Kaindl®
SCHLEIFTECHNIK

OPERATION MANUAL FOR DRILL AND CORE DRILL GRINDER BKS

Original manual

Please keep for further use!

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CONTENT

EC-DECLARATION OF CONFORMITY

The manufacturer:	Kaindl-Schleiftechnik Reiling GmbH Remchinger Straße 4 75203 Königsbach-Stein Germany
declares that the machine descripted herein:	**Drill and Core drill grinding machine** Type: **BKS**
refers to the security an health requirements of the following EC instructions:	EC-Machine directive (2006/42/EC) EC-Instruction EMV (2004/108/EC)

Applied harmonised norms:

EN ISO 12100-1; EN ISO 12100-2; EN ISO 13857; EN ISO 13732-1; EN 61029-1; EN 60204 Part 1; EN 61000-6-1; EN 61000-6-2; EN 61000-6-3; EN 61000-6-4

Changes in design, which affect the technical data, listed in this operation manual and the directed use, therefore change the machine substantially, make this declaration of conformity invalid!

These document had been compiled by:	Reinhard Reiling Kaindl-Schleiftechnik Reiling GmbH Remchinger Straße 4 75203 Königsbach-Stein

1. DESCRIPTION

1.1 DIRECTED USE

The Kaindl **drill and core drill grinding machine BKS** is determined exclusively for sharpening of HSS and hart metal drills and core drills.

For other operations, as listed here, the machine is not destined for. That goes for unauthorized use! In case the Kaindl drill and core drill grinding machine BKS is not used as per the intended purpose, a save operation cannot be granted.

In this case, the operator is responsible for all material- and personal damages. You are asked to read this operation manual carefully, especially the general safety advice.

1.2 DESCRIPTION OF FUNCTION

The **drill and core drill grinding machine BKS** offers the possibility to sharpen drills and core drills very easily.

Due to its robust and precision construction, the low-energy consumption and saving place, the machine can be operated everywhere and instantly. The machine has been designed, in order everyone is familiar with, within short time and to be able to re-sharpen drills and core drills very precise.

1.2 TECHNICAL DATA

Dimension L x W x H, mm:	500 x 420 x 310 mm
Weight net:	approx 30 Kg
Electrical connection:	230 V, 50/60 Hz
Motor:	230 V, 0.12 kW, 2800 RPM
Travel range:	
Prism feed	max. 45 mm
Motor slide, mm	max. 75 mm
Guiding slide	215 mm
Noise emission, dBa	< 70 db(A)
Run out time of grinding wheel	approx 10 seconds
Grinding wheel:	Diamond grinding wheel, electroplated for HSS core drills 125 mm. Corundum grinding wheel 125x20x20 grit 80 Hardness M
Core drill support	19 mm Weldon shank
Clamping range of drills	2-20 mm

Technical changes may be done without notification!

2. GENERAL SAFETY ADVICE

2.1 DUTY OF TAKING CARE OF THE USER

The Kaindl **drill and core drill grinding machine BKS** has been designed and constructed under consideration of an endangering analysis and careful selection of observed harmonized norms, as well as further technical specifications.

This safety can only be achieved in daily work, when all necessary steps are taken. It is the duty of taking care by the user to plan and control these steps.

The user has to take care that:

- the machine is used as directed (see chapter description)
- the machine is used in flawless workable condition, especially that the safety installations are checked regularly
- required personal protection equipment for the operating persons is available and made use of
- the operation manual is always in a readable condition, complete and available near the machine
- the drill and core drill grinding machine BKS is operated only by personnel that knows the contained operating instructions and the safety information
- all safety and warning instructions are not removed from the machine and kept readable

3. EXPLANATION OF THE USED SAFETY SYMBOLS

In this manual the following symbols are used. These symbols should attract the attention of the reader to read the text beneath the symbols.

Wear safety glasses during operation

General danger!

Before change of grinding wheel, or move to another place, disconnect from electric current!

Danger by laser beam

4. BASIC SAFETY ADVICE

Keep information available:

This manual has to be kept near the machine. It must be granted, that every person, who has to work with the machine, her access to the operating manual. Additionally to the manual, also company instructions in sense of security and health requirements have to be provided.

All safety- and operation labels on the machine have to be always kept in a readable condition. Damaged- or unreadable labels have to be replaced immediately. These symbols point out, that there is a danger of life and health for persons.

Always wear safety glasses during operation

Before change of wheel or move to another place, disconnect from electric current

Only remove the grinding wheel protection for changing the grinding wheel. During operation the grinding wheel protection must be mounted. The BKS has a laser unit. The laser beam mustn't get the eyes, because the eyes may be damaged heavily. Prevent that direct sunlight shines through the optical lens, fire hazard!

Laser safety regulation: The laser refers to Laser protection class II as per. DIN EN 60825-1/94.
For the operation, no further safety steps are requested.

4.1 DEMANDS FOR THE OPERATING PERSONNEL

Only persons who are familiar with this manual are allowed to work with the machine.

4.2 SPECIAL KIND OF DANGER

Before starting the machine, the following checks have to be done:
• Check the machine for visible damage; Defects have to be repaired immediately
• It is only allowed to operate the machine when all is 100 % ok

Check electrical connection regularly:
• Fix open connection
• Electric cables, being damages have to be replaced by an electrician immediately
• Never clean electrical equipment with water or similar

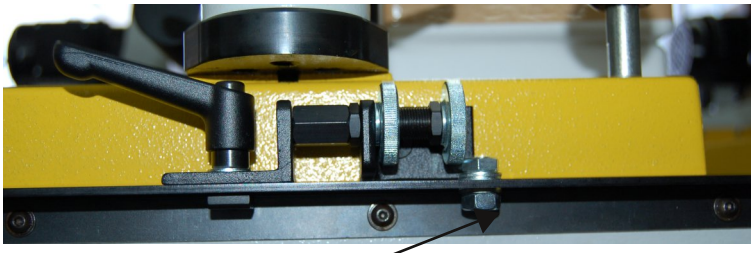
Modification of the machine:
Due to safety reasons, you are not allowed to modify the machine. Only use original spare parts / original accessories - these parts are specially constructed for this type of machine.

Please also read the chapter "General safety advice".

5. SET UP

5.1 ENVIRONMENTAL CONDITIONS FOR SET UP

Use the **drill and core drill grinding machine** only in dry rooms.
Environs temperature: from +5 to +50°C; Humidity: max. 90%, not condensing.
The BKS is made for placing on a solid bench. Please pay attention that the machine is placed safe. The place has to grant a vibration free turning of the motor.



After you have unpacked the machine, remove the transport locks.
(see picture)

6. ADVICE FOR DISPOSAL OF PACKING MATERIAL

The carded box can be recycled. The rest of the packing is for garbage.

7. START UP

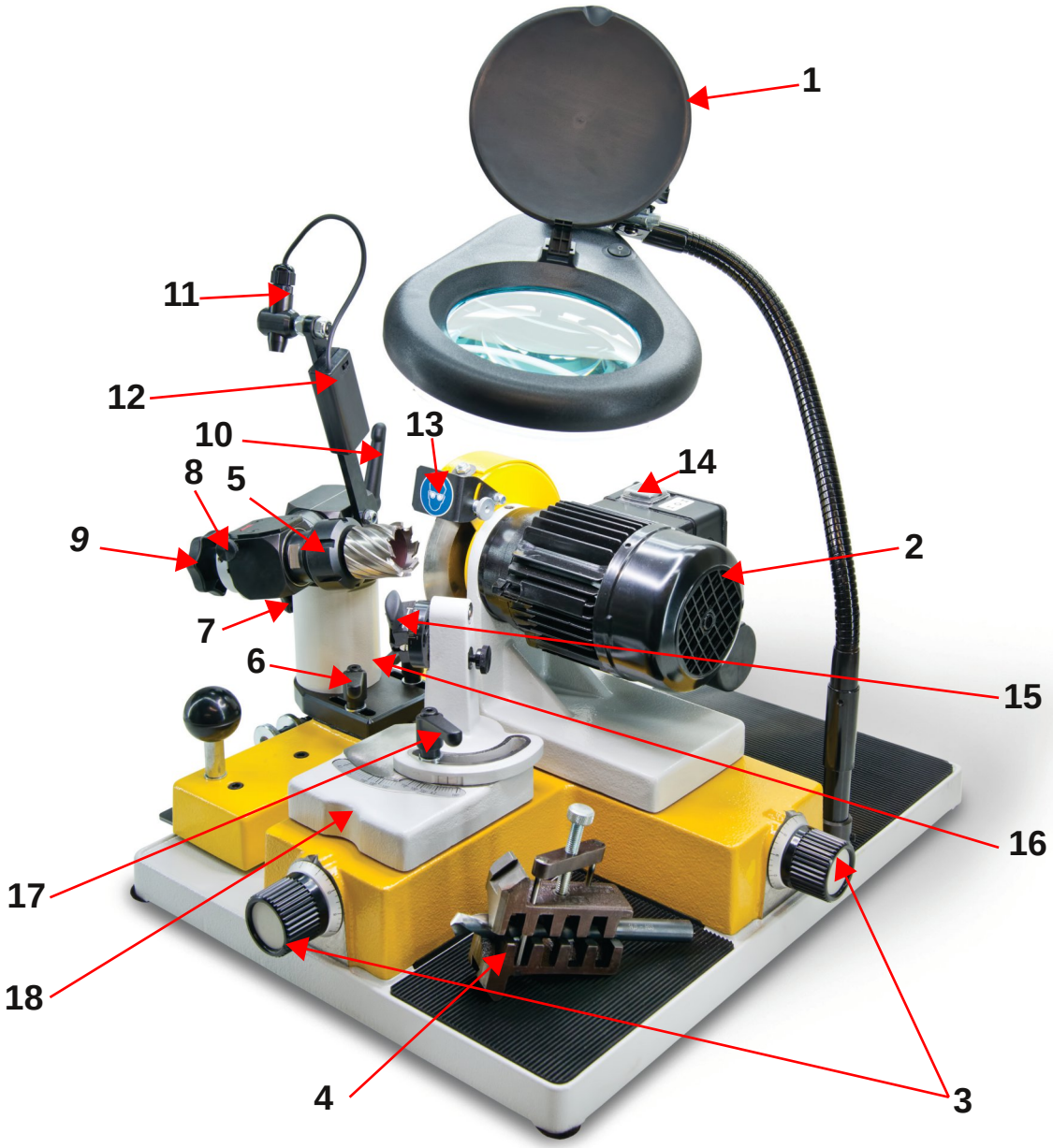
- To prevent damage on the machine or severe injuries while starting, the following items have to be taken into account
- Check if all tools and other parts not belonging to the machine, are removed
- Please check that the grinding wheel is turning downwards
- Also read the chapter "General safety advice"
- Wear safety goggles

7. CHECKS BEFORE THE FIRST START UP

- Check electrical components for damage
- Test if the guidance is sliding softly
- Inspect all fixed parts

8. OPERATION

8.1 DESCRIPTION OF COMPONENTS

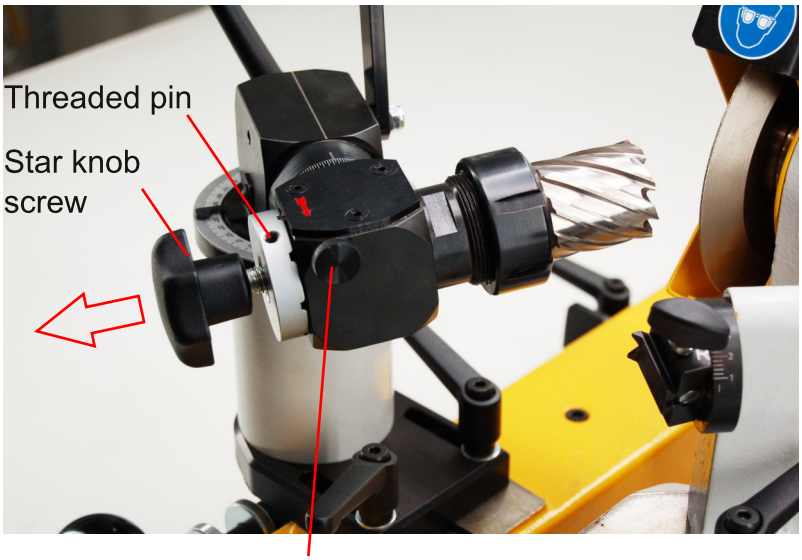


1. Precision lens LED lighted
2. Motor
3. Motor feed + Prism feed
4. Clamping prism for drills
5. Core drill support
6. Slide for long core drills
7. Star knob screw for angle adjustment
8. Index plate for core drills
9. Star knob screw for moving to the next tooth
10. Clamping lever for head adjustment
11. Laser
12. Battery box
13. Grinding wheel protection
14. Motor switch
15. Clearance angle adjustment
16. Prism support
17. Clamping lever for tip angle adjustment
18. Scale for tip angle

9. ADJUSTMENT AND SET UP

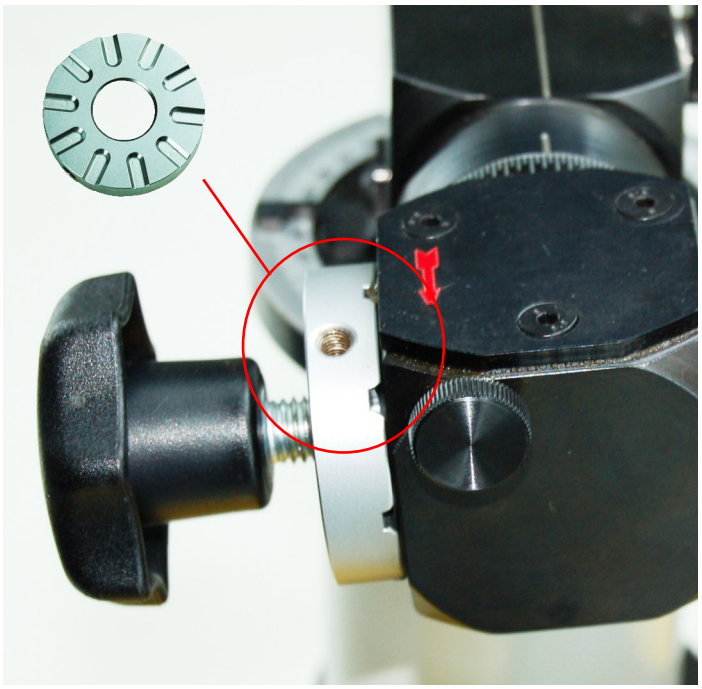
9.1 CHANGE OF INDEX PLATE

The index plate of the drill and core drill grinding machine determines the precise sharpening of core drills, having different numbers of teeth. The basic equipment comprises the following index plates: T-8 for core drills with 4 and 8 teeth and T-10 for core drills with 5 and 10 teeth.
Optional the following index plates can be ordered: T-4 - T-20 (Ø 45 mm) / T-22 and T-24 (Ø 65mm); Special divisions on request!



Change of the index plate

Select the suitable index plate for your core drill. For changing the index plate, turn the star knob screw clockwise till the threaded pin is on the upside and locked (see picture on the left). Fix the knurled screw (a). Screw off the star knob screw anti-clockwise. Open the threaded pin (Hexagon socket wrench 2,5) and remove the index plate.



Insert the index plate

Place the selected index plate on the spindle, pay attention that the threaded pin is over the groove of the spindle (see picture).

Turn the threaded pin in order it gets in slight contact to the groove (do not fix). Screw the star knob screw clockwise and fix. Now fix the threaded pin and open the knurled screw.

10. ADJUSTMENT OF THE CORE DRILL

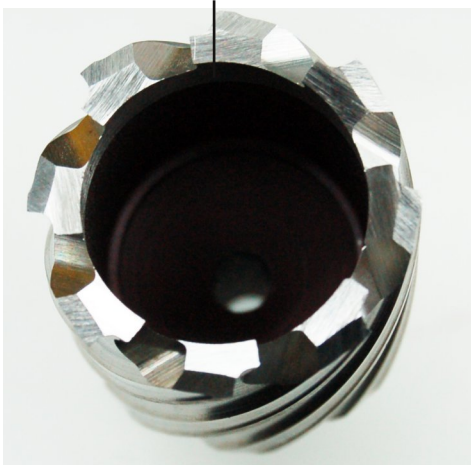
Please be careful, the cutting edges are very sharp and you may hurt yourself very easily.

Turn the core drill support to 90° (see picture above).

By placing the core-drill inside the support, pay attention that the threaded pin is **not** on the flat side of the weldon shank. The pin **must** touch the curved side of the shank (do not tighten the pin yet).

The laser beam grants a precise positioning of the core-drill in the support (picture on the right). By use of the laser guiding pin, align the beam that he **exactly** lights the **outer cutting edge** (see picture on the right below).

outside cut



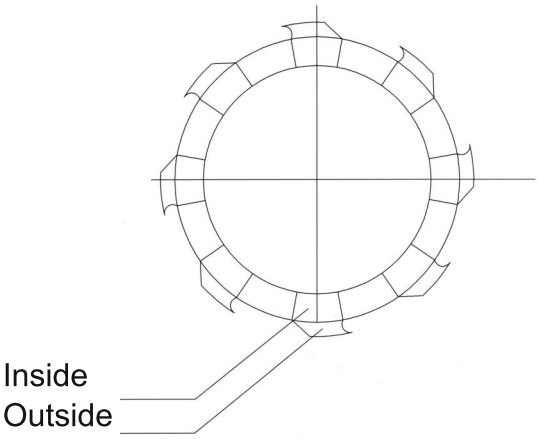
The laser is switched on, by pressing the knob on the side of the casing. Turn the core-drill in the support unit the laser exactly lights the edge of the outer cutting edge. Fix the core-drill in this position with the threaded pin M8, placed on the side of the support.

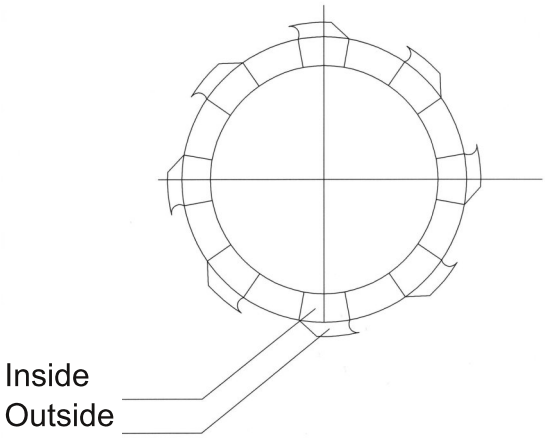
Mark the tooth you have adjusted with a black felt pen!

10. ALIGNMENT OF THE CORE DRILLS

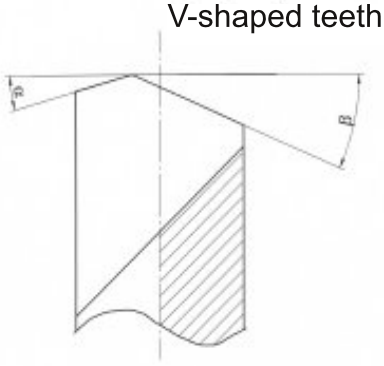
During all grinding operation, always wear your safety goggles!

Core-drills are divided into 2 categories. Core drill with flat tooth or V-shaped tooth. The standard core-drills only have V-shaped teeth. The alternating core drills have varying V-shape and flat teeth.
With this machine type drill and core drill grinding machine BKS the teeth are sharpened first on the inside and then on the outside. On the alternating core-drills the V-sharpened first and then the flat teeth.

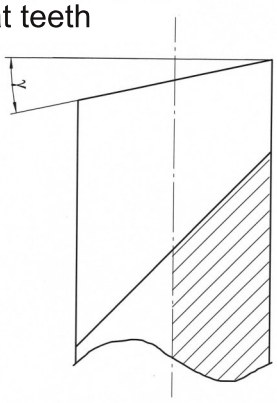




V-shaped teeth



Flat teeth



12. GRINDING OF THE CORE-DRILLS

Core-drills are available in different diameters and variations, manufactured by different companies.
In case you got a grinding manual of your supplier, please use their specifications. If not, then use our adjustment (see table).

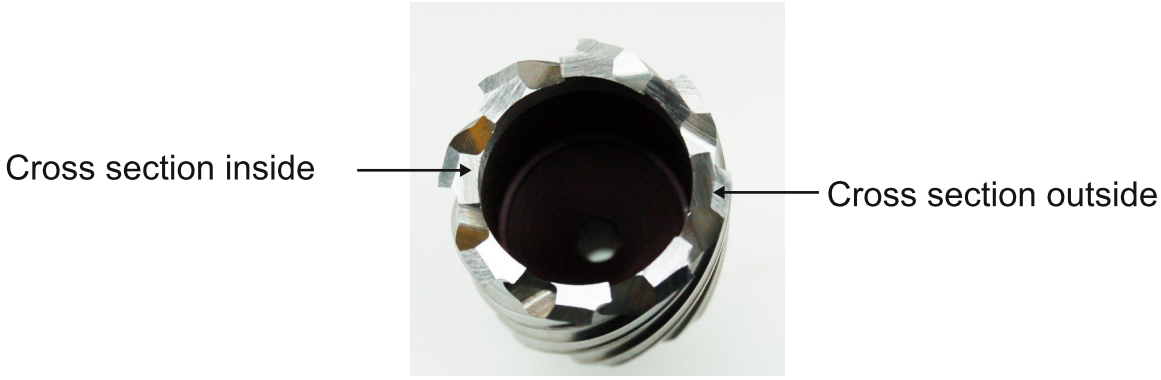
No. of teeth	**Standard HSS**			
	Scale pillar		Support	
Back inside/ back outside	Inside		Inside	
4	70°		7,5°	
5	70°		7,5°	
6	70°		7,5°	
7	70°		7,5°	
8	70°		7,5°	
9	70°		7,5°	
10	70°		7,5°	
11	70°		7,5°	
12	70°		7,5°	

Adjustment of the core-drill for grinding the back inside

Adjustment of the core-drill: Back inside

!!! Use the suitable index plate !!!

We start grinding the back inside (see picture)

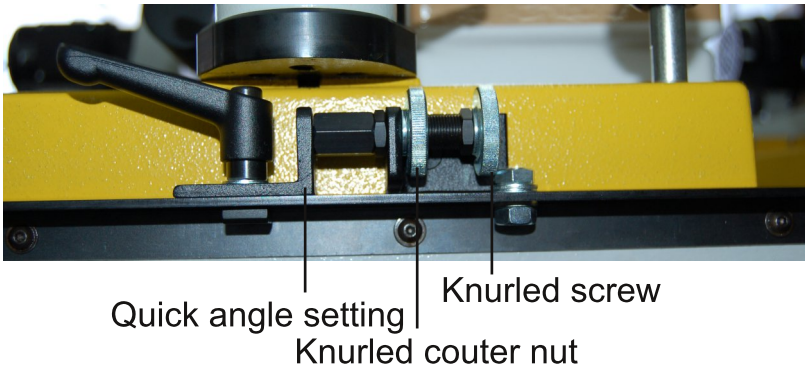


Place the scale of the pillar to **70°** (see picture on page 13)
The core-drill support place to **7,5°**

After you finished the angle adjustment, move the core-drill by using the guiding slide and the motor feed towards the grinding wheel. Grind the tooth which is projected to **the middle** of the grinding wheel. The one you have **adjusted and marked before**.

Move inside the grinding wheel (motor off) up to you touch the next tooth. Now fix the stop dog on the side in this position (see picture below). By using the micrometer knurled screw, move back a little in order the tooth does not touch the next tooth.

Now start grinding tooth by tooth of the back inside, by moving the slide forward and backward. The feeding with the motor feed should be done carefully and be kept in the same position for all teeth.



After you have sharpened the first tooth, move back the slide and turn the star knob screw, clockwise up to the next index of the index plate. Do not work with the motor feed.

Repeat this operation until all teeth are sharpened.

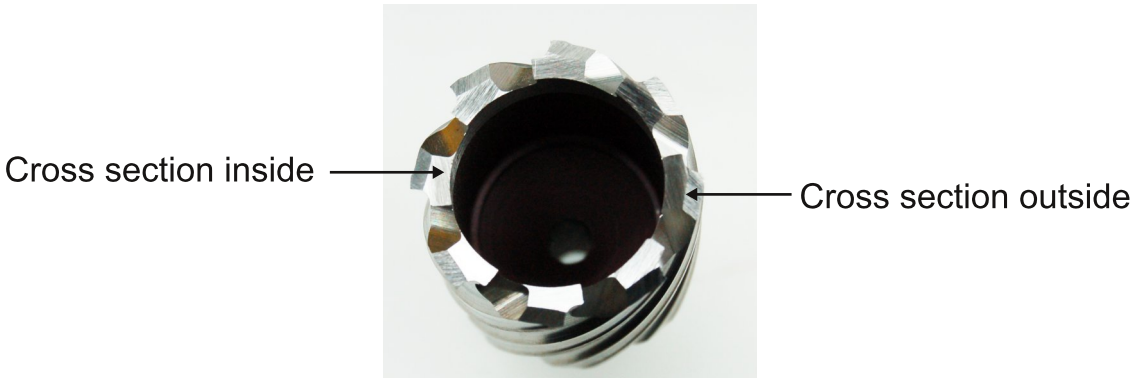
No. of teeth	**Standard HSS**			
	Scale pillar		Support	
Back inside/ back outside		Inside		Inside
4		82,5°		15°
5		82,5°		15°
6		82,5°		15°
7		82,5°		15°
8		82,5°		15°
9		82,5°		15°
10		82,5°		15°
11		82,5°		15°
12		82,5°		15°

Adjustment for grinding the back outside

Adjustment of the core-drill: back outside

!!! Use the suitable index plate !!!

We start grinding the back outside (see picture)

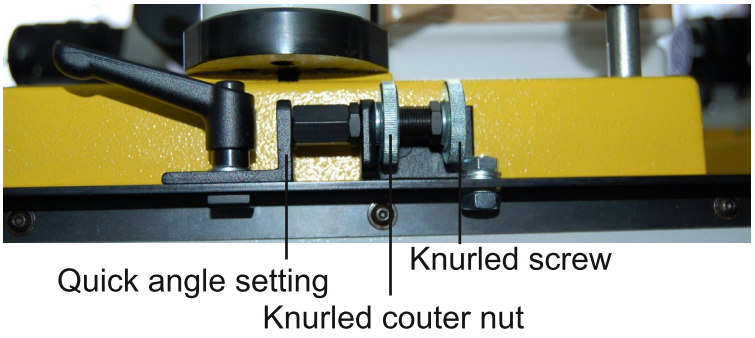


Place the scale of the pillar to **7,5°** (see picture page 15)
The core-drill support place to **15°**

After you have finished the angle adjustment, move the core-drill by using the guiding slide and the motor feed towards the grinding wheel. Do not grind the tooth, you have adjusted before (marked tooth), but the next cutting tooth below.

Move with the core-drill slide to the grinding wheel (motor off) and adjust with the stop dog on the side (see picture below). Turn back the stop dog with the precision adjustment screw. Up to the following tooth does not touch the grinding wheel.

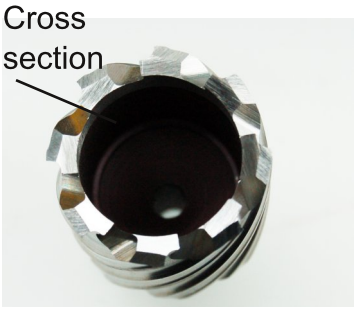
Now start grinding tooth by tooth of the adjusted back, by moving the slide forward and backward. The feeding with the motor feed should be done carefully and be kept in the same position for all teeth.



This grants that all teeth having the same length after. When you have sharpened the first tooth, move back the slide and turn the star knob screw, clockwise up to the next index of the index plate. Do not work with the motor feed.

Repeat this operation until all teeth are sharpened.

13. GRINDING OF THE CUTTING FACE



For grinding the cutting face, use the Kaindl diamond wheel with radius Part. No. 10980.

(Please see chapter "Change the grinding wheel" page 18).

Place the scale of pillar to **30°** (see picture below)
Place the core-drill support to **25°**.

(This setting is not identical for all types of core-drills) Move the core-drill towards the grinding wheel (Motor off) and correct the angle setting if necessary. The angle can be between 15° and 30°).

After the setting, move the core-drills with the slide and the motor feed towards the grinding wheel grind the cutting face, by using the diamond wheel with radius. Do not grind the tooth you have adjusted (marked tooth), but the next but one cutting face below.

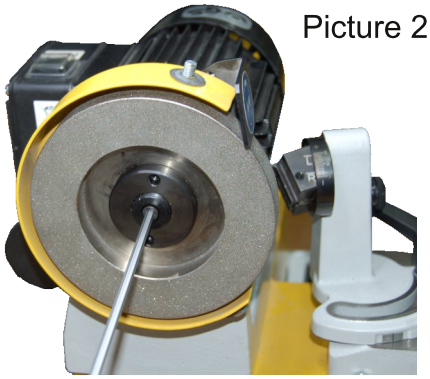
Move inside the grinding wheel up to the diamond wheel touches the cutting face (motor off). Fix the stop dog on the side. Turn the micrometer adjustment screw, in order you can grind the cutting face completely. Now sharpen the adjusted cutting face. The feeding with the micrometer adjustment screw should be done carefully.

After you have sharpened the first cutting face, move back the slide and turn the star knob screw clockwise up to the next index of the index plate. Do not work with the motor feed not the micrometer adjustment screw. Repeat this operation until all cutting faces are sharpened.

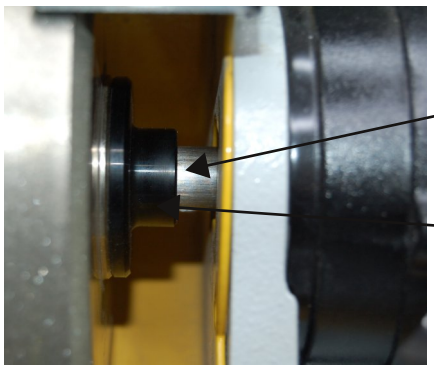
14. CHANGE OF THE GRINDING WHEEL

Picture 1

Picture 2



Picture 3



Before changing the wheel, disconnect the electric plug, remove the core drill from the support.

Loosen both head cap nuts with a 10 mm engineers wrench and remove the grinding wheel cover as shown on the picture (Picture 1).

Now open by use of an allen key SW 4,0 the screw in the center of the wheel support. Now you can remove the grinding wheel from the motor spindle. Open the grinding wheel support with the supplied key and change the grinding wheel.

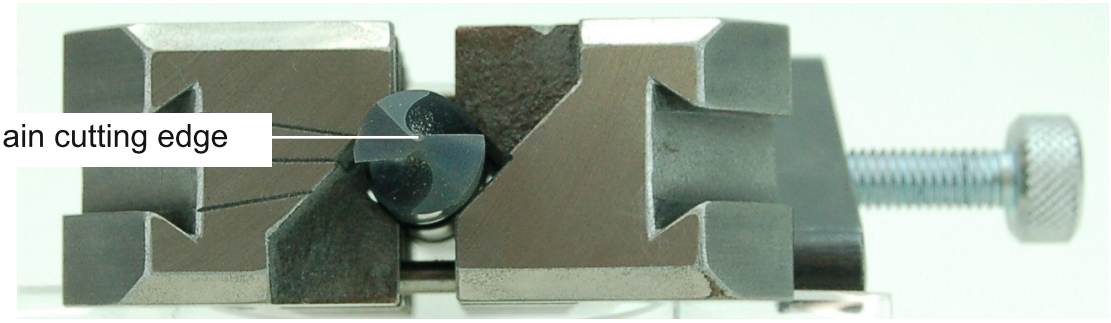
When placing the support in the motor spindle, pay attention that the threaded pin is in the notch of the motor spindle (picture 3). Now fix the screw in the center of the wheel support with the allen key SW 4,0 and mount the grinding wheel cover in opposite sequence. Take care that the grinding wheel support is mounted correctly.

The grinding wheels have to correspond to norm EN 12413 or EN 13236. After the grinding wheel change make a 1 minute test run. In case of uncommon performance, switch off the machine and check for the cause of failure.

Never use the BKS without correctly mounted grinding wheel protection!

15. GRINDING OF RIGHT HAND TWIST DRILLS

Alignment of drill:
The reversing prism has a clamping range from **2-20 mm**. Open the prism by turning the knurled screw. Place the drill in the prism.

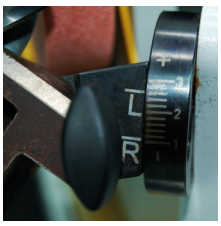


Let project the drill around 20-25 mm outside the prism clamp.
Close the prism carefully with the knurled screw, pay attention that the drill can still be turned. Align one cutting edge between both graduation lines (see picture above). Now tighten the prism with the knurled screw by hand (without use of force). The drill is now aligned and ready to sharpen.

Slide prism with the drill onto the prism support and fix with the wing screw. Adjust the requested top angle (Standard 118°) on the prism support and fix with the clamping lever.

- right part-scale: support to right stop dog (slot) and adjust clearance angle.
- left part-scale: support to left stop dog (slot) and adjust clearance angle.

It does not matter which part-scale you use. The clearance angle is adjusted by the scale for the clearance angle.



- Direction 3 = more clearance angle
- Direction 1 = less clearance angle

By opening the clamping screw the clearance angle can be adjusted stepless.

GRINDING OF THE DRILL

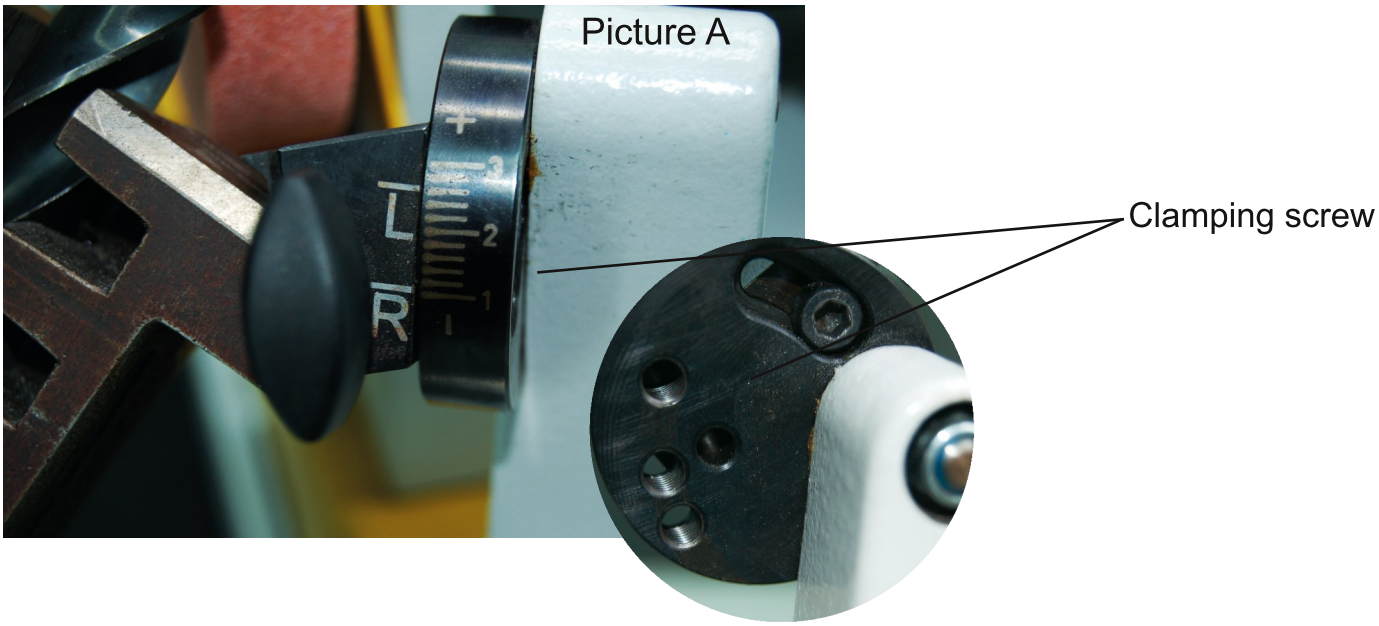
Move the drill to the front side of the grinding wheel, by using the prism feed and the motor feed. By carefully feeding with the prism feed and meantime turning the prism upside down, grind the first cutting edge completely.
Note the graduation No. on the scale, feed back, remove and turn the prism, place again in the prism support, fix it and grind the second cutting edge to the same graduation as noted.

16. GRINDING OF LEFT HAND TWIST DRILLS

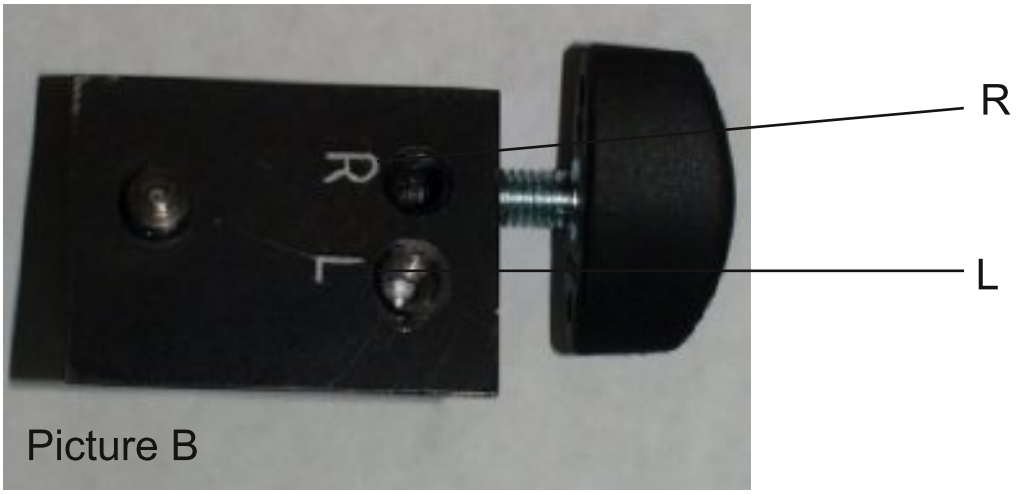
Grinding wheel: depending on sort of drill, use corundum and diamond wheel.

Adjustment on the machine:
Tip angle 118°

For grinding of left hand drills, the prism rest and clearance angle adjustment has to be changed (Picture A).

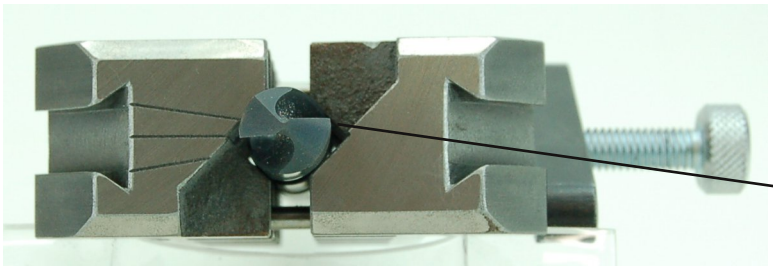


Remove the prism support from the clearance angle adjustment and screw together on the provided fixation threat (L) for left hand drills (Picture B).



Let project the drill approx 15 mm out of the prism.

Align one cutting edge parallel to the graduation mark for left hand drills.



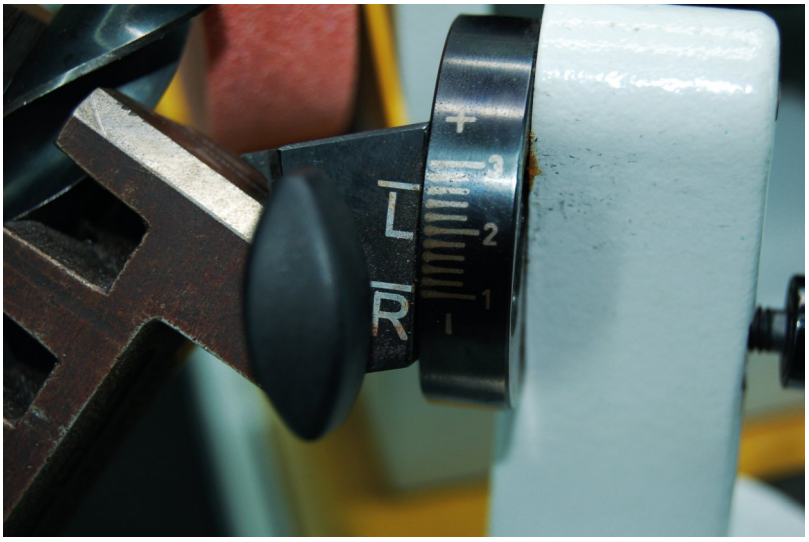
Graduation line for left hand drills

Adjust the requested clearance angle on the scale (Picture below).

Applicative scale range for left hand grinding: 2-3.

2 = slight clearance angle

3 = high clearance angle



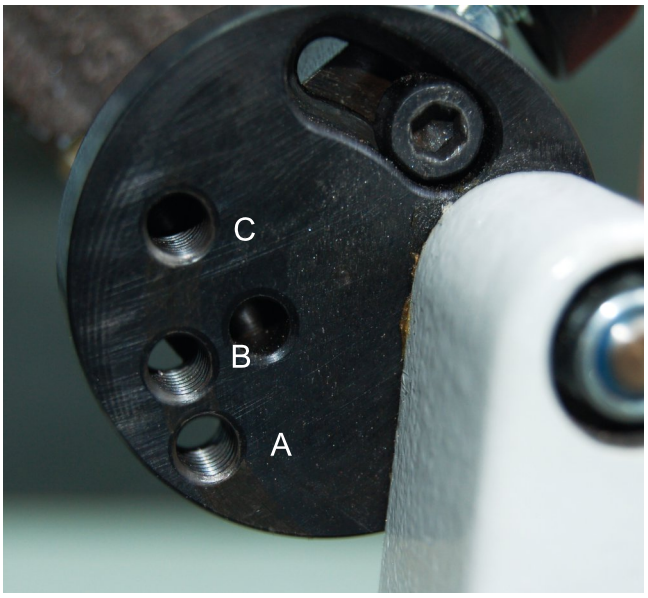
GRINDING OF THE DRILL

Move the drill to the front side of the grinding wheel, by using the prism feed and the motor feed. By carefully feeding with the prism feed and meantime turning the prism upside down, grind the first cutting edge completely.
Note the graduation No. on the scale, feed back, remove and turn the prism, place again in the prism support, fix it and grind the second cutting edge to the same graduation as noted.

17. WEB THINNING OF DRILLS

Keep the prism in the prism support, as descripted before.Turn the clearance angle adjustment to 1 (see picture below). Fix the turning mechanism in hole **C** of the fixation plate (see picture below). Shift the complete prism trestle to the left stop, adjust to mark **A1**.

By using the motor- and prism feed, grind inside the drill behind the cross cutting edge. Note the graduation No. on the prism feed scale and got back for **3 complete turns**. Do not change the position of the motor feed. Open the clamping lever, reverse the prism, fix again and thin the web of the other side.

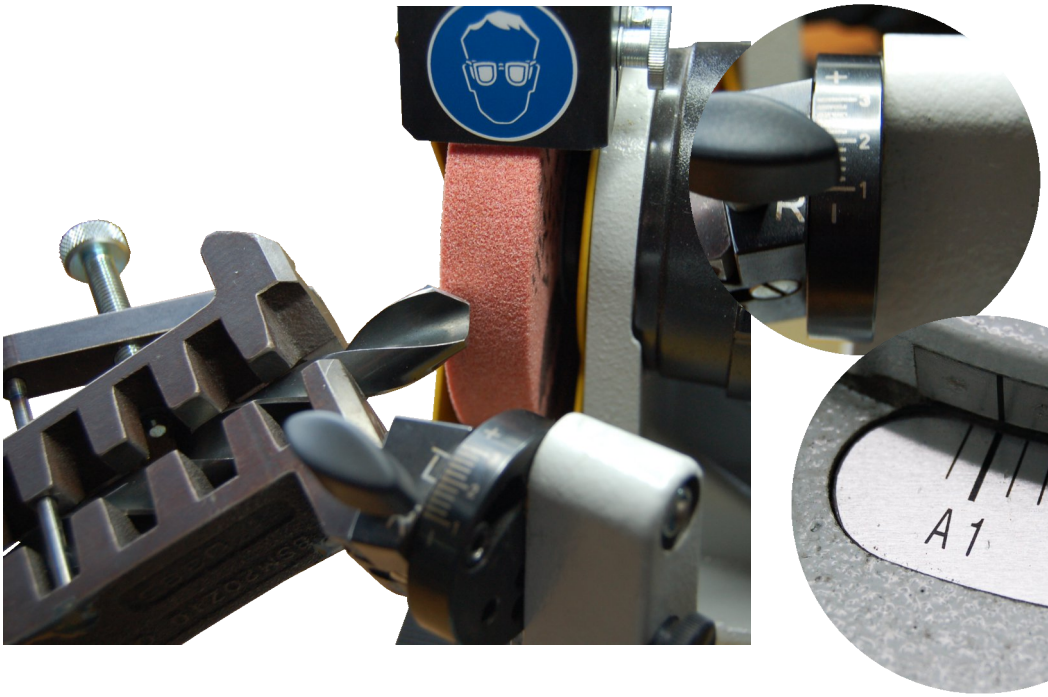


Lock points

A: **Lock points for cutter, carbide drill crossfacet shape, four surface shape**

B: **Lock point for back or free sharpening**

C: **Lock point for web thinning**

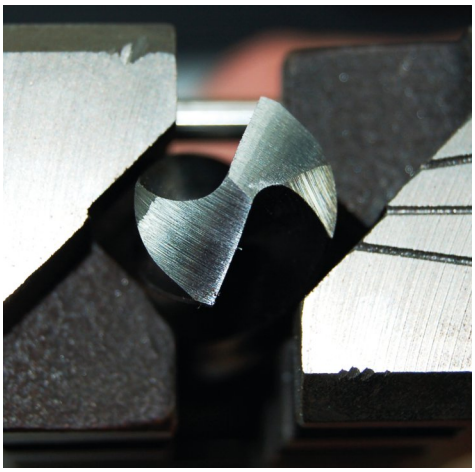


Adjust clearance angle to 1

Prism support to Pos. **A1**

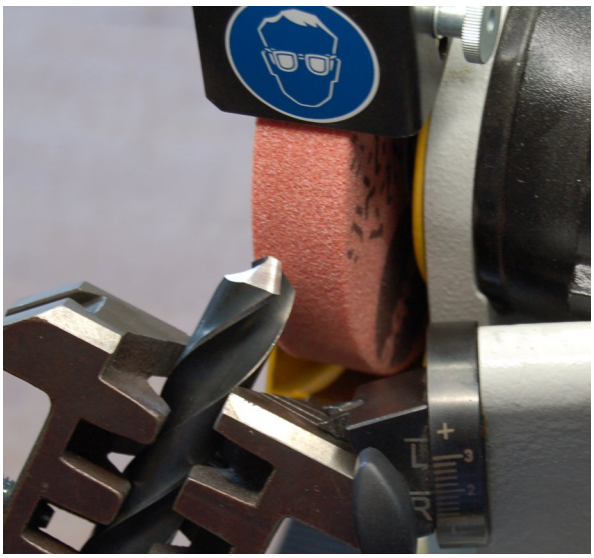
18. SPLIT-POINT GRINDING

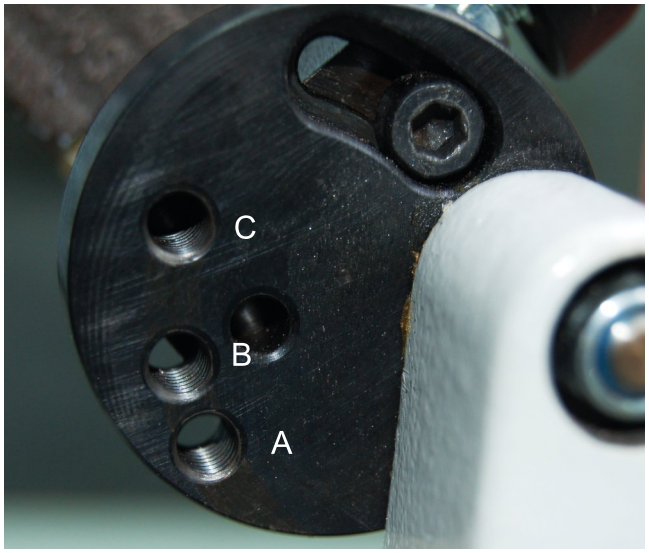
After sharpening, do not change the position of drill in the prism. Place clearance angle to position **2** (see picture 1). Fix the swivel mechanism in boring **C** (see picture 2). Place the tip angle to **A2** (see picture 3), for this move the support completely to the right.

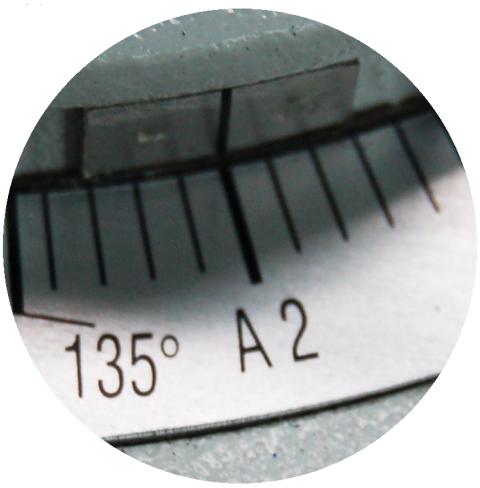


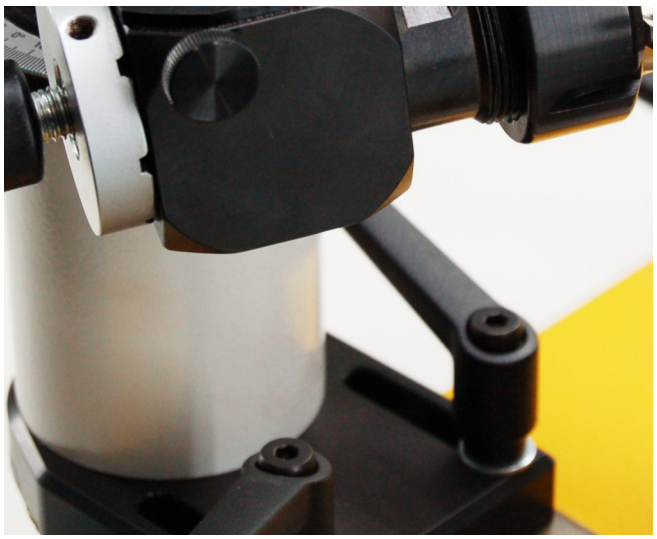
In combination of prism feed and motor feed, sharpen the first side of the drill on hook (see picture 4). Note the graduation mark of the motor feed and then move back to the left away from grinding wheel. Turn the prism for 180° and move forward to the same graduation mark as before.

The drill should now look like on the picture above.









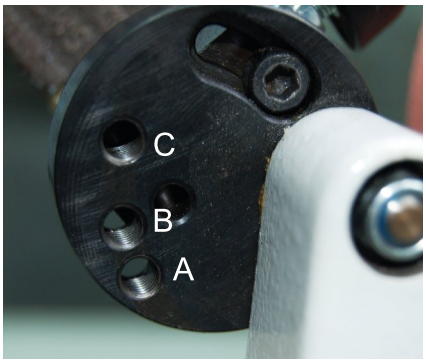
19. GRINDING OF CROSS CUTTING OR 4 FACET DRILLS

Depending of the drill is made of, use the corresponding grinding wheel.
Align one cutting edge parallel to both graduation lines (see picture). Project the drill approx. 20 mm outside the prism. Fix the turning mechanism in hole **A** (see picture below). Adjust the top- and clearance angle to your specifications. Grind the first side over the right edge of the grinding wheel by feeding the prism and moving with the motor feed. The second side is ground with the same adjustments. For grinding the back, fix the turning mechanism in hole **B**. The grinding operation is the same as for the first two cutting edges.

20. GRINDING OF A CUTTER

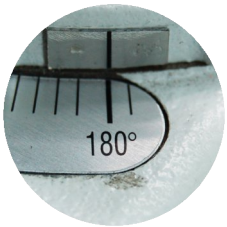
Align the cutter to the straight line of the prism

Cutter grinding is slightly different to cross facet grinding. But the adjustment and alignment is identical to the 4 facet drill.
The difference is only the top angle adjustment. Here use 180°-185° (see picture below).
The sharpening procedure is identical. For cutters with more than two cutting edges use the magnetic depth stop, listed unter special accessories. For cutters with odd. cutting edges (e.g. 3-cutters) each cutting edge has to be adjusted separately. Having cutters with even numbers of cutting edges, the opposite cutting edges can by ground by reversing.



A: Locking for main cutting edges

B: Locking for free sharpening

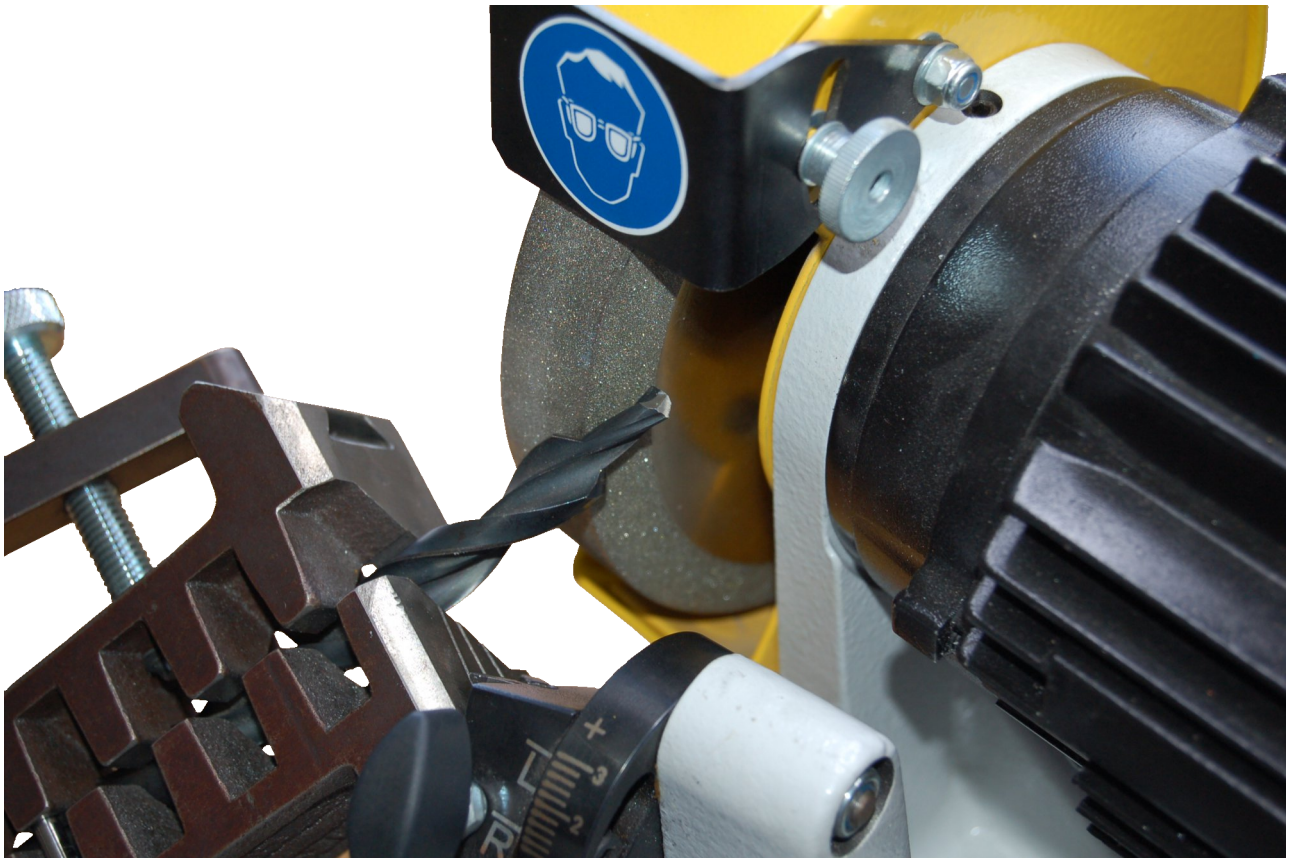


Prism rest to 180° - 185°

21. STEP DRILLS

Grinding wheel: Depending on the drill, use corundum or diamond wheel.

ATTENTION! Only step drills with two steps can be sharpened.



Grinding of the 1. step (tip): **Alignment and sharpening as for right hand drills** (see picture below).

The second step is adjusted in length and side direction as twist drills. The tip angle is adjusted on the prism support. Clearance angle as per your request.

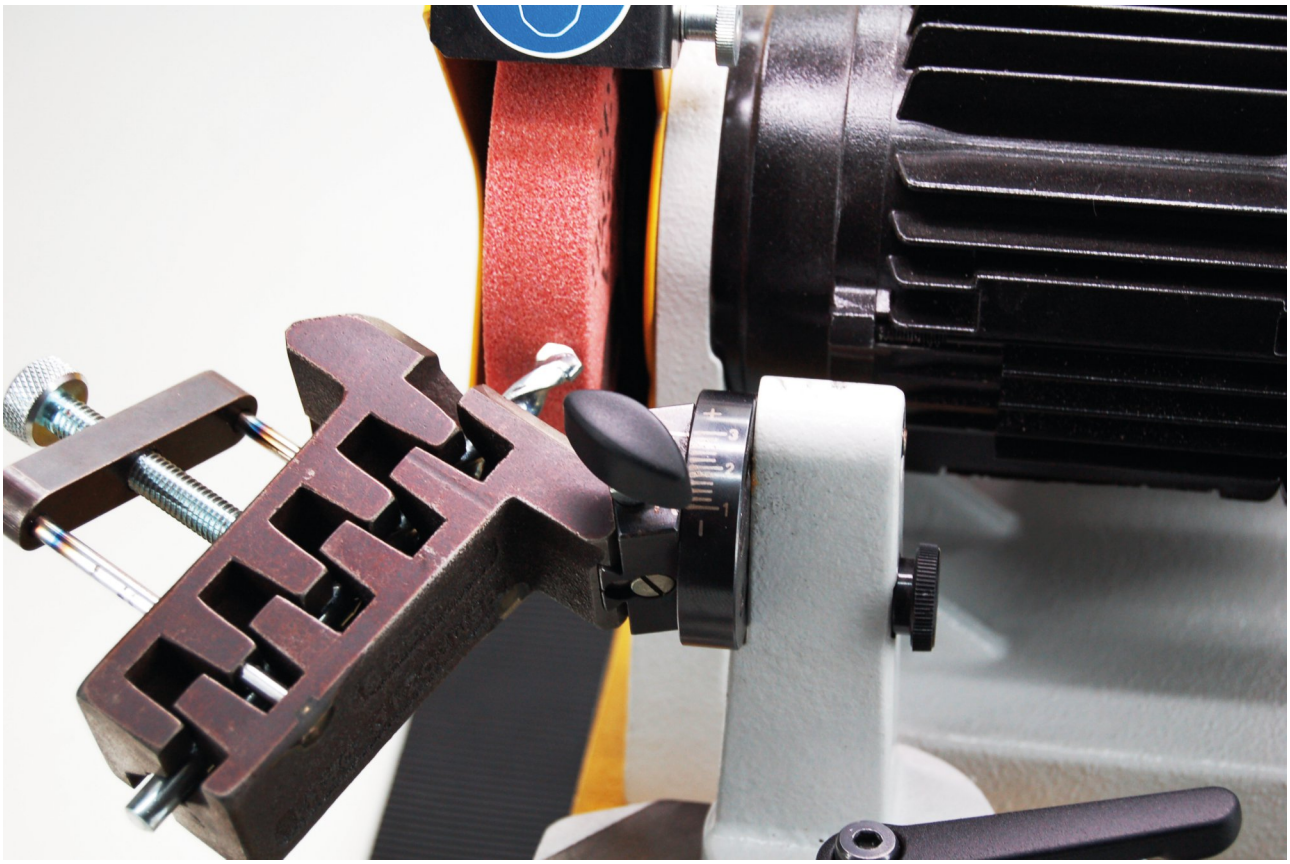
Grind the second step over the right side of the grinding wheel.

Alignment of the top

Alignment of the step

22. CARBIDE DRILLS

Use diamond wheel! (Option)
Change of grinding wheel see page 18.



Grinding of **carbide drills** depending on shape of cutting edge use the **4 facet shape** or **twist drills**.
The sharpening of stone drills with 4 facet shape is same as described on page 19. The sharpening of stone drills with standard twist drill shape is same as described for right hand drills, see page 19.

Align main cutting edge straight to line

4 facet shape

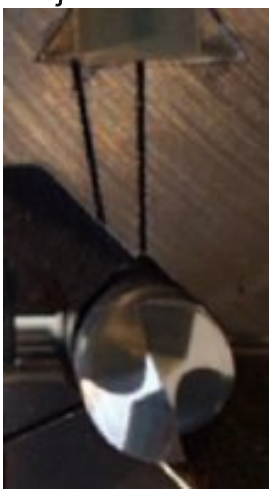
Align main cutting edge between both graduation marks

Twist drill shape

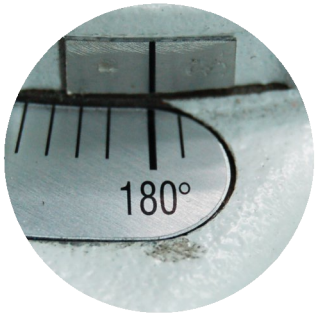
23. SHEET METAL DRILLS

Grinding wheel: Corundum, dress the right side of the wheel with an angle of 45°.
Use the grinding wheel dresser to dress the requested shape.

Adjustment of drill



Prism rest



Adjustment of the drill in the prism:

- Adjust the main cutting edge parallel to both graduation lines on the prism (see picture)
- Project the drill around 35-40 mm outside the prism

Adjustment of the machine

- Top angle 180° left
- Clearance angle to your requirement

Grinding operation:

By **carefully** feeding the prism towards the wheel and meantime swivelling the prism, grind the first side of the cutting edge, then move with the motor feed to the centre tip of the drill bit and grind over the tip using the 45° dressed side of the grinding wheel.

Note the No. on the scale of the prism feed and move back, remove the prism of the prism support, reverse, fix again in the support and grind the second cutting edge to the same graduation No. Now the second side of the tip is ground centrically.

The tip thinning is identical as for twist drills (see page 22).

24. CENTRE BITS FOR WOOD

Grinding wheel: Depending of the material the drill is made of; thin corundum or thin diamond wheel.

Adjustment of the drill in the prism:

- main cutting edge parallel to both graduation lines (see picture)
- project the drill approx. 35-40 mm outside the prism

Adjustment of the machine

- tip angle 180° left
- clearance angle to your requirement

Grinding of the drills:

By **carefully** feeding the prism towards the wheel and meantime swivelling the prism, grind the first side of the cutting edge, then move with the motor feed to the centre tip of the drill bit and grind over the tip using the 45° dressed side of the grinding wheel.

Note the No. on the scale of the prism feed and move back, remove the prism of the prism support, reverse, fix again in the support and grind the second cutting edge to the same graduation No. Now the second side of the tip is ground centrically.

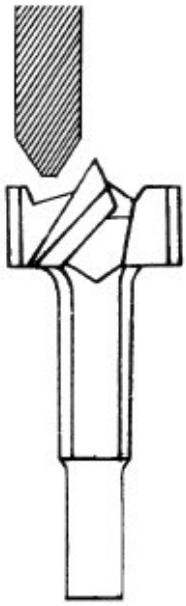
Move with the motor feed to the left and grind the outer cutter with the dressed side of the grinding wheel.

The second outer cutter grind with the same setting. The tip thinning is identical as for twist drills.

25. FORSTNER DRILLS

ATTENTION! Only the open types can be ground.

Grinding wheel: Depending on the material the drill is made of, use a thin corundum or thin diamond wheel.



Adjustment of the drill in the prism:

The outer and main cutting edges are placed directly on the grinding wheel.

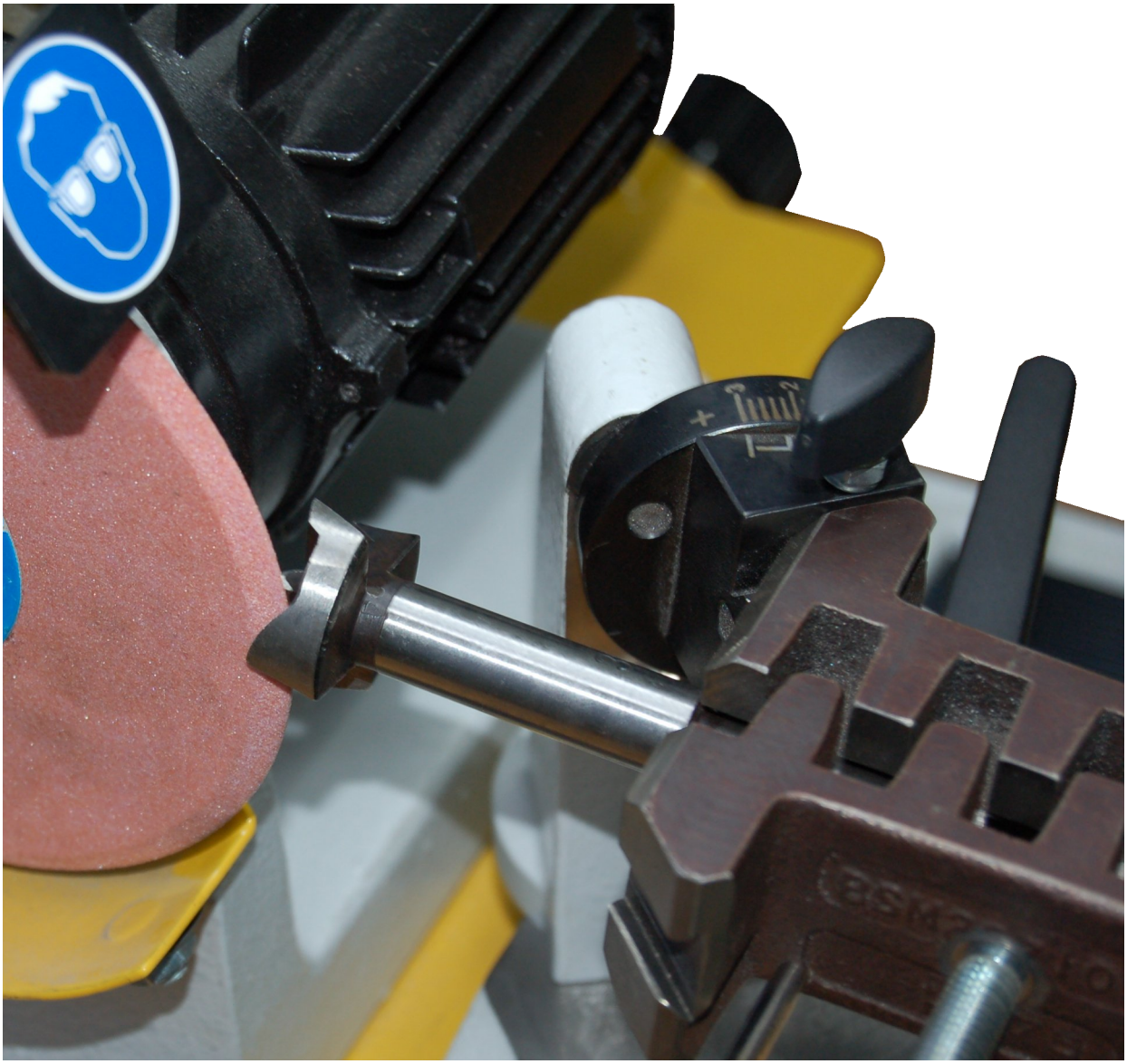
Adjustment of the machine:

- tip angle 180° left
- clearance angle to your requirement
- turning mechanism fix in hole A

Grinding of the main cutting edges:

- align the main cutting edge to the grinding wheel, so that the outer edge cannot be hurt by the grinding wheel
- grind the first main cutting edge from the inside to the outside
- reverse the prism and grind the second main cutting edge from the outside to the inside

26. GRINDING THE OUTER CUTTING EDGES

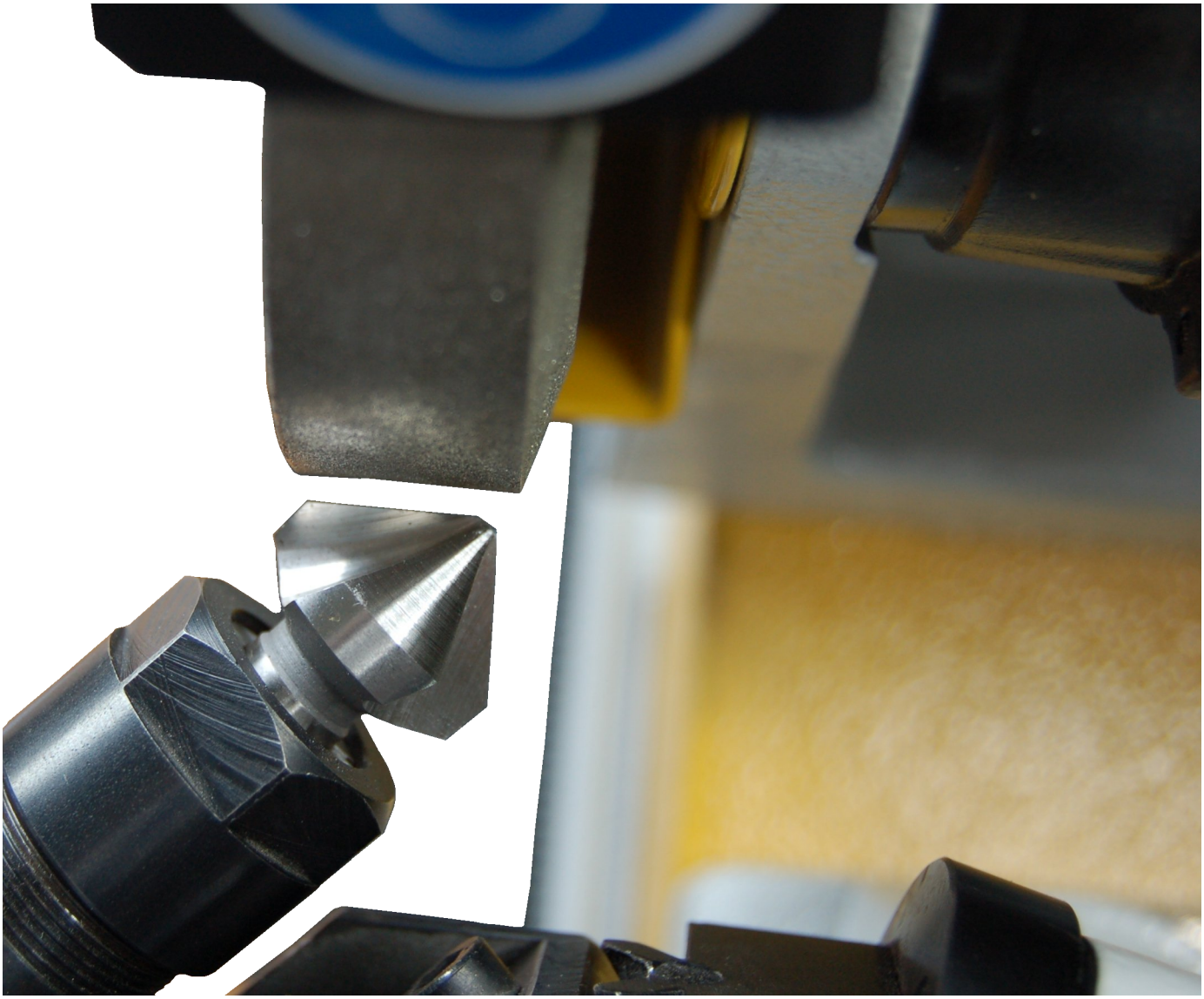


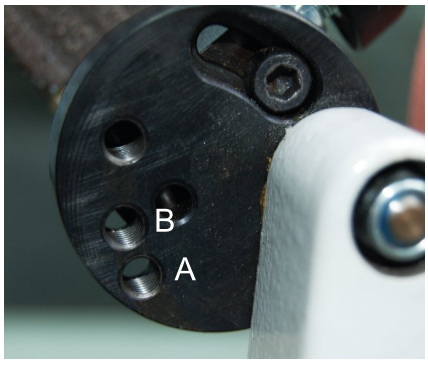
Adjustment on the machine

- tip angle 180° left
- clearance angle to your requirement
- turning mechanism fix in hole A

Align outer cutters to the grinding wheel and grind by reversing.

27. COUNTERSINK SHARPENING DEVICE SVR 20





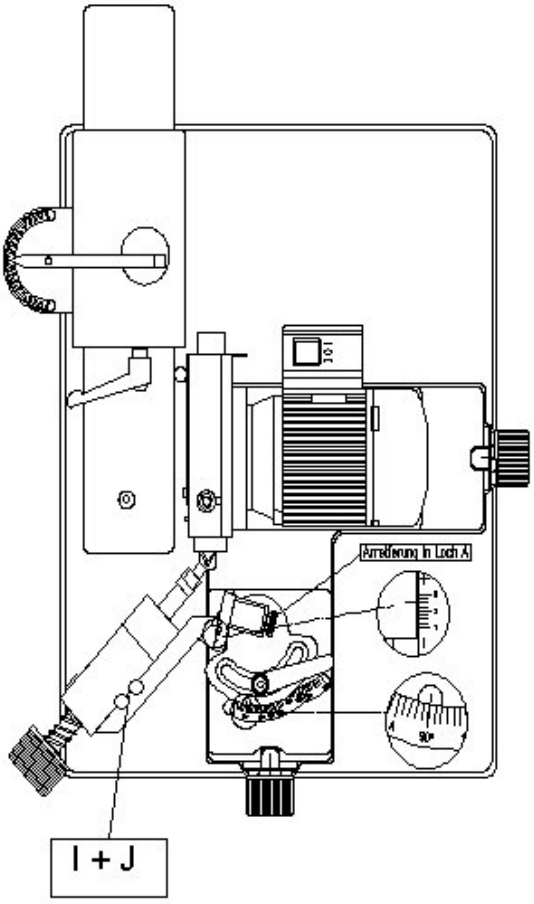
Turning mechanism
fix in hole **A**.

28. COUNTERSINK SHARPENING DEVICE SVR 20

For sharpening countersinks with the BKS, this special accessory type SVR 20 is required. Arrest the turning mechanism of the BKS in hole **A**. (See picture on page 31).

Fix the stepless clearance angle adjustment on the third graduation mark from above (see picture). The prism rest fix at **90°** (see Picture).

Place your countersink inside the collets of the SVR 20, below the collets nut (see also drawing E). With the screws I and J (see drawing on the right) you can adjust the distance between the SVR 20 and the grinding wheel. For bigger countersinks the SVR is positioned backwards and can only fix with the clamp mechanism to the stop dog and fix with the clamping screw. By turning the hand wheel of the SVR clockwise and carefully moving forward with the prism feed. You can now sharpen the flutes of your countersink.

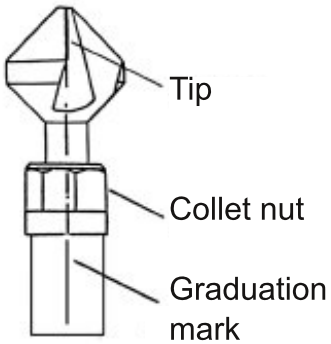


It is absolutely recommended grinding with a clean and parallel dressed grinding wheel.

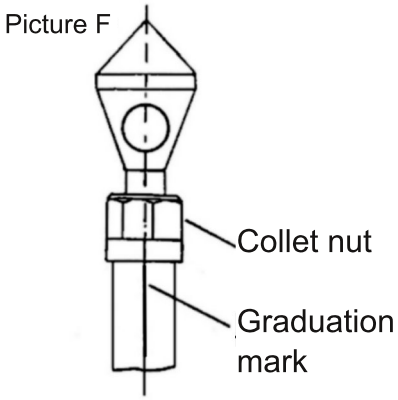
For one-flute countersinks you have mount the special cam (special accessory). For adjusting see drawing F.

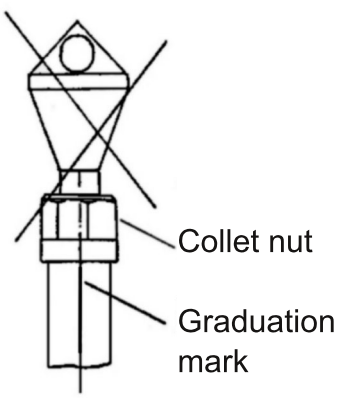
ATTENTION! When you align the tip of countersink parallel to the graduation line on the SVR 20, take care that the bigger hole is on this side.

Picture E



Picture F





29. MAINTENANCE

CLEANING AND GREASING

The BKS should be cleaned from grinding dust, using a soft brush, once a week. Persistant dirt, please clean with a usual in trade machine cleaner. After cleaning, please grease all movable parts with some drops of machine oil. To prevent corrosion of the blank parts, also grease with little oil and rug with a soft rag. The prism- and motor slides should be greased every three month, using the lubrication nipples. Please use special sliding- or roller bearing grease.

30. REPAIRS

All parts listed in the spare part list, can be replaced by the user. Repairs of assembly groups, as reversing prism or the blase plate with guide and spindle, can only be repaired in our company. Reason is, these parts are mainly responsible for the precision of the BKS.

31. WARRANTY

The warranty is **12 months** from date of shipment and refers to a **one shift work** under condition of a appropriate use of the machine. The guarantee includes the costs of replacing of defect parts and assembly groups, including the required working time.

Excluded from any guarantee are:

- Wear parts
- Transport damage
- An improper use
- Damage by use of force
- Damages and consequential damages caused by breach of the duty taking care of the user

In case of a warranty claim, we ask you to inform us about the serial No. of the machine.

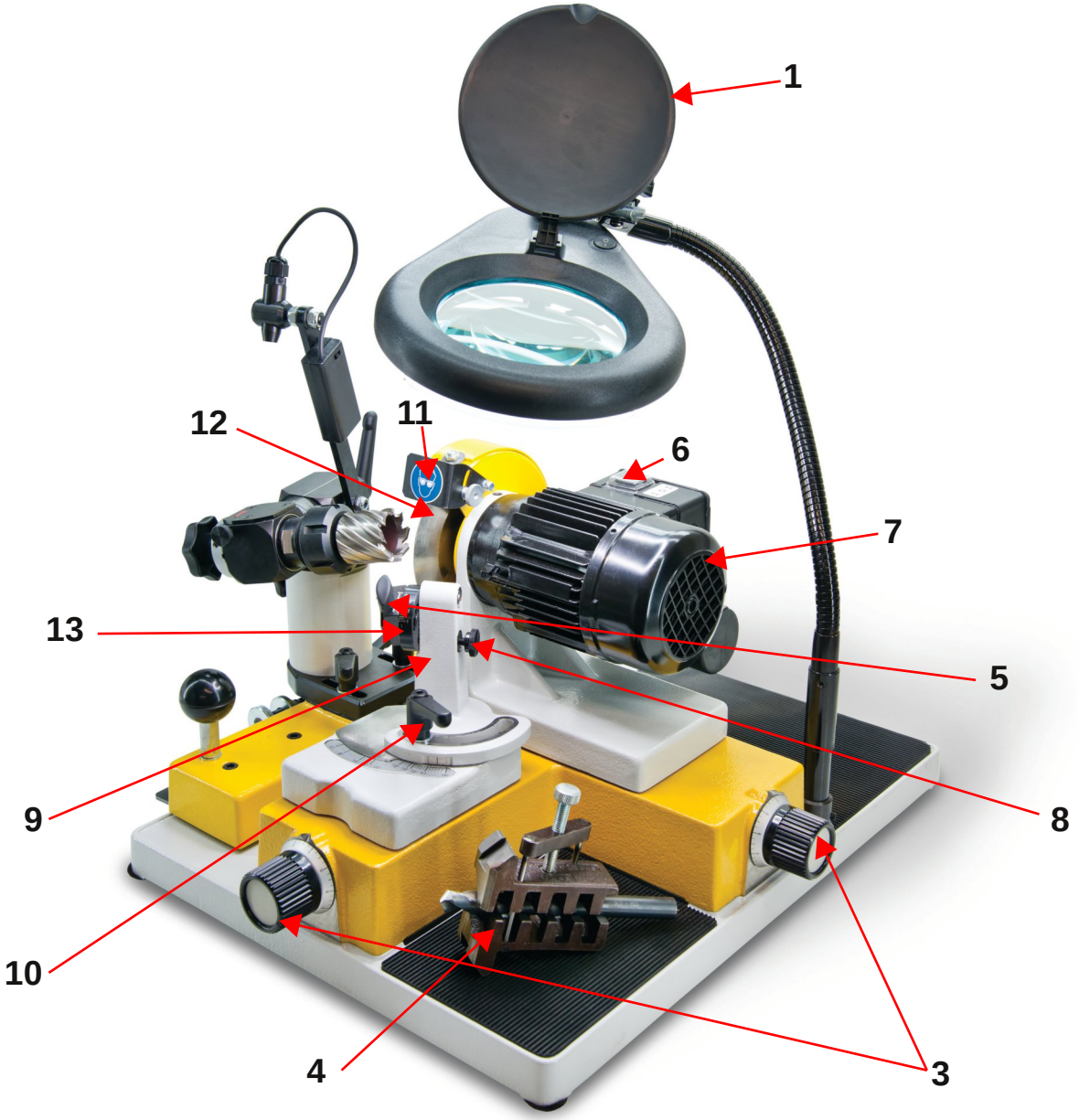
Returns have to be authorized by us, before shipment. We reserve the right to charge you with the transportation cost, if the return was not authorized.

Spare parts or replacement parts are transferred absolutely in our ownership..

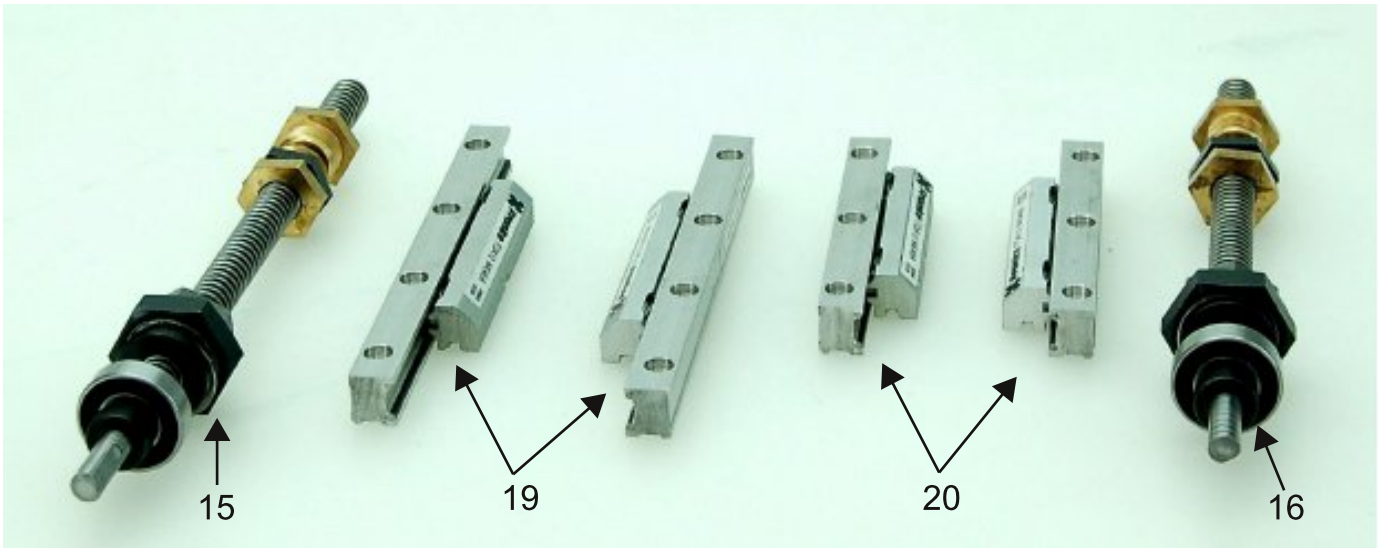
32. DISPOSAL OF THE MACHINE INSIDE EU

When sending back the machine to us (transport charges prepaid), the company Kaindl-Schleiftechnik Reiling GmbH grants for the competent disposal as per the currently in force guidelines of the europeen waste equipment regulations.

33. SPAR PART LIST



1. Item No. 18070 Precision lens LED lighted
2. Item No. 10923 Motor 230V/50 Hz bulk
3. Item No. 10915 Turning knob with scale for prism and motor feed
4. Item No. 10905 Prisma 1-20 mm
5. Item No. 11399 Wing screw for prism fixation M5
6. Item No. 11013 Motor switch complete with box
7. Item No. 10567 Fan wheel cover
8. Item No. 10549 Fixation screw M6
9. Item No. 11235 Prism rest
10. Item No. 10959 Clamping lever M8
11. Item No. 11261 Spark protection flap 42 mm
12. Item No. 10914 Grinding wheel cover 3pcs.
13. Item No. 11095 Clearance angle adjustment
14. Item No. 11006 Prism support with wing screw



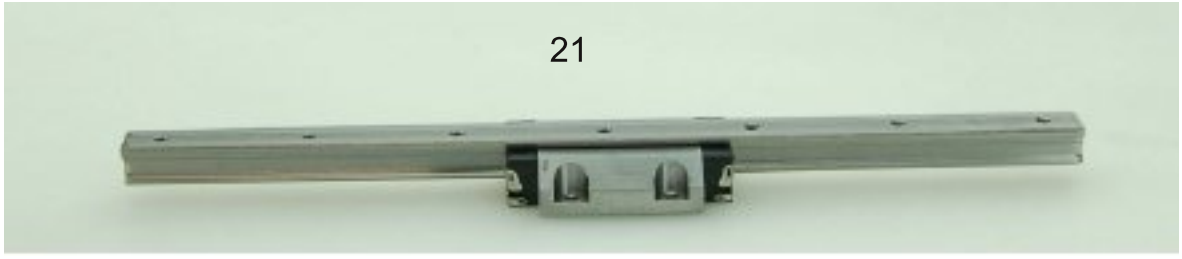
15. Item No. 10924 Spindle system complete for motor feed, L = 37 mm
16. Item No. 12336 Spindle system complete for prism feed, L = 217 mm

17. Item No. 12340 Guidance set (old version) for motor feed
18. Item No. 12341 Guidance set (old version) for prism feed

19. Item No. 12343 Guidance set (new version) for motor feed
20. Item No. 12342 Guidance set (new version) for prism feed

When placing an order, please tell your No. of the machine and year of the construction!

21. Item No. 12357 Precision guidance set complete with guiding carriage



34. WEAR PARTS LIST

Item No.	Description
10896	Corundum cup wheel grit 60 (125x40x20)
10897	Corundum cup wheel grit 80 (125x40x20)
10898	Corundum cup wheel grit 100 (125x40x20)
10909	Spare diamond dresser head
10910	Support for diamond dresser
10890	Corundum grinding wheel grit 80 (125x20x20)
10891	Corundum grinding wheel grit 180 fine
10895	Corundum grinding wheel grit 60
10893	Corundum grinding wheel grit 100 (125x5x20)
11103	Corundum grinding wheel grit 100 (125x10x20)
17073	CBN grinding wheel ø 125 mm B126/3 (broad)
16490	CBN grinding wheel ø 125 mm B76/3 (broad, standard)
17556	CBN grinding wheel ø 125 mm B46/3 (broad)
17052	CBN grinding wheel ø 125 mm B 126 (thin), covered on 2 sides
17053	CBN grinding wheel ø 125 mm B 126 (thin), covered on 3 sides
15422	Grinding wheel support