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PAGE NO: 1
DATE: 6/5/2021

# Assignment No. 5

## Fitting shop

CO1 - Build an object using fitting trade as per given specifications

Q1) What do you understand by Bench work and fitting?

A) Bench work refers to the production of components by hand on the bench. It includes various cutting process that machinists complete by hand rather than on a machine when creating part features that require less power and force.
Fitting deals with the assembly of mating parts, through removal of metal, to obtain the required fit. It includes laying out various cutting operations, filing, threading, bending etc.

Q2) Name and explain various types of files. How are files classified?

A) A file is used to cut, trim or finish a job of metal or wood, in order to give them a shape according to our needs such as making the job round, square or angular. File is made from high carbon tool. Files can be classified on the basis of their length, shape, grades, cut (tooth shape).
The different types of files are:

(i) Hand file -
It is used for general filing of metals such as steel. They are rectangular in section.

(ii) Half round file -
It is used for filing curved surfaces, especially used for filing internal curves

(iii) Three square file -
It is triangular in section and very useful when filing 'tight' corners / angles. The sharp edges allow the file to fit into corners.

Name: Aanchal Thaman
Roll No: 160101201110
Batch: B2
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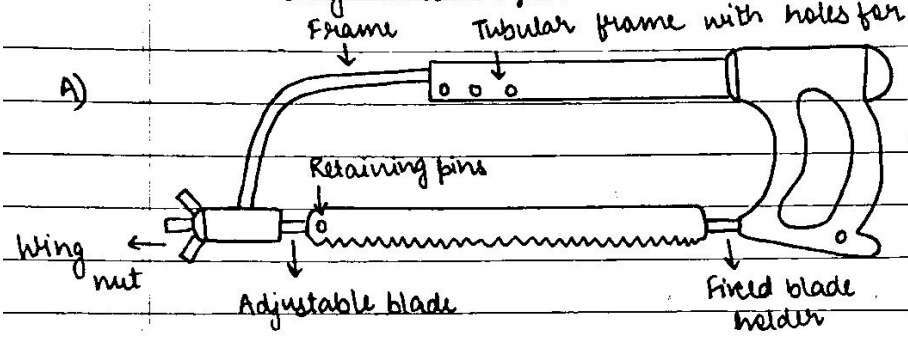
(iv) Knife file -
These are very useful during filing where there is very little space. It is very thin and can fit into small gaps.

(v) Square file -
They are very thin and fit into corners well. They are used to file slots in metal or for filing where there is little space.

(vi) Round file -
This type of file has a round section. It is used for rubbing or finishing Key whole of small diameter.

Q3) With neat sketch explain hacksaw. What precautions should we take while using hacksaw?

A)




## Hack Saw

A hacksaw is a fine textured saw, originally and mainly made for cutting metal. Most hacksaws are hand saws with a C-shaped working frame that holds a blade under tension. Such hacksaws have pins for attaching a narrow disposable blade. The frames may also be adjustable to accomodate blades of different sizes.

The precautions that should be taken while using a hacksaw are:

- Wear safety glasses or goggles, or a face sheild.
- Select a saw of proper shape and size for stock being used and with the number of teeth per inch (TPI) in order to get the desired finish.
- Avoid putting too much pressure on the blade, especially if its twisted at all
- Always secure the blade properly before any job and use even, steady strokes
- Wipe the saw clean after every use.

Name: Ranchal Thaman
Roll No: 16010120110
Batch : B2
Ranchal.

PAGE NO. 3
DATE 6/5/2021

Q4) Describe drilling and tapping. How are taps selected while tapping?

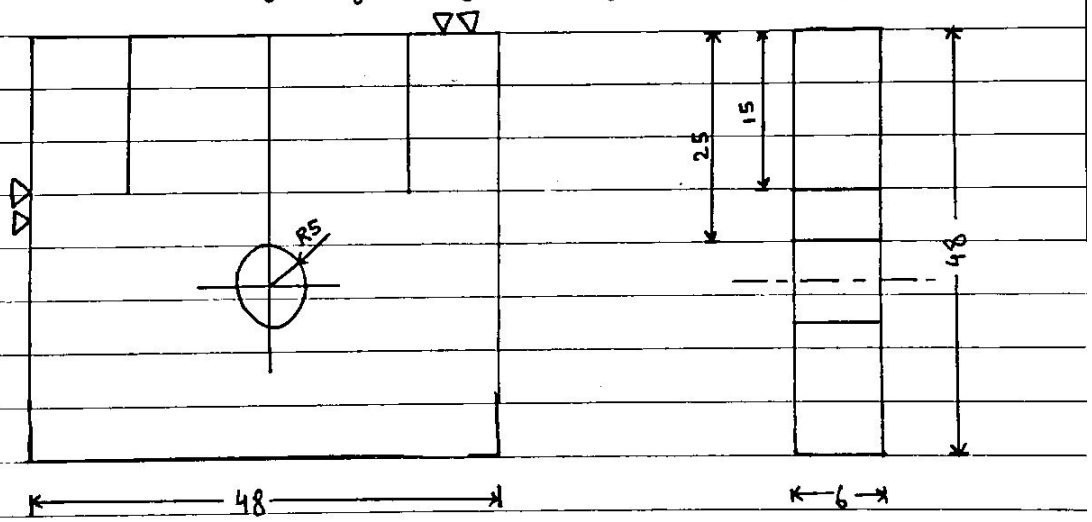
A) • Drilling refers to creating a smooth hole in a material with a drill and motor. Tapping is the action that creates a thread into the side of the hole.
• Drilled holes are characterised by their sharp edge. Tapping can be done on the lathe by power fed or by hands.
• When choosing a tap, the chart is first referred to get the tap size.

Process of tap selection is :

1. The material of the component
2. Type of hole is considered
3. Type of tool required to meet the requirement of application.
4. Batch size on the tap selection
5. Threading depth.

Q5) For the given fitting job drawing, write the process plan.

Operations – Filing, Right Angle Making and sawing Practice.




Accuracy : ±0.1 mm
Scale : N.T.S
Raw material size : 50×50 mm (1 No.)

Name : Aanchal Thaman
Roll No : 160101 20110
Batch : B2
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PAGE NO. 4
DATE 6 5 2021

A) Process sheet

| Operation No. | Operation Description | Job Holding Device used / Machine | Cutting / Marking Tool used | Measuring Instrument |
|---|---|---|---|---|
| 1. | Cutting the Flat of size 50x5 in 50mm length | Power saw Machine | HSS Blade (8TPI) | Steel Rule |
| 2. | Inspection of prize for size and defects | — | — | Steel Rule |
| 3. | Burrs removing | Bench Vise | Rough Flat File | — |
| 4. | One side filing as base side. Straightness and Flatness | Bench Vise | Rough Flat File<br>Smooth Flat File | Steel Rule<br>~~Try Square~~ |
| 5. | Adjacent side Filing. Right Angle Making | Bench Vise | Rough Flat File<br>Smooth Flat File | Steel Rule<br>Try square |
| 6. | Marking for Job size | Surface Plate, 'V' Block | Chalk | Height Gauge |
| 7. | Filing & Right Angle making other two sides | Bench Vise | Rough Flat File<br>Smooth Flat File | Steel Rule<br>Try square |
| 8. | Marking for sawing & Drilling | Surface Plate, 'V' Block | Chalk | Height Gauge |
| 9. | Sawing as per marking | Bench Vise | Hack Saw with Blade | Steel Rule |
| 10. | Drilling | Drilling machine, Vice | Twist Drill 10mm | Steel Rule |
| 11. | Removal of Burrs all over. | Bench vise | Smooth Flat File | — |
| 12. | Final Inspection | — | — | Vernier Calliper |