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Assignment 1

Fitting shop

CO₁: Build an object using Fitting trade as per given specifications.

Q1) Write down the answers of following questions in two three sentences.

a) What is Debarring?

Ans) Debarring is a material modification process that removes sharp edges from the material and leaves smooth edges. It is commonly performed on machine operations.

b) For what purpose Twist drills are used?

Ans) A twist drill is cutting tool that is used to create holes in the work piece. It can create holes in wood, plastic, metal, PCB, etc.

c) What are the three filing methods used in fitting shop?

Ans) The methods are as follows:

- Cross filing: It is the most common method which is carried out across the diagonally, to produce medium surface finish. It is used when large amount of metal is to be removed.
- Straight filing: When a short length of workpiece is used to have a flat surface, straight filing is used.
- Draw filing: It is done to get a finely finished surface. It produces a smoother finish than straight filing. A smooth or dead file is utilized for this job.

Q2) Explain in brief with labeled diagram what is Hack Saw?
Types of frames, types of blades & use of hack saw.

Ans)

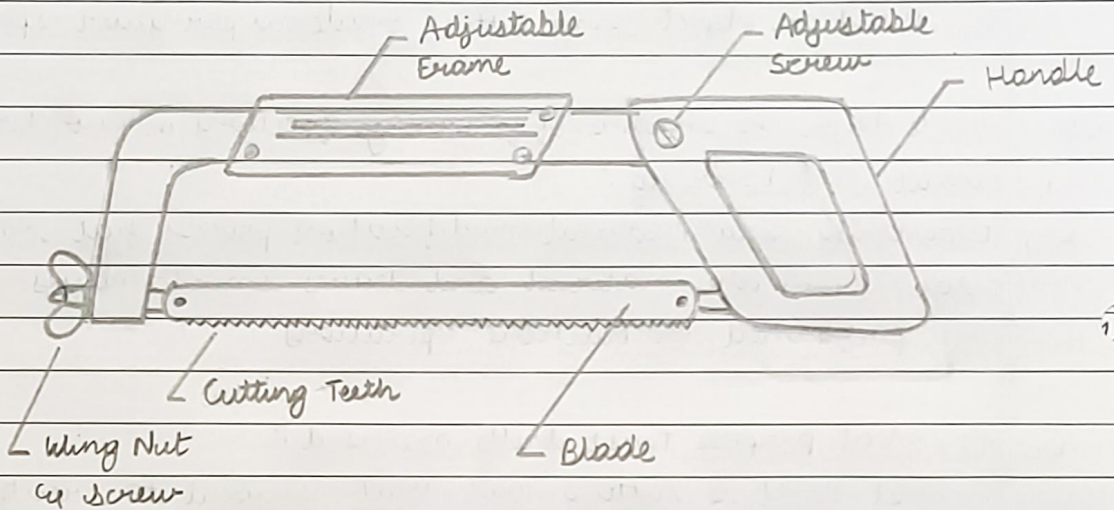


Fig: Hack Saw

Hacksaw consists of a frame which holds a thin blade, firmly in position. The blade has a number of cutting teeth. The number of teeth per 25 mm of the blade length or teeth per inch (TPI) is selected on the basis of work material & thickness being cut. The teeth of the hacksaw blade are staggered as ~~is~~ shows in figure which is known as set of teeth. These make the slots wider than the blade thickness preventing it from jamming.

There are two types of frames:

- Fixed Hacksaw Frame: For making this type of hacksaw frame, one piece of flat iron strip or pipe is bent at a right angle. In these types of Hacksaw frame, only hacksaw blades of a specific size can be fixed, not of short size or long size.

- Adjustable Hacksaw Frame: In this type the structure is a bit different from a fixed frame. The frame is made up of two parts. This part can be adjusted at different distances. Therefore in this adjustment at different distances, ~~therefore~~ blades are of different sizes.

Types of Blades are as follows:-

- Course Grade Hacksaw Blade: Hacksaw blade of this grade is used for cutting thickness of mild steel, copper, aluminium & brass, etc. It contains 14 to 18 teeth per inch.
- All Hard Blade: Blades of this nature are hardened & tempered only except the ends having holes. These are used for cutting articles cast iron or mould iron, etc.
- Flexible Blade: In blades of this nature only the cutting teeth and nearby part of it is hardened & tempered.

Uses of a Hacksaw Blade is as follows:-

- It is used for cutting metal pipes, rods, brackets, etc.
- Hacksaws can ~~cut~~ also cut through plastic.
- They are used for cutting PCB boards to perfect dimensions.
- Plumbers, woodmen, electricians and many other used them for various tasks which involves cutting.

Q3)

List the cutting tools, measuring and marking tools used in fitting shop.

Ans)

Cutting Tools used in fitting shop are:-

- Hacksaw
- Files
- Chisels
- Twist Drill
- extractors

Measuring Tools used in fitting shop are:-

- Vernier Calipers
- Screw gauge
- Depth micrometer
- Steel Ruler
- Drill gauges

Marking Tools used in fitting shop are:

- Try Square
- Divider
- Marking Table
- Combination set
- Universal scribing block.

Q4) What is the use of files in workshop? Explain in brief the types of files according to size, shape, grade & cut in files.

Ans) Files are used for finishing purpose in the workshop by the process of filing. Filing is one of the methods of removing small amounts of material from the surface of a metal part. A file is a hardened steel, having sharp parallel rows of cutting edges or teeth on its surface. On the faces the teeth are usually diagonal to the edges. One end of the file is shaped to fit into a wooden handle.

Types of files are:-

- Handfile: Rectangular in section & tapered in thickness but parallel in width. The faces carry double cut teeth and one of the edges single cut. The other edge, known as safe edge does not have any teeth & hence called safe edge. Used in filing a surface at right angle to an already finished surface.
- Flat file: It is rectangular in section & tapered for $\frac{1}{3}$ length in width & thickness towards the tip. The faces carry double cut teeth & edges carry single cut teeth. It is a general purpose file.
- Square file: Square in section & carry double cut teeth on all faces. It is tapered for $\frac{1}{3}$ of its length towards the point. It is used for filing corners, slots and keyways.
- Three square file: Triangular in crosssection & tapers towards the ~~end~~ tip. It carries double cut faces & sharp edges. Used in ~~on~~ angular hole, recesses and sharpening.

- Swiss or Needle File : 150 mm long with double cut teeth. used for filling corners, grooves, narrow slots, etc.

Q5) Prepare process plan for performing the fitting job with help of points given below.

Ans) Job Title: To perform the fitting job for the job drawing given.

Material Used: One mild-steel sheet cut into piece of 50x50 mm in dimension.

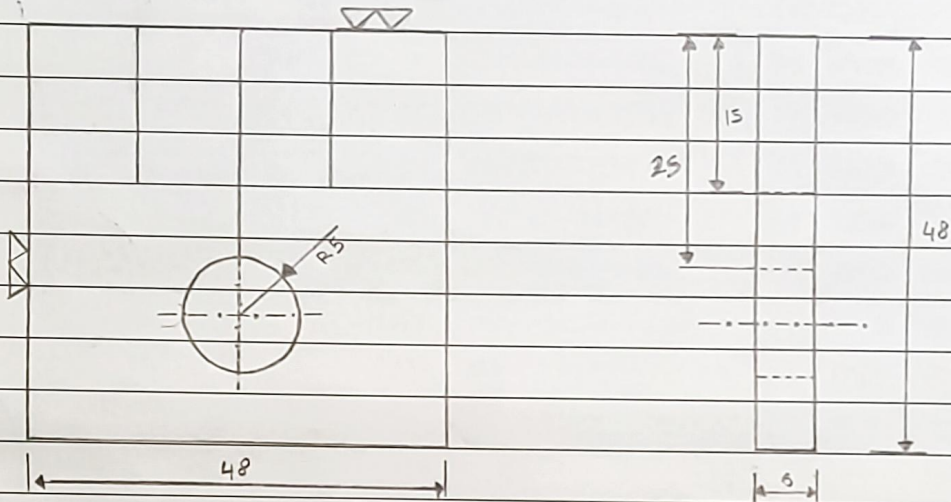
Tools and equipment: Hacksaw, Files, Dot punch, centre punch, steel rule, Try-square, bench-vice table, hammer.

Operations: Filing, Right Angle making and sawing.

Procedure:

- The piece required is checked for its dimension.
- Adjacent edges are filed to straightness and are checked with try square.
- Wet chalk / Marker is used to mark one side and is dried for marking.
- Lines are marked according to the figure.
- Centre is marked according to the figure.
- excess material is cut off using saw from remaining edges.
- Finally all parts are ~~are~~ removed by filing the surface of the job.

Job Drawing:



Accuracy ± 0.1 mm

Raw Material size 50×50 mm