

## Operating Instructions

### USK 160 S

Universal Wet-Sharpening Machine



# Operating Instructions

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## USK 160 S Universal Wet-Sharpening Machine

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### Documents for machine operator

Operating Instructions

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# 1. Important notes

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## 1.1 Preface to the operating instructions

These operating instructions are intended to make it easy to learn how to use the universal wet-sharpening machine, hereafter referred to as the grinding machine and to properly utilize its features.

These operating instructions contain important notes on how to operate the grinding machine safely, properly and efficiently. Observing these instructions helps to avoid hazards, reduce repair costs and downtimes and to increase the reliability and service life of the grinding machine.

The operating instructions must always be stored in the location that the grinding machine is used.

The operating instructions must be read and applied by every person tasked with working with the grinding machine, e.g.:

- transport, installation, commissioning
- operation, including error rectification during operation, as well as
- servicing (maintenance, repair).

Recognized technical standards for safe and professional work must be observed in addition to these operating instructions and the binding accident prevention regulations applicable in the country of use and at the place of use.

## 1.2 Warnings and symbols in the operating instructions

The operating instructions use the following symbols/designations that must be followed:



**CAUTION**

The hazard triangle with the signal word "CAUTION" serves as a work safety notice for all work for which there is a risk of personal injury or death.

In these cases, work should be done with special attention and care.

**ATTENTION**

"ATTENTION" is written in places where special attention must be paid to prevent damage or destruction of the grinding machine or its surroundings.

**NOTE**

"NOTICE" refers to user tips and especially useful informations.

# 1. Important notes

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## 1.3 Warning and mandatory signs and their meaning

### 1.3.1 Warning and mandatory signs on the grinding machine

The following warning and mandatory signs have been affixed on the grinding machine:



**CAUTION! RISK OF INJURY FROM ABRASIVE PARTICLES  
(mandatory sign on the machine front)**

Grinding, polishing, deburring and dressing gives rise to grinding particles which can enter the eyes.

Wearing eye protection is mandatory when carrying out such work.

### 1.3.2 General warning and mandatory signs

The following general warning and mandatory signs must be followed:



**CAUTION! DANGEROUS ELECTRICAL VOLTAGE**

The grinding machine carries life-threatening voltage when it is connected to the current supply.

Current-carrying device parts may only be opened by authorized personnel.

The grinding machine must be separated from the mains supply before carrying out servicing, maintenance and repair work on it.



**CAUTION! RISK OF INJURY FROM KNIFE!**

Working with the grinding machine involves grinding knives that could cause serious cut injuries due to their sharpness.

Caution when transporting knives. Use the protective equipment provided by the knife manufacturer. Protective gloves and safety shoes must be worn.

# 1. Important notes

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## 1.4 Rating plate and machine serial number

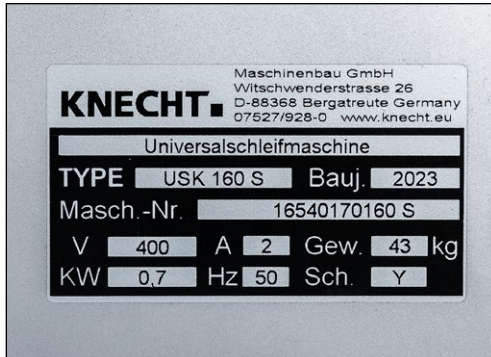


Figure 1-1 Rating plate

The rating plate (1-1) is located on the rear panel of the machine.



Figure 1-2 Machine serial number

The machine serial number (1-2) can be found on the rating plate (1-1) and on the right side wall underneath the wet-grinding belt.

## 1.5 Figure and position numbers in the operating instructions

If the text makes a reference to a machine component depicted in a figure, the figure and position number will be given in brackets.

Example: (7-19/1) means figure number 7-19, position 1.



Figure 7-19 Serrating the cutlery knife

*Hold the cutlery knife (7-19/1) at a steep angle (approx. 45°) on the serration grinding wheel (7-19/2).*

*Then turn slowly until the knife tip is reached.*



## 2. Safety

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### 2.1 Basic safety instructions

#### 2.1.1 Observe notes in the operating instructions

The basic prerequisite for the safe handling and uninterrupted operation of this grinding machine is knowledge of the basic safety instructions and regulations.

- These operating instructions contain important notes on how to operate the grinding machine safely.
- All persons carrying out work on the grinding machine must follow these operating instructions, in particular the safety notices.
- In addition, the rules and regulations regarding accident prevention at the place of use are to be observed.

#### 2.1.2 Obligation on the part of the operator

The operator is obliged to allow only those persons to work on the grinding machine, who

- are familiar with the occupational safety and accident prevention regulations and have received instruction in handling the grinding machine,
- have read and understood the operating instructions, in particular the section entitled "Safety" and the warning notes and have provided signed confirmation of this.

The safety-awareness of the personnel at work will be monitored at regular intervals.

#### 2.1.3 Obligation on the part of the personnel

All personnel working on the grinding machine shall be obliged, before starting work, to

- observe basic occupational safety and accident prevention regulations,
- read the operating instructions, particularly the section entitled "Safety" and the warning notes and provide signed confirmation that they have understood them.

#### 2.1.4 Hazards involved in handling the grinding machine

The grinding machine has been built to the latest technological standards and the recognized rules of technical safety. In spite of this, its use poses inherent risks which could result in bodily harm or even death of the user or third persons, or damage to the grinding machine or other property.

The grinding machine may be used only:

- for its intended purpose
- in a safe and secure condition.

Malfunctions that may impair safety are to be eliminated immediately.

## 2. Safety

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### 2.1.5 Malfunctions

If safety-relevant malfunctions occur with the grinding machine, or if the processing behavior indicates that such malfunctions may have occurred, the grinding machine must be stopped immediately and until such time as the malfunction has been found and eliminated.

Allow only authorized trained personnel to eliminate the malfunctions.

## 2.2 Intended use

The grinding machine is intended exclusively for grinding, deburring and polishing hand knives, cutter knives up to 120l. cutter size and other cutting tools.

Except for hand knives (e.g. boning knives), all knives must be clamped on the corresponding grinding plates.

Before grinding, first check whether the grinding plate fits the knife to be ground. Only then the knife may be ground.

Any other use or use beyond this is not considered as intended. KNECHT Maschinenbau GmbH is not liable for any damage resulting from this. The risk is borne solely the user.

Intended use also includes observing all instructions in the operating manual.

### **ATTENTION**

**Improper use of the grinding machine exists, for example, if:**

- **cutting tools that cannot be guided by hand are ground without a grinding plate.**
- **fixtures are not properly attached.**
- **on the wet-grinding belt, on the finned grinding wheel, on the polishing disk as well as on the wet-honing wheel knives are ground / polished against the cutting edge.**

## 2.3 Warranty and liability

Warranty and liability claims in case of personal injury or property damage are excluded if such damage is attributable to one or more of the following causes:

- improper use of the grinding machine,
- improper transport, commissioning, operation and maintenance of the grinding machine,

## 2. Safety

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- operating the grinding machine with defective safety devices, or using improperly attached or malfunctioning safety and protective equipment,
- failure to observe the instructions with regard to transportation, commissioning, operation, maintenance and repair of the grinding machine,
- unauthorized structural alterations to the grinding machine,
- unauthorized modification, e.g. of the drive conditions (output and speed),
- failure to monitor machine parts that are subject to wear, and
- use of unapproved replacement and wear parts.

Use only original replacement and wear parts. If externally purchased parts are used, it is not guaranteed that they have been designed and manufactured to meet the requirements in terms of stress and safety.

### 2.4 Safety regulations

#### 2.4.1 Organizational measures

Inspect all available safety devices regularly.

Observe prescribed intervals for recurring maintenance work or as specified in the operating instructions!

#### 2.4.2 Protective equipment

Before every commissioning of the grinding machine, ensure that all protective equipment is properly mounted and in functional condition.

Protective equipment may be removed only after the grinding machine has stopped and has been secured against accidental restart.

When attaching spare parts, the protective equipment must be attached by the operator as stipulated.

#### 2.4.3 Informal safety measures

The operating instructions must be permanently available at the place of use of the grinding machine. In addition to the operating instructions, the generally applicable as well as locally relevant accident prevention regulations must also be made available and observed.

All safety alert symbols and hazard warnings on the grinding machine must be complete and clearly legible.

## 2. Safety

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### 2.4.4 Selection and qualification of personnel

Only trained and instructed personnel may work on the grinding machine. Observe the legally permitted minimum age!

The responsibilities of personnel with respect to commissioning, operation, maintenance and repair must be clearly specified.

Personnel still undergoing training or instruction may only work on the grinding machine under the permanent supervision of an experienced person!

### 2.4.5 Machine control system

Only trained and instructed personnel are permitted to switch on and operate the machine.

### 2.4.6 Safety measures in normal operation

Do not operate the machine in any unsafe manner. Only operate the grinding machine if all the safety devices are installed and fully functional.

At least once per shift (or per day), check the grinding machine for externally visible damage and proper functioning of the safety devices.

Immediately report any changes present (including those of the operating behavior) to the responsible office or person. If necessary, immediately shut down the grinding machine and secure it against restart.

Before you switch on the grinding machine, ensure that no one can be injured by the start-up of the machine.

In the event of a malfunction, immediately stop the grinding machine and secure it against restart. Rectify malfunctions immediately.

### 2.4.7 Hazards due to electrical power sources

Work on electrical systems or operating materials may only be performed by a qualified electrician, in accordance with electrical regulations.

Defects, such as damaged cables, cable connections, etc. must be immediately rectified by an authorized specialist.

### 2.4.8 Particular hazard areas

In the area of the grinding stations there is a hazard of pinching and of drawing in e.g. clothing, fingers and hair. Suitable personal protective equipment must be worn.

## 2. Safety

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### 2.4.9 Servicing (maintenance, repair) and fault rectification

Maintenance work is to be carried out on schedule by trained personnel. Inform operating personnel before beginning repair work. Designate a supervisor responsible for this.

For all service work, the grinding machine is to be disconnected from the current supply and secured against accidental restart.

Remove power plug. Secure repair area as necessary.

After completing maintenance work and rectifying any faults, install all safety devices and verify that they are fully functional.

### 2.4.10 Structural alterations to the grinding machine

Do not make any changes, additions or conversions to the grinding machine without the approval of the manufacturer. This also applies to the installation and setup of safety devices.

Any conversion work requires the written permission from KNECHT Maschinenbau GmbH.

Immediately replace machine parts that are not in perfect condition.

Use only original replacement and wear parts. If externally purchased parts are used, it is not guaranteed that they have been designed and manufactured to meet the requirements in terms of stress and safety.

### 2.4.11 Cleaning the grinding machine

Properly handle any cleaning agents and materials used and dispose of them in an environmentally-friendly manner.

Dispose of the wear parts and replacement parts in a safe and environmentally-friendly manner.

### 2.4.12 Lubricants / oils and greases

When using oils and greases, follow the safety regulations applicable to the product. Comply with the special regulations for the food areas.

### 2.4.13 Relocation of the grinding machine

Disconnect the grinding machine from any external power supply, even in the event of a minor change of location. Before restarting the grinding machine, connect it properly to the power supply.

For loading work, use only lifting equipment and load-bearing devices with sufficient lifting capacity. Appoint a qualified instructor for the lifting operation.

No persons other than those designated for this work may be present in the loading and installation area.

## 2. Safety

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Only lift the grinding machine properly with lifting gear as specified in the operating instructions. Only use a suitable transport vehicle with sufficient load-bearing capacity. Secure the load reliably. Use suitable attachment points.

When restarting the machine, proceed only in accordance with the operating instructions.

# 3. Description

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## 3.1 Intended use

The USK 160S Universal Wet-Sharpening Machine can be used to sharpen, deburr and polish hand knives, cutter knives up to cutter size 120l., cutlery knives and other cutting tools.

## 3.2 Technical specifications

### 3.2.1 General

Power supply*	_____	3x 400 V
Mains frequency*	_____	50 Hz
Power Output*	_____	0,7 kW
Power consumption*	_____	0,8 kW
Current consumption*	_____	2 A
Back-up fuse	_____	16 A
Operating noise level (Measured A-weighted emission sound pressure level at workplace LpA)**	_____	approx. 85 dB (A)
Diameter polishing disk (wet-honing wheel)	_____	150 mm
Speed wet-grinding belt/polishing disk (wet-honing wheel)	_____	2500 1/min
Diameter finned grinding wheel	_____	150 mm
Speed finned grinding wheel	_____	2500 1/min
Diameter serration grinding wheel	_____	150 mm
Speed serration grinding wheel	_____	2500 1/min

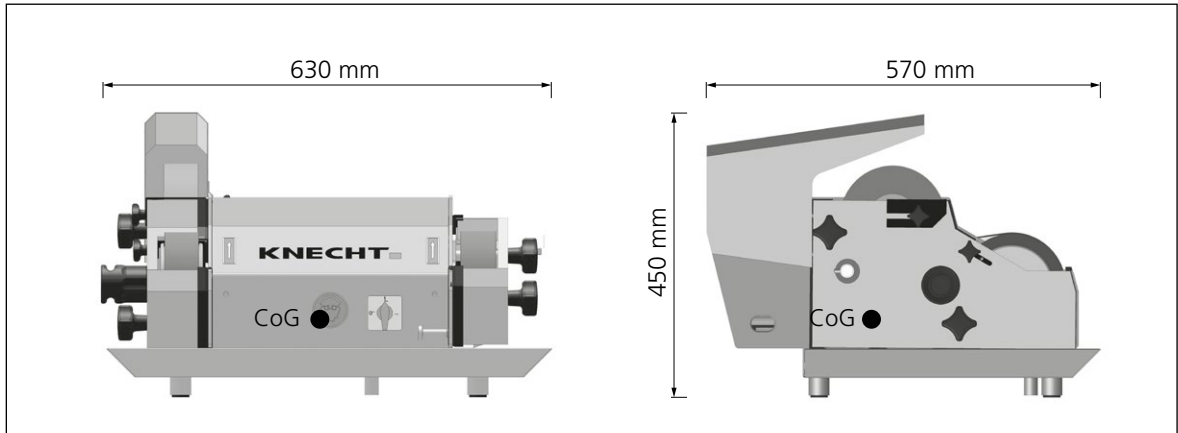
\*) This information may change depending on the electrical power supply.

\*\*\*) Two-digit sound emission value according to EN ISO 4871 (measurement uncertainty KpA. 3 dB (A)). Emission sound pressure level according to EN ISO 11201. Sharpened was a hand knife from the Giesser company.

# 3. Description

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## 3.2.2 USK 160 S (table model)



**Figure 3-1** Dimensions in mm (table model)

Height \_\_\_\_\_ approx. 450 mm

Width \_\_\_\_\_ approx. 630 mm

Depth \_\_\_\_\_ approx. 570 mm

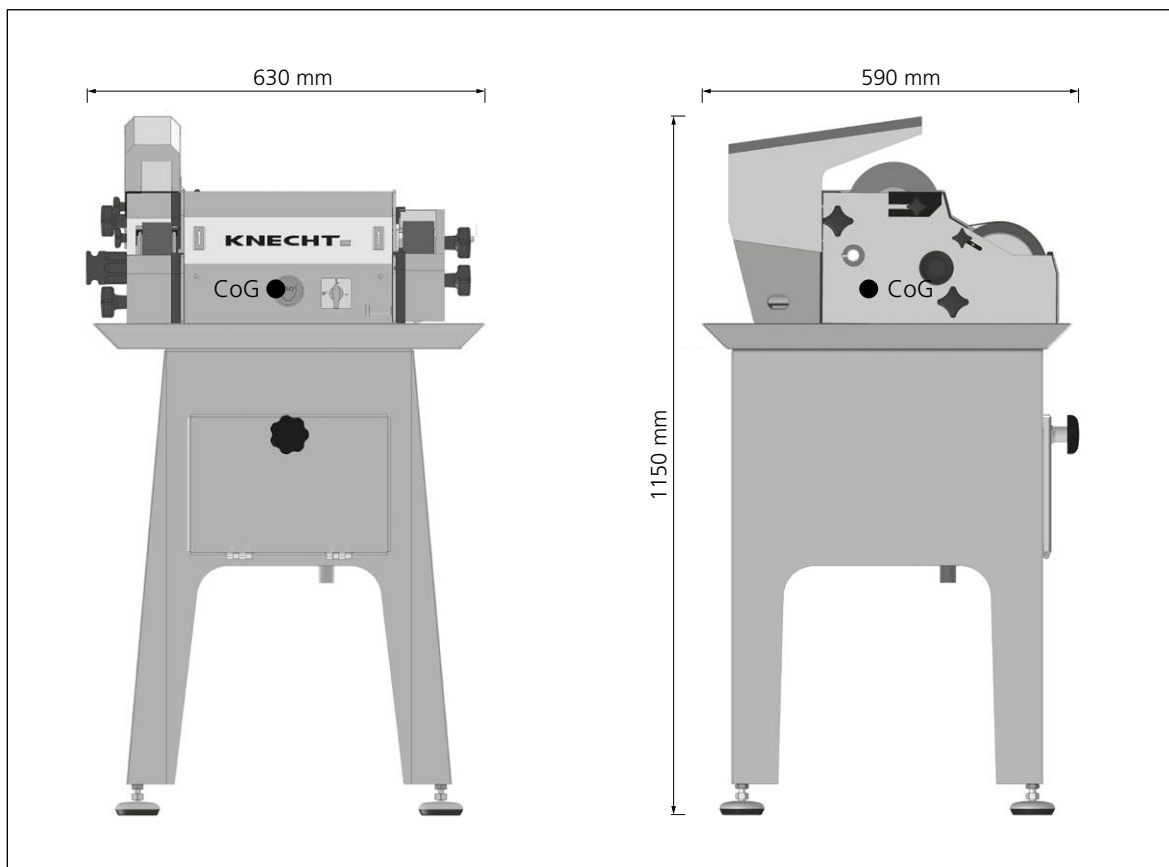
Space requirement (WxD) \_\_\_\_\_ approx. 1200 x 1200 mm

Weight \_\_\_\_\_ approx. 46 kg



# 3. Description

## 3.2.3 USK 160 S (floor model)



**Figure 3-2** Dimensions in mm (floor model)

Height \_\_\_\_\_ approx. 1150 mm

Width \_\_\_\_\_ approx. 630 mm

Depth \_\_\_\_\_ approx. 590 mm

Space requirement (WxD) \_\_\_\_\_ approx. 1200 x 1200 mm

Weight \_\_\_\_\_ approx. 70 kg

## 3. Description

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### 3.3 Functional description

The USK 160S Universal Wet-Sharpening Machine can be used to sharpen, deburr and polish hand knives from 50–550 mm in length.

The grinding machine is equipped with a wet-grinding belt, a finned grinding wheel and a polishing disk.

#### 3.3.1 Optional equipment

##### **Wet-honing wheel**

Instead of the polishing disk, the machine can be equipped with a water-cooled wet-honing wheel.

##### **HV 150 Hand Knife Grinding Attachment**

The HV 150 Hand Knife Grinding Attachment ensures that hand knives are always ground with the same cutting edge angle.

##### **Serration grinding wheel**

For grinding and serrating cutlery knives, the USK 160S can be equipped with a water-cooled serration grinding wheel.

##### **HV 161 Belt Grinding Attachment**

Sickle-shaped cutter knives up to 120l. cutter size are resharpened angle true with the HV 161 Belt Grinding Attachment.

##### **Table/floor model**

The USK 160S is available as a table and floor model.

## 3. Description

### 3.4 Description of assemblies

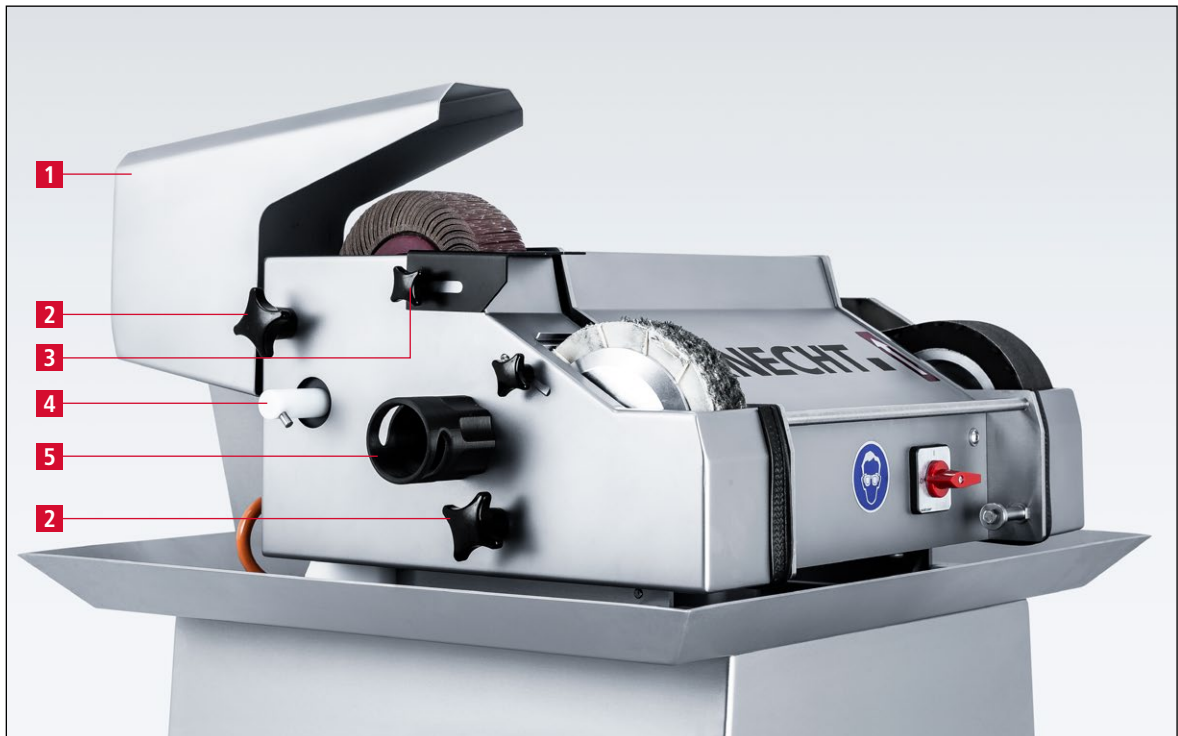


**Figure 3-3** General view of sharpening machine (USK 160S floor model | HV 161)

- 1 Finned grinding wheel
- 2 Polishing disk
- 3 Suction unit
- 4 Water tray
- 5 Machine feet
- 6 Wet-grinding belt
- 7 HV 161 Belt Grinding Attachment (optional)
- 8 Base with storage space for accessories (only floor model)

### 3. Description

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**Figure 3-4** Side view (left) sharpening machine (USK 160S table model)

- 1 Splash guard
- 2 Star handles of protection hood
- 3 Safety slides
- 4 Water supply finned grinding wheel
- 5 Suction nozzle polishing disk

#### 3.4.1 Control panel



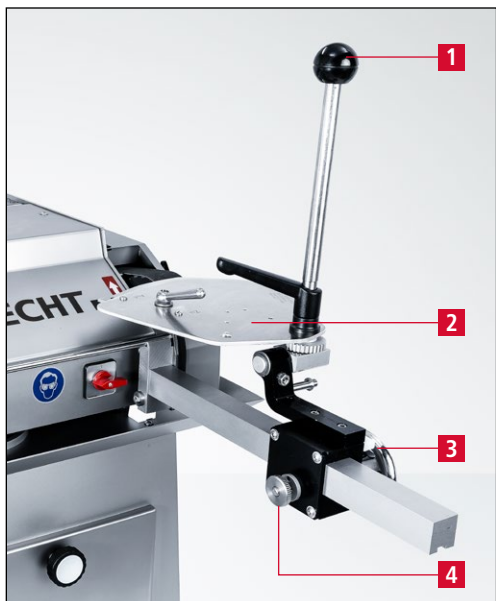
- 1 ON/OFF switch "I/O"

**Figure 3-5** Control panel

# 3. Description

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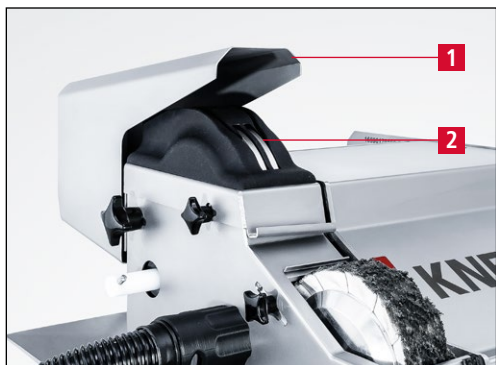
## 3.4.2 HV 161 Belt Grinding Attachment (optional, all versions)



- 1 Grinding lever
- 2 Grinding plate
- 3 Hand wheel for infeed belt grinding attachment
- 4 Spacer discs for grinding angle adjustment

Figure 3-6 HV 161 Belt Grinding Attachment

## 3.4.3 HV 150 Hand Knife Grinding Attachment (optional, all versions)



- 1 Protection hood
- 2 Grinding wheels

Figure 3-7 HV 150 Hand Knife Grinding Attachment

## 4. Transport

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**When transporting, observe the local applicable safety and accident prevention regulations.**

**Only transport the grinding machine with the machine feet facing downwards.**

### 4.1 Transport aids

For transporting and for setting up of the grinding machine, only use adequately dimensioned transport aids.

When using a forklift or a lifting truck, move the fork under the grinding machine.

Note the machine's center of gravity when transporting. The center of gravity (CoG) is shown in figure 3-1 and 3-2.

### 4.2 Transport damage

If damage is detected after unloading, during acceptance of the delivery, immediately inform KNECHT Maschinenbau GmbH and the forwarding agent. If necessary, an independent expert must be called in immediately.

Remove packaging and fastening straps. Dispose of packaging in an environmentally friendly manner.

### 4.3 Transport to another installation site

For transport to another installation site, ensure that the space requirements are fulfilled (see Chapter 3.2).

A permissible electrical connection must be provided at the new installation site. The grinding machine must stand firmly and securely.



**Work on the electrical unit is only to be carried out by an authorized specialist. Observe the locally applicable safety and accident prevention regulations.**

# 5. Installation

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## 5.1 Selection of qualified personnel



We recommend having installation work on the grinding machine carried out by the trained KNECHT personnel.

We are not liable for any damage resulting from improper installation.

## 5.2 Installation site

When determining the installation site, bear in mind the space required for installation as well as maintenance and repair work on the grinding machine (see section 3.2).

## 5.3 Supply connections

The grinding machine is provided ready to connect with the corresponding connection cable.



Ensure that the machine is correctly connected to the current supply.

## 5.4 Settings

KNECHT Maschinenbau GmbH will configure the various components as well as the electrical system before delivery.

**ATTENTION**

Unauthorized alterations to the preset values are not permitted and can damage the grinding machine.

# 5. Installation

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## 5.5 Initial start-up of the grinding machine

Place the grinding machine at the installation site on a level base.

Level out any floor unevenness by turning the machine feet. Align the machine using a spirit level (only floor model).

Have an authorized electrician install the current supply on-site.

Completely install and inspect the protective equipment before commissioning.



CAUTION

**Have all protective equipment checked for proper functioning by authorized trained personnel before commissioning the machine.**



## 6. Commissioning

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All work must be performed by authorized trained personnel.

Observe the locally applicable safety and accident prevention regulations.

**There is a risk that hands, hair and clothing may be pulled in while the grinding machine is switched on.**

**Serious injury may result. Wear personal protective equipment.**



**Figure 6-1** Filling the water tray

Fill the water tray (6-1/1) with approx. 6 liters of water (to approx. 1 cm below the edge of the water tray).

Connect the machine plug to the socket provided on site (3x 400 V, 16 A).



**Figure 6-2** Switching on the sharpening machine

Switch on the sharpening machine.

To do this, turn the ON/OFF switch (6-2/1) to position "I".

Wet-grinding belt, polishing disk and finned grinding wheel rotate.

## 6. Commissioning

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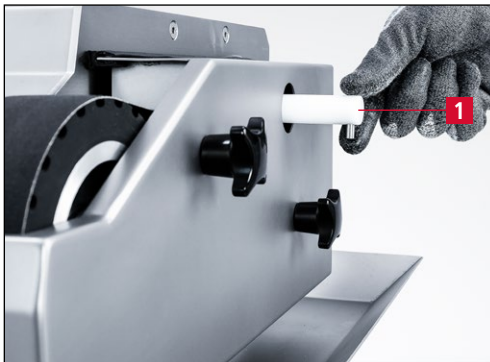


**Figure 6-3** Checking the rotating direction

Check the rotating direction of the wet-grinding belt.

The direction arrow (6-3/1) indicates the rotating direction of the wet-grinding belt and polishing disk and finned grinding wheel.

If the rotating direction is not correct, have the phase reversed by a qualified electrician.



**Figure 6-4** Dosing the coolant supply

Dose the coolant supply by turning the water nozzle (6-4/1) (see Chapter 7.15.1).

After ensuring the prescribed rotating direction, turn the ON/OFF switch (6-2/1) to position "0".

### ATTENTION

**If the rotating direction is incorrect, the polishing disk and finned grinding wheel and the contact disk may come loose.**

# 7. Operation

---

## 7.1 General grinding fundamentals

To sharpen the cutting edge which has become blunt, the metal must be removed from the knife.

To do so, grind the knife up to the cutting edge until a small burr appears.

With the USK 160S, the knife is pre-ground on the wet-grinding belt until the knife has the desired profile. Fine grinding is performed on the finned grinding wheel. The burr is ground here.

The burr is gently removed on the polishing disk under moderate pressure. To do this, the knife is moved alternately to the left and right over the polishing disk approx. 6–10 times (left – right – left – right – left).

As it is not only the sharp cutting edge, but also the long service life that define a blade, the cutting edge angle is another important indicator of a blade's performance.

The smaller the cutting edge angle, the higher its theoretical service life. In practice, however, it seems that a cutting edge angle that is too small results in the cutting edge breaking off and thus becoming blunt.

The cutting edge angle is therefore between 25° and 35°. For cutting edge angles below 15°, the cutting edge is so unstable that it snaps with the smallest resistance.

For a cutting edge angle of more than 40°, the cutting edge is stable but it loses sharpness very fast.

The cutting edge profile is an additional criterion for the characteristics of the cutting edge.

There are three different ground surfaces:



Convex ground surfaces are usually found on cutter knives and hand knives, tapered and concave ground surfaces mainly on circular knives.

In essence: The profile and cutting edge angle stipulated by the manufacturer must be maintained.

# 7. Operation

## 7.2 Switching on the grinding machine



Figure 7-1 Switching on the grinding machine

Switch on the grinding machine. To do this, turn the ON/OFF switch (7-1/1) to position "I".

Wet-grinding belt, polishing disk and finned grinding wheel rotate.

## 7.3 Grinding hand knives

### 7.3.1 Grinding the hand knife on the wet-grinding belt



There is a risk that hands, hair and clothing may be pulled in while the grinding machine is switched on.

Never hold the cutting edge against the running direction of the wet-grinding belt. Serious injury may result!

Grinding, polishing and deburring create abrasive particles that can enter the eyes. Wear safety glasses.



Figure 7-2 Pre-grinding the hand knife

Place the hand knife flat on the wet-grinding belt (7-2/1).

The cutting edge should not run across, but at an angle to the grinding belt. Press the knife onto the grinding belt with your free hand. The stronger the pressure, the more convex the cutting edge.

Move both sides of the hand knife alternately over the grinding belt until the knife has the desired profile.

# 7. Operation

---

## 7.3.2 Fine-grinding the hand knife on the finned grinding wheel



**Figure 7-3** Fine grinding the hand knife

The hand knife is finely ground with the finned grinding wheel.

To do this, place the hand knife flat on the finned grinding wheel (7-3/1).

The cutting edge should not run across, but at an angle to the finned grinding wheel. Press the knife onto the finned grinding wheel with your free hand. The stronger the pressure, the more convex the cutting edge.

Pull both sides of the hand knife alternately over the finned grinding wheel until a small burr has formed over the entire length of the cutting edge.

## 7.3.3 Deburring and polishing the hand knife with the polishing disk



**Figure 7-4** Applying polishing paste

Hold the polishing paste (7-4/1) briefly against the running polishing disk (7-4/2) with little pressure.



**Figure 7-5** Deburring and polishing the hand knife

For deburring/polishing, place the knife on the polishing disk (7-5/1) at an angle of approx. 30°. The cutting edge should not run across but at an angle to the polishing disk.

The burr is gently removed under moderate pressure. To do this, move the knife alternately to the left and right over the polishing disk (left – right – left – right – left) approx. 5–7 times.

## 7. Operation

---

After completion of the grinding process, switch off the grinding machine.

To do this, turn the ON/OFF switch to position "0".

### **NOTE**

**Polish the blade only until the burr has been removed.**

**Reapply polishing compound to the polishing disk after approx. 5–7 knives.**

# 7. Operation

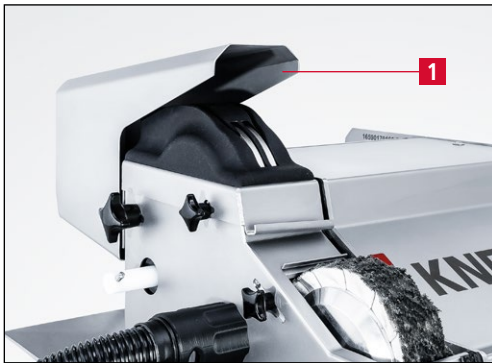
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## 7.4 HV 150 Hand Knife Grinding Attachment (optional)



Serious cuts may occur when handling hand knives.

Protective gloves and safety shoes must be worn.



**Figure 7-6** HV 150 Hand Knife Grinding Attachment

For sharpening of hand knives the HV 150 Hand Knife Grinding Attachment (7-6/1) is fitted to the machine.

The knife guides ensure that the hand knives are sharpened with the correct cutting edge angle at all times. Additional integrated magnets support the knife guidance and make grinding very easy.

### NOTE

More information can be found in the technical documentation of the HV 150 Hand Knife Grinding Attachment.

# 7. Operation

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## 7.5 Sharpening cutter knives

### 7.5.1 HV 161 Belt Grinding Attachment (optional)



Serious cuts may occur when handling cutter knives. Only transport cutter knives using transport devices intended for this purpose.

Protective gloves and safety shoes must be worn.



Figure 7-7 HV 161 Belt Grinding Attachment

For sharpening sickle-shaped cutter knives, the machine is equipped with the HV 161 Belt Grinding Attachment (7-7/1), on which the grinding plate with the knife is clamped.

The belt-grinding attachment enables an angle true cutting edge with simple operation and very little effort.

### NOTE

More information can be found in the technical documentation of the HV 161 Belt Grinding Attachment.



# 7. Operation

## 7.6 Deburring and polishing cutter knives with the polishing disk



**Figure 7-8** Applying polishing paste

Hold the polishing paste (7-8/1) briefly against the running polishing disk (7-8/2) with little pressure.



**Figure 7-9** Deburring and polishing the cutter knife

For deburring/polishing, place the knife on the polishing disk (7-9/1) at an angle of approx. 30°. The cutting edge should not run across but at an angle to the polishing disk.

The burr is gently removed under moderate pressure. To do this, move the knife alternately to the left and right over the polishing disk (left – right – left – right – left) approx. 5–7 times.

After completion of the grinding process, switch off the grinding machine.

To do this, turn the ON/OFF switch to position "0".

### NOTE

**Polish the blade only until the burr has been removed.**

**Reapply polishing compound to the polishing disk after approx. 5–7 knives.**

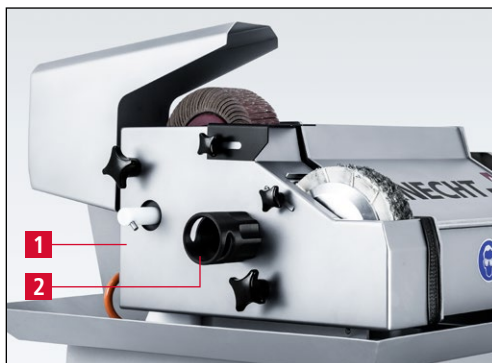
# 7. Operation

## 7.7 Suction unit

### NOTE

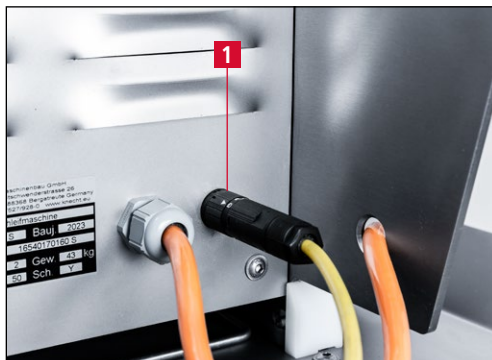
If the grinding machine is equipped with a polishing disk, it may only be operated with a suction unit (industrial vacuum cleaner).

**KNECHT offers a suction set tailored to the USK 160 S.**



**Figure 7-10** Protection hood left with suction nozzle

The left protection hood (7-10/1) of the USK 160 S is equipped with an suction nozzle (7-10/2) for commercially available industrial vacuum cleaners.



**Figure 7-11** Connection for industrial vacuum cleaner

There is a connection (7-11/1) for commercially available industrial vacuum cleaners on the rear of the machine.

### NOTE

**The standard scope of delivery includes a socket (7-11/1) and a plug for commercially available industrial vacuum cleaners.**

# 7. Operation

## 7.8 Sharpening and profiling cutlery knives



There is a risk that hands, hair and clothing may be pulled in while the grinding machine is switched on.

Never hold the cutting edge against the running direction of the wet-grinding belt and polishing disk

Grinding, polishing and deburring create abrasive particles that can enter the eyes.

Wear safety glasses.

### 7.8.1 Mounting the serration grinding wheel



Figure 7-12 Removing the splash guard

The serration grinding wheel is mounted for profiling cutlery knives.

Open the knurled screw (7-12/2) and remove the splash guard (7-12/1) to the rear.

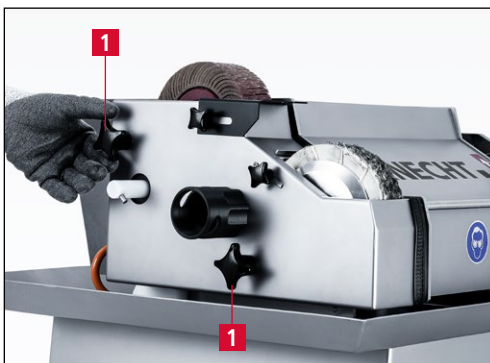
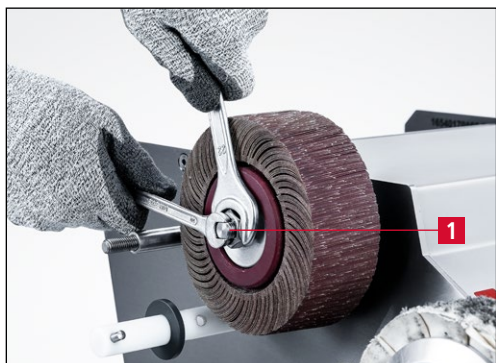


Figure 7-13 Removing the protection hood

Loosen the two star handles (7-13/1) on the left side of the machine and remove the protection hood.

## 7. Operation

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**Figure 7-14** Loosening the finned grinding wheel

Then dismount the finned grinding wheel.

To do this, open the hex nut (7-14/1) **counter-clockwise** with the open-end wrench AF22 mm.

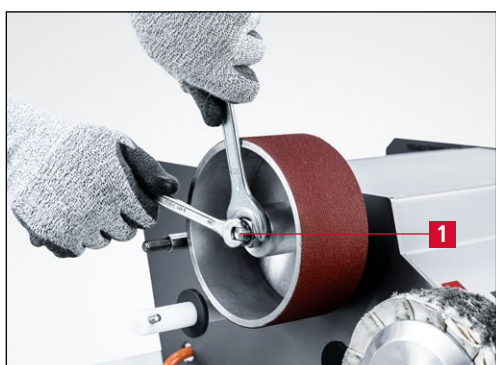
Fix the shaft with the open-end wrench AF10 mm.

Remove the finned grinding wheel and the clamping flanges from the grinding spindle.



**Figure 7-15** Mounting the serration grinding wheel

Place the serration grinding wheel (7-15/1) on the grinding spindle (7-15/2).



**Figure 7-16** Tightening the serration grinding wheel

Fasten the hex nut (7-16/1) clockwise with the open-end wrench AF22 mm.

Fix the shaft with the open-end wrench AF10 mm.

Mount the protection hood again. Tighten the star handles (7-13/1) moderately.

Attach the splash guard (7-12/1).

# 7. Operation

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## 7.8.2 Pre-grinding the cutlery knife



**Figure 7-17** Switching on the grinding machine

Switch on the grinding machine.

To do this, turn the ON/OFF switch (7-17/1) to position "I".



**Figure 7-18** Grinding out the existing serration

The existing serration is ground out on a fine grinding belt (240 grit).

## 7.8.3 Profiling the cutlery knife



**Figure 7-19** Profiling the cutlery knife

Hold the cutlery knife (7-19/1) at a steep angle (approx. 45°) against the serration grinding wheel (7-19/2).

Then slowly move it to the knife tip.

# 7. Operation

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## 7.8.4 Deburring and polishing the cutlery knife



**Figure 7-20** Applying polishing paste

Hold the polishing paste (7-20/1) briefly against the running polishing disk (7-20/2) with little pressure.



**Figure 7-21** Deburring and polishing the cutlery knife

For deburring/polishing, place the knife on the polishing disk (7-21/1) at an angle of approx. 30°. The cutting edge should not run across but at an angle to the polishing disk.

The burr is gently removed under moderate pressure. To do this, move the knife alternately to the left and to the right over the polishing disk (left – right – left – right – left) approx. 5–7 times.

After completion of the grinding process, switch off the grinding machine. To do this, turn the ON/OFF switch (7-17/1) to position “0”.

# 7. Operation

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## 7.9 Deburring hand knives and cutter knives on the wet-honing wheel (optional)



**CAUTION**

There is a risk that hands, hair and clothing may be pulled in while the grinding machine is switched on.

Never hold the cutting edge against the running direction of the wet-honing wheel.

Deburring creates abrasive particles that can enter the eyes.

Wear safety glasses.

### 7.9.1 Mounting the wet-honing wheel



Figure 7-22 Removing the splash guard

Open the knurled screw (7-22/2) and remove the splash guard (7-22/1) to the rear.

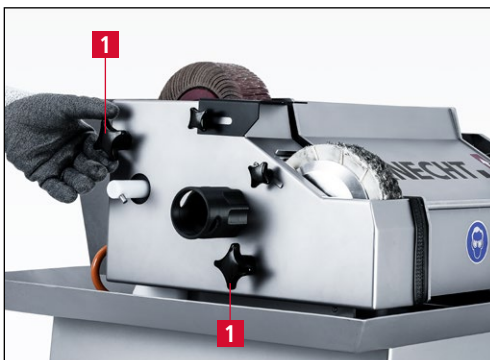
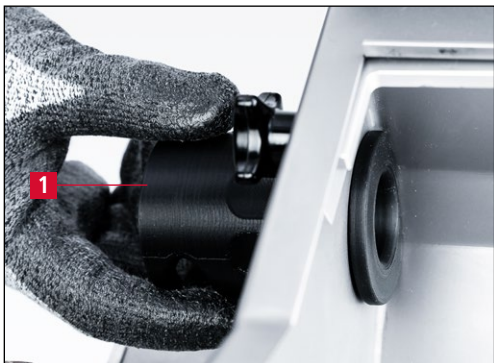


Figure 7-23 Removing the protection hood

Loosen the two star handles (7-23/1) on the left side of the machine and remove the protection hood.

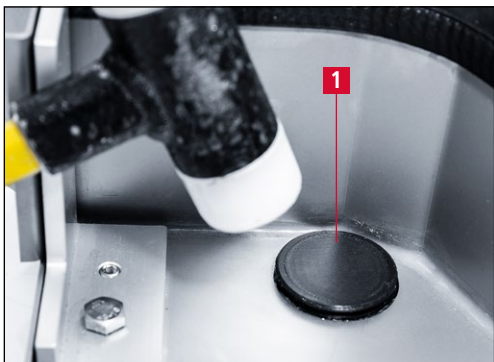
# 7. Operation

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**Figure 7-24** Unscrewing the suction nozzle

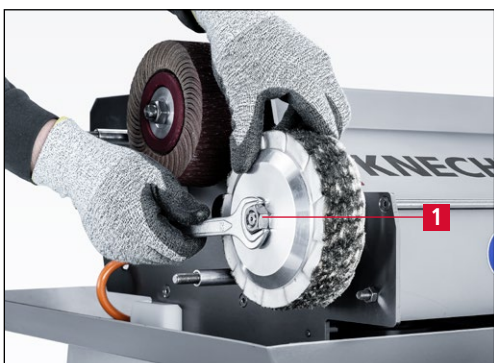
Unscrew the suction nozzle (7-24/1) from the protection hood.



**Figure 7-25** Removing the cover lid

If a cover lid is mounted instead of the suction nozzle, remove the cover lid from the protection hood.

To do this, remove the O-ring from the cover lid using a screwdriver and press the cover lid (7-25/1) outwards.



**Figure 7-26** Loosening the polishing disk

Then disassemble the polishing disk.

To do this, open the hex nut (7-26/1) **counter-clockwise** with the open-end wrench AF 22 mm.

Remove the polishing disk and the clamping flanges from the grinding spindle.



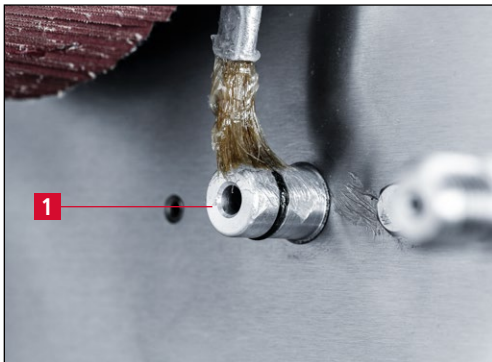
# 7. Operation

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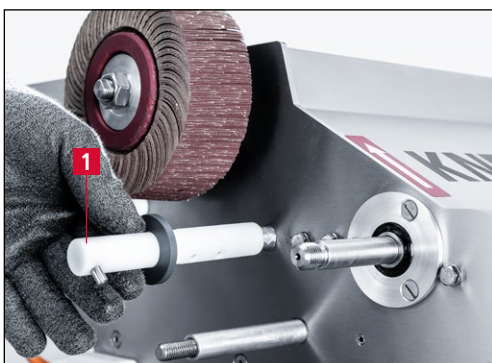
**Figure 7-27** Pulling off the protective cap (7-27/1) at the coolant nozzle.

Pull off the protective cap (7-27/1) at the coolant nozzle.



**Figure 7-28** Greasing the coolant nozzle (7-28/1) (see Cleaning agent and lubricant table, Chapter 8.1.1).

Grease the coolant nozzle (7-28/1) (see Cleaning agent and lubricant table, Chapter 8.1.1).

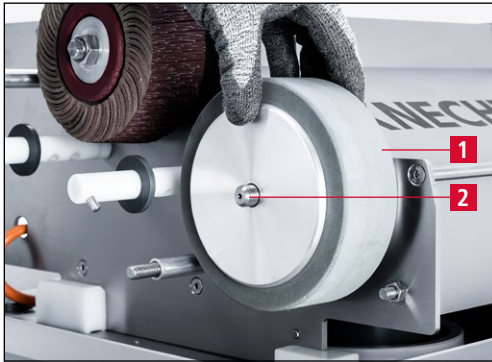


**Figure 7-29** Attaching the water nozzle (7-29/1) onto the coolant nozzle.

Move the water nozzle (7-29/1) onto the coolant nozzle.

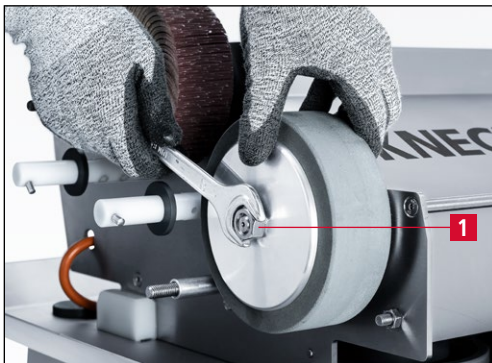
## 7. Operation

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**Figure 7-30** Mounting the wet-honing wheel

Place the wet-honing wheel (7-30/1) with the clamping flanges on the grinding spindle (7-30/2).



**Figure 7-31** Tightening the wet-honing wheel

Close the hex nut (7-31/1) **clockwise** with the open-end wrench AF22 mm.

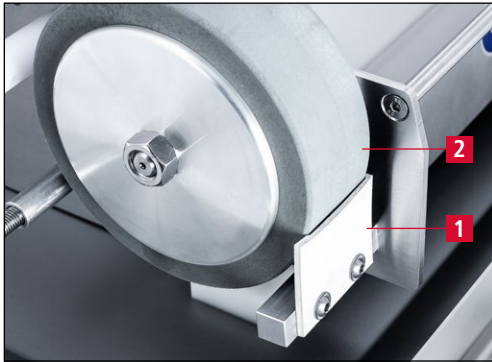


**Figure 7-32** Mounting the wiper

Mount the wiper (7-32/1) with a hexagon screwdriver AF5 mm.

## 7. Operation

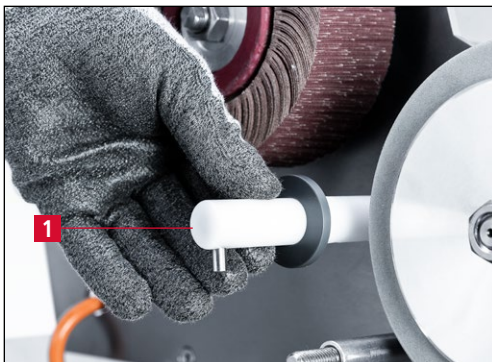
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**Figure 7-33** Positioning the wiper

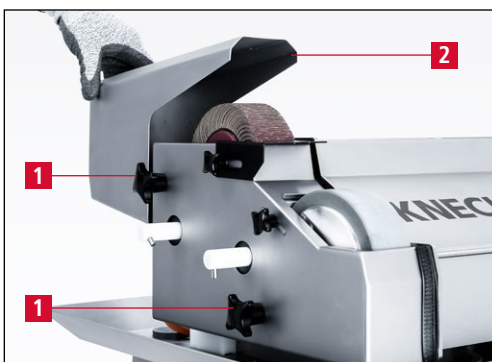
Swivel the wiper (7-33/1) in the direction of the wet-honing wheel (7-33/2) until it rests lightly.

Tighten the screw.



**Figure 7-34** Adjusting the water nozzle

Turn the water nozzle (7-34/1) down to a vertical position.



**Figure 7-35** Mounting the protection hood and attaching the splash guard

Refit the protection hood. Tighten the star handles (7-35/1) moderately.

Attach splash guard (7-35/2).

# 7. Operation

## 7.9.2 Deburring the hand knife and cutter knife on the wet-honing wheel



**Figure 7-36** Switching on the grinding machine

Switch on the grinding machine.

To do this, turn the ON/OFF switch (7-36/1) to position "1".



**Figure 7-37** Fine adjustment of coolant supply

Adjust the coolant supply so that the wet-honing wheel is slightly wetted.

Turning the water nozzle (7-37/1) clockwise = less coolant

Turning the water nozzle (7-37/2) counterclockwise = more coolant



**Figure 7-38** Deburring the knife on the wet-honing wheel

For deburring, guide the knife at a flat angle (approx. 15°) and with moderate pressure along the wet-honing wheel (7-38/1). The cutting edge should not run across, but at an angle to the wet-honing wheel.

The burr is removed gently under moderate pressure. To do this, move the knife alternately to the left and right over the wet-honing wheel approx. 5–7 times (left – right – left – right – left).

Once the burr has been removed, finish deburring at a steeper angle (approx. 17°) and without pressure. To do this, move the knife alternately to the left and to the right over the wet-honing wheel approx. 3 times (left – right – left).

## 7. Operation

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After finishing the deburring process, switch off the grinding machine. To do this, turn the ON/OFF switch (7-36/1) to position "0".

### **NOTE**

**Deburr the blade only until the burr has been removed.**

# 7. Operation

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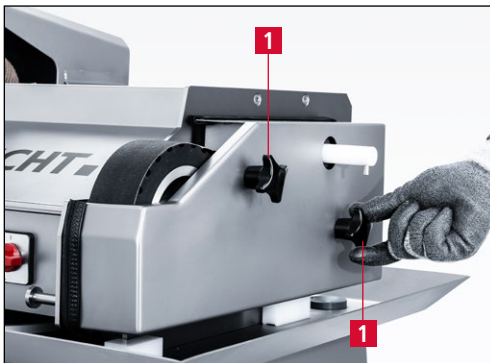
## 7.10 Changing the wet-grinding belt



For all work on the grinding machine, the local safety and accident prevention regulations as well as the chapters “Safety” and “Important information” in the operating instructions must be observed.

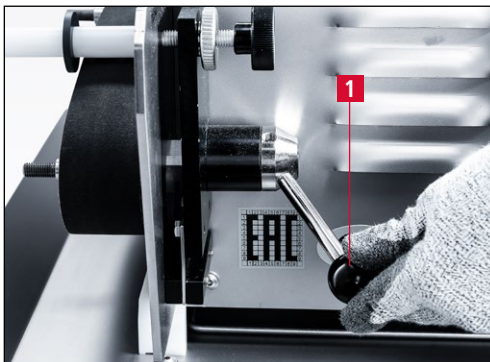
**CAUTION**

Never switch on the machine without the belt protection hood. Risk of injury!



**Figure 7-39** Removing the belt protection hood

Loosen the star handles (7-39/1) on the right side of the machine counterclockwise and remove the belt protection hood.

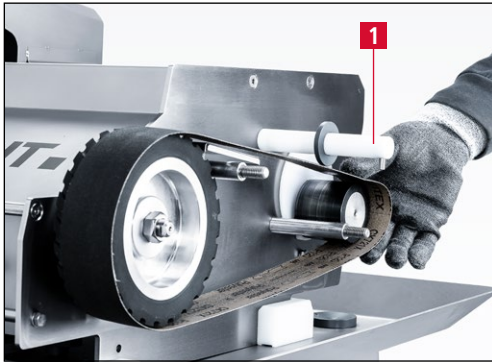


**Figure 7-40** Relieving the wet-grinding belt

Press the belt relief lever (7-40/1) down as far as it will go and hold it in this position.

The wet-grinding belt is now relieved.

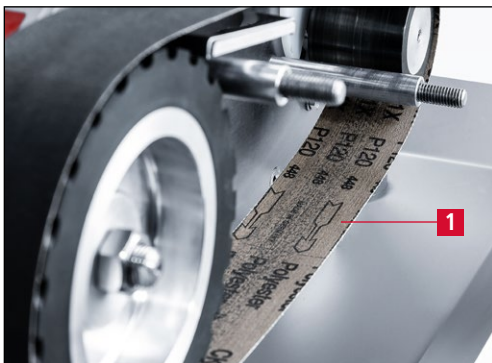
# 7. Operation



**Figure 7-41** Placing the grinding belt

Remove the used grinding belt.

Place the new grinding belt over the contact wheel and guide pulley. Ensure that the grinding belt passes **under the water nozzle** (7-41/1).



**Figure 7-42** Checking the running direction of the grinding belt

The running direction arrows (7-42/1) of the grinding belt must point to the left.

Release the belt relief lever (7-40/1).

The grinding belt is tensioned.



**Figure 7-43** Checking the grinding belt

Turn the grinding belt by hand and check that it does not rub anywhere.

Reassemble the belt protection hood. Tighten the star handles (7-39/1) moderately.

**ATTENTION**

**Observe the running direction arrows (7-42/1) on the inside of the grinding belt.**

# 7. Operation

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## ATTENTION

Only original abrasives from KNECHT Maschinenbau GmbH are permitted to be used.

KNECHT Maschinenbau GmbH assumes no responsibility for the use of non-original abrasives.

### 7.11 Adjusting the belt movement



Figure 7-44 Switching on the grinding machine

Switch on the grinding machine.

To do this, turn the ON/OFF switch (7-44/1) to position "I".

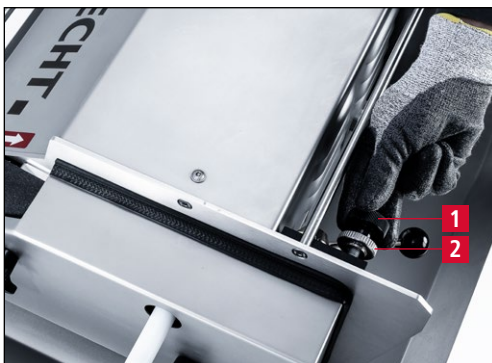


Figure 7-45 Aligning the belt movement

If the grinding belt does not run centrally on the contact wheel, it can be aligned with the belt adjustment (7-45/1).

Turn the belt adjustment (7-45/1) clockwise/counter-clockwise until the grinding belt runs centrally on the contact wheel.

Lock the belt adjustment with the knurled nut (7-45/2).

Switch off the grinding machine.

To do this, turn the "ON/OFF" switch (7-44/1) to the "0" position.



# 7. Operation

## 7.12 Changing the polishing disk (wet-honing wheel)



Do not switch on the machine while the protection hoods are removed!

Serious injuries are possible!



Figure 7-46 Removing the splash guard

To change the polishing disk (wet-honing wheel), first remove the splash guard (7-46/1).

Open the knurled screw (7-46/2) and remove the splash guard (7-46/1) to the rear.

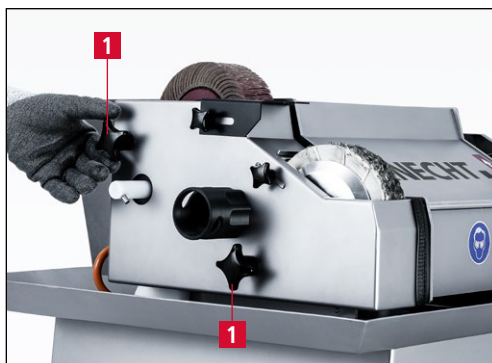


Figure 7-47 Removing the protection hood

Loosen the two star handles (7-47/1) on the left side of the machine and remove the protection hood.

Clean the protection hood under running water.



Figure 7-48 Loosening the polishing disk

Then remove the polishing disk.

To do this, open the hex nut (7-48/1) **counter-clockwise** with the open-end wrench AF22 mm.

## 7. Operation

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**Figure 7-49** Removing the polishing disk and replacing it with a new one

**ATTENTION**

Remove the used polishing disk (7-49/1) and the clamping flanges from the grinding spindle and mount the new polishing disk in reverse order.

Reassemble the protection hood. Moderately tighten the star handles (7-47/1).

Attach the splash guard (7-46/1).

Carry out function check!

**Only original abrasives from KNECHT Maschinenbau GmbH are permitted to be used.**

**KNECHT Maschinenbau GmbH assumes no responsibility for the use of non-original abrasives.**

# 7. Operation

## 7.13 Changing the finned grinding wheel



Do not switch on the machine while the protection hoods are removed!

Serious injuries are possible!



Figure 7-50 Removing the splash guard

To change the finned grinding wheel, first remove the splash guard (7-50/1).

Open the knurled screw (7-50/2) and remove the splash guard (7-50/1) to the rear.

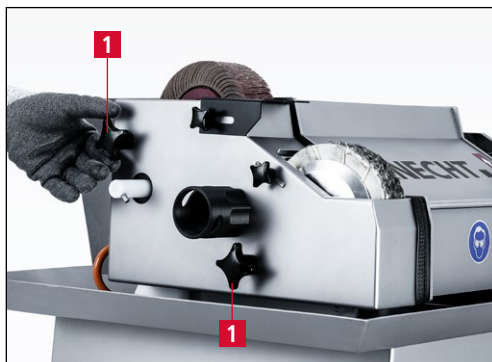


Figure 7-51 Removing the protection hood

Loosen the two star handles (7-51/1) on the left side of the machine and remove the protection hood.

Clean the protection hood under running water.

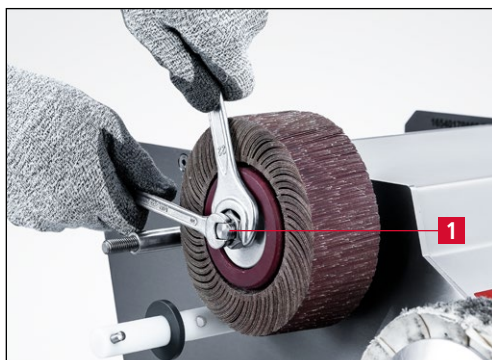


Figure 7-52 Loosening the finned grinding wheel

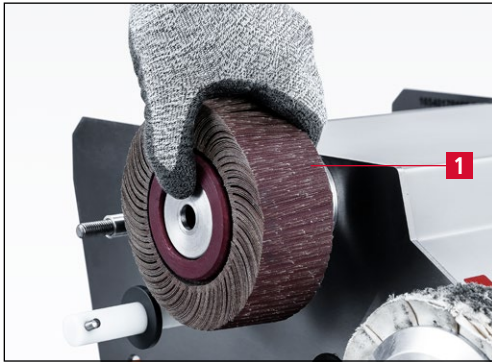
Then remove the finned grinding wheel.

For this purpose, open the hex nut (7-52/1) **counterclockwise** with the open-end wrench AF 22 mm.

Fix the shaft with the open-end wrench AF 10 mm.

## 7. Operation

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**Figure 7-53** Removing the finned grinding wheel and replacing it with a new one

### ATTENTION

Remove the used finned grinding wheel (7-53/1) and the clamping flanges from the grinding spindle and mount the new finned grinding wheel in reverse order.

Observe the position of the fins (see Figure 7-53).

Reassemble the protection hood. Moderately tighten the star handles (7-51/1).

Attach the splash guard (7-50/1).

Carry out function check!

**Only original abrasives from KNECHT Maschinenbau GmbH are permitted to be used.**

**KNECHT Maschinenbau GmbH assumes no responsibility for the use of non-original abrasives.**

# 7. Operation

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## 7.14 Coolant device

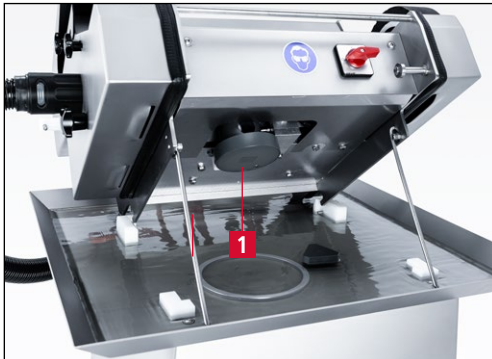


Figure 7-54 Coolant pump

In the USK 160S, the coolant is continuously circulated to the grinding elements by a submersible pump (7-54/1).

The abrasives are not standing in the water when the machine is not running. The grinding abrasion is collected in the water tray.

The coolant pump is driven by a round belt.

## 7.15 Cooling the wet-grinding belt

### 7.15.1 Setting the water nozzle



Figure 7-55 Adjusting the water nozzle

The coolant pump feeds the coolant to the wet-grinding belt via the water nozzle.

The dosing is done by swiveling the water nozzle.

This does not change the flow rate of the coolant, but the angle of impact on the grinding belt.

The pin (7-55/2) on the water nozzle (7-55/1) indicates the angle at which the coolant impacts.

Turn the water nozzle (7-55/1) down to a vertical position.



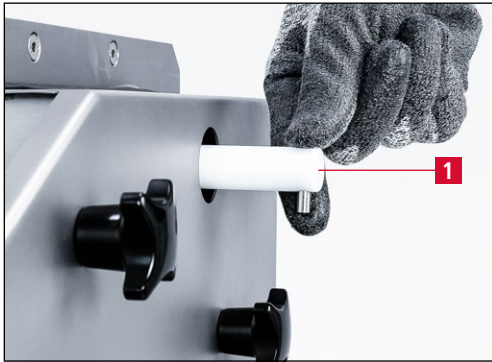
Figure 7-56 Switching on the grinding machine

Switch on the grinding machine.

To do this, turn the "ON/OFF" switch (7-56/1) to position "I".

# 7. Operation

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**Figure 7-57** Fine adjustment of coolant supply

Adjust the coolant supply so that the wet-grinding belt is completely wet.

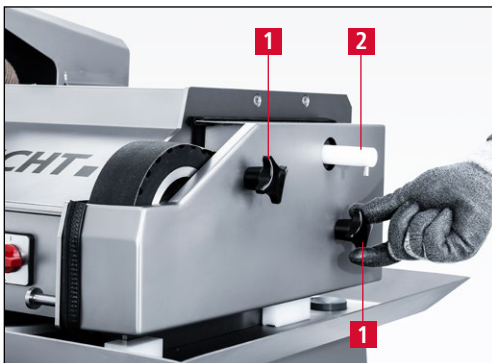
Turning the water nozzle (7-57/1) clockwise = more coolant

Turning the water nozzle (7-57/1) counterclockwise = less coolant

Switch off the grinding machine.

To do this, turn the "ON/OFF" switch (7-56/1) to the "0" position.

## 7.15.2 Cleaning the water nozzle

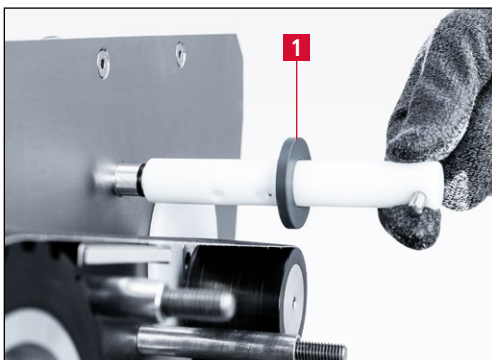


**Figure 7-58** Removing the belt protection hood

To clean the water nozzle (7-58/2), first remove the belt protection hood.

To do this, loosen the two star handles (7-58/1) on the right side of the machine and remove the protection hood.

Clean the belt protection hood under running water.



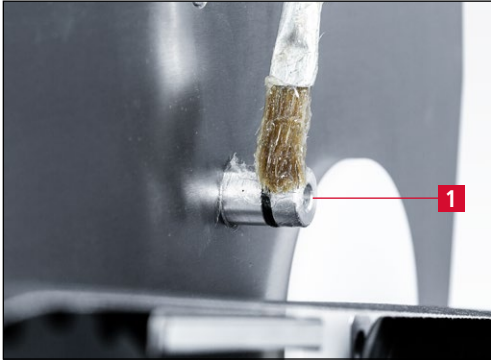
**Figure 7-59** Pulling off the water nozzle

For cleaning, simply pull off the water nozzle (7-59/1).

Clean the water nozzle under running water.

## 7. Operation

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**Figure 7-60** Greasing the coolant nozzle

Before remounting the water nozzle, grease the coolant nozzle (7-60/1) (see Cleaning agent and lubricant table, Chapter 8.1.1).

Reassemble the belt protection hood. Tighten the star handles (7-58/1) moderately.

# 7. Operation

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## 7.16 Cooling the finned grinding wheel (wet-honing wheel)

### 7.16.1 Adjusting the water nozzle

#### NOTE

In contrast to the belt side, where as much coolant as possible should be applied to the wet-grinding belt, it must be dosed more finely on the finned grinding wheel, wet-honing wheel and serration grinding wheel.

**These abrasives should only be wetted with coolant.**

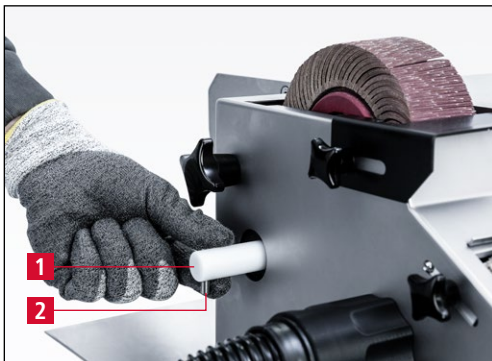


Figure 7-61 Adjusting the water nozzle

The coolant pump feeds the coolant via the water nozzle to the finned grinding wheel (to the wet-honing wheel).

Dosing is carried out by swiveling the water nozzle.

This does not change the flow rate of the coolant, but the angle of impact on the finned grinding wheel (the wet-honing wheel).

The pin (7-61/2) on the water nozzle (7-61/1) indicates the angle of impact of the coolant.

Turn the water nozzle (7-61/1) down to a vertical position.



Figure 7-62 Switching on the grinding machine

Switch on the grinding machine.

To do this, turn the ON/OFF switch (7-62/1) to position "I".



# 7. Operation

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**Figure 7-63** Fine adjustment of the coolant supply

Adjust the coolant supply so that the finned grinding wheel is slightly wetted.

Turning the water nozzle (7-63/1) clockwise = less coolant

Turning the water nozzle (7-63/1) counterclockwise = more coolant

Switch off the grinding machine.

To do this, turn the "ON/OFF" switch (7-62/1) to position "0".

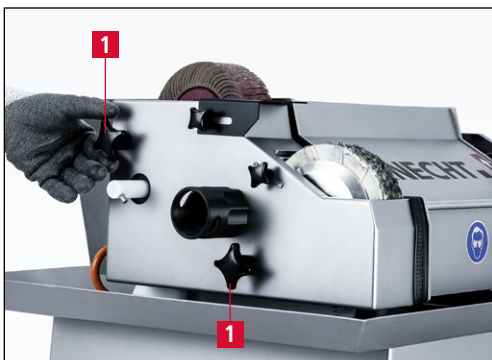
## 7.16.2 Cleaning the water nozzle



**Figure 7-64** Removing the splash guard

To clean the water nozzle, first remove the splash guard (7-64/1).

Open the knurled screw (7-64/2) and remove the splash guard (7-64/1) to the rear.



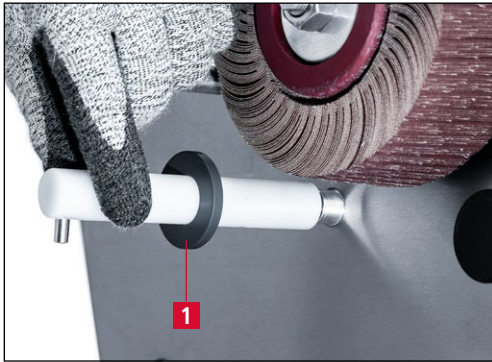
**Figure 7-65** Removing the protection hood

Loosen the two star handles (7-65/1) on the left side of the machine and remove the protection hood.

Clean the protection hood under running water.

# 7. Operation

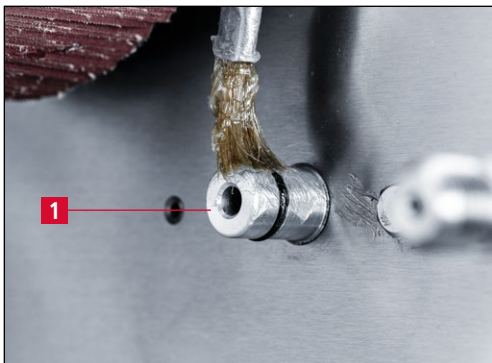
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**Figure 7-66** Pulling off the water nozzle

For cleaning, simply pull off the water nozzle (7-66/1).

Clean the water nozzle under running water.



**Figure 7-67** Greasing the coolant nozzle

Before remounting the water nozzle, grease the coolant nozzle (7-67/1) (see Cleaning agent and lubricant table, Chapter 8.1.1).

Reassemble the protection hood. Tighten the star handles (7-65/1) moderately.

Attach splash guard (7-64/1).

## 8. Care and maintenance

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For all work on the grinding machine, observe the locally applicable safety and accident prevention regulations as well as instructions in the "Safety" and "Important notes" section of the operating instructions.

### 8.1 Cleaning

The grinding machine must be cleaned daily, otherwise the grinding abrasion dries and is difficult to remove.

After cleaning, we recommend the products listed below for the care of the machine (see also Cleaning agent and lubricant table, Chapter 8.1.1).

Coolant must be replaced weekly. The water tray must be cleaned each time the coolant is changed.

#### **ATTENTION**

**Do not spray the grinding machine with water. Do not allow the polishing disk to get wet.**

**When using a wet-honing wheel, the machine may be hosed down with water.**

#### 8.1.1 Cleaning agent and lubricant table

Cleaning / Lubrication work	Interflon	WÜRTH	SHELL	EXXON Mobil
Cleaning and care of machine parts	Dry Clean Stainless Steel	Stainless steel care spray	Risella 917	Marcol 82
Lubricate threads and sliding surfaces	Fin Grease	Multi-purpose grease	Gadus S2	Ronex MP

## 8. Care and maintenance

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### 8.2 Maintenance plan (one-shift operation)

Interval	Assembly	Maintenance task
Daily	All machine surfaces	Clean with soft cloth and care spray.
Weekly	Star handle threads	Lubricate with multi-purpose grease.
	Water tray	Replace coolant and clean water tray.
	Water nozzles	Clean under running water.
	Coolant nozzles	Lubricate with multi-purpose grease.
Annually		Contact the service department of KNECHT Maschinenbau GmbH.

# 9. Disassembly and disposal

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## 9.1 Disassembly

All operating materials must be disposed of properly.

Secure moving parts against slippage.

Disassembly must be conducted by a qualified specialist.

## 9.2 Disposal

After the machine has reached the end of its service life, it must be disposed of by a qualified specialist. In exceptional situations and after consultation with KNECHT Maschinenbau GmbH, the machine may be returned.

Operating materials (e.g. wet-grinding belts, finned grinding wheels, polishing disks, etc.) must also be disposed of correctly.

# 10. Service, spare parts and accessories

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## 10.1 Postal address

KNECHT Maschinenbau GmbH  
Witschwender Straße 26  
88368 Bergatreute  
Deutschland

Phone +49-7527-928-0  
Fax +49-7527-928-32

mail@knecht.eu  
www.knecht.eu

## 10.2 Service

### **Service line:**

For address, see postal address

service@knecht.eu

## 10.3 Wear and spare parts

If you need spare parts, please use the spare parts list provided with the machine. Please place your order using the format described below.

<b>When ordering, please always provide:</b>	<b>(example)</b>
Machine type	(USK 160S)
Machine number	(16650170160S)
Designation of assembly	(base plate)
Designation of individual part	(coolant pump assembly)
Item number (position number)	(1)
Drawing number (article number)	(013E-01-0000)
Quantity	(1 pc)

We are always happy to answer any questions.

# 10. Service, spare parts and accessories

## 10.4 Accessories

### 10.4.1 Abrasives used, etc.

Designation	Dimensions	Grain	Article Number	Note
Wet-grinding belt	960x50	100	412A-23-0518	for heavy material removal
	960x50	120	412A-24-0519	installed on delivery
	960x50	240	412A-26-0520	fine cutting edges e.g. cutlery knives
Wet-grinding belt Compact grain	960x50	180	412A-30-0180	for cutter knives only
Polishing disk	d.150x40xd.15		412N-05-0150	installed on delivery
Polishing paste	95x30		412Z-02-0010	included in scope of delivery
Finned-grinding wheel	d.150x50xd.15	280	412H-03-0624	installed on delivery
Wet-honing wheel	d.150x50xd.100		412K-01-0549	instead of polishing disk for wet deburring
Serration-grinding wheel waterproof	d.150x65xd.15 Tlg. 1,25		412G-01-0498	1,25 mm pitch
	d.150x65xd.15 Tlg. 1,5		412G-02-0543	1,5 mm pitch

### ATTENTION

**Only original abrasives, wear and spare parts from KNECHT Maschinenbau GmbH are permitted to be used.**

**KNECHT Maschinenbau GmbH assumes no responsibility for the use of non-original parts.**

If you require abrasives or other accessories, please contact our sales staff and distributors, or KNECHT Maschinenbau GmbH directly.

Thank you for choosing KNECHT!

# 11. Appendix

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## 11.1 EU Declaration of Conformity

in accordance with EU Directive 2006/42/EU

- Machinery 2006/42/EU
- Electromagnetic Compatibility 2014/30/EU

We hereby declare that the machine designated as follows, due to its construction and design, as well as the version we placed on the market, complies with the relevant fundamental safety and health requirements of the applicable EU Directive.

In case of a modification of the machine not agreed with us, this declaration loses its validity.


<b>Machine designation:</b>	Universal Wet-Sharpener Machine
<b>Model designation:</b>	USK 160S
<b>Machine number:</b>	from no. 16650170160S
<b>Applicable harmonized standards, in particular:</b>	DIN EN 12100-1 DIN EN 12100-2 DIN EN 60204-1 ISO 13857 DIN EN 349
<b>Responsible for documentation:</b>	Peter Heine (B. Eng. Mechanical Engineering BA) Phone +49-7527-928-15 p.heine@knecht.eu
<b>Manufacturer:</b>	KNECHT Maschinenbau GmbH Witschwender Straße 26 88368 Bergatreute Germany

A complete technical documentation is available. The operating instructions document for the machine is available in its original version and in the native language of the user.

The validity of the declaration expires in the event of changes to the legal requirements.

Bergatreute, September 18, 2023

KNECHT Maschinenbau GmbH



Markus Knecht  
CEO



**KNECHT Maschinenbau GmbH**

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