DICK

Traditionsmarke der Profis

Operating Instructions (Translation)

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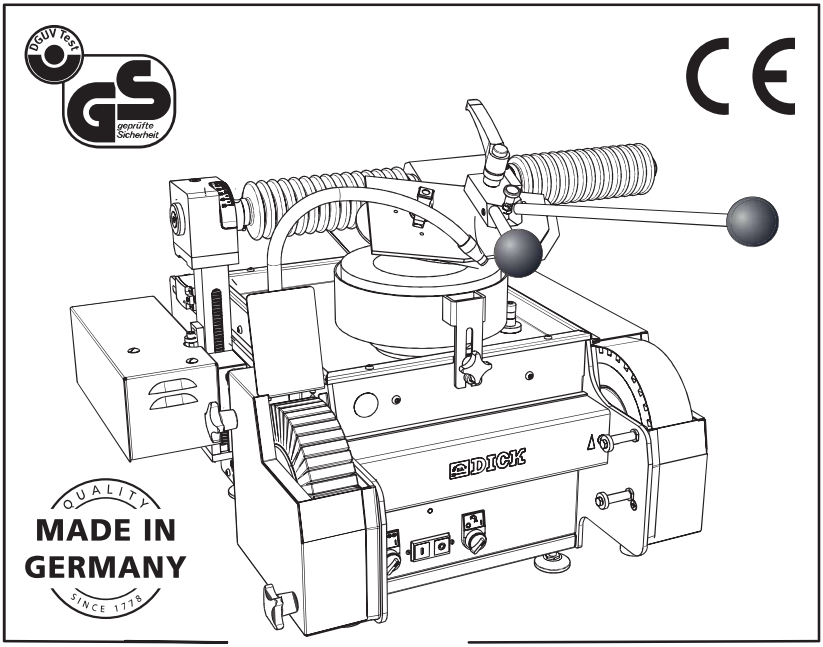

SM-200 TE

3~400 V - 50-60 Hz

Grinding and Honing Machine

Art. No. 98320005 with a universal grinding arm

Art. No. 98320000 with a radial grinding arm

No. 9 8320 4252 Vers.2 / 11-2017

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Also visit the Friedr. Dick YouTube channel.
https://www.youtube.com/user/FriedrDick/videos
Videos show the operation of the Friedr. Dick machines.

Copyright

1. User Information

1.1 General

These operating instructions are an integral part of the SM-200 TE grinding and honing machine with the serial number indicated on the type plate (the type plate is located on the back of the SM-200 TE grinding and honing machine).

The operating instructions must be kept close at hand at all times. They contain important information and instructions for safe, proper and economic use of the SM-200 TE grinding and honing machine. They must have been read and understood by each person before this person can be entrusted with the following work using the SM-200 TE grinding and honing machine:

- Putting the machine into operation,
- Operating,
- Servicing.

The operating instructions must be followed during all work on and with the SM-200 TE grinding and honing machine. Following the information and instructions helps to prevent hazards, to reduce repair costs and to increase the reliability and life of the SM-200 TE grinding and honing machine.

The technical information and instructions for use in these operating instructions are up-to-date and correct on delivery of the SM-200 TE grinding and honing machine. Friedr. Dick GmbH & Co. KG reserves the right to further develop the design and to make changes without notice.

All directional information is given from the view of the user.

1.2 Symbols and conventions

Instructions

Sequences of actions, which must be carried out in the given order are specified as a numbered list. Example:

1 Instruction step 1.
2 Instruction step 2.

Lists

Lists without a particular order that have to be followed are shown as a list with bullet points or indent markings. Example:

- Property A
  - Detail 1
  - Detail 2
- Property B

1.3 Symbols

Important or particularly useful information is highlighted by way of symbols so that it is readily recognised.

WARNING

This symbol denotes a warning, which must always be noted and followed.

- For more information on the meaning of the warnings, refer to the Safety chapter.

MANDATORY

This symbol indicates instructions, which must be complied with for safety reasons.

NOTE, TIP

This symbol denotes general information, which contains user tips and useful information.

2. Delivery, Transport and Storage

2.1 Delivery

The SM-200 TE grinding and honing machine is delivered in a cardboard box on a Euro pallet.

Use a suitable means of transport to move the delivered grinding and honing machine in its packaging, e.g. a forklift or hydraulic pallet truck.

Do not stack the machine. Do not place any objects on the packed machine.

2.2 Package contents

- a) SM-200 TE grinding and honing machine with a stand
  b) SM-200 TE Grinding and honing machine
- Radial or linear grinding arm - not mounted
- Double grinding lever
- Cooling water unit
- Connecting hose
- Return hose (b)
- Foot pedal
- Dressing device
- Tool
- Polishing compound
- Operating instructions

2.3 Unpacking

Unpack the SM-200 TE grinding and honing machine immediately after receipt and check whether there is damage or defects on the SM-200 TE grinding and honing machine caused by the transportation. Also check the package contents to ensure that the delivery is complete.

Report any defects immediately. Complaints made at a later date can no longer be recognized.

Keep the invoice for the entire warranty period as proof of purchase.

In case of complaints, write to Friedr. Dick GmbH & Co. KG, enclose the original invoice and a precise description of the defects.

Before returning the product, wait for the manufacturer's reply in order to initiate the necessary steps.

Friedr. Dick GmbH & Co. KG does not pay any transport costs for returns that have not been explicitly approved.

Keep the original box for any necessary returns in order to prevent transport damage.

2.4 Transportation

WARNING

Risk of injury when carrying and moving the grinding and honing machine

- Do not carry the SM-200 TE grinding and honing machine. This will risk damage to health.
- If the SM-200 TE grinding and honing machine starts to move uncontrollably during transportation, this will risk damage to the health of people in its vicinity.

CAUTION

Risk of damage to the SM-200 TE grinding and honing machine during transportation.

- Disassemble the grinding arm before transportation.

Please note the following when transporting the SM-200 TE grinding and honing machine after unpacking or starting it up:

- Use a suitable means of transport to move the machine, e.g. a forklift or hydraulic pallet truck.
- The machine is fixed to the machine base with retaining hooks on a Euro pallet for transportation purposes. Remove the retaining hooks when unpacking the machine.

- Use a crane and sling for lifting the machine. Use suitable slings or lifting straps. The weight of the machine without the stand is 98 kg. Place the slings outside the machine base on the machine frame.

CAUTION

The machine with the stand is top-heavy.

- There is an increased risk of tipping when transporting the SM-200 TE grinding and honing machine with the stand.

- A forklift may fit under the lower struts of the table in a machine with a stand.
  Make sure when lifting the machine with a stand with a suitable sling that the sling does not get pulled over the tray in the middle of the machine. The tray will then be damaged.

2.5 Storage location

Store the machine in a dry place. The storage location must be free of frost and the air temperature must not exceed 40 °C.

3. Product Liability

All abrasives and other wear parts are excluded from the warranty.

Modifications to the SM-200 TE grinding and honing machine require the written consent of Friedr. Dick GmbH & Co. KG.

Friedr. Dick GmbH & Co. KG does not accept any liability whatsoever for defects or damage caused by incorrect assembly or use of non-original DICK wear and spare parts or accessories as well as for improper handling.

Please refer to our General Terms and Conditions of Sale, Delivery and Payment for further details concerning the product liability and warranty. These can be downloaded at www.dick.de.

4. Environmental Protection

Used machines, replacement parts and packaging are made of recyclable materials. The owner is obliged to dispose of them properly and in an environmentally friendly way in accordance with the legal regulations.

- All plastic injection-moulded parts bear a recycling symbol.

5. Safety

5.1 Meaning of the warnings

In these operating instructions, a differentiation is made between warnings depending on the hazard:

DANGER

Imminent risk to the life and health of people.

- Causes serious injuries or death.

WARNING

Possible imminent risk to the life and health of people.

- Could cause serious injuries or death.

CAUTION

Possible dangerous situation

- Could cause minor injuries.

5.2 Intended use

The SM-200 TE grinding and honing machine is designed exclusively for commercial use.

The SM-200 TE grinding and honing machine may exclusively be used for grinding and honing hand knives, cleavers, cutting tools, cutter knives, circular blades and machine knives with a smooth cutting edge. The grinding arm that is mounted determines the cutting type of machine knife that can be ground:

- Linear cutting edge only with a universal grinding arm
- Radial cutting edge with a universal and radial grinding arm
- Spiral-shaped cutting edge conditionally with a universal and radial grinding arm.

A special grinding arm (accessory) allows the sharpening of small circular blades. A guard (accessory) must be mounted for sharpening large circular blades (Ø 200-500 mm).

Circular and sickle-shaped blades as well as linear, flat machine knives with a smooth cutting edge can be sharpened properly on a grinding belt with the universal belt grinder attachement UB3F or UB3F-XL.

A special clamping plate is required for grinding machine knives.

Intended use also includes observing the operating instructions and adhering to the servicing and maintenance work.

Any other or additional use is deemed to be not as intended and therefore misuse.

The grinding of large circular blades without the mounted guard is deemed to be misuse.

The grinding of materials that produce harmful or readily ignitable dusts is also deemed to be misuse. These include, for example: aluminium and magnesium.

The SM-200 TE grinding and honing machine may not be switched on or operated in potentially explosive atmospheres and is exclusively designed for use in dry rooms at temperatures between +3 and +40 °C.

Exclusively original spare parts and accessories from Friedr. Dick GmbH & Co. KG may be used.

The owner is responsible for any damage caused by misuse

5.3 General safety instructions

WARNING

Risk of injuries due to incorrect handling

Improper handling of the SM-200 TE grinding and honing machine can cause serious injury.

- The SM-200 TE grinding and honing machine may only be used by people who have read and understood the operating instructions.

- The SM-200 TE grinding and honing machine may only be operated by people who are familiar with the starting up, operation, and servicing of machines and the relevant accident prevention regulations, who are able to recognise the hazards that occur when using the machine and who work reliably.
- The SM-200 TE grinding and honing machine may not be operated outside the given power ranges (see “Technical data” on page 19).
- Operate the SM-200 TE grinding and honing machine only for its approved uses (see “Intended use” on page 11).

WARNING

Risk of fire in the event of unsuitable environmental influences

Moisture and water can cause a short circuit. Flying sparks can cause flammable liquids and gases to ignite.

- Do not expose the SM-200 TE grinding and honing machine to rain or salt water.
- Do not use the SM-200 TE grinding and honing machine near flammable liquids or gases.

WARNING

Risk of injury due to damaged or incorrectly mounted machine parts

Using the SM-200 TE grinding and honing machine with damaged electric parts or power cables can cause injuries due to electric shocks or malfunctions. Parts of the damaged grinding wheel, grinding belt or polishing wheel may be spun off the machine.

- Missing or damaged covers expose rotating parts and can cause injuries due to crushing and drawing in.
  Check the grinding and honing machine for damage before each use, in particular the:
  - Grinding wheel,
  - Wet grinding belt,
  - Polishing wheel,
  - Power cable,

- Correct assembly of all covers and the housing,
- Function of the switches.

- Replace damaged parts before reusing the SM-200 TE grinding and honing machine.

CAUTION

Risk of injuries due to the poor health of the operator

Lack of concentration, over-tiredness, illness, drunkenness or leg or arm disabilities as well as mental disabilities cause a high risk of injuries.

- People who work at the SM-200 TE grinding and honing machine must be healthy and capable of concentrating.
- Before starting work at the SM-200 TE grinding and honing machine, ensure that you are in a stable position in which you can maintain your balance without any effort.
- When grinding and polishing, do not look away from the SM-200 TE grinding and honing machine and the workpiece.

CAUTION

Risk of injury when touching the SM-200 TE grinding and honing machine

Touching the grinding wheel, polishing wheel or grinding belt when the abrasives and SM-200 TE grinding and honing machine are switched on will cause injuries.

- Do not touch any abrasives when the abrasives and machine are switched on.
- Do not use any objects to brake rotating abrasives.
- The switched on SM-200 TE grinding and honing machine must be inaccessible to persons not working at the SM-200 TE grinding and honing machine, especially to children.
- Switch off the SM-200 TE grinding and honing machine and pull the mains plug out of the socket before leaving the work area

WEAR SUITABLE PROTECTIVE CLOTHING

Rotating machine parts can catch unsuitable clothing or long hair.

Abrasive particles spun off the machine or loud machine noises can damage eyes and ears.

Sharp and hot workpieces can cause injuries to hands.

Rotating abrasives can pull off pieces of clothing.

- Wear safety glasses or goggles,
- Gehörschutz tragen,
- Wear suitable protective gloves,
- Ensure good lighting is available,
- Wear tight-fitting clothing,
- Do not wear jewellery,
- Wear a hair net on long hair,
- Do not touch rotating machine parts with parts of the body covered with fabric.

Further information on the safe operation of the SM-200 TE grinding and honing machine:

- Keep the work area clean. An untidy work area increases the risk of accidents.
- Do not leave any tool keys in place. Check that all keys and adjustment tools are removed each time before switching on the machine.
- Switch off the SM-200 TE grinding and honing machine and pull the mains plug out of the socket before the machine is ever transported.

5.4 Signs on the grinding and honing machine

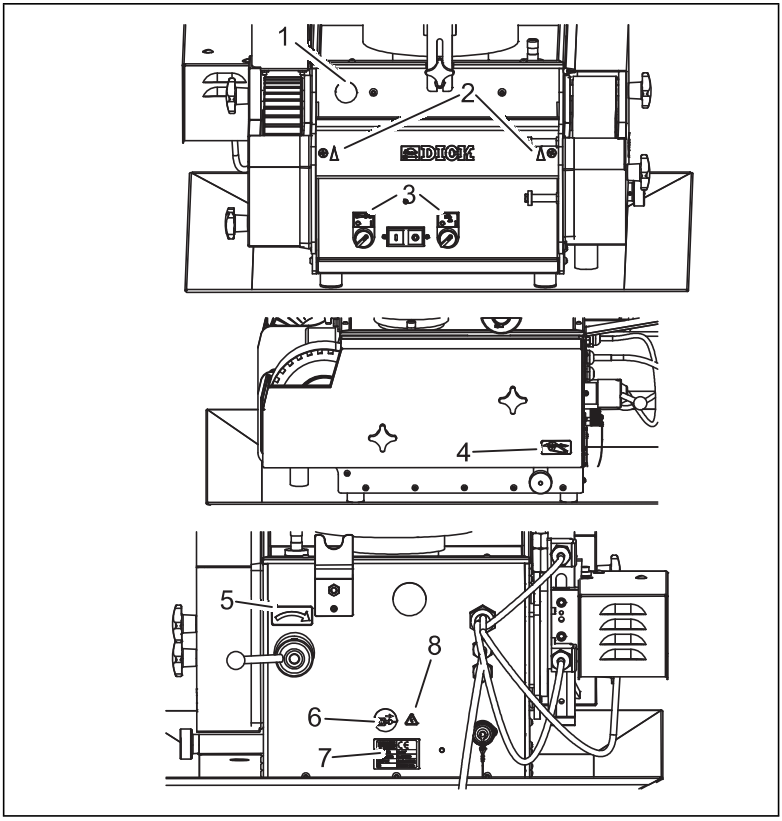


Figure 5.1 – Position of the signs

[1] Wear hearing protection and safety goggles when working with the SM-200 TE grinding and honing machine.
[2] Direction of rotation on the grinding belt and polishing station
[3] Functional description for switches
[4] Note - moving parts under the cover.
[5] Direction of rotation for loosening the grinding belt.
[6] Disconnect the mains plug before opening the cover.
[7] Type plate
[8] Caution: electric shock - parts under the cover may be live.

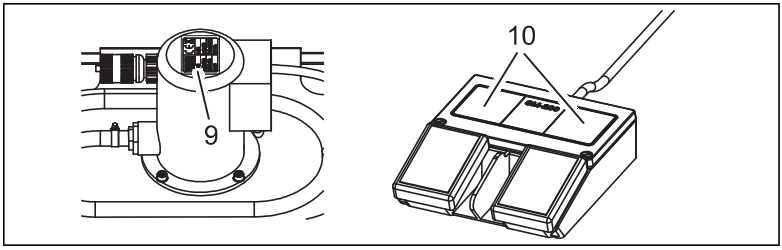


Figure 5.2 – Position of the signs

[9] Type plate on the cooling water tank
[10] Functional description of the foot pedal

5.5 Signage

Note:

Arrow on the machine housing for the correct direction of rotation for the abrasives

Mandatory sign:

Use safety goggles

Mandatory sign:

Pull out the mains plug before opening.

Note:

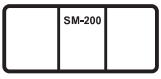
Moving parts under the cover.

Warning sign:

Caution: high voltage

Note:

Direction of rotation to loosen the grinding belt.



Note:

Function of the foot pedal.

5.6 Covers

WARNING

Risk of injuries due to missing covers

The SM-200 TE grinding and honing machine may only be put into operation when all covers and guard plates on the grinding wheel, polishing wheel and grinding belt (see chapter 6.4 Covers) are fully functional.

The SM-200 TE grinding and honing machine is covered with sheet metal. The user cannot come into contact with moving parts inside the machine.

The covers of the polishing wheel and wet grinding belt as well as the guard plate of the grinding wheel are fastened with tommy screws. They are very easy to remove for making adjustments or modifications or for servicing. The belt safety guard on the wet grinding belt must be mounted in such a way that the SM-200 TE grinding and honing machine can be started.

6. Design and Function

6.1 Technical data

Motor and electrics

Power:	1.3 kW
Voltage:	3~400 V (three-phase)
Current intensity:	4.13 A
Frequency:	50/60 Hz
Type of operation:	S3-70%
Degree of protection:	IP 54
Connection:	3.5 m cable H05VV-F5G1.5 incl. 5-pin CEE plug 16 A
Nominal speed:	2800 1/min (50 Hz)

Grinding wheel

Art. no.:	9 4601 010
Dimensions:	Ø 200 x 60 mm
Rpm:	384 1/min (50 Hz)
Cutting speed:	V_C = 4.0 m/s (50 Hz)

Grinding belt

Art. no.:	9 4601 120
Dimensions:	1250 x 60 mm - P120
Rpm (spindle):	1440 1/min (50 Hz)
Cutting speed:	V_C = 15.1 m/s (50 Hz)

Polishing wheel

Art. no.:	9 4601 180
Dimensions:	Ø 200 x 50 mm
Rpm:	1440 1/min (50 Hz)
Cutting speed:	V_C = 15.1 m/s (50 Hz)

Machine dimensions / weights

Depth:	830 mm
Width:	650 mm
Height:	500 mm (without a stand)
Weight:	98 kg (without a stand)

Cooling water unit

Volume of cooling water circulated:	40 l/min
Content of water tank	20 litres
Pump	
Power	0.12 kW
Degree of protection	IP54
Connection	3~400 V (three-phase)

Emissions sound pressure level

Sound emission in accordance with EN ISO 11201.

A-rated emissions sound pressure level at the work area measured at idling speed L_{pA}:	73 dB (A)
Uncertainty K_{pA} ; uncertainty in decibels:	3 dB (A)
A-rated emissions sound pressure level at the work area measured when grinding a hand knife L_{pA}:	77 dB (A)
Uncertainty K_{pA}; uncertainty in decibels:	3 dB (A)

Ambient conditions

Temperature	
Storage:	3 - 40 °C
Operation:	3 - 30 °C
Usage:	indoors

6.2 Overview

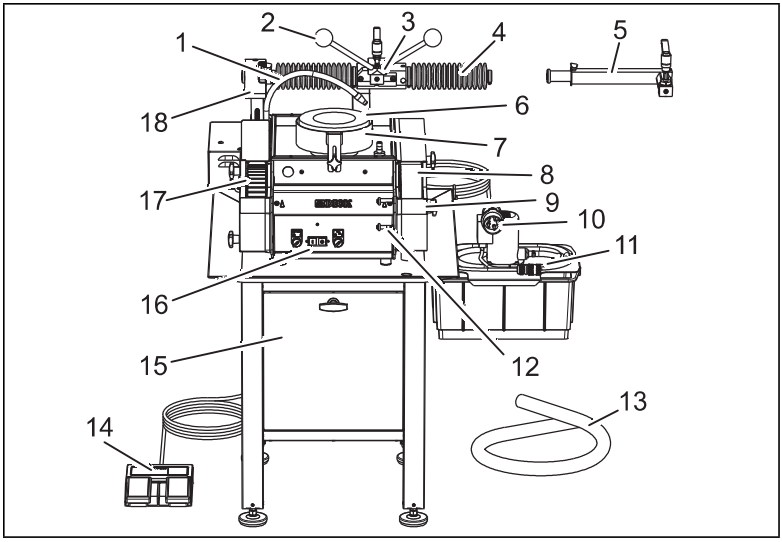


Figure 6.1 – SM-200 TE grinding and honing machine

[1] Cooling water supply
[2] Double grinding lever
[3] Mounting head
[4] Grinding arm (universal)
[5] Grinding arm (radial)
[6] Grinding wheel
[7] Guard ring
[8] Wet grinding belt
[9] Belt safety guard
[10] Mains plug
[11] Cooling water unit
[12] Mounting for belt grinding device
[13] Connecting hose
[14] Foot pedal
[15] Stand
[16] Control panel with On/Off switches
[17] Polishing wheel
[18] Grinding angle device

6.3 Design and Function

The SM-200 TE grinding and honing machine consists of a grinding angle device **[18]**, a grinding wheel **[6]**, a wet grinding belt **[8],** a polishing wheel **[17]** and a cooling water unit **[11]**. The electric motor in the housing of the machine powers all the abrasives at the same time via the gears, V-belt and spindle.

A buckle-resistant stainless steel frame accommodates the individual components of the SM-200 TE grinding and honing machine.

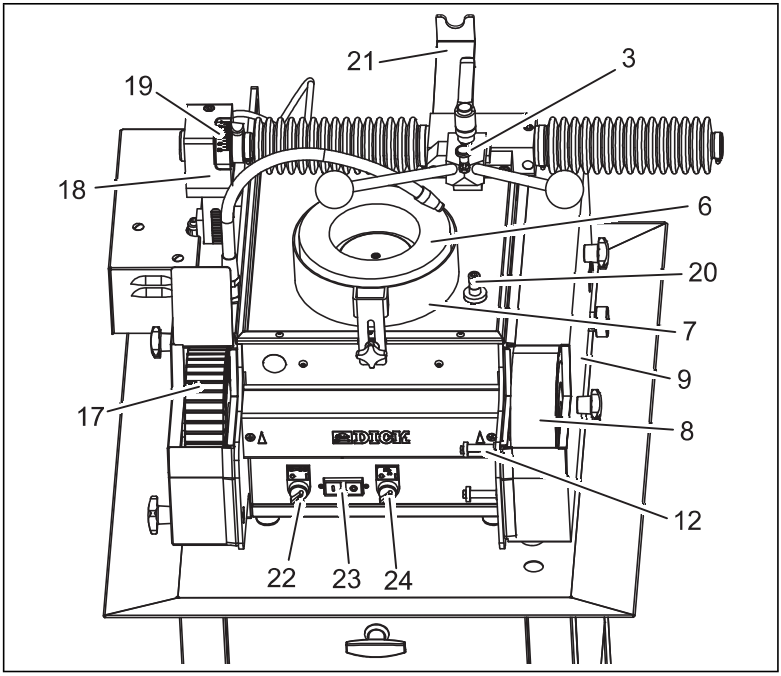


Figure 6.2 – Overview from above

[19] Scale head
[20] Mounting for dressing tool
[21] Grinding lever support
[22] On/Off switch for the abrasives
[23] Main On/Off switch
[24] On/Off switch for the cooling water

Grinding wheel

Knives, which are precisely positioned using the grinding arm **[4]** or **[5]**, are ground on the rotating grinding wheel. The cooling water supply **[1]** provides cooling water. The guard ring **[7]** secures the grinding wheel against inadvertent contact with the user and prevents water splashing.

Wet grinding belt

Knives are ground and deburred on the wet grinding belt **[8]**. The grinding belt is guided over rollers and automatically tensioned. The position of the grinding belt can be adjusted. The cooling water flows through a channel from the tray below the grinding wheel to the wet grinding belt. A marker shows the grinding belt's direction of rotation. The belt safety guard **[9]** prevents access to the grinding belt during operation. The grinding and honing machine does not start if the belt safety guard is not mounted.

Polishing wheel

Ground knives are deburred and polished on the polishing wheel **[17]**. A marker shows the polishing wheel's direction of rotation.

Grinding angle device

The lift rod, scale head **[19]** and grinding angle display make up the grinding angle device **[18]**. The grinding angle device is altered vertically with a motor. The foot pedal controls the motor. The grinding angle device can also be moved horizontally after loosening the clamping lever on the left-hand side of the machine. The grinding angle device accommodates the grinding arm, which positions the knives over the grinding wheel. The vertical movement of the grinding angle device changes the grinding angle.

Grinding arm

The grinding arm **[4]** is available in two different versions. Round cutting edges can be sharpened with the radial grinding arm and round and straight cutting edges with the universal grinding arm.

Grinding plates for clamping the knives are mounted on the mounting head **[3]** The grinding plate and double grinding lever **[2]** are fastened here with the star handle.

The double grinding lever with the grinding plate is rotated into the grinding lever support **[21]** on the back when workpieces are not being machined. The grinding plate is mounted and the knives are inserted here.

Cooling water unit

The grinding wheel and grinding belt are water-cooled. The cooling water unit **[11]** provides the cooling water. The cooling water unit on the SM-200 TE grinding and honing machine with a stand is housed in the stand **[15]**, otherwise it is provided. The cooling water unit has a pump and the power is supplied indirectly via a connection to the grinding and honing machine. A water tank contains the cooling water. The cooling water is fed to the grinding wheel via the cooling water supply and runs off into the tray. The cooling water is fed through a cooling water channel to the grinding belt. The cooling water accumulates in the belt safety tank and is fed back to the water tank through a drain and hose.

Grinding device holder

Position the UB3F or UB3F-XL belt grinding device (special accessory) on the mountings for the belt grinding device **[12]** on the front. This accommodates the grinding plates that can be used to precisely grind machine knives, such as cutter blades, on the grinding belt.

Dressing tool

Dress the grinding wheel if it is dirty or uneven. The bolt **[20]** next to the grinding wheel holds the dressing tool for the grinding wheel in place.

Mains plug

The power is supplied via the mains plug **[10]**. The pump of the cooling water unit is powered by the SM-200 TE grinding and honing machine.

Control panel

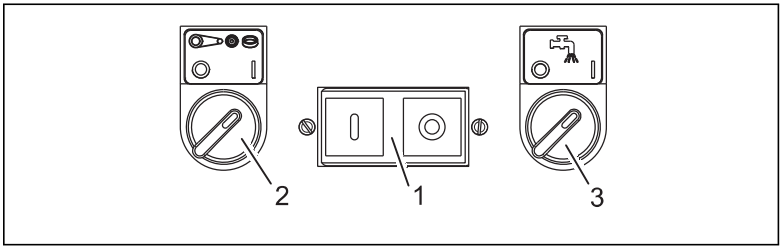


Figure 6.3 – Control panel

[1] Main On/Off switch for the machine
[2] On/Off switch for the abrasives
[3] On/Off switch for the cooling water

The control panel **[16]** contains the main On/Off switch **[1]** for the SM-200 TE grinding and honing machine and one On/Off switch each for the cooling water **[3]** and the abrasives **[2]**, the grinding wheel, wet grinding belt and polishing wheel.

Foot pedal

Adjust the grinding angle with the foot pedal **[14]**. The motor moves the grinding angle device **[18]** vertically to do this. This changes the setting angle of the knife on the grinding wheel. The left-hand switch moves the grinding arm downwards and the right-hand switch moves it upwards. The scale head **[19]** shows the current grinding angle.

6.4 Covers

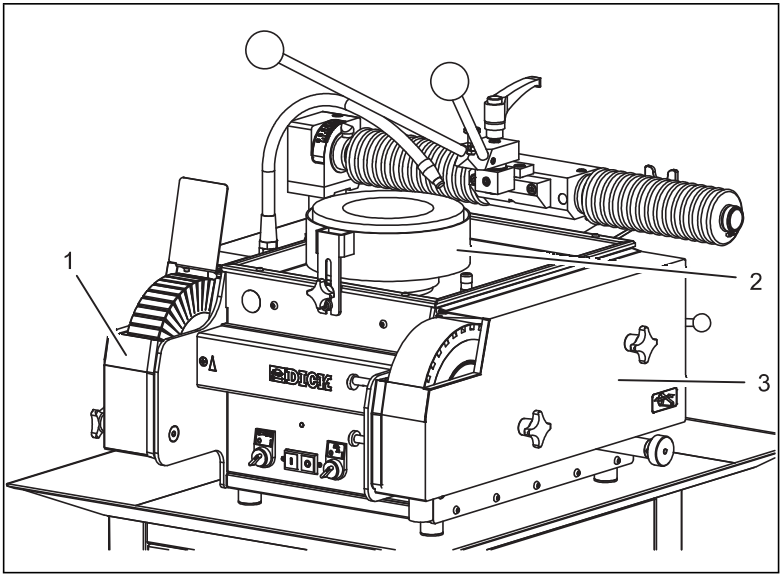


Figure 6.4 – Covering danger zones

[1] Polishing safety guard
[2] Guard ring
[3] Belt safety guard

The covers prevent access to the moving parts and protect the user.

Only operate the SM-200 TE grinding and honing machine with the covers fully fitted.

7. Putting the Machine into Operation

Please take the following points into account when choosing a place to set up the machine:

- The place must provide the space required for operating and installing the machine as well as for maintenance and servicing work.
- A power connection with the necessary features is available.

7.1 Installing the machine

Place the SM-200 TE grinding and honing machine on a flat, non-slip surface to ensure that the grinding and honing machine does not slip, tilt or move when it is being used.

Place the SM-200 TE grinding and honing machine without a stand on a stable table or other substructure, which has sufficient stability to carry the weight of the machine.

TAKE ACCOUNT OF THE ERGONOMICS

- Set up the SM-200 TE grinding and honing machine in such a way that it is possible to work safely with an upright posture.
- Ensure there is good lighting at the work area.

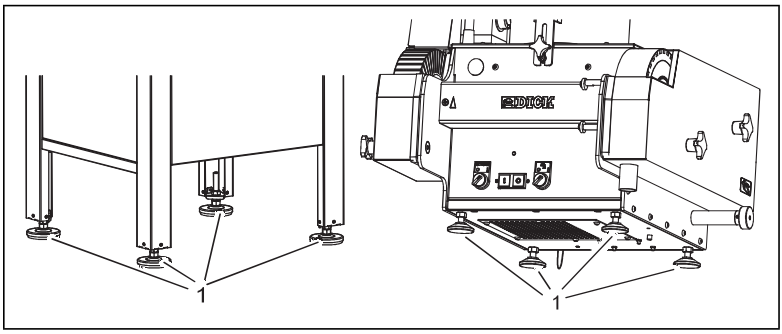


Figure 7.1 – Horizontal alignment by means of the machine feet

[1] Machine feet

1 Align the grinding and honing machine horizontally by means of the height-adjustable machine feet **[1]**.

7.2 Mounting the grinding arm

The grinding arm is supplied with the SM-200 TE grinding and honing machine. It is mounted on the scale head with the rounded bearing side. The same steps are used for mounting the radial or linear grinding arm.

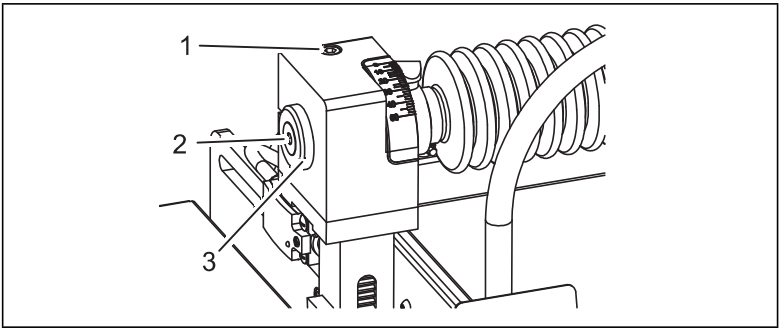


Figure 7.1 – Mounting the grinding arm

[1] Scale head clamping screw
[2] Grinding arm screw
[3] Bearing plate

1. Loosen the hexagon socket screw **[2]** on the grinding arm on the bearing side and remove it together with the bearing plate **[3]**.
2. Insert the bearing side of the grinding arm through the mounting of the scale head until the edge of the other side is visible.
3. First place the bearing plate on the bearing side of the grinding arm, then tighten the hexagon socket screw **[2]**. The grinding arm remains movable in the bearing.
4. Tighten the clamping screw **[1]** on the scale head. Tighten the screw so that there is no play on the grinding arm, but the grinding arm can move freely.

Disassemble the grinding arm before the grinding and honing machine is ever transported in order to avoid damage. To do this, perform the assembly steps in the reverse order.

7.3 Removing the dressing tool

The SM-200 TE grinding and honing machine is delivered with the dressing tool mounted. Remove the dressing tool next to the grinding wheel before starting up the machine.

1. Loosen the clamping screw on the dressing tool.
2. Pull the dressing tool upwards out of the mounting.
3. Place the dressing tool in a suitable location.

7.4 Setting up the cooling water unit

The SM-200 TE grinding and honing machine with a stand is delivered with the cooling water unit fully installed.

The cooling water unit must be installed with the version without a stand.

Position the cooling water unit at the SM-200 TE grinding and honing machine in such a way that the power supply, cooing water hose and return hose can be easily attached.

The recommended position for the cooling water unit is below the SM-200 TE grinding and honing machine.

Make the connections.

1. Place the water hose on the hose coupling below the cooling water supply.
2. Place the return hose on the drain nozzle on the underside of the belt safety tank. Guide the other end through the opening in the lid into the water tank.
3. Place the power plug in the socket on the back of the machine.

7.5 Filling the cooling water unit

Normal water suffices as cooling water.

1. Open the door on the stand.
2. Lift the cover with the pump out of the water tank.
3. Clean the water tank if necessary. To do this, remove the water tank from the stand. Place the cleaned water tank in the stand.
4. Fill the water tank with cooling water to around 50 mm below the rim.

5 Place the cover with the pump back on the water tank.
6 Close the door

Perform steps 2, 3, 4 and 5 for the SM-200 TE grinding and honing machine without a stand.

7.6 Electrical connection

NOTE

Damage to the SM-200 TE grinding and honing machine due to mismatching connection data.

- Compare the electrical data of the grinding and honing machine (see "Technical data" on page 19) with the connection data on site before starting up the machine.

- Connect the SM-200 TE grinding and honing machine only to sockets with a clockwise rotating field and protective earthing.
- Connect the machine only when it is switched off.

1 Before connecting the SM-200 TE grinding and honing machine to the mains supply, check that the switches for the abrasives and for the cooling water pump are set to zero.
2 Connect the power.

7.7 Performing test runs

Perform a test run for the abrasives and for the cooling water unit.

Test run for the abrasives

Check the direction of rotation of the abrasives. The grinding belt and polishing wheel must rotate in the direction of the arrows for the direction of rotation on the front of the machine. A second test run checks the cooling water supply.

1 Press the **I** (ON) button on the main On/Off switch.
2 Set the switch for the abrasives to position **I** (ON).

The grinding and honing machine starts up.

3 Check the direction of rotation of the grinding belt and polishing wheel.
4 Set the switch for the abrasives to position **0** (OFF).

A fault exists if the grinding belt and polishing wheel rotate in the wrong direction. There is a risk of accidents. Switch off the machine immediately and arrange for it to be checked by a qualified electrician. Repeat the test run if the fault has been rectified.

Correction of possible faults

CAUTION

A faulty power connection prevents the safe operation of the machine.

If the running direction of the abrasives is incorrect, this may be because the power is not connected properly. The mains plug is connected with an anticlockwise rotating field. A qualified electrician can check and change the connection if necessary.

If this is not the cause of the fault, switch off the SM-200 TE grinding and honing machine, disconnect it from the mains and arrange for it to be checked.

Test run for the cooling water unit

This checks the function of the cooling water unit. An adequate amount of cooling water must be fed onto the grinding wheel and the wet grinding belt. All lines and connections on the cooling water line must be sealed. The routing of the cooling water to the wet grinding belt and the return to the water tank must be secure.

1. Check that the valve on the cooling water supply is open (see Figure 8.3 – Cooling water supply, pos.2).
2. Press the **I** (ON) button on the main On/Off switch.
3. Set the switch for the cooling water supply to position **I**.

The cooling water supply pump starts up.

4 Check that the cooling water is fed to the grinding wheel.

CAUTION

Unidentifiable faults can compromise the safe operation of the machine.

A fault exists if the cooling water does not reach the grinding wheel. There is a risk of accidents. Switch off the machine immediately and arrange for it to be checked by a qualified electrician. Repeat the test run if the fault has been rectified.

5 Check that the supply line to the cooling water supply is tightly sealed to the couplings.

6 Check that sufficient cooling water is fed to the wet grinding belt.

7 Check that the cooling water is returned to the water tank.

Correction of possible faults

CAUTION

A faulty power connection prevents the safe operation of the machine.

If the cooling water does not reach the grinding wheel, this may be because the power is not connected properly. The mains plug is connected with an anticlockwise rotating field. A qualified electrician can check and change the connection if necessary.

If this is not the cause of the fault, switch off the SM-200 TE grinding and honing machine, disconnect it from the mains and arrange for it to be checked.

If cooling water is leaking from the supply line, check the lines for defects and that the couplings are tightly sealed.

If insufficient cooling water reaches the wet grinding belt, check that the SM-200 TE grinding and honing machine is set up in a horizontal position.

If the cooling water collects in the belt safety tank, the return is blocked and the cooling water circuit is interrupted. Switch off the SM-200 TE grinding and honing machine and check the return.

8. Setting up the Machine

Follow the safety instructions

Working with the SM-200 TE grinding and honing machine poses a considerable safety risk. The risk of injury comes from the moving parts and the knives to be ground.

- Follow the general safety instructions! See chapter 5. Safety, page 11.

8.1 Switching on the grinding and honing machine

Do not switch on the SM-200 TE grinding and honing machine until all preparations, modifications and adjustments for the current task have been completed.

- Check that the abrasives are free of objects.
- Check that the machine is connected to the mains supply.

Switch the SM-200 TE grinding and honing machine on/off on the control panel.

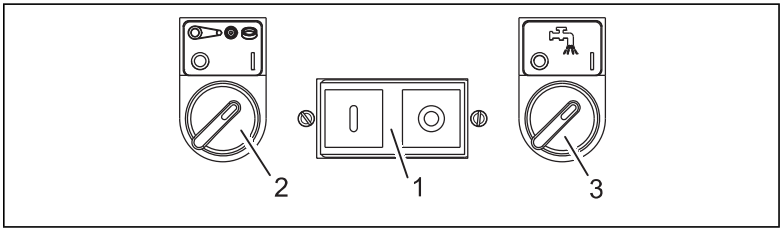


Figure 8.1 – Control panel

[1] Main On/Off switch on the SM-200 TE
[2] On/Off switch for the abrasives
[3] On/Off switch for the cooling water

Switching on the machine:

1. Press the **I** (ON) button on the main On/Off switch.
2. Set the On/Off switch for the abrasives to position **I** (ON).

The abrasives start up.

Switch on the cooling water unit for working on the grinding wheel or wet grinding belt.

3 Set the On/Off switch for the cooling water to position **I** (ON).

8.2 Switching off the grinding and honing machine

Switch off the grinding and honing machine if it is not used for a longer period of time or is unattended.

1 Set the On/Off switch for the cooling water to position **0** (OFF).
2 Set the On/Off switch for the abrasives to position **0** (OFF).
3 Press the **0** (OFF) button on the main On/Off switch.

Pull out the mains plug if the grinding and honing machine is not used for a longer period of time.

8.3 Adjusting the wet grinding belt

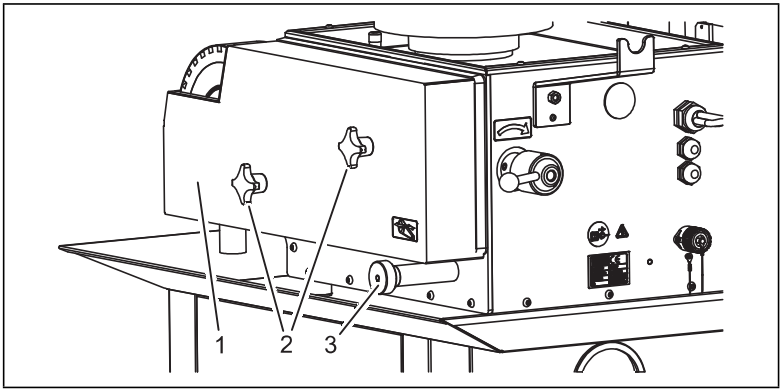


Figure 8.2 – Adjusting the wet grinding belt

[1] Belt safety guard
[2] Star handles
[3] Belt adjusting screw

The wet grinding belt must be adjusted when starting up the machine and after the belt has been changed. The pressure of the grinding on the wet grinding belt is not the same across the entire width. One-side of the belt material can move. The belt does not run in the middle of the roller.

Set the position of the grinding belt on the roller on the belt adjusting screw **[3]**.

If the grinding belt does not run symmetrically to the contact wheel, first make a rough adjustment to the running direction.

1 Set the switch for the abrasives to position **0** (OFF).

If the grinding belt is still running, wait until it stops.

2 Loosen the star handles **[2]** and remove the belt safety guard.

3 Move the grinding belt on the front roller to the desired position. Move the grinding belt a little by hand.

4 Preset the belt run with the belt adjusting screw.

- Rotating to the left, the grinding belt moves to the left.
- Rotating to the right, the grinding belt moves to the right.

5 The grinding belt must not run against the guard or the side panel. The SM-200 TE grinding and honing machine is then damaged.

If the running direction of the grinding belt is roughly in the correct position, replace the belt safety guard and fasten it with the star handles.

6 Move the switch for the abrasives briefly to position **I** (ON).

7 Check the belt movement when starting up the grinding belt. The grinding belt must not touch the side panel or belt safety guard.

Repeat steps 2, 3 and 4 if the grinding belt does not run in the correct position.

8 If the belt run is roughly in the correct position, set the switch for the abrasives to position **I** (ON).

The abrasives start up.

9 Now make a fine adjustment to the grinding belt with the belt adjusting screw **[3]**.

- Rotating to the left, the grinding belt moves to the left.
- Rotating to the right, the grinding belt moves to the right.

10 Set the correct position.

8.4 Setting the cooling water supply

Set the cooling water supply hose for the grinding task. Set the cooling water supply so that sufficient water reaches the grinding wheel and the hose does not impede the grinding process.

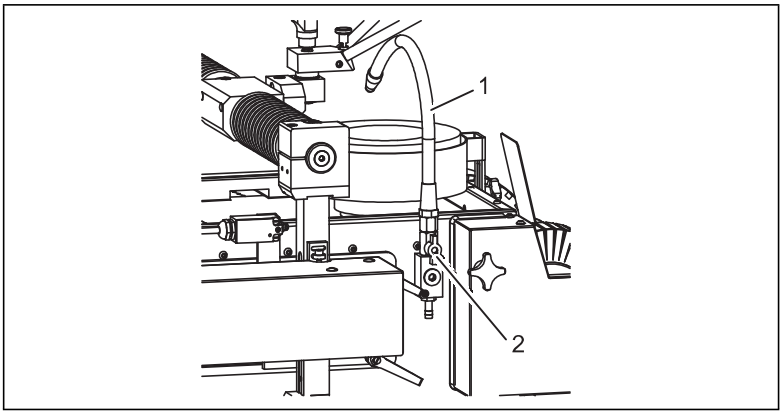


Figure 8.3 – Cooling water supply

[1] Hose
[2] Valve

1. Set the On/Off switch for the abrasives to position **0** (OFF).
2. Set the On/Off switch for the cooling water to position **I** (ON).
3. Close the valve **[2]**.
4. Set the hose **[1]** so that the water can run onto the grinding stone without impeding the grinding process.
5. Open the valve again and check the result of the adjustments.
6. Set the On/Off switch for the abrasives to position **I** (ON).

8.5 Setting the guard ring

The guard ring prevents the user having any contact with the grinding wheel and stops water splashing.

The grinding wheel is subject to wear. The guard ring must not impede the grinding process.

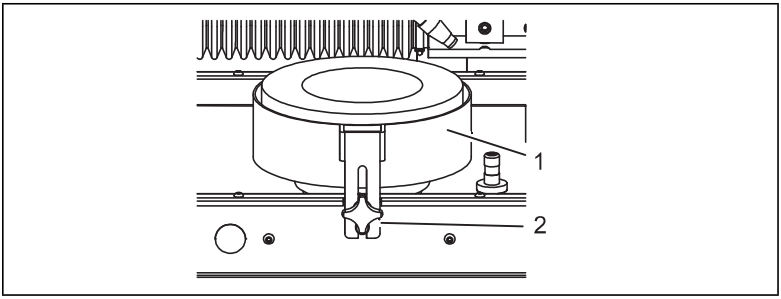


Figure 8.4 – Adjusting the guard ring

[1] Guard ring
[2] Star handle

1. Set the On/Off switch for the abrasives to position **0** (OFF).
2. Wait until the grinding wheel stops rotating.
3. Hold the guard ring with the hand.
4. Loosen the star handle. Place the guard ring in the correct position. The grinding wheel must protrude 2 mm above the guard ring.
5. Tighten the star handle.

8.6 Setting the universal grinding arm

The universal grinding arm provides a wide range of settings for grinding different round and straight cutting edge shapes.

Knives with a straight cutting edge

The rotary function of the universal grinding arm is blocked and the sliding function is released for grinding a knife with a linear (straight) cutting edge.

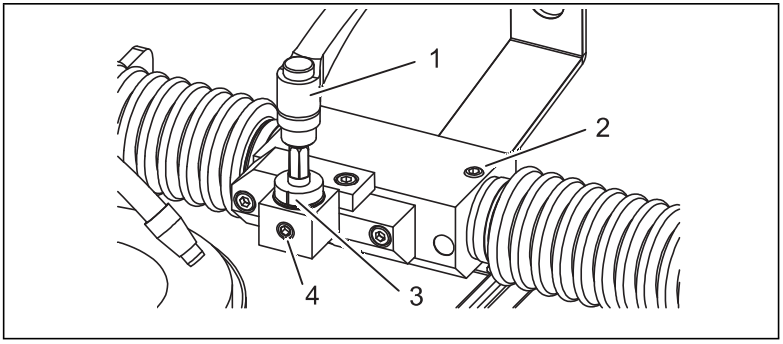


Figure 8.5 – Setting a straight cutting edge

[1] Clamping lever
[2] Screw
[3] Groove
[4] Screw

1. Loosen the screw **[2]**.
2. Loosen the screw **[4]**.
3. Rotate the clamping lever **[1]** on the universal mounting head so that the groove **[3]** points to the front.
4. Clamp and fasten the universal mounting head in this position with the screw **[4]**.

Knives with a round cutting edge

The rotary function of the universal grinding arm is released and the sliding function is blocked for grinding a knife with a radial (round) cutting edge.

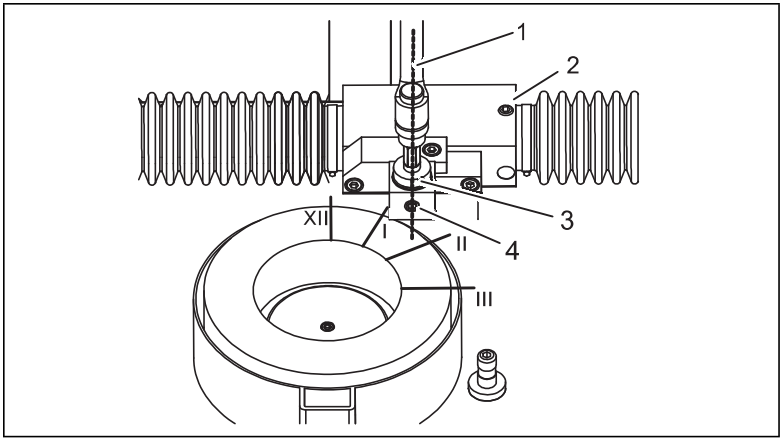


Figure 8.6 – Setting a round cutting edge

[1] Line through the universal mounting head onto the grinding plate
[2] Screw
[3] Groove
[4] Screw

1 Loosen the screw **[2]**.
2 Position the sliding carriage so that a line can be drawn through the universal mounting head that lands on the grinding wheel between the 1 o'clock and 2 o'clock positions.
3 Tighten the screw **[2]**.
4 Loosen the screw **[4]** and release the rotary function.

8.7 Setting the grinding radius on the universal grinding arm

The SM-200 TE grinding and honing machine with a universal grinding arm can be set for different grinding radii. To do this, mount the universal mounting head along with the clamping piece on the front or the back of the universal grinding arm. Each position enables a specific grinding radius range.

Grinding radius/distance	Position on the universal grinding arm
< 260 mm	Front
> 260 mm	Back

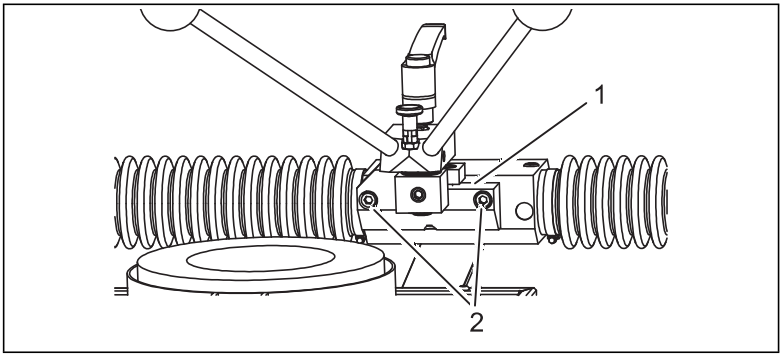


Figure 8.7 – Setting the grinding radius

[1] Clamping piece
[2] Screws

Changing the grinding radius:

1. Remove the screws **[2]**.
2. Remove the clamping piece **[1]** with the universal mounting head from the grinding arm.
3. Remove the plugs from the holes on the back of the grinding arm.
4. Use the screws to fasten the clamping piece **[1]** with the universal mounting head on the grinding arm.
5. Use the plugs to block the holes on the front of the grinding arm.

8.8 Setting the radial grinding arm

The radial grinding arm provides a range of settings for grinding round cutting edge shapes. The radial grinding arm positions the universal mounting head in different positions in the direction of the grinding plate. The rotary function of the universal mounting head is required for the grinding tasks.

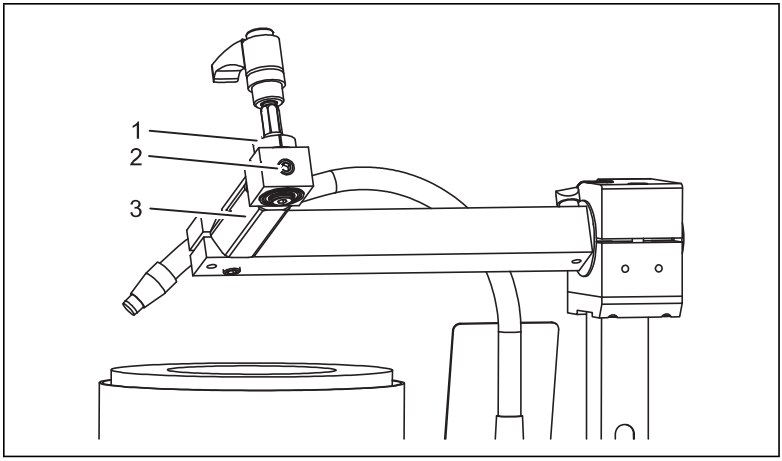


Figure 8.8 – Setting round cutting edge shapes

[1] Universal mounting head
[2] Screw
[3] Extension

Releasing the rotary function:

1 Loosen the screw **[2]** on the universal mounting head **[1]**.

8.9 Setting the grinding radius on the radial grinding arm

The SM-200 TE grinding and honing machine can be set for different grinding radii. Four options are available for mounting the universal mounting head on the grinding arm.

Each option enables a specific grinding radius range by combining the mounting position of the universal mounting head on the grinding arm and the use of an extension.

Grinding radius	Position on the radial grinding arm	Extension
< 140 mm	Front	Yes
> 140 mm < 220 mm	Front	No
> 220 mm < 300 mm	Back	No
> 300 mm < 390 mm	Back	Yes

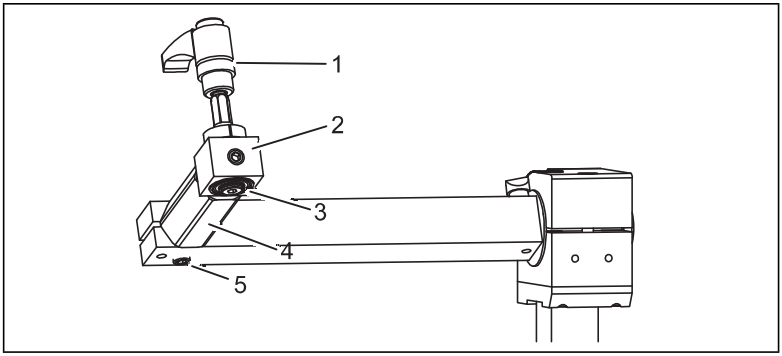


Figure 8.1 – Setting the grinding radius

[1] Clamping lever
[2] Universal mounting head
[3] Screw
[4] Extension
[5] Screw

Changing the grinding radius:

1. Loosen the screw **[5]**.
2. Pull the universal mounting head **[2]** out of the grinding arm.
3. If the extension **[4]** is required - see table above - insert the pin of the extension on the right-hand side of the grinding arm.
4. If the extension **[4]** is not required - see table above - insert the universal mounting head **[2]** on the right-hand side of the grinding arm.
5. Tighten the screw **[5]**.

Mounting the universal mounting head **[2]** on the extension **[4]**:

1. Insert the pin of the universal mounting head in the extension.
2. Tighten the screw **[3]**.

8.10 Clamping the grinding plate

CAUTION

Risk of injury from knives and abrasives

- Set the On/Off switch for the abrasives to position **0** (OFF) for the preparatory adjustments.
- Do not mount or remove the grinding plate with the workpiece attached.

The guided sharpening of machine knives is performed with the special grinding plate. The grinding plate will be produced individually by request to suit the workpiece.

The grinding plate replicates the shape of the knife edge on one side. Fix the knife to the back of the grinding plate after using a lever on the front to insert it into the knife-specific mountings.

Note

Use the correct grinding plate!

Sharpen the workpiece only with the appropriate grinding plate.

- If the grinding plate and workpiece do not fit together, this may damage the workpiece, the grinding plate and the grinding and honing machine.

First clamp and set the right grinding plate on the grinding arm for grinding a machine knife.

1. Lower the grinding arm with the foot pedal. Position the mounting surface of the universal mounting head almost horizontally to the grinding wheel.
2. Loosen the two clamping levers of the grinding device.
3. Move the grinding device horizontally so that approximately 1 cm of the mounted grinding plate will subsequently rest on the grinding wheel.
4. Clamp the two clamping levers of the grinding device.
5. Remove the clamping lever **[1]** on the universal mounting head.
6. Place the grinding plate without a workpiece on the shaft of the universal mounting head. The other side of the grinding plate rests on the grinding wheel.

7 Place the hexagon socket of the double grinding lever on the shaft of the universal mounting head. Align the hexagon socket of the double grinding lever with the hexagon head of the shaft.

8 Mount the clamping lever **[1]** onto the universal mounting head again. Make sure that both hexagon sockets are threaded.

9 Loosen the locking pin of the double grinding lever.

10 Rotate the grinding plate until the bolt engages.

11 Fasten the grinding plate and double grinding lever to the universal mounting head with the clamping lever **[1]**.

Fasten the workpiece in the grinding plate after these initial steps.

WARNING

Machine knives have a sharp cutting edge. They could cause serious injuries.

- Always wear cut-resistant gloves when working with machine knives.
- Work with due care and attention.

1 Move the grinding arm to the middle height.

2 Place the double grinding lever in the fork of the grinding lever support.

3 Lay the knife in the grinding plate and fasten with the rotary lever of the grinding plate.

Checking the settings

Check the settings after this work. The contact point of the knife edge on the grinding wheel should be positioned between 1 o'clock and 2 o'clock.

1. Place the knife edge on the grinding wheel with the double grinding lever.
2. Raise the grinding arm to the maximum desired angle with the foot pedal.
3. Check and adjust the contact point if necessary.
4. Loosen the clamping lever of the grinding angle device to make an adjustment. Move the position of the grinding angle device forwards or backwards.
5. Retighten the clamping lever or the grinding angle device once the correct position is achieved.

The touchdown point moves forward a little when grinding smaller angles.

6. Check the lateral position of the contact point after making this adjustment. Adjust the lateral position of the contact point if the position is incorrect here.

8.11 Setting up special solutions for circular blades

Flat circular blades with hole diameters >ø13.5 mm can be sharpened on the universal and radial grinding arm.

Special accessories are used for sharpening circular blades.

WARNING

Circular blades have a sharp cutting edge around the circumference. They could cause serious injuries.

- Always wear cut-resistant gloves when working with circular blades.
- The knives rotate while they are being sharpened.
- Work with due care and attention.

NOTE

There are a very large number of versions of circular blades. Only the typical special clamping devices are shown below. Special clamping devices on request.

Special accessories for sharpening circular blades:

- Adapter set for circular blades
  - Centring pieces
  - Clamping discs
- Special accessories depending on the diameter of the circular blade:
  - Circular blade grinding arm ø 70 mm – ø 180 mm
  - Circular blade grinding lever ø 180 mm – ø 500 mm
  - Circular blade guard ø 200 mm – ø 500 mm

All special accessories require different set-up steps.

General preparatory work:

Prepare the universal grinding arm for radial grinding, see page 37.

1. Fasten the sliding carriage.
2. Release the rotary function of the universal mounting head.

Step 1 is not required on the radial grinding arm.

On both grinding arm versions:

3. Move the grinding angle device to the approximate position required after loosening the clamping lever.
4. Choose a centring piece suitable for the circular blade from the adapter set.

Now different work is required for the different knife sizes.

Circular blades ø 70mm – ø 180mm

1. Remove the universal mounting head.
2. Mount the circular blade grinding arm.
3. Tilt the circular blade grinding arm backwards. Loosen the mounting screw on the underside with a hexagon socket key.
4. Remove the clamping disc.
5. Place the circular blade with the centring piece on the circular blade grinding arm.
6. Mount the clamping disc again with the mounting screw.
7. Tilt the circular blade grinding arm forwards.

8 Adjust the grinding angle with the foot pedal. Adjust the horizontal and vertical position of the grinding device if necessary. Contact point of the knife edge at approximately 1-2 o'clock on the grinding wheel.

Circular blades ø 180mm – ø 200mm

1 Clamp the rotary axis on the universal mounting head, see page 38.
2 Remove the double grinding lever of the universal mounting head.
3 Place the stopper disc from the adapter set on the universal mounting head.
4 Place the centring piece and circular blade on the universal mounting head.
5 Screw together the clamping flange and circular blade grinding lever.
6 Release the rotary axis on the universal mounting head again.
7 Adjust the grinding angle with the foot pedal. Adjust the horizontal and vertical position of the grinding device if necessary. Contact point of the knife edge at approximately 1-2 o'clock on the grinding wheel.

Circular blades ø 200mm – ø 500mm

1 Remove the universal mounting head.
2 Mount the circular blade guard on the grinding arm.
3 Place the centring piece and circular blade on the circular blade guard.
4 Screw together the clamping flange and circular blade guard.
5 Adjust the grinding angle with the foot pedal. Adjust the horizontal and vertical position of the grinding device if necessary. Contact point of the knife edge at approximately 1-2 o'clock on the grinding wheel.

9. Machining Workpieces

9.1 Sharpening machine knives

WARNING

Machine knives have a sharp cutting edge. They could cause serious injuries.

- Wear cut-resistant gloves when working with knives.
- Work with due care and attention.

NOTE

The grinding process removes material on the knife. Grinding can cause the knives in a cutter set to have different weights. The cutter shows an imbalance after the knife has been mounted. The different weight of the knives can be balanced on the grinding and honing machine. Please follow the instructions of the machine manufacturer. We recommend grinding to ±5 g if no information is available.

NOTE

Knives can be quickly resharpened on the SM-200 TE grinding and honing machine with minimal wear with the special UB3F /-XL belt grinding device accessory.

Grind the machine knife according to the angle specified by the knife manufacturer. Adjust the angle by lifting and lowering the grinding arm and the grinding angle device.

9.2 Clamping and unclamping knives in grinding plates

Clamp the machine knife in a grinding plate in order to grind it. The grinding plate must be a precise fit for the knife. The grinding plate is mounted on the double grinding arm, see chapter “Clamping the grinding plate”, page 43.

1. Place the double grinding arm in the support facing backwards.
2. Open the grinding plate clamping device.
3. Place the machine knife in the grinding plate.
4. Close the grinding plate clamping device.

The knife can now be ground.

Remove the machine knife from the grinding plate

1. Place the double grinding arm in the grinding lever support again to remove the machine knife.
2. Open the clamping device of the grinding plate and remove the knife.

9.3 Sharpening knives

The machine knife is clamped in the grinding plate on the double grinding arm.

1. Adjust the grinding angle on the grinding device.
2. Lift the workpiece off the grinding wheel with the double grinding arm.
3. Set the On/Off switch for the abrasives to position **I** (ON).
4. Set the On/Off switch for the cooling water to position **I** (ON).
5. Lower the workpiece with the double grinding arm. Move the area to be ground back and forth over the grinding wheel with light pressure.

NOTE

Do not stop the movement of the workpiece on the grinding wheel.

- There is a risk that the knife will overheat and the contour will be damaged if the workpiece remains stationary on the grinding wheel.

6. Move the workpiece back and forth with the double grinding lever.

NOTE

Follow the instructions of the knife manufacturer for grinding workpieces.

7. Repeatedly raise the workpiece and check the progress of the grinding.
8. Complete the process when a burr has formed on the cutting edge.

Deburr the workpiece in the next step, see chapter “9.5 Deburring and polishing machine knives”.

9.4 Machine knives with a bevelled contoured cutting edge

Regrind the contour specified by the manufacturer with a machine knife. First regrind the cutting edge. Use the universal angle of 27° if no information is available from the manufacturer.

The contoured cutting edge is produced after grinding the cutting angle. Grind three bevels for basic sharpening. The following bevel stages are tried and tested: 17°, 13° and 9°. These grinding stages are marked in red on the scale of the grinding device.

The grinding of bevels is similar to the V-shaped edge. However, a burr is only formed on the cutting edge when grinding the angle of the cutting edge.

Round the bevels in the next step on the grinding stone or on the wet grinding belt.

Grinding the angle of the cutting edge:

1. Set the grinding angle on the grinding device to 27°.
2. Lift the workpiece off the grinding wheel with the double grinding lever.
3. On/Off switch for the abrasives to position **I** (ON).
4. Set the On/Off switch for the cooling water to position **I** (ON).
5. Lower the workpiece with the double grinding lever. Move the area to be ground back and forth over the grinding wheel with light pressure.

NOTE

Do not stop the movement of the workpiece on the grinding wheel.

- There is a risk that the knife will overheat and the contour will be damaged if the workpiece remains stationary on the grinding wheel.

NOTE

- Follow the instructions of the knife manufacturer for grinding workpieces.

6 Repeatedly raise the workpiece and check the progress of the grinding.

7 Complete the process when a burr has formed on the cutting edge.

Grinding the bevels:

1 Lift the workpiece off the grinding wheel with the double grinding lever.

2 Set the grinding angle on the grinding device to 17°.

3 Lower the workpiece with the double grinding lever. Move the area to be ground back and forth over the grinding wheel with light pressure.

4 Complete the process once a smooth bevel has formed.

5 Repeatedly raise the workpiece and check the progress of the grinding.

6 Repeat this step for the other bevels with the grinding angles of 13° and 9°.

7 The bevelled cutting edge profile is pregrounded.

The bevels must be rounded in the next step. This is done on the grinding stone or wet grinding belt.

Rounding on the grinding wheel:

Round the edges of the bevels by constantly changing the grinding angle. Never set the grinding angle at a more obtuse angle than the angle of the cutting edge or 25°.

1 Lower the workpiece onto the rotating grinding wheel with the double grinding lever.

2 Constantly move the grinding arm on the grinding device up and down between 20° and 5°, thus changing the grinding angle. The grinding angle must not be at a more obtuse angle than the angle of the cutting edge.

3 Lift the workpiece off the grinding wheel with the double grinding lever.

4 Check that a smooth surface has formed without edges.
5 Complete the process when a smooth bevelled contour has formed on the surface.
6 Place the double grinding arm in the support facing backwards.
7 Take the knife out of the grinding plate.
8 Check the ground knife with the grinding template provided by the knife manufacturer.

Rounding on a wet grinding belt

NOTE

- Follow the instructions in chapter 9.7 “Grinding hand knives and cleavers” for working with the wet grinding belt.

1 Place the double grinding lever in the support facing backwards.
2 Take the workpiece out of the grinding plate.
3 Grind the contoured surfaces on the wet grinding belt. Constantly change the grinding angle.
4 The grinding angle must not be at a more obtuse angle than the angle of the cutting edge. If the grinding angle gets closer to the angle of the cutting edge, the grinding noise changes slightly and the pressure of the water jet drops. Then switch to a steeper grinding angle.
5 Complete the process when a smooth bevelled contour has formed on the surface.

9.5 Deburring and polishing machine knives

Deburr and polish the machine knives after sharpening. Use the polishing wheel to do this.

WARNING

Risk of injury. Guide the knives by hand when deburring and polishing. The knives are always sharp and can cause cuts.

- Never place knives against the cutting edge on the polishing wheel.
- Wear cut-resistant gloves.
- Never grip the cutting edge.
- The workpiece can become hot.

NOTE

The fins of the polishing wheel must not get wet.
Moisture damages the lamellar buffing wheel and makes it unusable.

Holding and guiding the knife

Hold and guide the knife by hand when polishing and deburring.

- Hold the knife close to the body.
- One hand holds the workpiece in such a way that it can be polished safely on both sides by turning the hand. There is no change to the grip on the workpiece during this process.
- The other hand changes the position when the workpiece is rotated. It supports the other hand in guiding the workpiece. The hand is placed on top of the workpiece in each case and exerts the required pressure for the polishing. The cutting edge of the knife is parallel to the polishing wheel shaft. The surface to be polished is tangential to the polishing wheel and at an obtuse angle to the previous bevel.

Applying polishing compound

Apply polishing compound to the lamellar buffing wheel for the polishing.

1 Press the block of polishing compound against the polishing wheel while it is running.

- Apply the polishing compound shortly before starting up the polishing wheel and using it to avoid contamination caused by flying particles of compound.
- Repeat the process if the polishing effect wears off or the polishing compound is no longer present.

Deburring knives

Polish the ground cutting edge alternately on both sides for the deburring.

1 Hold the workpiece in the hands and guide it onto the polishing wheel.

2 Guide the knife over the polishing wheel.

3 Rotate the workpiece so that both sides of the cutting edge are machined evenly.
4 Hold the workpiece at a steep angle and under considerable pressure on the polishing wheel at the beginning.
5 Repeatedly check the condition of the burr.
6 If a burr is no longer visible, guide the workpiece 3-4 times in a flat position over the polishing wheel while applying pressure. This will polish the cutting edge.

Polishing the surface

1 The hands take their positions on the knife.
2 Guide the knife back and forth from side to side over the polishing wheel.
3 Exert only a little pressure.

NOTE

- Prepare the ground surface by pregrinding it on the wet grinding belt to reduce the polishing time.

9.6 Sharpening circular blades

WARNING

Circular blades have a sharp cutting edge around the circumference. They could cause serious injuries.

- Wear cut-resistant gloves when working with circular blades.
- Work with due care and attention.

Specific preparations are needed depending on the diameter of the circular blade. Information regarding the steps are provided in chapter “8.11 Setting up special solutions for circular blades”, page 45.

Start sharpening the circular blades if all preparations have been completed.

1 Lift the circular blade off the grinding wheel with the holder.
2 Press the **I** (ON) button on the main On/Off switch.
3 Move the grinding angle on the grinding device to 25° or to the grinding angle specified by the manufacturer.

4 Set the On/Off switch for the abrasives to position **I** (ON).
5 Set the On/Off switch for the cooling water to position **I** (ON).
6 Lower the circular blade onto the grinding wheel and apply light pressure.

The circular blade immediately rotates automatically as a result of the relative movement to the rotating grinding wheel. If this does not happen, lift the circular blade again immediately and adjust the settings.

7 Continue sharpening until a burr has formed on the circumference of the blade.
8 Repeat the grinding on the other side on circular blades with a symmetrical bevel. To do this, remove the circular blade from the special clamping device, rotate it and mount it again.

Deburr the circular blade after sharpening it.

9 Lower the grinding arm slightly. Place the circular blade on the grinding wheel while applying very little pressure to the grinding lever. The circular blade rotates. Remove the burr by alternately placing a sharpening steel on both sides of the cutting edge at an angle of 15°-20°.

9.7 Grinding hand knives and cleavers

Machine hand knives and cleavers on the wet grinding belt and polishing wheel.

NOTE

Dirty knives can irreparably damage the grinding belt and polishing wheel. The surfaces can heat with long-term use.

- Only grind clean tools.

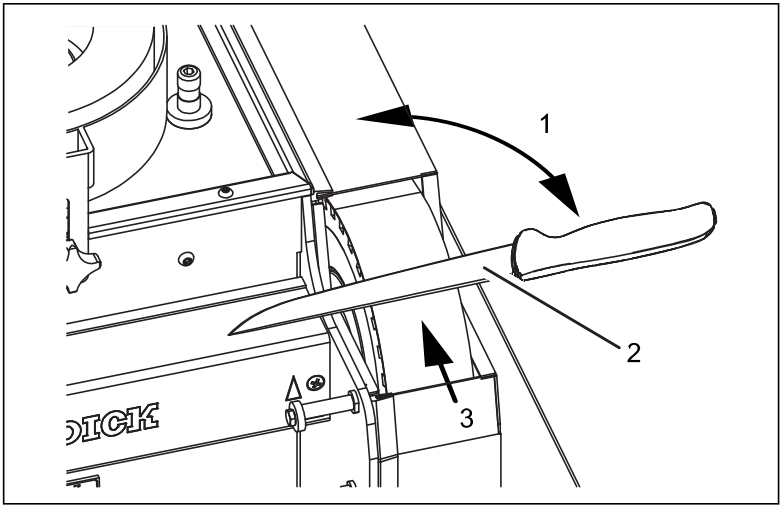


Figure 9.2 – Grinding a knife

[1] Knife positioned at a right angle to the wet grinding belt
[2] Knife edge
[3] Direction of rotation of the wet grinding belt

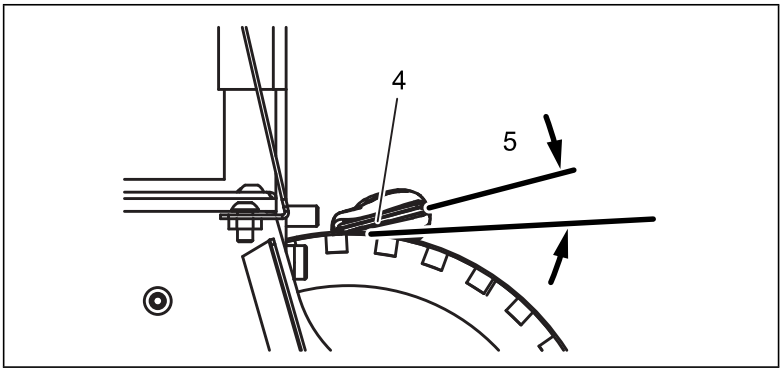


Figure 9.2 – Grinding a knife

[4] Knife blade
[5] Positioning angle for the knife blade (15°) and cleaver (20°).

WARNING

Risk of injury

The blade may cut into the grinding belt and be torn from the hand.

- Never grind against the cutting edge.

1. Position the knife on the wet grinding belt so that the knife edge **[2]** points in the direction of rotation of the wet grinding belt **[3]**.
2. Align the cutting edge of the knife horizontally so that it is positioned roughly perpendicular **[1]** to the grinding belt.
3. Position the knife blade **[4]** on the wet grinding belt at an angle of approx. 15° **[5]**. Position the blade at approx. 20° with a cleaver.
4. Grind the sides of the blade alternately when grinding until a burr has formed over the entire surface.

NOTE

Workpieces heat during the grinding process

An over-heated cutting edge can anneal (loss of hardness) and stress cracks can form on it.

- Always wet grind cutting tools.

NOTE

If the cutting edge has become thicker as a result of frequent grinding, the cutting edge thickness can be reduced again by grinding the flat sides.

9.8 Polishing workpieces

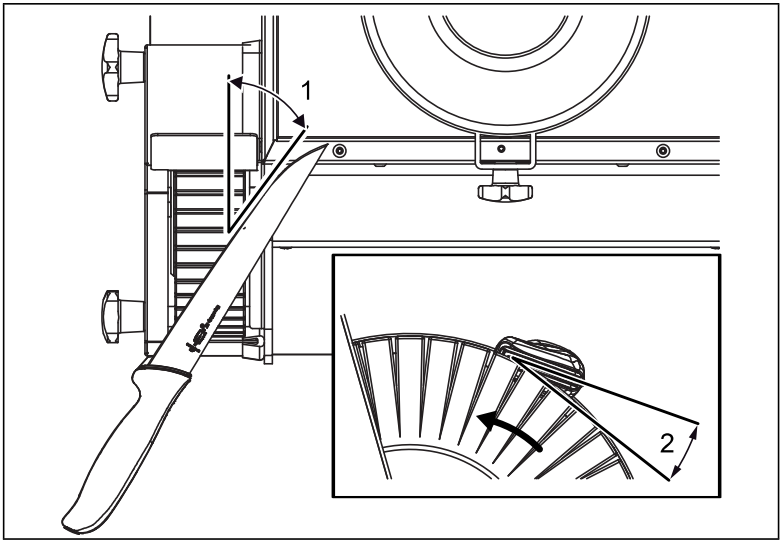


Figure 9.3 – Polishing a workpiece

[1] Positioning angle slanted relative to the running direction (approx. 30°-60°)

[2] Positioning angle relative to the polishing wheel (approx. 20°)

WARNING

Risk of injury

The blade may cut into the polishing wheel and be torn from the hand.

- Never polish against the cutting edge.

1. Hold the polishing compound against the polishing wheel while it is running as required.
2. Position the workpiece slanted relative to the running direction.
3. Position the knife at the polishing wheel at a more obtuse angle than for grinding.
4. Hone the knife until the burr has been completely removed and the surface has the required polish.
5. Polish both sides of the blade alternately.

10. Servicing and Maintenance

WARNING

Risk of injuries due to unauthorised or thoughtless switching on or wrong spare parts

- Always pull out the mains plug before carrying out any maintenance or repair work on the belt grinding machine.
- Use exclusively original spare parts from Friedr. Dick GmbH & Co. KG.

WARNING

Risk of injuries due to improper repair work

- Any repair work on electric components may only be carried out by qualified electricians.

NOTE

After finishing all repairs and servicing work, check that all dismantled parts have been completely and correctly installed, especially the covers.

Perform a test run lasting 1 minute after changing the grinding belt, lamellar buffing wheel or grinding wheel and working on the ribbed or V-belt.

Switch off the machine in case of unusual behaviour and remedy the cause of the problem.

10.1 Cleaning the SM-200 TE grinding and honing machine

Clean the SM-200 TE grinding and honing machine after each use. The grinding sludge is difficult to remove if it dries out.

We recommend lightly lubricating the machine with acid-free oil after cleaning.

1. Remove the belt guards of the wet grinding belt.
2. Remove the polishing station cover.
3. Remove abrasion residues and grinding dust from the

machine and covers, e.g. with a brush.

4 Clean the water tank, remove the grinding sludge and replace the water.

5 Lightly lubricate the grinding and honing machine - including the inside of the covers.

6 Screw the covers on tightly again.

10.2 Dressing the grinding wheel

Clean or smooth dirty or uneven grinding wheels with the dressing tool.

The dressing tool is supplied with the SM-200 TE grinding and honing machine.

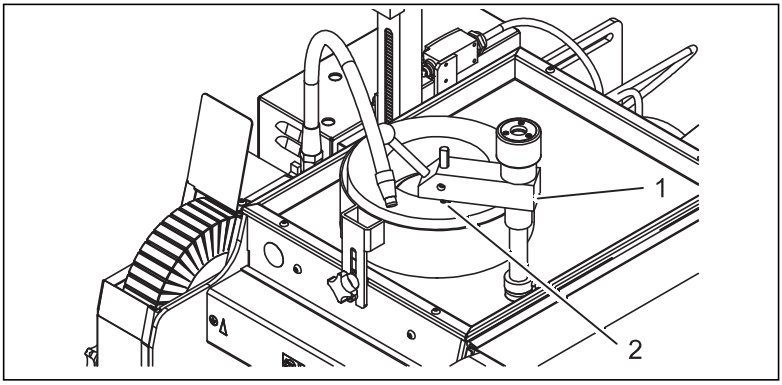


Figure 10.4 – Dressing the grinding wheel

[1] Dressing tool
[2] Dressing diamond

1 Place the dressing tool **[1]** on the mounting next to the grinding wheel.

2 Tighten the clamping screw on the dressing tool.

NOTE

- Before switching on the grinding and honing machine, make sure that the dressing spindle and the diamond are not touching the grinding wheel.

NOTE

- Never dry dress the grinding wheel.

3 Press the I (ON) button on the main On/Off switch.

4 Set the On/Off switch for the abrasives and the On/Off switch for the cooling water to position I (ON).

5 Pivot the dressing tool over the grinding wheel. Adjust the knurled screw so that the dressing diamond touches the disc.

6 Move the dressing tool over the grinding wheel by hand. Slightly adjust the knurled screw with the other hand with every pivoting action.

7 Continue this dressing process until the grinding wheel is clean and smooth.

8 Round the upper edge of the grinding wheel after the dressing process. Use a dressing stone (accessory) to do this.

10.3 Changing the grinding wheel

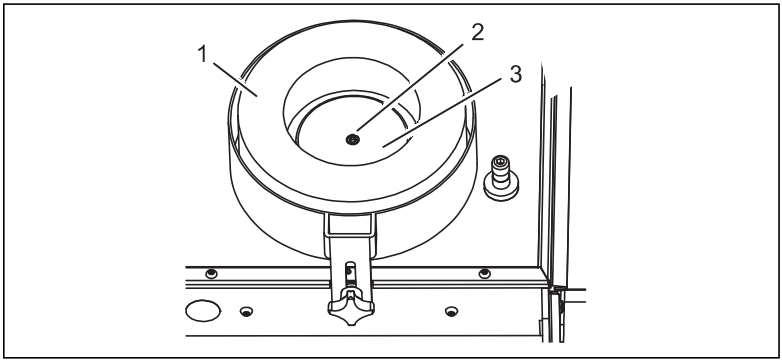


Figure 10.5 – Changing the grinding wheel

[1] Grinding wheel
[2] Hexagon socket screw
[3] Clamping flange

Replace a worn or damaged grinding wheel immediately.

NOTE

Pull out the mains plug before changing the grinding wheel on the grinding and honing machine.

1 Pull out the mains plug on ther SM-200 TE.
2 Set the On/Off switch for the abrasives to position **0** (OFF).
3 Unscrew the hexagon socket screw **[2]** in the middle of the clamping flange of the grinding wheel **[1]**.
4 Remove the grinding wheel.
5 Remove the clamping flange **[3]** from the grinding wheel.
6 Clean the clamping flange and mounting flange.
7 Insert a new grinding wheel.
8 Position the clamping flange in the grinding wheel.
9 Lightly lubricate the hexagon socket screw.
10 Screw in and tighten the hexagon socket screw.
11 Plug in the mains plug on the SM-200 TE again.

10.4 Changing the wet grinding belt

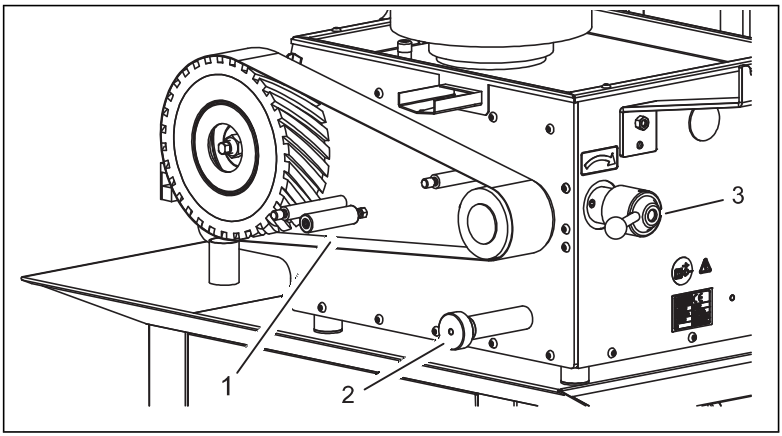


Figure 10.6 – Changing the wet grinding belt on the SM-200 TE

[1] Wet grinding belt
[2] Belt adjusting screw
[3] Belt release lever

Replace a worn or damaged grinding belt immediately.

NOTE

Pull out the mains plug before changing the wet grinding belt on the grinding and honing machine.

1. Pull out the mains plug on the SM-200 TE.
2. Set the On/Off switch for the abrasives to position **0** (OFF).

If the grinding belt is still running, wait until it stops.

3. Loosen the star handles and remove the belt safety guard.
4. Rotate the belt release lever **[3]** in the direction of the arrow.

Remove the wet grinding belt **[1]**.

The direction of rotation is marked with arrows on the inside of the new grinding belt. These arrows must point in the same direction as the arrow for the direction of rotation on the front of the grinding and honing machine. The running direction of the grinding belt will be correct if this is the case.

5. Position the new wet grinding belt.
6. Move the grinding belt on the front roller to the desired position. Move the grinding belt a little by hand.
7. Preset the belt run with the belt adjusting screw **[2]**.
   - Rotating to the left, the grinding belt moves to the left.
   - Rotating to the right, the grinding belt moves to the right.
8. The grinding belt must not run against the guard or the side panel. The SM-200 TE grinding and honing machine is then damaged.

If the running direction of the grinding belt is roughly in the correct position, mount the belt safety guard and fasten it with the star handles.

9. Plug in the mains plug on the SM-200 TE.
10. Move the switch for the abrasives briefly to position **I** (ON).
11. Check the belt movement when starting up the grinding belt. The grinding belt must not touch the side panel or belt safety guard.

Repeat steps **6**, **7** and **8** if the grinding belt does not run in the correct position.

12 If the belt run is roughly in the correct position, set the switch for the abrasives to position **I** (ON).

The abrasives start up.

13 Now make a fine adjustment to the grinding belt with the belt adjusting screw **[2]**.

- Rotating to the left, the grinding belt moves to the left.
- Rotating to the right, the grinding belt moves to the right.

14 Set the correct position.

Replace and adjust the wet grinding belt.

10.5 Changing the polishing wheel

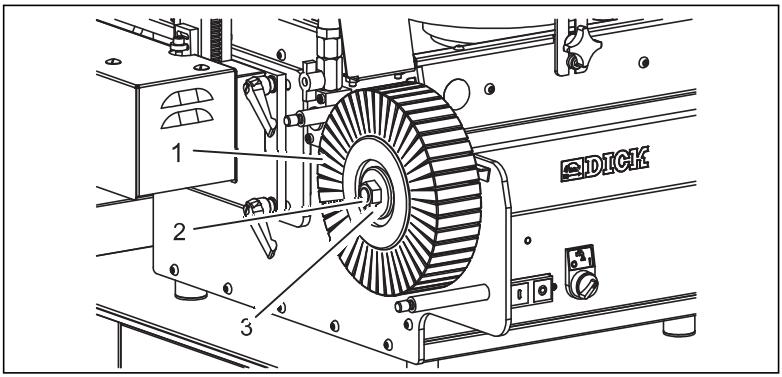


Figure 10.7 – Changing the polishing wheel

[1] Polishing wheel
[2] Mounting nut
[3] Flange cover

Change the polishing wheel if the fins are damaged or worn.

NOTE

Pull out the mains plug before changing the polishing wheel on the grinding and honing machine.

1 Pull out the mains plug on the SM-200 TE.
2 Set the On/Off switch for the abrasives to position **0** (OFF).
3 Loosen the star handles and remove the safety guard.
4 Loosen the mounting nut **[2]** of the flange cover **[3]** (right-hand thread).
5 Remove the flange cover **[3]**.
6 Remove the polishing wheel **[1]**.
7 Clean the shaft.
8 Mount the new polishing wheel.
9 Mount the flange cover.
10 Tighten the mounting nut of the flange cover **[3]** (right-hand thread).
11 Mount the safety guard and tighten the star handles.
12 Plug in the mains plug on the SM-200 TE.

10.6 Readjusting the ribbed belt

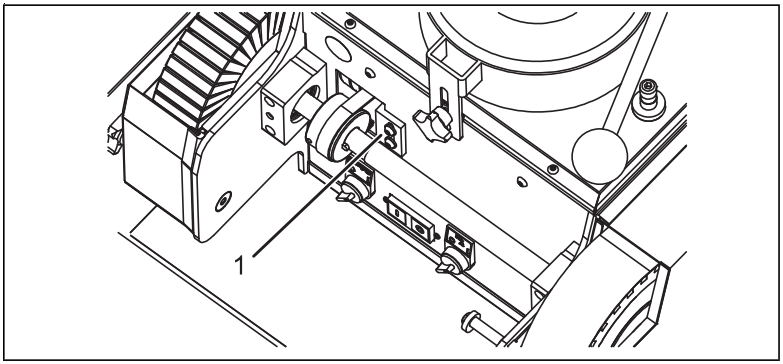


Figure 10.8 – Tensioning the ribbed belt

[1] Idler pulley

Tension the ribbed belt if there is insufficient torque on the grinding belt or polishing wheel.

NOTE

Switch off the grinding and honing machine SM-200 TE and pull out the mains plug before working on the ribbed belt.

1. Pull out the mains plug on the SM-200 TE.
2. Set the On/Off switch for the abrasives to position **0** (OFF).
3. Remove the screws from cover plate.
4. Remove the cover plate.
5. Loosen the screws on the idler pulley.
6. Press and hold the idler pulley upwards.
7. Retighten the screws on the idler pulley.
8. Replace the cover plate.
9. Retighten the mounting screws on the cover.
10. Plug in the mains plug on the SM-200 TE.

10.7 Readjusting the V-belt

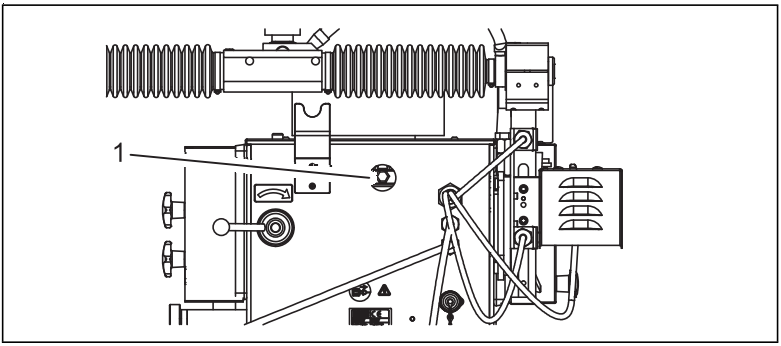


Figure 10.9 – Tensioning the V-belt

[1] Clamping screw

Tension the V-belt if there is insufficient torque on the grinding wheel, grinding belt and polishing wheel.

NOTE

Pull out the mains plug before changing the polishing wheel on the grinding and honing machine.

1 Pull out the mains plug on the SM-200 TE.
2 Set the On/Off switch for the abrasives to position **0** (OFF).
3 Remove the protective cover on the back of the machine.
4 The clamping screw is now visible. Rotate the clamping screw with an SW 17 spanner and lightly tension the V-belt.
5 Replace the protective cover.

10.8 Adjusting the wedge on the lift rod

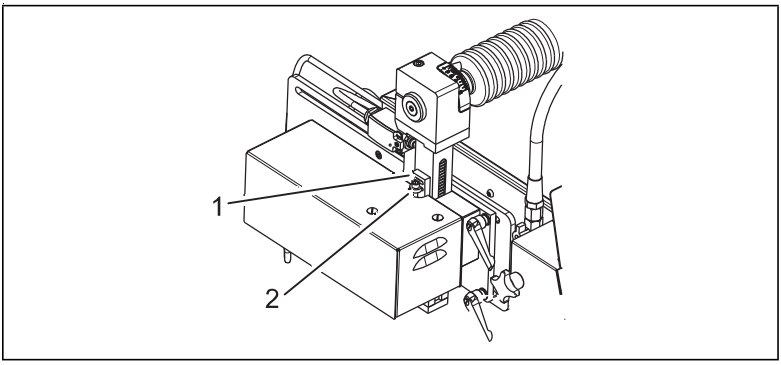


Figure 10.10 – Adjusting the wedge on the lift rod

[1] Wedge
[2] Adjusting screw

Wear can cause play in the transverse direction on the lift rod.

Check the wedge **[1]**. Replace the wedge if there is uneven wear.

If the wedge has worn evenly, reduce the play in the transverse direction by altering the adjusting screw **[2]**.

1 Move the lifting device to the top position with the foot pedal.
2 Place a drop of oil in the transition between the wedge and the lift rod.

3 Use an SW 5 hexagon socket key to screw the adjusting screw into the housing until the play has disappeared.

4 Checking the adjustment: Exert pressure by hand on the scale head in the transverse direction. Observe the film of oil in the transition between the wedge and lift rod. There is no longer any play if no change is noticeable here.

5 Move the lifting device from the top position to the lowest position in the next control step. If the wedge is too tight, the lift rod will jam and the lower position will not be reached.

If the adjusting screw is completely screwed in after a few adjustments, position the collar of the adjusting screw in the overlying groove of the wedge.

Replace the wedge if the adjusting screw is completely screwed in again after the new positioning and making additional adjustments.

10.9 Troubleshooting

Machine

Fault	Cause	Remedy
Motor and pump do not work.	Power supply is not available.	Check if there is a connection to the mains supply. Compare the power supply parameters with the machine data. Check the lines and connections for damage CAUTION: Disconnect the machine from the power supply.
	Safety switch emits no signal.	Belt safety guard must be mounted. Check that the magnetic bar is attached to the guard. Replace the safety switch if necessary.
	Main On/Off switch is defective.	Check the main On/Off switch and connections.
Grinding angle device cannot be moved.	A neutral conductor is needed to operate the lifting motor.	Ensure the connection with the neutral conductor. In power networks without a neutral connector, connect to the earth in the neutral conductor socket. Caution: A safety function is overridden.
	Lift drive is sluggish.	Check the lift rod for damage or contamination.
	Foot pedal is not connected.	Plug in the foot pedal connector plug.
	Component is defective.	Arrange for a qualified electrician to remedy the fault.

Fault	Cause	Remedy
No cooling water.	Insufficient water in the tank.	Refill the water and clean the tank if necessary.
	Pump is not connected.	Connect the pump to the designated socket on the machine.
	Valve is closed.	Open the valve.
	Water pipe is defective or blocked.	Clean the pump filter. Clean or replace the water-bearing components.
	Defective component.	Check the power supply and replace the pump if necessary.
Insufficient torque on the grinding belt or polishing wheel in combination with a whistling noise.	Too little tension on the V-ribbed belt.	Increase the tension of the V-ribbed belt.
	V-ribbed belt is worn.	Replace the V-ribbed belt.
	Dirt is blocking the free running of the discs.	Clean them so that they run freely again.
Insufficient torque on the grinding wheel and grinding belt or on the polishing wheel.	Too little tension on the V-belt.	Re-tension the V-belt.
	V-belt is worn.	Replace the V-belt.
	Component defect is present.	Replace the defective component.
Grinding belt cannot be adjusted.	Deflection pulley is worn. The deflection pulley must be bevelled.	Replace the deflection pulley.
	Mechanics are sluggish or defective.	Repair the mechanics.
	Contact wheel is worn.	Replace the contact wheel.
Grinding belt cannot be tensioned.	Mechanics are sluggish or defective.	Repair the mechanics.
Increased and unusual noises.	Component damage (bearings, loose screw connection).	Localise the source of the noise and replace the defective component if necessary.
Play in the lifting device.	Wear on the wedge.	Tighten the wedge.
	Wear on the guidance.	Replace the assembly.

Circular blade grinding

Fault	Cause	Remedy
Circular blade does not turn.	Sharpening position without relative movement.	Change the contact point.

11. Accessories and Spare Parts

11.1 Accessories

Description	Order number
Universal belt grinding device For sharpening sickle-shaped and linear machine knives	
UB3F:	9 8302 001-A
UB3F-XL:	9 8311 000
UB3F-XL with a pivot arm:	9 8311 011
Wet grinding belt 60 x 1250 mm	
P80:	9 4601 110
P120 (standard):	9 4601 120
P180:	9 4601 130
P400	9 4601 150
Wet grinding wheel Ø 200 x 60 x Ø 50 mm	
P80:	9 4601 060
P120 (standard):	9 4601 010
Polishing wheel:	9 4601 180
Radial grinding arm:	9 8319 3603
Universal grinding arm:	9 8319 3602
Circular blade adapter discs (Centring set), 12-piece, up to Ø 550 mm:	9 8324 120
Circular blade grinding lever:	9 8302 950
Circular blade grinding arm for circular blades Ø 70-Ø 180 mm:	9 8312 000
Circular blade guard Ø 200-Ø 500 mm:	9 8314 100
Dressing stone:	9 8181 060
Wet honing wheel:	9 4601 260
Polishing compound, 1 kg:	9 4700 040
Cooling water additive 1 l:	9 8404 311
Grinding plates:	on request

CAUTION

Risk of accidents due to incorrect accessories.

Using accessories that are not matched to the SM-200 TE grinding and honing machine constitutes an unassessable risk.

- Use exclusively F. DICK original accessories.

Use only F. DICK original accessories that are specified in the operating instructions. The Friedr. DICK specialist advisers or the supplier of the machine will be happy to help you if you have any questions.

See "Ordering accessories and spare parts" on page 73 for ordering accessories.

11.2 Spare parts

The spare parts drawing and spare parts list are available at www.dick.de.

11.3 Circuit diagram

The circuit diagram for the SM-200 TE grinding and honing machine is available at www.dick.de.

11.4 Ordering accessories and spare parts

CAUTION

Risk of accidents due to incorrect accessories.

Using parts that are not matched to the SM-200 TE grinding and honing machine constitutes an unassessable risk.

- Use exclusively F. DICK original accessories and F. DICK original spare parts.

Use only F. DICK original accessories or spare parts that are specified in the operating instructions or diagrams and spare parts lists at www.dick.de for the SM-200 TE grinding and honing machine.

Please proceed as follows to order accessories or spare parts:

- Select the desired parts from the accessories or spare parts list.
- The order must include the following details:

1 Required quantities
2 Item number
3 Name
4 Machine type, machine article number, serial number, year of manufacture (see type plate on back of machine).

- Please send your order for spare parts to your specialist dealer.
- You will find your specialist dealer at www.fdick.com/dealer

12. EC Declaration of Conformity

Manufacturer

Friedr. Dick GmbH & Co. KG
Esslinger Str. 4-10
73779 Deizisau
GERMANY

We hereby declare in sole responsibility that the following product, the

SM-200 TE Grinding and Honing Machine

with the serial number indicated on the type plate of the machine, conforms to the following EC directives:

- EC Machinery Directive (2006/42/EC),
- EMC Directive (2014/30/EU),
- RoHS Directive (2011/65/EU).

European standards applied:

- EN ISO 12100:2010,
- EN 60204-1:2018,
- EN IEC 61000-3-2:2019,
- EN 61000-3-3:2013 + A1:2019,
- EN 55014-1:2017,
- EN 55014-2:2015
- EN IEC 63000:2018

The authorised representative responsible for compiling the technical documentation at Friedr. Dick GmbH & Co. KG is Mr Steffen Uebele, Managing Director.

Traditionsmarke der Profis