

➲ Insert the empty flat (4) and align it flush on the right and at the rear with the pins on the right support plate (7).

➲ Check that the length of the card flat is flush with the left support plate (3). If necessary, adjust the position of the left support block (2).

➲ Place the carriage (6) on the control bar (1) of the control device.

➲ Attach the dial gauge (5) to the carriage (6) and align it with the flat (4) (see the Aligning the dial gauge [▶ 47] chapter).

➲ Adjust the stops for the measuring carriage (9) on the support brackets so that the dial gauge's measuring plate is approx. 5 mm from both sides of the flat at the beginning and the end.

7.4.2 Adjusting the support brackets

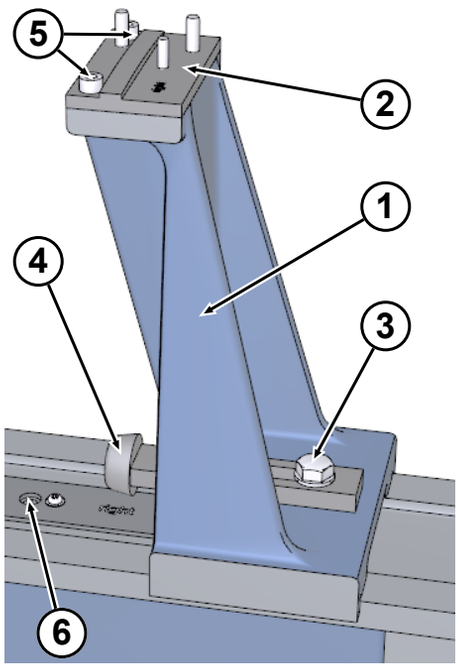


Fig. 11: Support bracket on the control device

Changing the position of the support brackets

- ➲ To change the position of the support blocks, loosen the screw (3) all the way. Hold the support bracket (1), stop piece (4) and screw (3) together.
- ➲ Place the support bracket with stop piece and screw in the required position on the control bar and screw the screw (3) into the threaded hole (6).
- ➲ Carry out fine adjustment as described below.

Fine adjustment of support bracket and stop

- ➲ To finely adjust the position of the support blocks and the stops for the measuring carriage, loosen the screw (3) until the support block (1) and the stop (4) can be moved.
- ➲ Set the support block (1) and the stop (4) to the required position and tighten the screw (3).

Changing the support plates

- ➲ Loosen the cylinder screws (5) on the support plate (2) and remove the support plate.
- ➲ Mount the new support plate (2) and secure it with the cylinder screws (5). Ensure that the support plates are mounted on the correct side.

	NOTE
	The start and end positions of the support blocks for 60" and 40" are marked on the scale on the running surface.

7.4.3 Aligning the dial gauge

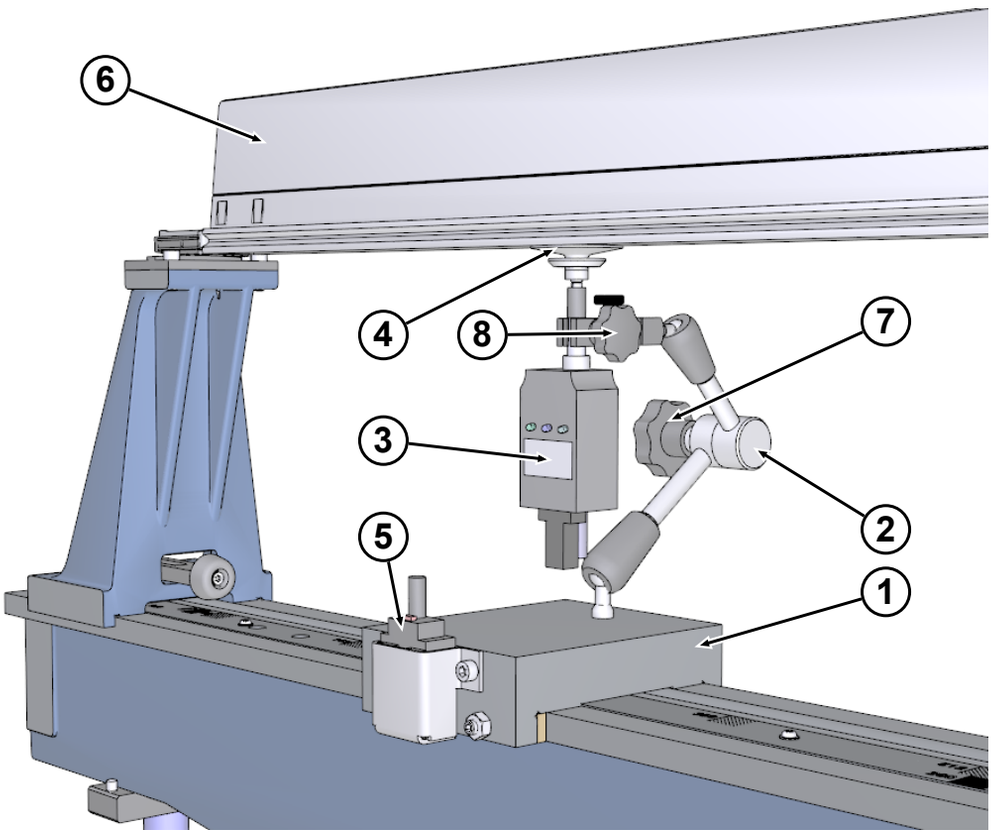


Fig. 12: Dial gauge on the control device

- ➲ Place the measuring carriage (1) with articulated arm (2) on the control bar of the control device.
- ➲ Loosen the star grip nut (7) and adjust the articulated arm as shown. Tighten the star grip nut (7).
- ➲ Loosen the clamping screw (8) and insert the dial gauge (3) into the holder. Tighten the clamping screw (8).
- ➲ Insert the transmitter unit (5) for the dial gauge into the holder or insert the analogue dial gauge.
- ➲ Loosen the star grip nut (7) and adjust the articulated arm with the dial gauge so that the deflection of the plate (4) through the cover is within the free movement range of the plate. Tighten the star grip nut (7).
- ➲ Switch on the dial gauge and check the battery status.

NOTE

More information on operating the dial gauge and changing the battery is available in the manufacturer's instructions for the dial gauge and the documentation "Instruction manual for Digital Dial Gauge" (see the Digital measuring pointer [▶ 112] chapter).

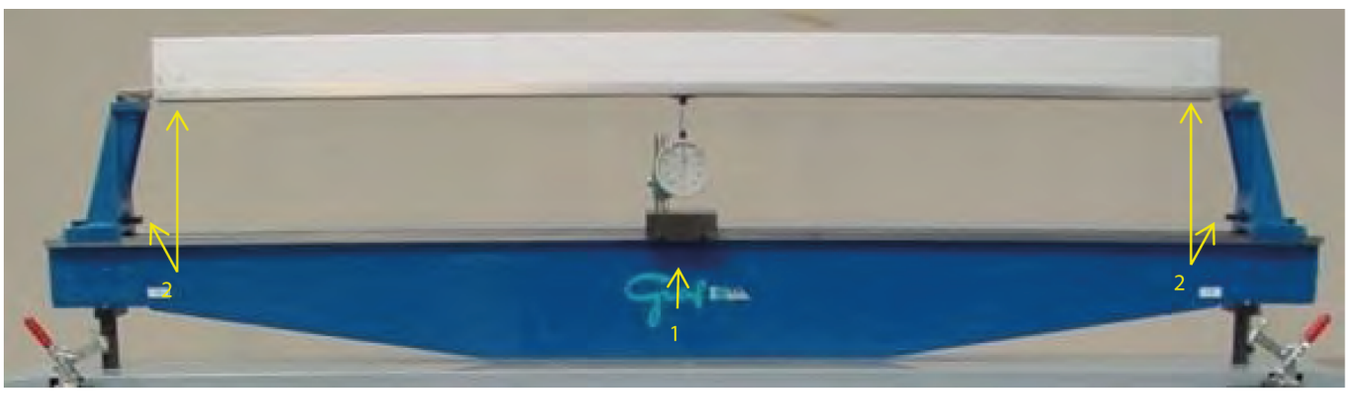
7.4.4 Determine measuring positions

7.4.4.1 General information

	NOTE
	It is important that all measurements for the flat bar with and without flexible flat clothings for 40" and for 60" are always carried out at the same positions. To do this, some markings must be made on the control bar.

7.4.4.2 Markings for flat bar without flexible flat clothings

The measurements for the flat bar without flexible flat clothings are only taken at 3 positions: left - middle - right



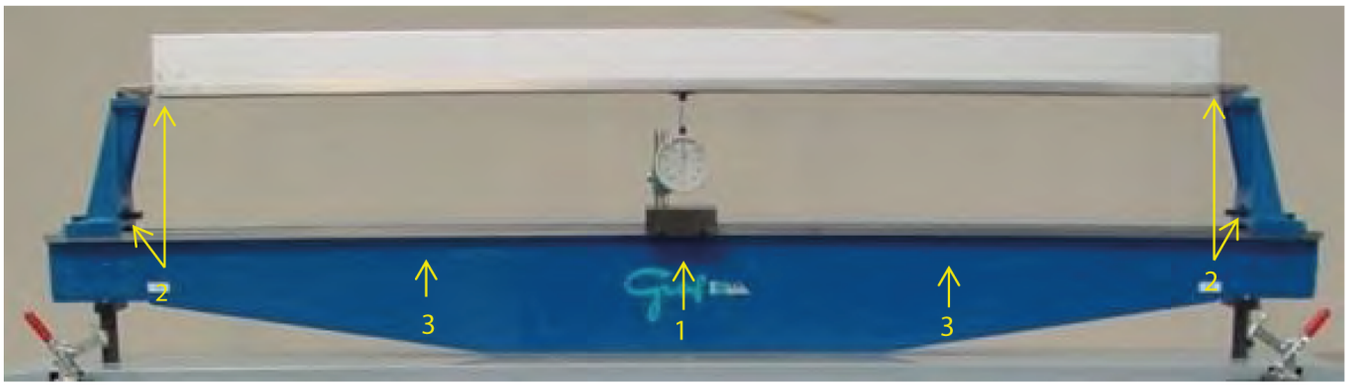
Place the marking in the centre of the bar (1) and adjust the stop (2) on the left and right side so that the plate of the digital dial gauge is still on the flat bar.

The marking in the centre can be used for both the 40" and 60" versions. The support brackets on the left and right side must be adjusted depending on the flat length.

7.4.4.3 Markings for flat bar with flexible flat clothings (40")

The measurements for the flat bar with flexible flat clothings (40") are only taken at 5 positions: 20 - 240 - 480 - 720 - 980 mm.

A marking strip is available for 40" flats.



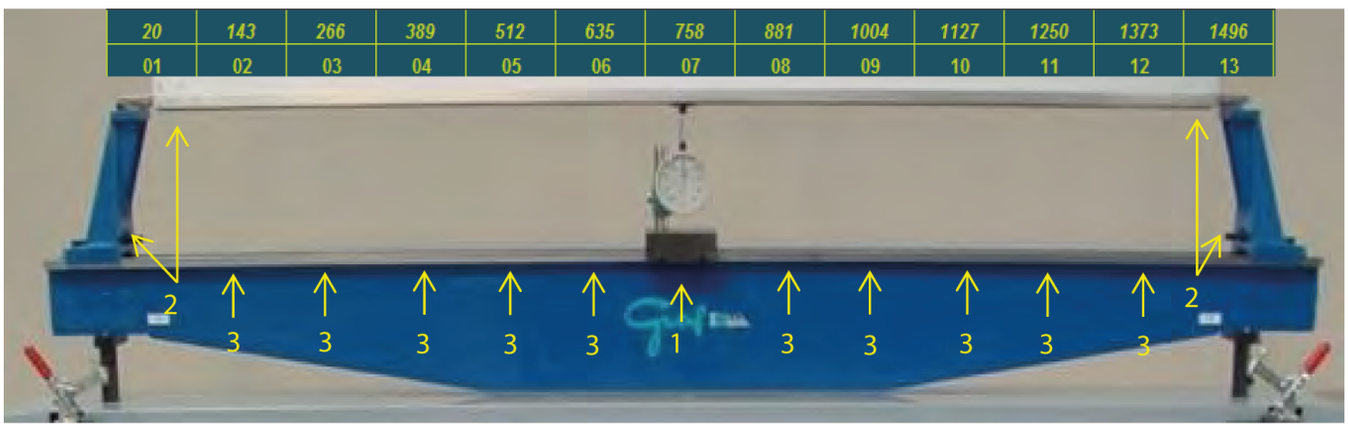
The marking in the middle (see the Markings for flat bar without flexible flat clothings [▶ 48] chapter) can also be used for this measurement. Set the stop (2) on the left and right side so that the digital dial gauge's plate is still on the flat bar.

Two additional markings (3) must be made at a distance of 240 mm from the middle marking.

7.4.4.4 Markings for flat bar with flexible flat clothings (60")

The measurements for the flat bar with flexible flat clothings (60") are taken at 13 positions.

A marking strip is available for 60" flats.



The marking in the middle (see the Markings for flat bar without flexible flat clothings [▶ 48] chapter) can also be used for this measurement. Set the stop (2) on the left and right side so that the digital dial gauge's plate is still on the flat bar.

Additional markings (3) must be applied for positions 2 - 6 and 8 - 12.

7.4.5 Check the straightness (concavity) of the empty flat

After stripping the used flat clothings, the straightness of all empty flats of a flat clothing set must be checked. The check is carried out at several flat positions using the dial gauge on the control device.

Flat with measured values outside the tolerance must be replaced, as sufficient yarn quality cannot be achieved with this flat. Since this can only be identified when measuring with the flat clothings, however, each flat bar set must be checked in advance without flat clothings.

- ➲ Prepare the control device for the flat (see Preparing the control device [▶ 45]).
- ➲ Place the first empty flat on the control unit. Align the flat flush with the pins on the right support plate.
- ➲ Slide the carriage with dial gauge to the stop at the left position.
- ➲ Adjust the dial gauge to zero.
- ➲ Slide the carriage with dial gauge to the middle position (see scale on the running surface).
- ➲ Press the button on the transmitter unit of the dial gauge to transmit the measured value to the connected computer.
- ➲ Slide the carriage with dial gauge to the stop at the right position.
- ➲ Press the button on the transmitter unit of the dial gauge again to transmit the new measured value to the connected computer.
- ➲ Remove the empty flat.
- ➲ Place the next empty flat of the set on the control device and align it.
- ➲ Slide the carriage with dial gauge to the stop at the left position.
- ➲ Press the button on the transmitter unit of the dial gauge to transmit the measured value to the connected computer.
- ➲ Repeat the procedure for the middle and right position.
- ➲ Repeat the measurements for all empty flats in the card flat set.

NOTE

- ▶ The middle position for 60" and 40" is marked on the running surface scale.
- ▶ More information on operating the dial gauge is available in the manufacturer's instructions for the dial gauge and the documentation "Instruction manual for Digital Dial Gauge" (see theDigital measuring pointer [▶ 112] chapter).
- ▶ As an alternative to wireless transmission of the measured values, they can also be read directly on the dial gauge and manually entered in a table.

Once the measured values have been determined for all the flats in a card flat set, the flats whose measured values are outside the tolerance can be identified.

If the straightness and/or concavity in the flat is good, but the overall height relative to the flat set is no longer good, the plastic shoes can be replaced or milled. We recommend refitting the entire set. In case of mechanical deformation, the flat bar must be replaced so that it does not cause a collision in the card.

	NOTE
	▶ Use a reference flat to set the dial gauge to zero. ▶ Recommendation: number all flats consecutively and assign the flat numbers to the measurement results. This ensures that the flat bar can be sorted out after the measurement.

7.4.6 Checking the dimensional accuracy of the card flat

After clipping the new flat clothings, the dimensional accuracy of all card flats of a card flat set must be checked. The check is carried out at several flat positions using the dial gauge on the control device.

➲ Prepare the control device for the flat (see Preparing the control device [▶ 45]).

➲ Place the first card flat on the control device with the flat clothing facing down. Align the flat flush with the pins on the right support plate.

➲ Slide the carriage with the dial gauge to the next position (see scale on the running surface).

➲ Adjust the dial gauge to zero.

➲ Slide the carriage with the dial gauge to the next measuring position.

➲ Press the button on the transmitter unit of the dial gauge to transmit the measured value to the connected computer.

➲ Slide the carriage with dial gauge to the next position (see scale on the running surface).

➲ Press the button on the transmitter unit of the dial gauge again to transmit the new measured value to the connected computer.

➲ Repeat the procedure for all other positions (see the scale on the running surface).

➲ Remove the card flat.

➲ Place the next card flat of the set on the control device with the flat set facing down and align it.

➲ Slide the carriage with the dial gauge to the next position again (see scale on the running surface).

➲ Press the button on the transmitter unit of the dial gauge to transmit the measured value to the connected computer.

➲ Repeat the procedure for all other measuring positions.

➲ Repeat the measurements for all flats in the card flat set.

	NOTE
	▶ The measuring position for 60" and 40" is marked on the running surface scale. ▶ More information on operating the dial gauge is available in the manufacturer's instructions for the dial gauge and the documentation "Instruction manual for Digital Dial Gauge". ▶ As an alternative to wireless transmission of the measured values, they can also be read directly on the dial gauge and manually entered in a table.

Once the measured values have been determined for all the flats in a card flat set, the flats whose measured values are outside the tolerance can be identified. These flats must then be ground.

	NOTE
	▶ Use a reference flat to set the dial gauge to zero. ▶ Recommendation: number all flats consecutively and assign the flat numbers to the measurement results. This ensures that the flat bar can be sorted out after the measurement.

7.5 Grinding the flat clothings

7.5.1 General notes

Adjusting the grinding roller

To adjust the parallelism of the grinding roller, always use a correct flat with a perfect flat bar.

Notes on grinding

From the total quantity of flats measured, select the flats that are outside the tolerance range. These flats must be ground.

From the remaining flats in the flat set, select the flat whose measurement result is in the middle of the tolerance range.

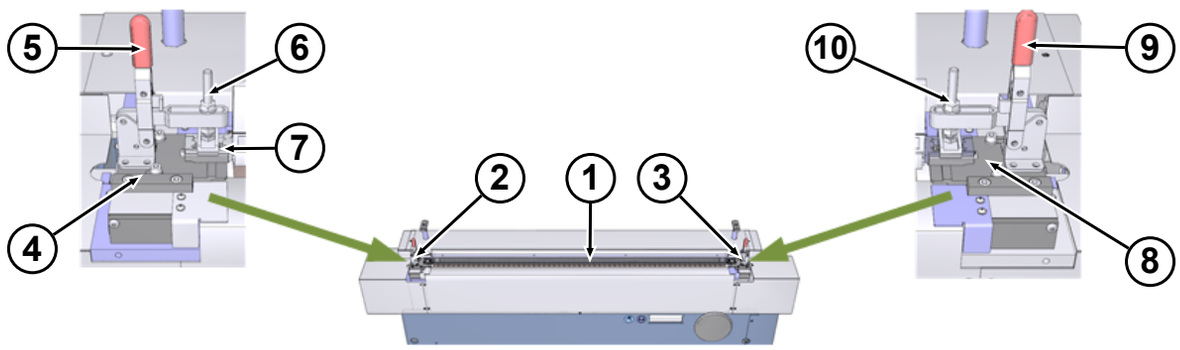
The flats to be ground are ground onto these flats.

Assessing the grinding result

The grinding result is satisfactory if the ground flat bars are measured and the entire set is within tolerance.

In case of concave flat bars, the concavity of the entire set must also be correct.

7.5.2 Preparing the grinding device

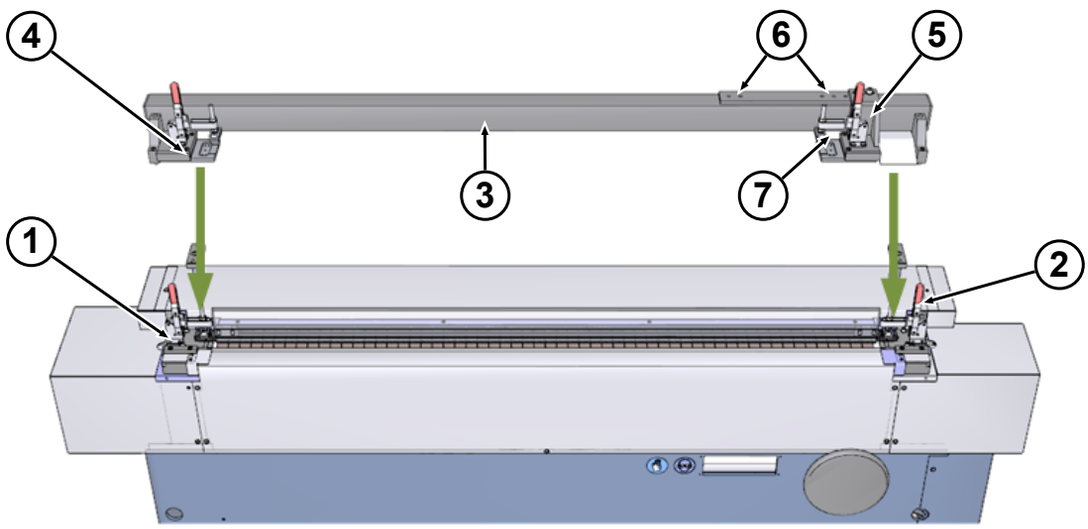


The grinding device must be adjusted to the flat type before starting to grind the card flat.

Proceed as follows to adjust the grinding device to the flat type:

- ➲ If the flats to be ground are smaller than 60", first install the grinding support for processing flats smaller than 60" (see Retrofitting to grinding unit carriers [▶ 55]).
- ➲ When using a grinding device without a grinding support, mount the support plates (4, 8) matching the flat type on both sides (2, 3).
- ➲ Insert the card flat (1) and align it flush on the right and at the rear with the pins on the right support plate (8).
- ➲ Adjust the right support plate (8) using the slotted holes so that the grinding roller can process the start of the flat clothing.
- ➲ Close the right quick release (9). The flat should only be slightly clamped. The strength of the clamp can be adjusted using the height adjustment (10) on the quick release.
- ➲ Adjust the left support plate (4) using the slotted holes so that the left quick release (7) can hold the flat.
- ➲ Close the left quick release (5). The flat should only be slightly clamped. The strength of the clamp can be adjusted using the height adjustment (6) on the quick release.

7.5.3 Retrofitting to grinding unit carriers

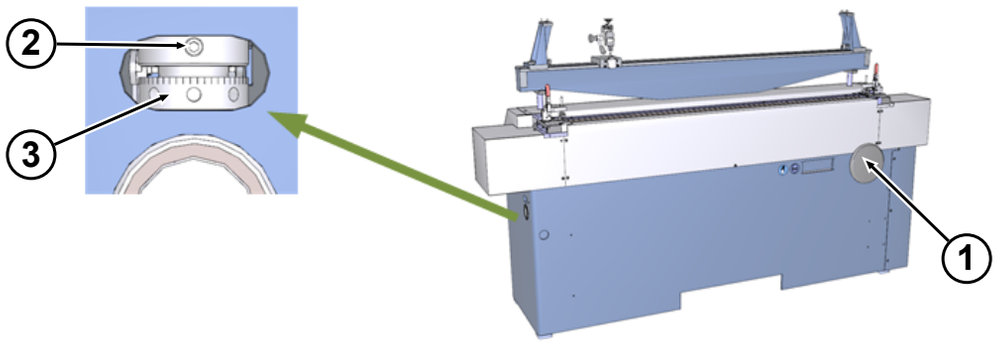


The machine is designed as standard for card flats with a length of 60". In case of shorter card flats, the grinding unit carrier for grinding flat sizes smaller than 60" must be installed first.

Proceed as follows to install the grinding unit carrier:

- ➲ Unscrew the two cylinder screws on the left and right support plates (1, 2) and remove both support plates.
- ➲ Mount the grinding carrier (3) and secure it at the positions of the support plates that were previously removed.
- ➲ Depending on the length of the card flat, the holder (5) for the right support plate (7) can be mounted in several positions (6). There are threaded holes for lengths of 40" and 48" - 54".
- ➲ Mount the support plates (4, 7) that match the flat type on both sides.

7.5.4 Adjusting the grinding roller



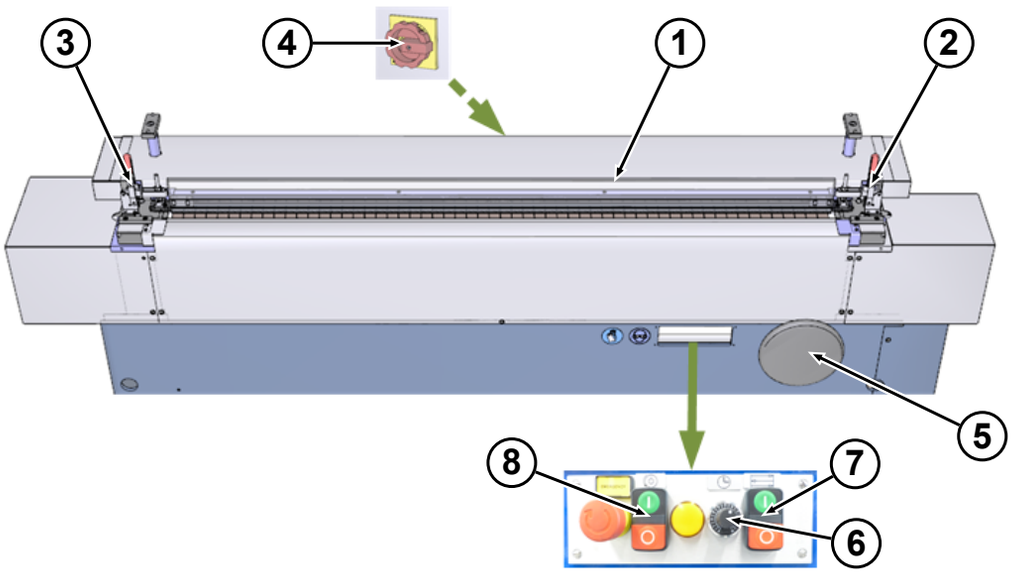
Observe the notes in the General notes [▶ 53] chapter.

After mounting the appropriate holder and holding device for the card flats to be ground (see the Retrofitting to grinding unit carriers [▶ 55] chapter and the Preparing the grinding device [▶ 54] chapter), the grinding roller must be aligned to the card flat.

Proceed as follows to align the grinding roller:

- ➲ Move the feed of the grinding roller down using the handwheel (1).
- ➲ Insert the card flat with the flat clothing facing down and secure it with the quick release. The tips of the flat clothing should point towards the rear of the machine.
- ➲ For 60" Rieter clothings C70, C72, C75, C77 or C80, place a suitable weight on the centre of the card flat.
- ➲ Switch on the machine's main switch.
- ➲ Switch on the traversing drive on the control panel. Switch off the traversing drive when the card flat is exactly above the middle of the roller.
- ➲ When the drive of the grinding roller is switched off, move the feed of the grinding roller up using the handwheel (1) until the gap between the grinding roller and the card flat is kept to a minimum (approx. 0.5 mm).
- ➲ Use a feeler gauge to check the distance between the grinding roller and the card flat. The distance between the grinding roller and the card flat should be the same over the entire length in order to ensure an even grinding result.
- ➲ If the distance between the grinding roller and the card flat is not the same over the entire length of the reference flat, adjust the height of the grinding roller on the left side of the machine. If no reference flat is used, you need to determine whether or not the flat is in a parallel position or whether the machine settings are incorrect before adjusting the left side relative to the right side.
- ➲ To do this, loosen the locking screw (2) and adjust the height of the grinding roller by turning the adjusting ring (3). Turn it to the left to lift the grinding roller and turn it to the right to lower it.
- ➲ In the interim, use a feeler gauge to check the distance between the grinding roller and the card flat.
- ➲ Once the height of the grinding roller on the left side of the machine has been set correctly, retighten the locking screw (2).

7.5.5 Grinding a card flat



Observe the notes in the General notes [▶ 53] chapter.

After aligning the grinding roller, you can start grinding the card flat.

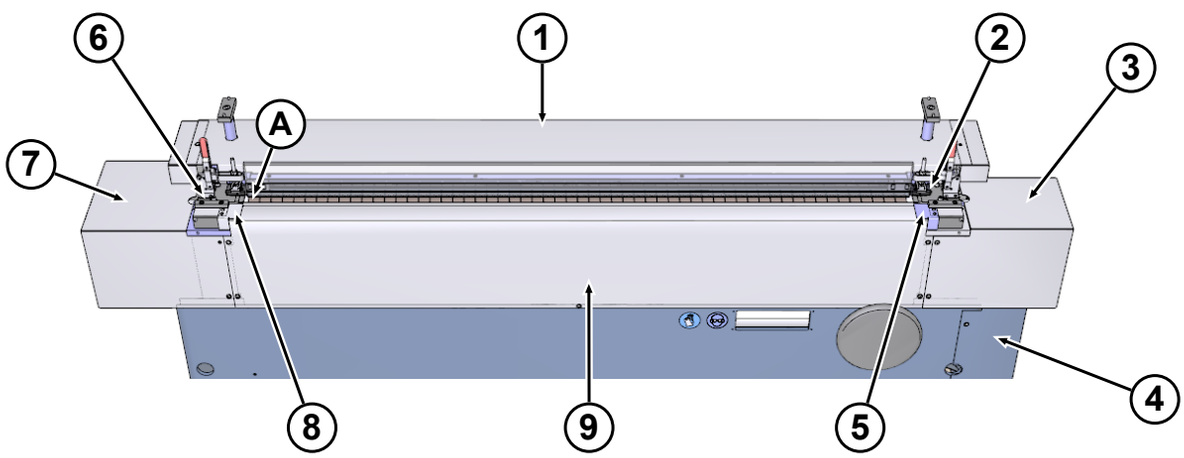
Proceed as follows to grind a card flat:

- ➲ Move the feed of the grinding roller down using the handwheel (5).
- ➲ Insert the card flat (1) with the flat clothing facing down and secure it with the quick releases (2, 3). The tips of the flat clothing should point towards the rear of the machine.
- ➲ For 60" Rieter clothings C70, C70EFC, C72, C75, C77 or C80, place a suitable weight on the centre of the card flat.
- ➲ Switch on the machine's main switch (4).
- ➲ Switch on the traversing drive using the button (7) on the control panel.
- ➲ Set the traversing time using the potentiometer (6). For a single grinding pass, the card flat should be moved over the grinding roller 16 - 20 times.
- ➲ After setting the appropriate duration, leave the traversing drive switched off. The card flat is centred over the roller.
- ➲ Switch on the drive of the grinding roller using the button (8) on the control panel.
- ➲ Move the feed of the grinding roller up using the handwheel (5) until the grinding roller is in contact with the tips of the card flat.
- ➲ Switch off the grinding roller.
- ➲ Adjust it by 1-2 increments on the handwheel.
- ➲ Switch on the traversing drive using the button (7) on the control panel and wait until the traversing drive has switched off.
- ➲ Unclamp the card flat and check on the control device with dial gauge whether or not the points have been ground evenly and parallel over the entire length of the card clothing.
- ➲ If not, adjust the handwheel by another 1-2 increments and switch the traversing drive on again using the button (7) on the control panel.
- ➲ Repeat the procedure until you achieve a satisfactory result.

7.6 Changing the grinding belt

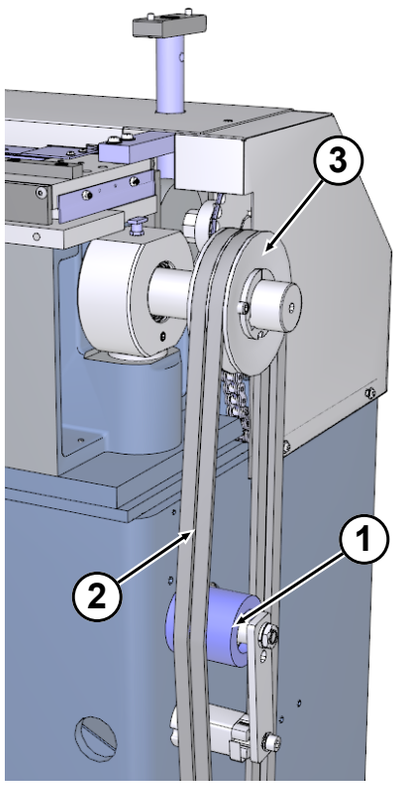
7.6.1 Preparing to change the grinding belt

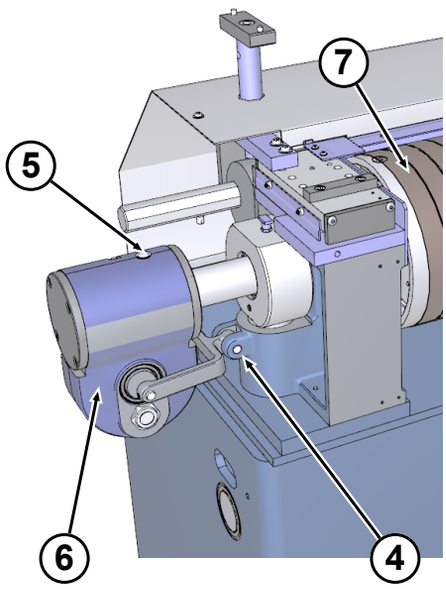
	NOTE
	If the grinding result is not good or if the grinding process takes too long to achieve the desired result, the grinding belt must be changed.



The following preparations must be made before changing the grinding belt:

- ➲ Switch off the machine and secure it against being switched on again.
- ➲ Remove the control device using a suitable hoist and set it aside.
- ➲ Remove the card flat (1).
- ➲ If the grinding unit carrier is mounted, remove it. Otherwise, remove the support plates with the quick releases on the right (2) and left (6).
- ➲ Remove the shaft cover on the right (3).
- ➲ Remove the V-belt cover on the right (4).
- ➲ Remove the infeed protection on the right (5).
- ➲ Remove the shaft cover on the left (7).
- ➲ Remove the infeed protection on the left (8).
- ➲ Remove the front cover (9).
- ➲ Mark the current inclination (angle) on the left side of the grinding roller at the start of the grinding belt (A) with a felt-tip pen.
- ➲ Set all parts and screws aside for subsequent reassembly.





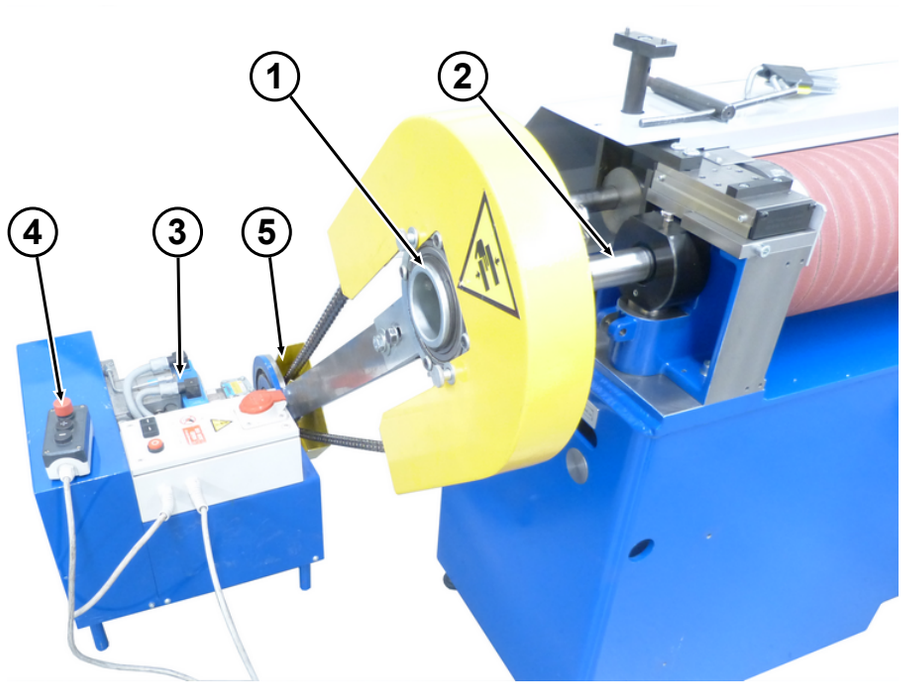
Shaft end on the right:

- ➲ Mark the current position of the belt pulley (3) on the shaft with a felt-tip pen.
- ➲ Relieve the V-belt tensioner (1) and remove both V-belts (2).
- ➲ Loosen the belt pulley (3) and pull it off the shaft.
- ➲ Remove the key from the key groove at the shaft end.
- ➲ Set all parts aside for subsequent reassembly.

Shaft end on the left:

- ➲ Mark the current position of the gear unit (6) on the shaft with a felt-tip pen.
- ➲ Knock out the connecting pin (4) from the gear unit of the axial adjustment (6)
- ➲ Loosen the two set screws that connect the gear unit to the shaft through the opening (5) in the gear unit. If necessary, turn the grinding roller (7) to access the set screws.
- ➲ Remove the complete gear unit (6) from the shaft.
- ➲ Set all parts aside for subsequent reassembly.

7.6.2 Assembling the MCC mounting drive



The MCC mounting drive (3) is required to change the grinding belt. It is operated using the remote control (4).

Proceed as follows to mount the MCC mounting drive:

- ➲ Mount the three-jaw chuck with sprocket (1) of the MCC mounting drive on the left shaft end (2) of the grinding roller
- ➲ Mount the small sprocket (5) on the output shaft of the MCC mounting drive.
- ➲ Mount the chain and position the MCC mounting drive.
- ➲ Connect the tensioning arm between the MCC mounting drive and the sprocket at the shaft end. Tension the chain at the same time.
- ➲ Mount the protective cover at the top and bottom

	NOTE
	▶ For more information on installing and operating the MCC mounting drive, refer to the separate instructions for the MCC mounting drive.

7.6.3 Removing the used grinding belt

	NOTE
	Before removing the used grinding belt, mark the current inclination (angle) of the grinding belt on the left side of the grinding roller at the start of the grinding belt (1 slot) with a felt-tip pen so that the new grinding belt can be mounted with the same inclination.

Proceed as follows to remove the used grinding belt:

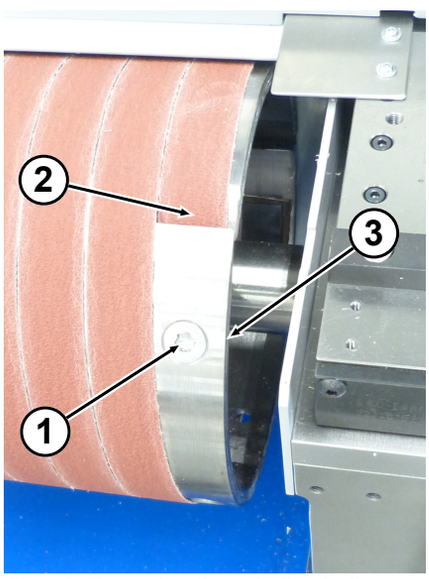


Fig. 13: Removing the grinding belt from the roller

- ➲ Loosen and unscrew the countersunk screw (1).
- ➲ Remove the loosened clamp (3) to the right.
- ➲ Pull the start of the grinding belt out of the slot in the roller (2).
- ➲ Start the MCC mounting drive and let the roller run in reverse.
- ➲ While the roller is rotating, unwind the used grinding belt from the roller.
- ➲ Dispose of the used grinding belt.
- ➲ Clean the grinding roller.
- ➲ Set all parts and screws aside for subsequent reassembly.

	NOTE
	▶ For more information on operating the MCC mounting drive, refer to the separate instructions for the MCC mounting drive.

7.6.4 Mounting the belt mounting device

	NOTE
	The following work must be carried out by at least 2 people.

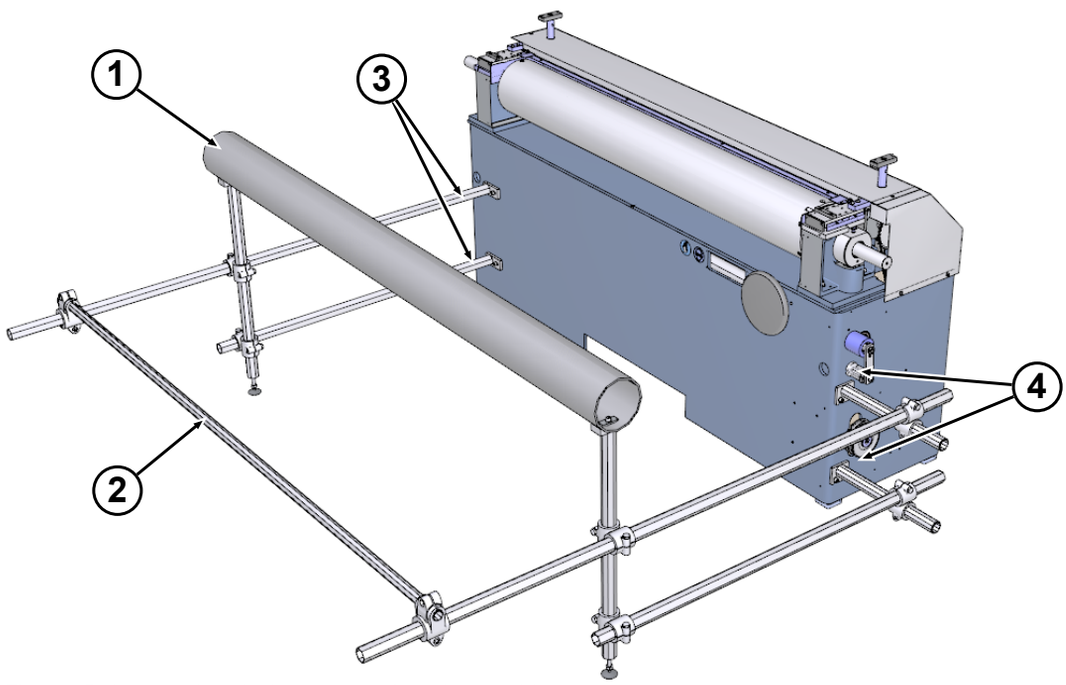


Fig. 14: Belt mounting device mounted on the machine

Proceed as follows to mount the belt mounting device:

➲ Have two people carry the tubular frame (2) with the winding tube (1) to the machine.

➲ Screw the tubular frame to the machine at the fastening points (3, 4).

7.6.5 Threading in the start of the belt

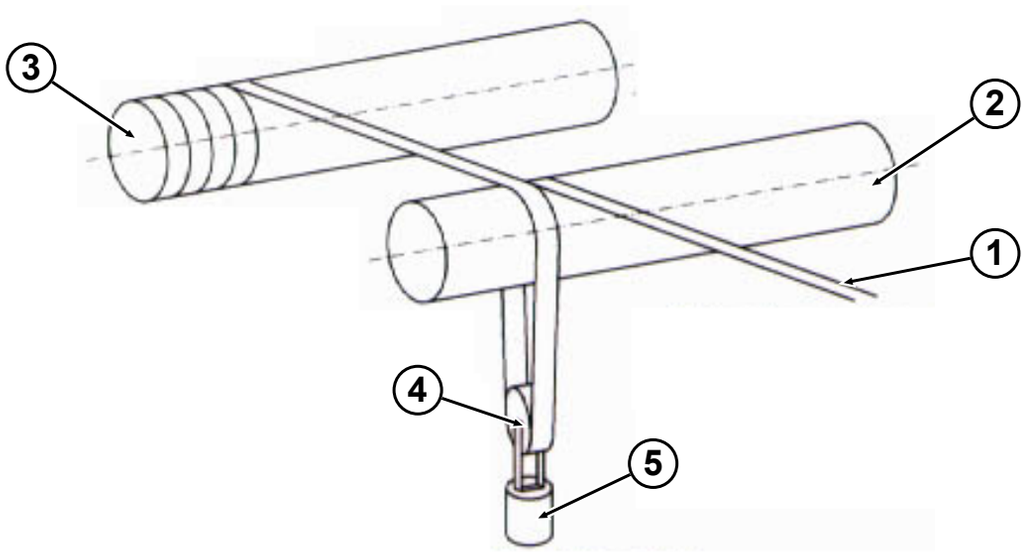


Fig. 15: Schematic diagram of the belt path

1	Belt supply, which is kept under tension by hand	2	Winding tube
3	Grinding roller	4	Redirecting roller
5	Weight (30 kg)		

Proceed as follows to thread in the new grinding belt:

- ➲ Place the roller with the belt supply in such a way that it can be unwound without it twisting (turntable or rod).
- ➲ Wind the start of the grinding belt with one turn over the winding tube (2).

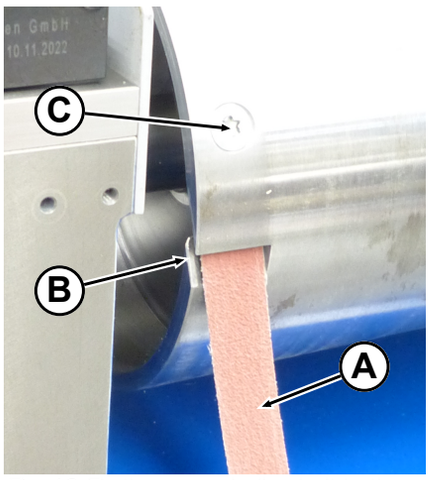


Fig. 16: Fix the new grinding belt to the roller

- ➲ Thread the start of the grinding belt (A) onto the left side (B) of the grinding roller (3). Ensure that the start of the belt can be held securely by the clamping piece.
- ➲ Use a felt-tip pen to mark the point on the grinding belt where the hole for the screw (C) must be punched.
- ➲ Pull the grinding belt (A) out of the grinding roller again and punch a sufficiently large hole at the marked point on the grinding belt using a hole punch.
- ➲ Re-thread the start of the grinding belt (A) on the left side (B) of the grinding roller and place the clamping piece underneath.
- ➲ Insert the countersunk screw (C) through the roller and the belt into the clamp and secure with the screw.
- ➲ Attach the return pulley (4) to the grinding belt as shown above.
- ➲ Attach the weight (5) to the redirecting roller.
- ➲ Tension the belt (1) manually until the redirecting roller (4) is almost level with the lower edge of the winding tube (2).

7.6.6 Mounting the grinding belt

	NOTE
	The following work must be carried out by at least 2 people.

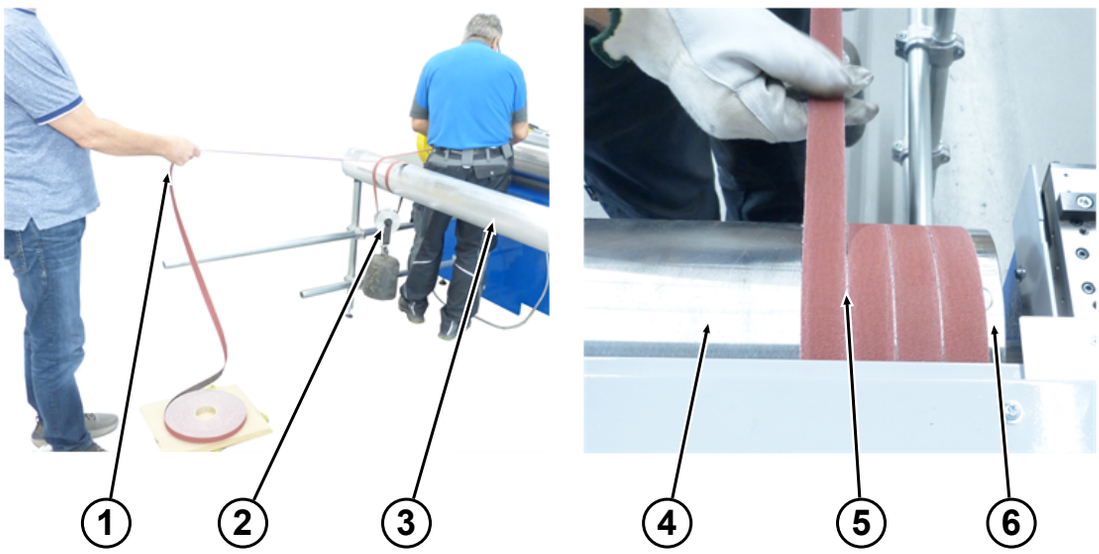


Fig. 17: Mounting the grinding belt on the grinding roller

Proceed as follows to mount the grinding belt on the grinding roller:

- ➲ One person holds the loose end of the grinding belt under tension until the redirecting roller (2) is almost level with the lower edge of the winding tube (3).
- ➲ The person at the grinding roller starts the MCC mounting drive at a slow speed.
- ➲ While the grinding roller (4) slowly rotates, guide the grinding belt at the start of the grinding roller (6) along the marking of the gradient of the old grinding belt. The distance (5) between the coils of the grinding belt should be constant between 0.5 and 1 mm.
- ➲ To make corrections, the MCC mounting drive can be stopped and started in the reverse direction. The weight (2) should always be above the floor in order to maintain the tension on the grinding belt.
- ➲ Continue this procedure until the grinding belt has been threaded along the entire length of the grinding roller.

	NOTE
	▶ For more information on operating the MCC mounting drive, refer to the separate instructions for the MCC mounting drive.

7.6.7 Fastening the grinding belt

	NOTE
	The following work must be carried out by at least 2 people.

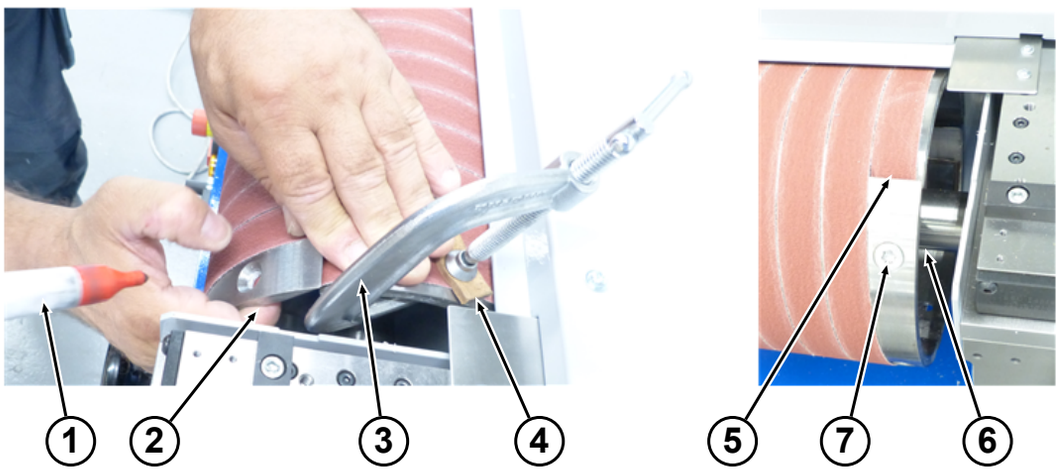


Fig. 18: Fastening the grinding belt on the grinding roller

Proceed as follows to fasten the grinding belt on the grinding roller:

- There are 3 slots on the right side of the grinding roller. Insert the grinding belt into the slot (5) in the grinding roller that can just accommodate the width of the grinding belt. The grinding belt must not protrude.
- Clamp the grinding belt to the grinding roller using a screw clamp (3) and a protective piece (4) (leather or wood).
- Mark the point at which the grinding belt can be cut. Make sure that the length (approx. 2 cm above the screw hole) is sufficient to hold the end of the belt securely from the clamp.
- Insert the grinding belt and use a felt-tip pen (1) to mark the point on the grinding belt through the hole (2) where the hole for the screw (7) must be punched.
- Pull the grinding belt out of the grinding roller again and cut it at the marked point.
- Use a hole punch to punch a sufficiently large hole at the marked point on the grinding belt.
- Re-thread the end of the grinding belt on the right side of the grinding roller (5) and place the clamp (6) under it.
- Insert the countersunk screw (7) through the grinding roller and the grinding belt into the clamp and secure it with the screw.

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 [▷ 19] chapter).
- Work on electrical systems must only be carried out by qualified electricians (see the Personnel qualifications [▷ 19] 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 Faults in the electrical equipment

➲ Check the position of the main switch.

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

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 [▷ 19] chapter).
- Work on electrical systems must only be carried out by qualified electricians (see the Personnel qualifications [▷ 19] 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 50 operating hours	Clean and oil the carriage bed of the control device	Cleaning the machine [▶ 74]
	Grease the chain and eccentric bracket with a grease brush	
Every 150 operating hours	Lubricate needle bearings	Lubricate needle bearings [▶ 74]
	Check gear oil	Check gear oil [▶ 74]
As necessary	Cleaning the machine	Cleaning the machine [▶ 74]

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 of the control device

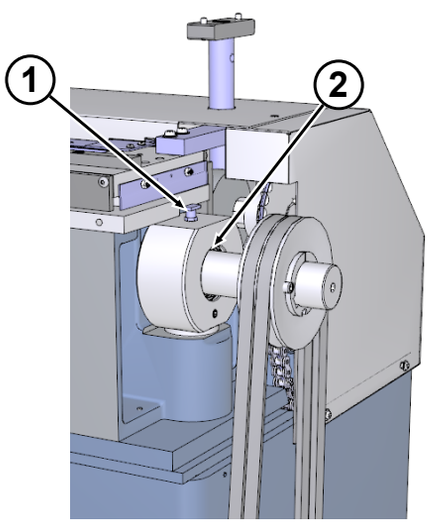
➲ Clean the running surfaces of the control device's carriage bed using a soft, lint-free cloth.

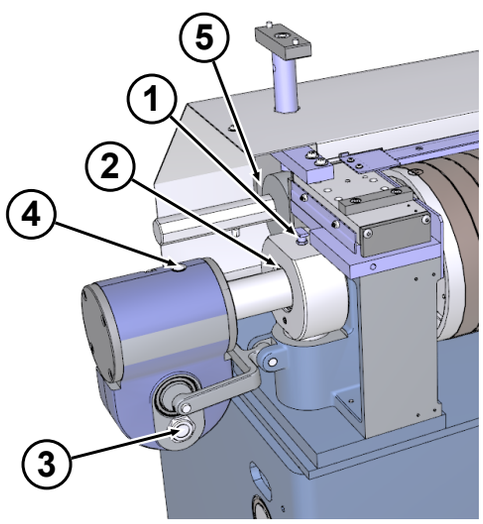
➲ Lightly oil the running surfaces.

Eccentric bracket

➲ Clean and re-grease the eccentric bracket (5) as necessary.

9.4.2 Lubricate needle bearings





Oil the needle bearings (2) after each set of flats

➲ Add 5 - 10 drops of oil by opening the self-closing oiler (1).

9.4.3 Check gear oil

➲ Check the oil level in the gear at the inspection glass (3).

⇨ If the oil level is less than 2/3 full, top it up.

➲ To top up the oil, remove the cover (4) on the top of the gear.

➲ Top it up with oil.

➲ Mount the cover again.

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 used have been removed from the work area.
- ➲ Make sure that all the machine's safety devices are functioning properly.

⚠DANGER

Danger to life due to premature restarting 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 [▶ 19] chapter).
- Work on electrical systems must only be carried out by qualified electricians (see the Personnel qualifications [▶ 19] 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 [▶ 40] 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 [▶ 79]. 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

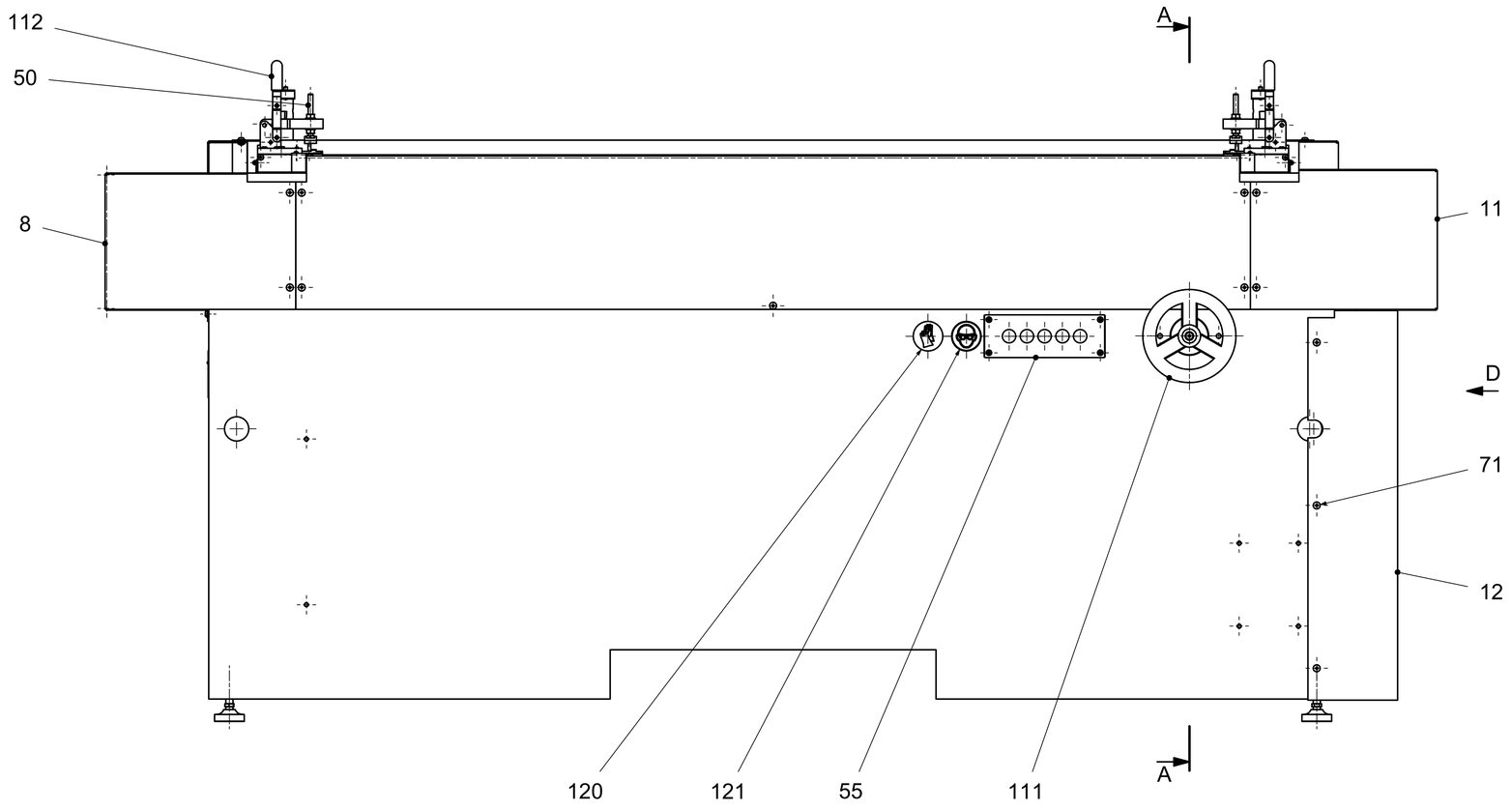
Graf + Cie AG

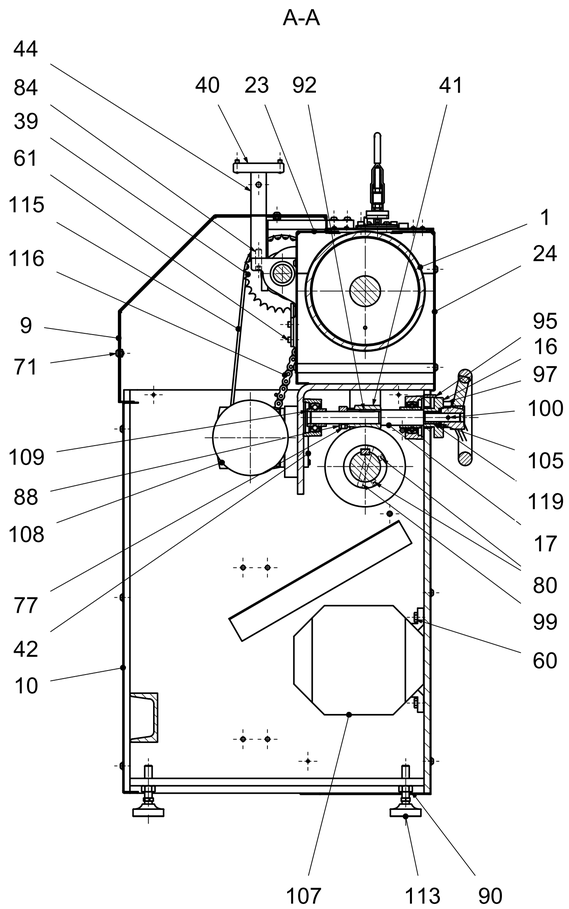
Managing Director Graf Group Head R&D

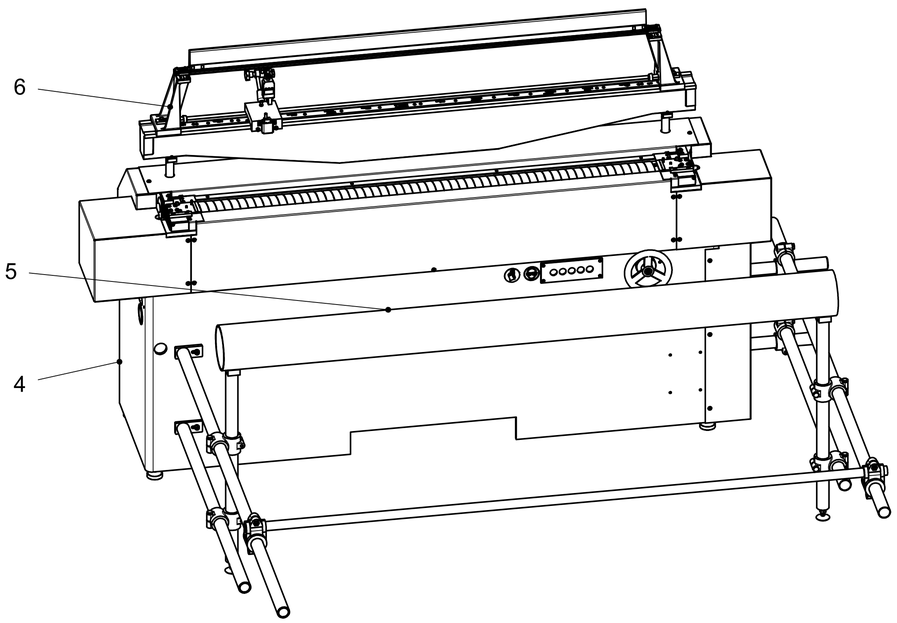
11.2 Plans, diagrams and other applicable documents

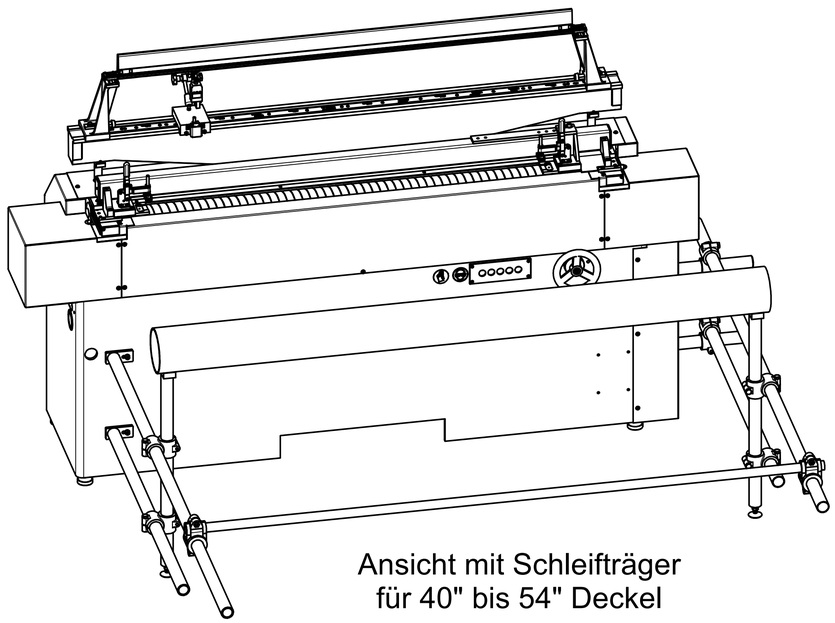
The following plans, diagrams and other applicable documents are an integral part of the overall documentation

1. Machine drawings and parts lists [▶ 81]
2. Spare parts list [▶ 97]
3. Electrical diagram [▶ 100]
4. Digital measuring pointer [▶ 112]









Ansicht mit Schleifträger
für 40" bis 54" Deckel

Alle Ansichten ausser Isometrie ohne
Bandaufziehvorrichtung 50-1-0422 und Kontrollvorrichtung 50-1-0500

Artikelnummer	Ersatz für	Material	Masse	Allgemeintoleranzen nach ISO 2768 - mK	
005043573	-		649 kg		

Deckelschleifmaschine
DSM 20/1

Massstab			
1 : 10	Gezeichnet	15.09.2023	chrp
	Geprüft	18.10.2023	chmko

Graf + Cie AG
CH-8640 Rapperswil

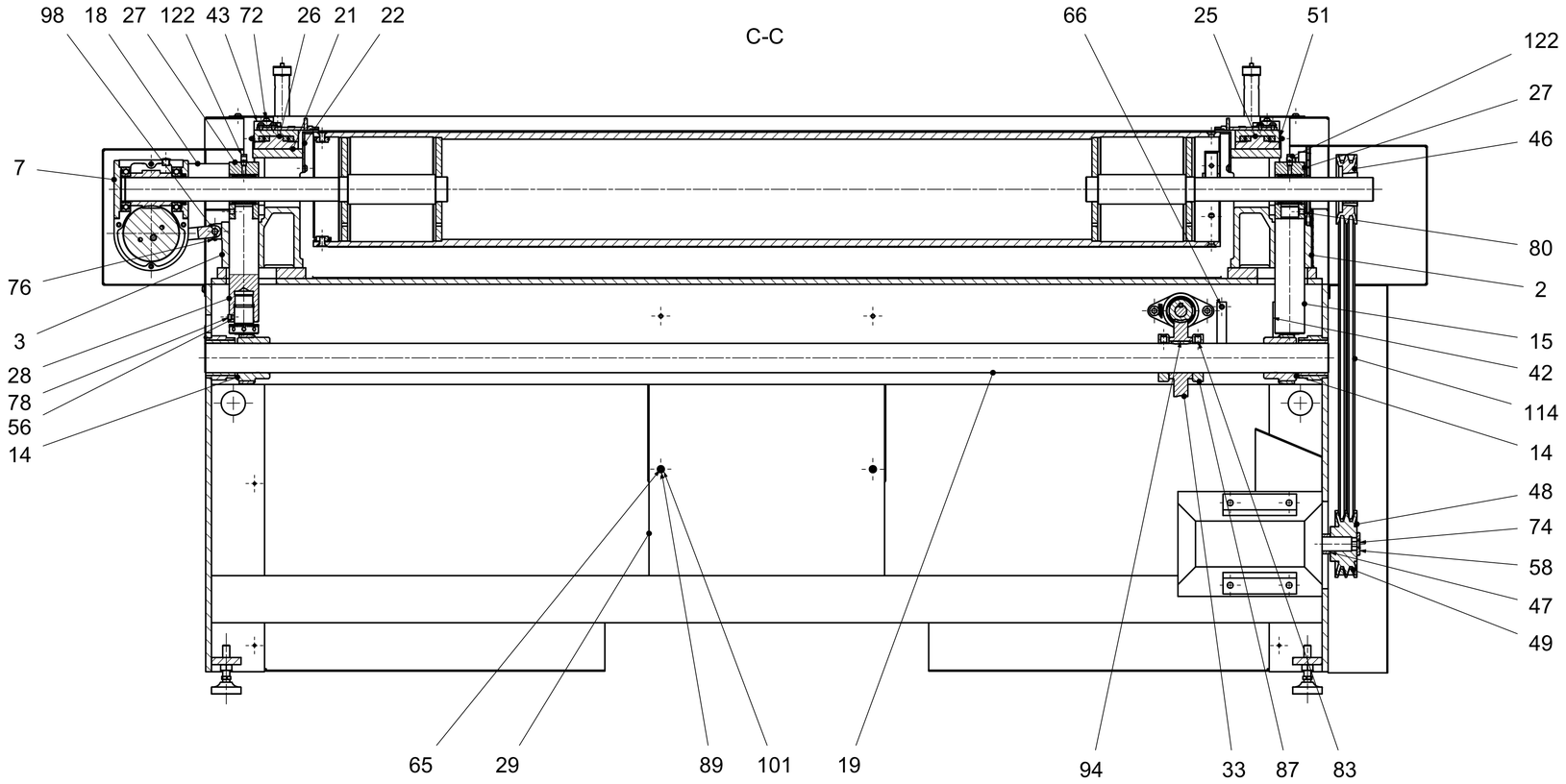
Schutzvermerk:
DIN ISO 16016 beachten
(Refer to ISO 16016)

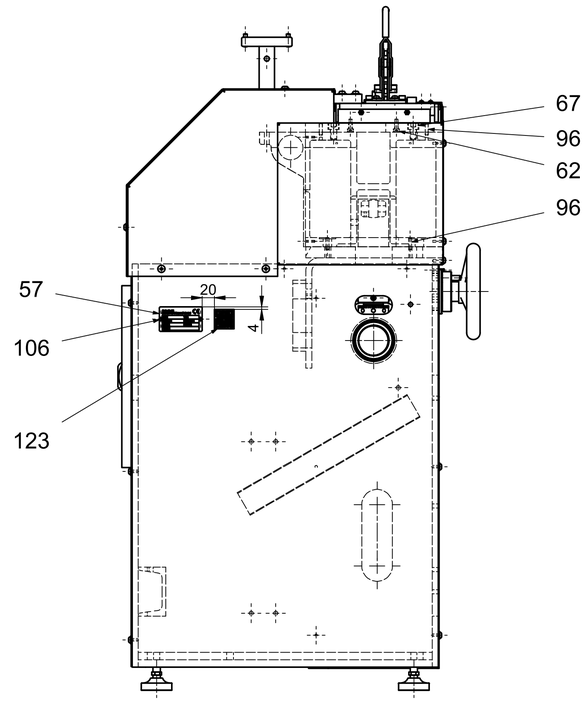
A1
Blatt 1/7

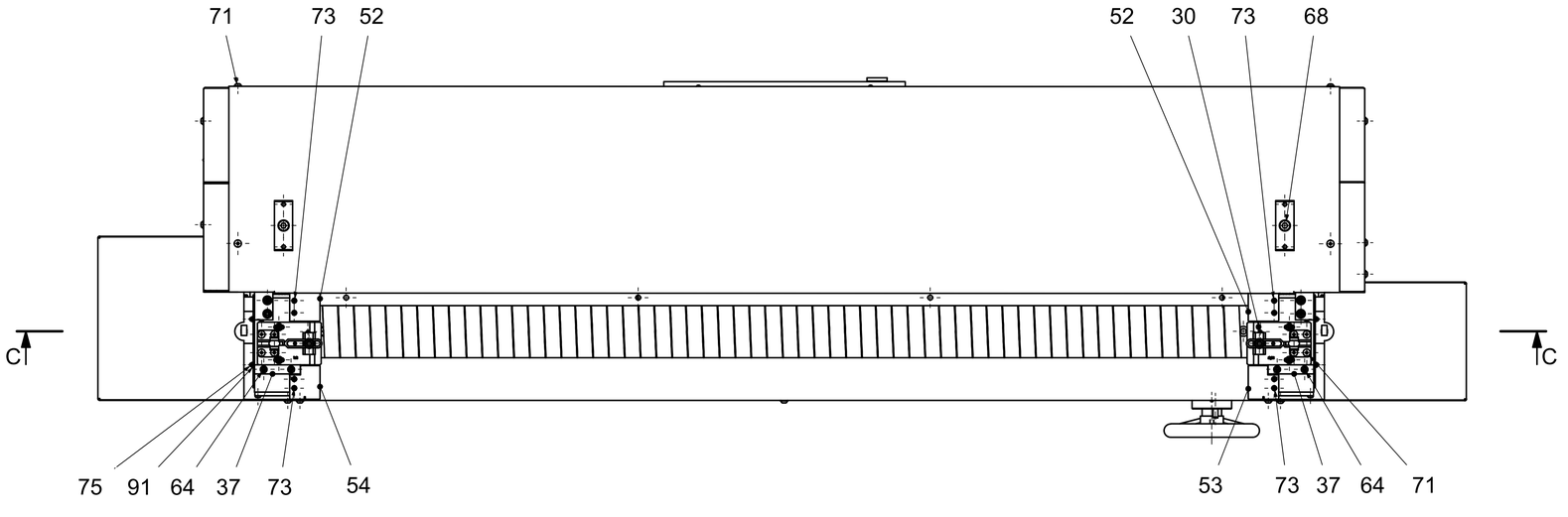
Zeichnungs-Nummer: D-001885

Index: 0

C-C

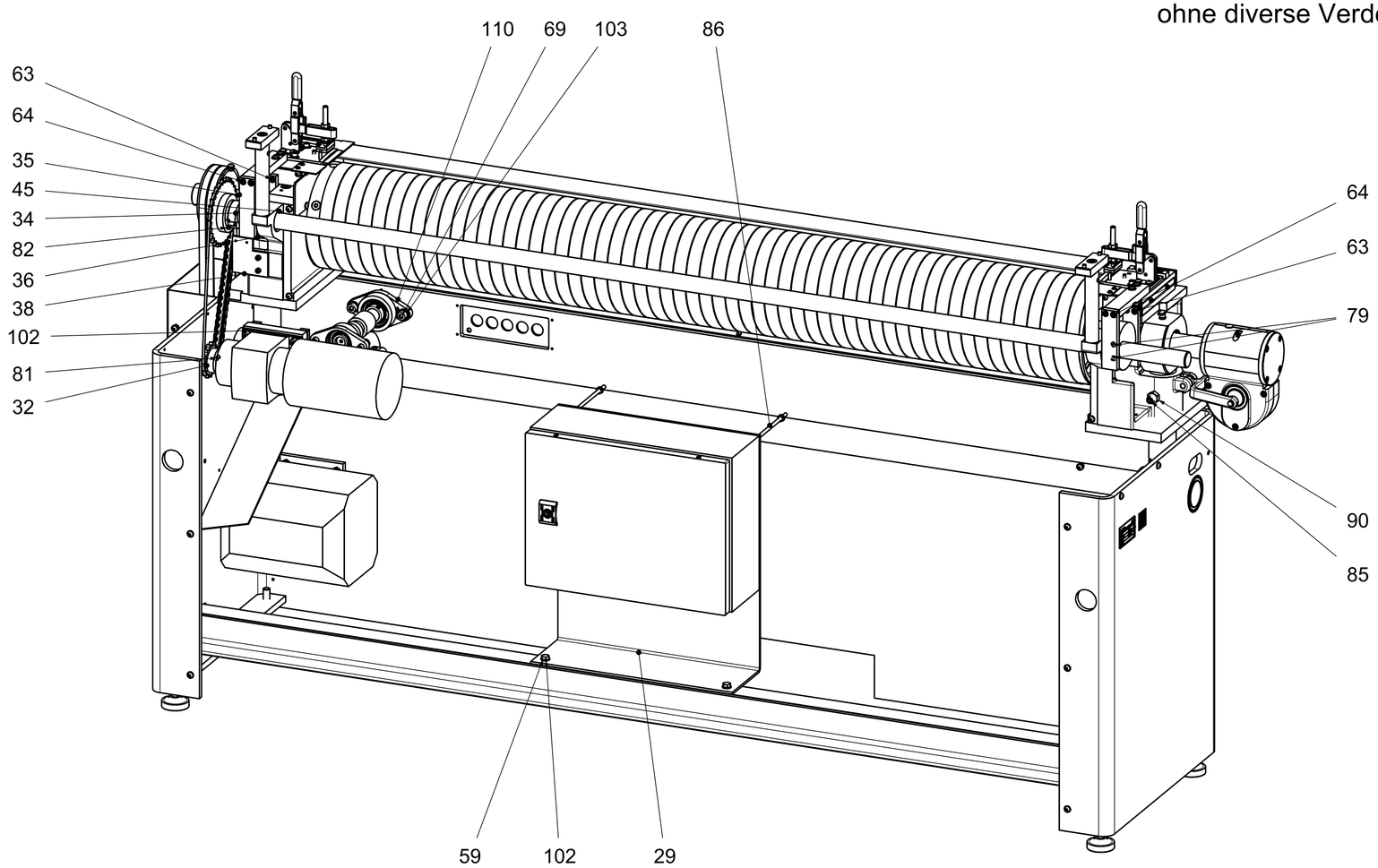




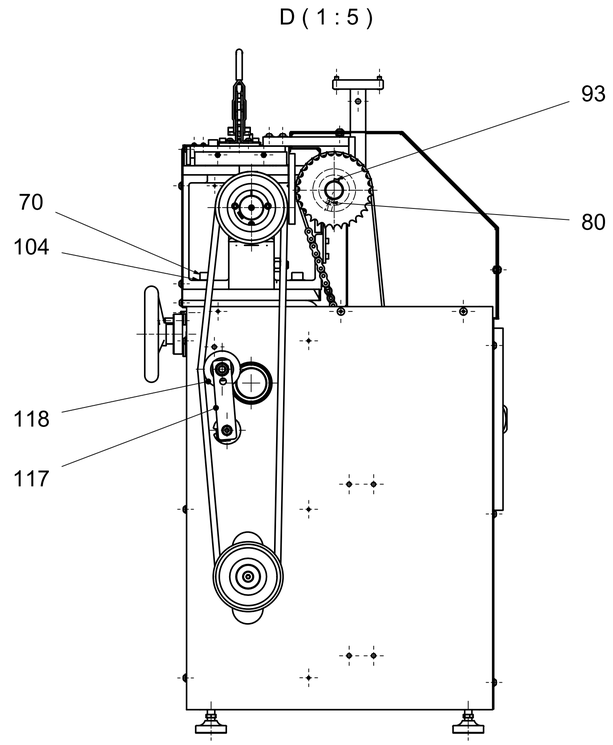


Artikelnummer 005043573	Ersatz für -	Material	Masse 649 kg	Allgemeintoleranzen nach ISO 2768 - mK		
Deckelschleifmaschine				Massstab 1 : 5	Gezeichnet	15.09.2023 chrp
DSM 20/1					Geprüft	18.10.2023 chmko
Graf + Cie AG CH-8640 Rapperswil		Schutzvermerk: DIN ISO 16016 beachten (Refer to ISO 16016)	A1 Blatt 2/7	Zeichnungs-Nummer D-001885		Index 0

ohne diverse Verdecke



D (1 : 5)



Artikelnummer 005043573	**Ersatz für** -	**Material**	**Masse** 649 kg	Allgemeintoleranzen nach ISO 2768 - mK		
Deckelschleifmaschine				**Massstab** 1 : 5	**Gezeichnet** 15.09.2023	chrp
DSM 20/1					**Geprüft** 18.10.2023	chmko
Graf + Cie AG CH-8640 Rapperswil		Schutzvermerk: DIN ISO 16016 beachten (Refer to ISO 16016)	A1 Blatt 3/7	Zeichnungs-Nummer D-001885		Index 0

Pos.	Anz.	Bezeichnung	Lieferant	Zeichnung-Nr.	Artikel-Nr.
40	2	Gabel		50-4-1279	005041279
39	1	Kettenrad z = 30		50-4-1257	005041257
38	1	Befestigungsplättchen		50-4-1256	005041256
37	2	Führung		50-4-1255	005041255
36	2	Exzenter		50-4-1253	005041253
35	4	Anschlag		50-4-1252	005041252
34	1	Schaltring		50-4-1250	005041250
33	1	Schneckenrad		50-4-1208	005041208
32	1	Kettenrad		50-4-1203	005041203
30	0	Schleifplatten Rieter Alu-Deckel	auf KA	50-3-1951	005031951
29	1	Halteblech		50-3-1355	005031355
28	1	Lagerzapfen links		50-3-1318	005031318
27	2	Lager komplett		50-3-1313	005031313
26	1	Rolltisch links RE 75.155.050-GG-SOT	ERO	50-3-0673	100.008
25	1	Rolltisch rechts RE 75.155.050-GG-SOT	ERO	50-3-0665	100.007
24	1	Walzenverdeck vorne		50-3-0658	00503658
23	1	Walzenverdeck hinten		50-3-0657	00503657
22	2	Staubabdeckung		50-3-0656	00503656
21	1	Aufspannplatte links		50-3-0654	00503654
20	1	Aufspannplatte rechts		50-3-0653	00503653
19	1	Welle		50-3-0611	00503611
18	1	Welle		50-3-0610	00503610
17	1	Schneckenwelle		50-3-0608	00503608
16	1	Skalaring		50-3-0607	00503607
15	1	Lagerzapfen rechts		50-3-0604	00503604
14	1	Exzenter komplett		50-3-0067	00503067
13	0	Schleifträger	auf KA	50-2-0997	00502997
12	1	Riemenverdeck		50-2-0847	00502847
11	1	Seitenverdeck rechts		50-2-0846	00502846
10	1	Verdeck hinten-unten		50-2-0816	00502816
9	1	Verdeck hinten oben		50-2-0815	00502815
8	1	Seitenverdeck links		50-2-0705	00502705
7	1	Traversiergetriebe		50-2-0079	00502079II
6	1	Kontrollvorrichtung		50-1-0500	005041338
5	1	Bandaufziehvorrichtung		50-1-0422	00501422
4	1	Maschinenständer		50-1-0405	00501405
3	1	Support links		50-1-0277	00501277
2	1	Support rechts		50-1-0276	00501276
1	1	Schmirgelbandwalze Cubitron 60"		60-1-0177	00601177

Artikelnummer	Ersatz für	Material	Masse	Allgemeintoleranzen nach ISO 2768 - mK
005043573	-			

Deckelschleifmaschine

DSM 20/1

Massstab			
	Gezeichnet	15.09.2023	chrp
	Geprüft	18.10.2023	chmko

Graf + Cie AG
CH-8640 Rapperswil

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Pos.	Anz.	Bezeichnung	Lieferant	Zeichnung-Nr.	Artikel-Nr.
80	7	Gewindestift ISO 4026-M8x10-45H	BN 1424	-	27300810
79	4	Gewindestift ISO 4026-M8x8-45H	BN 1424	-	27300808
78	1	Gewindestift ISO 4026-M8x6-45H	BN 1424	-	27300806
77	1	Gewindestift ISO 4026-M6x8-45H	BN 28	-	27300608
76	1	Gewindestift ISO 4026-M5x10-45H	BN 28	-	27300510
75	4	Gewindestift ISO 4026-M4x16-45H	BN 28	-	27300416
74	1	Senkschraube ISO 14581-M8x30-8.8	BN 4851	-	27170830
73	8	Linsenschraube eco-fix-M3x8-4.8	BN 5128	-	27222308
72	4	Linsenschraube eco-fix-M6x20-4.8	BN 5128	-	27222620
71	46	Linsenschraube In-6Rund -M5x8-St	BN 5128	-	27222508
70	4	Zylinderschraube DIN 912-M12x35-8.8	BN 3	-	27021235
69	2	Zylinderschraube DIN 912-M10x25-8.8	BN 3	-	27021025
68	4	Zylinderschraube DIN 912-M10x20-8.8	BN 3	-	27021020
67	4	Zylinderschraube DIN 912-M10x16-8.8	BN 3	-	27021016
66	4	Zylinderschraube DIN 912-M8x50-8.8	BN 4	-	27030850
65	2	Zylinderschraube DIN 912-M6x16-8.8	BN 3	-	27020616
64	8	Zylinderschraube DIN 912-M6x12-8.8	BN 3	-	27020612
63	4	Zylinderschraube DIN 912-M6x8-8.8	BN 3	-	27020608
62	8	Zylinderschraube DIN 912-M5x16-8.8	BN 3	-	27020516
61	2	Zylinderschraube DIN 912-M5x12-8.8	BN 3	-	27020512
60	4	Sechskantschraube DIN 933-M8x20-8.8	BN 56	-	27000820
59	2	Sechskantschraube DIN 933-M8x16-8.8	BN 56	-	27000816
58	1	Scheibe Senkung 90°	GRIT	2134	2134001
57	1	Maschinenschild klein mit CE	Thomas	D.100.109	100.096
56	1	Rund-Kupfer		D-001891	111.015
55	1	Elektroschema mit Cubitronband		D-001444	110.743
54	1	Blech vorne links		50-4-3571	005043571
53	1	Blech vorne rechts		50-4-3570	005043570
52	2	Blech hinten		50-4-3569	005043569
51	2	Rolltisch - Abdeckung		50-4-3348	005043348
50	2	Druckstück		50-4-3248	005043248
49	0	Keilriemenscheibe 60Hz	auf KA	50-4-2745	005042745
48	0	Keilriemenscheibe 50Hz	auf KA	50-4-2743	005042743
47	1	Distanzbüchse		50-4-2742	005042742
46	1	Keilriemenscheibe ø112 mit Taper-Lock Büchse		50-4-2741	005042741
45	2	Flanschbüchse		50-4-2220	005042220
44	2	Bolzen		50-4-2218	005042218
43	2	Platte		50-4-2130	005042130
42	2	Leiste		50-4-1974	005041974
41	1	Bohrungsschnecke		50-4-1314	005041314

Artikelnummer	Ersatz für	Material	Masse	Allgemeintoleranzen nach ISO 2768 - mK
005043573	-			

Deckelschleifmaschine

DSM 20/1

Massstab			
	Gezeichnet	15.09.2023	chrp
	Geprüft	18.10.2023	chmko

Graf + Cie AG
CH-8640 Rapperswil

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Zeichnungs-Nummer
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Pos.	Anz.	Bezeichnung	Lieferant	Zeichnung-Nr.	Artikel-Nr.
120	1	Gebotsschild Handschuhe benutzen ø50	Schärer + Kunz AG	-	25910202
119	1	Glissa-Lager 14E7/20r7x25	Aladin	-	2691142025
118	1	Spannrolle R 27 101041	Rosta	-	25101010
117	1	Spannelement SE-F 18	Rosta	-	25101021
116	1	Verschlussglied 9812 Nr.26E	Ortlinghaus	-	25070204
115	1	Rollenkette 1/2"x5/16" Nr.9812 mit 65 Glieder	Ortlinghaus	-	25070003
114	2	Keilriemen SPA 13 x 1525	Angst+Pfister	-	2503131525
113	4	Schwingungsdämpfer 10250	Rosta	-	25600001
112	2	Schnellspannklemme SU 12	Sermax	-	25121001
111	1	Speichenrad VR. 160 FP	Elesa	-	110.987
110	1	Y-Flanschlager FYTB 25 TF	SKF	-	26FYTB25TF
109	1	Y-Flanschlager FYTB 20 TF	SKF	-	26FYTB20TF
108	0	Stirnradgetriebe-Motor MRD 02	auf KA	-	29103238050
107	0	Drehstrom-Motor MT 90 S	auf KA	-	29011840050
106	2	Halbrundkerbnägel ISO 8746-2.5x6-St	BN 893	-	27400256
105	2	Tellerfeder DIN 2093 B-28x14.2x1-FSt	BN 805	-	27130051
104	4	Scheibe DIN 125 A-12-140 HV	BN 715	-	27100012
103	2	Scheibe DIN 125 A-10-140 HV	BN 715	-	27100010
102	6	Scheibe DIN 125 A-8-140 HV	BN 715	-	27100008
101	10	Scheibe DIN 125 A-6-140 HV	BN 715	-	27100006
100	1	Spannstift ISO 8752-4x24-St	BN 876	-	27270424
99	2	Kegelstift ISO 2339 A-8x70-St	BN 861	-	27260870
98	1	Zylinderstift DIN 6325-10 h6x40-St	BN 858	-	27251040
97	1	Zylinderstift DIN 6325-8 h6x30-St	BN 858	-	27250830
96	8	Zylinderstift DIN 6325-5 h6x20-St	BN 858	-	27250520
95	1	Zylinderstift DIN 6325-4 h6x20-St	BN 858	-	27250420
94	1	Passfeder DIN 6885-A 14x9x32	BN 870	-	2734140932
93	1	Passfeder DIN 6885-A 8x7x20	BN 870	-	2734080720
92	1	Passfeder DIN 6885-A 6x6x25	BN 870	-	2734060625
91	4	Sicherungsmutter DIN 985-M4-6	BN 161	-	27076504
90	6	Sechskantmutter DIN 934-M12-8	BN 117	-	27060012
89	8	Sechskantmutter DIN 934-M6-8	BN 117	-	27060006
88	1	Stellring VSM 15210-20-St	BN 866	-	27360020
87	2	Stellring DIN 705 A-50-St	BN 868	-	27360050
86	2	Gewindestange DIN 975-M6x180-8.8	BN 5269	-	19010006
85	2	Gewindestift ISO 4027-M12x40-45H	BN 29	-	27321240
84	2	Gewindestift ISO 4026-M10x35-45H	BN 1424	-	27301035
83	2	Gewindestift ISO 4026-M10x12-45H	BN 1424	-	27301012
82	1	Gewindestift ISO 4026-M8x20-45H	BN 1424	-	27300820
81	1	Gewindestift ISO 4026-M8x12-45H	BN 1424	-	27300812

Artikelnummer	Ersatz für	Material	Masse	Allgemeintoleranzen nach ISO 2768 - mK
005043573	-			

Deckelschleifmaschine

DSM 20/1

Massstab			
	Gezeichnet	15.09.2023	chrp
	Geprüft	18.10.2023	chmko

Graf + Cie AG
CH-8640 Rapperswil

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

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Zeichnungs-Nummer
D-001885

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Pos.	Anz.	Bezeichnung	Lieferant	Zeichnung-Nr.	Artikel-Nr.
123	1	Sticker QR-Code		D-001790	111.063
122	2	Federdecköler M8	Hausammann	-	27490008
121	1	Augenschutz benutzen ø50mm	Schärer + Kunz AG	-	25910301

Artikelnummer	Ersatz für	Material	Masse	Allgemeintoleranzen nach ISO 2768 - mK
005043573	-			

Deckelschleifmaschine

DSM 20/1

Massstab			
	Gezeichnet	15.09.2023	chrp
	Geprüft	18.10.2023	chmko

Graf + Cie AG
CH-8640 Rapperswil

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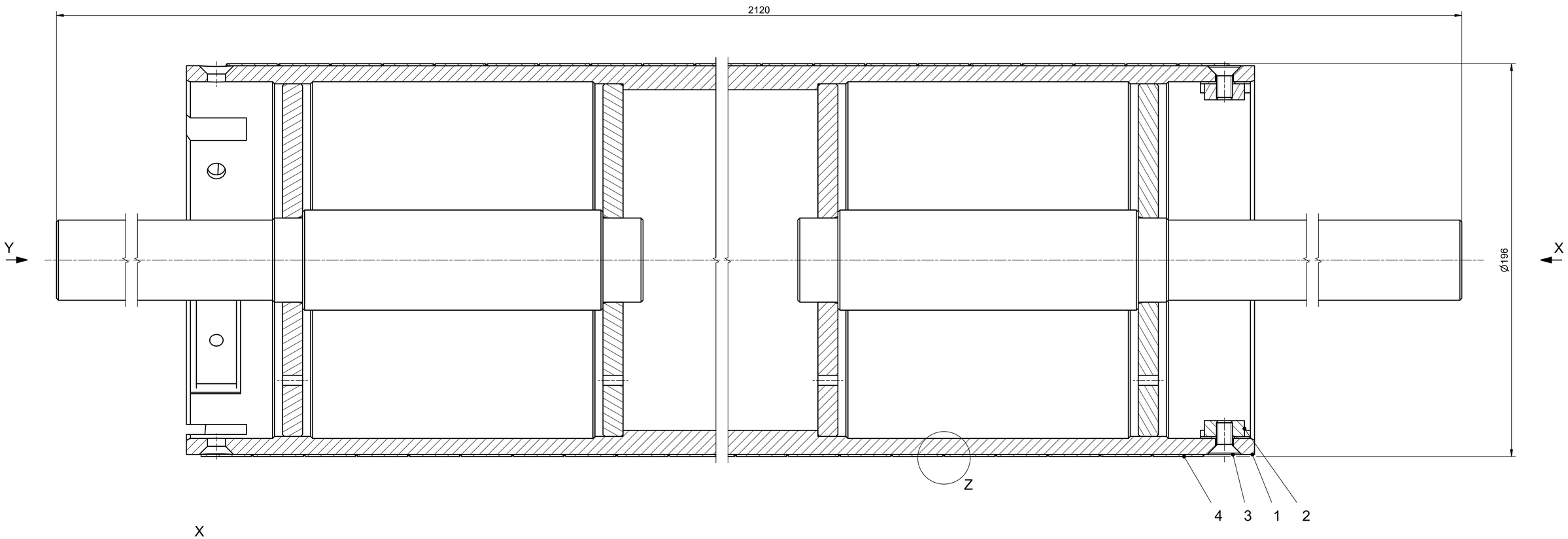
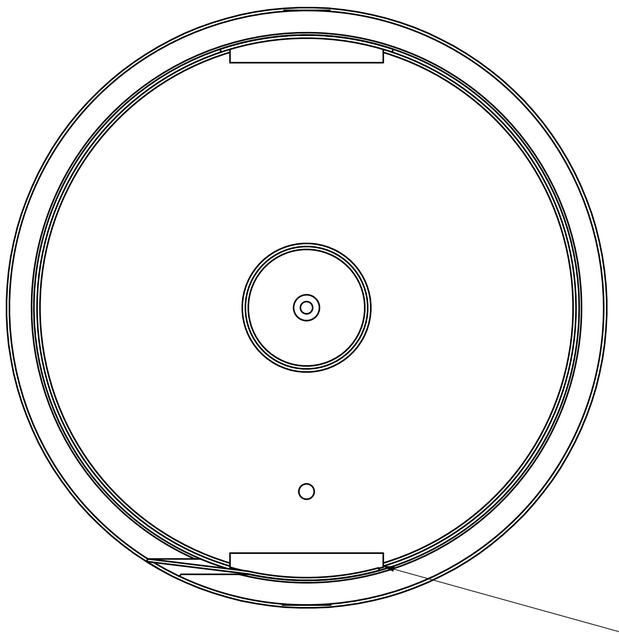
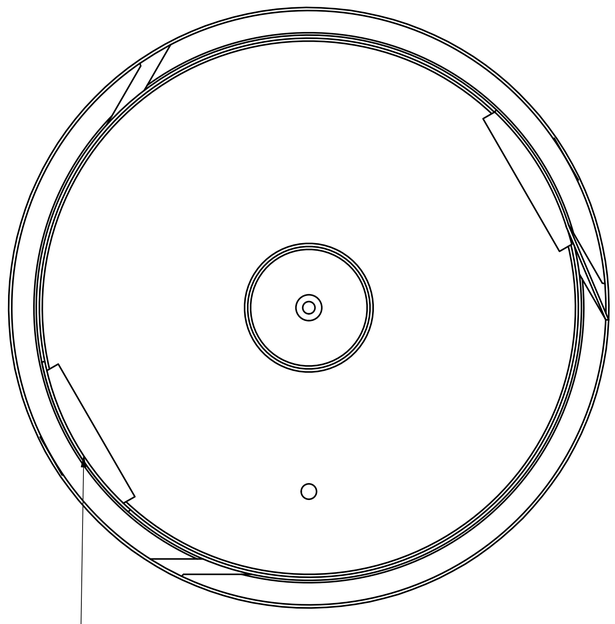
Blatt 7/7

Zeichnungs-Nummer
D-001885

Index
0



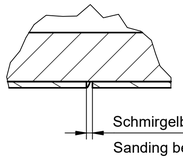




Briden gegenüber befestigen und
ein Stück Schmirgelband unterlegen

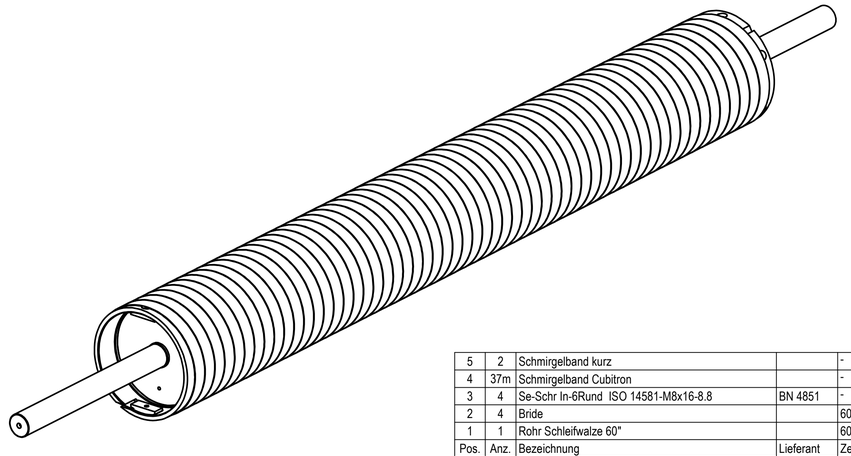
Fasten the clamps opposite each other and
place a piece of sanding belt underneath

Z (2:1)



Schmirgelband mit 1-2mm Lücke aufgezogen

Sanding belt hoisted up with 1-2mm gap



Pos.	Anz.	Bezeichnung	Lieferant	Zeichnung-Nr.	Artikel-Nr.
5	2	Schmirgelband kurz		-	80001464
4	37m	Schmirgelband Cubitron		-	80001464
3	4	Se-Schr In-6Rund ISO 14581-M8x16-8.8	BN 4851	-	27170816
2	4	Bride		60-4-1062	006041062
1	1	Rohr Schleifwalze 60"		60-1-0179	00601179

Artikelnummer	Ersatz für	Material	Masse	Allgemeintoleranzen nach ISO 2768 - mK
60-1-177	-		96.31 kg	

Schmirgelbandwalze Cubitron 60"

DSM20

Massstab			
1 : 5	Gezeichnet	10.03.2023	chyf
	Geprüft	23.03.2023	chyf

Graf + Cie AG
CH-8640 Rapperswil

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

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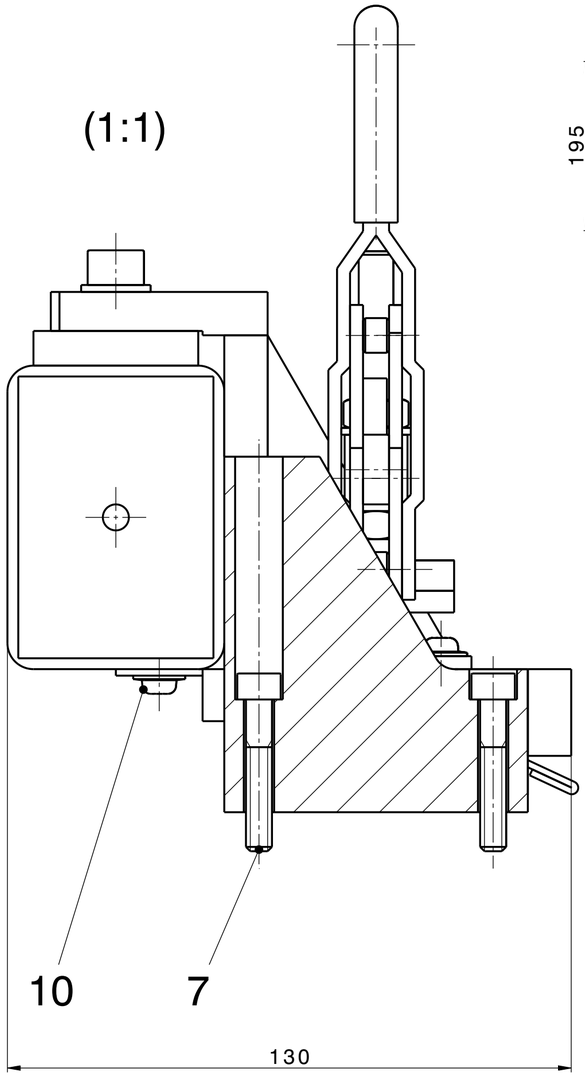
Blatt 1/1

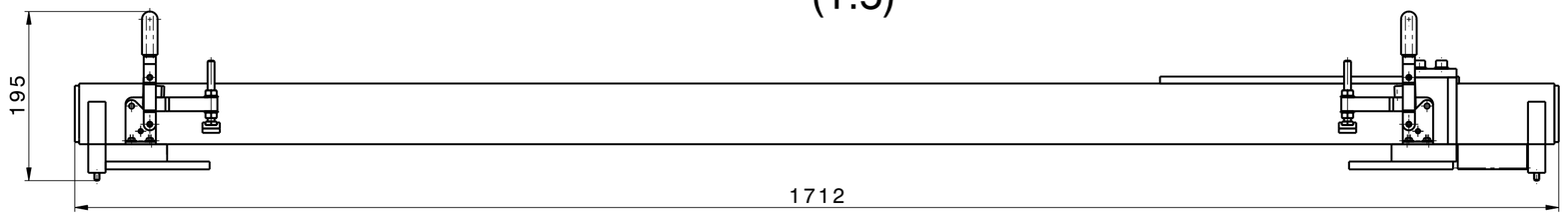
Zeichnungs-Nummer: 60-1-0177

Index: 1

(1:1)



(1:5)



Pos.	Menge	Bezeichnung	Lieferant	Bemerkung
12	2	Schnellspannklemme SU 12	Sermax	25121001
11	2	Scheibe DIN 125 A-8-140 HV	BN 715	27100008
10	2	Linsenschraube eco-fix-M5x6-4.8	BN 5128	27222506
9	8	Linsenschraube eco-fix-M5x12-4.8	BN 5128	27222512
8	4	Zylinderschraube DIN 912-M6x20-8.8	BN 3	27020620
7	4	Zylinderschraube DIN 912-M6x35-8.8	BN 4	27030635
6	2	Zylinderschraube DIN 912-M8x25-8.8	BN 3	27020825
5	2	Druckstück		50-4-3248
4	1	Schutzblech Schleifträger		50-3-2390
3	1	Winkel		50-3-2389
2	1	Schleifplatte	auf KA	50-3-667
1	1	Schleifträger Universell		50-1-501

Änderungen:

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

Gehört zu Zeichnung -
Ersetzt durch -
Ersatz für -
Allgemeintoleranzen nach ISO 2768 - mK

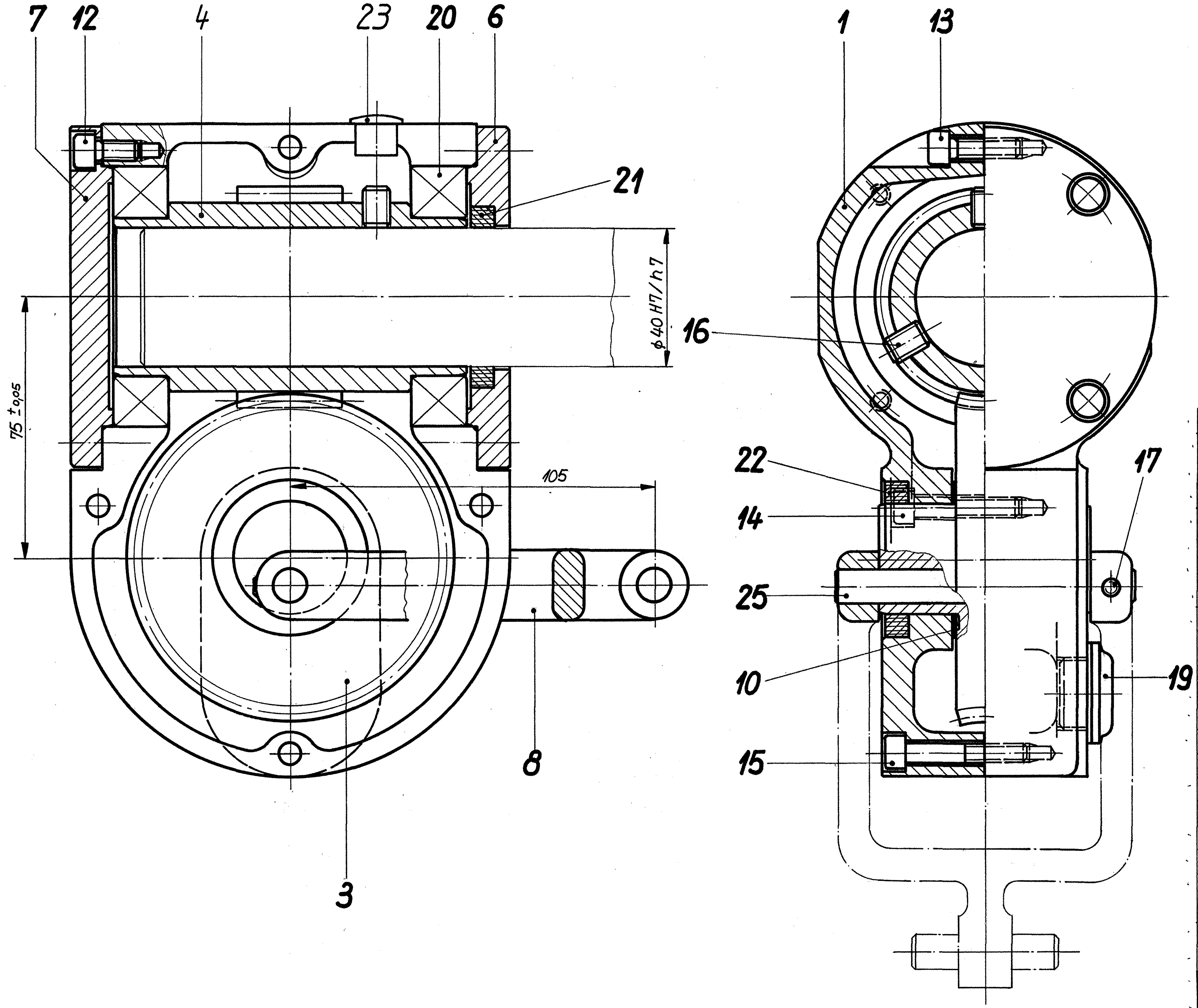
Schleifträger 40-60"

DSM20

Massstab	Gezeichnet	08.10.21	chyf
1:2	Geprüft	12.10.21	chcd

Graf + Cie AG
CH-8640 Rapperswil

50-2-997,0



Stück	Gegenstand	Pos.	Werkstoff	DIN	Modell	Bemerkung
1	Zyl-Sti	25	10 x 90	BN858	CBZ	27241090
		24				
1	Schutzstopfen	23	TL-4-124		CBZ	27604124
2	Radial-Wellendichtring	22	SM 32/45x7		APZ	2500SM32457
1	Radial-Wellendichtring	21	BASL 40/52x7			25000002
2	Rillenkugellager	20	6009		SKF/SRO	266009
1	Oelstands-Schauglas	19	G 1/2"	600-4		27396004
		18				
2	Gew-Sti In-6kt	17	M5x6	912		27300506
2	Gew-Sti In-6kt	16	M8x12	912		27300812
1	Zyl-Schr In-6kt	15	M6x35	912		27020635
2	Zyl-Schr In-6kt	14	M6x30	912		27020630
1	Zyl-Schr In-6kt	13	M6x20	912		27020620
8	Zyl-Schr In-6kt	12	M6x12	912		27020612
		11				
2	Distanzscheibe	10	32/44x0,5		CBZ	2746324405
		9				
1	Gabel	8			3775	50-4-1286
1	Deckel	7				50-4-1285
1	Deckel	6				50-4-1284
		5				
1	Schnecke	4				50-3-682
1	Schneckenrad	3			1105	50-3-681
		2				
1	Getriebegehäuse	1			3774	50-2-337

I

Aenderungen: 17.6.82 Qe / 7.10.82 Qe 19.4.90 CH. 23.10.90 CH. 30.4.91 Qll 3.10.91 ru 17.8.93 Sto 9) Nr. 982 25.2.99 RP

Ersetzt durch ....

Gehört zu Zeichnung: ....

Ersatz für alte Zeichnung

DSM 10 und DSM 20

Grundsymbol, Formgebung freigestellt
Bearbeitung durch Spanabnahme
Spanabnahme nicht erlaubt

N 12......N 1 Rauheitsklassen nach VSM 10230 und 10231

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

Traversiergetriebe

Zusammenstellung

Maßstab 1:1

Gezeichnet 27.11.80 Wili

Geprüft 25.2.99

Gesehen

Graf & Cie AG, Rapperswil

50-2-79

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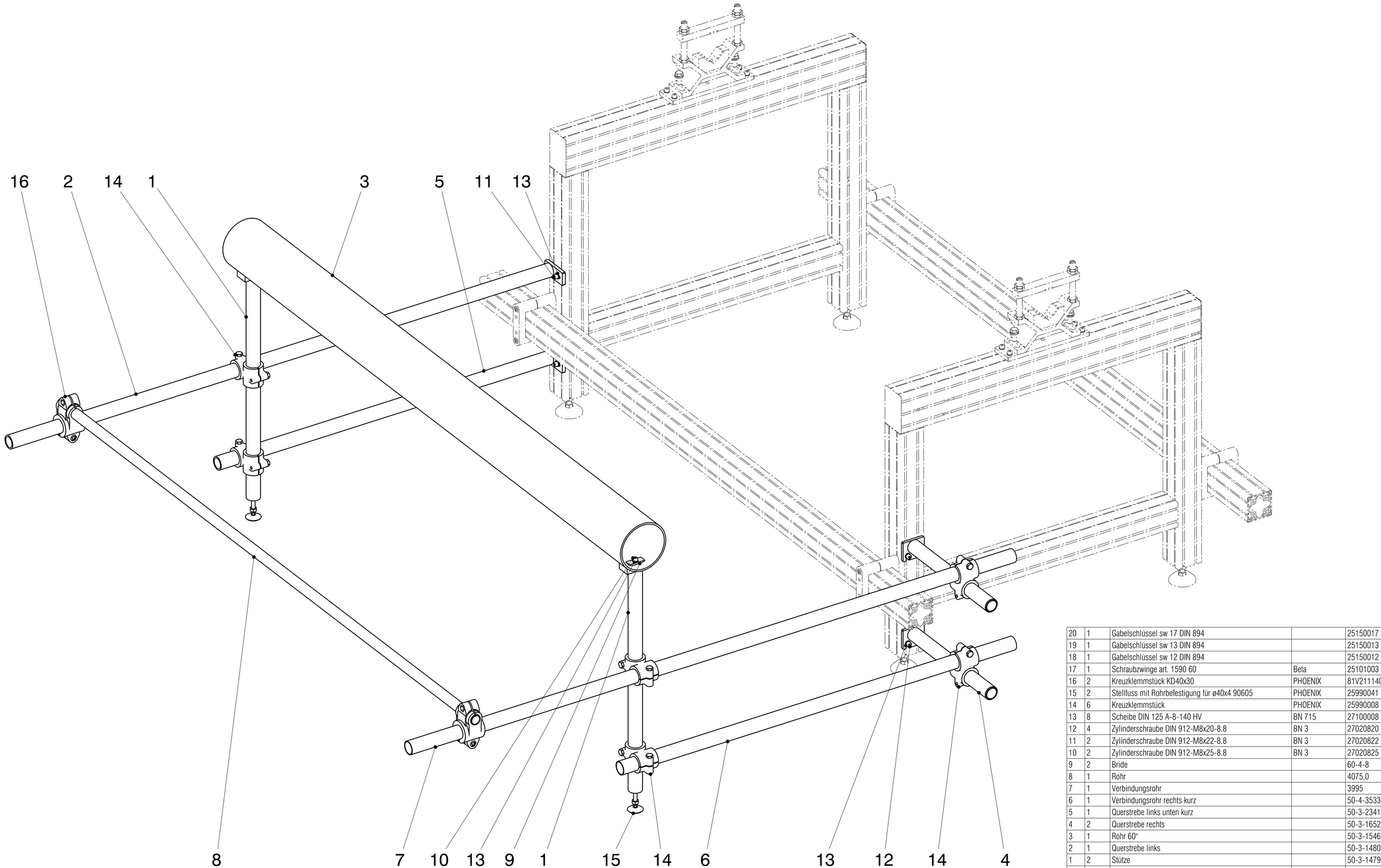
A1

C 693



Pos.	Menge	Bezeichnung	Lieferant	Bemerkung
20	1	Gabelschlüssel sw 17 DIN 894		25150017
19	1	Gabelschlüssel sw 13 DIN 894		25150013
18	1	Gabelschlüssel sw 12 DIN 894		25150012
17	1	Schraubzwinge art. 1590 60	Beta	25101003
16	2	Kreuzklemmstück KD40x30	PHOENIX	81V211140
15	2	Stellfuss mit Rohrbefestigung für ø40x4 90605	PHOENIX	25990041
14	6	Kreuzklemmstück	PHOENIX	25990008
13	8	Scheibe DIN 125 A-8-140 HV	BN 715	27100008
12	4	Zylinderschraube DIN 912-M8x20-8.8	BN 3	27020820
11	2	Zylinderschraube DIN 912-M8x22-8.8	BN 3	27020822
10	2	Zylinderschraube DIN 912-M8x25-8.8	BN 3	27020825
9	2	Bride		60-4-8
8	1	Rohr		4075,0
7	1	Verbindungsrohr		3995
6	1	Verbindungsrohr rechts kurz		50-4-3533
5	1	Querstrebe links unten kurz		50-3-2341
4	2	Querstrebe rechts		50-3-1652
3	1	Rohr 60"		50-3-1546
2	1	Querstrebe links		50-3-1480
1	2	Stütze		50-3-1479

Änderungen:

1) Nr. 2182	05.11.04	RP	6)	
2) Nr. 3996	06.08.15	RP	7)	
3) Nr. 4793	21.02.20	chrp	8)	
4)			9)	
5)			10)	

Gehört zu Zeichnung -
Ersetzt durch -
Ersatz für -
Allgemeintoleranzen nach ISO 2768 - mK

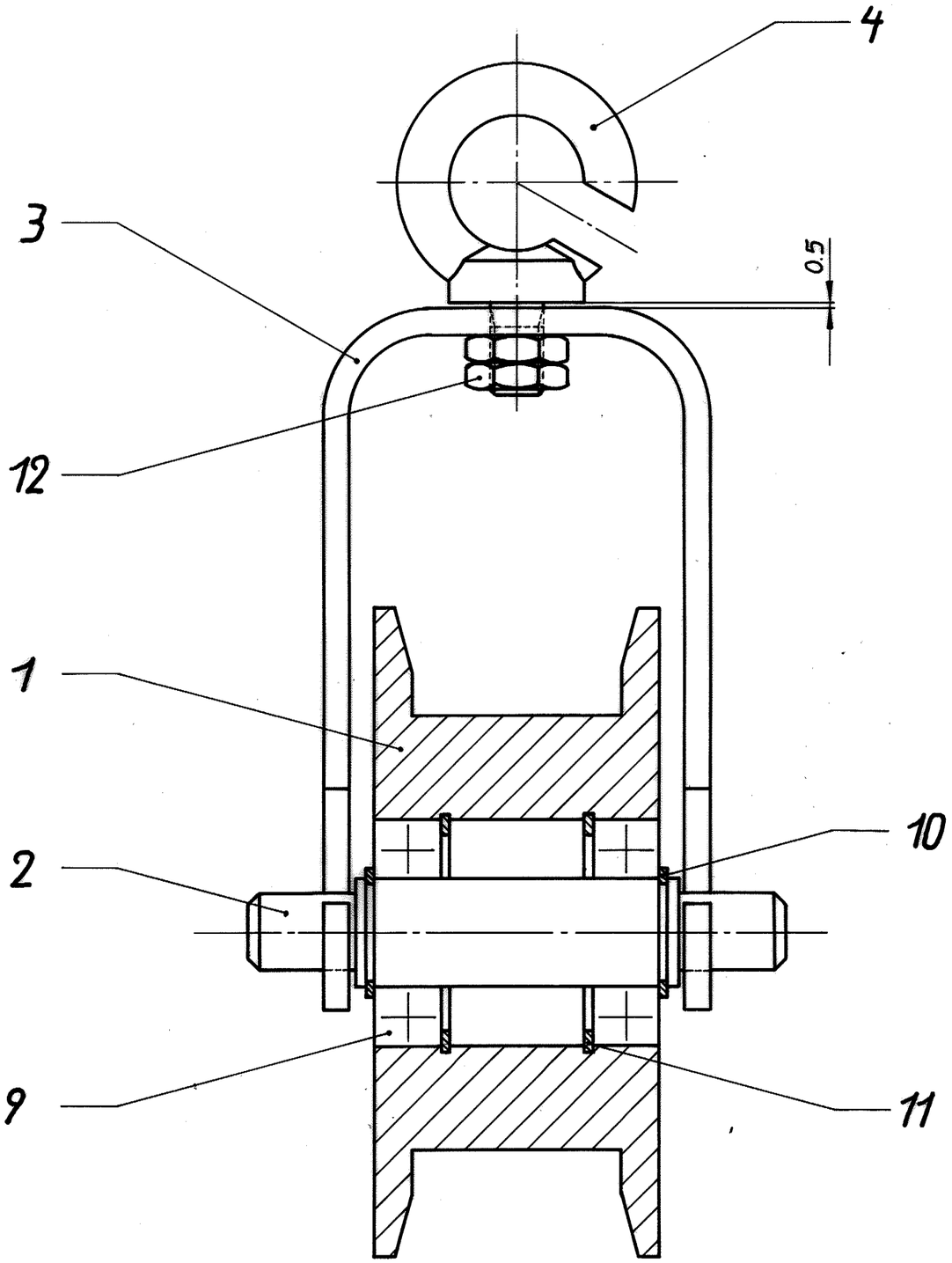
Bandaufziehvorrichtung

ROD 35 und ROD 35/1

Massstab	Gezeichnet	21.02.20	chrp
1:1	Geprüft	21.02.20	chcd

Graf + Cie AG
CH-8640 Rapperswil

50-1-422,3



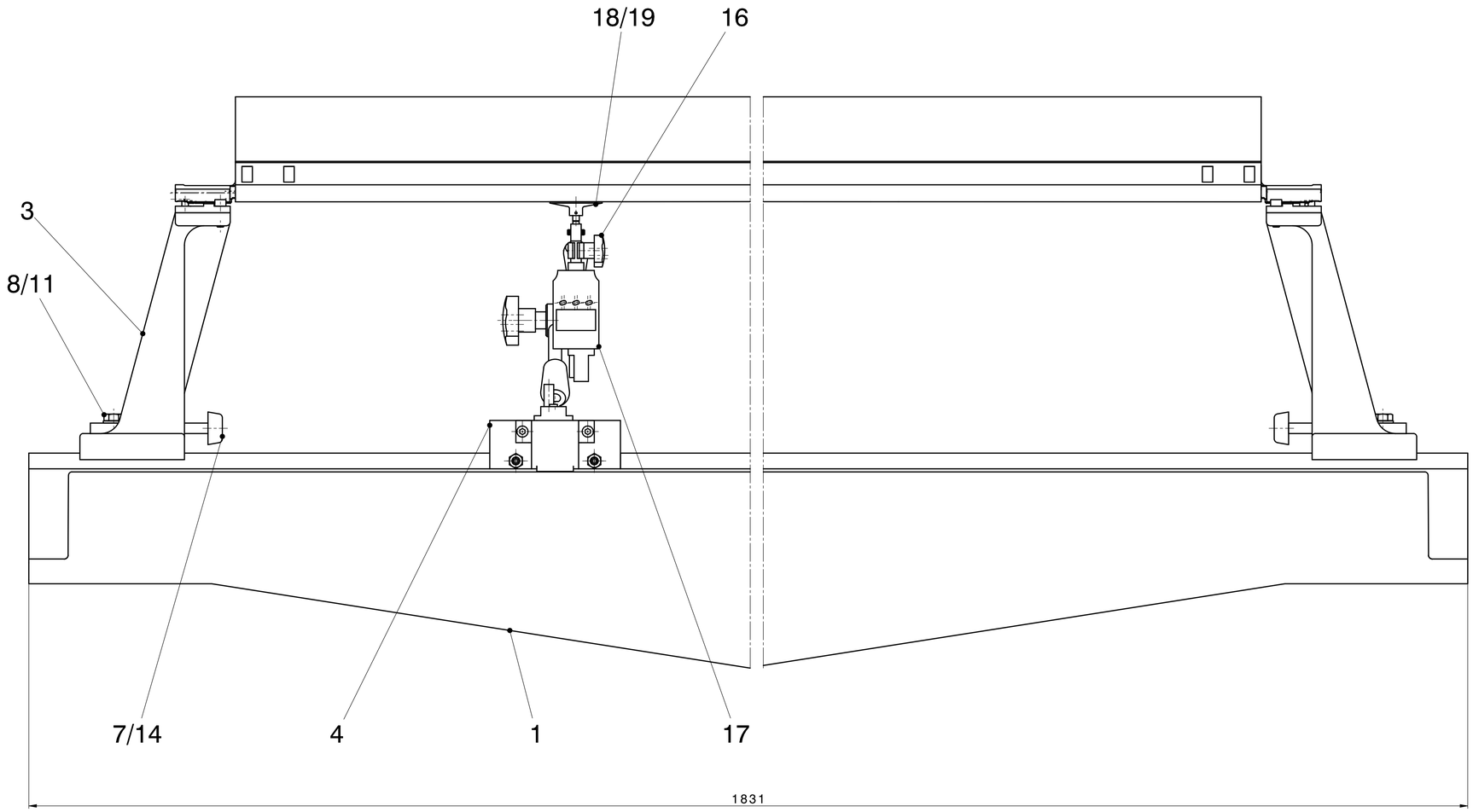
Stück		Gegenstand	Pos.	Werkstoff	VSM	Modell	Bemerkung
II	I	Aenderungen: 1) 2) 3) 4) 5)			Gehört zu Zeichnung 50-4-2161 Ersetzt durch Ersatz für Masse ohne Toleranz sind nach DIN 7168 "mittel" einzuhalten.		
		Umlenkrolle ROD 30			Massstab 1:1	Gezeichnet 3.1.94 RE Geprüft 5.1.94 Sto Gesehen	
		Graf + Cie AG, Rapperswil			50-3-1430.0		

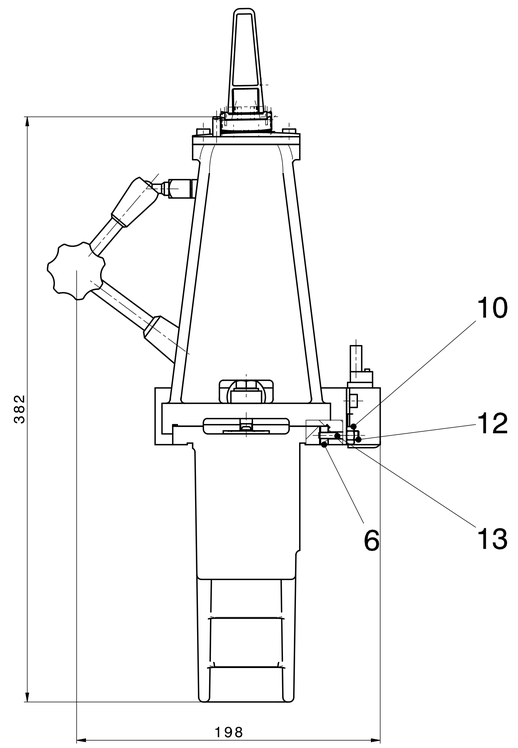
			30				
			29				
			28				
			27				
			26				
			25				
			24				
			23				
			22				
			21				
			20				
			19				
			18				
			17				
			16				
			15				
			14				
			13				
	2	6kt-Mutter 0.5d	12	M10	439B		27070010
	2	Si-Ring	11	ϕ42x1.75	472		27290042
	2	Si-Ring	10	ϕ20x1.2	471		27280020
	2	Rillenkugellager	9	6004 2RS			2660042RS
			8				
			7				
			6				
			5				
	1	Ringschraube	4				50-4-2317
	1	Bügel	3				50-3-1394
	1	Achse	2				50-4-2316
	1	Rolle	1				50-4-2315
Stück		Gegenstand	Pos.	Werkstoff	VSM	Modell	Bemerkung

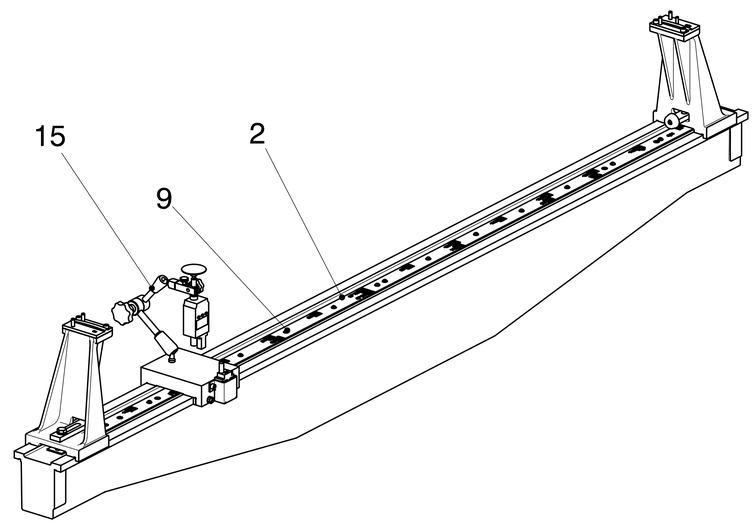
II	I	Aenderungen:	Gehört zu Zeichnung 50-3-1430
		1) Pos.11 neu 14.05.93 FI 2) 3) 4) 5)	Ersetzt durch Ersatz für
			Blatt 1/1

Umlenkrolle ROD 30	Massstab %	Gezeichnet	04.05.93	Sto
		Geprüft		
		Gesehen		

Graf + Cie AG, Rapperswil	50-4-2161,1







Artikel Nummer 005041338

Pos.	Menge	Bezeichnung	Lieferant	Bemerkung
19	1	Messteller beweglich		25130010-25
18	1	Messteller starr		25130011-25
17	1	Messuhr Digital Sender+Empfänger	GRIT	005043310
16	1	Mikro-Feineinstellung C1200	BRC	25130006
15	1	Anbau-Gelenkstativ FISSO CLASSIC C100	BRC	25130005
14	2	Gummipuffer M5		25120103
13	1	Spannstift VSM 12785-4x12-St	BN 881	27270412I
12	2	Gewindestift ISO 4026-M6x20-45H	BN 28	27300620
11	2	Scheibe DIN 125 A-8-140 HV	BN 715	27100008
10	2	Sechskantmutter DIN 934-M6-8	BN 117	27060006
9	16	Linsenschraube eco-fix-M3x8-4.8	BN 5128	27222308
8	2	Sechskantschraube DIN 931-M8x45-8.8	BN 57	27010845
7	2	Zylinderschraube DIN 912-M4x12-8.8	BN 3	27020412
6	1	Keil		50-4-1215
5	2	Pufferplatte		50-4-301
4	1	Schlitten		50-3-678
3	1	Kontrollbock komplett		50-2-691
2	1	Beschriftungsband		50-3-2146
1	1	Kontrollbalken 60"		50-1-285

Änderungen:

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

Gehört zu Zeichnung -
Ersetzt durch -
Ersatz für -
Allgemeintoleranzen nach ISO 2768 - mK

Kontrollvorrichtung

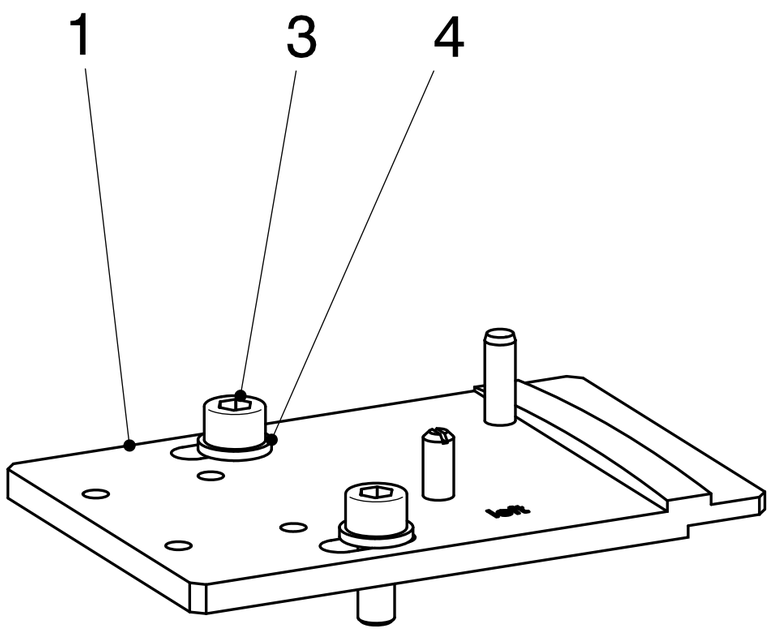
DSM20

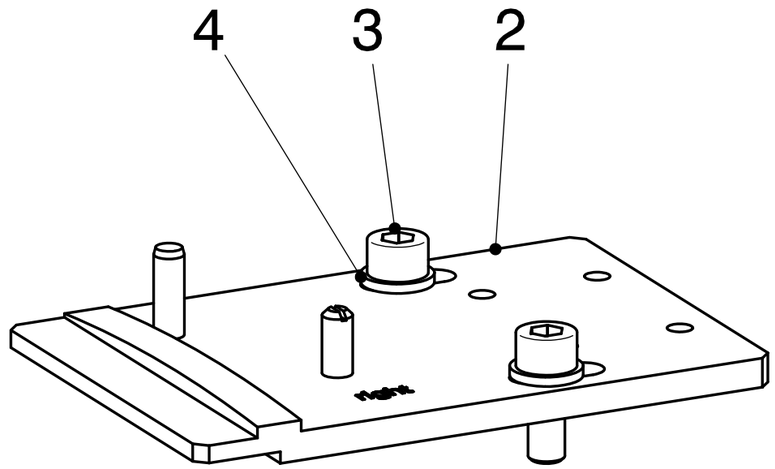
Massstab	Gezeichnet	08.10.21	chyf
1:2	Geprüft	12.10.21	chcd

Graf + Cie AG
CH-8640 Rapperswil

Schutzvermerk:
ISO 16016 beachten
(Refer to ISO 16016)

50-1-500,0





Pos.	Menge	Bezeichnung	Lieferant	Bemerkung
4	4	Scheibe DIN 125 A-6-140 HV	BN 14683	27100006
3	4	Zylinderschraube DIN 912-M6x16-8.8	BN 272	27020616
2	1	Schleifplatte rechts		50-4-3393
1	1	Schleifplatte links		50-4-3392

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Änderungen:

1) Nr. 3258	02.02.2012	str	6)		
2) Nr. 3415	19.12.2012	lg	7)		
3) Nr. 3840	19.02.2015	RP	8)		
4)			9)		
5)			10)		

Gehört zu Zeichnung -
Ersetzt durch -
Ersatz für 50-3-1638

Allgemeintoleranzen nach
ISO 2768 - mK

Schleifplatten Rieter Alu-Deckel

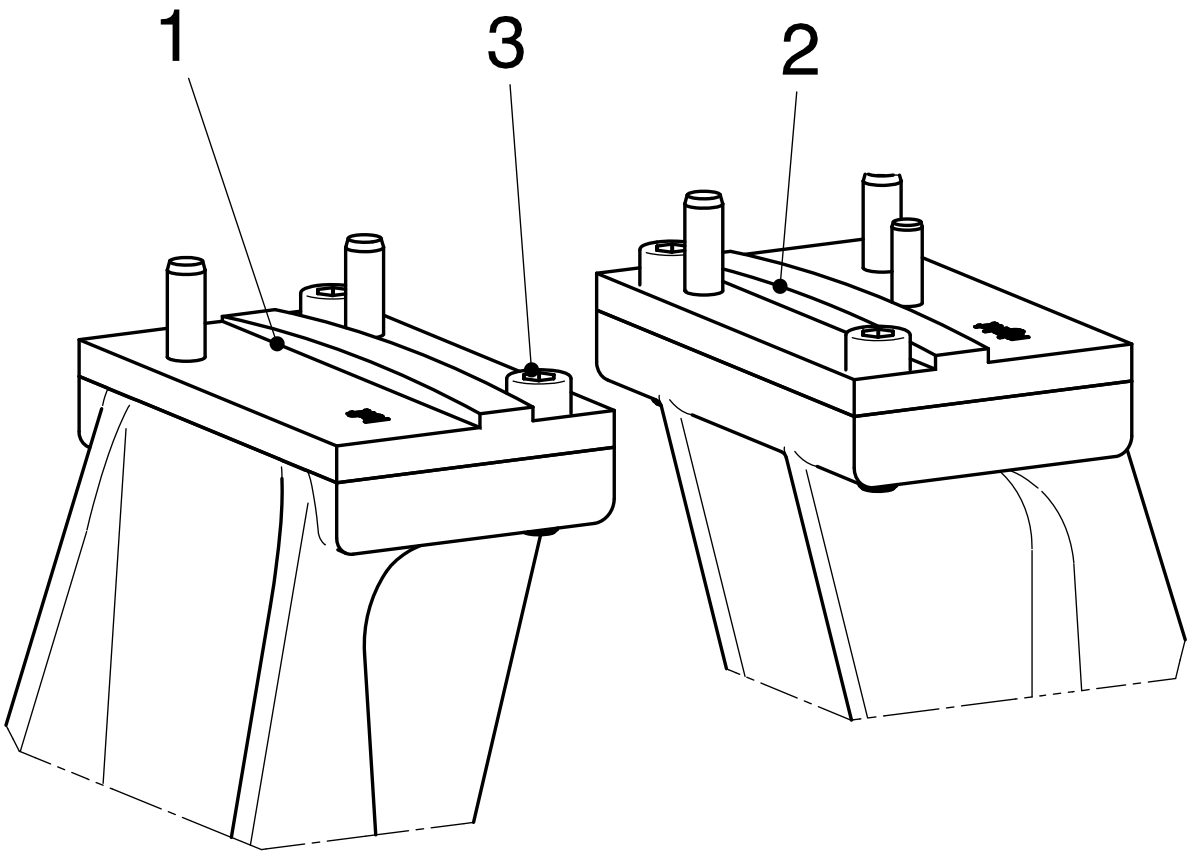
DSM 20/1 / Anzug 1°

Massstab	Gezeichnet	15.12.11	str
1:1	Geprüft	26.02.15	av

Graf + Cie AG
CH-8640 Rapperswil

Schutzvermerk:
ISO 16016 beachten
(Refer to ISO 16016)

50-3-1951,3



Pos.	Menge	Bezeichnung	Lieferant	Bemerkung
3	4	Zylinderschraube DIN 912-M5x16-8.8	BN 272	27020516
2	1	Auflageplatte rechts komplett		50-4-3391
1	1	Auflageplatte links komplett		50-4-3390

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Änderungen:

1) Nr. 3444	25.11.13	str	6)		
2) Nr. 3837	16.02.15	RP	7)		
3)			8)		
4)			9)		
5)			10)		

Gehört zu Zeichnung -
Ersetzt durch -
Ersatz für -

Allgemeintoleranzen nach
ISO 2768 - mK

Auflageplatten Rieter Alu-Deckel

DSM 20/1 Kontrollvorrichtung

Massstab	Gezeichnet	18.08.11	str
1:1	Geprüft	03.03.15	av

Graf + Cie AG
CH-8640 Rapperswil

50-4-3261,2

Spare and wear parts DSM 20/1

Pos.	Qty	Item description	Item No.	Qty per machine
		Deckelschleifmaschine siehe Zeichnung D-001885 **Flat grinding machine see drawing D-001885**		
25	1	Schlittenführung rechts Carriage guidance right	100.007	1
26	1	Schlittenführung links Carriage guidance left	100.008	1
27	1	Lager komplett Bearing complete	005031313	2
50	1	Druckstück zu Vertikalspanner Pressure piece for vertical clamp	005043248	2
107	1	Drehstrommotor 1.1 kW Three-phase motor 1.1 kW	29011540050	1
108	1	Stirnradgetriebemotor 0.18 kW Spur gear motor 0.18 kW	29103238050	1
114	1	Keilriemen SPA 13x8x1525 V-belt SPA 13x8x1525	2503131525	2
115	1	Rollenkette 65 Glieder 1/2" X 5/16" Roller Chain 65 links 1/2" X 5/16"	25070003	1
-	1	Ausgleichsgewicht für Rieter C70, C72, C75, C77 und C80 Compensation weight for Rieter C70, C72, C75, C77 und C80	005031950	1
-	1	Ausgleichsgewicht für Rieter C70, C72, C75, C77 und C80 EF Compensation weight for Rieter C70, C72, C75, C77 und C80 EF	005032036	1
		Schmirgelbandwalze Cubitron 60" siehe Zeichnung 60-1-0177 **Grinding roller with cubitron 60" see drawing 60-1-0177**		
-	1	Schmirgelbandwalze komplett mit Cubitron 3M Grinding roller complete with cubitron 3M	00601177	1
4	65m	Schmirgelband Cubitron 3M Emery fillet Cubitron 3M	80001464	65m
		Schleifträger für 40" bis 60" Deckel siehe Zeichnung 50-2-997 **Sanding carrier for 40" to 60" flats see drawing 50-2-997**		
-	1	Schleifträger für 40" bis 60" Deckel komplett Grinding carrier for 40" to 60" flats complete	00502997	1
		Traversiergetriebe siehe Zeichnung 50-2-79 **Traverse gear see drawing 50-2-79**		
-	1	Traversiergetriebe komplett Traverse gear complete	00502079II	1

Bandaufziehvorrichtung siehe Zeichnung 50-1-422
Filet winding device see drawing 50-1-422

-	1	Bandaufziehvorrichtung komplett Filet winding device complete	00501422	1

Umlenkrolle siehe Zeichnung 50-3-1430 / 50-4-2161
Guide roller see drawing 50-3-1430 / 50-4-2161

-	1	Umlenkrolle zu Bandaufziehvorrichtung Guide roller to filet winding device	005042161	1

Schleifplatten siehe Zeichnung D-001885
Grinding plates see drawing D-001885

30	1	Paar Schleifplatten Standard für diverse Deckel Pair of grinding plates standard for various flats	00503667I	1
30	1	Paar Schleifplatten 0° für diverse Deckel Pair of grinding plates 0° for various flats	005031402I	1
30	1	Paar Schleifplatten 1° für Rieter C60, C70, C72, C75 und C77 Pair of grinding plates 1° for Rieter C60, C70, C72, C75 und C77	005031951	1
30	1	Paar Schleifplatten 0.7° für Rieter C80 Pair of grinding plates 0.7° for Rieter C80	005032186	1
30	1	Paar Schleifplatten 1°22' für Crosrol MK4 und MK5 Pair of grinding plates 1°22' for Crosrol MK4 and MK5	005043088	1
30	1	Paar Schleifplatten 1°22' für Crosrol MK6 und MK7 Pair of grinding plates 1°22' for Crosrol MK6 and MK7	005043121	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

0	1	2	3	4	5	6	7	8	9

REV	DATE		DESIGNED	VERIFIED	APPROVED	
1	02/05/2023	AS-BUILT	BAT			
0	28/03/2023	ISSUED FOR CONSTRUCTION	BAT			

CONTRACT	DIAGRAM	PROJED	REGULATION
	GI002A23		

DESCRIPTION

WIRING DIAGRAM
MACHINE DSM 20/1

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 DSM20/1 MACCHINA DSM20/1	GRAF ITALIA	BOARD DIAGRAM SCHEMA QUADRO	GI002A23
			Diseg.	123				110.743
			Plot.	06. Set. 2023				D-001444,0
Modifiche	Data	Nome	Norm.					

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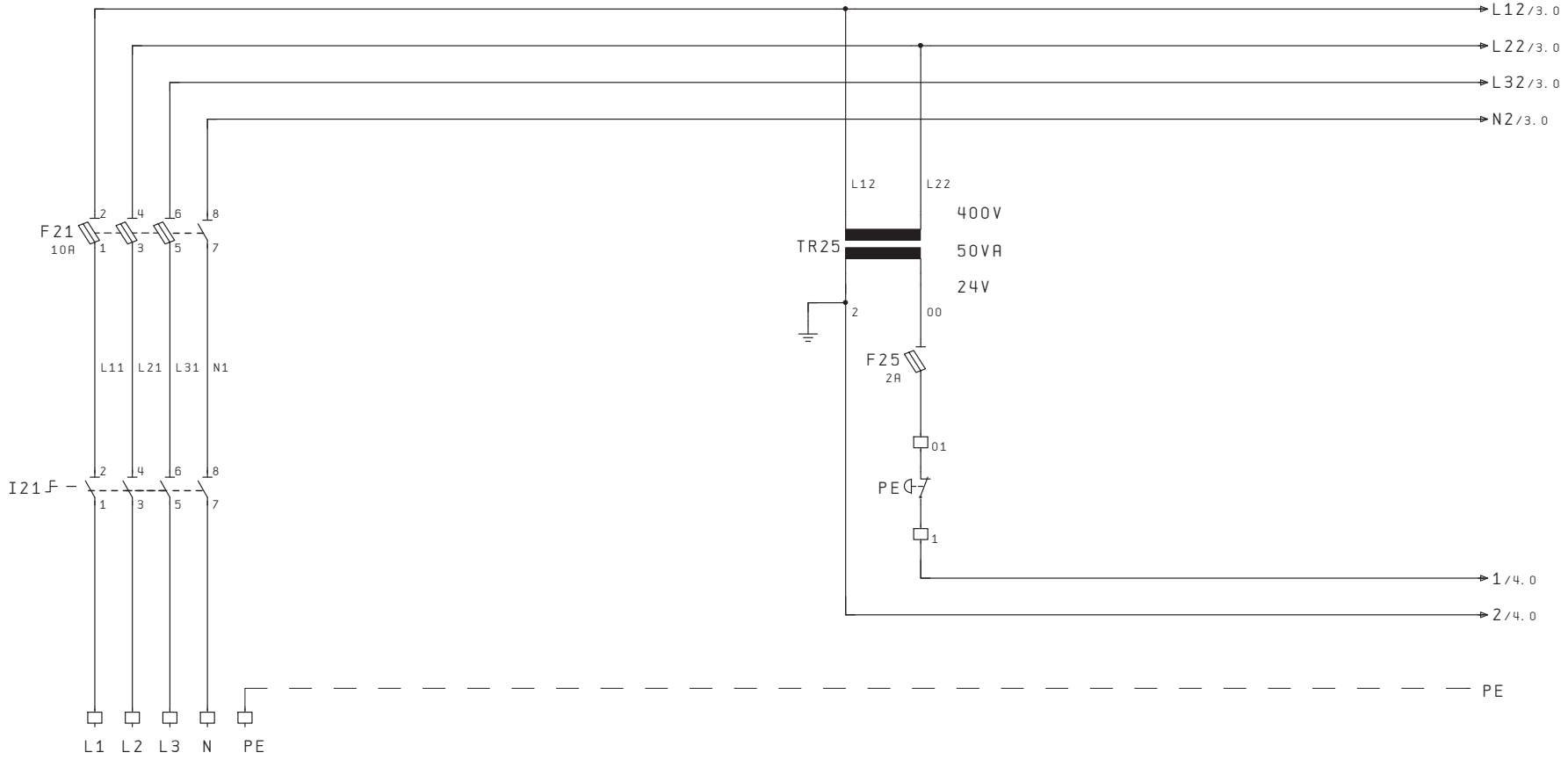
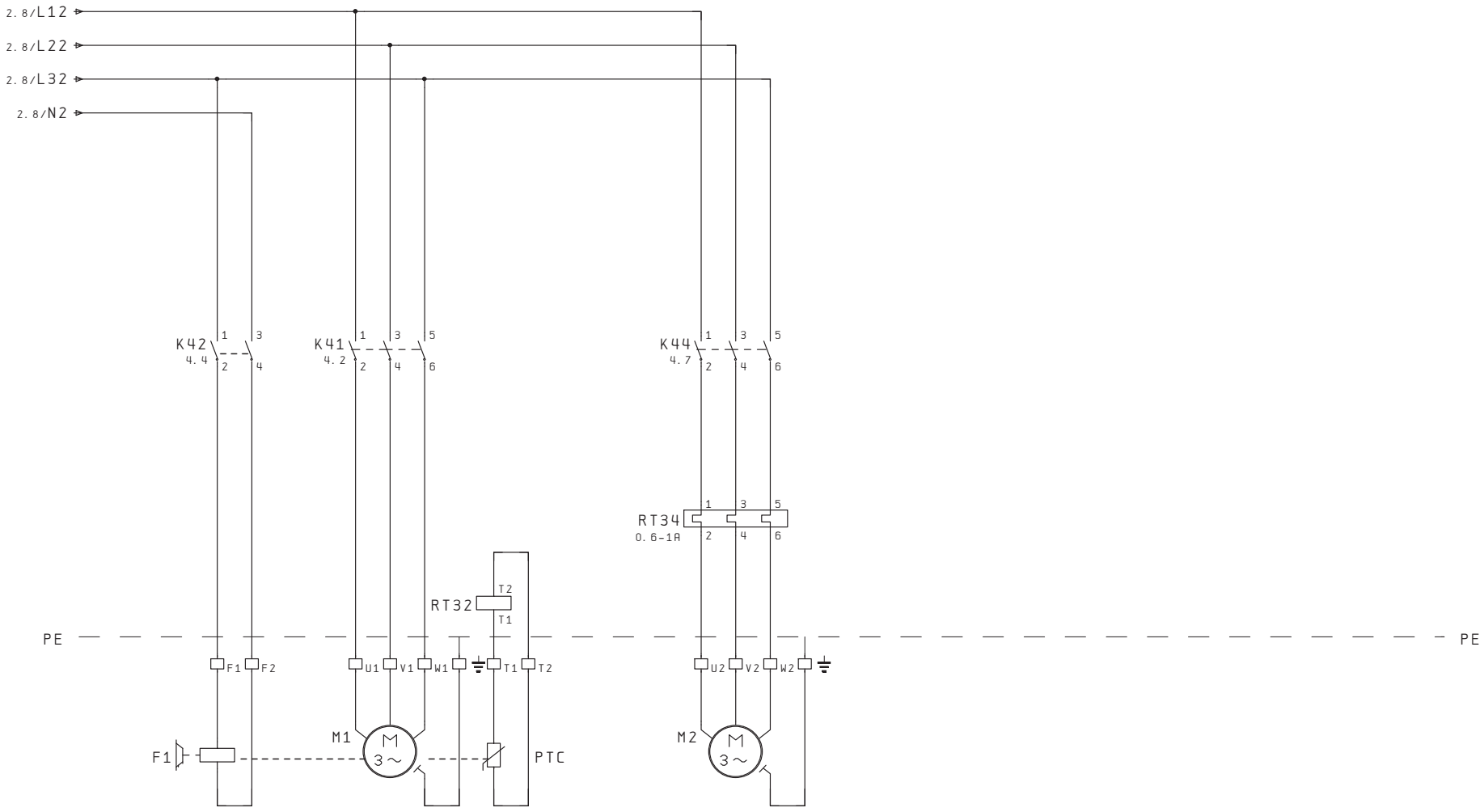
Pag. 1
12



LINE SUPPLY
3P+N 400V 50/60Hz
ARRIVO LINEA
3F+N 400V 50/60HZ

			Data		MACHINE DSM20/1 MACCHINA DSM20/1	GRAF ITALIA	LINE SUPPLY ARRIVO LINEA	GI002A23
			Diseg.					110.743
			Plot.	06. Set. 2023				D-001444,0
Modifiche	Data	Nome	Norm.					Pag. 2 / 12



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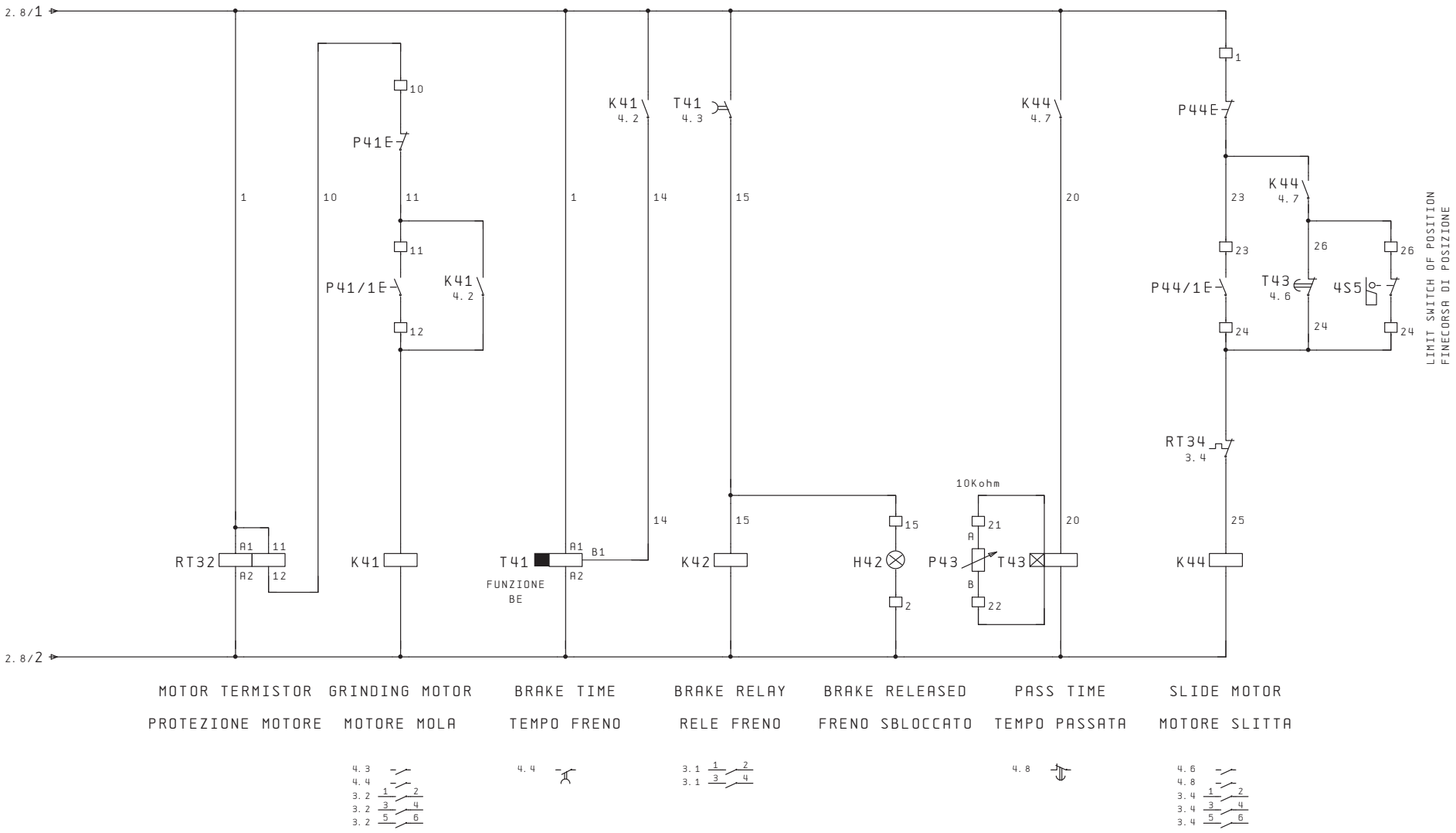
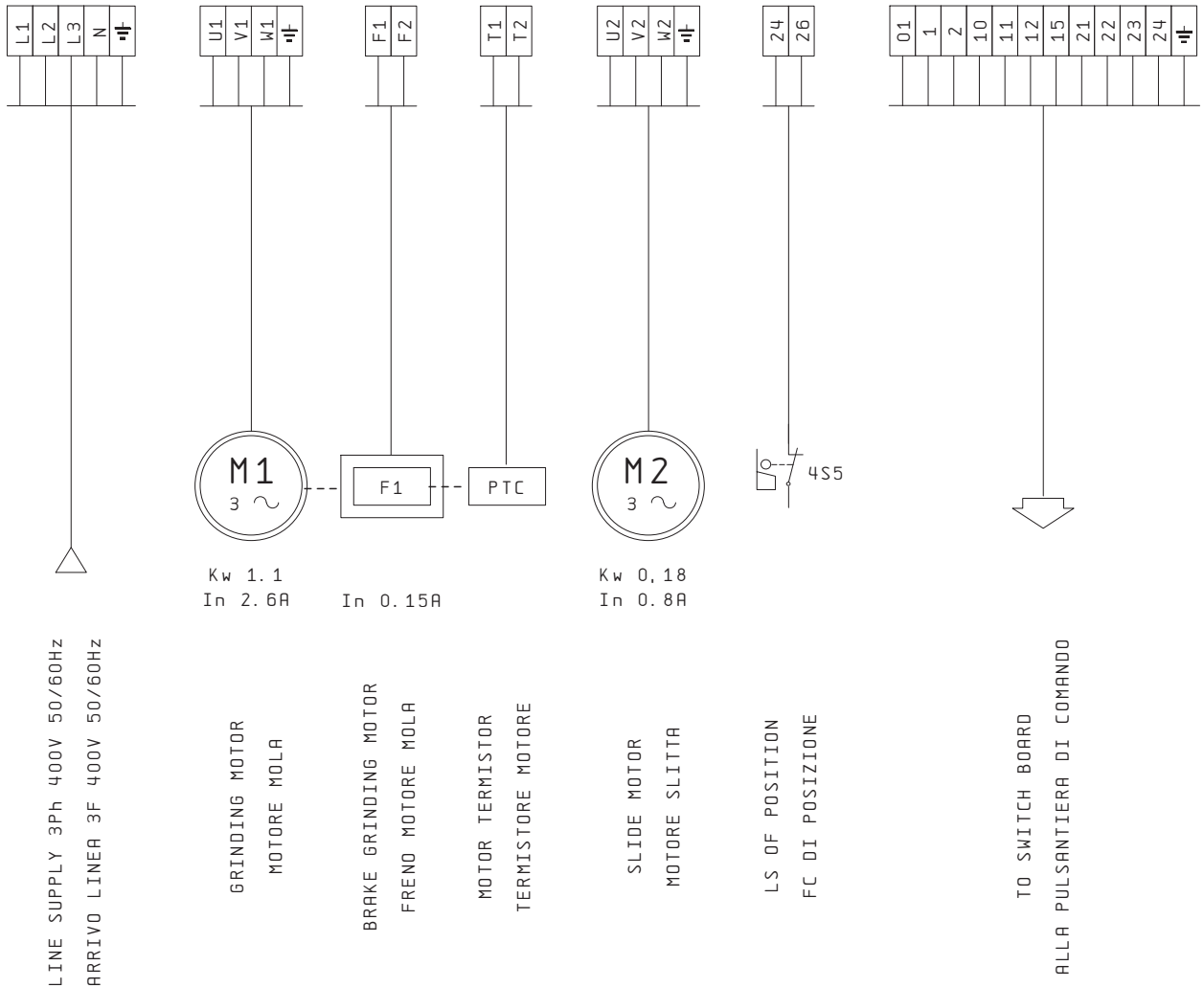
			Plot.	06. Set. 2023				D-001444,0
Modifiche	Data	Nome	Norm.					Pag. 3 / 12

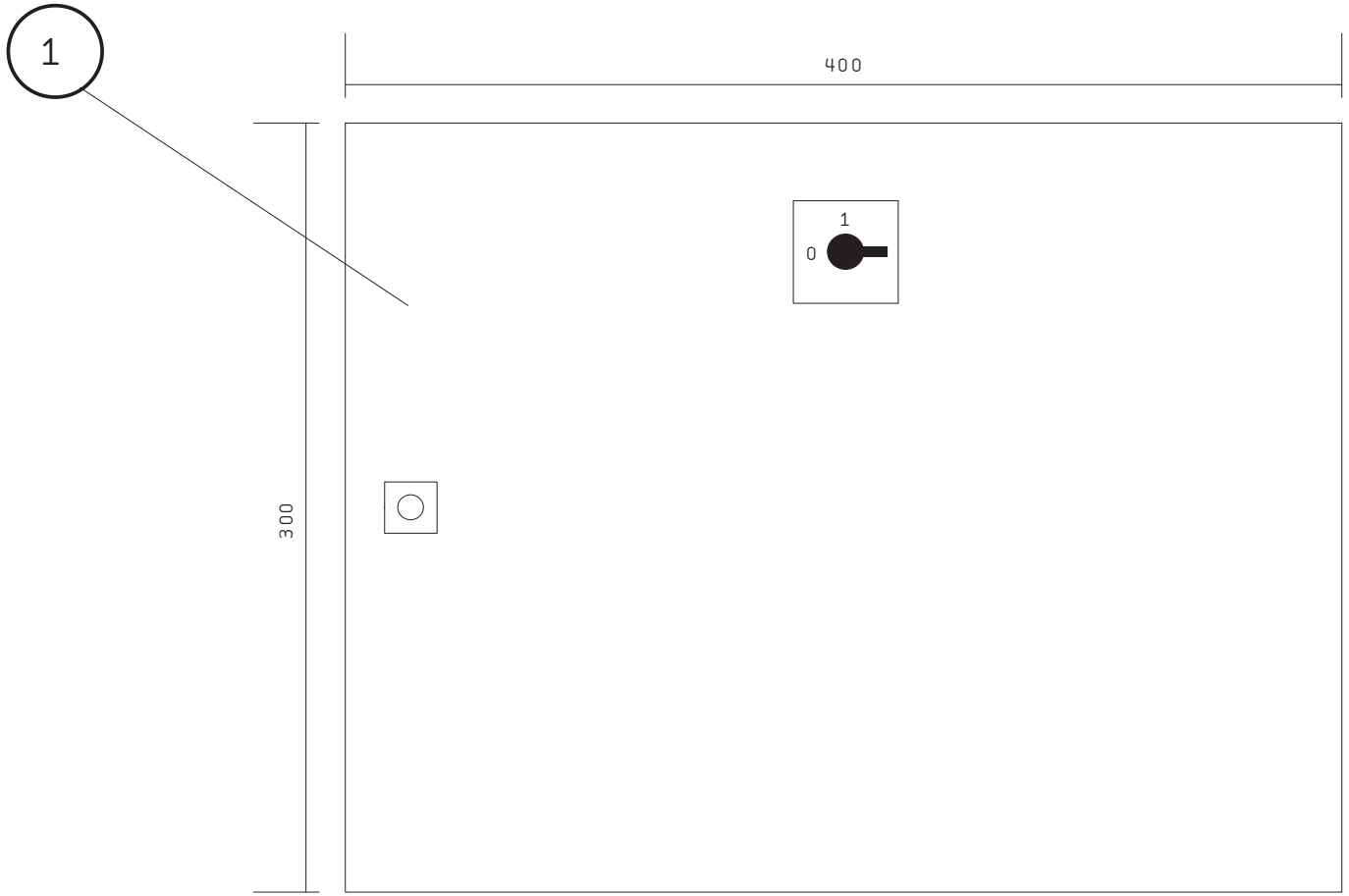


3 5

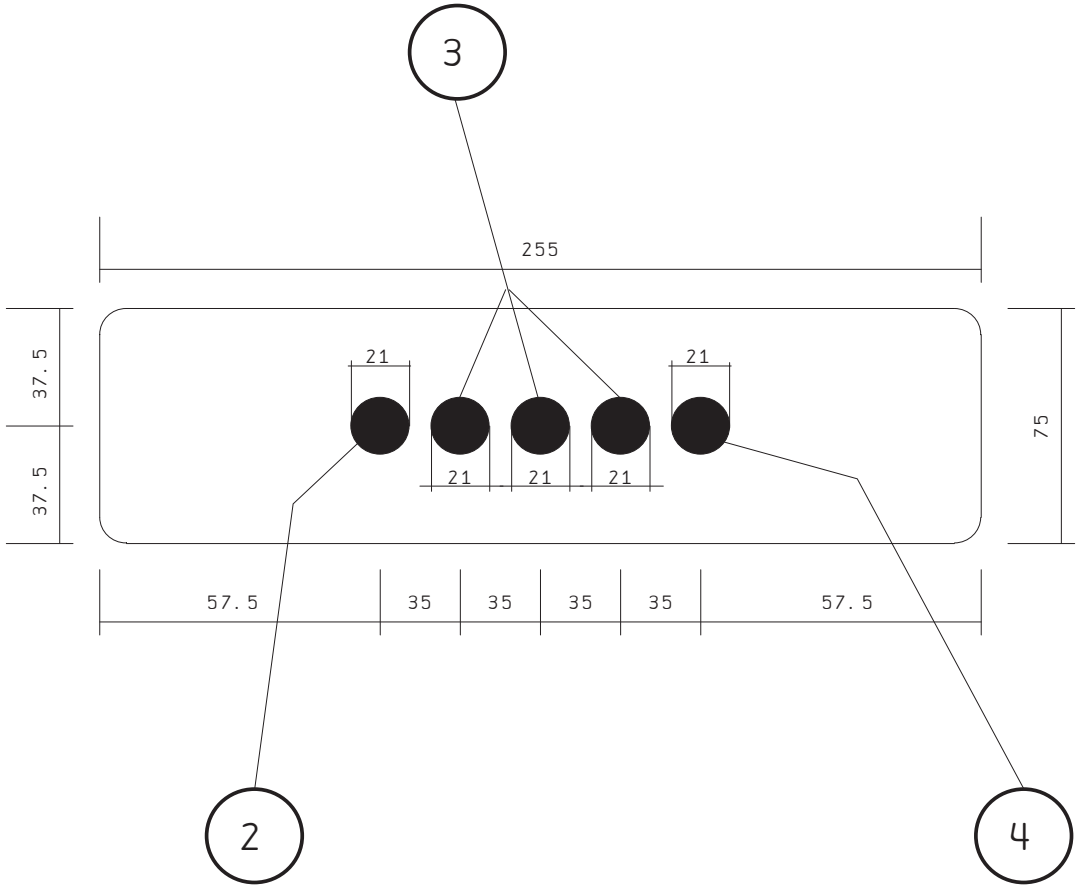
			Data		MACHINE DSM20/1 MACCHINA DSM20/1	GRAF ITALIA	AUXILIARY CIRCUIT CIRCUITO AUSILIARIO	GI002A23
			Diseg.					110.743
			Plot.	06. Set. 2023				D-001444,0
Modifiche	Data	Nome	Norm.					Pag. 4 / 12



			Data		MACHINE DSM20/1 MACCHINA DSM20/1	GRAF ITALIA	TERMINAL BLOCK MORSETTIERA	GI002A23
			Diseg.					110.743
			Plot.	06. Set. 2023				D-001444,0
Modifiche	Data	Nome	Norm.					Pag. 5 / 12



			Data		MACHINE DSM20/1 MACCHINA DSM20/1	GRAF ITALIA	BOARD FRONT FRONTE QUADRO	GI002A23	=
			Diseg.						+
			Plot.	06. Set. 2023				110.743	D-001444,0
Modifiche	Data	Nome	Norm.						Pag. 6 12



			Data		MACHINE DSM20/1 MACCHINA DSM20/1	GRAF ITALIA	CABLE INLET ENTRATA CAVI	GI002A23
			Diseg.					110.743
			Plot.	06. Set. 2023				D-001444,0
Modifiche	Data	Nome	Norm.					Pag. 7 / 12

POS	SIGLE	DENOMINATION	MAKE	TYPE
1		METALLIC BOX CASSA METALLICA	DKC	CE.0341
2		CABLEPRESSER PG13.5 + NUT PRESSACAVO PG13.5 + DADO	CEMBRE	1900.13 11420.13
3		LINKAGE PG13,5 ∅ 12 + NUT RACCORDO PG13,5 ∅ 12 + DADO	LEGRAND	81266G 86564
4		LINKAGE PG13,5 ∅ 17 + NUT RACCORDO PG13,5 ∅ 17 + DADO	LEGRAND	81267G 86564

Modifiche | Data | Nome | Norm.

Data | Diseg. | Plot. 06.Set.2023

MACHINE DSM20/1
MACCHINA DSM20/1

GRAF ITALIA

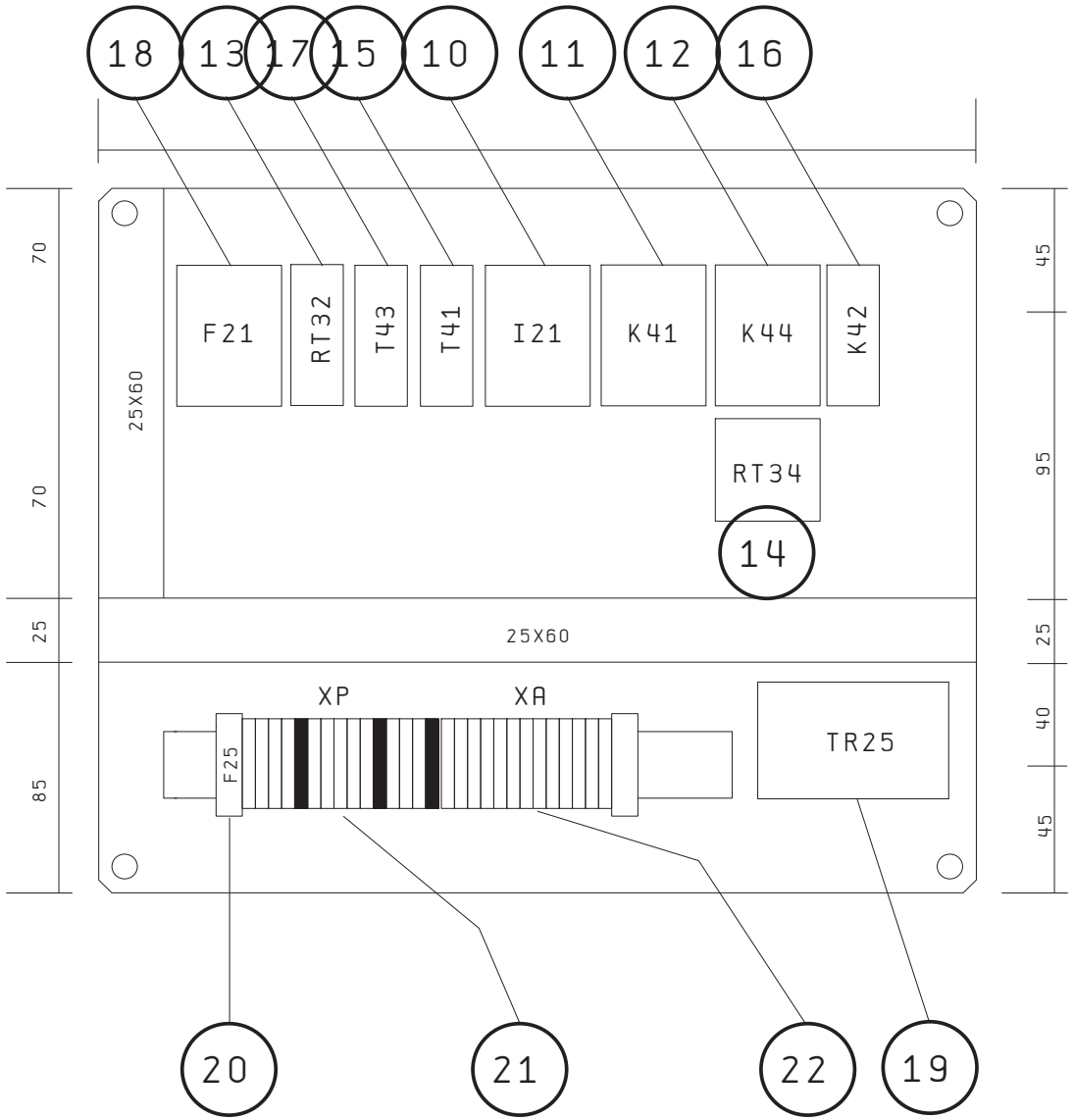
MATERIAL LIST
LISTA MATERIALI

GI002A23

110.743

D-001444,0

Pag. 8 / 12



			Data		MACHINE DSM20/1 MACCHINA DSM20/1	GRAF ITALIA	INTERNAL PLATE PIASTRA INTERNA	GI002A23
			Diseg.					110.743
			Plot.	06. Set. 2023				D-001444,0
Modifiche	Data	Nome	Norm.					Pag. 9 / 12

POS	SIGLE	DENOMINATION	MAKE	TYPE
10	I21	MAIN SWITCH INTERRUTTORE	SCHNEIDER	V0+VZ11+KCC1YZ +VZN17+KZ32
11	K41	CONTACTOR CONTATTORE	SCHNEIDER	LC1D09B7 LAD20
12	K44	CONTACTOR CONTATTORE	SCHNEIDER	LC1D09B7 LAD20
13	RT32	MOTOR TERMISTOR TERMICO MOTORE	SIEMENS	3RN2000-1AA30
14	RT34	THERMORELAY RELE' TERMICO	SCHNEIDER	LRD05
15	T41	TIMER TEMPORIZZATORE	FINDER	830202400000
16	K42	RELAY RELE	FINDER	60.12+90.20
17	T43	TIMER TEMPORIZZATORE	FINDER	805102400000
18	F21	FUSE BASE PORTAFUSIBILI	SIEMENS	3NW7063 10A Gg
19	TR25	TRANSFORMER TRASFORMATORE	AB	400/24V USE50AB
20	F25	FUSIBLE FUSIBILI	PHOENIX	UK-Si
21	XP	TERMINAL BLOCK POWER MORSETTI POTENZA	PHOENIX	UT4 UT4-PE
22	XA	TERMINAL BLOCK AUXILIARY MORSETTI AUSILIARI	PHOENIX	UT2.5

Modifiche | Data | Nome | Norm. | Piot. 06.Set.2023 | Disseg. | Data

MACHINE DSM20/1
MACCHINA DSM20/1

GRAF ITALIA

MATERIAL LIST
LISTA MATERIALI

GI002A23

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D-001444,0

Pag.10
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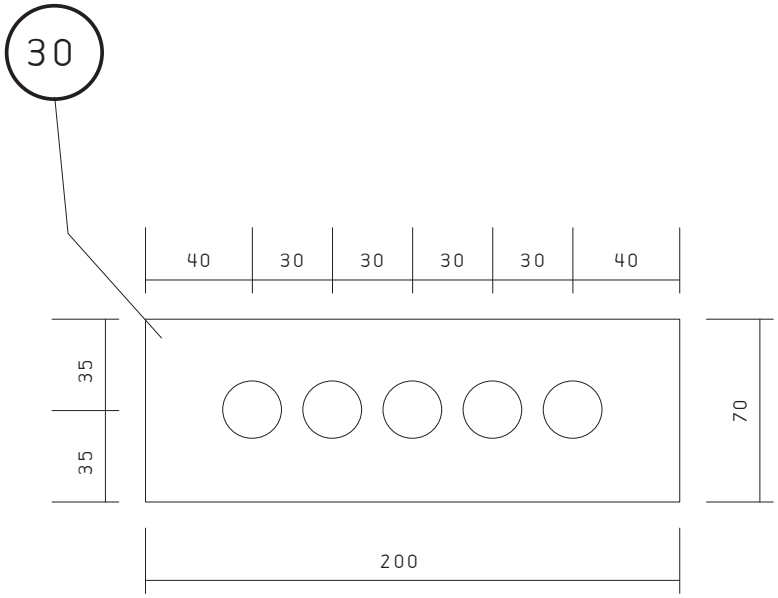
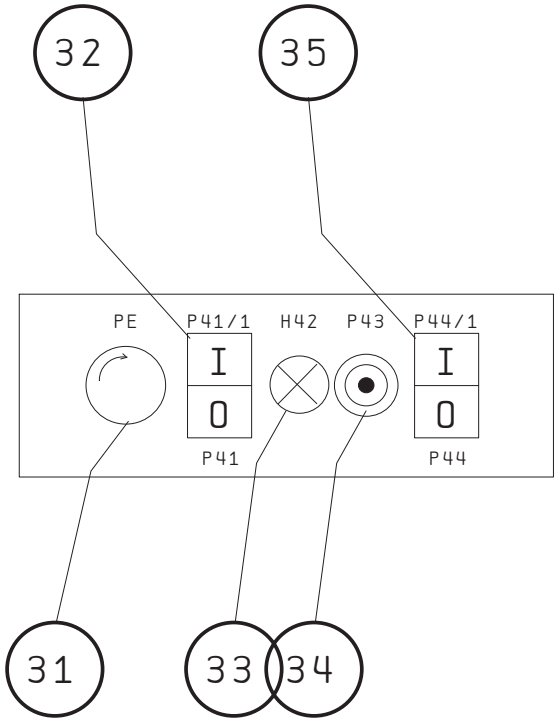
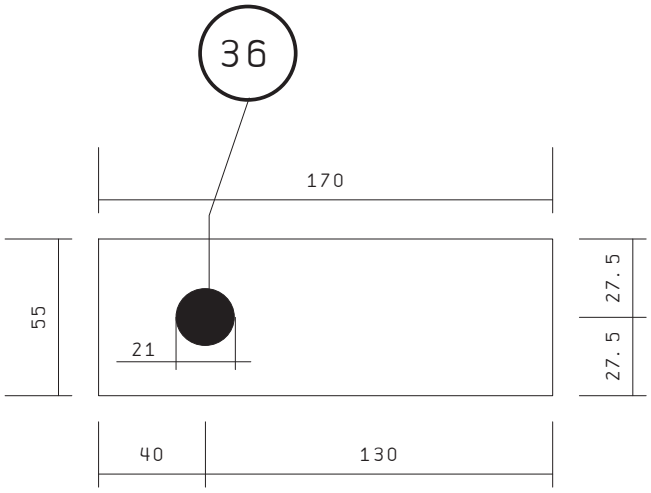
11

0 1 2 3 4 5 6 7 8 9







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12

			Data		MACHINE DSM20/1 MACCHINA DSM20/1	GRAF ITALIA	SWITCH BOARD PULSANTIERA	GI002A23
			Diseg.					110.743
			Plot.	06. Set. 2023				D-001444,0
Modifiche	Data	Nome	Norm.					Pag. 11 12

POS	SIGLE	DENOMINATION	MAKE	TYPE
30	PL	PUSH BUTTON PANEL PULSANTIERA	SCHNEIDER	XAP-E305 XAP-E905
31	PE	MUSHROOM PUSH BUTTON PULSANTE A FUNGO	SCHNEIDER	ZB5-AS44 ZB5-AZ102
32	P41 P41/1	PUSH BUTTON FOR START-STOP PULSANTI MARCIA-ARRESTO	SCHNEIDER	ZB5-AL7340 ZB5-AZ105
33	H42	LIGHT SPIA	SCHNEIDER	ZB5-AV053 ZB5-AVB5
34	P43	POTENTIOMETER POTENZIOMETRO	SCHNEIDER	ZB4-BD912 10Kohm
35	P44 P44/1	PUSH BUTTON FOR START-STOP PULSANTI MARCIA-ARRESTO	SCHNEIDER	ZB5-AA8134 ZB5-AZ105
36		LINKAGE PG13,5 ∅ 17 + NUT RACCORDO PG13,5 ∅ 17 + DADO	LEGRAND	81267G 86564

Modifiche | Data | Nome | Norm. | Data | Diseg. | Piot. 06.Set.2023

MACHINE DSM20/1
MACCHINA DSM20/1

GRAF ITALIA

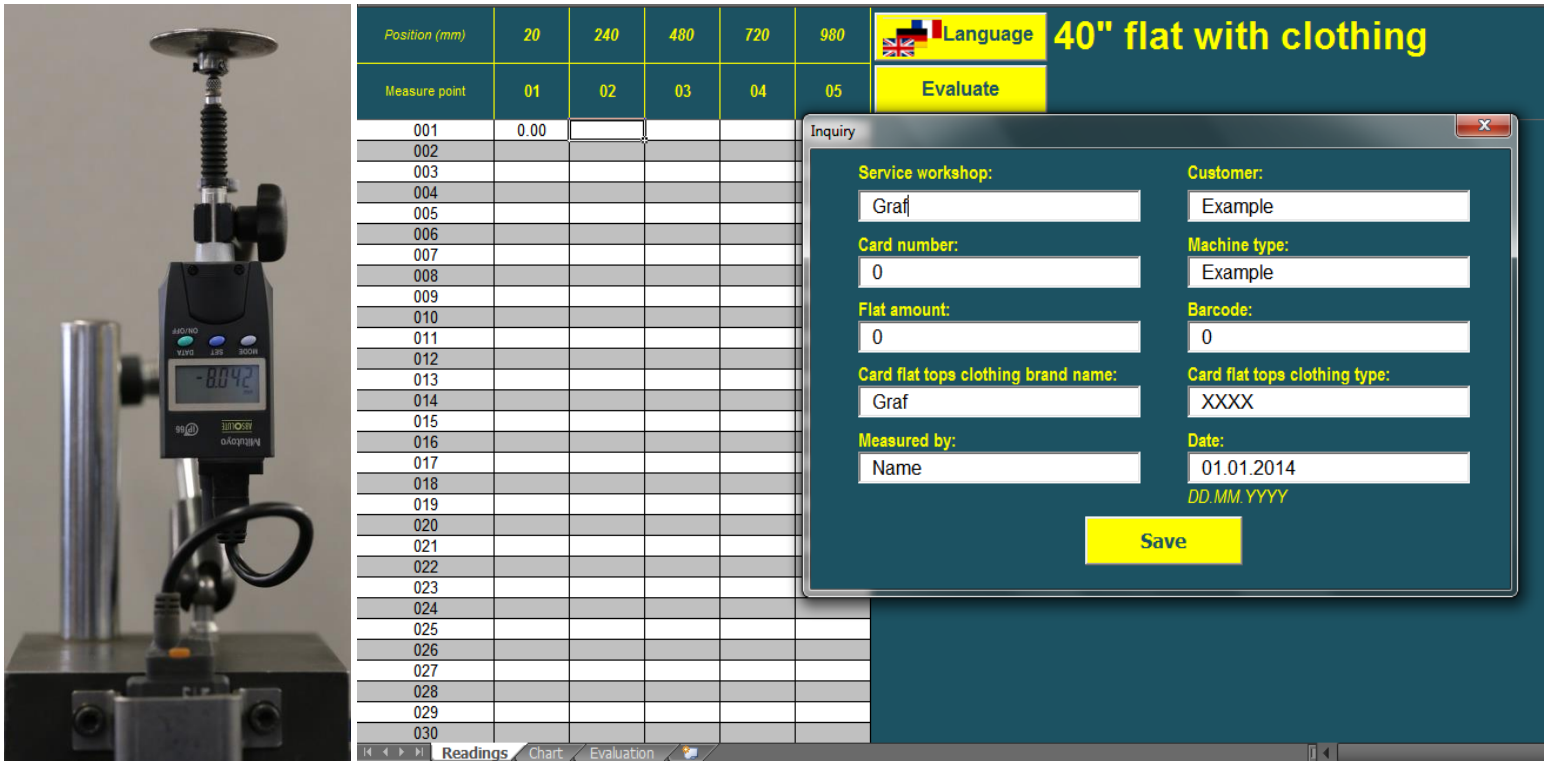
MATERIAL LIST
LISTA MATERIALI

GI002A23

110.743

D-001444,0

Pag. 12
12



Instruction manual for Digital Dial Gauge
Part No. 005043336

Please read this manual first before assembling and installing software

When measuring flat bars there should be put on gloves

Copy the “Digital dial gauge.exe” to your “Documents” folder on your hard disk and extract.

Edition of December 2015

Graf + Cie AG
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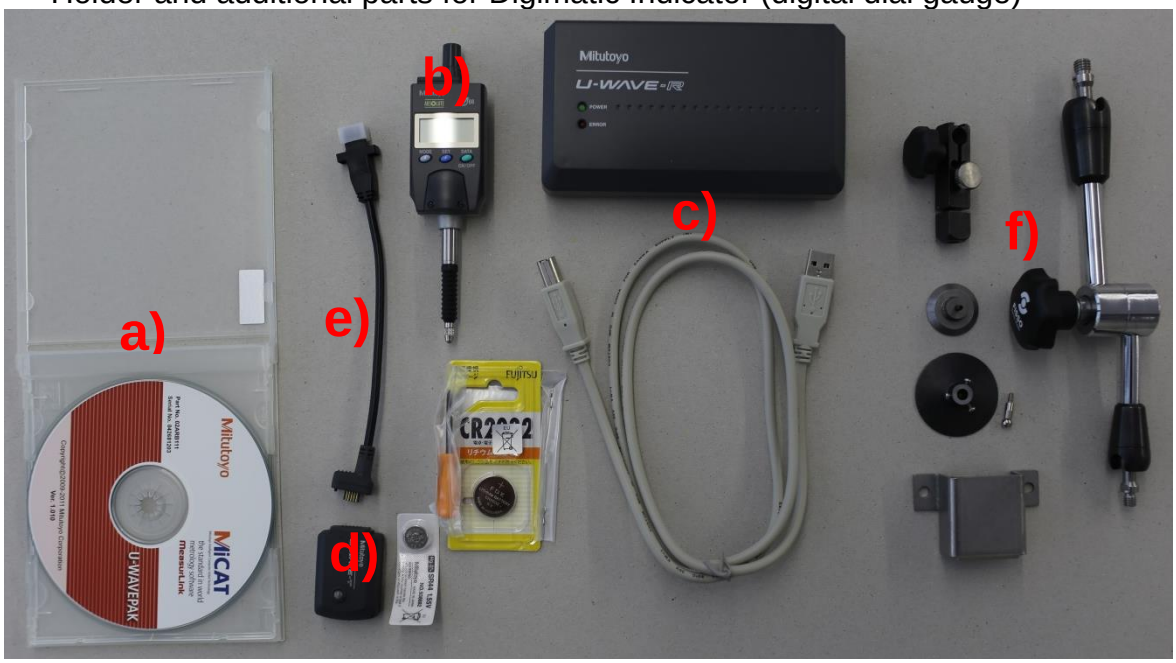
II Index

1. Scope of delivery

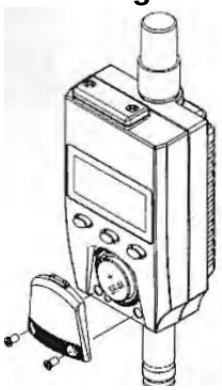
a) Software CD
b) Digimatic Indicator (digital dial gauge)
c) U-WAVE-R (receiver with USB cable)
d) U-WAVE-T (transmitter)
e) Connection cable Digimatic Indicator to U-WAVE-T (transmitter)
f) Holder and additional parts for Digimatic Indicator (digital dial gauge)



2. Assembling (Digimatic Indicator and U-WAVE-T)

2.1. Digimatic Indicator setup

2.1.1. Digimatic indicator battery replacement

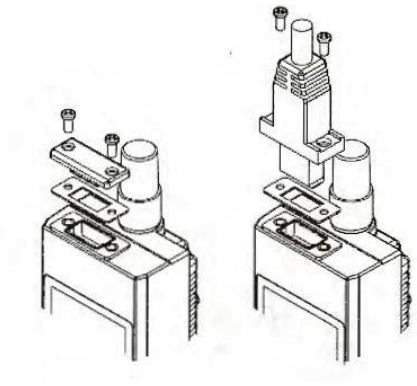


Use silver oxide battery (SR44).
a) Loosen the battery lid setscrews (M 1.7x0.35x4, No. 21ESA049) with the supplied screwdriver. Do not lose the battery lid, setscrews and packing seal.
b) Remove used battery.
c) Set a new battery with the positive (+) side up.
d) Place the battery lid and tighten the lid with the setscrews. (Torque of approximately 5 to 10N•cm)
Replacing battery clears the origin information and [-----] appears in the indicator. Set the origin again. ("4.3 Setting and calling of Preset Value")

IMPORTATNT: Be sure to use the supplied 0-size screwdriver (No. 05CZA619) when screwing or unscrewing the setscrews and tighten the setscrews at a torque of approximately 5 to 10N•cm.
-Unless the battery lid and the seal are set properly, the instrument may not display a correct value or any failure may result.
-Should the origin setting fail, reset the battery.
-Remove the battery from the instrument if it will not be used for more than three months. The instrument may be damaged by battery leakage.

NOTE: As this instrument is not supplied the battery set in position, install the battery before use.
-As the supplied battery is used only for the purpose of checking the functions and performance of the instrument, therefore it may not satisfy the specified battery life

2.1.2. Data Input/output cable connection digital dial



a) Vital SPC data is available by connecting the instrument to a Digimatic Miniprocessor DP-1VR and other data processor with an optional cable.
b) Remove the cap of output connector using a slotted- screwdriver and insert the cable fully to the end, and then fix the cable with the removed screws (Ml.7x0.35, 21ESA049). (Put the removed cap in a small bag and store in safe place.)

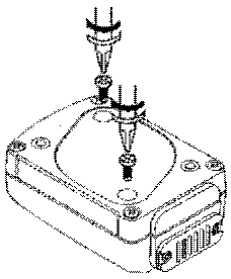
IMPORTANT: Be sure to use the supplied 0-size screwdriver (No. 05CZA619) when screwing or unscrewing the setscrews and tighten the setscrews at a torque of approximately 5 to 10N•cm.
-Unless the connecting cable and the seal are set properly, it may cause incorrect display or loss of waterproof quality

NOTE: Read the manual of the data processing device thoroughly before outputting data for proper operation.
Data output may be disabled if an output request (REQ) is received while the spindle is in motion or if REQ are made at short intervals during a continuous data output.

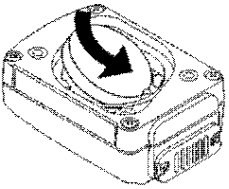
2.2. U-WAVE-T

2.2.1. U-WAVE-T battery replacement

Use Lithium Battery (CR2032).



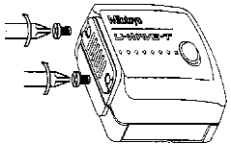
a) Loosen the battery lid setscrews (M 1.7x0.35x4, No. 21ESA049) with the
b) Supplied screwdriver. Do not lose the battery lid, setscrews and packing seal.
c) Remove used battery.
d) Set a new battery with the positive (+) side up.



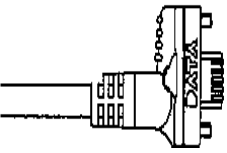
e) Place the battery lid and tighten the lid with the setscrews. (Torque of approximately 5 to 10N•cm)

Replacing battery clears the origin information and [-----] appears in the indicator. Set the origin again. ("4.3 Setting and calling of Preset Value")

2.2.2. U-WAVE-T Data Input/output cable connection



c) After inserting the battery connect the connection cable to the U-WAVE-T.
d) When connecting the cable takes acre that the plug of the connection cable (02AZD791A, B) is correct insert in to the U-WAVE-T.
If the cable is not correct connected so no data will be transmitted.



e) Check if the seal (No. 09GAA374) is in place and then fix the cable with the screws (M1,7 x 0,35 x 2,5/No. A 115-1712C).

3. Setting the digital dial gauge

3.1. Operating

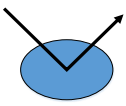
There are 3 buttons on the digital dial gauge

a) The mode button is used for setting the parameters

b) The set button is used to set the dial gauge to zero

c) With the ON/OFF button the dial gauge switched ON or OFF. When the dial gauge is not used for longer time she has to be switched OFF manually, she has no automatic switch OFF mode integrated

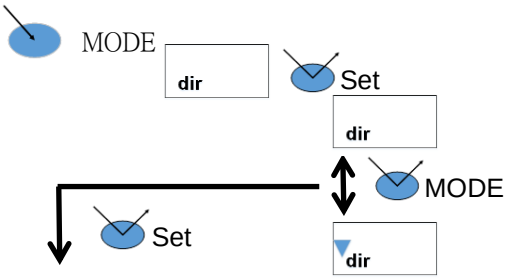
3.2. Setting of basic parameters on the digital dial



Press short (< 1 sec)

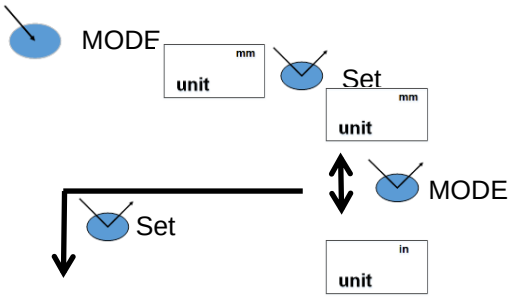
Press and hold (1 sec or more)

3.2.1. Change the counting direction



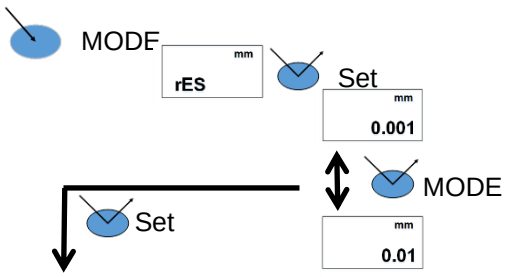
The spindle is descending: positive count
The counting direction must be set on positive count, so there must be no triangle visible on the display under “dir”.

3.2.2. Set the measuring unit (Inch or metric on some types not visible)



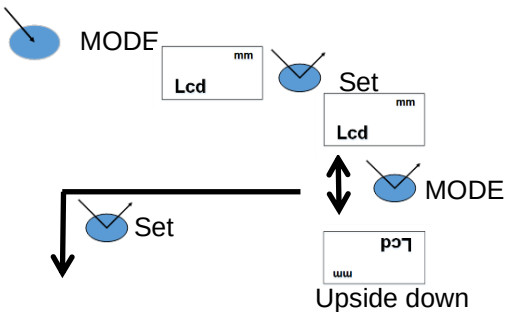
The measuring unit must be set at “metric [mm]”

3.2.3. Set the measuring resolution



The possible resolution setting is 0.01 or 0.001
The measuring resolution has to be set at “0.000” because the Excel sheets calculate wit 0.000

3.2.4. Set display orientation



The display has to be set upside down because the digital gauge will be mounted upside down on the control beam.

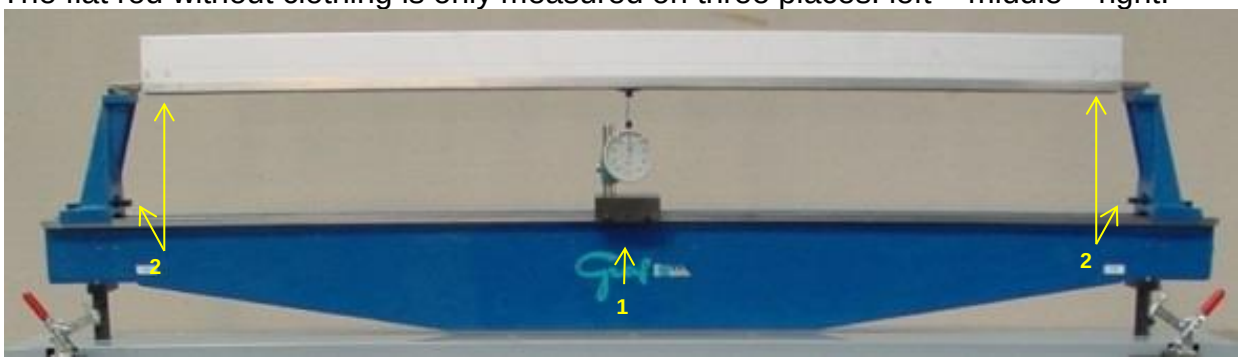
At the end of the programming press the Mode button and hold for >1 sec, so the setting will be adapted and saved.

4. Control beam marking

It is important that all the measurement on the flats is made on the same position for the 40” and 60” flat rod and with flat clothing.
The newest control beams are equip with positioning tape, if only the digital dial was ordered so this positioning tape will be delivered as modification.

4.1. Marking for the flat rod without clothing

The flat rod without clothing is only measured on three places: left – middle – right.

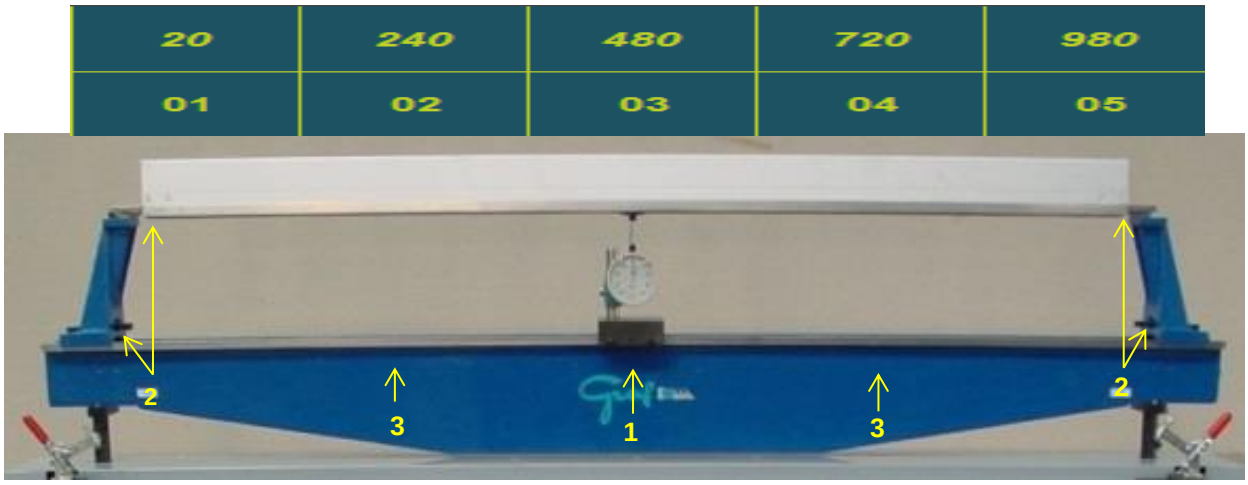


Make the marking in the center of the beam (1), on the left and right hand side adjust the stopper (2) so that the disc of the digital dial gauge is still on the flat rod.

The center marking can be used for both 40” and 60” flat rod without clothing.
The stands on left and right hand side needs to be adjusted depending the flat rod size 40” and 60”.

4.2. Marking for the flat rod with clothing 40”

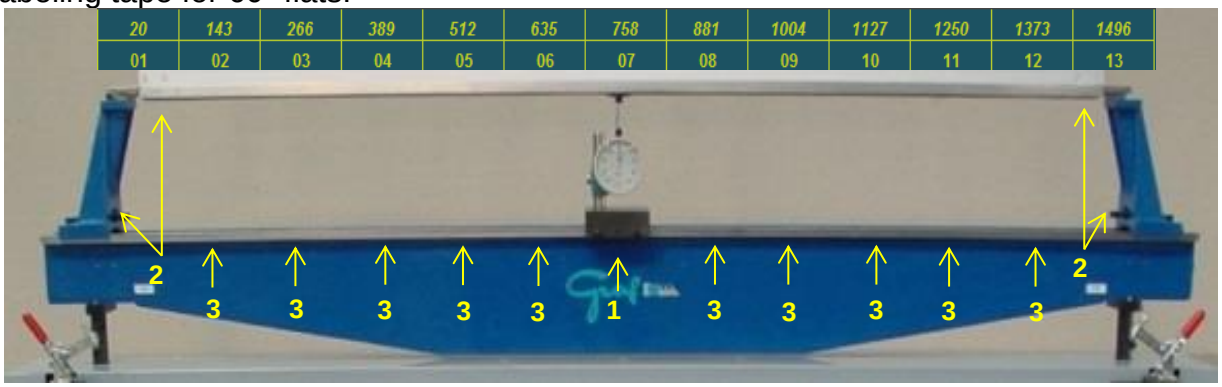
The flat rod with clothing 40” has 5 measuring point. Since 2015, there has been a labeling tape for 40" flats.



The center measuring position (1) can be used again from “Marking for the flat rod without clothing”.
On the left and right hand side adjust the stopper (2) so that the disc of the digital dial gauge is still on the flat rod with clothing.
There is needed to making two more markings (3) 240 mm from the center position on left and right hand side.

4.3. Marking for the flat rod with clothing 60”

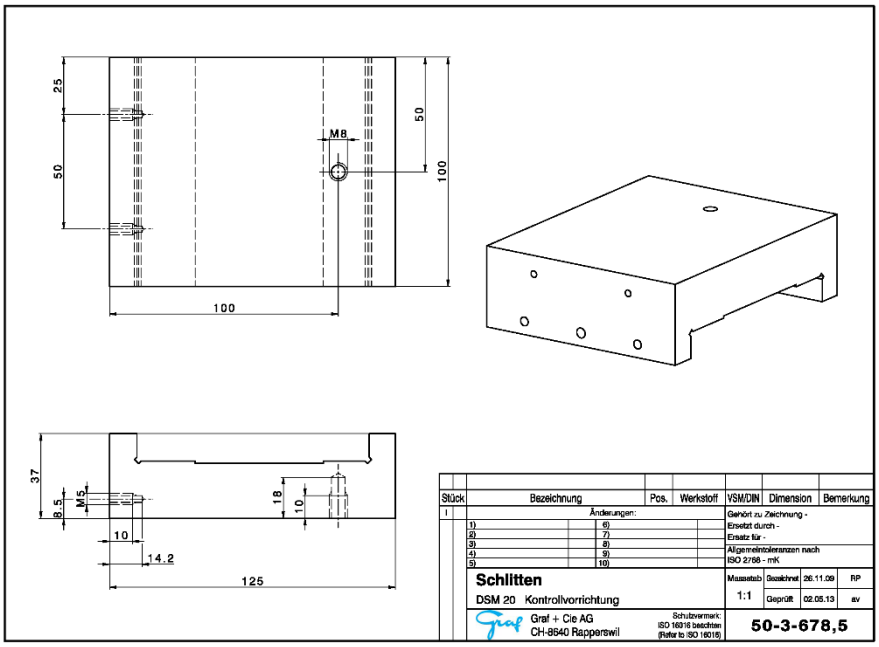
The flat rod with clothing 60” has 13 measuring point. Since 2015, there has been a labeling tape for 60" flats.



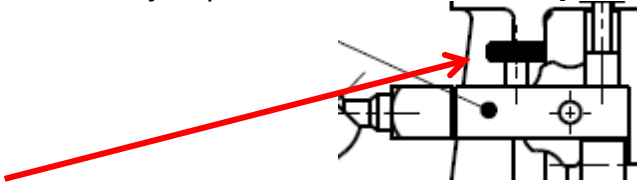
The center measuring position (1) used again from “Marking for the flat rod without clothing” (2).
On the left and right hand side adjust the stopper (2) so that the disc of the digital dial gauge is still on the flat rod with clothing.
There is needed to be making some more markings (3) for position 2 - 6 and 8 - 12.

4.4. Reworking of the slide to mount the digital dial

The older slides of the control beam has to be modify to use the digital dial gauge, some additional threaded holes has to made so the digital dial can be mounted



The digital dial will be mounted on the slide with hinged stand and Micro fine adjustment. It is very important that Micro fine adjust is correct installed.



The screw of the Micro fine adjust must look upwards and never downwards.

5. U-WAVEPAK

5.1. Basic knowledge

5.1.1. Overview

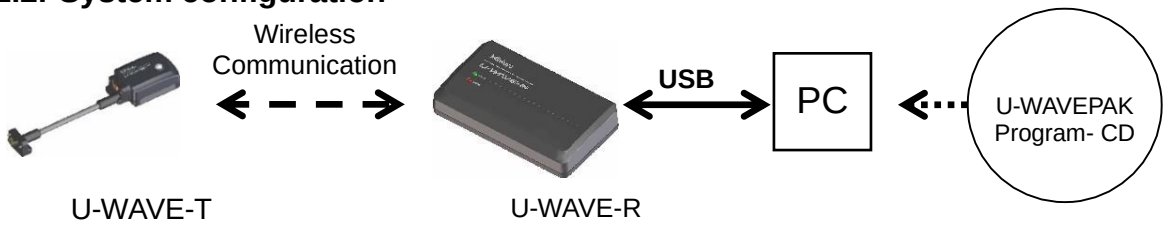
U-WAVE is a wireless communication system.
U-WAVEPAK is the software which supports collection of measurement data from the measuring tool connected to the U-WAVE-T to a computer.

This software has the following purposes.

a) Setup of U-WAVE-R and U-WAVE-T
This software sets up the some information for the wireless communication between U-WAVE-R and U-WAVE-T. That information is controlled by this software.

b) Data I/F with the application software on computer
This software notifies measurement data and the status which were sent from the U-WAVE-T as keyboard emulation data to the application software (Microsoft Excel, etc.) on computer.

5.1.2. System configuration



5.2. Required computer specification

The specifications of the hardware and software required for this program are as follows.

5.2.1. Hardware requirements

- Monitor's resolution is 800 x 600 (or above), color is 256 (or above)
- The free disk space on the hard disk drive above 5Mbytes (The minimum capacity for installation)
- CD-ROM Drive (It is necessary to install this program.)
- USB Ports (It is necessary to connect U-WAVE-R.)

5.2.2. Software requirements

- **Operating System :**

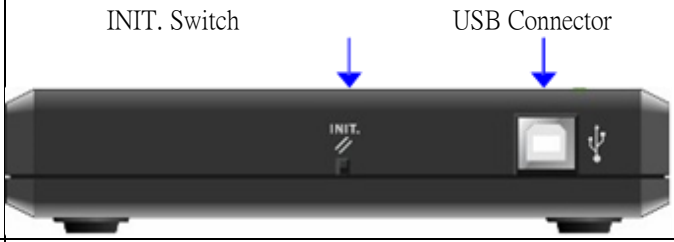
Microsoft Windows 7 (32 or 64bit)
Microsoft Windows 8 (32 or 64bit)
Microsoft Windows 10 (32 or 64bit)

- **Software application**

Microsoft Office 2010 (Excel) only 32bit version

5.3. Specification of U-WAVE-R

The specifications of the U-WAVE-R are as follows.

Items	Specifications
Nomenclature (Top)	
Nomenclature (Back)	
LED	Green (POWER) / Red (ERROR)
Switch	INIT. Switch (for resting to factory default)
I/F with PC	USB Connector (Series-B, Female) USB 2.0 (Full-Speed)
Power supply	Bus-power by USB (It is supplied from PC via USB cable.)

IMPORTANT: Use the 'Self-powered USB hub' when you connect the U-WAVE-R with PC via the USB hub.
Even if the power of the U-WAVE-R is turned off, information memorized in the U-WAVE-R is preserved.

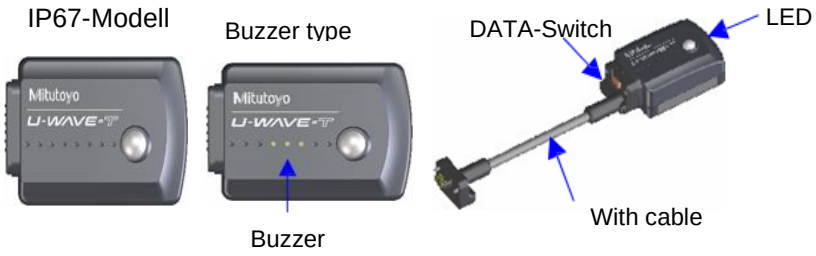
The status of the U-WAVE-R and the status of LED are as follows.

Status of LED	Status of U-WAVE-R
Green LED - ON Red LED - OFF	The power of the U-WAVE-R is turned on. The U-WAVE-R is working.
Green LED - Blinks Red LED - Blinks	The U-WAVE-R is a factory default state. Another U-WAVE-R to which same 'Group ID' and 'Band ID' are registered is detected.
Green LED - Blinks Red LED - OFF	The U-WAVE-R is processing 'All Band ID scan'. (The time required of 'All band ID scan' is about 10 seconds.)
Green LED - ON Red LED - Blinks	Warning! The U-WAVE-R cannot be used. (The power voltage value supplied by PC has reduced.)
Green LED - OFF Red LED - OFF	The power of the U-WAVE-R is turned off.

IMPORTANT: LED doesn't light when the device driver is not installed.

5.4. Specification of U-WAVE-T

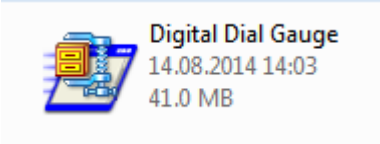
The specifications of the U-WAVE-T are as follows.

Items	Specifications
Nomenclature	
LED	Green / Red / Orange
Switch	DATA Switch
Battery	Lithium coin cell battery(CR2032) : 1piece

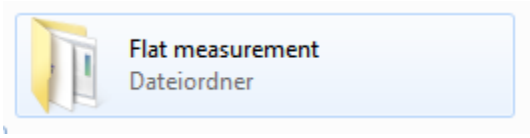
IMPORTANT: Even if the battery in the U-WAVE-T empties, information memorized in the U-WAVE-T is preserved.

6. Software Installation

Copy the “Digital dial gauge.exe” to “My Documents” folder on your hard disk and extract.

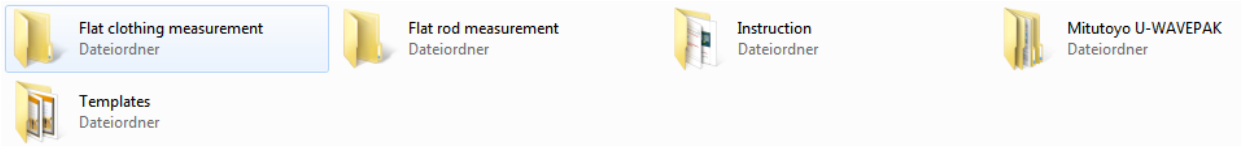


If extracted it will create new folder “Flat measurement”



Inside this folder are some more Executable Files
Extract each of the files and there will some additional folder created.
After all files are extracted you can delete them. (Maybe keep a backup of the Digital Dial Gauge.exe.

At the end it should look like this in the folder Flat measurement:



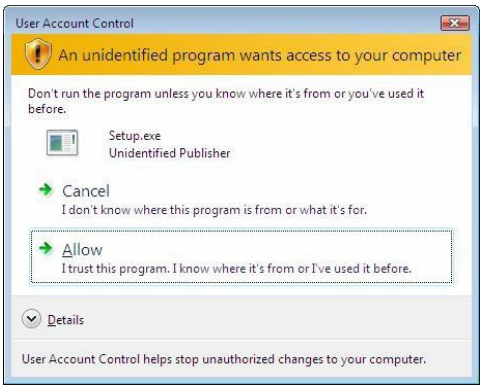
- Folder
  - Flat clothing measurement: here you could store the all the measurement of flat with the clothing. (Example: Year, Month…)
  - Flat rod measurement: here you could store the all the measurement of flat with the clothing. (Example: Year, Month…)
    But it is your choice how the measurement of flat bar should be stored.
  - Instruction: here are all the instruction manuals what has information stored how to measure flat bar also the instruction of Rieter how to handle Rieter C 60 and C 70 flat bars.
  - Mitutoyo U-WAVEPAK: this the folder with the Mitutoyo U-WAVEPAK software
  - Templates: here are the templates are stored what are need for measuring.

6.1. Installation of U-WAVEPAK program

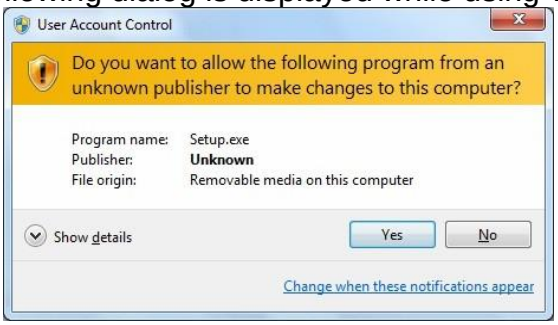
IMPORTANT: **Log in to Windows by “Administrator”**
Do not connect the U-WAVE-R with PC until the operation of 10) is completed.

a) Go to My Documents\Flat measurement\Mitutoyo U-WAVEPAK\Setup
b) Run 'Setup.exe' in the 'Setup folder’

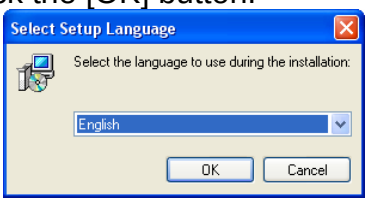
Select [Allow] when the following dialog is displayed while using Windows Vista.



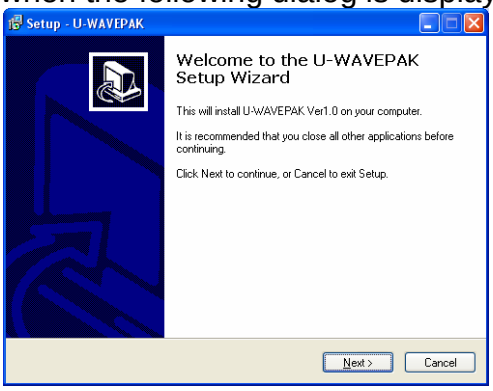
Select [Yes] when the following dialog is displayed while using Windows 7.



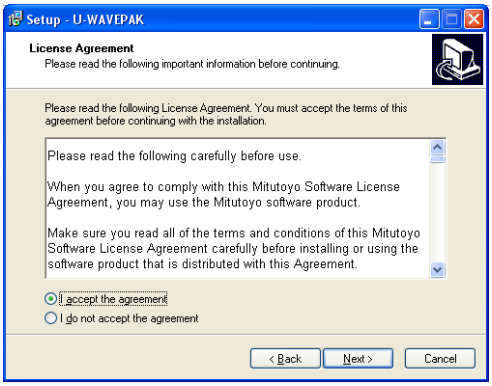
c) Select language and click the [OK] button.



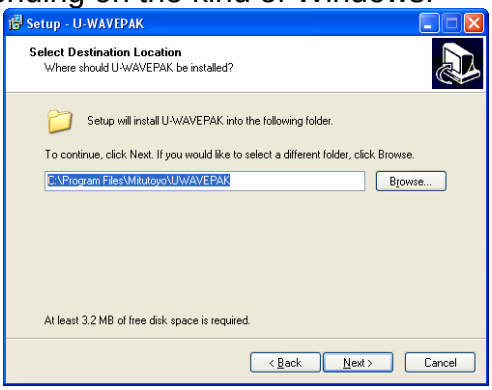
d) Click [Next] button, when the following dialog is displayed.



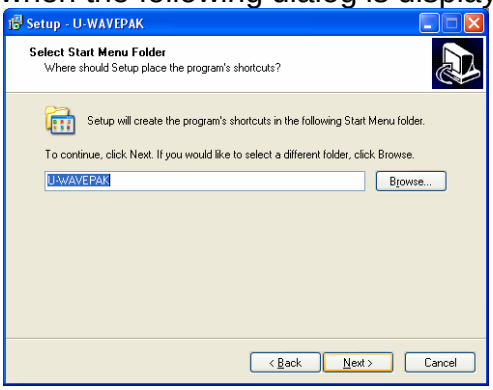
e) When the following dialog is displayed, select [I accept the agreement] and click [Next] button.



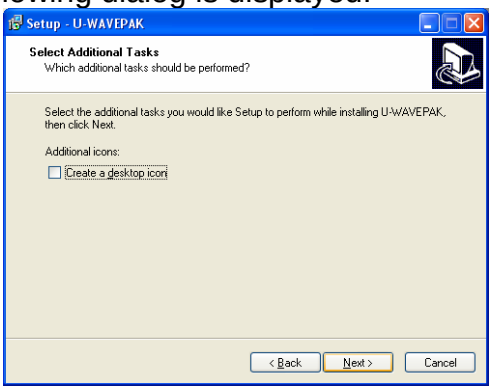
f) Click [Next] button, when the following dialog is displayed.
The folder is different depending on the kind of Windows.



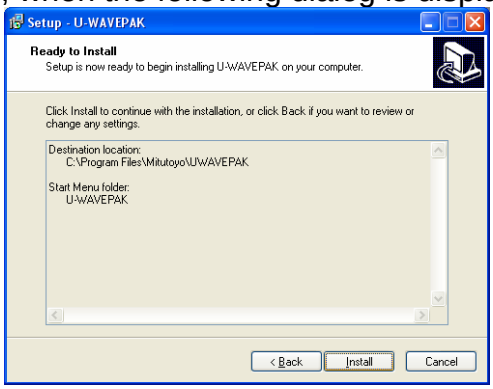
g) Click [Next] button, when the following dialog is displayed.



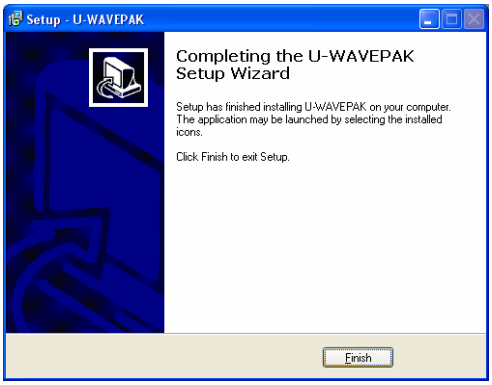
h) If you like to have desktop icon then click on the checkbox and then Click [Next] button, when the following dialog is displayed.



i) Click [Install] button, when the following dialog is displayed.



j) When the following dialog is displayed, click the [Finish] button to exit installation.



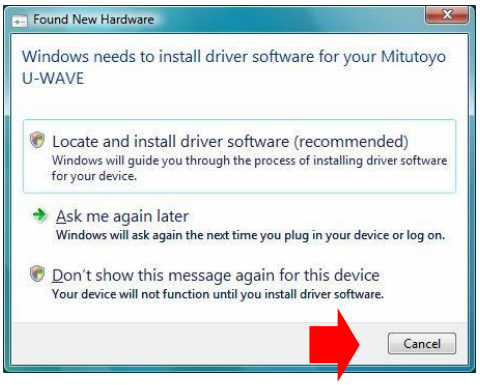
6.2. Installation of device driver

6.2.1. Windows 7, 8 & 10

IMPORTANT: **Log in to Windows by 'Administrator'.**

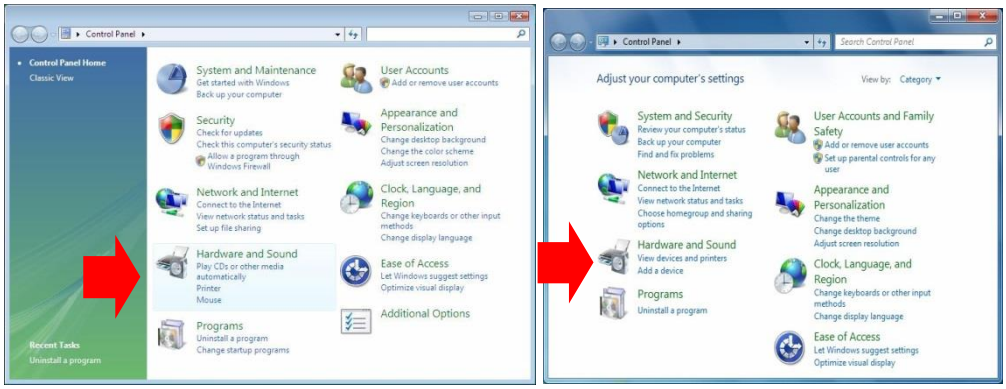
a) Connect a U-WAVE-R to the USB port of PC.

b) Select [Cancel] when the following dialog is displayed while using Windows Vista.



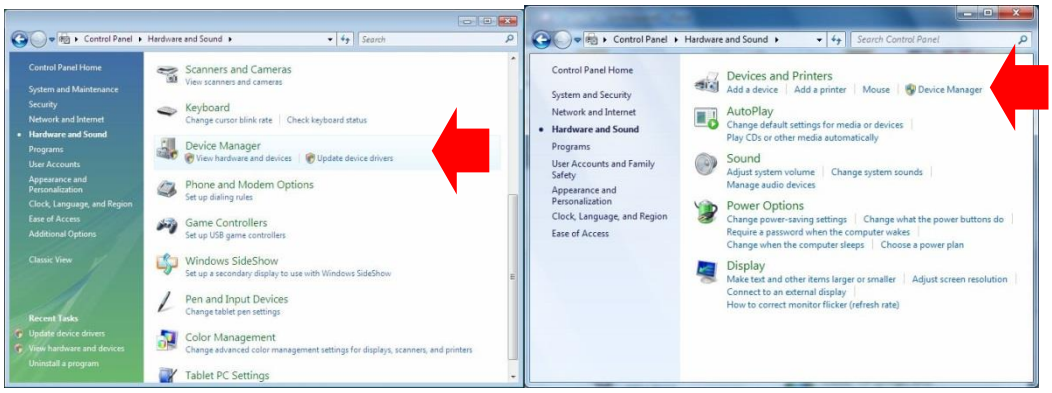
c) Open [Control panel]-[Hardware and Sound] of Windows.

<Windows Vista> <Windows 7>



d) Open [Hardware and Sound]-[Device Manager] of Windows.

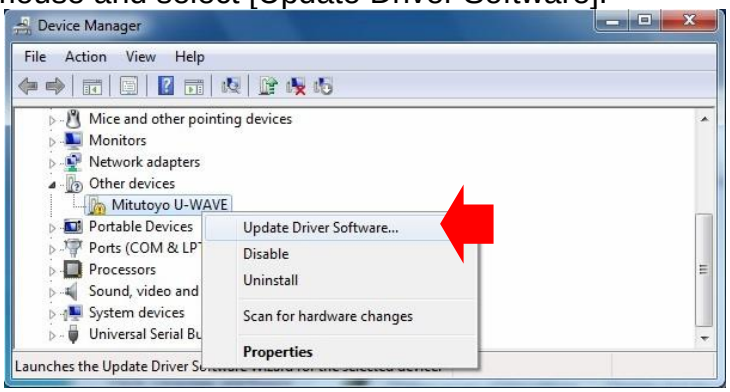
<Windows Vista> <Windows 7>



e) Click [Other devices].

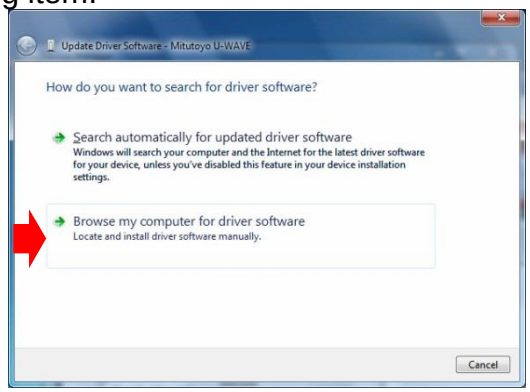
Point the cursor to [Mitutoyo U-WAVE].

Right-click in the mouse and select [Update Driver Software].

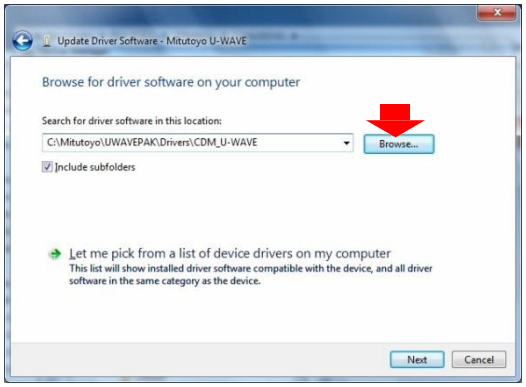


If [Mitutoyo U-WAVE] or [USB Serial Port] is not displayed in [Other devices], the device driver has already been installed. Therefore, close [Device Manager] and end the installation of the device driver.

f) Select the following item.



g) Click [Browse] button.



h) In the following dialog, specify the driver to install.

Specify [\Drivers\CDM_U-WAVE\] folder in CD or an installation folder.
Click the [OK] button after specifying the driver. And click the [Next] button in the dialog of 7).

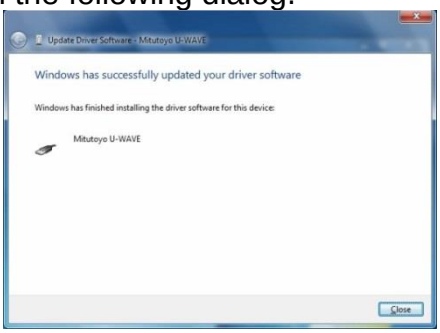
IMPORTANT: Two kinds of following drivers are automatically installed.

a) Driver for VCP (Virtual COM port)
b) Driver for direct USB

When starting, U-WAVEPAK can select either driver.
Please use the driver supported by the application software if you connect the U-WAVE-R with the application software other than U-WAVEPAK.
It is necessary to include special DLL (FTD2XX.lib) into the application software to use the driver for direct USB.

i) Select the following item.

j) Click [Close] button in the following dialog.



7. Windows System configurations

7.1. Default printer setting

Depending of the printer type what is installed on your system it can cause malfunctioning of the excel sheet, if the excel sheet start with some;

"Run Time Error"

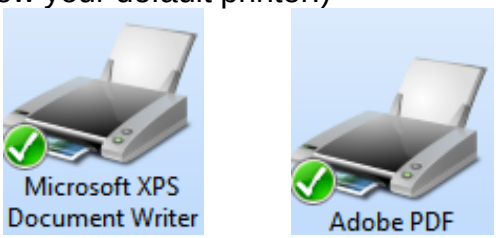
Is mainly cause by the faulty printer driver!

In this case the default printer has to be changed to;

"Microsoft XPS Document Writer" or some PDF Printer is installed.

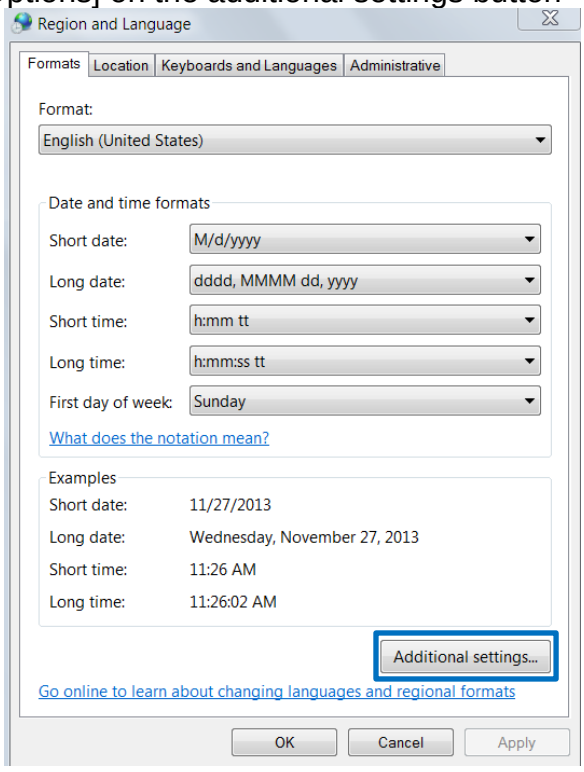
7.1.1. Select a new default printer

1. Open Devices and Printers by clicking the **Start** button, and then, on the Start menu, clicking **Devices and Printers**.
2. Right-click on **"Microsoft XPS Document Writer" or PDF Printer**, and then click **Set as default printer**. (You'll see a check mark on the printer's icon signifying that it's now your default printer.)

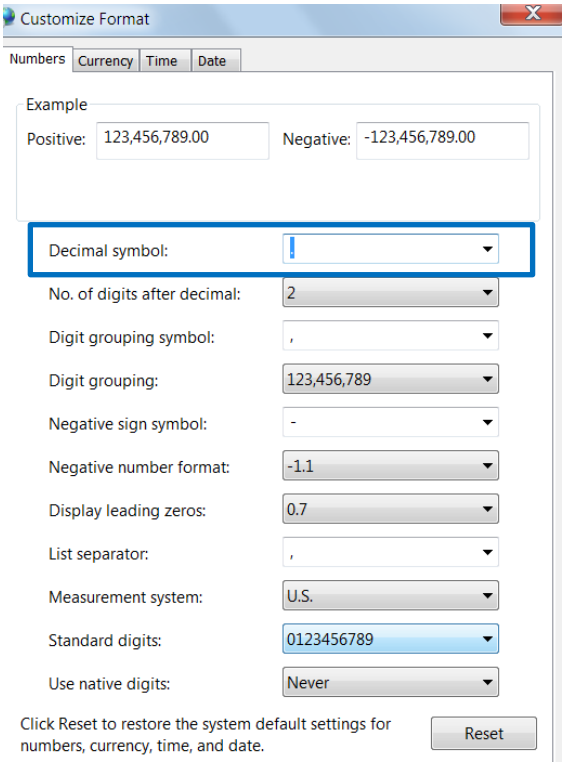


7.1.2. In case of Windows 7, 8 & 10

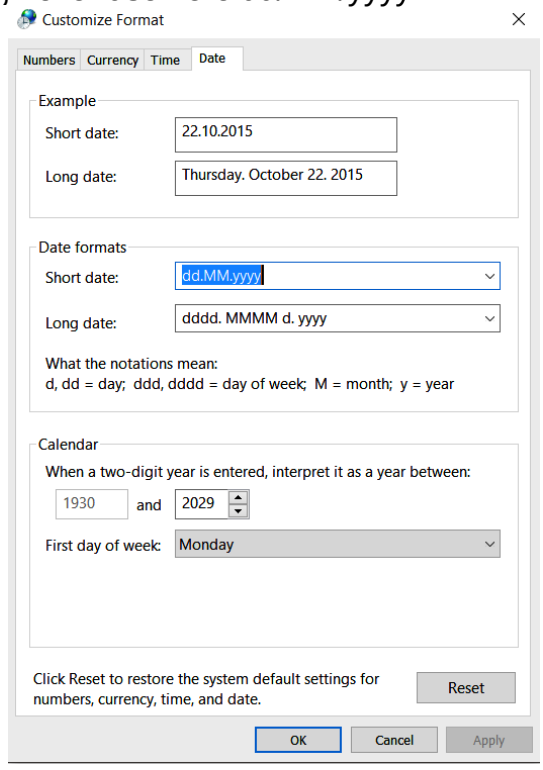
a) Specification on the Windows 7, 8 & 10 system setting [Control Panel]-[Region and Language Options] on the additional settings button



b) The Customize Format will open, select the Number tab and change the decimal symbol to point.



c) Select the Date tab and change date format short date to **“dd.MM.yyyy”** or **“dd-MM-yyyy”,** never use here dd/MM/yyyy.

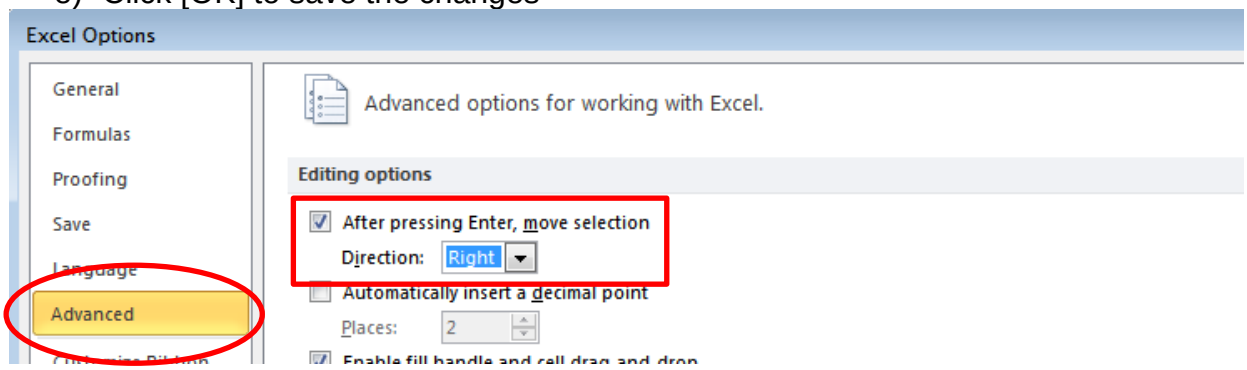


Click the OK button to save the changes.

7.2. Excel 2010 configuration

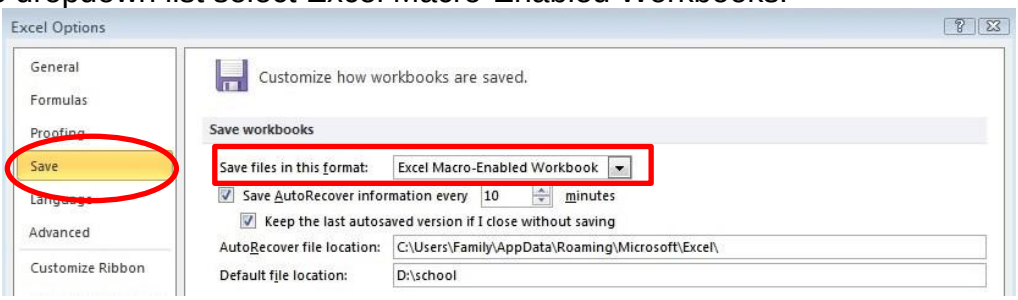
7.2.1. Setting the selection direction

a) Open the Excel
b) Under the File tab click on options, the [Excel Options] dialog box appear
c) Click on Advance
d) In the Advance options under [Editing options] the options [After pressing Enter, move selection Direction] must be set [Right]
e) Click [OK] to save the changes



7.2.2. Save option

Select Save option, here all the default setting are made for saving the excel files
In the Save options under [Save workbook] the options [Save files this format] select from the dropdown list select Excel Macro-Enabled Workbooks.



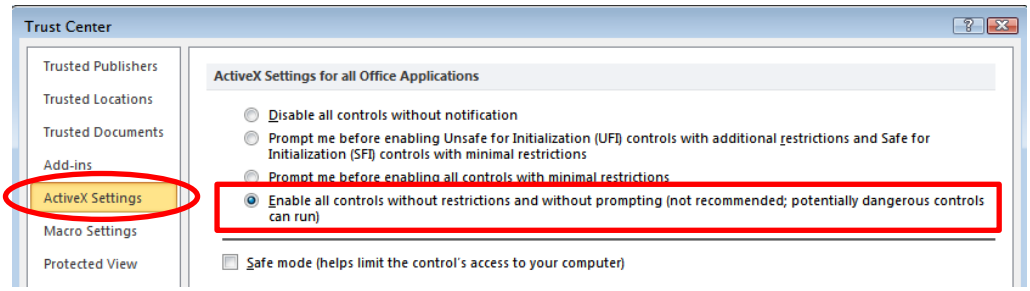
With this setting from now on all workbook will be save with Macro enabled.

7.2.3. ActiveX and Macro monitoring

The default setting of Macros in the Excel is set to “all macros deactivated so there will appear some information of the trust center when open one of the supplied excels sheets for measuring the flats.

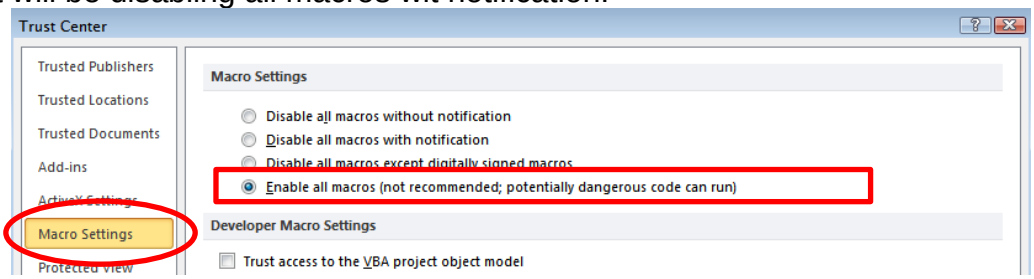
Select trust center option and select Trust center settings.

Select ActiveX settings, in the ActiveX Settings for all Office application can be chosen which setting is suitable for you system.



If the setting is chosen as above in the picture so all ActiveX control will enabled, but this setting dangerous.
You have to choose be yourself about the setting.

Select Macro settings, at the macro settings can be chosen if they are started or not. Default will be disabling all macros wit notification.



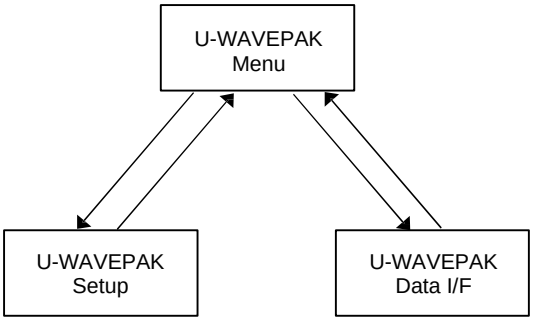
With the setting above all macros are enabled, but it is dangerous because macros can contain computer virus. You have to choose be yourself about the setting.

8. U-WAVEPAK software

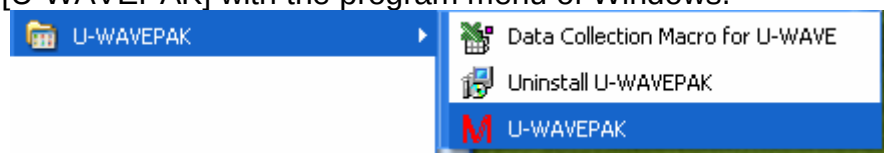
8.1. Start of menu dialog

IMPORTANT: Start this program after connecting U-WAVE-R to the USB port on PC.

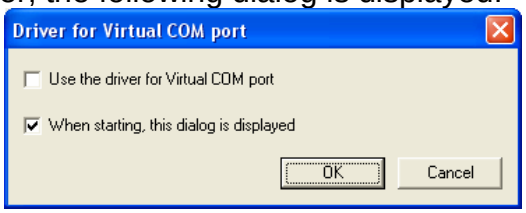
Do not pull out the USB cable during program execution.
U-WAVEPAK can switch between [Setup] function and [Data I/F] function via the menu dialog.



a) Click [U-WAVEPAK] with the program menu of Windows.



b) To specify the driver, the following dialog is displayed.



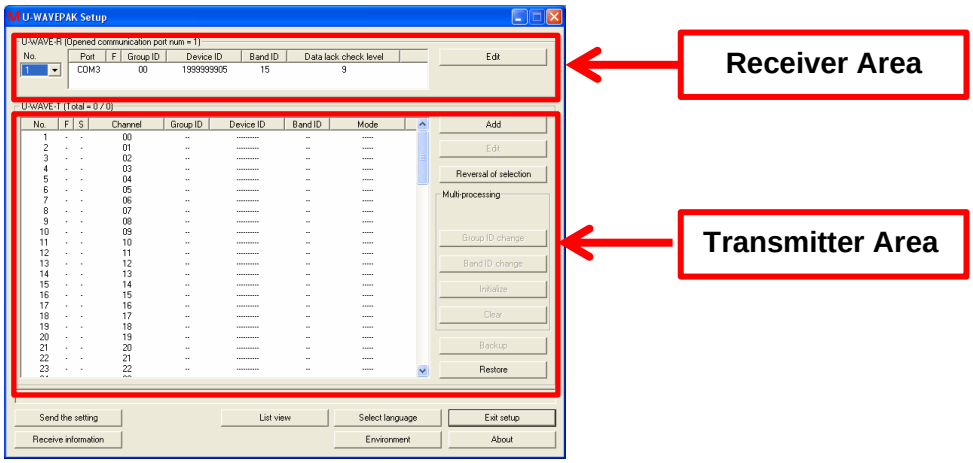
If the [Use the driver for Virtual COM port] check box is turning off, the driver for direct USB is used.
If the [Use the driver for Virtual COM port] check box is turning on, the driver for VCP is used.
If you do not want to display this dialog at the next start, turn off the [When starting, this dialog displayed] check box.

Click the [OK] button to decide the state of the check box on this dialog. These settings are memorized to the system.

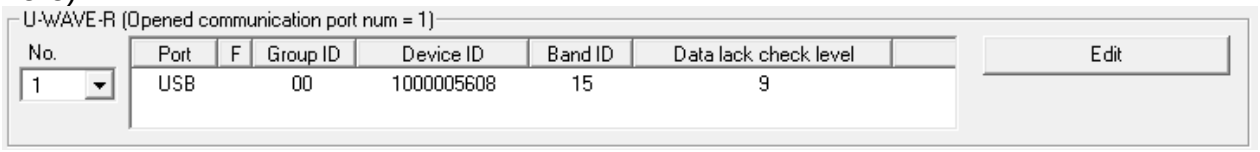
c) The following menu dialog is displayed.

8.2. Addition of U-WAVE-T

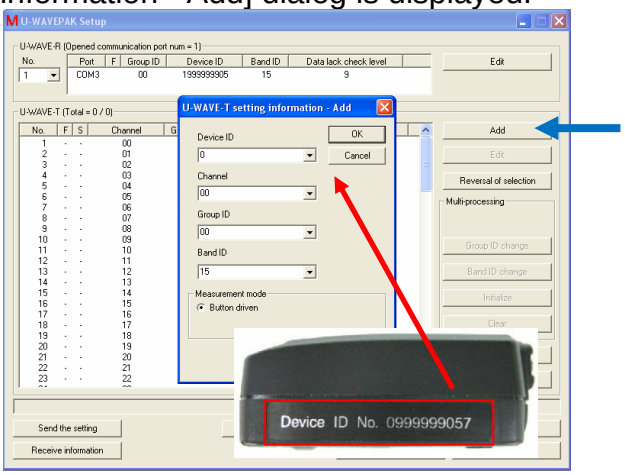
a) Click the [Setup start] button in this dialog; this will open the U-WAVEPAK Setup dialog.
The upper part of the window show the receiver what is installed and at the lower part the transmitter can be added.



In these dialog window on the top is the U-WAVE-R listed (no change need to be made here)



b) Click [Add] button on the following dialog to add U-WAVE-T. After that, [U-WAVE-T setting information - Add] dialog is displayed.



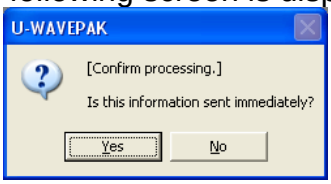
Specify the following values on [U-WAVE-T setting information - Add] dialog.

1) Input the value of device ID printed on U-WAVE-T to [Device ID]. Device ID is an identification value of each U-WAVE-T.

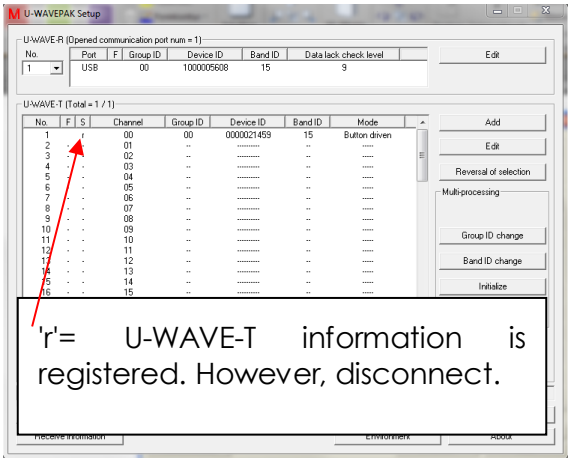
2) Select [Channel] registered to the U-WAVE-T. The range of the selection is 00-99, leave at 00.

3) Select the same value as the U-WAVE-R about the value of [Group ID] and [Band ID].

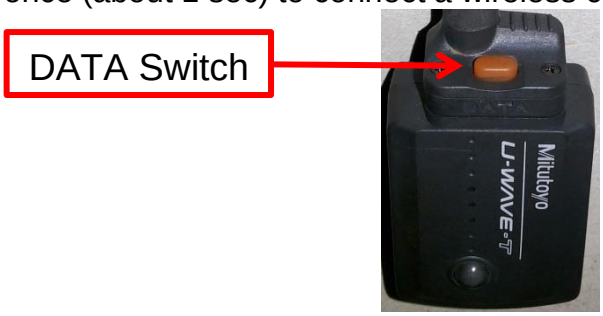
When [OK] button is clicked, the following screen is displayed. And, click [Yes] button.

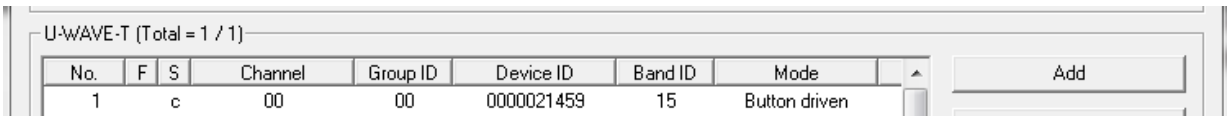


c) When information for U-WAVE-T is registered to U-WAVE-R, the following dialog is displayed



In this state, the communication by the wireless between the U-WAVE-R and the U-WAVE-T is not connected. Therefore, push the orange button [DATA switch] on the U-WAVE-T once (about 1 sec) to connect a wireless communication.





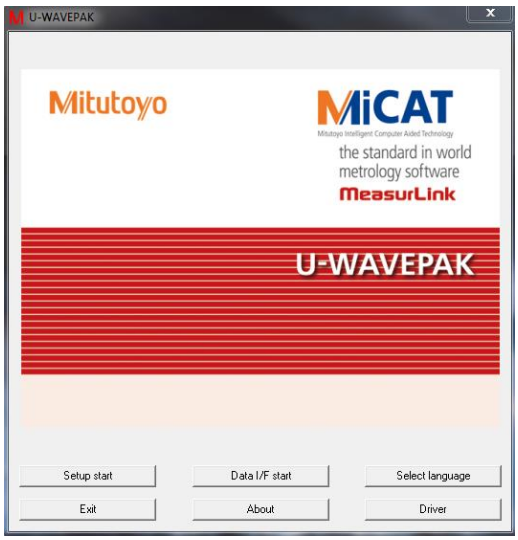
'S' row in this dialog changes from 'r' to 'c' when a wireless communication succeeds. ('c' = wireless communication is connected.)

The registration and connection of the U-WAVE-T with the U-WAVE-R has been established.

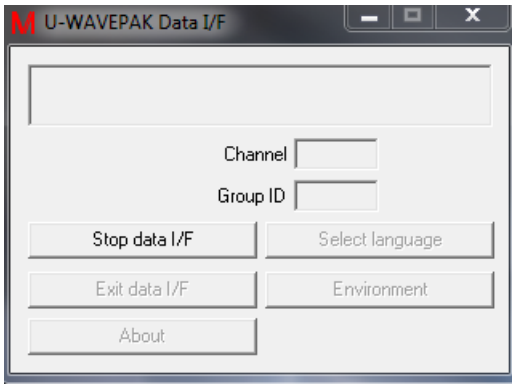
d) Click [Exit setup] button on the on the dialog window to close the U-WAVEPAK setup.

8.3. Data transfer

To start the data transfer click the [Data I/F start] button in this dialog to start collect the data from the measuring tool connected with U-WAVE-T



The data transfer software will be started minimize  in the taskbar.



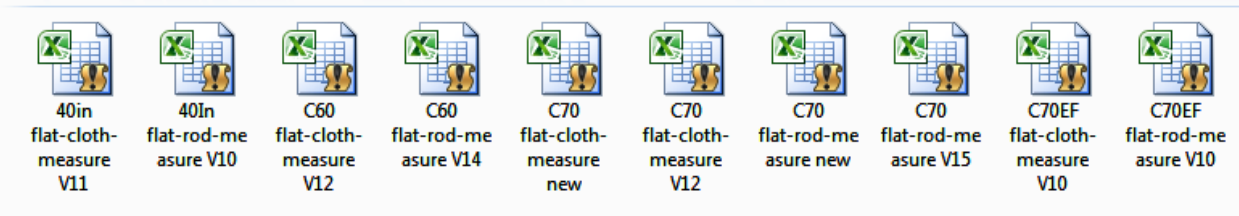
Now the system is ready to transfer data from the Digital dial gauge to Excel worksheet.

9. Handling the Excel sheets

The latest excel sheets has to be requested from info@graf-companies.com

9.1. Excel Sheets templates

The excel templates are stored under “My Documents\Flat measurement\Templates”



Use all the time the correct template file type for measuring, if the wrong template file would be used as the evaluation at the end of measuring would be wrong and maybe some damage can be cause: such as crash flat with cylinder wire on the machine

9.2. Excel sheet type

There are 8 different excel worksheet available, at the end of the file is one letter and some number, example: measurement flat clothing C60 **V08** this is only the file version number and has nothing to do with the version of the machine.

measurement flat rod	measurement flat clothing
40In flat-rod-measure V## C60 flat-rod-measure V## C70 flat-rod-measure V## C70EF flat-rod-measure V##	40in flat-cloth-measure V## C60 flat-cloth-measure V## C70 flat-cloth-measure V## C70EF flat-cloth-measure V##

Explanation:

40inch: **This worksheet can be used to measure all 40 inch flat cards**

Example: Rieter C 1/1 – C 51, Trützschler DF700 – TC07, Jingwei Qingdao 1181/C - JWF 1207, Jingwei Zhengzhou FA221 – JWF1204, Jinsheng Saurer JFA226 – JFA228, Crosrol MK2 – MK7, Lakshmi C1/3 - LC333, Marzoli C20 – C601 SN……

C60: **For Rieter C 60 flat type only**

C70: **For Rieter C 70 flat type only**

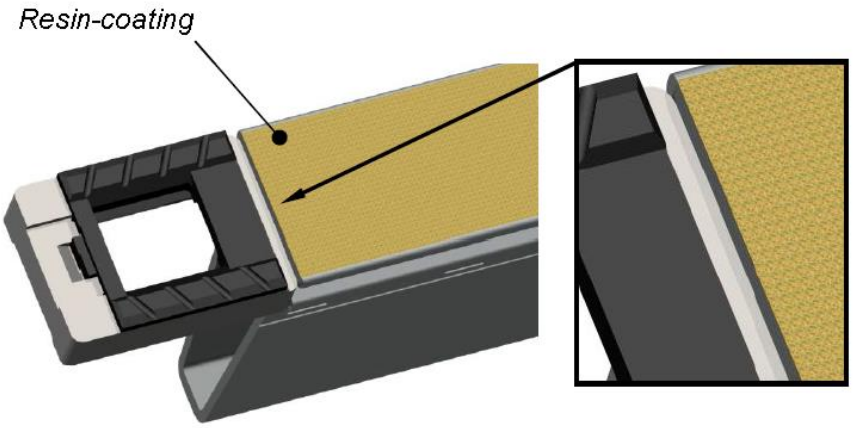
C70 EF: **For Rieter C 70 EF flat type only**

Rieter flat rod version type C 60

Card flat rod C60 type 1
No groove.

0.0 mm (even)

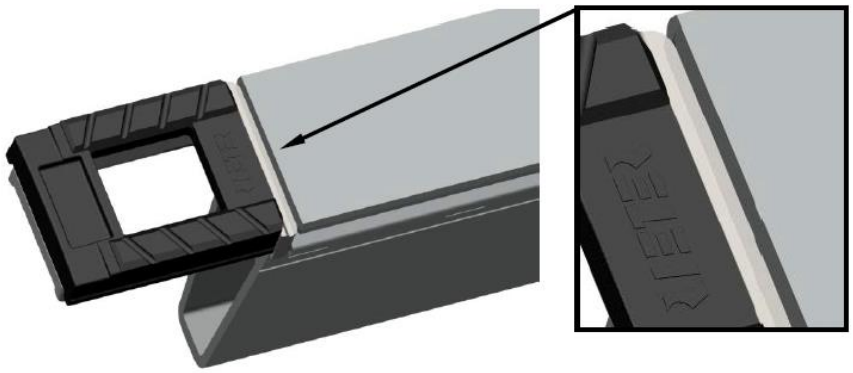
Tolerance Limit +0,05mm



Card flat rod C60 type 2
No groove.

0.0 mm (even)

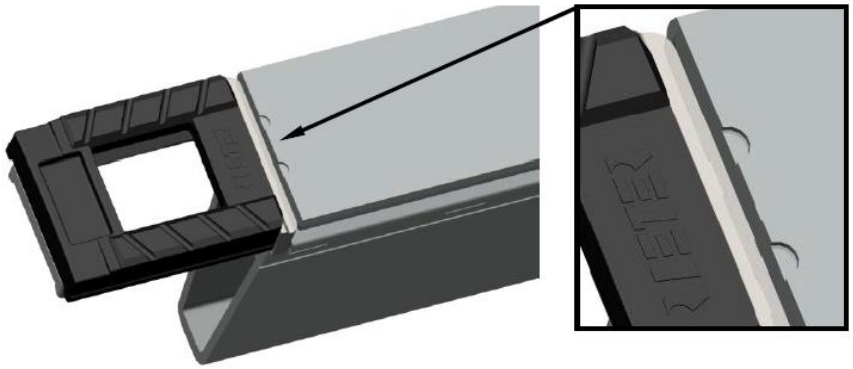
Tolerance Limit +0,05mm

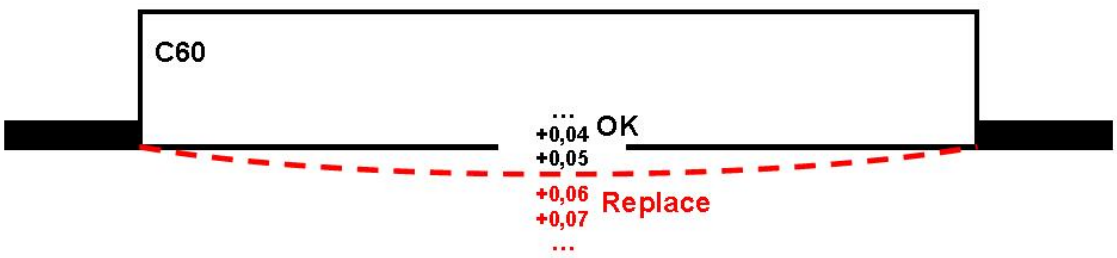


Card flat rod C 60 type 3
Two grooves

-0.05 mm (concave)

Tolerance Limit +0,05mm



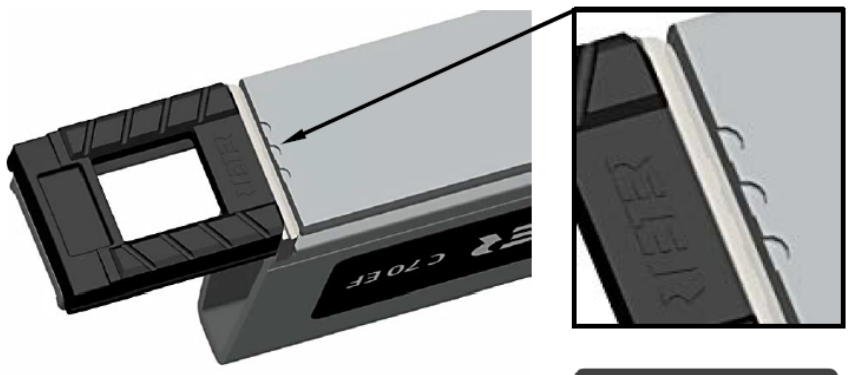


Rieter flat rod version type C 70

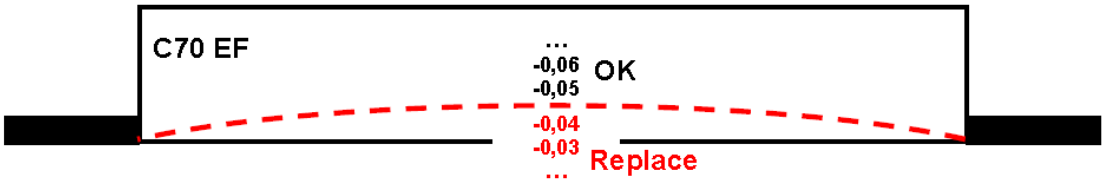
Card flat rod C70 EF
Three grooves

-0.10 mm (concave)

Tolerance Limit -0,05mm



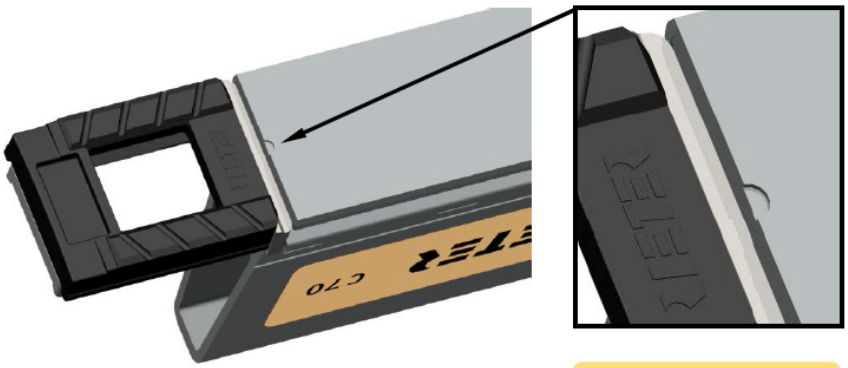
EF = extra fine yarn

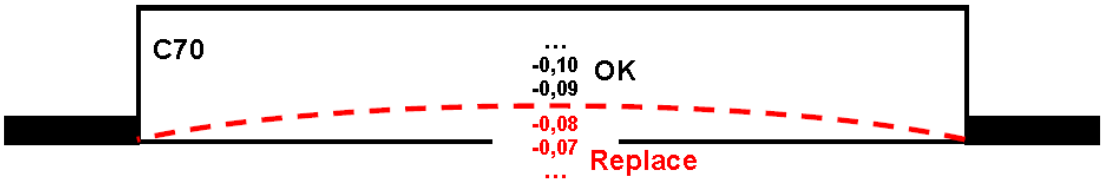


Card flat rod C70
One groove

-0.14 mm (concave)

Tolerance Limit -0,09mm



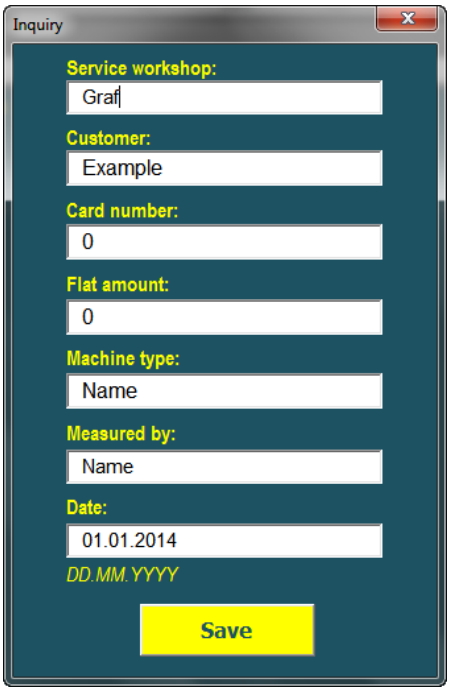


9.3. Excel function

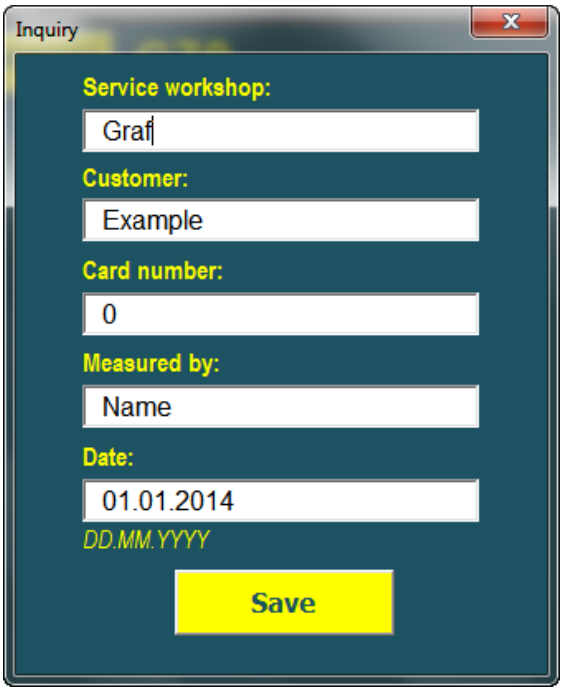
9.3.1. Measurement flat rod template

When starting the excel measurement flat rod template there will appear the Inquiry dialogue **(if there would be any "Run Time Error", please go back to part 6.3 Default printer setting)**

Measurement flat rod 40in



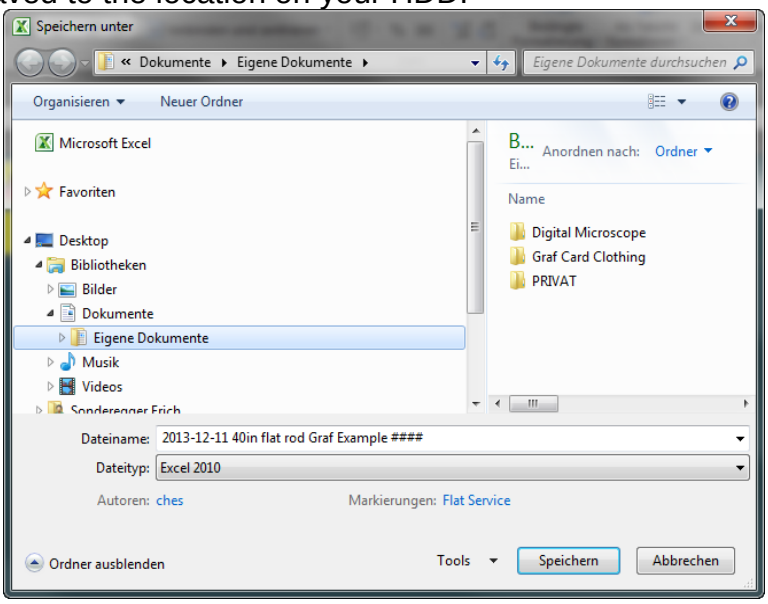
Measurement flat rod C60, C70, C70 EF



All the required data must be filed in to the field's, it is important to fill-in this data, because out of this data Excel programming will generate the file name when the save button is pressed.

Important: The date must be insert according the required format DD.MM.YYYY, if it is wrong insert so there will be an error massage.

After pressing Save button on the Inquiry dialogue, the save dialogue will open; now the file can be saved to the location on your HDD.

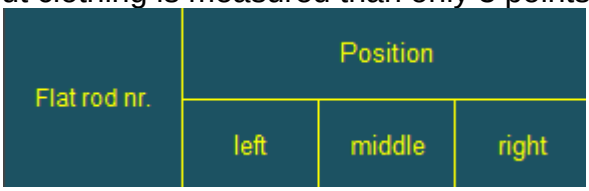


After clicking on save the excel file will be ready and the measurement can be started.

From now on there should be gloves worn when measuring flat bars.

9.3.1.1. Flat rod measuring

When the flat rod without clothing is measured than only 3 points will be measured:

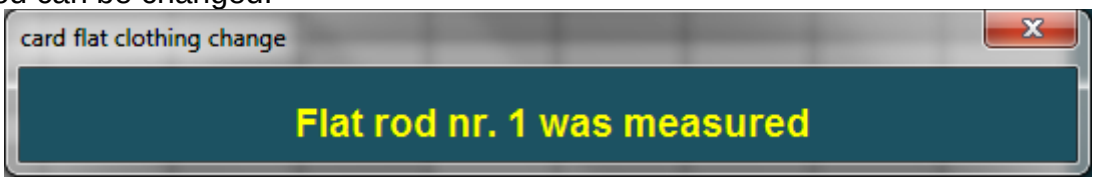


a) Move the slide with the digital dial gauge to the left on side (marked 1. Position), place the first flat rod on to the control beam and then press the “Set” button on the digital dial gauge, so the system set to zero.

Important: This zero setting has to be made only on the beginning of each flat rod set measuring at the first flat in left position.

b) Then move the slide to middle of the measuring beam (marked position center of the flat rod) and press the orange button on the U-WAVE-T: so the digital dial gauge will make the measurement and transfer the measured data in to the excel sheet.
c) After move the slide to outer right hand side on to the marking and press again the orange button on the U-WAVE-T.

So the first flat has been measured, there will appear an information massage and the flat rod can be changed.



Remove the flat rod, move the slide to left hand side and place the second flat rod on to the control beam, than press the orange button on the U-WAVE-T, move the slide to middle position press the orange button again, move the slide to right hand side and press the orange button again.
Each time the flat rod measuring (3 positions) has been made the information massage appear that the flat rod can be changed.
Measure the whole set of flat rod as describe here.

9.3.1.2. Evaluation of the measuring

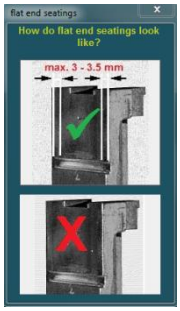
After the measuring of the flat set has been finished so the evaluation has to be made, press the evaluation button.

After the evaluation button has been pressed the window about the flat end condition will appear.

Here chose the Flat head condition be clicking on the pictures.

Rieter C 60, C 70 EF & C 70

40in



The programming will now make the evaluation and after it created a PDF file (same location as the Excel file) with the Measurement-, Chart-, Evaluation data and the front page.

This PDF file could be used later if there would be any problem with the flat and could be send to Graf for investigation.

Important: Before measuring of the flat rods the condition of the flat end has to be check, if the slide shoe of Rieter C 60, C 70 EF, C 70 are worn out, if the worn out change them and make milling in advance before measuring, the same is on the cast iron flat ends if the seating's are bigger than 3.5 mm also the milling has to be carried out in advance.

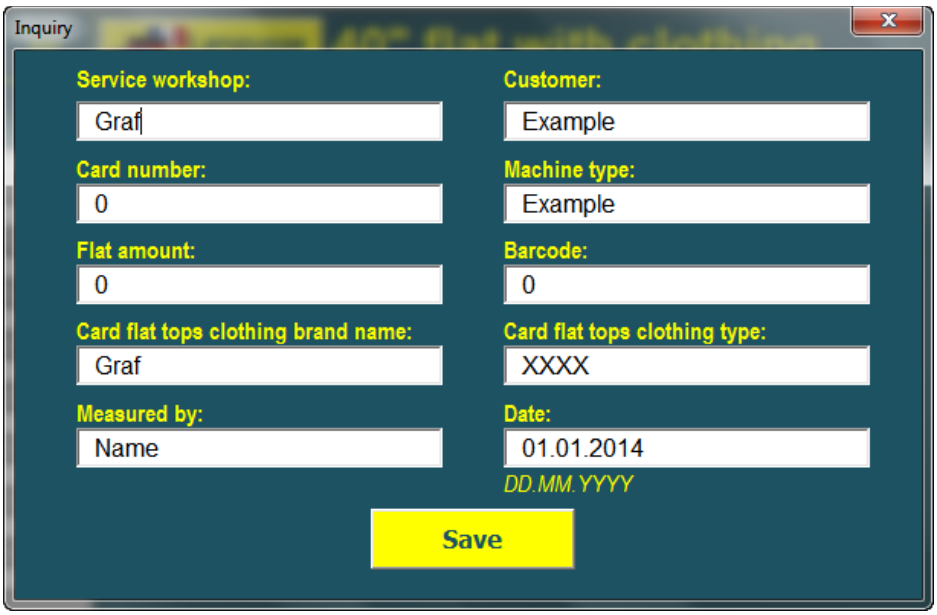
In the whole set there should be not more than 0.05 mm variation, if needed than milling of the flat ends has to be done at Rieter C 60, C 70 EF, C 70 or cast iron flat. Alu flat bar with pin can't be milled, if the variation is to big the only solution is to replace the flat rod.

9.3.2. Measurement flat clothing template

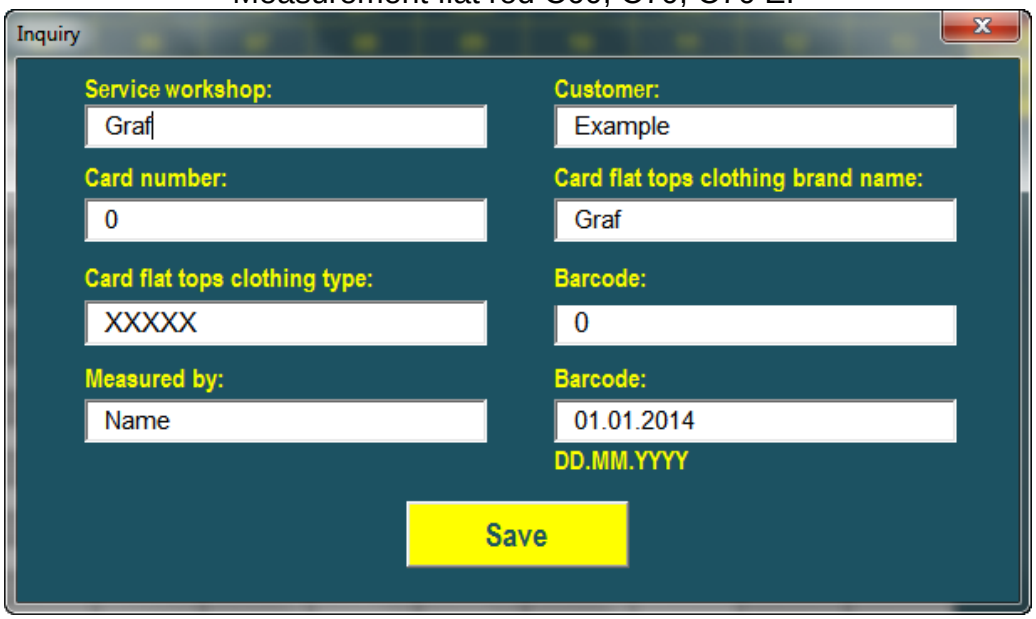
9.3.2.1. Measurement flat clothing sheet

When starting the excel measurement flat clothing template there will appear the Inquiry dialogue:

Measurement flat rod 40in



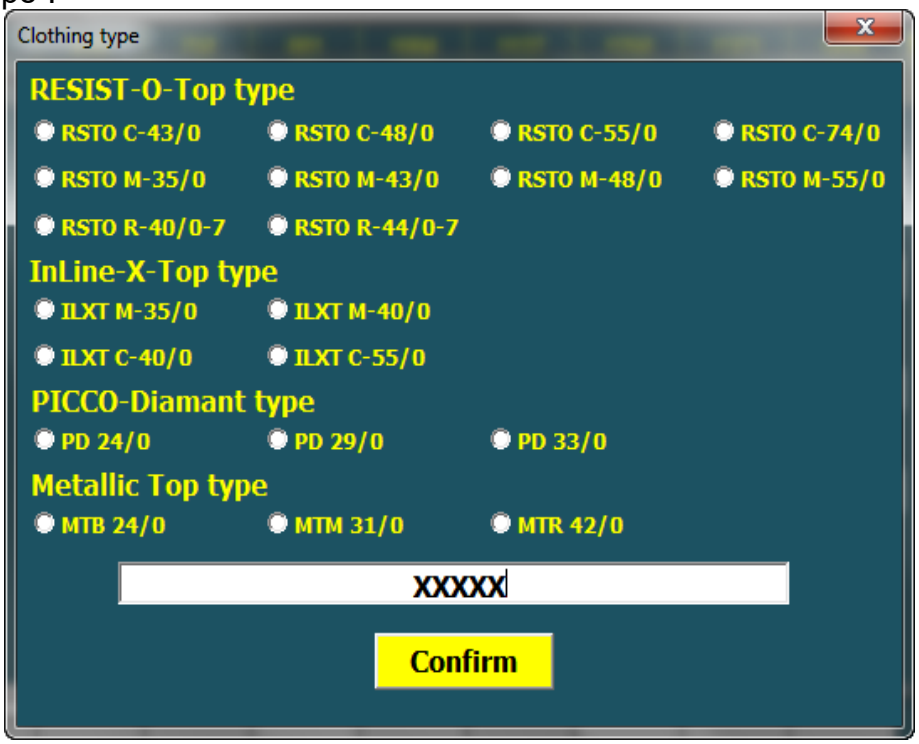
Measurement flat rod C60, C70, C70 EF



All the required data must be filed in to the field's, it is important to fill-in this data; because out of this data Excel programming will generate the file name when the save button is pressed.

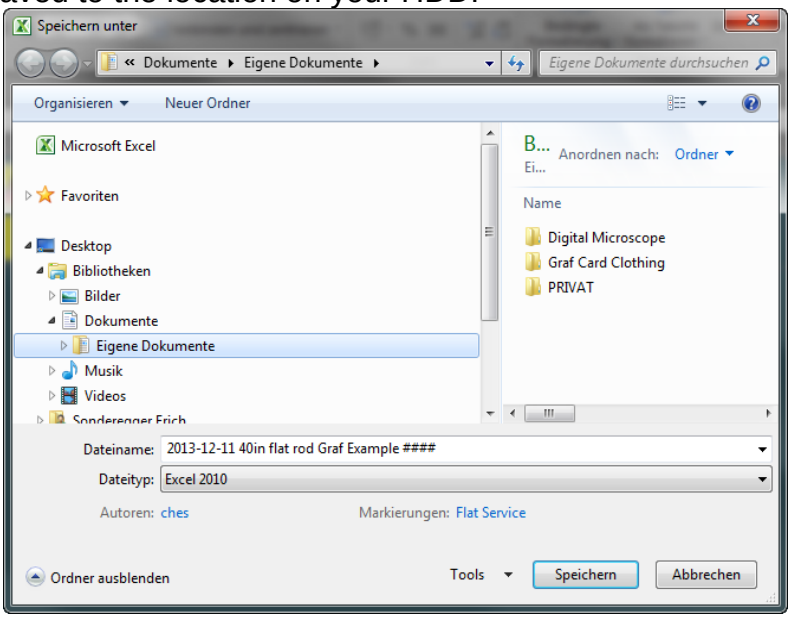
Important: The date must be insert according the required format DD.MM.YYYY, if it is wrong insert so there will be an error massage.

If on the "Card flat tops clothing type" field is click there will appear new window "Clothing type".



Here can be chosen the flat type what will be installed from Graf or if there is competitor product is used so it can be written in the field with the "X" and then the confirm button needs to be pressed.

After pressing Save button on the Inquiry dialogue, the save dialogue will open; now the file can be saved to the location on your HDD.



After clicking on save the excel file will be ready and the measurement can be started.

9.3.2.2. Flat clothing measurement

When the flat clothing is measured than 5 measuring points at the 40” flat rod

Position (mm)	20	240	480	720	980
Measure point	01	02	03	04	05
001	0.00				

and 13 measuring points at the Rieter C 60, C 70 and C 70EF is measured.

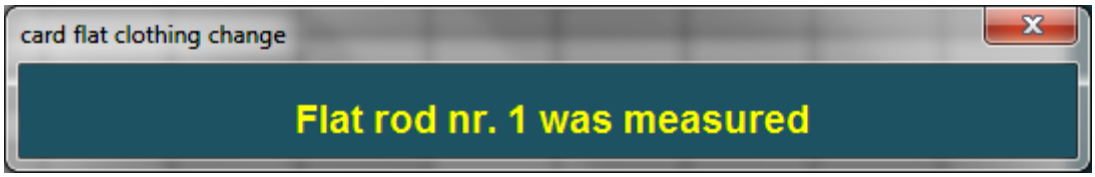
Position (mm)	20	143	266	389	512	635	758	881	1004	1127	1250	1373	1496
Measure point	01	02	03	04	05	06	07	08	09	10	11	12	13
001	0.00												

a) Move the slide with the digital dial gauge to the left on side (marked 1. Position), place the first flat rod on to the control beam and then press the “Set” button on the digital dial gauge, so the system set to zero.

Important: This zero setting has to be made only on the beginning of each flat rod set measuring at the first flat in left position.

b) Then move the slide to next measuring point depending 40” or 60” flat rod. On each measuring point press the orange button on the U-WAVE-T: so the digital dial gauge will make the measurement and transfer the measured data in to the excel sheet.
c) After move the slide to outer right hand side on to the marking and press again the orange button on the U-WAVE-T.

So the first flat has been measured, there will appear an information massage and the flat rod can be changed.



Remove the flat rod, move the slide to left hand side and place the second flat rod on to the control beam, than press the orange button on the U-WAVE-T, move the slide to middle position press the orange button again, move the slide to right hand side and press the orange button again.
Each time the flat rod measuring (3 positions) has been made the information massage appear that the flat rod can be changed.
Measure the whole set of flat rod as describe here.

9.3.2.3. Evaluation of the measuring

After the measuring the flat set has been finished so the evaluation has to be made, press the evaluation button.

After the evaluation button has been pressed the programming will now make the evaluation and after it create a PDF file (same location as the Excel file) with the Measurement-, Chart-, Evaluation data and the front page.

This PDF file could be used later if there would be any problem with the flat and could be send to Graf for investigation.

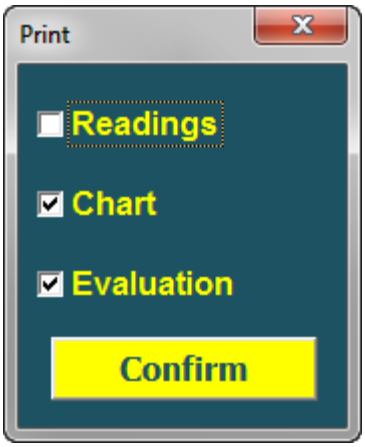
9.4 Reading sheet

On the reading sheet is the Language button

The language is normally taken over from the system, possible languages: English, German, France, Italian, Spanish, Portuguese, Turkish and Chinese.
If the operating system is set to a Language what is not listed here so it will take English as default.

9.5. Evaluation sheet

On the Evaluation sheet there is one print button: it can be used to print out hard copy for filling.



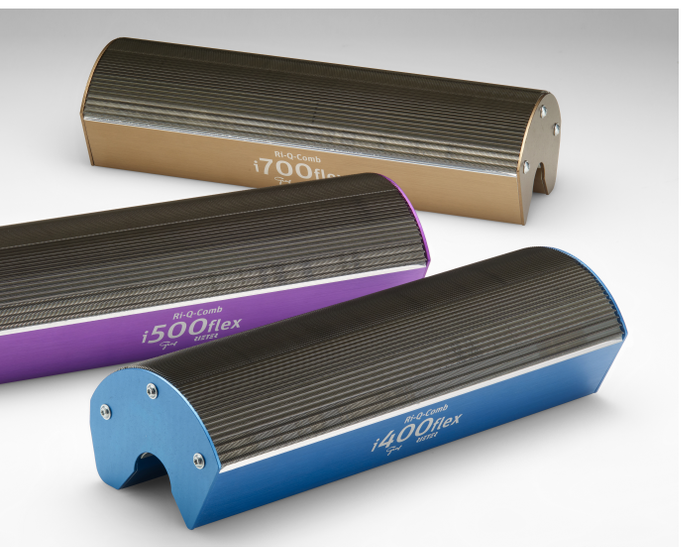
If on print is click so the print window will appear where the pages can be

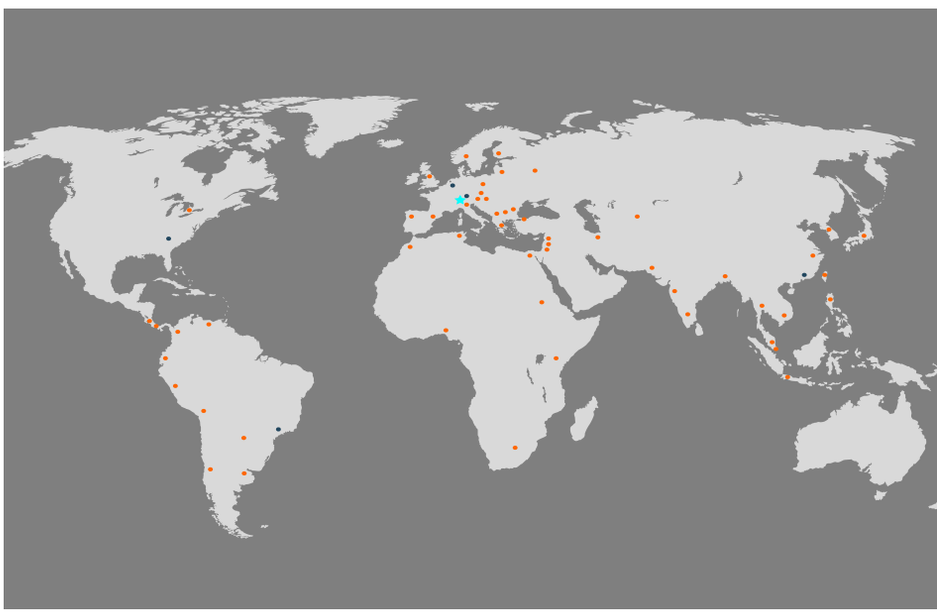
Keyword index

Keyword index

S

T





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