KNECHT

Operating Instructions

HV 161

Belt-Grinding Attachment for Sickle-shaped Cutter Knives

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Operating Instructions

HV 161 Belt-Grinding Attachment for Sickle-shaped Cutter Knives

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Documents for machine operator

Operating Instructions

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1. Important notes

1.1 Preface to the operating instructions

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

These operating instructions contain important notes on how to operate the belt-grinding attachment 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 belt-grinding attachment.

The operating instructions must always be stored in the location where the belt-grinding attachment is used.

The operating instructions must be read and applied by every person tasked with working with the belt-grinding attachment, 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 belt-grinding attachment or its surroundings.

NOTE

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

1. Important notes

1.3 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: (7-8/1) means picture number 7-8, position 1.

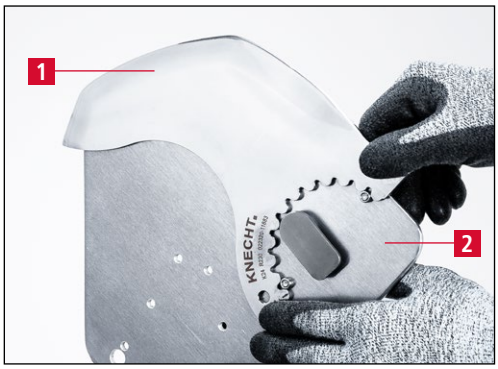


Figure 7-8 *Clamping the knife onto the grinding plate*

Clamp the knife (7-8/1) onto the grinding plate (7-8/2).

2. Safety

2.1 Basic safety instructions

2.1.1 Observe notes in the operating instructions

The basic prerequisite for the safe handling and trouble-free operation of the belt-grinding attachment is knowledge of the basic safety instructions and regulations.

- These operating instructions contain important notes on how to operate the belt-grinding attachment safely.
- All persons carrying out work on the belt-grinding attachment 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 belt-grinding attachment, who

- are familiar with the occupational safety and accident prevention regulations and have received instruction in handling the belt-grinding attachment,
- 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 belt-grinding attachment 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 belt-grinding attachment

The belt-grinding attachment has been built to the latest technological standards and the recognized rules of technical safety. Nevertheless, its use may result in danger to life and limb of the user or third parties, or damage to the belt-grinding attachment or other property.

The belt-grinding attachment may be used only:

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

Malfunctions that may impair safety are to be eliminated immediately.

2. Safety

2.1.5 Malfunctions

If safety-relevant malfunctions occur in the belt-grinding attachment, or if the processing behavior indicates that such malfunctions may have occurred, the belt-grinding attachment 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 HV 161 Belt-Grinding Attachment is exclusively intended for grinding sickle-shaped flat machine knives (e.g. cutter knives). It is suitable for mounting on the KNECHT grinding machines of the USK 160 S model series.

All knives must be clamped onto the corresponding holding fixtures for grinding. First, check whether the holding fixture matches the knife to be ground. The knife can only be ground if this is the case.

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

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

ATTENTION

Improper use of the belt-grinding attachment exists, for example, if:

- **it is installed onto grinding machines other than the KNECHT USK 160 S series,**
- **the knife has been clamped incorrectly,**
- **the knife is ground without being clamped,**
- **protective equipment is not properly attached.**

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 belt-grinding attachment
- improper transport, commissioning, operation and maintenance of the belt-grinding attachment,
- operating the belt-grinding attachment with defective safety devices, or improperly attached or malfunctioning safety and protective equipment,

- failure to observe the instructions with regard to transportation, commissioning, operation, maintenance and repair of the belt-grinding attachment,
- unauthorized structural alterations to the belt-grinding attachment,
- 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 the belt-grinding attachment, ensure that all protective equipment is properly mounted and in functional condition.

Protective equipment may only be removed after the grinding machine has come to a complete stop and has been secured against restarting.

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 belt-grinding attachment. 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 the safety alert symbols and danger warnings on the belt-grinding attachment must be complete and clearly legible.

2.4.4 Selection and qualification of personnel

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

2. Safety

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 belt-grinding attachment 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 belt-grinding attachment if all the safety devices are installed and fully functional.

At least once per shift (or per day), check the belt-grinding attachment 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.

2.4.9 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 power 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 belt-grinding attachment

Do not make any changes, additions or conversions to the belt-grinding attachment 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 belt-grinding attachment

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 with the belt-grinding attachment

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.

Only use a suitable transport vehicle with sufficient load-bearing capacity. Secure the load reliably. See also the operating instructions for the USK 160 S Universal Wet-Sharpening Machine (Chapter 4. Transport).

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

3. Description

3.1 Intended use

The HV 161 Belt-Grinding Attachment is used to grind sickle-shaped cutter knives on the wet-grinding belt.

It can be used to grind precise angles with simple operation and minimal effort.

The attachment is only used on KNECHT grinding machines of the USK 160 S model series.

3.2 Technical specifications

Height	approx. 475 mm
Width	approx. 280 mm
Depth	approx. 165 mm
Weight	approx. 3.5 kg
Maximum grinding radius	260 mm
Minimum grinding radius	70 mm
Poss. Cutter knife sizes*	45 – 120 ltr.

*) The grinding radius must be within the specified range.

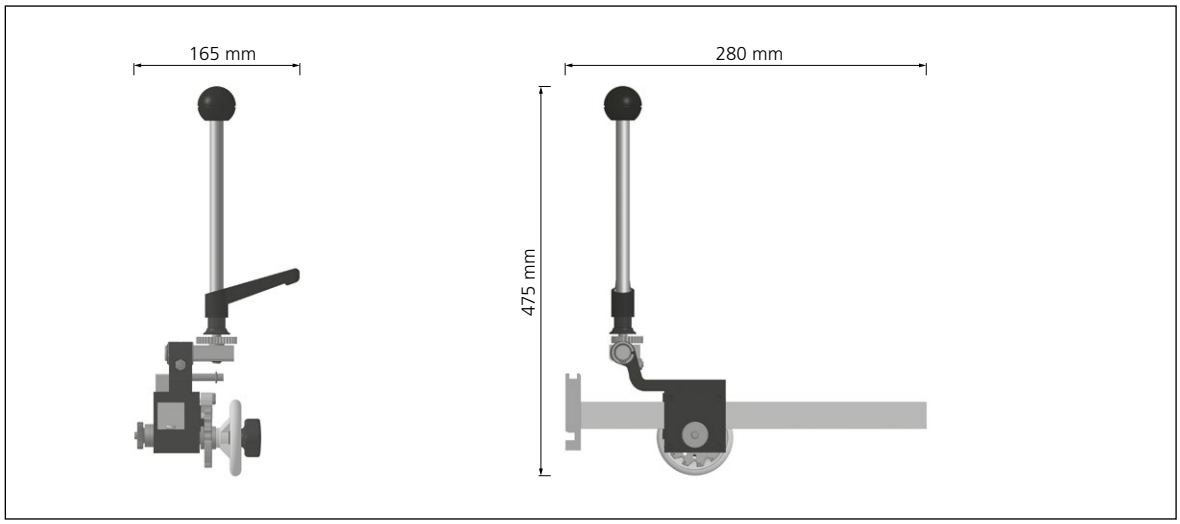


Figure 3-5 HV 161 top and side view (dimensions in mm)

3. Description

3.3 Functional description

The HV 161 Belt-Grinding Attachment can be used to grind knives with sickle-shaped cutting edges up to a grinding radius of 260 mm. To grind, the cutting tool is moved concentrically over the wet-grinding belt.

The HV 161 grinds cutter knives with normal wear.

3. Description

3.4 Description of the assemblies

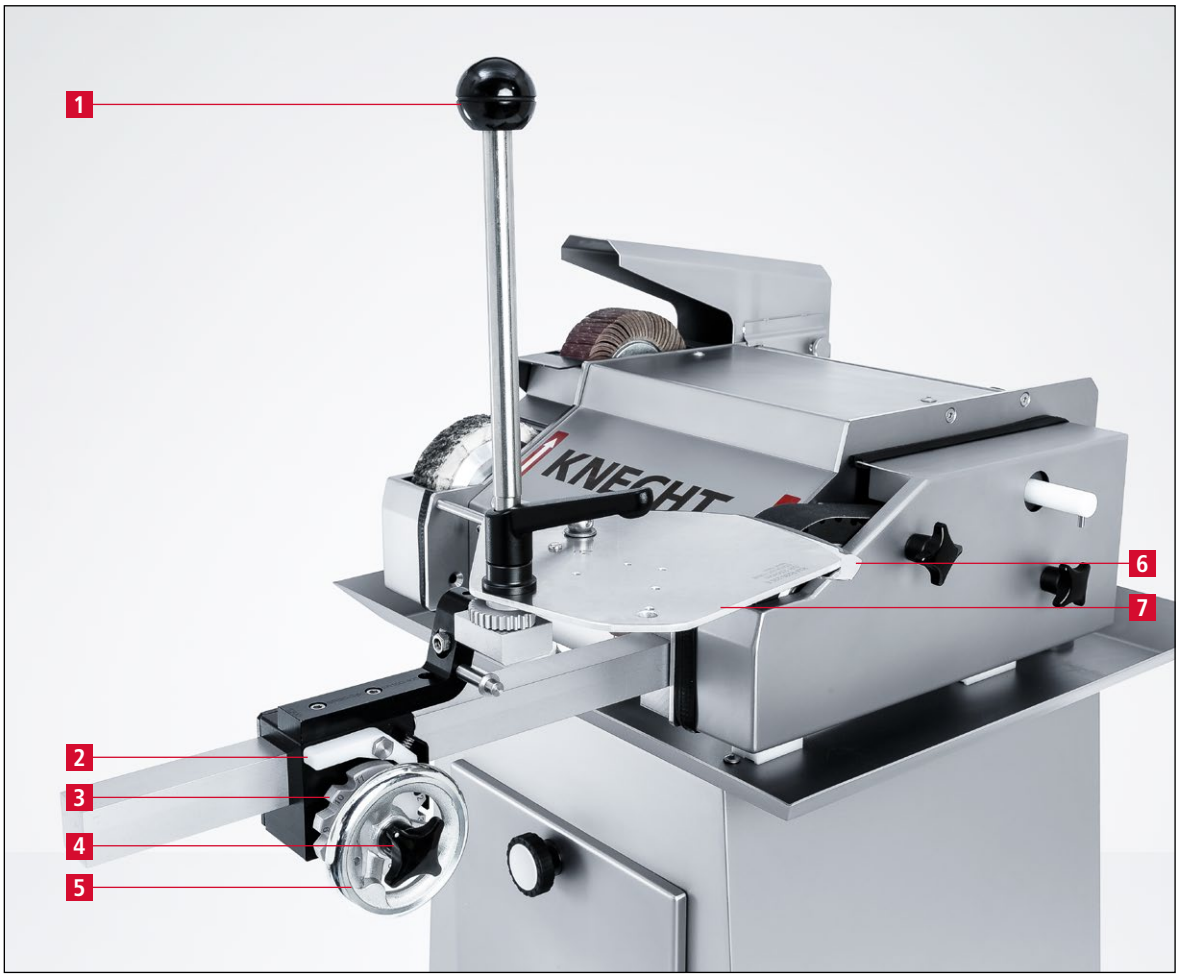


Figure 3-6 General view of the HV 161 Belt-Grinding Attachment

1 Grinding lever
2 Locking lever
3 Locking disc
4 Star handle locking disc
5 Hand wheel
6 Cutter knife
7 Grinding plate

4. Transport

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

4.1 Transport aids

For transporting the belt-grinding attachment only use adequately dimensioned transport aids.

4.2 Transport damage

If damage is detected 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 environment-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).

The belt-grinding attachment must be secured properly during transport.

5. Installation

5.1 Selection of qualified personnel

We recommend having installation work on the belt-grinding attachment carried out by 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 with the belt-grinding attachment (see Chapter 3.2).

5.3 Settings

KNECHT Maschinenbau GmbH will configure the various components before delivery.

ATTENTION

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

5.4 Initial start-up of the belt-grinding attachment

Completely install and inspect the protective equipment before commissioning.

The HV 161 Belt-Grinding Attachment is only suitable for attachment to KNECHT grinding machines of the USK 160 S model series.

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

6. Commissioning

CAUTION

All work may only be carried out by authorized specialist 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 injuries are possible. Wear personal protective equipment.

6.1 Mounting the HV 161 Belt-Grinding Attachment

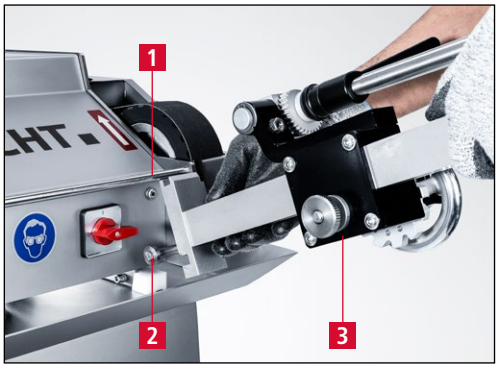


Figure 6-1 Mounting the belt-grinding attachment

Place the belt-grinding attachment (6-1/3) with the recesses on the handle bar (6-1/1) and the stop bolt (6-1/2).

Figure 6-2 Fixing the belt-grinding attachment

Tighten the screw (6-2/1) with the open-end wrench SW 10 mm.

7. Operation

7.1 Grinding sickle-shaped cutter knives on the wet-grinding belt (convex cutting edge)

7.1.1 Setting the grinding angle

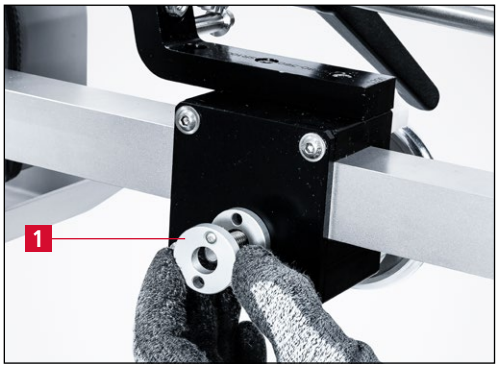


Figure 7-1 Spacer discs for grinding angle setting

The grinding angle is set on the belt-grinding attachment using spacer discs.

Spacer discs for 25 ° and 27 ° (7-1/1) are located on the left-hand side of the guideway housing of the belt-grinding attachment.

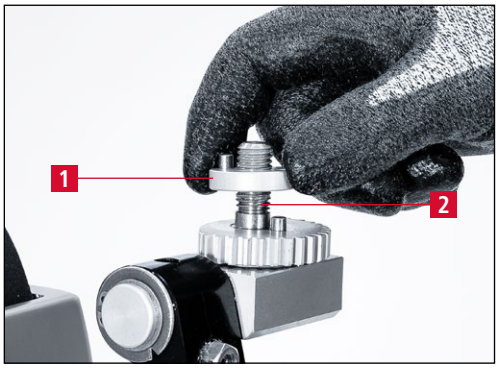


Figure 7-2 Setting the grinding angle

To set the desired grinding angle, place the appropriate spacer disc (7-2/1) on the locating bolt (7-2/2).

7.1.2 Mounting the grinding plate

NOTE

KNECHT produces a suitable grinding plate for each knife. KNECHT requires as precise information as possible on the shape and size of the knife to be ground. A drawing from the knife manufacturer is ideal (knives that can be procured on the open market sometimes deviate from the original contour).

Photos of the entire knife and the knife label are also helpful.

7. Operation

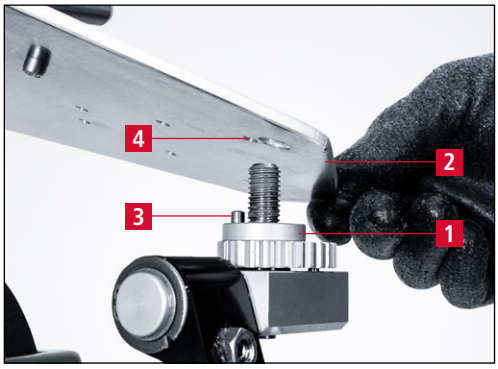


Figure 7-3 Mounting the grinding plate

The grinding plate (7-3/1) is placed over the spacer disc (7-3/2).

The cylindrical pin (7-3/3) of the spacer disc (7-3/1) must engage in the hole (7-3/4) of the grinding plate.

If the grinding plate has several locating holes, mount it so that the cutting segment at the knife tip is ground first.

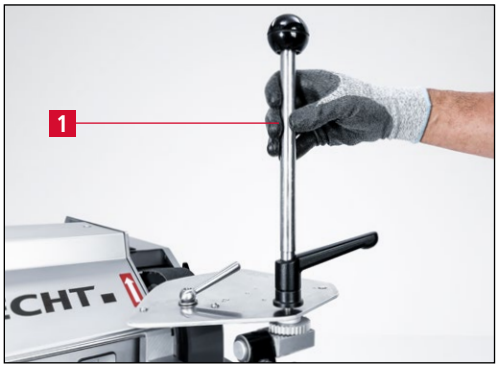


Figure 7-4 Slightly tightening the grinding lever

Turn the grinding lever (7-4/1) clockwise onto the locating bolt and tighten it slightly so that the grinding plate can still be moved.

7.1.3 Adjusting the swivel range of the grinding plate

Figure 7-5 Setting the swivel range

Swivel the grinding plate to the right until the left edge of the grinding plate comes to rest approx. 10 cm to the right of the grinding belt.

Tighten the grinding lever (7-5/1) clockwise.

7.1.4 Clamping the cutter knife

CAUTION

Serious cutting injuries 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.

ATTENTION

Before clamping the knife, check whether the grinding plate matches the knife to be ground. Compare the inscription of the grinding plate with that of the knife.

The use of an unsuitable grinding plate can damage the knife and grinding plate.

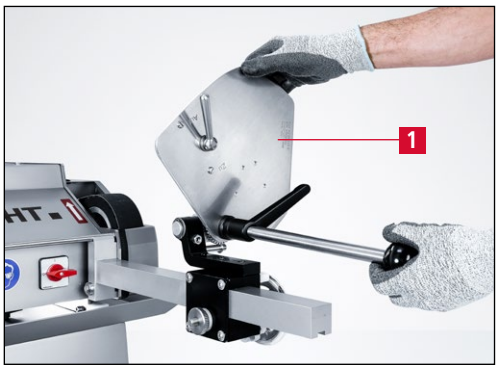


Figure 7-6 Swiveling the grinding plate backward into the anti-rotation lock

Swivel the grinding plate (7-6/1) back as far as it will go. It is now secured against rotating.

Position the grinding plate in such a way that the mounting area of the knife is easily accessible.

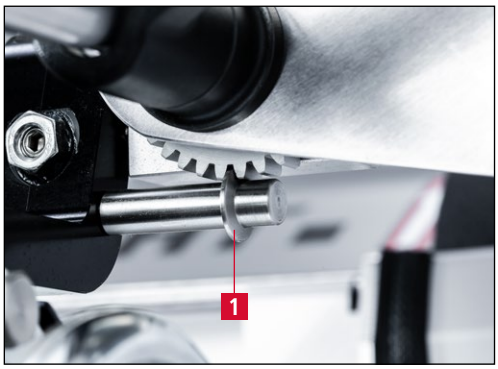


Figure 7-7 Anti-rotation lock

The grinding plate must be engaged in the anti-rotation lock (7-7/1).

7. Operation

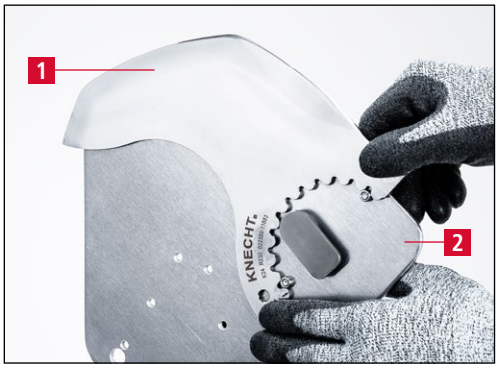


Figure 7-8 Clamping the knife onto the grinding plate

Clamp the knife (7-8/1) onto the grinding plate (7-8/2).

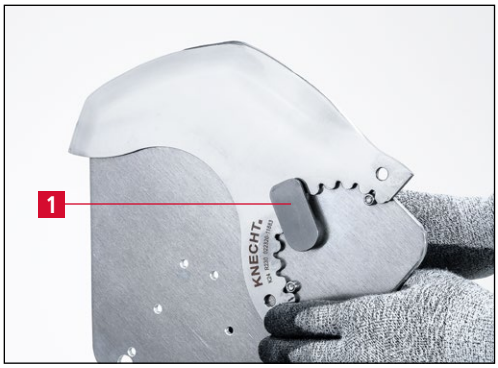


Figure 7-9 Locking the knife on the grinding plate

Turn clamping lever (7-9/1) to "Closed" position.

The knife is now locked.

Swivel the grinding plate with the clamped knife forward to the grinding belt.

7.1.5 Basic function of the HV 161 locking mechanism

NOTE

The locking disc has several locking positions. The first two positions are U-shaped, all subsequent positions are V-shaped.

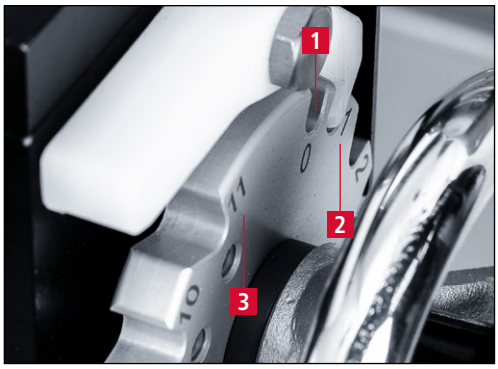


Figure 7-10 Locking disc

The two U-shaped locking positions are used to adjust the knife on the grinding belt and to grind the burr.

The V-shaped locking positions are used for convex grinding of the knife.

0 = adjustment position (7-10/1)
1 = grinding position (7-10/2)
2 – 11 = convex grinding (7-10/3)

7. Operation

NOTE

Every grinding process is started with adjustment position “0”.

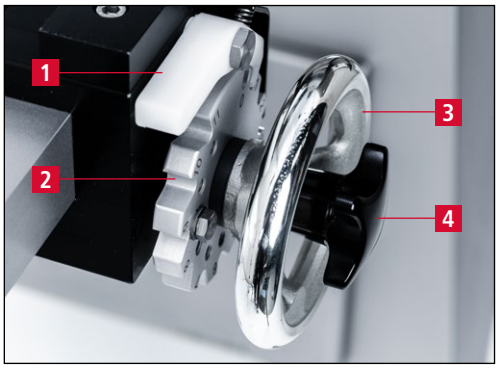


Figure 7-11 Overview locking mechanism

1 Locking lever
2 Locking disc
3 Hand wheel
4 Star handle

7.1.6 Bringing the HV 161 Belt-Grinding Attachment into adjustment position

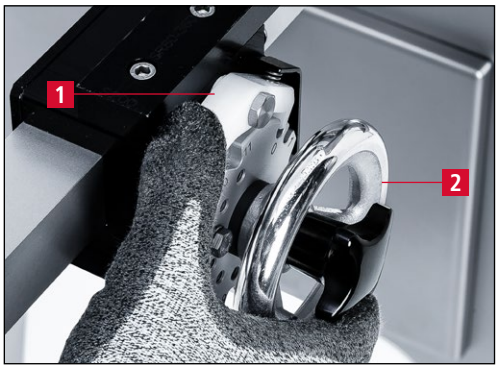


Figure 7-12 Bringing the grinding attachment into adjustment position “0”

To bring the belt-grinding attachment into the adjustment position, press the locking lever (7-12/1) with your thumb and turn the hand wheel (7-12/2) with your remaining four fingers until adjustment position “0” is reached.

Release the locking lever (7-12/1).

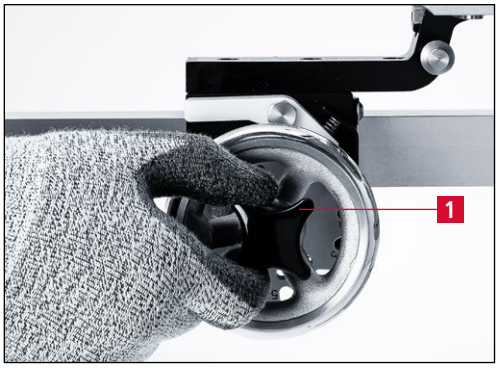


Figure 7-13 Loosening the star handle

Slightly loosen the star handle (7-13/1) by turning counterclockwise.

The grinding attachment can now be moved back and forth freely using the hand wheel.

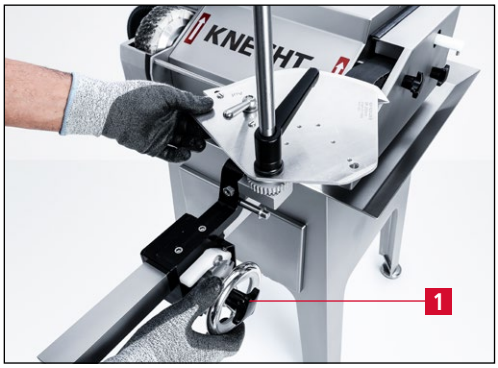


Figure 7-14 Moving the grinding attachment to the grinding belt

Use the hand wheel to move the grinding attachment counterclockwise towards the grinding belt until the cutting edge of the cutting segment to be ground first touches the grinding belt slightly.

Tighten the star handle (7-14/1) clockwise.

7.1.7 Grinding the cutter knife

CAUTION

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

Wear safety glasses.

Figure 7-15 Switching on the grinding machine

Switch on the grinding machine.

To do this, turn the "ON / OFF" switch (7-15/1) to position "I".

7. Operation

Figure 7-16 Bringing the grinding attachment into grinding position "1"

Move the grinding attachment from adjustment position to grinding position "1".

To do so, press the locking lever (7-16/1) with your thumb and turn the hand wheel (7-16/2) counterclockwise towards the grinding belt with your remaining four fingers until grinding position "1" is reached (7-16/3).

Release the locking lever (7-16/1).

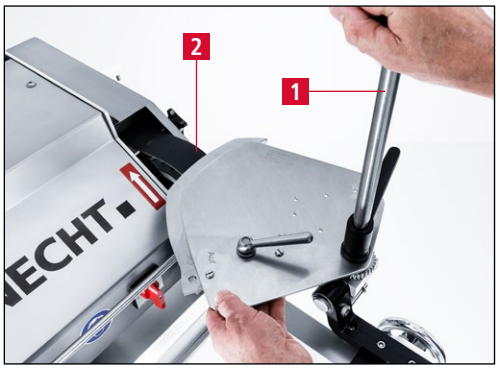


Figure 7-17 Grinding burr

With sickle-shaped cutter knives, each cutting segment is ground separately (1 segment = corner to corner).

Using the grinding lever (7-17/1), press the knife against the grinding belt (7-17/2) with moderate force and move it evenly over the grinding belt.

Grind until a small burr forms on the cutting edge.

Figure 7-18 Sickle-shaped cutter knife, convex grinding

With the following locking positions, the knife is ground convex.

To do this, press the locking lever with your thumb and with the remaining four fingers, turn the hand wheel counterclockwise towards the grinding belt, until locking position "2" (7-18/1) is reached. Release the locking lever.

In this position, make about ten grinding strokes (1 stroke = 1 movement from one corner to the other corner of the cutting segment).

Then move to the next locking position "3". Do approx. ten grinding strokes here also.

Repeat the process until approx. locking position "7" until the entire convex edge of the knife is ground.

7. Operation

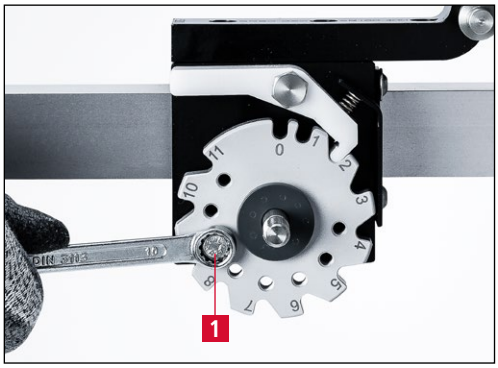


Figure 7-19 Stop screw

The number of infeeds can be limited by the stop screw (7-19/1) in any position.

For better access to the stop screw (7-19/1), unscrew the star handle and remove the hand wheel.

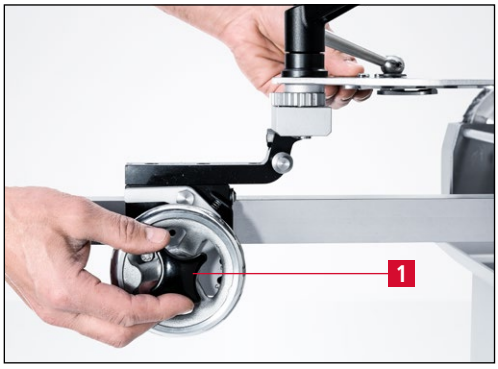


Figure 7-20 Retracting the grinding attachment

Once the first segment has been fully ground, return the grinding attachment to grinding position "1" by turning the hand wheel clockwise toward the operator.

Move the grinding attachment to adjustment position "0" by pressing the locking lever.

Loosen the star handle (7-20/1) and move the grinding attachment approx. 5 cm away from the grinding belt.

Figure 7-21 Swiveling the cutter knife to the next cutting segment

Slightly loosen the grinding lever (7-21/1) and swivel the knife to the next cutting segment.

If necessary, reclamp the grinding plate.

To do so, unclamp the knife. Reclamp the grinding plate as described in Chapter 7.1.2 in the locating hole that matches the next cutting segment.

Grind all cutting segments as described below:

Bring the HV 161 Belt-Grinding Attachment into adjustment position "0" (see Chapter 7.1.6).

Grind cutter knives (see Chapter 7.1.7)

Repeat process for each cutting segment.

7.1.8 Polishing and deburring the cutter knife

Figure 7-22 Deburring and polishing the cutter knife on the polishing disk

Deburr and polish the cutter knife on the polishing disk. See technical documentation of the Universal Wet-Sharpening Machine USK 160 S, Chapter 7.6.

8. Care and maintenance

CAUTION

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 belt-grinding attachment must be cleaned after each grinding operation, otherwise the grinding abrasion dries and is difficult to remove.

After cleaning the belt-grinding attachment, we recommend the following products for machine care (see also cleaning agent and lubricant table in Chapter 8.1.1).

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
Lubricating of threads and sliding surfaces	Fin Grease	Multi-purpose grease	Gadus S2	Ronex MP

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.
	Guideways	Clean and lubricate with multi-purpose grease.
Annually		Contact the service department of KNECHT Maschinenbau GmbH.

9. Disassembly and disposal

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 with all grinding attachments by a qualified specialist company. In exceptional situations, and after consultation with KNECHT Maschinenbau GmbH, the machine can be returned.

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

10. Service, spare parts and accessories

10.1 Postal address

KNECHT Maschinenbau GmbH
Witschwender Strasse 26
88368 Bergatreute
Germany

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.

When ordering, please always provide:	**(example)**
Type of machine	(HV 161)
Designation of individual part	(Spacer disk 27°)
Item number	(10)
Drawing number (article number)	(2000030-3908)
Quantity	(1 pc)

We are always happy to answer any questions.

11. Appendix

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.

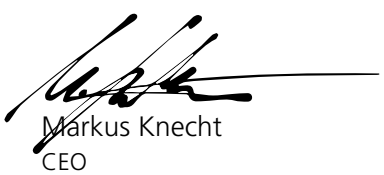
Designation of the machine:	Belt-Grinding Attachment
Model designation:	HV 161
Applicable harmonized standards, in particular:	DIN EN 12100-1 DIN EN 12100-2 DIN EN 60204-1 ISO 13857 DIN EN 349
Responsible for documentation:	Andreas Doerr (State-certified technician) Phone +49-7527-928-81 a.doerr@knecht.eu
Manufacturer:	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, November 4, 2024

KNECHT Maschinenbau GmbH



Markus Knecht
CEO

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