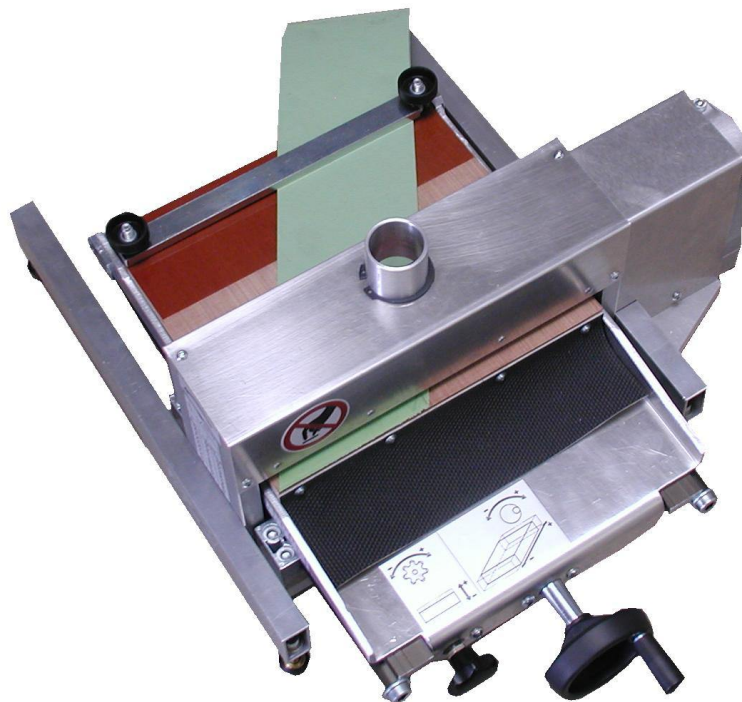




Operating Instructions

Grinding Tool GKR 230-T



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BELTINGTOOLS
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Introduction

We would like to congratulate you for having purchased the Müssel-Belting Tools made by Müssel Maschinenbau GmbH and to thank you for the confidence you placed in us.

This operating instruction provides you with important information for the proper and safe use of the grinding tool, **GKR 230-T**.

Owing to our experience over decades in the development and the fabrication of finishing tools for conveyor belts and driving belts, these devices have been designed according to the latest state of technique and in compliance with this application. Please find further information on splicing types and finishing parameters in the detailed splicing instructions or in the belt specific technical data sheets of the belt manufacturer.

Please note that the future usage conditions of the conveyor belt have to be considered for the choice and the finishing of splices.

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1 General Information

1.1 Name and address of the manufacturer

Müssel Maschinenbau GmbH
Reichelsweiherstraße 8
95615 Marktredwitz
GERMANY

1.2 Identification of the device

Product designation:	Grinding tool
Serial/Type designation:	GKR 230-T
Serial number:	see type label
Year of construction:	see type label

1.3 CE-Declaration

see fixed label



1.4 Declaration of incorporation

DECLARATION OF INCORPORATION in accordance with the EC machinery directive 2006/42/CE (attachment II B)

The manufacturer
Müssel Maschinenbau GmbH
Reichelsweiherstraße 8
95615 Marktredwitz
GERMANY

declares herewith that the uncompleted machine described mentioned below

Product designation: Grinding tool

Serial/Type designation: GKR 230-T

Serial number: see type label

Year of construction: see type label

complies with all fundamental requirements of the machinery directive 2006/42/CE, insofar as it is possible in the scope of delivery. Furthermore, we do declare that the special technical documentation had been issued according to attachment VII part B of this directive.

The uncompleted machine complies additionally with the purposes of the directive 2004/108/CE on the electromagnetic tolerance. The protection targets of the directive 2006/95/CE on electrical means of production resources are observed.

We commit ourselves to provide, upon justified demand, the market controlling authority with the specific documentation regarding the uncompleted machine.

The uncompleted machine can only be commissioned when it has been determined – if necessary – that the machine or the plant, in which the uncompleted machine has to be incorporated, complies with the dispositions of the directive 2006/42/CE on machinery and the die EC Declaration of Conformity according to attachment II A has been issued.

Marktredwitz, 01.02.2015 Langner Reinhard (Vice President of Establishment)
Place, Date Name, first name (company function)

i.v. Langner
Signature



2 General Safety Instructions

The following document contains important information on serious risks when operating the tool described or important technical information on the tool or processes used. Symbols are used to highlight this important information and indicate as follows:



This symbol is always to be found in connection with an endangerment and its respective signal word.

Signal words hierarchy:

Danger: This signal word is indicating a person endangerment with a high risk level which causes death or serious injury, in case it cannot be avoided.

Warning: This signal word is indicating a person endangerment with a medium risk level, which can cause death or serious injury, in case it cannot be avoided.

Caution: This signal word is indicating an endangerment with a low risk level which can cause a minor or moderate injury, in case it cannot be avoided.

Attention: This signal word is indicating a warning of material and environmental damages.

2.1 Basics

This device has been built as state of the art and according to the fundamental health and safety requirement of the EC machinery directive. However, its usage may result in risks to the body or life of users or third parties, or adverse effects to devices and other property.

The device may only be used in proper technical condition as intended, in a safety- and hazard conscious manner and observing the operating instructions!

Observing the operating instructions and adhering to the inspection and maintenance conditions are also parts of the intended use.

2.2 Organisational measures

The operating instructions must always be at hand at the place of use of the device!

In addition to the operating instructions, observe and instruct the user in all other generally applicable legal and other mandatory regulations relevant to accident prevention and environmental protection!

The operating instructions must be supplemented by instructions covering the duties involved in supervising and notifying special organizational features, such as job organization, working sequences or the personnel entrusted with the work.

Please only assign trained personnel familiar with the operating instructions on the device.

Check at regular intervals whether the personnel are carrying out the work in compliance with the operating instructions and paying attention to risks and safety factors!

In order to minimize the risk of injury, garments must be close-fitting. Furthermore long hair must be tied back and jewellery -including rings- have to be removed before beginning work.

Observe all safety instructions and warnings attached to the device and see to it that they are always complete and perfectly legible!

If the operating behaviour changes immediately stop the device and report the error to the responsible department/person!

Never make any modifications, additions or conversions which might affect safety without the supplier's approval.

Additional mountings or modifications have as consequence that the responsibility for the accordance with the EU-directive has to be assured by the person who carries out the mountings and the modifications.

Spare parts, only, from the original equipment comply with the technical requirements specified by the manufacturer and guarantee the failure-free operation of the device.

2.3 Personnel selection and -qualification

The device can only be operated by staff accordingly skilled and instructed.

2.4 Safety instructions for specific operating phases

The device can only be operated in a safe and absolutely reliable state. Make sure in particular that all protective and safety-oriented devices are in place and fully functional.

Loosened screws and hose connections must be tightened upon completion of the maintenance and repair work.

2.5 Mobile devices

Always use hoisting and slinging equipment with sufficient weight bearing capacity for loading!

Position hoisting devices or slinging means only on the load lifting appliances of the device that is provided for this purpose.

Take suitable measures to ensure that no parts of the device can fall off or loosen while the device is being transported.

2.6 Safety instructions

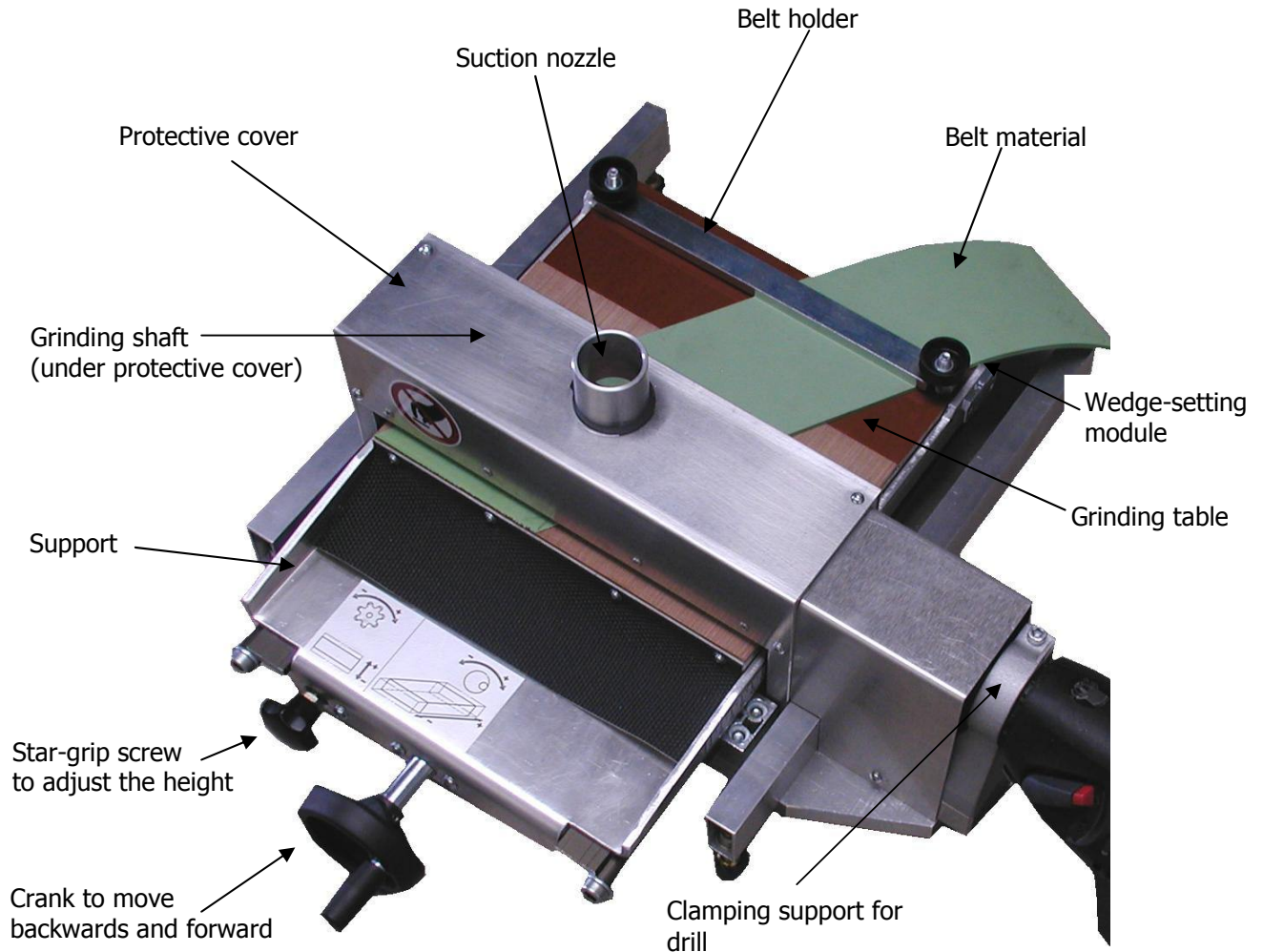
The removing of covers or parts of safety-oriented components may increase the risk of accident.

Conversions, maintenance and repair work must be performed by trained, competent and skilled persons.

3 Product Description

3.1 Components and proper usage

The GKR 230-T grinding machine is a portable fitting tool for preparing belting material. The belting material is grounded in a wedge shape. A standard drill is used as a drive.



3.2 Mode of operation

Grinding tools of the GKR 230-T type are used in finishing belting material for bevelling the ends of splices, for example to prepare wedge splices on power transmission and conveyor belts. The maximum width of belting material that can be handled is 230 mm at a cut-off angle of 90° and maximum material thickness is 6 mm. At a cut-off angle of 60°, the maximum width of belting material that can be handled is reduced to 100 mm.

To grind the belt, the end of the belt is fixed with double-sided adhesive tape in the grinding section of the grinding table and clamped to the grinding table with the belt holder. The table is pushed forwards and back manually by turning the crank. The table's height is adjusted by turning the star-grip screw. Operating a fastened drill will make the grinding shaft turn (make sure you turn it in the right direction). To remove shavings, a vacuum cleaner can be connected to the suction nozzle.

You can find more information on how the grinding machine works in the section "5 Handling".

3.3 Technical data

Belt width max. (at 90°)	mm	230
Belt width max. (at 80°)	mm	150
Belt width max. (at 60°)	mm	100
Belt thickness max.	mm	6
Grinding length max.	mm	150
Standard wedge	%	3,5
Standard wedge	%	4,5
Length	mm	450
Width	mm	510
Height	mm	240
Weight (net)	kg	15,5
Grinding shaft ø	mm	60
Grinding speed	m/s	2,4 – 3,1
Connecting hole for vacuuming device	mm	35

Material number	Designation
7872990	PG-GM-V/230-T

3.4 Accessories

Accessories are not included in the scope of delivery and must be ordered separately!

Material number	Designation
7870017	Double-sided adhesive tape 50m x 50mm

4 Preparing the product for usage

Before operating the device, the following steps must be carried out each time to ensure the device works properly. Check the following points:

4.1 Positioning

Grinding tools and their components may only be put on surfaces that are suitable for fabricating. The surfaces must also be able to withstand the static load from the weight of the grinding tools and the procedure.

4.2 Utilities

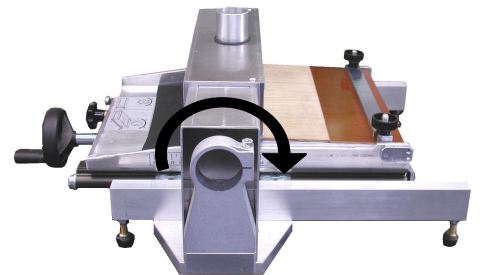
- Double-sided adhesive tape
- Grinding belt
- Wedge-setting module for grinding machine
- Drill adaptor

All utilities must be clean!

4.3 Electric installations

The mains voltage must comply with the operating voltage of the drill used.

Ensure the grinding shaft rotates in the correct direction. During the grinding process, the grinding shaft presses the belting material onto the table. In doing so the grinding shaft must turn right "into" the belting material.



Warning



Risk of injury. To avoid injuring hands, the protective cover must always be fitted over the grinding shaft during operation. Otherwise there is a risk of objects being pulled into the rotating grinding shaft.

4.4 Vacuuming the shavings

On the top of the protective cover on the grinding machine there is a nozzle which can be used to connect a standard vacuum cleaner to remove the shavings.

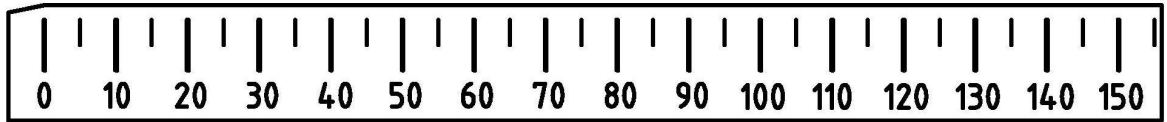
Note:

To guarantee good vacuuming, the vacuum cleaner must be firmly positioned in the nozzle.



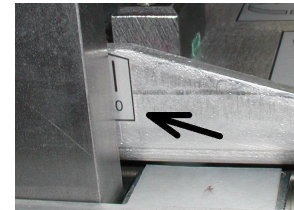
4.5 Checking the grinding length

A scale on both sides of the grinding machine tells you the length grounded during the grinding process.



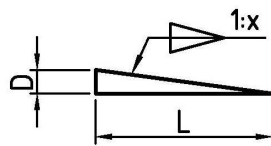
Neutral position:

When the front edge of the grinding table is in the middle underneath the grinding shaft, the grinding table is in a neutral position and the zero is visible on the side marking on the support.

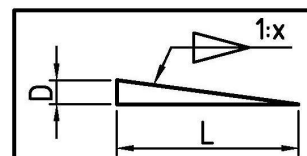


Grinding length:

On the side of the grinding machine's protective cover is a table which gives guidelines for the grinding length required, with different belt thickness and wedge shapes.



Belt thickness D (mm) and grinding length L (mm)



D (mm)	L (mm)	
	x=3,5	x=4,5
1,0	29	22
1,5	43	33
2,0	57	44
2,5	71	55
3,0	86	67
3,5	100	78
4,0	114	89
4,5	129	100
5,0	143	111



5 Handling

5.1 General

GKR 230-T grinding tools are for use in finishing (preparing) belting material, for example wedge splices. The maximum width of belting material that can be handled is 230 mm at a cut-off angle of 90°.

Note:

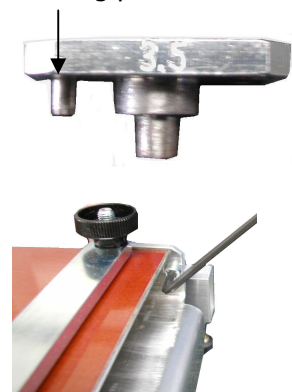
When fabricating (preparing) always refer to the appropriate splicing instructions for the belt type to be spliced.

5.2 Exchanging the wedge-setting mode

Use the wedge-setting module to adjust the grinding angle on the grinding table. Always use the correct wedge-setting module as stated in the splicing instructions for the belt type. To exchange the wedge-setting module, proceed as follows:

1. Remove the M5x10 Allen screws with an Allen key.
2. Pull off the wedge-setting module and place it on both sides onto the grinding table so you can see the engraving. The centring pin must face the grinding machine!
3. Both wedge-setting modules must be turned on.
4. Please be sure that the wedge size shown on both sides have numbers positioned upwards and are of the same size. (see for example the figure shown in addition 3,5)
5. Tighten the Allen screw with the Allen key again.

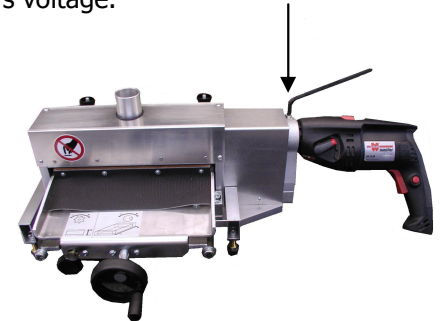
Centering pin



5.3 Connecting a drill to act as a drive

Use a standard drill. The mains voltage must comply with the drill's voltage.

1. Connect the drill to the tool.
2. Switch the drill on to operate towards the right.
3. Adjust the drill adaptor to the drill's chuck and affix it tightly.
4. Guide the drill with the adaptor through the clamping support and centre the drill adaptor on the outer Allen screw on the grinding shaft.
5. Tighten the adjustment screw on the clamping support with the SW 5 Allen key.
6. Use the plug on the drill to connect it to the mains.



Caution



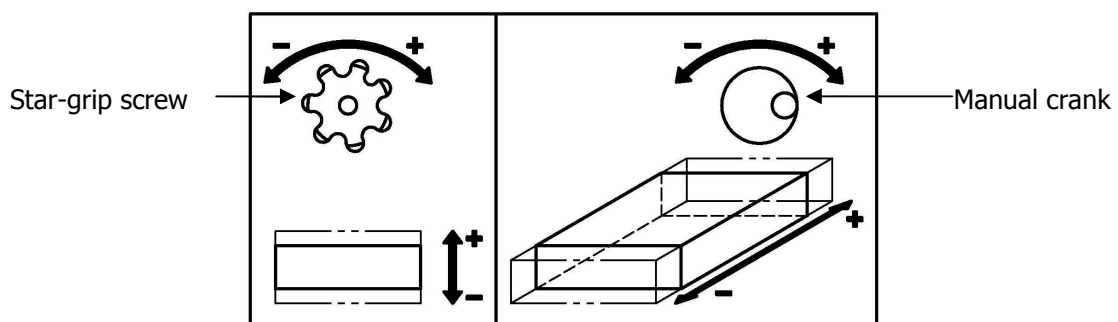
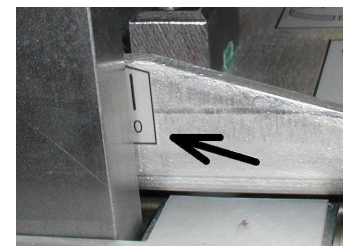
Risk of injury. If the inner Allen screw is not correctly tightened, the drill will move about on the clamping support.

7. Grinding velocity is about 2.4 to 3.1 m/s.
Establish the data for the different belting materials and choose the right setting.

5.4 Adjusting the height of the grinding table

In the factory, the grinding table's height has been set to the surface of the grinding table. Check the height of the grinding table as follows:

1. Turn the star-grip screw to the right (+) till it goes no further.
2. Position the support with the grinding edge of the grinding table surface by turning the crank in the middle underneath the grinding shaft, until the scale on the side of the support is pointing to zero (see section „6.4 Checking the grinding length“).
3. The grinding shaft must not come in contact with the top of the grinding table.
If the shaft's setting is not ideal, please contact the manufacturer.



5.5 Inserting and bevelling the first end of the splice

Caution



Risk of injury! The grinding shaft has abrasive grinding paper and rotates very fast during operation. Always wear protective clothing and goggles!

1. Move the support by turning the crank (towards the right) till it goes no further.

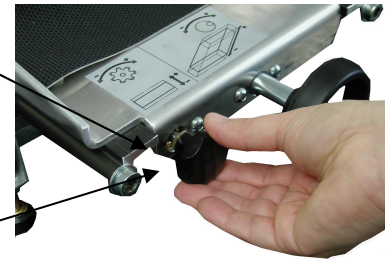
2. Stick double-sided adhesive tape across the wedge you want to grind so that it is flush with the front edge of the table support.



3. Affix the belting material of the first end of the splice with the top face facing upwards and flush with the front edge of the table support and onto the double-sided adhesive tape. Ensure the belting material covers the whole area.

4. Affix the belting material that has been adhered with the belt holder.

5. Turn the star-grip screw to the left to position the grinding table underneath the grinding shaft so that the belt does not come into contact with the grinding shaft.



6. Switch on the drill.

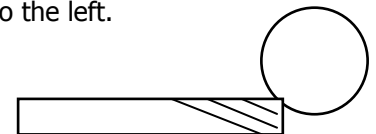
7. Turn the star-grip screw to the right until the grinding shaft touches the belting material.

8. Turn the crank to the right to position the grinding table so that the shaft can move freely.

9. Turn the star-grip screw at least one revolution to the right.

10. Move the support under the grinding shaft by turning the crank to the left.
⇒ The grinding process will start.

11. Repeat the cycle until the belting material has been grounded fully.



12. Check whether the star-grip screw has been turned until it goes no further and the required grinding length has been reached (see section „6.4 Checking the grinding length“).

13. Switch off the drill.

14. Move the support by turning the crank (towards the right) till it goes no further.

15. Take out the belting material.

5.6 Inserting and bevelling the second end of the splice

Caution



Risk of injury! The grinding shaft has abrasive grinding paper and rotates very fast during operation. Always wear protective clothing and goggles!

1. Move the support by turning the crank (towards the right) till it goes no further.

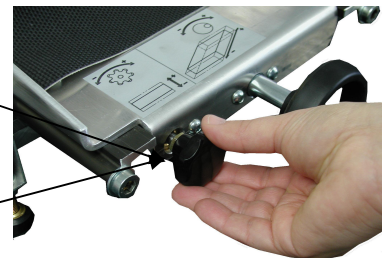
2. Stick double-sided adhesive tape across the wedge you want to grind so that it is flush with the front edge of the table support.



3. Affix the belting material of the second end of the splice with the top face facing upwards and flush with the front edge of the table support and onto the double-sided adhesive tape. Ensure the belting material covers the whole area.

4. Affix the belting material that has been adhered with the belt holder.

5. Position the grinding table by turning the star-grip screw to the left underneath the grinding shaft so that the belt does not come into contact with the grinding shaft.



6. Switch on the drill.

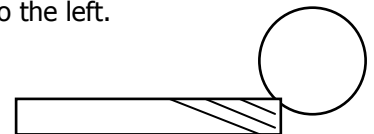
7. Turn the star-grip screw to the right, until the grinding shaft touches the belting material.

8. Turn the crank to the right to position the grinding table so that the shaft can move freely.

9. Turn the star-grip screw at least one revolution to the right.

10. Move the support under the grinding shaft by turning the crank to the left.
⇒ The grinding process will start.

11. Repeat the cycle until the belting material has been grounded fully.



12. Check whether the star-grip screw has been turned until it goes no further and the required grinding length has been reached (see section „6.4 Checking the grinding length“).

13. Switch off the drill.

14. Move the support by turning the crank (towards the right) till it goes no further.

15. Take out the belting material.



6 Maintenance work

Before operating the tool, the following maintenance work must be carried out each time to ensure that the tool works properly. If damage is established during maintenance that cannot be rectified on site, the tool must no longer be used and must be sent for repair to the manufacturer.

Check the following each time before use:

- Check that all the screws and bolts sit securely on a regular basis.
- Make sure the moveable parts are lubricated sufficiently (bolts, threads etc.)
- Make sure the protective cover is not damaged.
- Check the grinding table is clean.
- Check the grinding belt sticks to the grinding shaft.
- Check the grinding belt for wear and tear.
- Check the threads are not dirty.

Check the following weekly:

- Check the grinding shaft lies parallel with the table.
- If necessary lubricate the shafts.

Check the following monthly:

- Check the outside Allen screw on the grinding shaft for wear and tear.
- Check the outside Allen screw on the grinding shaft for damage.

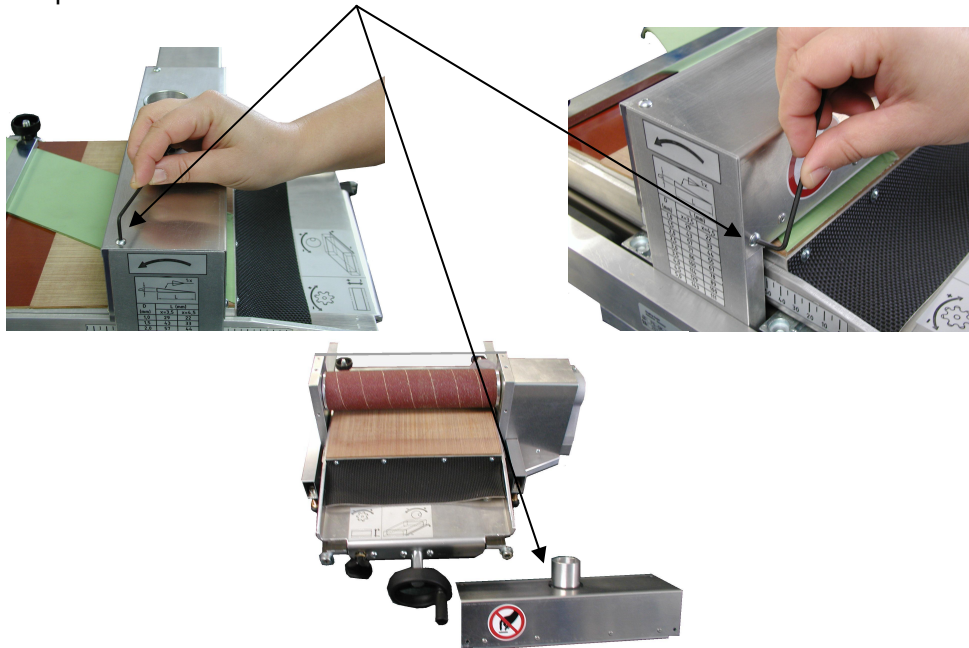
6.1 Exchanging the grinding belt

If you cannot grind the belting material cleanly, the grinding belt must be exchanged.

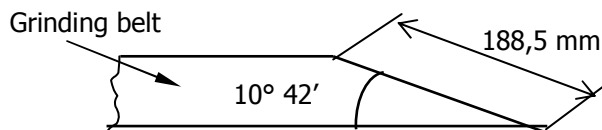
Note:

Do not remove the grinding shaft before exchanging the grinding belt.

1. Take the drill out of the clamping support.
2. Remove the protective cover over the grinding shaft by loosening the screws with an Allen key and put the cover to one side.



3. Remove the torn grinding belt.
4. Clean the grinding shaft. The surface of the shaft must be free of grease.
5. Cut the new grinding belt at an angle of $10^{\circ} 42'$.
⇒ The cut edge is 188.5 mm long.



6. On the new grinding belt, pull off the protective film on the adhesive tape.

7. Stick the grinding belt in spirals from edge to edge to the grinding shaft. When sticking on the grinding belt, make sure there is a space of 3 mm to the left and right of the grinding shaft. Press the grinding belt down firmly.



8. Fit the protective cover over the grinding shaft and tighten the screws.

6.2 Spare parts

Material number	Designation
7875067	Grinding belt, 50 grain
7872990032	Grinding shaft

7 Disassembling and Disposal

The disassembling in individual components can only be effected by competent staff with a good knowledge of machine building.

Please sort out the machine according to the respective materials (metal, plastics, electronic) and recycle them.