Drill sharpening

Few people are well-practised at sharpening drill bits but the process can be learned easily with a few simple pointers.

A correctly sharpened drill will wear better and produce accurate holes more quickly than a blunt or incorrectly sharpened one.

There are three methods which can be used to sharpen drills in the workshop. These are:

1. Eye or hand sharpening.
2. Using a sharpening jig.
3. Using a drill sharpening attachment on a power drill.

There are four main drill point characteristics which require special attention when resharpening. These are:

1. Equal length cutting lips (Figure 1).
2. Equal and proper size drill angle (Figure 2).
3. Appropriate cutting lip clearance (Figure 3).
4. Correct chisel length angle (Figure 4).

Figure 1 Equal length cutting lips

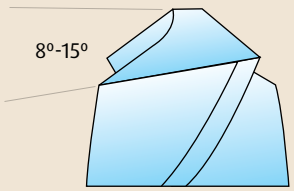


Figure 2 Drill point angle

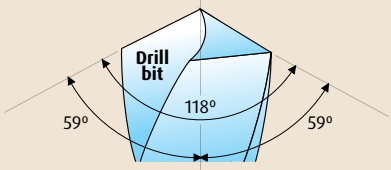


Figure 3 Lip clearance angle

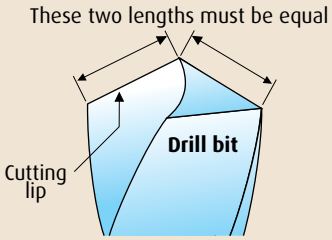
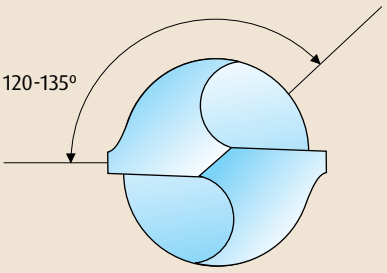


Figure 4 Chisel edge angle



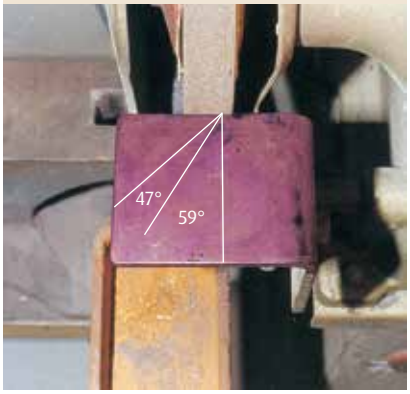
1 A bench grinder fitted with a dedicated sharpening wheel is the ideal method for sharpening drills because the face of the wheel needs to be flat.

2 Maintaining a flat edge on the grinding wheel is difficult so regular dressings using a dressing tool will ensure the grinding face remains flat for sharpening drills.

3 The facing tool uses a number of fluted free-wheeling discs to grind away any ridges or imperfections on the face.

Compiled by James Bourchier. Photos by Kim Barnett and Josh Giumelli

4 To begin, make two marks on the tool rest, one at 59 degrees (half of 118) parallel to the face of the grinding wheel and one at 47 degrees.



5 Hold the cutting lip parallel to the grinder face and align the axis of the drill with the 59-degree mark. As the lip is brought lightly against the face of the wheel three motions need to be carried out simultaneously.

6 Move the shank of the drill to the left by 12 degrees to the 47 degree mark.

7 While the drill is moved to the left it must be moved downward by about 30 degrees. The drill is also rotated during these two motions until the trailing edge of the cutting lip is reached, which should coincide with the 47-degree mark and a drill attitude of 30 degrees. Repeat the procedure for the opposite side.

8 Take care not to overheat the drill as this will soften it and make it wear quicker. Overheating is indicated by the point becoming a bluish colour. To prevent this, ensure each grinding movement is light and cool the drill each time.

9 A second method, and one of the easiest, is to use a sharpening attachment on a power drill. These sharpeners use an angled grinding wheel to obtain the correct angle on the cutting faces. Once again, take care not to overheat the drill bits.

10 The third and most accurate method to sharpen drills is to use a sharpening jig. These jigs bolt onto the grinder and provide a stable base on which the drill can be held to obtain the correct angles. The drill is placed in a cradle, set at a predetermined angle (usually 59 degrees) and a small lip positioner ensures the drill is rotated at the correct position in the cradle regardless of the drill diameter. A second adjustment is used to alter the clearance angle. To operate, the drill is firmly held by the right hand thumb while the left hand adjusts the drill stop. The left hand pivots the cradle to move the drill cutting face against the grinding wheel in one movement. The depth stop at the base of the drill is used to push the drill along the cradle should more than one pass be necessary.

11 Drill gauges can be used to check the point angle and the cutting lip lengths after grinding the points. A set angle, cut into the side of the gauge, is used is used to check the point angle by aligning the drill along the length of the gauge and pushing it against the angle. To measure the cutting lip length, two methods are used. This first gauge has indentations along the point angle template that are used to check the lengths of both sides.

12 This second gauge is for use with larger drill bits with long lip lengths. To measure the cutting lip length the face of the gauge is coated with marking blue. After placing the drill at the base of the gauge, use one of the cutting lip points to scribe a line on the gauge. The drill is then turned so that the other lip can be scratched. If the lines are on the same point then the lengths are equal.