

OPERATION MANUAL FOR DRILL GRINDING MACHINE BSG 20/2



Original manual

Please keep for further use!

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EC DECLARATON OF CONFORMITY

The manufacturer:

Kaindl-Schleiftechnik
Reiling GmbH
Remchinger Straße 4

75203 Königsbach-Stein
Germany

Declares that the machine
described herein:

Grinding machine
Type: **BSG 20/2**

Refers to the safety and health requirements
of the following EC instructions:

EC-Machine instruction (2006/42/EC)
EC-directive EMV (2004/108/EC)

Applied harmonised norms:

**EN ISO 12100-1 and 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!**

The documents had been made up by:

Reinhard Reiling

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1. DESCRIPTION

1.1 DIRECTED USE

The **drill grinding machine BSG 20/2** is exclusively designed for occasional grinding of twist drills, step-drills, wood-drills, Forstner drills, sheet metal drills and stone drills (Carbide).

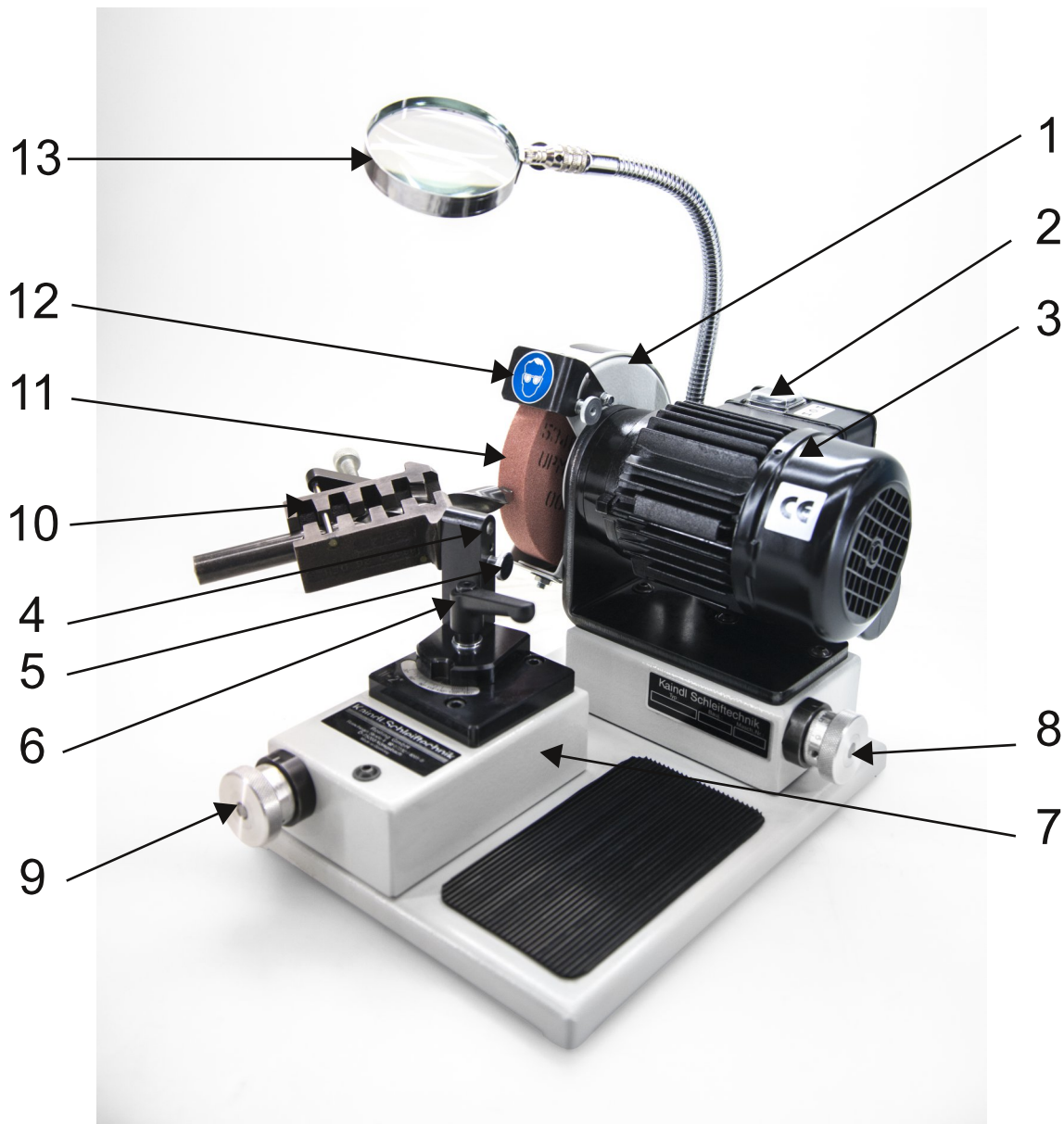
For other use, than listed here the machine is not destined for and is regarded as a matter of adverse use!

The directed use includes also reading the operation manual, as well as keeping all containing directions of use - especially the safety information.

In case, the drill grinding machine BSG 20/2 is not used as per the intended purpose a save operation cannot be granted.

For all personal- and material damages, arising by not intended use, not the manufacturer but the user of the BSG 20/2 is responsible!

2. STRUCTURE



1. Grinding wheel cover, complete
2. Motor switch (left- or right-hand turn)
3. Motor 230 V 50 Hz single phase
4. Prism support with 2 boring for prism fixation
5. Knurled screw for prism fixation
6. Clamping lever for top angle adjustment
7. Slide for drill feed
8. Knurled nut with scale for motor feed
9. Knurled nut with scale for drill feed
10. Reversing prism, clamping range from 2-20 mm
11. Special corundum grinding wheel
12. Adjustable splash guard
13. Optical lens

3. DESCRIPTION OF FUNCTION

This mobile drill grinding machine made by Kaindl is unique as to its design and offers a genuine alternative to bigger and considerably more costly equipments.

Owing to its solid construction, its high precision, its small space requirement and its favorable price. The Kaindl drill grinding machine is an indispensable auxiliary equipment and a real measure of economy, even for single operation sections and for smaller craftsmans workshop. This machine facilitates the adjustment and the resharpener of twist drills to that extent, that everyone is able to resharpen drills with every lip angle that is imaginable.

The prism reversing process automatically grants the highest precision and cutting edge symmetry. The well planned conception and the possibility to easily replace all wear parts make the Kaindl grinding machine BSG 20/2 to an indispensable auxiliary for many years in your company.

4. TECHNICAL DATA

Dimension: L x W x H	290 x 220 x 250 mm
Weight net:	13,5 Kg
Travel range: Motorslide:	55 mm
Travel range: prism feed:	45 mm
Electrical connection:	Euro plug 230 Volt / 50 Hz; 120 Watt; 2800 RPM
Clamping range prism:	2,0 - 20,0 mm
Noise emission:	< 70 dB(A)
Flow time of grinding wheel:	around 10 seconds

5. ACCESSORY (OPTION) FOR BSG 20/2

16496	CBN Grinding wheel B 76 (125 x 20 x 20 mm)
17073	CBN Grinding wheel B 126 (125 x 20 x 20 mm)
10528	Magnetic depth stop for cutters
15422	Grinding wheel support for all grinding wheels
10530	Corundum grinding wheel fine grit 180, 125 x 20 x 20 mm
10532	Corundum grinding wheel 125 x 5 x 20 mm
10533	Corundum grinding wheel 125 x 10 x 20 mm
14580	Diamond grinding wheel 125 mm, covered on 3 sides, D 76/3 (carbide drills)
14581	Diamond grinding wheel 125 mm, covered on 3 sides, D 76/3 (carbide wood drills)

Technical changes may be done without notification!

6. GENERAL SAFETY ADVICE

6.1 DUTY OF TAKING CARE BY USER

The drill grinding machine BSG 20/2 has been designed and constructed under consideration of an endangerin analysis and carefull selection of observed harmonized norms, as well as further specifications. The BSG 20/2 meets the state of the art and grants a maximum of safety.

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

The user has to take care that:

- Sound check, mounting and dressing of the wheel before the first start (see page 9)
- the BSG 20/2 is used as directed (see chapter description)
- the BSG 20/2 is used in flawless workable condition, especially that the safety installations are checked for function
- the requested personal equipment for the operator is available and will be used
- the operation manual of the BSG 20/2 is always kept in a readable conditions and available near the machine
- the drill grinding machine BSG 20/2 is only operated by staff, who knows the operation manual, especially the included safety information
- all safety and warning instructions are not removed from the machine and keeps readable.

6.2 BASIC SAFETY ADVICE



Always wear protection glasses when working with the BSG 20/2!



Only operate the BSG 20/2 with the complete grinding wheel protection!



Before changing the grinding wheel or moving, disconnect from electric current!

7. DEMANDS FOR THE OPERATING PERSONNEL

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

8. EXPLANATION OF THE USED SAFETY ICONS

In this manual the following safety icons are used.

The reader should pay attention to these icons, shown here.

Danger



This icon points that there exists a danger for life and health of persons.

Attention



This icon points that there exists a danger for machines, material and environment.

9. MOVING TO ANOTHER PLACE

Only with disconnected plug!



Grasp the drill grinder BSG 20/2 below the motor, between motor and motor angle.

The drill grinding machine BSG 20/2 is made for placing on a worktable.

Take care for a solid stand on your worktable.

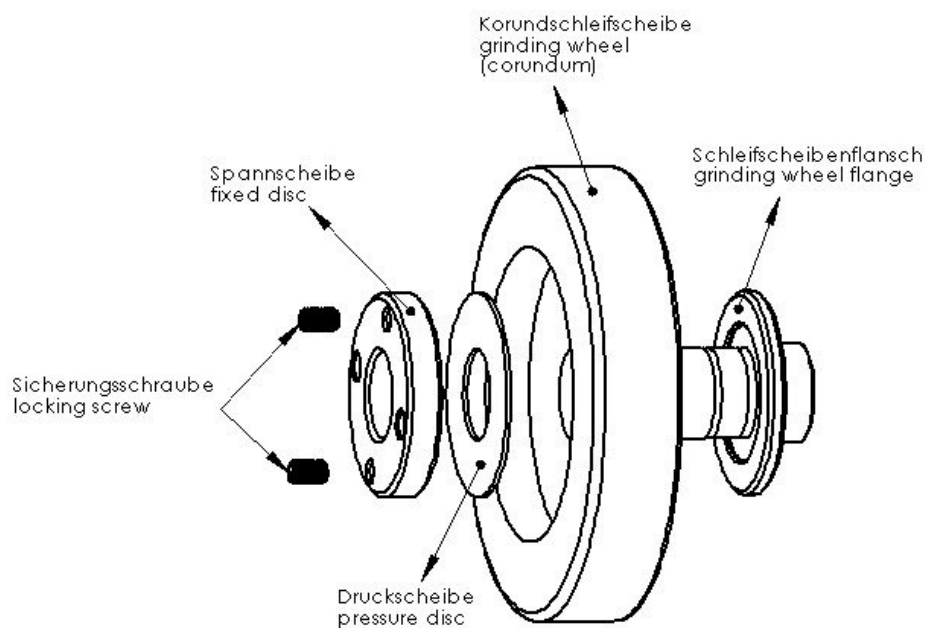
9.1 ENVIROMENMENTAL CONDITIONS FOR SET UP

Only in dry rooms.

Environmental temperature: from +5 to +50° Celsius
Humidity: up to 90%, not condensing

10. MOUNTING AND DRESSING OF THE GRINDING WHEEL BEFORE THE FIRST OPERATION

After you have moved the machine to its final place of working, take the wheel and make a sound check as well as a optical control of damage. Mount together the grinding wheel with its support.



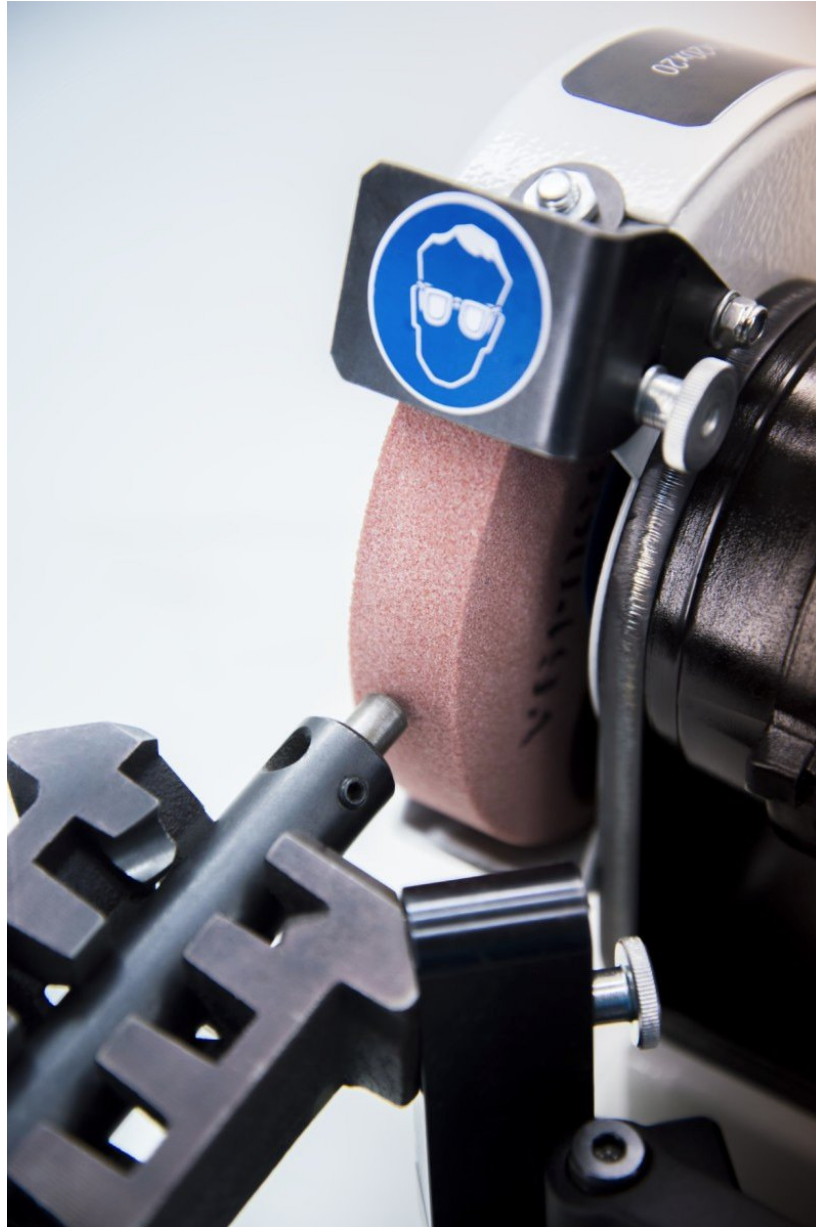
Montageanleitung für Schleifscheiben installation instructions for grinding wheels

After you have mounted the grinding wheel support, place the wheel on the motor spindle. (see page 11 "Change of grinding wheel")

After the grinding wheel is placed correctly on the motor spindle and the grinding wheel cover is mounted, start dressing the grinding wheel first. (see page 10 "Dressing of the grinding wheel")

Only after observing these steps, a save and correct operation is possible!

11. DRESSING OF THE GRINDING WHEEL



For dressing of the grinding wheel, please release the clamping lever and place the prism rest on the **150°** graduation line.

Fix the Kaindl diamond dresser device in the prism and fix the prism with the knurled fixation screw in the bottom boring hole of the prism rest.

Move the motor feed with the knurled nut slowly towards the turning grinding wheel. When the diamond pin touches the grinding wheel, then move the motor feed back and forth. Do not feed more than **1-2 scale graduations**. For sheet metal drills, Forstner drills or milling cutters, you need a grinding wheel of suitable shape.

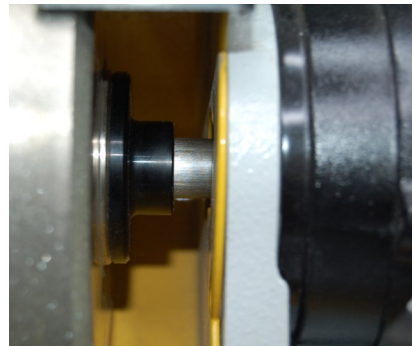
By an adequate adjustment of the prism support, with the attached dresser, it is possible to dress the wheel in any shape requested.

12. CHANGE OF THE GRINDING WHEEL

Pic 1



Pic 2



Pic 3



For changing the grinding wheel, disconnect from electric current!

Loosen both head cap nuts (1+2) 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.

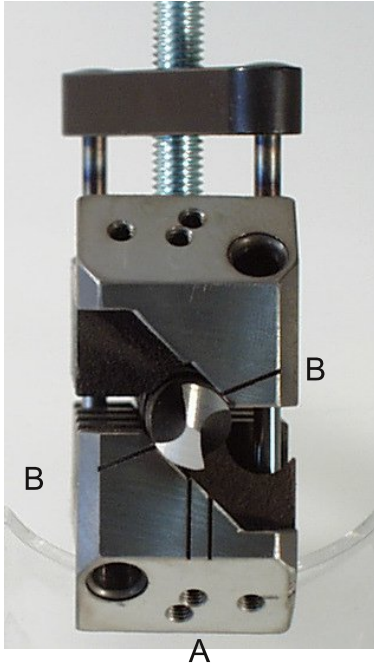
The grinding wheels have to correspond to norm **EN 12413** or **EN 13236**. After the grinding wheel change make a 1 minute test turn. In case of uncommon performance, switch off the machine and check for cause of failure.



The BSG 20/2 is not allowed to be operated without correctly mounted grinding wheel cover!

13. GRINDING OF DRILLS

PLACING AND ADJUSTMENT OF DRILLS



The reversing prism comprised a range of **2-20 mm**. The insertion and alignment of the drill is achieved in the most simple manner conceivable. Open the prism by means of the knurled head screw, provided for this purpose. Now insert the drill to be ground inside the prism.

Keep the drill projecting about **15 - 20 mm** beyond the prism edge. The prism jaws are pressed together by a slight turn of the knurled screw. The thus inserted drill is held tight in this position, but it can still be turned easily as this is important for the alignment. Now it is only necessary to align the cutting edge of the drill in parallel to the two indicated marks (**Mark A** = right-hand drills; **Mark B** = left-hand drills).

The prism is to be tightened by hand only a hereafter, the grinding operation can be started.

Deviating from this basic adjustment, you can change your relief angle depending on the material to be drilled.

You want a higher clearance angle - a higher cutting capacity, then revolve the drill slightly to the left (shorter graduation mark on the prism). If you want less relief - a lower cutting capacity, then revolve the drill slightly to the right (longer graduation mark on the drill). You will thus obtain the correct cutting edge and angle for every kind of material.

In case of a broken drill, having no cutting edge for adjustment, grind the drill to get a truncated end. Align the cutting corners as closely as possible to the adjustment marks and regrind the drill until a new cutting edge appears. Thereafter the adjustment is to be carried out as before.

14. ADJUSTMENT OF THE TOP ANGLE

In order to work always in conformity with the properties of the material, you have the opportunity to adjust every top angle that is imaginable.

The common top angles are **118°, 130°** and **180°** degrees.

The angles are solidly marked on the prism slide. They can easily be adjusted by opening the clamping lever (see picture on page 5, No. 6) and by moving the prism rest.

15. GRINDING OF THE DRILLS



Wear your safety glasses!

The prism, with the well aligned drill is slipped on to the prism swing pin and revolved in front of the grinding wheel (page 5, No. 4). Simultaneously move the drill feed carriage towards the grinding wheel by means of the knurled nut (page 5, No. 9) until one side of the prism is well formed.

Note the scale mark on the nut (e. g. scale mark 5). Move backward the feed carriage by **2 to 3** scale marks closer to the grinding wheel.

The drill in this position is swiveled until no further formation of the sparks are visible.

In the order to achieve the best possible cutting edge symmetry, the prism is reversed again by 180° without any alteration of the position of the drill feed carriage. The other side is ground until no more spark are visible.



ATTENTION!

In order to prevent temper of anneal, please always work with low feeding grade.

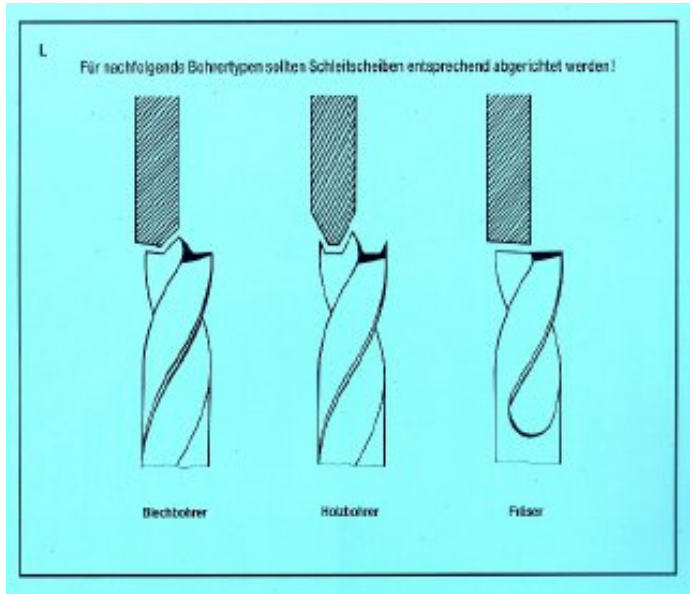
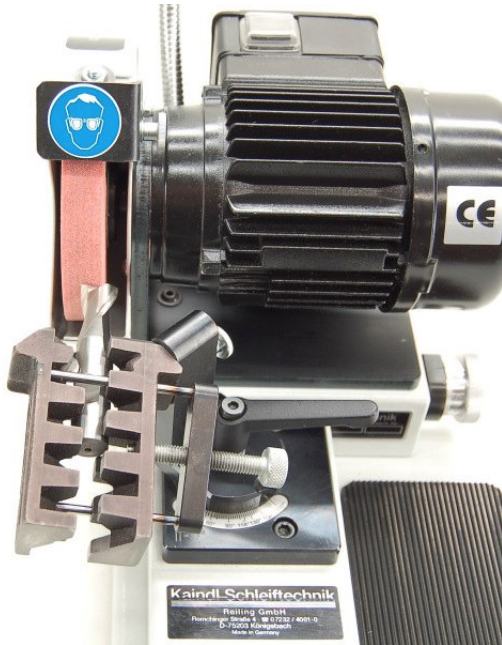
16. STEP DRILLS

Grind the cutting edges of the first step same as standard twist drills. The cutting edges of the second step are likewise aligned in parallel with the indicated marks of adjustment (see chapter "Alignment and adjustment of drills"). The drill inside the prism is then pushed forward until the second step passes by the grinding wheel (Picture).

Using the knurled nuts (7) and (9) you can do the fine adjustment of the drill to the grinding wheel. Thereafter you resharpen the cutting edges by way of the reversal of the prism as described before for standard twist drills.



17. SHEET METAL DRILLS, WOOD DRILLS, FORSTNER DRILLS AND CUTTERS



For the above mentioned drills it is recommended to use specially dressed grind wheel faces (Picture).

Release the clamping lever of the prism rest and place on the adjustment line of the drill feed carriage (see picture). The adjustment of the drills is identical to twist drills. The fine adjustment of the drill to the grinding wheel is carried out with the screws (Pic page 5, No. 7 and 9).

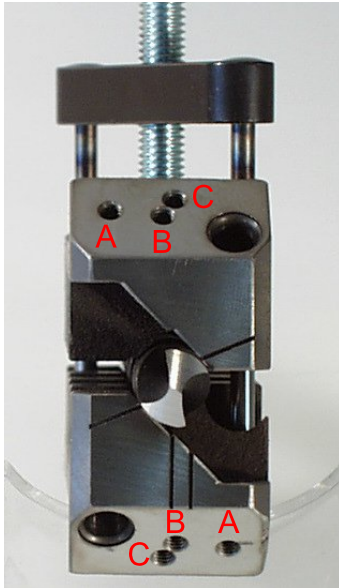
Only when the setting-up work has been completed, switch on the motor and start working as described in the chapter "Grinding of drills". For milling cutters, the prism is fixed with the knurled screw in the lower screw hole, placed on the side of the prism support. (Page 5, No. 5).

By moving forward with the knurled nut, sharpen one cutter and after reversal of the prism, sharpen the second side (Pic page 5, No. 9). For milling cutters having 3 or 4 cutting edges you will need the magnetic depth stop (option).

Forstner drills in contrary to other drills are not adjusted according to adjustment marks on the prism, but aligned to the stagnant grinding wheel.

The grinding operation is same as for cutters.

18. WEB THINNING



With the new clamping prism it is now possible to thin the web of the sharpened drill.

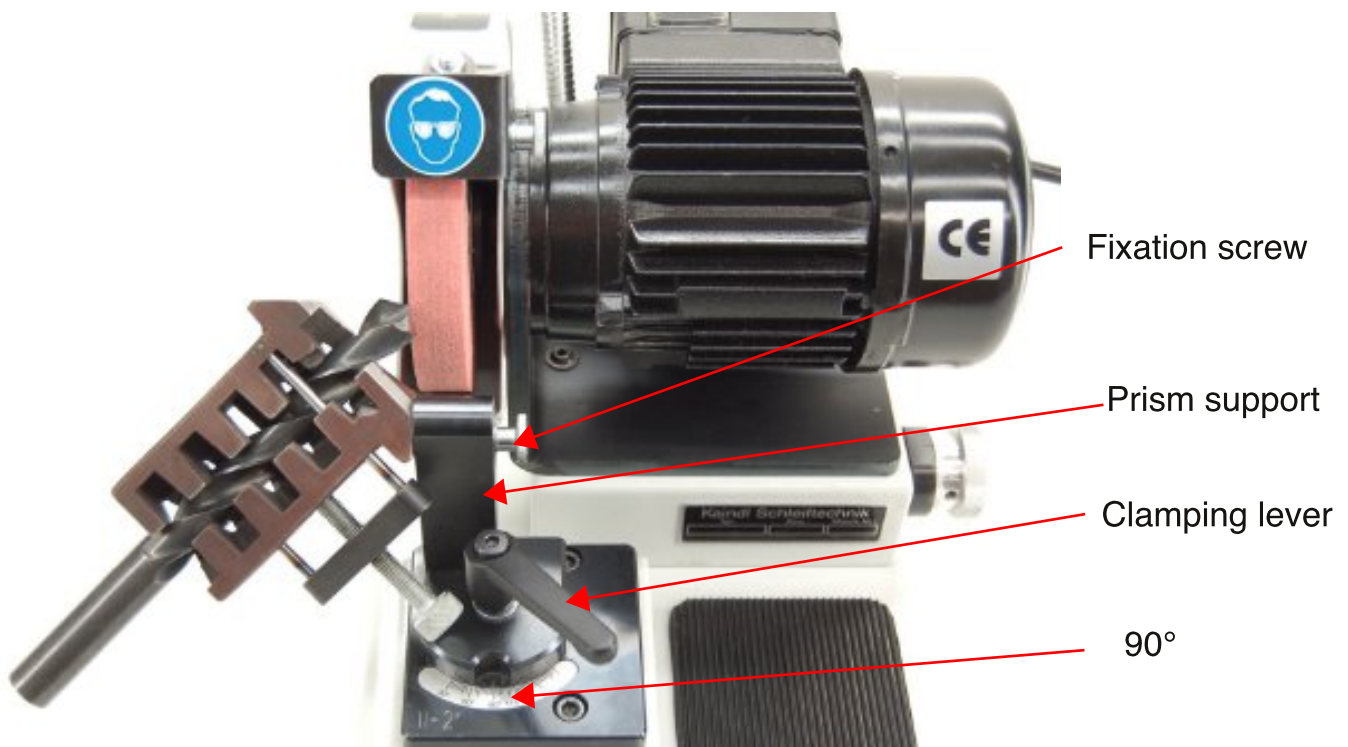
1. The boring holes **A** and **B** are for grinding of cutters and drills with 4 facet shape.
2. The boring **C** is for web thinning.

For web thinning let project the drill **25 mm outside** the prism and do not change the position of the drill in the prism. Fix the prism with the knurled screw in hole **C**.

Use the upper boring on the prism support. Loosen the clamping lever and move the prism support to **90°**.

By use of the prism- and motor feed, thin the web of the drill by using the left edge of the grinding wheel.

After one side is finished, note the graduation marks on the prism feed screw and move back for one turn. Now reverse the prism for **180°**, fix again in hole **C** and move forward with the prism feed to the same graduation mark on the knurled screw.



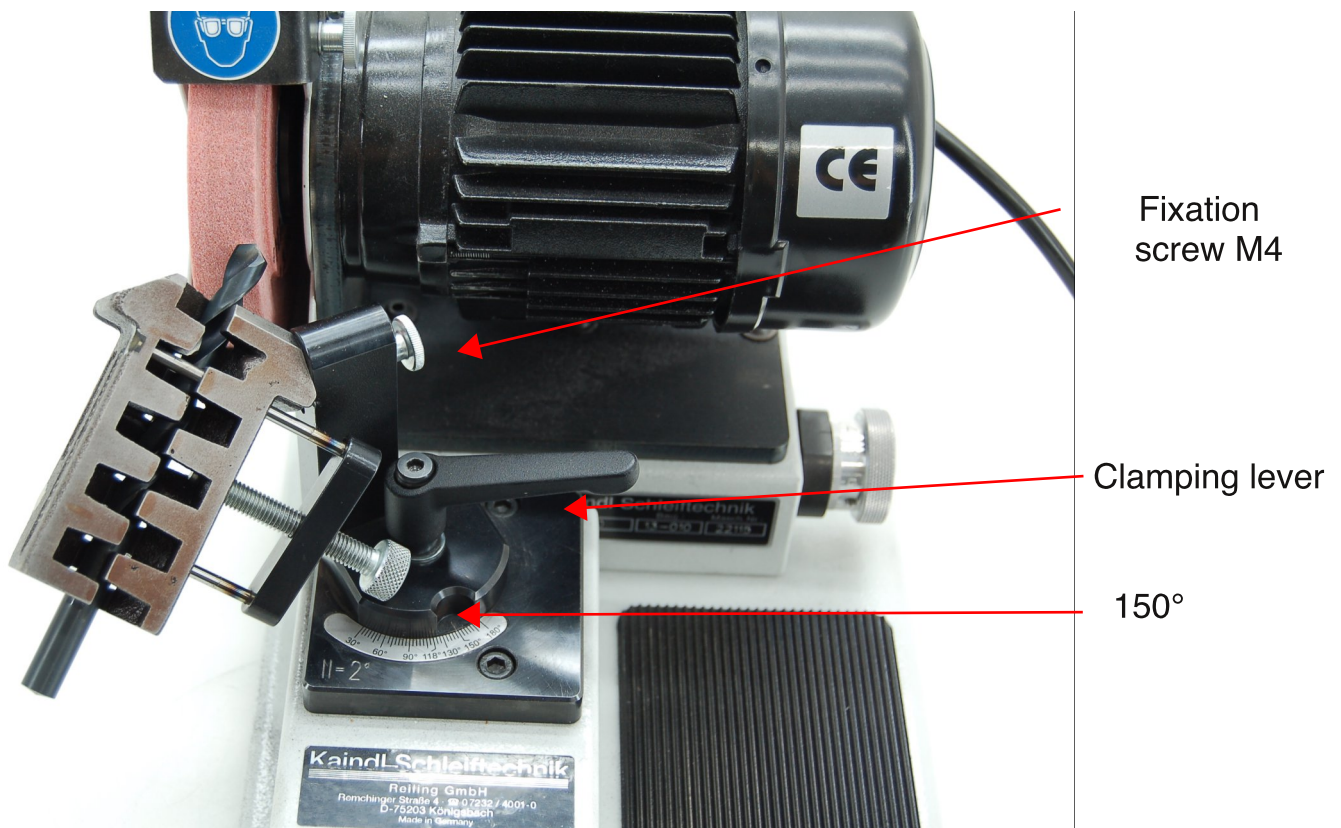
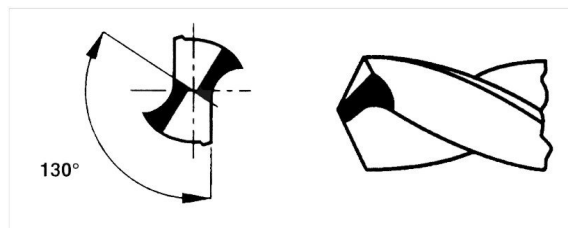
19. CROSS- OR FACETTE GRINDING

After the sharpening procedure, you have the possibility to change the standard twist drill shape to a cross- or facette grinding.

The twist drill remains in the prism clamp without any changes in setting. Fix the prism with the fixation screw M4 in hole **C** (see page 15). Open the clamping lever and turn the prism support to **150°**.

Move with the motor feed to the left, till you touch the cross cutting edge of the twist drill by the right edge of the grinding wheel.

Dive slowly into the center of the cross cutting edge by moving forward the prism feed. Notice the position on the feeding scale, move back, loosen the fixation screw, reverse the prism for **180°**. Fix the screw again and move slowly forward again to the same position.



20. SPARE PART LIST

Item No.	Description
11303	Prism 2 - 20 mm
17840	Prism support
10546	Clamping lever M8 with washer for prism support
16556	Fixation screw for prism to prism support
10554	Pin 7 mm for prism support
10888	Dresser unit without diamond
10550	Spare diamond for dresser unit
10556	Scale-ring for the drill feed
10557	Scale-ring for the motor feed
10563	Grinding wheel cover, painted
10565	Motor 230 Volt / 50 Hz, 2800 RPM; painted
10567	Cover for fan propeller
10568	Fan propeller
10570	Motor switch
10571	Box for motor switch without switch
15422	Grinding wheel support complete without grinding wheel

Only use original Kaindl spare parts!

21. MAINTENANCE

The drill grinder BSG 20/2 should be cleaned from grinding dust with a soft brush. Persistent dirt, please clean with usual in trade machine cleaner. After cleaning, please grease all movable parts with some drops of machine oil. To prevent erosion of the blank parts, also grease with little oil and rug with a soft rag.

22. REPAIRS

All parts listed in the spare part list can be replaced by the user. Repairs of assembly groups as reversing prism of the base plate with guide and spindle can only be repaired in our company, as these parts are mainly responsible for the precision BSG 20/2.

23. WARRANTY

The warranty is **12 month** and refers to **one shift work** on condition of an appropriate use. The warranty comprises the costs for replacement of defect parts and assembly groups including the necessary working time (the replaced parts can also be overhauled parts or assembly groups).

Excluded from any warranty are:

- Wear parts due to operating conditions
- Transport damage
- Inappropriate use of the machine
- Damages by use of force
- Damages and consequential damages by violation of duty for taking care by the user

In case of a warranty claim, we please ask you to form us about the serial No. of your machine!

Return have to be authorized by us before back-shipment. We reserve the right to charge you with the shipping costs, in case the return was not authorized.