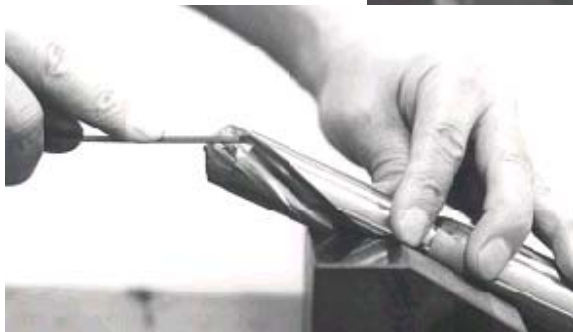
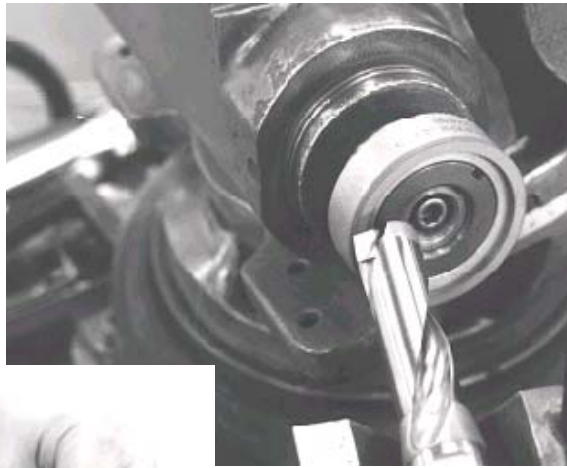


REGRINDING MANUAL FOR BRAZED DRILL

BRA type

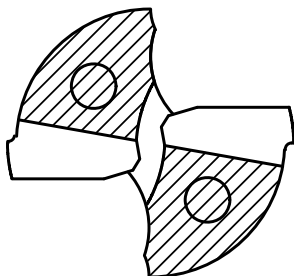
May 1, 2009



MITSUBISHI MATERIALS CORPORATION CARBIDE & TOOLS DIVISION

■ Confirmation of Cutting Edge

Fig.1



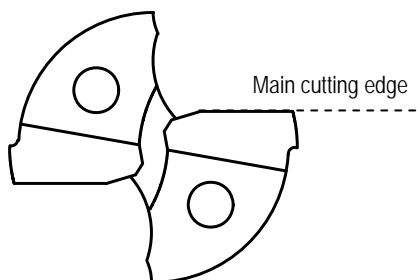
- Check the worn and/or damaged condition of the cutting edge.
- In case of extensive chipping on the cutting edge, eliminate the segment with a GC-wheel.

<Secondary Relief Grinding>

- In case of much elimination or several times of regrinding, eliminate back metal as the secondary relief (oblique portion of **Fig.1**) with a WA-wheel.

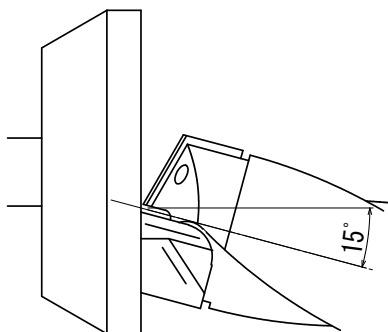
■ Primary Relief Grinding

Fig.2



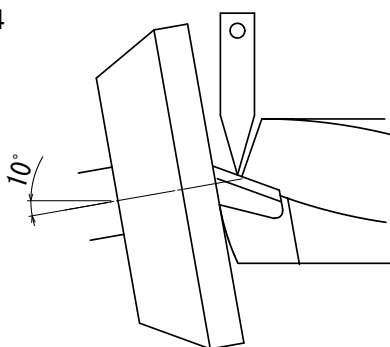
- Use a collet chuck when installing a drill. Recommend to use the coolant, because a drill is easy to heat and cracks occurs.
- The main cutting edge should be parallel from the drill's point view as shown in **Fig.2**.
- Set the rest on the rake face to adjust the drill position.

Fig.3



- The point angle should be 150° with the swivel angle designated to 15° as shown in **Fig.3**.

Fig.4



- Incline the angle of the drill to 10° (**Fig.4**). The angle will be the primary relief angle of the cutting edge.
- After the completion of a single cutting edge, index the drill until another side of the rake face contacts the rest. Then regrind another cutting edge. The grinding depth is 0.02-0.03mm per pass.

<Spark Out>

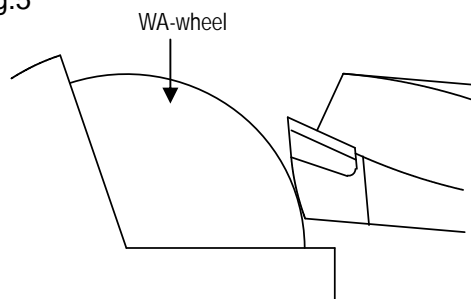
- Last, finish both cutting edges with the grind depth at 0.01mm. Repeat the procedure 2-3 times, including a spark out with a slow traverse for finishing.

<Remark>

- Grind until the worn and chipped segment of the cutting edge is eliminated.
- Pay extra attention to the wear on the major portion.

■ Secondary Relief Grinding

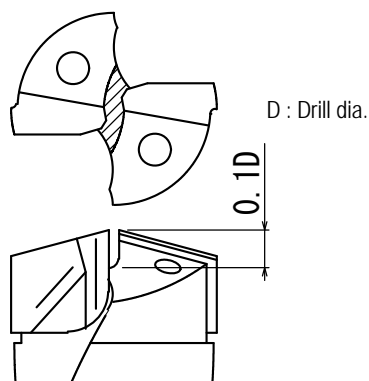
Fig.5



- After the completion of the primary relief, grind the secondary relief by the hands (oblique portion of Fig.1).
- Eliminate the back metal with a WA-wheel so that the secondary relief angle gets larger than the primary relief one, 10° (Fig.5).
- The wheel shouldn't contact the insert, if possible.
- Eliminate burrs with a file.

■ Slit

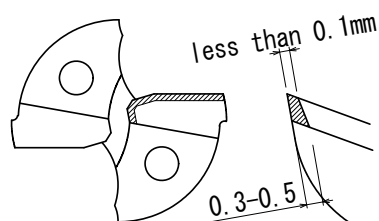
Fig.6



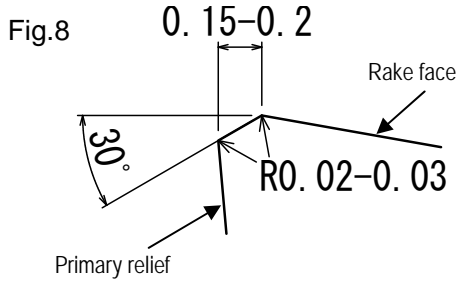
- After the completion of the secondary relief, cut the slit with a hand saw.
- The slit depth is approximately 0.1D (Fig.6).

■ Honing

Fig.7



- Last, execute the honing.
- The honing should be done homogeneously on entire cutting edge as Fig.7.



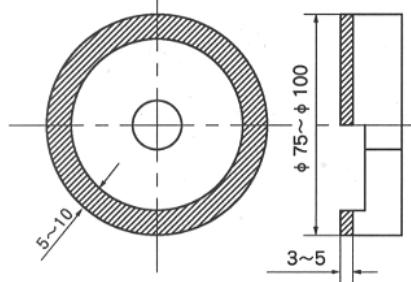
- The honing angle is 30° as shown in **Fig.8**.
- The honing width is according to the work material. In case of cutting general steel, the honing width is 0.15-0.20mm. On honing width, refer to the operating instruction.
- Chamfer on the drill corner as **Fig.7**.
- The honing face is finished with a hand lapper.

The regrinding process is completed. Confirm the following criteria before using.

- Within 0.03mm the lip height difference.
- Complete grinding of damage segments of the cutting edge.
- Optimal honing.
- Grinding burr is eliminated.

■ Primary Relief Grinding

Diamond wheel



Grit No.

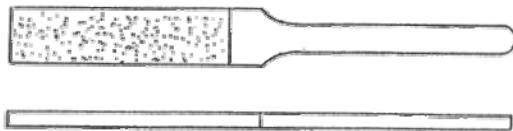
Rough grinding : No.200

Finish grinding : No.400

- If necessary, grind roughly before finish grinding.

■ Honing

Diamond file



Grit No.

Rough grinding : No.140

Finish grinding : No.400

Hand lapper : No.1500

- If necessary, grind roughly before finish grinding.