

## Operation manual for Drill and Core drill grinder BKS



**Original manual**

**Please keep for further use !!**

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## EC-Declaration of conformity

The manufacturer:

Kaindl-Schleiftechnik  
Reiling GmbH  
Remchinger Strasse 4  
75203 Königsbach-Stein  
Germany

Declares that the machine described herein:

**Drill and Core drill grinding  
Machine  
Type BKS**

<b>Machine No.</b>	<b>Year of construction:</b>
--------------------	------------------------------

refers to the security and health requirements of the following EC instructions::

EC-Machine directive (2006/42/EC)

EC-guideline EMV (2004/108/EC)

### Applied harmonised norms:

EN ISO 12100-1 und EN ISO 12100-2 ; EN ISO 13857 ; EN ISO 13732-1 ;  
EN 61029-1 ; EN 60204 Teil 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  
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Königsbach-Stein date 29.12.2009

.....  
Reinhard Reiling, General manager

## 2. Description

### 2.1. Directed use

The KAINDL drill and core drill grinding machine BKS is determined exclusively:  
- for sharpening of HSS and hard 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 advise.**

### 2.2. 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.

### 2.3. Technical data

Dimension L x D x H, mm	500x420x310 mm
Weight net, Kg:	approx 30
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	ca. 10 sec.
Grindign wheel	Diamond grinding wheel, electroplated for HSS core drills 125 mm. Corundum grinding wheel 125x20x20 / grit 80 / Hardness M
Core drill support	19 mm Weldonshank
Clamping range of drills	2-20 mm

Technical changes may be done without notification

### **3. General Safety advise**

#### **3.1. Duty of taking care of the user**

The KAINDL BKS machine 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
- all safety and warning instructions are not removed from the machine and kept readable.

#### **3.2. Explication 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

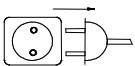


Wear safety glasses during operation

Augenschutz  
benutzen



General danger



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



Danger by laser beam

### 3.3. Basic Safety advise

Keep information available:

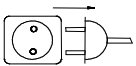
This manual has to be kept near the machine. It must be granted, that every person, who has to work with the machine, has access to the operation manual. Additionally to the manual, also company instructions in sense of security and health requirements have to be provided.

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 to life and health for persons.



Augenschutz  
benutzen

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 KBS has a laser unit.. The laser beam mustn't hit 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.**

### 3.4. Demands for the operating personnel

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

### 3.5. Special risks

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 connections regularly**

:

Fix open connections. Electric cables, being damaged 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 wear parts/original accessories - these parts are specially constructed for this

type of machine

- Please also read the chapter "General safety advice".

## **4. Installation**

### **4.1. Environmental conditions for the installation**

Use the core drill grinding machine only in dry rooms.

Environment temperature from +5 to +50°C

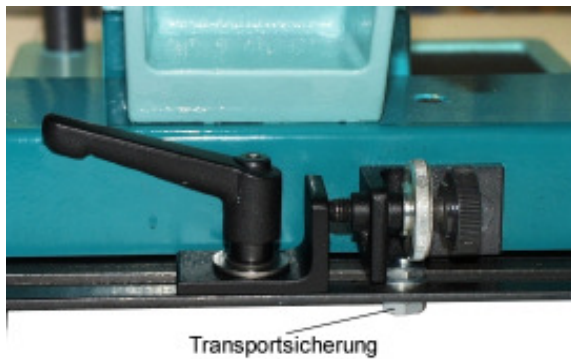
Humidity max 90% not condensing

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.

### **4.2. Remove transport locks**



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

### **4.3. Advice for dispose of packing material**



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

## 5. . Starting

To prevent damage on the machine or severe injuries while staring, 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 advise

- Wear safety goggles

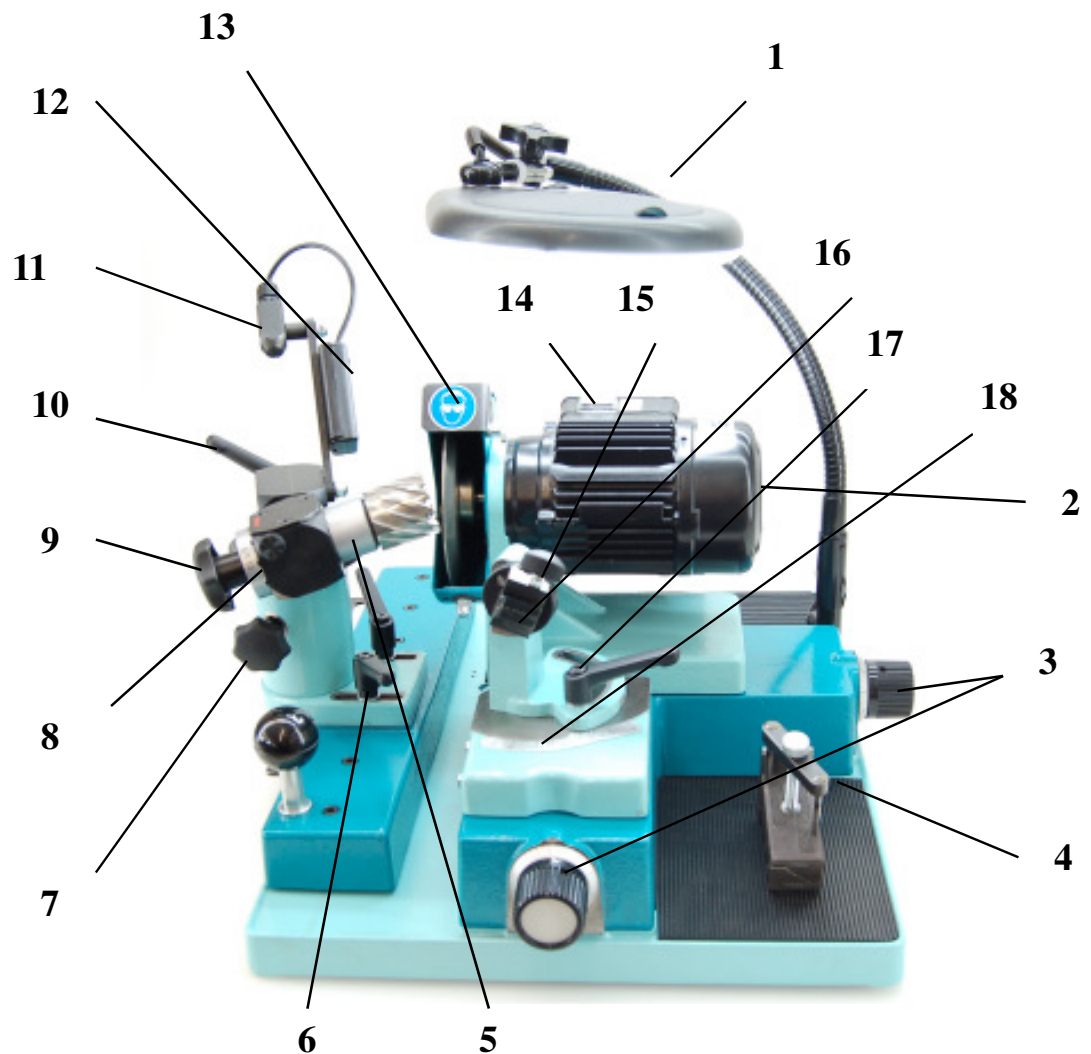
### 5.1. Checks before the first installation

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



## 6. Operation

### 6.1. Description of components



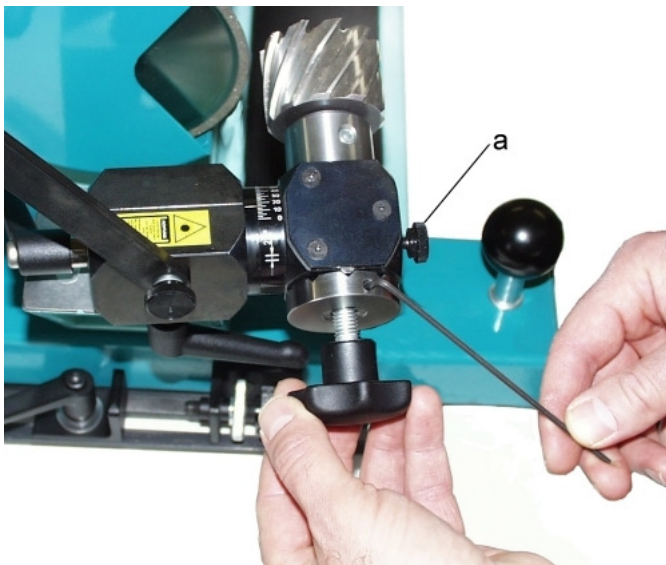
- |   |   |
|---|---|
| 1. Precision lens neon lighted                  | 10. Clamping lever for head adjustment      |
| 2. Motor  | 11. Laser                                   |
| 3. Motor feed                                   | 12. Battery box                             |
| 4. Clamping prism for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

## 6.2. Adjustment and set up

### 6.2.1 Change of index plate

The index plate (page 9 item 12) of the KBS 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 or 8 teeth and T-10 for core drills with 5 or 10 teeth. Optional the following index plates can be ordered: T-6, T-7, T-9 ( for core drills with 6 to 10 teeth.)

#### 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 pic. on the left.)

Fix the knurled screw (see pic 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 pic.). 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 (pic a)

## 6.2.2. 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 )

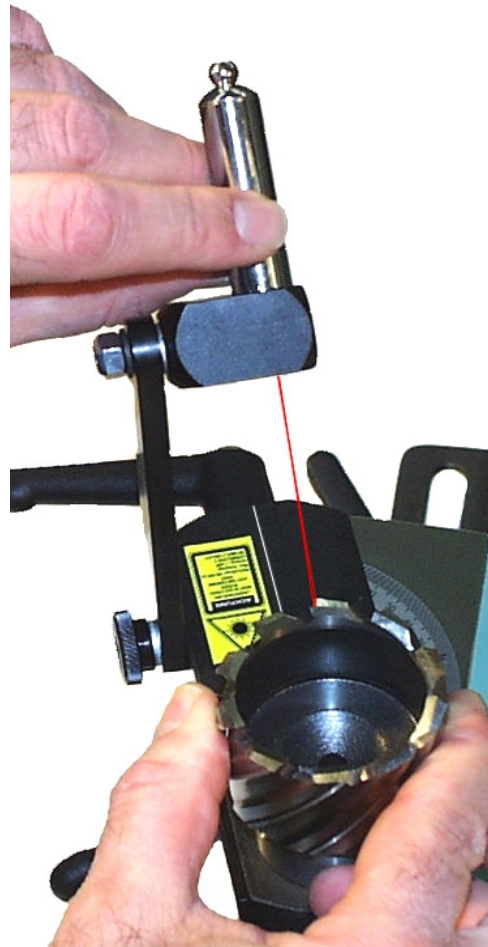
By placing the core-drill inside the support, pay attention that the threaded pin is **not** on the flat side of the Weldon shank. The pin must touch the curved side of the shank. ( Do not tighten the pin yet.)

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 )

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 !!!**

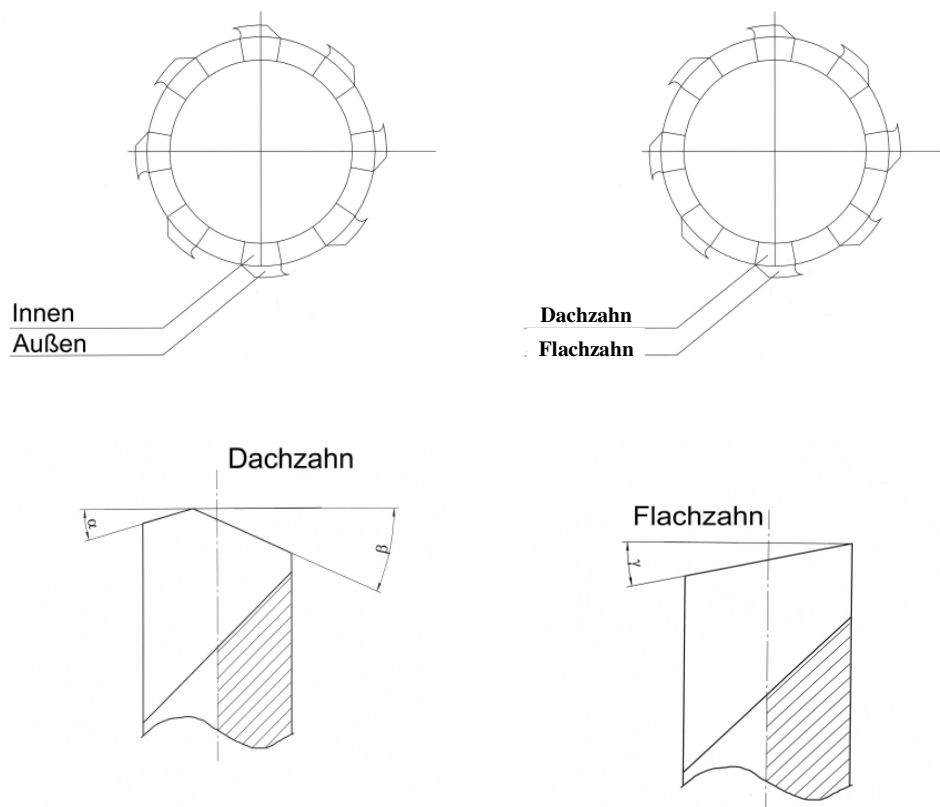


## 6.3. Operation

During all grinding operations, 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 KBS the teeth are sharpened first on the inside and then on the outside. On the alternating core-drills the V-shape teeth are sharpened first and then the flat teeth.



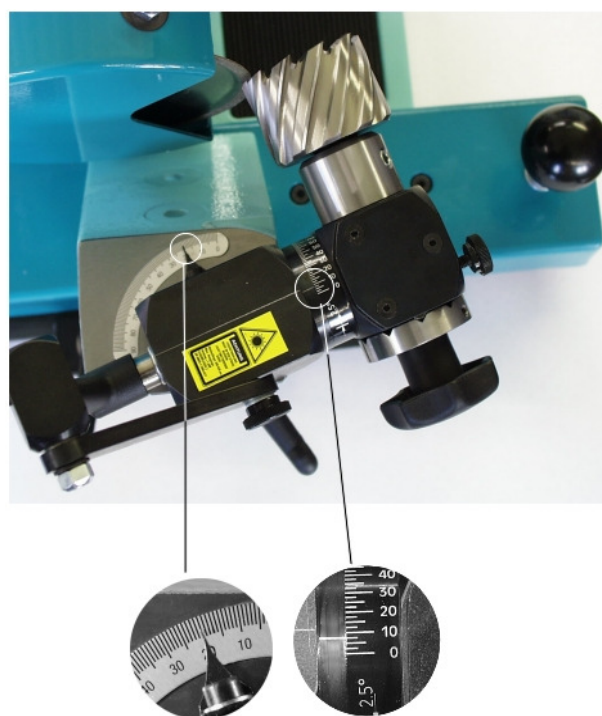
### 6.3.1. Grinding of the core-drills

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 adjustments. ( see table )

No. Of teeth	Standard HSS			
	Scale pillar		Aufnahme	
Back inside/ back outside	Inside	outside	inside	outside
4	20°	7,5°	7,5°	15°
5	20°	7,5°	7,5°	15°
6	20°	7,5°	7,5°	15°
7	20°	7,5°	7,5°	15°
8	20°	7,5°	7,5°	15°
9	20°	7,5°	7,5°	15°
10	20°	7,5°	7,5°	15°
11	20°	7,5°	7,5°	15°
12	20°	7,5°	7,5°	15°

#### Adjustment of the core-drill for grinding the back inside

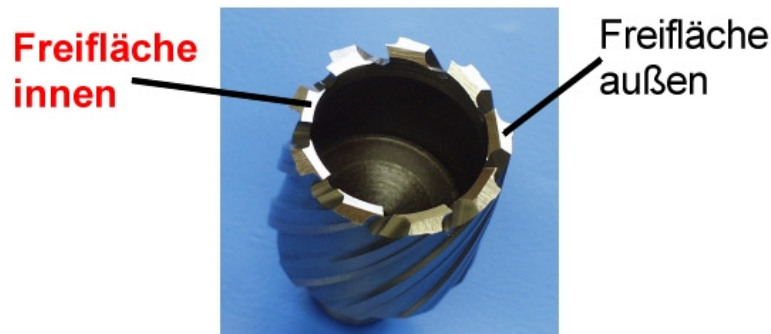




### Adjustment of the core-drill: Back inside

!!! Use the suitable index plate !!!

We start grinding the back inside ( see pic. )



Place the scale of the pillar to 20°

( see big pic. on the left. )

The core-drill support place to 7,5°

After you have 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.

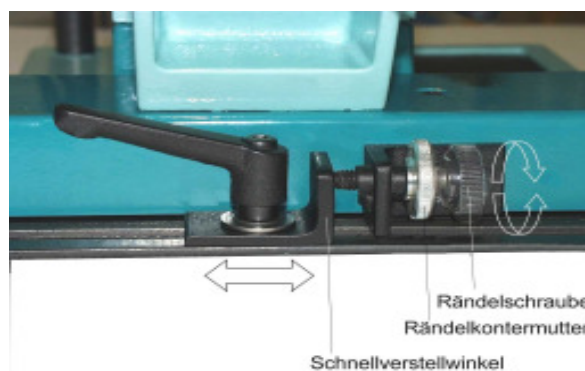
(The one you have adjusted and **marked before**.)

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 pic.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.

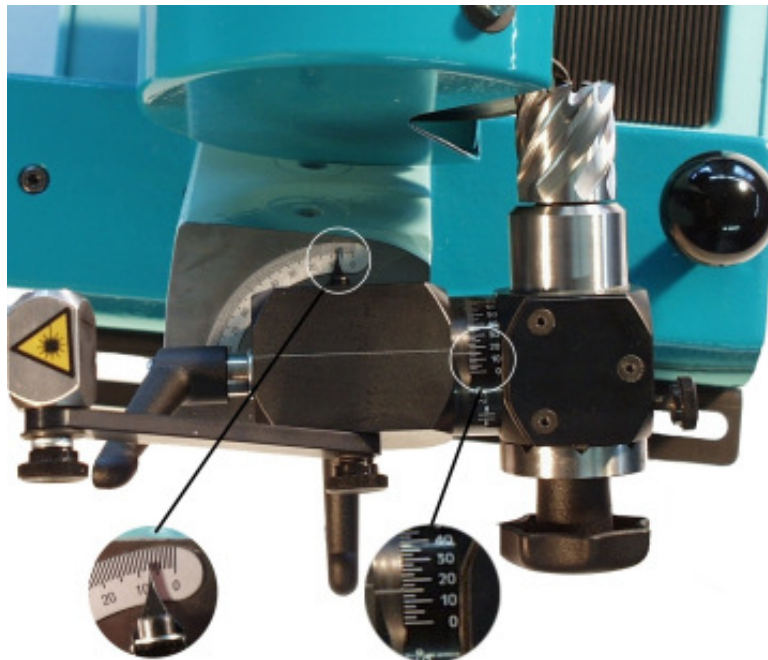
After you have sharpened the first tooth, move back the slide and turn the star know screw, clockwise up to the next index of the index plate. **Do not work with the motor feed.** Repeat this operation until all teeth are sharpened.



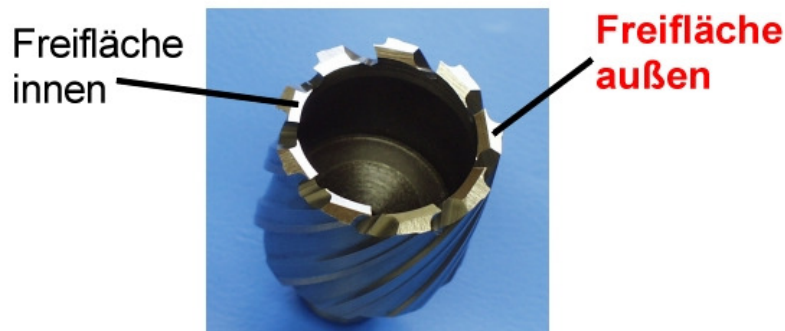
Micrometer adjustment

No of teeth	Standard HSS			
	Scale pillar		Support	
Back inside / back outside	inside	outside	inside	outside
4	20°	7,5°	7,5°	15°
5	20°	7,5°	7,5°	15°
6	20°	7,5°	7,5°	15°
7	20°	7,5°	7,5°	15°
8	20°	7,5°	7,5°	15°
9	20°	7,5°	7,5°	15°
10	20°	7,5°	7,5°	15°
11	20°	7,5°	7,5°	15°
12	20°	7,5°	7,5°	15°

### **Adjustment for grinding the back outside**



#### ADJUSTMENT OF THE CORE-DRILL BACK OUTSIDE (SEE PICTURE)



Place the scale of the pillar to  $7,5^\circ$

( see big. pic. on the left )

The core-drill support place to  $15^\circ$

After you have finished the angle adjustment, move the core-drill by using the guiding slide and the motor feed towards the grinding wheel. (**motor off**)

Do **not** grind the tooth, you have adjusted before (**marked tooth**) , **but the next cutting tooth below**.

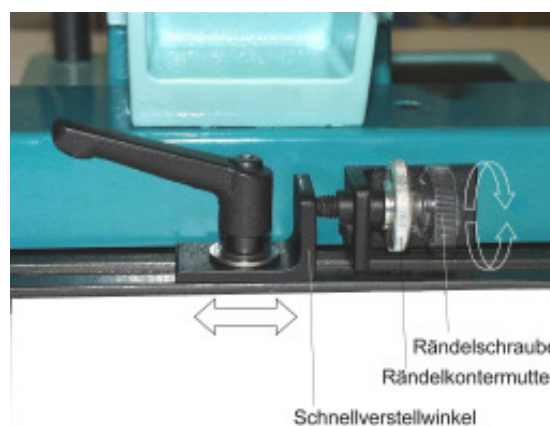
Move with the core-drill slide to the grinding wheel (**motor off**) and adjust with the stop dog on the side. (**see pic.below**)

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.

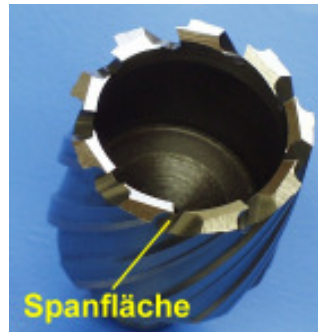
When you have sharpened the first tooth, move back the slide and turn the star knob screw, clockwise up to the next index of the index plate. **Do not work with the motor feed**. Repeat this operation until all teeth are sharpened.



Micrometer adjustment



### 6.3.2 Grinding of the cutting face :



For grinding the cutting face, use the Kaindl-diamond wheel with radius Part no. 15330  
(Please now change the diamond wheel)

Place the scale of the pillar to 50 °

( see pic. 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.

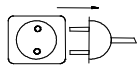
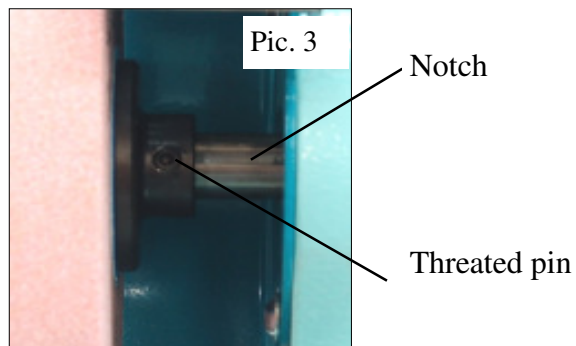
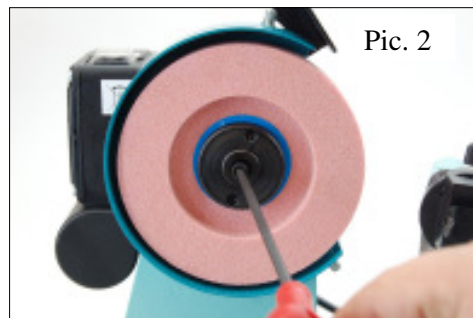
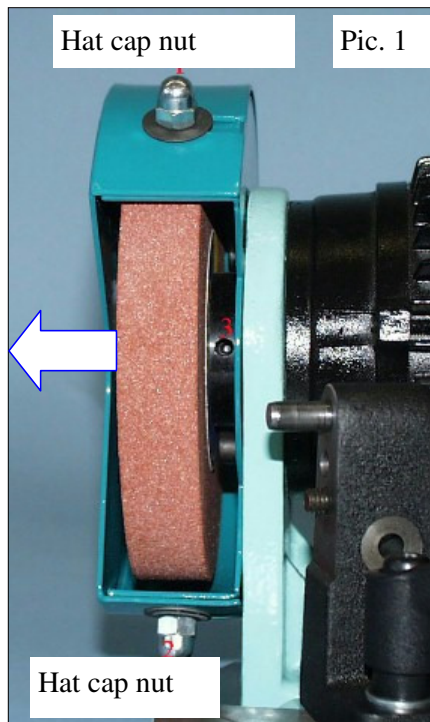
After you have sharpened the first cutting face, move back the slide and turn the star knob screw, clockwise up to the next index of the index plate. **Do not work with the motor feed nor the micrometer adjustment screw** . Repeat this operation until all cutting faces are sharpened.



Scale pillar

Scale core drill support

## Change of the grinding wheel



**Before changing the wheel, disconnect the electric plug, remove the core drill from the suport**

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

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 on 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

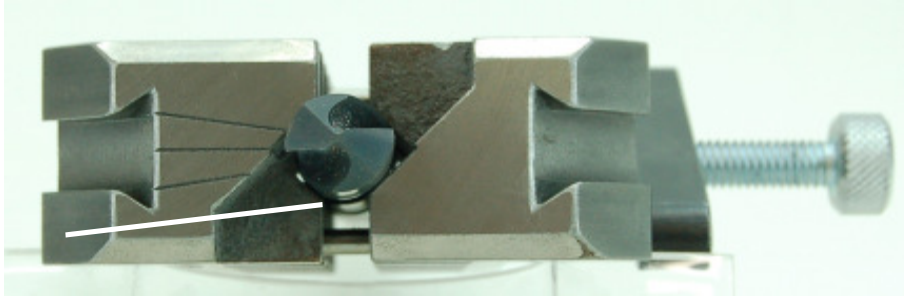
After the grinding wheel change make a 1 minute test run.

In case of uncommon performance, switch off the machine and check for the cause of failure.

## Grinding of right hand 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 mm outside the prism clamp.

Close the prism carefully with the knurled screw, pay attention that the drill still can still be turned.  
Align one cutting edge between both graduation lines (see pic. ).  
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.

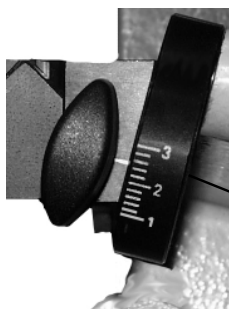
Adjust the requested top angle (Standard 118°) on the prism support and fix with the clamping lever.

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

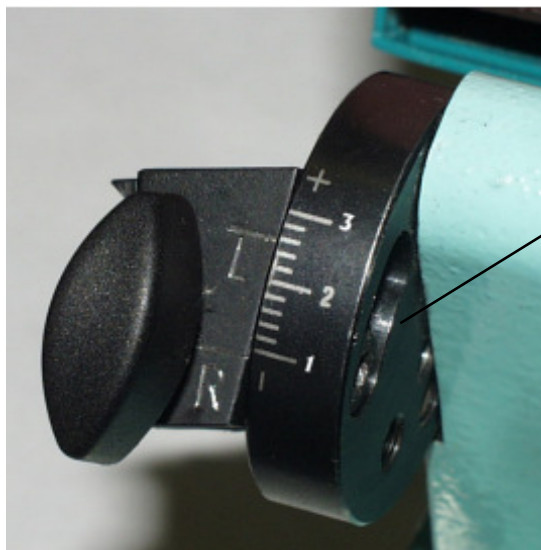
## Grinding of left hand drills

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

**Adjustment on the machine.**

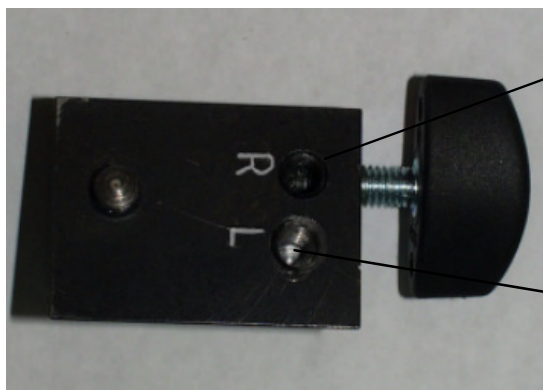
-Tip angle  $118^\circ$

For grinding of left hand drills, the prism rest and clearance angle adjustment has to be changed



Clamping screw

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



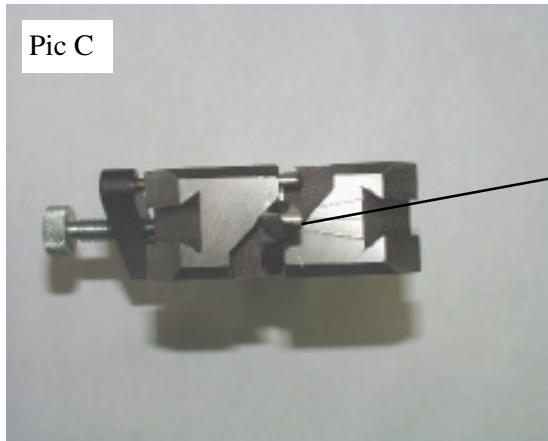
R for right hand drills

L for left hand drills

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

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

(See Pic. C)



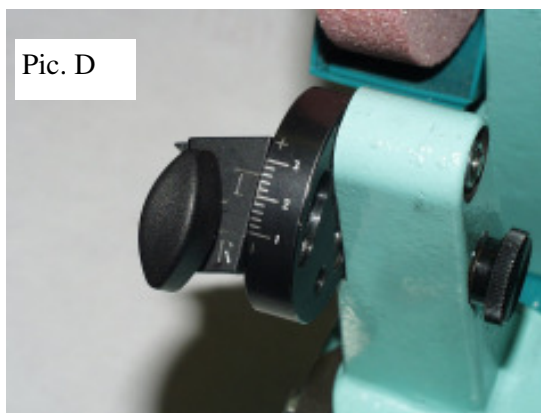
Graduation line for left hand drills

Adjust the requested clearance angle on the scale ( Pic. D ).

Applicative scale range for left hand grinding 2-3.

2= slight clearance angle

3= high clearance angle



Pic. D

## 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.

## Web thinning of drills

Keep the prism in the prism support, as described before.

Turn the clearance angle adjustment to 1. (see pic. below)

Fix the turning mechanism in hole No. **C** of the fixation plate (see pic. below)

Shift the complete prism trestle to the left stop, adjust on mark **A**.

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 go back for **3 complete turns**.

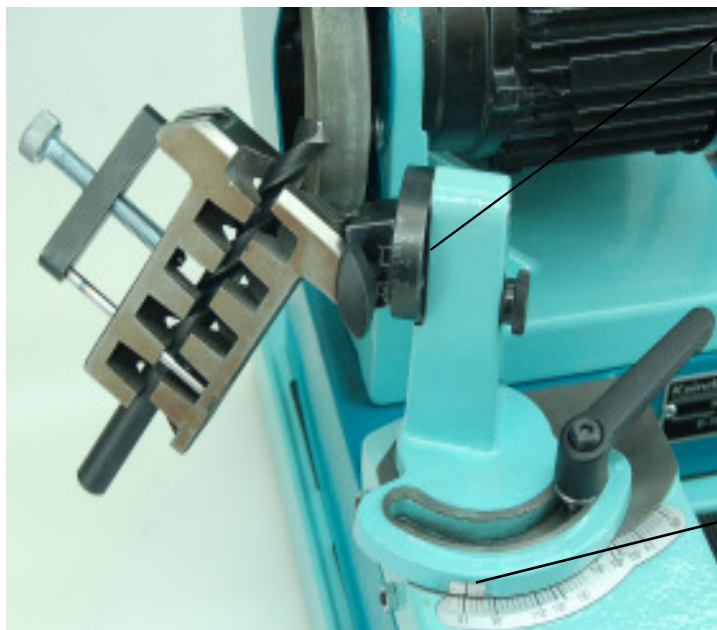
Do not change the position of the motor feed.

Open the clamping lever, reverse the prism, fix again and thin the web of the other side.



### Lock points

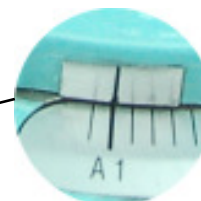
- A** : Lock point for cutter, carbide drill  
crossfacet shape, four surface shape
- B** : Lock point for back or free sharpening
- C** : Lock point for web thinning



Adjust clearance angle to 1



Prism support to . A1





## Web thinning Split - Point

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)

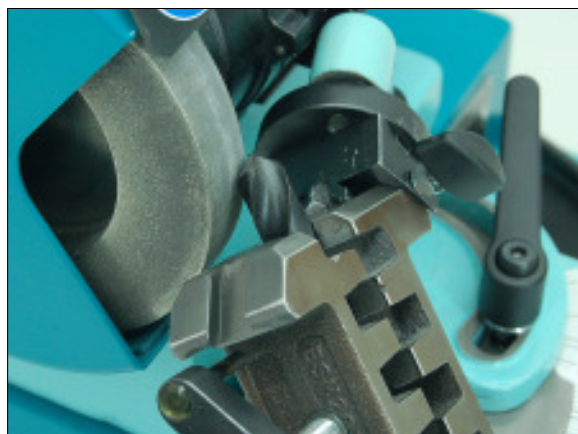
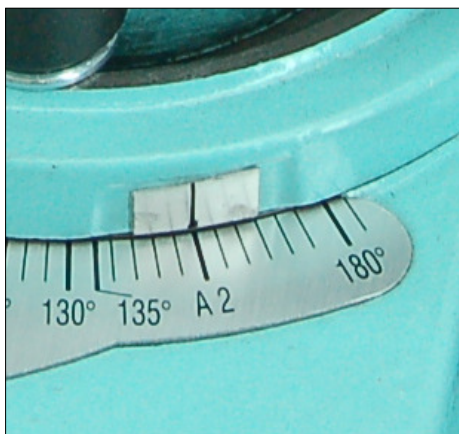
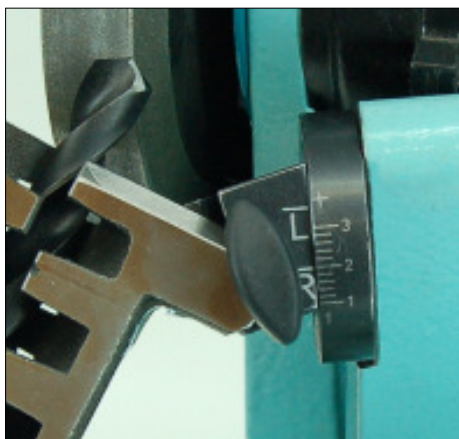
Place the tip angle to A2, for this move the support completely to the right (see picture 3)

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.



## Grinding of cross cutting or 4 facet drills

Depending of the drill is made of, use the corresponding grinding wheel.

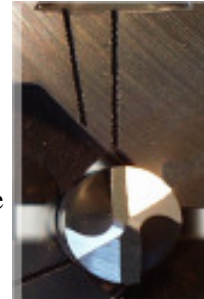
Align one cutting edge parallel to both graduation lines. (see pic.)

Project the drill approx. 20 mm outside the prism.

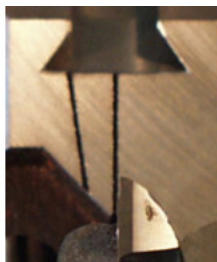
Fix the turning mechanism in hole **A**. (See pic. below)

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



## 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  $180^\circ$  -  $185^\circ$ . (see pic below)**

**The sharpening procedure is identical.**

For cutters with more than two cutting edges use the magnetic depth stop, listed under special accessories.

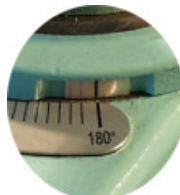
For cutters with odd. cutting edges (e.g. 3-cutters) each cutting edge has to be adjusted separately.

Having cutters with even numbers of cutting edges, the opposite cutting edges can be ground by reversing



**A : Locking for main cutting edge**

**B : Locking for free sharpening**



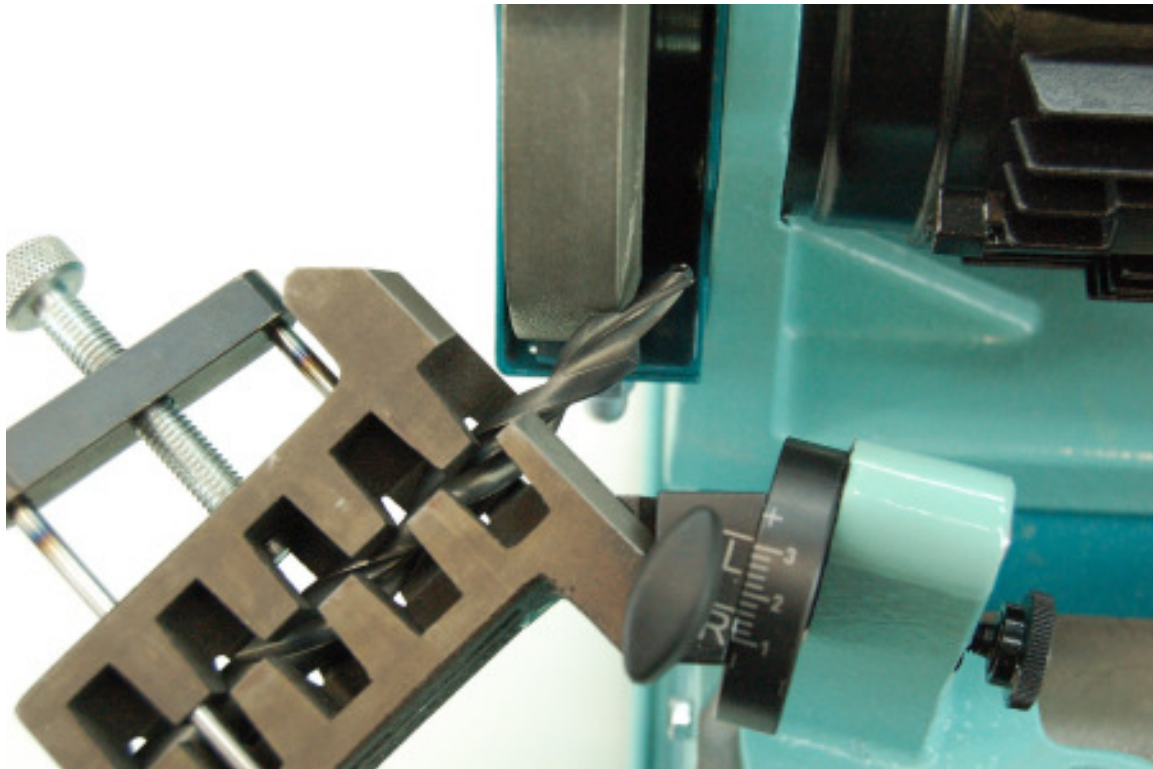
Prism rest to  $180^\circ$



## 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 pic. below)

The second step is adjusted in length and side direction as twist drills

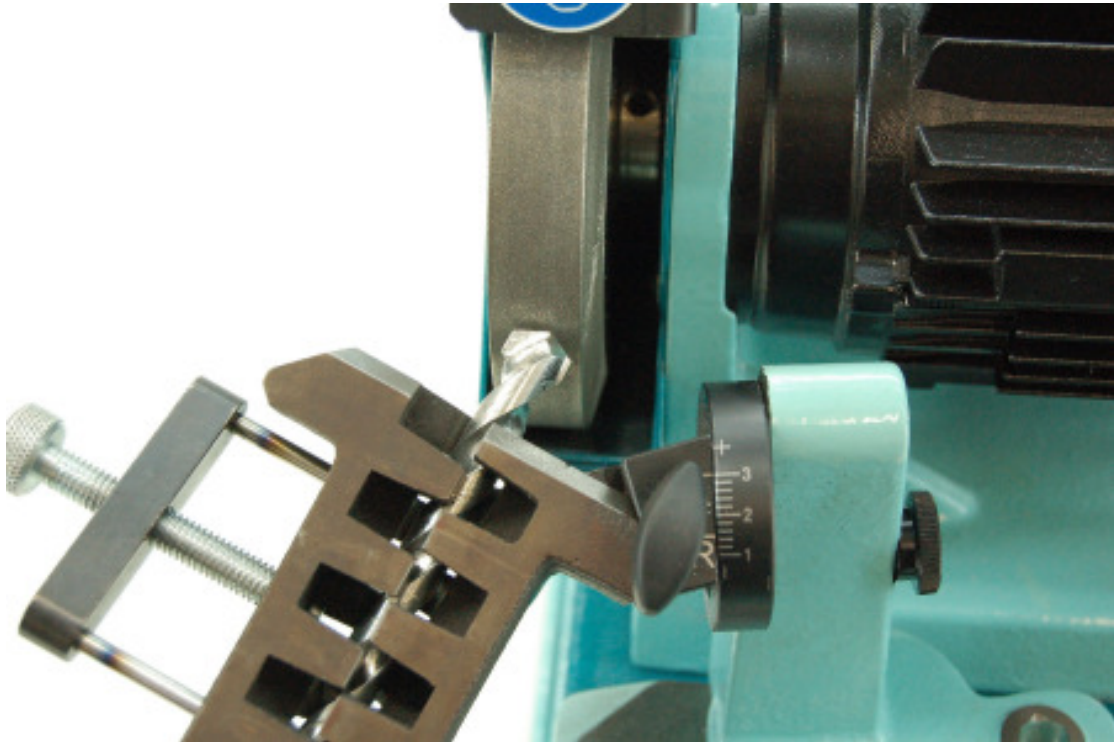
The tip angle is adjusted on the prism support

Clearance angle as per your request.

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

## Carbide drills

Use diamond wheel ! ( Option )  
Change of grinding wheel see page 28

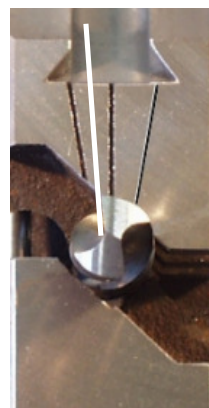


Grinding of **carbide drills** depending on shape of cutting edge use the **4 facet shape** or **twist drills**  
The sharpening of stone drills with 4 facet shape is same as described on page 19  
The sharpening of stone drills with standard twist drill shape is same as described for right hand drills .  
(See page 15)



4 facet shape

Align main cutting edge  
straight to line



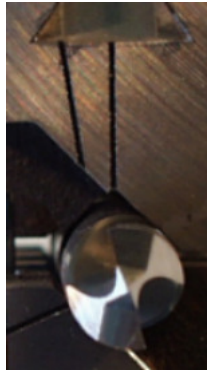
Twist drill shape

Align main cutting  
edge between both  
graduation marks

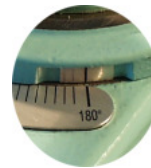
## Sheet metal drills (with center tip)

Grinding wheel: corundum, dress the right side of the wheel with an angle of  $45^\circ$   
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 pic.)
- Project the drill around 35 - 40 mm outside the prism

### Adjustment of the machine:

- Top angle  $180^\circ$  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  $45^\circ$  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 18)**

## 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
- 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 drill:

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 centrally.

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

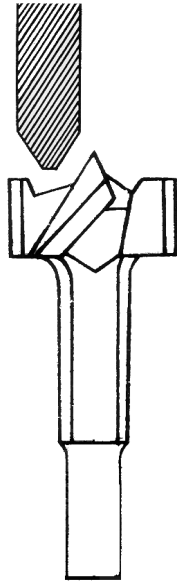
**The second outer cutter grind with the same setting.**

**The tip thinning is identical as for twist drills. (see page 18)**

## 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.

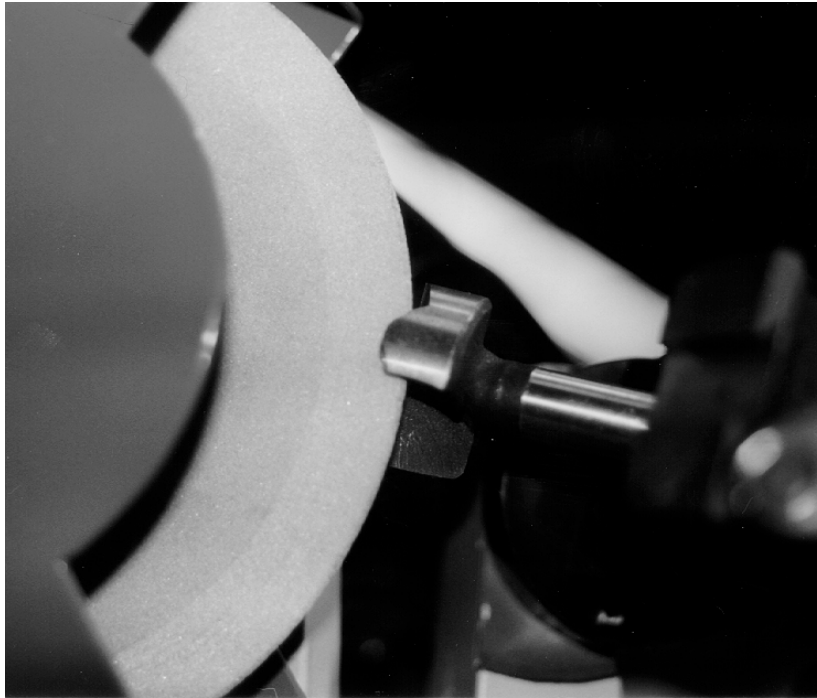
### **Adjustment of the machine:**

- 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

## Grinding of the outer cutting edges:

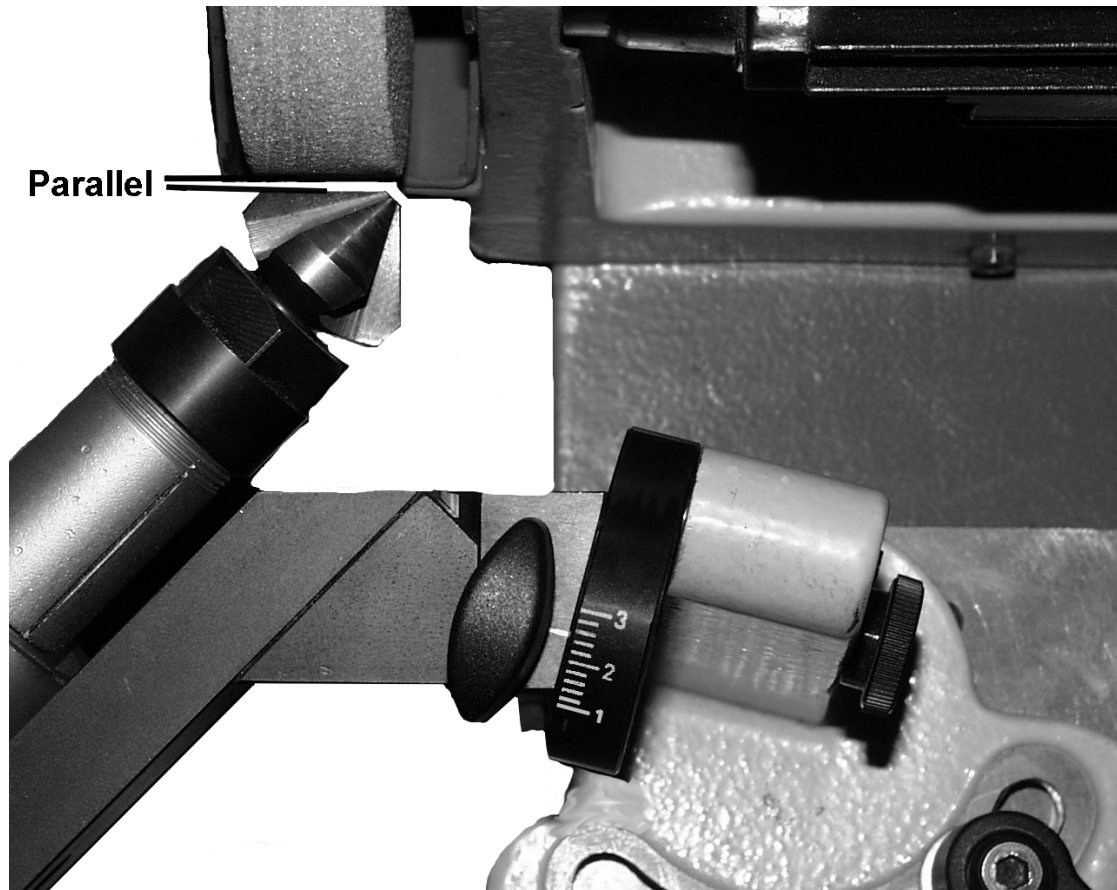


### Adjustment on the machine:

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

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

## Countersink sharpening device SVR 20



Fix in hole A



## Countersink sharpening device SVR 20

For sharpening countersinks with the BSM20/SZ, this special accessory type **SVR 20** is required. Arrest the turning mechanism of the BSM 20 drill sharpening machine in hole **A**. (See pic. on page 26) Fix the stepless clearance angle adjustment on the **third** graduation mark from above.

The prism rest fix at 90 ° see draw. above.

Place your countersink inside the collets of the SVR 31 and align one cutting edge parallel to the line on the SVR 31, below the Collets nut. (see also drawing E) With the screws i and j (see the 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 fixed with one screw on the adaptor plate. Slide the SVR 31 on the turning mechanism to the stop dog and fix with the clamping screw. By turning the hand wheel of the SVR 31 clockwise and carefully moving forward with the prism feed on the BSM 20 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 to mount the special cam. - Art No. 10605

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.

