FITTING SHOP

INTRODUCTION:

Mild Steel is the most widely used Steel which is not brittle and also cheap in price. Mild Steel is no readily tempered or hardened but possess enough Strength. Iron-carbon alloy containing less than 0.25% carbon which makes it more ductile and less hard thus rendering it unsuitable for structural work. It is used in industries as well as in the different objects that we use daily. It is also a very important constituent in the manufacturing of metal items.

AIM:

Making of female guage and internal thread on it and external thread on rod to fit the internal thread properly.

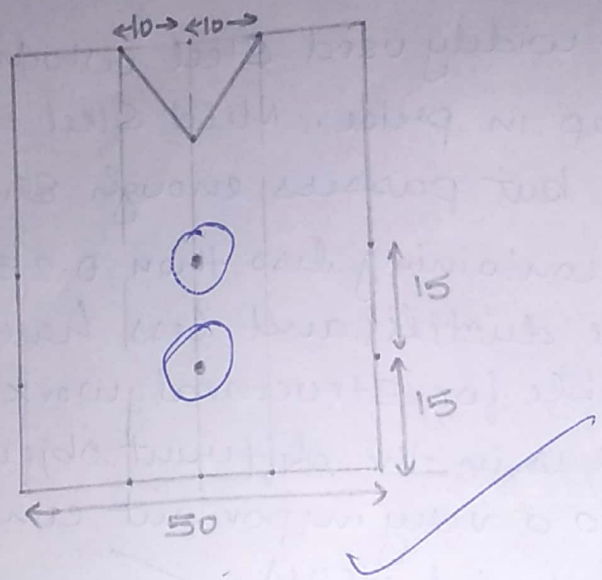
MATERIAL USED:

Mild Steel plate and mild Steel rod.

TOOLS USED:

→ Files
→ Punch
→ Drill machine
→ Taps
→ bench vice
→ ball peen hammar
→ outside ~~spin~~ Spring callipers
→ Hack-Shaw
→ Callipers

JOB DIAGRAM:



PROCEDURE:

→ filling the sides to make the job a perfect square.
→ Covering the surface with chalk dust and making the lines with appropriate measurements with the help of scribbers.
→ making the required marks using ball peen hammar, Centre punch.
→ Using the bench vise to hold the job material with the marked ~~##~~ line vertically
→ Cutting the job material to the required shape with the help of hack saw.
→ Using files to remove the marks and smoothen the cut surfaces.
→ making holes of required diameter using the drill machine.
→ making inner thread on the job material using the set of given tabs (rough, intermediate, fine) and

with the help of tap wrench.
→ again using the bench vice to hold the rod vertically.
→ filing the top of rod to reduce its diameter.
→ using dye to make internal threads on the rod.

REPORT :

Q1) Name 5 important operations that are performed in the fitting workshop and the tools used to perform such operations?

→ The five important operations that are performed in the fitting workshop are :

(1) filing — file
(2) Sawing - Hacksaw
(3) Marking - Scribber, punch, hammar
(4) Drilling - Drill machine.
(5) tapping - taps, tap wrench.

Q3) How do you determine the drill size for doing internal thread in job pieces?

Ans The size of the tap being the outside diameter of its thread it is evident that the drill hole must be smaller than the tap by ~~twice the~~ depth of thread. Thus the tap drill can be derived from the following given formula :

$$D = T - 2d$$

Hand guide

D = dimeter of drill size
T = " of tap or bolt to be used.
d = depth of thread.

Q4) Why are three taps used for doing internal thread by hand?

Ans The three taps that are provided have their own significant meaning, they are listed as followers:

(i) Rougher Tap: The end of Rougher tap has about ~~six~~ six thread tapered. This tap is basically used to start the process of threading so that the thread are formed gradully as the tap is turned or rotated. This is first step of the process of threading.

(ii) Intermediate Tap: The intermediate tap is tapered back from the edge about three or four thread from the edge. This is used after the rough tap has been used to cut the thread as far and deep as can be possible with rougher tap.

(iii) Finisher Tap: The finisher tap has full thread for the whole of its length. This as the name suggests acts as the finisher to finish the work that has been started by above two listed taps and this also completes the process of threading.

Q5) Name the tool used for making external thread by ~~hand~~ hand and explain how with the help of that one can make external thread on the given job piece?

Ans The tool used for making external thread is dye and dye stock.

using bench vice, the rod is held vertical and the top end is filled to make smooth. The dye is held in two handed dye stock. first we need to make sure that the diameter of the rod

is ~~larger~~ nearly equal to diameter of the dye. If diameter of the rod is larger than we need to file the upper part so that it fits into the dye. Once the rod is fixed, we need to rotate the dye stock clockwise to make the external thread. If after rotating 3-4 times we encounter any difficulty in rotating then the dye is rotated once backward/anticlockwise and then the above process is continued till we get threads upto a desired length. And hence it is simple and best process by which we can make external threads.

Q7) What does the following abbreviation stand for:

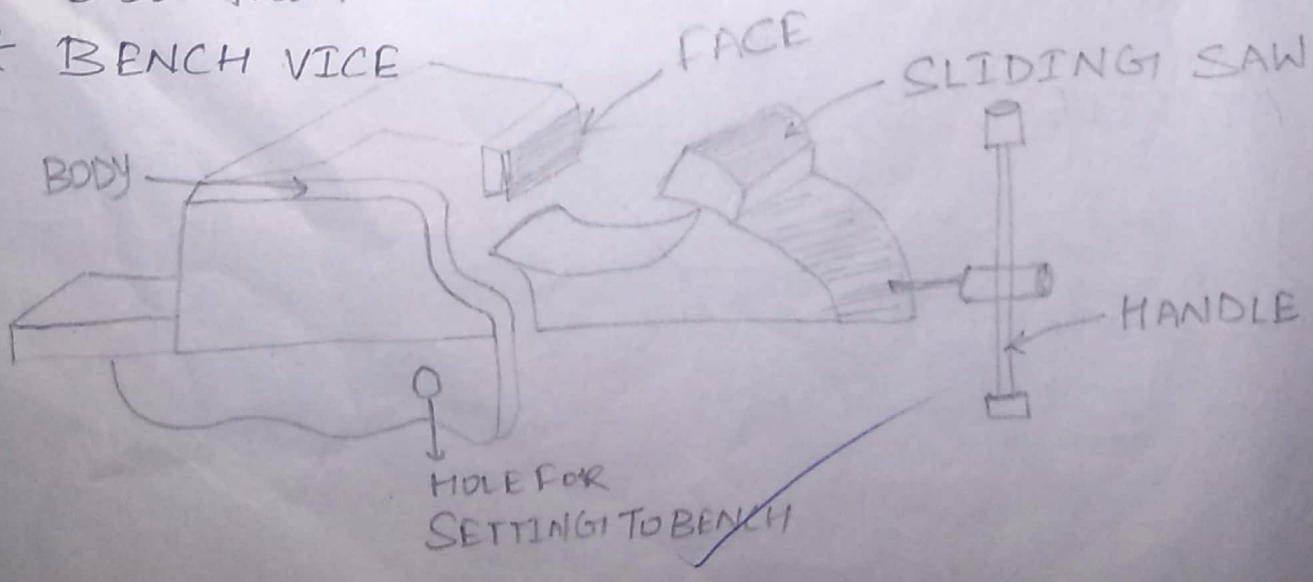
BSW: British Standard Whitework.

BSP: British Standard Pipe.

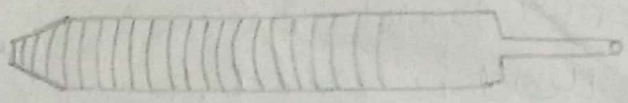
TPI: Teeth per inch.

Q2) Draw the following tool used in fitting workshop and label them.

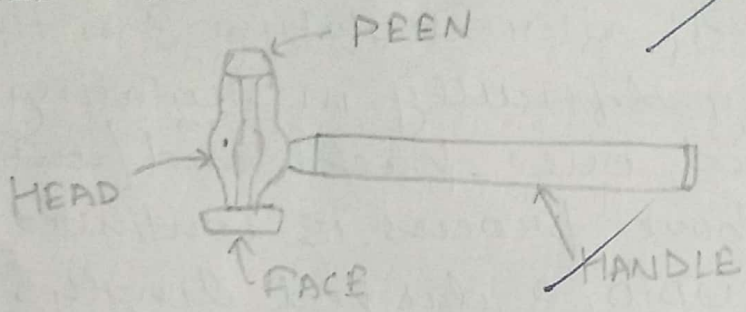
* BENCH VICE



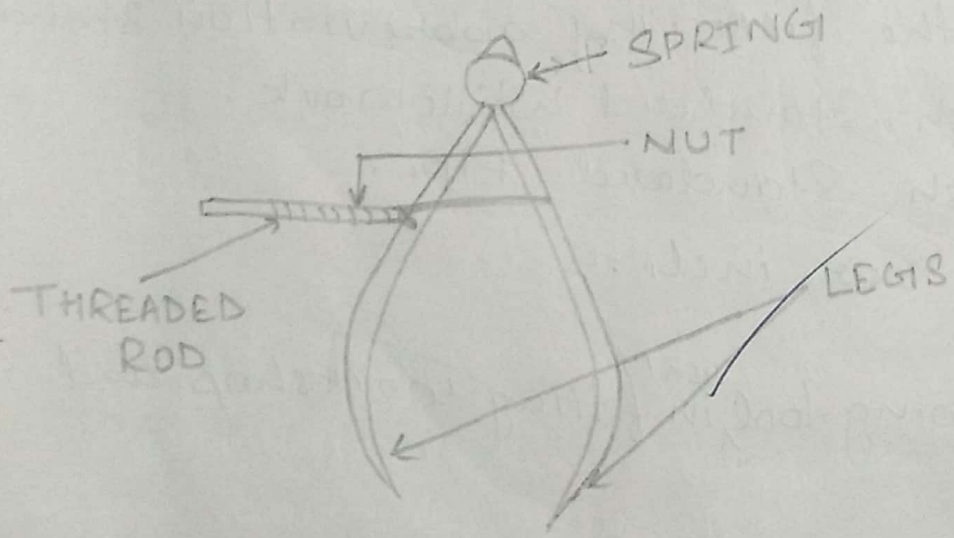
* HALF - ROUND FILE



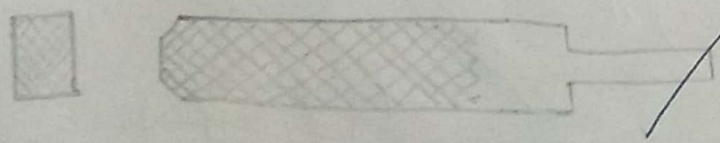
* BALL PEEN HAMMAR



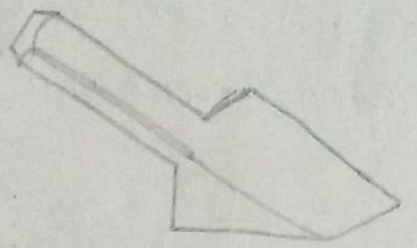
* OUTSIDE SPRING CALLIPER

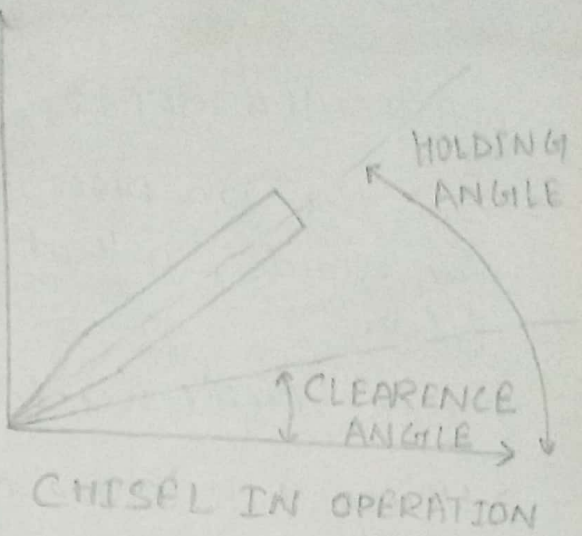


* FLAT FILE

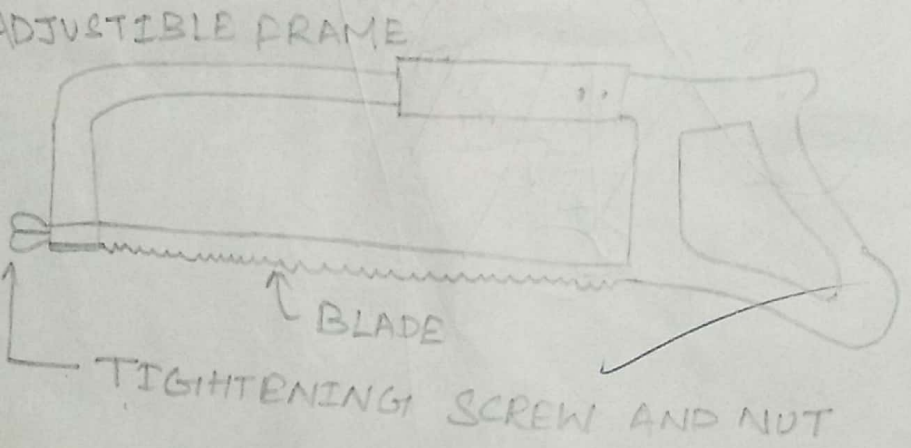


✳ FLAT CHISEL

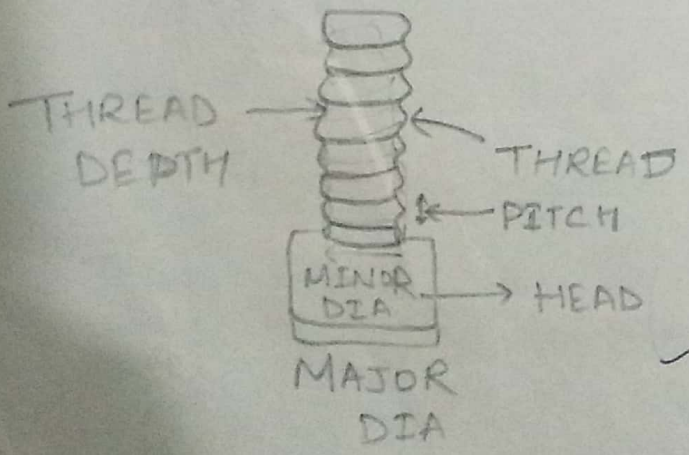




✳ ADJUSTIBLE FRAME HACKSAW



Q8) Draw a typical thread and mark major dia, minor dia, pitch dia and depth of a thread.



SAFETY MEASURES:

→ Cut the job piece with the Hacksaw a little beside the mark, so that it can be smoothened with filer.

→ Use drill machine carefully.

→ Using a mixture of water and oil commonly known as coolant to cool the job material while using the drill machine.