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MULTI- SHARP®

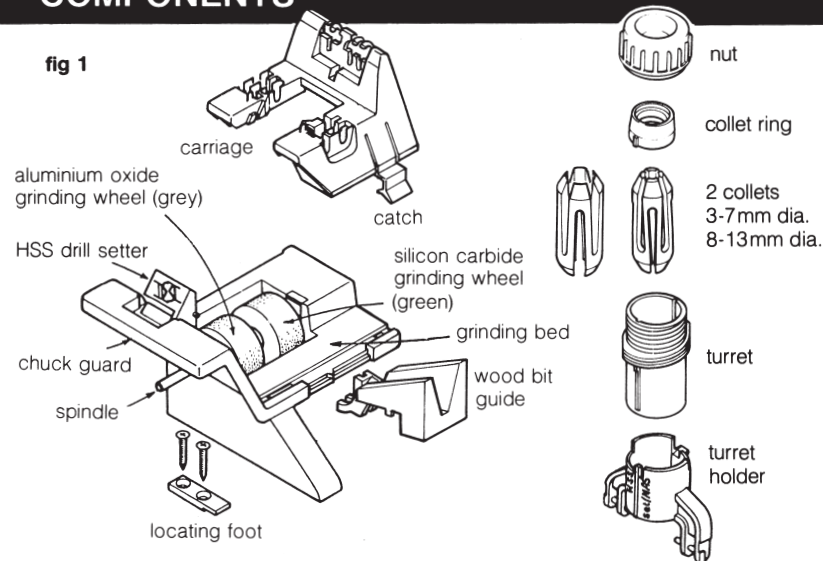
DRILL & TOOL SHARPENER

INSTRUCTIONS

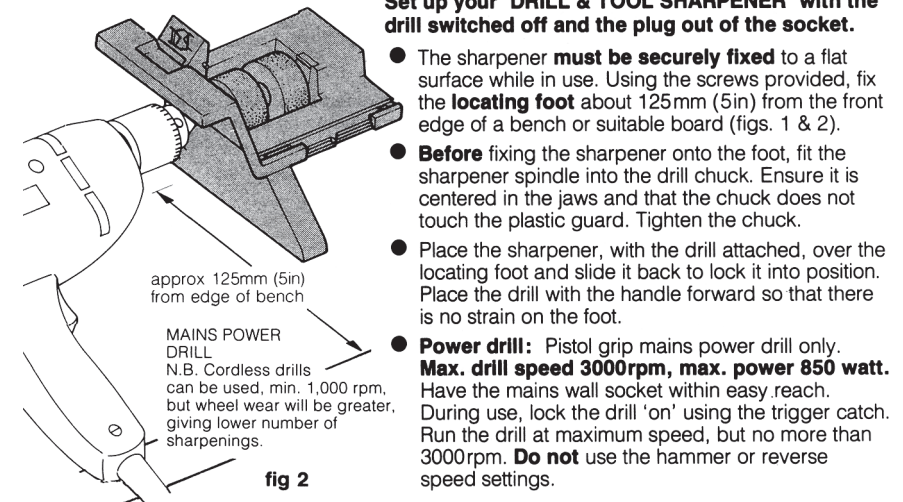
The MULTI-SHARP 'DRILL & TOOL SHARPENER' is a simple, multi-purpose grinding and sharpening tool. It is easy to use and has been engineered to accurately reproduce the geometry of a drill bit tip with no complicated measuring or setting up.

Designed to be used with a standard electric drill, your 'DRILL & TOOL SHARPENER' can be used to sharpen HSS or carbon-steel twist drills; all masonry drill bits, including conventional, hammer, and SDS-Plus; centre (brad) point and flat (spade) wood bits, 3-13mm (1/8" - 1/2") diameter. It can also be used as a bench grinding centre to sharpen cold chisels, screwdrivers, punches, etc.

COMPONENTS



SETTING UP



SAFETY

THIS PRODUCT IS NOT INTENDED FOR INDUSTRIAL / WORK USE OR CONDITIONS

It must only be used for the purposes specified in these instructions and used in the manner described. For your own safety and protection.

- Do not use the product without the locating foot.
- Always plug the drill into a socket which is protected by an MCB or earth leakage circuit breaker. If this is not possible, plug the drill into an adaptor-type RCD, which is then plugged into the socket.
- Only plug in and operate the drill when actually sharpening.
- Do not run the drill for longer than 5 minutes at a time.
- Wear suitable eye protection at all times.
- **Rotating wheels and drill chuck** — Never touch them, or allow hair, rags, clothing near them. Do not leave chuck key in the drill.
- The power drill cable should be placed so as not to cause a hazard.
- In the unlikely event the sharpening guides/rests become damaged, or the wheels are chipped/damaged, do not continue to use them.
- Our products are very carefully inspected. Nevertheless, as a safety precaution, after 'Setting Up' stand away from the wheels, turn on the drill for 30 seconds, to double-check the wheels for soundness.
- Always use the correct 'MULTI-SHARP' replacement wheels to avoid possible injury.

... continued

For general grinding

- Use the grinding bed on its own; see p17.

For HSS drill sharpening:

- Remove the turret and turret holder from the sliding carriage. Hold the carriage over the **left-hand** edge of the grinding bed, hook it under the rear rail and press it forwards until the catch clicks into position over the front rail. Slide it to the **right** until it reaches the stop; then see p6.

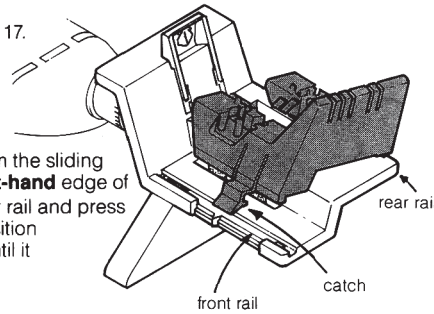


fig 3

For masonry drill sharpening:

- Starting with the carriage at the **right-hand end** of the grinding bed, repeat the procedure described above; then see p10.

For wood bit sharpening:

- Use the grinding bed without the carriage; see p14.

... continued

- Insert the turret into the holder (Fig. 6) — without the bit in it — with either rib fitted into the 'SET/MAS' slot. Push down **fully**.

- Now insert the bit into the turret (fig. 6) and push it down firmly to contact the drill setter and the wheel. Twist the bit **anti-clockwise**; it will lift slightly and then it will drop down into position. Press the bit down towards the wheel and then turn it **clockwise** until a stop is felt. Hold the bit in this position with one hand and tighten the nut with the other.

- Remove the turret from the holder and check that the drill bit cutting edges are aligned parallel with the turret nose index marks. Do not simply turn the bit by hand.

- **IMPORTANT:** If the position is not correct, remove the bit and repeat the alignment procedure. Do not simply turn the bit by hand.

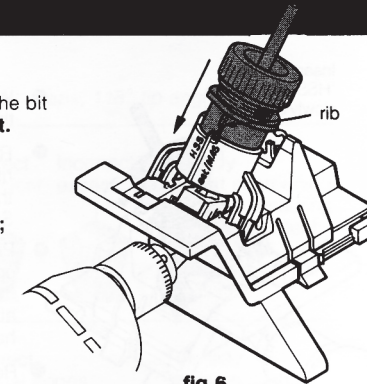
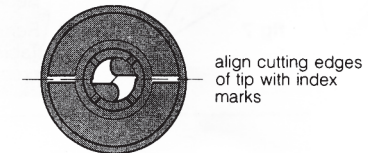


fig 6



SHARPENING HSS TWIST DRILL BITS

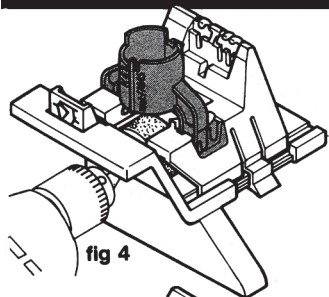


fig 4

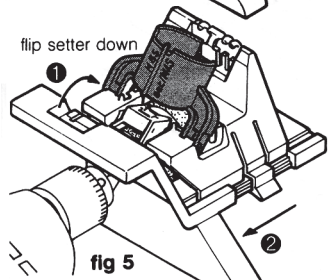


fig 5

- Set up the carriage for HSS drill sharpening; see p5.
- Hold the turret holder with the moulded 'HSS' marking **facing the drill**. Push the supporting legs into the 'HSS' slots on the carriage until they click into position (fig. 4).
- Flip the drill setter down to touch the grinding wheel. Hold it lightly in position against the wheel and slide the carriage to the left until it clicks into position (fig. 5).
- **Two collets.** Select a collet to suit the drill size: the white collet (already in the turret) is for 3 to 7mm ($1/8$ - $9/32$ in); the grey is for 8 to 13mm ($5/16$ - $1/2$ in) bits. If necessary, unscrew the nut, remove the collet ring and insert the other collet. Replace the collet ring with lugs downwards.
- Tilt the turret holder to the right, resting it on the upright part of the carriage.
- Insert the bit into the drill turret, and turn the nut until the bit is a loose fit and centered in the collet (not illustrated). (**13mm bits:** insert by disassembling the turret).

SHARPENING HSS TWIST DRILL BITS

Insert into wide 'HSS' slot. Rotate slowly and evenly.

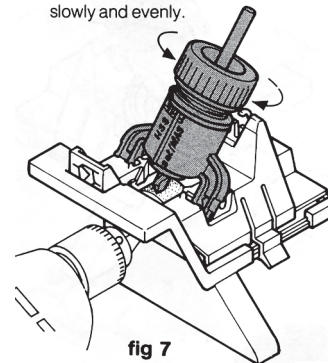


fig 7

- When the alignment is correct, slide the carriage to the right and flip the setter up.
- Replace the turret and bit in the holder so one of the ribs fits down into the **wide** slot marked 'HSS' with the bit fully over the left-hand (grey) wheel. Switch on the drill.
- Pressing the red cam on the drill turret against the upright part of the carriage, **slowly and evenly** rotate the turret from **one end of the slot to the other** about 10 times, or until you hear that the sharpening has stopped (fig 7).
- Remove the turret, turn it through 180° and replace it in the holder with the other rib in the wide 'HSS' slot. Repeat the sharpening procedure described above.
- Remove the bit from the turret and check it against Table 1. If necessary, repeat the sharpening procedure, making adjustments.

... continued

WORKING HINTS

Broken drill bits can be ground to approximate shape (see Table 1) on the silicon carbide (**green**) wheel; then follow the instructions given above.

If the grinding wheel is not flat, it will not give the correct tip geometry; see 'Good working practices', p19.

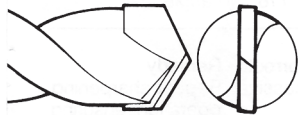
During sharpening, try to spread the wheel wear by slowly moving the carriage across the full width of the grey wheel with your **left** hand while rotating the turret with your **right**.

Table 1: HSS drill bit shape; 118° tip angle

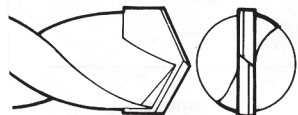
Tip clearance			Remedy Repeat sharpening operation, ensuring correct alignment; see p7.
Correct	Incorrect insufficient	Incorrect excessive	
Drill point			Remedy Sharpen slightly more on shorter edge
Correct	Incorrect unequal edges		

SHARPENING MASONRY DRILL BITS

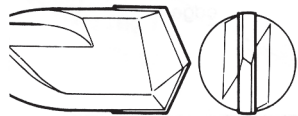
Masonry drill bits: tip geometry; 132° tip angle



conventional two-edge.
15° relief angle



hammer four-edge.
30° relief angle



SDS-Plus two/four edge.
15/30° relief angle

Your 'DRILL & TOOL SHARPENER' accurately sharpens all three main types of masonry bit: Conventional, Hammer, and SDS-Plus.

Check drill bit type first. **Conventional:** designed for use in standard drills, has **two** edges on the angled tip.

Hammer: tip relief angle is steeper and the tip is ground back to give **four** edges for improved performance.

SDS-Plus: a combination of the **two** and **four** edged types, and marked SDS-Plus on the shank.

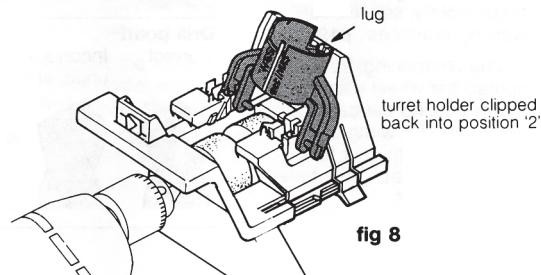


fig 8

... continued

- Set up the carriage for Masonry Drill Sharpening; see Setting Up, p5.
- Hold the turret holder with the moulded 'set/MAS' marking **facing** the drill and insert the supporting legs into the 'MAS' groove on the carriage (fig 8).
- Press the lug on the right-hand side of the turret holder into one of the slots on the upright part of the carriage until it clicks home. **Two-edge bits:** use slot '2'; **Four-edge bits:** Use the slot '4' which is closest to '2'. **SDS-Plus bits:** Use slot '4' furthest away from slot '2'.
- Select a collet to suit the drill bit size: see 'Two collets', HSS bit sharpening, p6.
- Insert the drill bit into the turret and turn the nut until the bit is a 'sliding fit' (i.e. held but still slides); manoeuvre the bit to ensure it is centred in the collet. **13mm bits:** disassemble the drill turret and insert the bit **in reverse**, from the bottom.
- Insert the turret into the holder, with either rib fitted into the 'set/MAS' slot. Push down fully (fig 9).

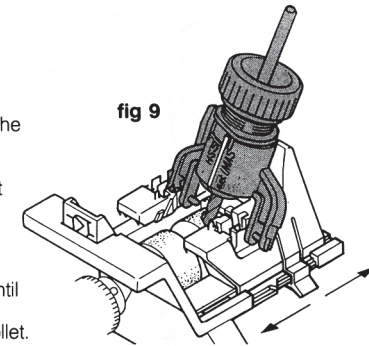


fig 9

slowly move carriage back and forth across green wheel

SHARPENING MASONRY DRILL BITS

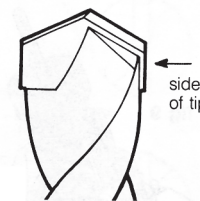


fig 10

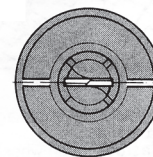


fig 11

- Push down bit until it touches the right-hand (green) wheel. Rotate the bit until **the side** of the tip (see fig 10) is aligned with the line marked on the turret holder (fig 9). Tighten the nut but do not over-tighten.
- Remove the turret from the holder and check that the bit cutting edges are correctly aligned with the turret nose index marks (see fig 11). If the position is not correct, **slightly** loosen the nut and **carefully** turn the tip to the required position, without altering the amount it protrudes through the nose of the turret.
- When aligned correctly, replace the turret and bit in the holder so one of the ribs fits into the **narrow** slot marked 'set/MAS'. Switch on the drill.
- Slowly move the carriage back and forth so the bit contacts the **full width** of the green wheel. Do this **3 or 4 times only**, using **light** downward pressure on the turret (fig 9).

align cutting edges of tip with index marks

... continued

- Remove the turret, turn it through 180° and replace it in the holder with the **other** rib in the narrow 'set/MAS' slot. Repeat the sharpening procedure. Check that the two edges appear equally sharpened.

Four-edge bits: additional sharpening

- To sharpen the other two edges, remove the **turret holder** and refit it into the second slot marked '4', **furthest** away from you (fig 12). Repeat the sharpening procedure from para 4, p12, but make **only 1 or 2 passes** of the bit across the wheel since the edges to be sharpened are narrower. Turn the turret through 180° to sharpen the other edge.

SDS-Plus bits additional sharpening:

- Use slot '4' closest to slot '2' and sharpen as per para. 4, p12 and para. 1, p13. (N.B. This step will only remove metal if there has been excessive tip wear).
- Finally, use slot '2' and sharpen as per para. 4, p12 and para. 1, p13.

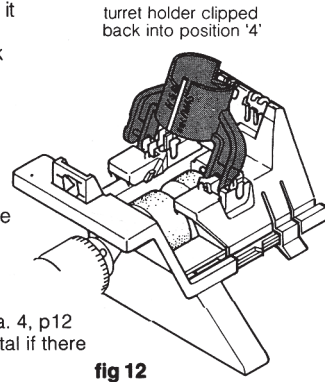


fig 12

... continued

the bit to lift. Feed the bit towards the wheel until edge 'A' makes contact with the wheel. Practise this a few times.

- Remove the bit and turn on the power drill. Feed the bit towards the wheel as above until 'A' (fig. 16) makes contact with the wheel. Maintain a light pressure on the bit and sharpen for **no more than 30 seconds** at a time; this avoids the tip overheating.
- Inspect the bit and repeat the procedure until the face is completely reground. Rotate the drill bit and repeat for the other face.
- Check that the centre point of the bit is central. Regrind if necessary.

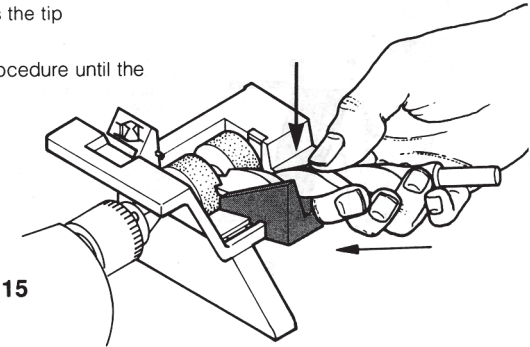


fig. 15

SHARPENING CENTRE (BRAD) POINT WOOD BITS



fig. 13

Your 'DRILL & TOOL SHARPENER' can be used to sharpen centre (brad) point wood bits, that have a 90° angle between the centre point and the cutting edges (fig. 13).

- Remove the sliding carriage and turret holder by lifting the catch on the carriage.
- Present the wood bit guide to the grinding bed at an upward angle of about 45° and fit the slot on the narrow part of the guide around the flange between the two grinding wheels. Press the guide down onto the grinding bed so that it locks into position (fig. 14).
- With the power to the drill off, practise positioning the drill bit. Slowly feed the bit into the channel on the guide (fig. 15), with a **downward** pressure on the bit (to maintain contact with the walls of the channel) and the outer tips positioned as in fig. 16 (see p16). As the bit gets very near the grinding wheel, turn the bit slightly **clockwise** until the **right-hand** outer tip just touches the channel face (arrowed on fig. 16) at the front of the guide. Do not over-turn; this will cause

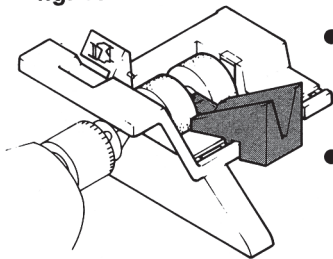


fig. 14

SHARPENING CENTRE POINT WOOD BITS ... cont.

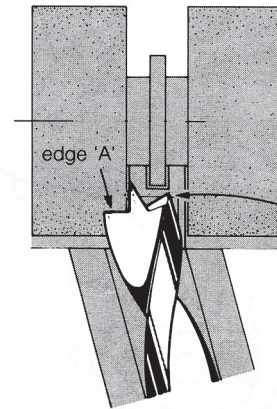


fig. 16

- After several sharpenings, the centre point of the bit might become ground away to a ridge; this means that it will not centre itself correctly in use. To correct this, and **before** sharpening the main faces, rotate the drill bit 90° from its usual position in the guide and sharpen the two smaller faces of the centre point until a sharp point is obtained. Take care **not** to grind the outer tips of the bit.

right-hand tip just contacts channel face

edge of point touches side of grinding wheel (drawing shows gap for clarity)

GENERAL GRINDING AND SHARPENING



Your 'DRILL & TOOL SHARPENER' also doubles as a compact bench grinder, for a range of grinding jobs: eg resharpening cold chisels, flat wood (spade) bits, glass drill bits, scribers, punches, and so on.

Use only the right-hand (green), silicon-carbide grinding wheel.

- Remove the sliding carriage and turret holder by lifting catch on the carriage.
- Start the drill and sharpen the tool using light, even pressure. **Never press hard** - heavy pressure actually reduces the cutting rate.
- Try to hold the tool so that part of it rests on the grinding bed. Small articles that cannot be supported in this way must be held in a clamp which itself is adequately supported. If this is not possible, **do not attempt to sharpen these articles**: they may slip down into the space around the spinning wheels.

support the tool on the grinding bed

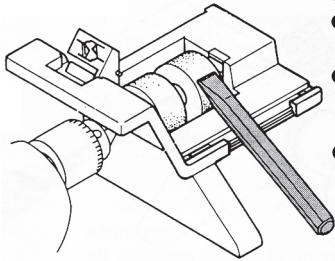


fig. 17

GENERAL GRINDING AND SHARPENING ... cont.

- If the work **must** be held radially to the wheel, for example when edging a screwdriver or square punch, it is essential that the part of the work nearest the wheel rests on the grinding bed.
- **Never** grind/sharpen pointed tools without handles unless you use a clamp to hold the tool; otherwise you could injure your hand.

work held like this must be supported on the grinding bed, pressing down to increase control

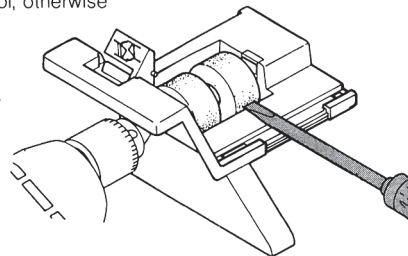


fig. 18

WORKING HINTS

During grinding, move the work across the wheel from side-to-side to even-out wear.

Do not allow the work to overheat, particularly on fine-edge tools eg wood chisels. Cool the edge with water.

Do not grind close to a fine cutting edge.

Do not grind soft materials which will clog the wheels such as brass, solder, lead, aluminium, plastic or copper.

GOOD WORKING PRACTICES

Drill life:

- Drill bits should be regularly sharpened and not allowed to become very blunt. On masonry bits particularly, the carbide tip wears much faster when it is blunt.

Grinding wheel life:

- When the wheels are worn to within 8mm of the grey spacer piece between them, they should no longer be used for drill sharpening since the smaller diameter of the wheel cannot produce the correct geometry.
- Special replacement wheels with bearings are available from your stockist. To replace them, press down **hard** on the black bearing next to the grey wheel, while pressing up on the lower flat part of the **same** bearing on the spindle side. Repeat for the other bearing. Fit the new bearings over the spindle with the smaller nib down.

Grinding wheel not flat:

- If the grinding wheels become unevenly worn, their surface can be restored by using, for example, an old masonry drill and simply running it from side to side across the wheel while it is rotating, until the surface is square again.

After use:

- Unscrew the nut to prevent the collet from developing a permanent 'set'.
- **Remove all abrasive dust.**

FLAT WOOD (SPADE) BITS

Practice the following before turning on power. Hold the flat wood (spade) bit at the **right-hand** edge of the green wheel (Fig. 19). Hold the bit above the grinding bed (Fig. 20), so that the angle of edge A to be sharpened is parallel with the wheel — usually, but not always, about 10mm ($\frac{3}{8}$ ") above grinding bed. Hold bit **firmly**. Switch on drill and sharpen edge A. Do not sharpen central 'spike'. Turn the bit over and repeat on edge B.

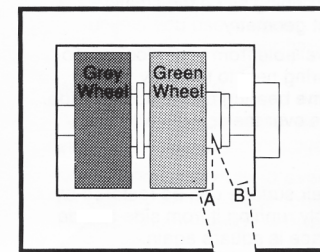


fig. 19 Top view of grinding bed

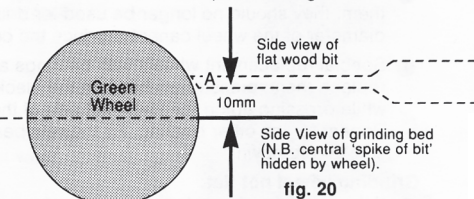


fig. 20

For details of our range of DIY and Gardening tools, including sharpeners for lawnmowers, secateurs, shears, knives, scissors, wood chisels and plane blades, write to: Multi-Sharp Tools, FREEPOST, Hyde House, The Hyde, London, NW9 7YP. No stamp needed.
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