



ME-160

Mechanical Engineering Drawing

Sectional Views

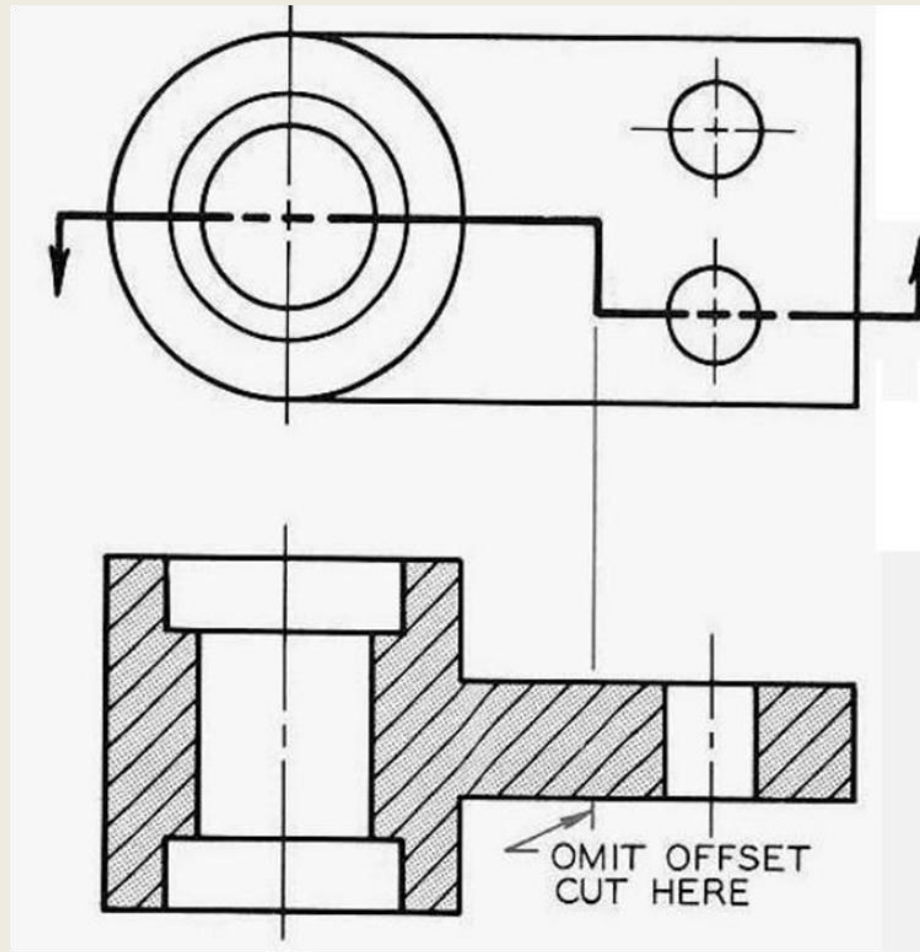
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What is Sectional View?

- A sectional view is that , which is seen beyond the **imaginary cutting plane** through an object at right angle to the direction of sight .
- The exposed or cut surface is identified with the help of **section lining or cross hatching**.

An example

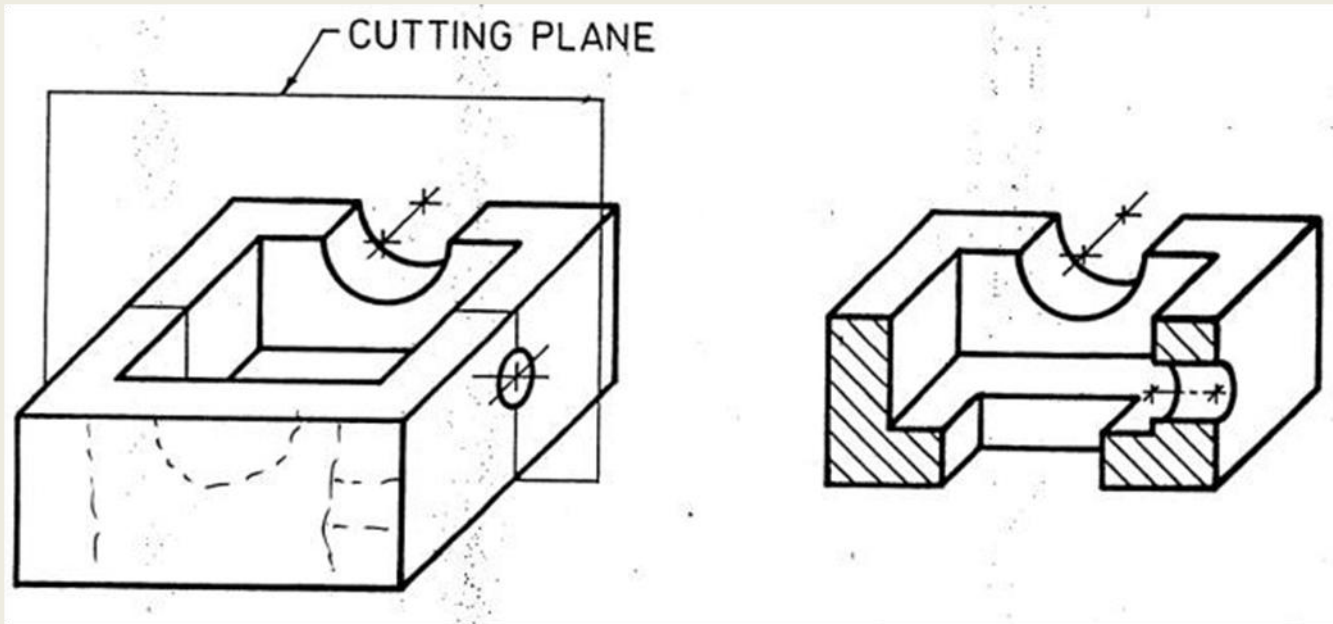


Purposes of use :

- The external features of an object can be shown fully in Orthographic Views.
- However, the internal details can not be shown clearly by means of hidden lines.
- The **Internal details** of complex machine parts can shown **by cut away sections** or views

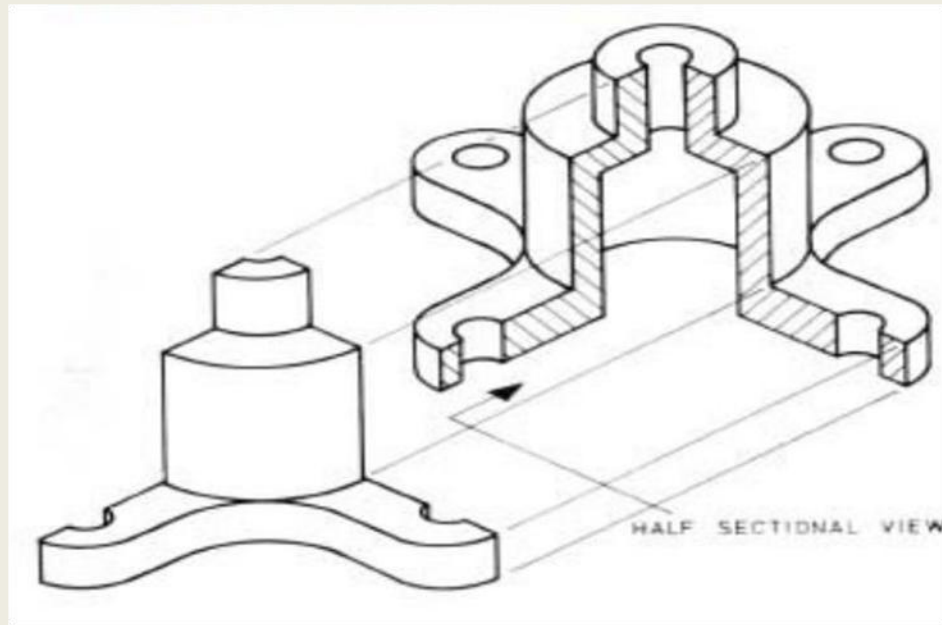
Sectioning Planes

The Object is assumed to be cut by one or more Planes usually parallel to the Principal Planes.



Sectioning Planes

The Object is cut by two orthogonal Planes

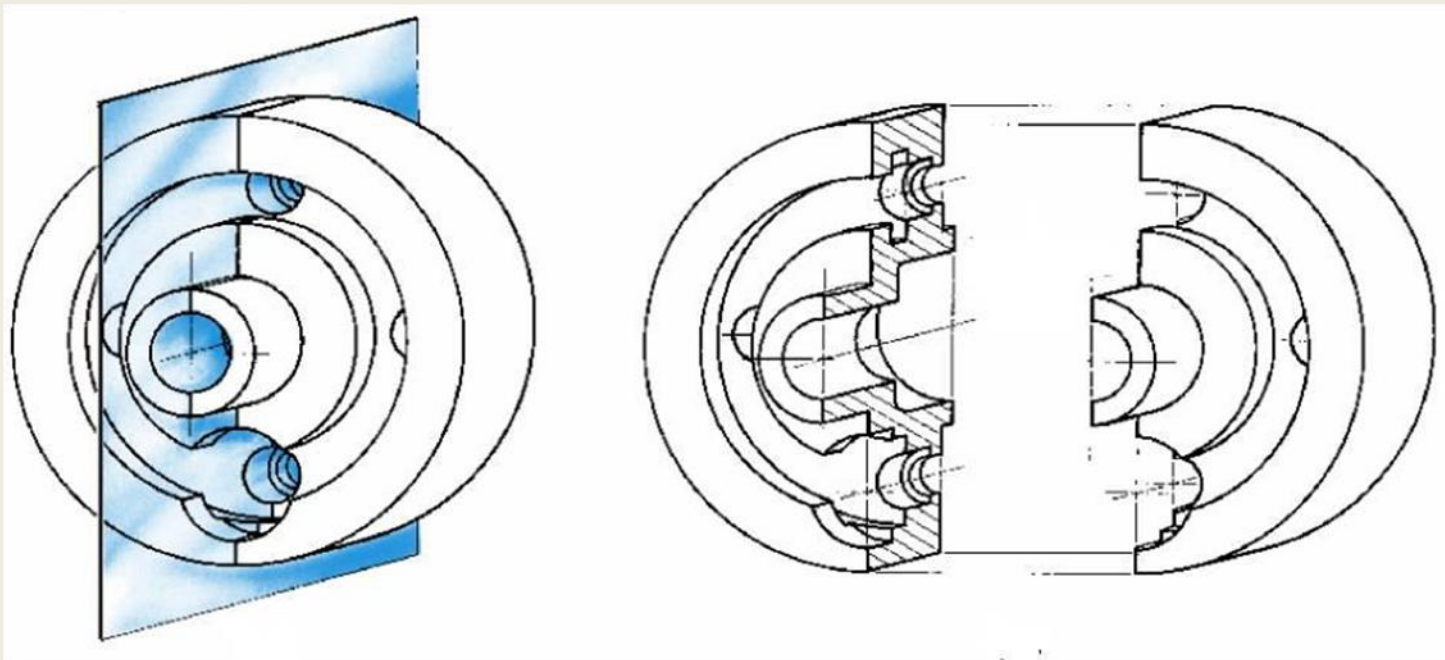


Types of Sections

- Full Sectional Views
- Half Sectional Views
- Offset Sectional Views

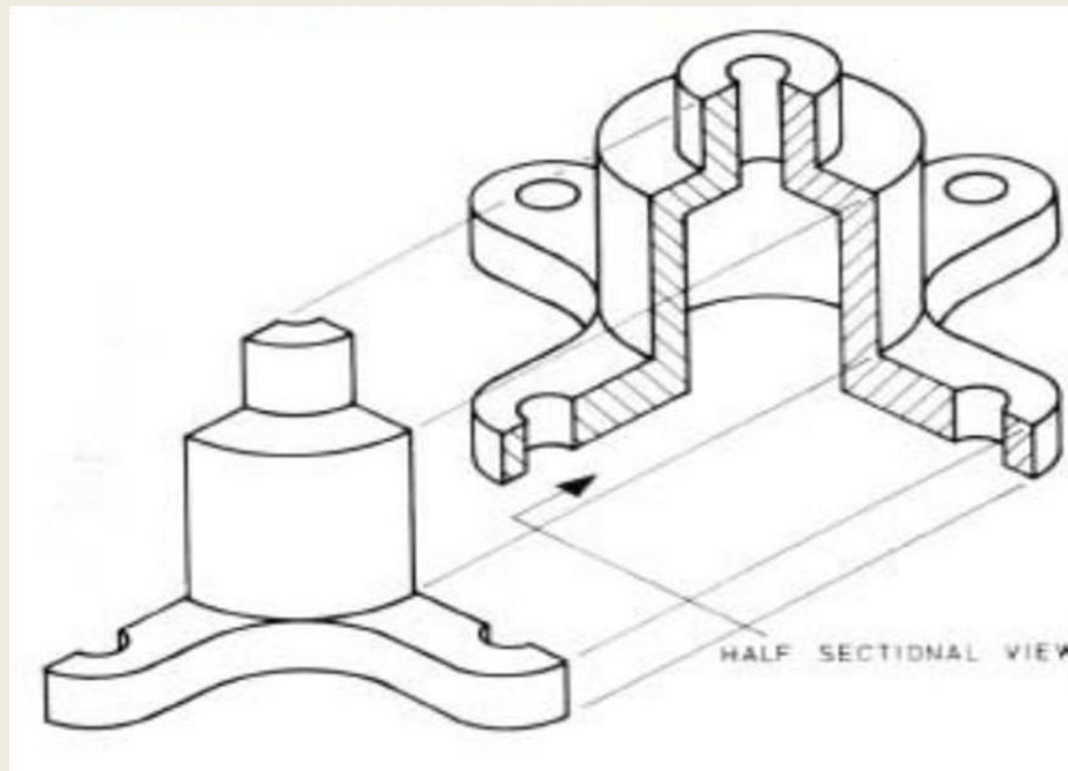
Full Sectional Views

The cutting plane cuts the part into two halves.



Half Sectional Views

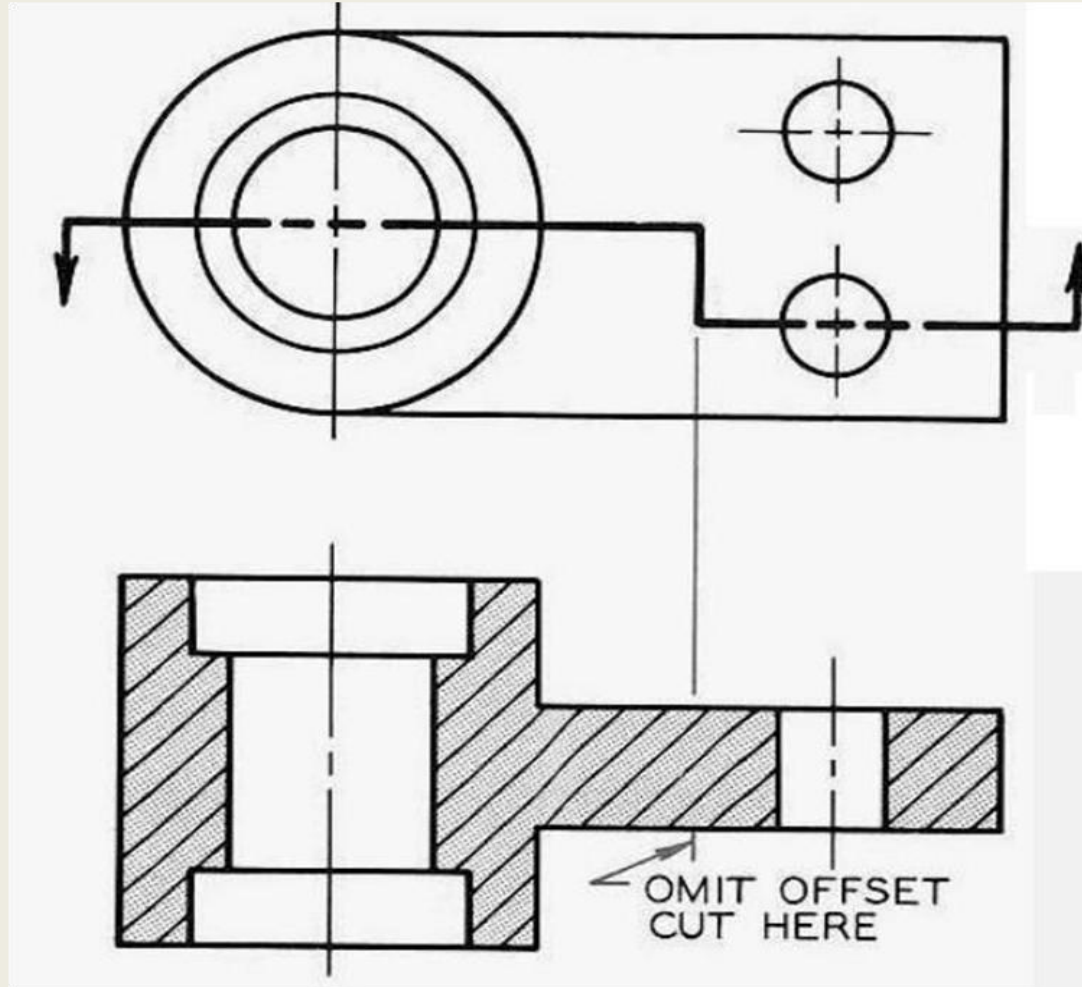
- A Quarter portion of the object is removed (or Half of the view is sectioned)



Offset Sectional Views

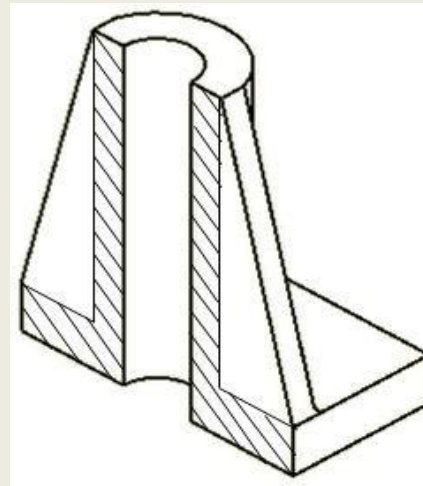
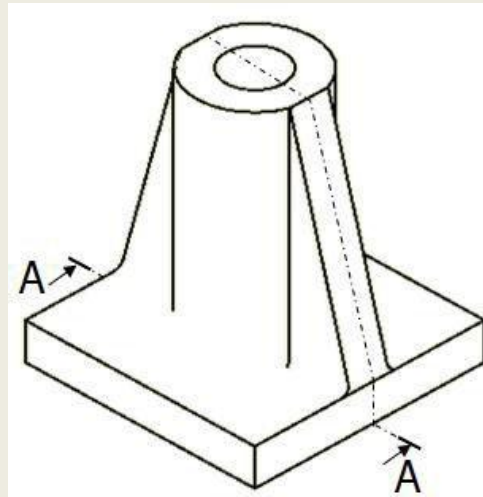
- Several features of an object that **do not lie in a straight line** .
- Such features can be shown by “**offsetting**” or **bending the cutting plane** .
- The section is then called an **OFFSET SECTION**.

Offset Sectional Views



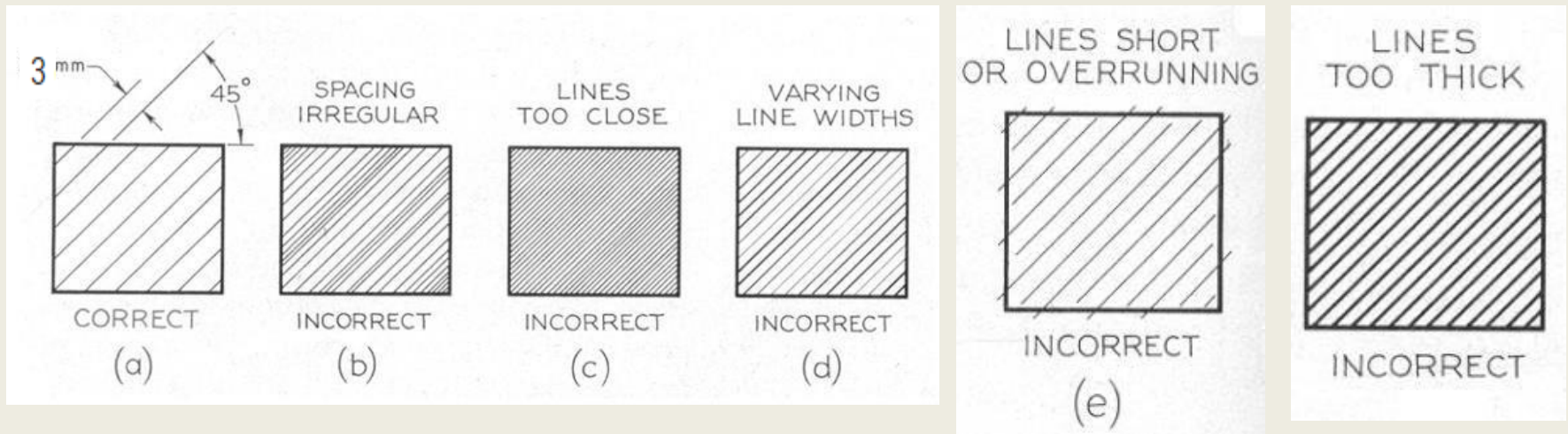
Parts should not be sectioned !

- When the cutting plane passes through **Thin features** such as **rib** or a web, shafts, keys & splines, nuts, bolts & rivets - such parts are not sectioned .



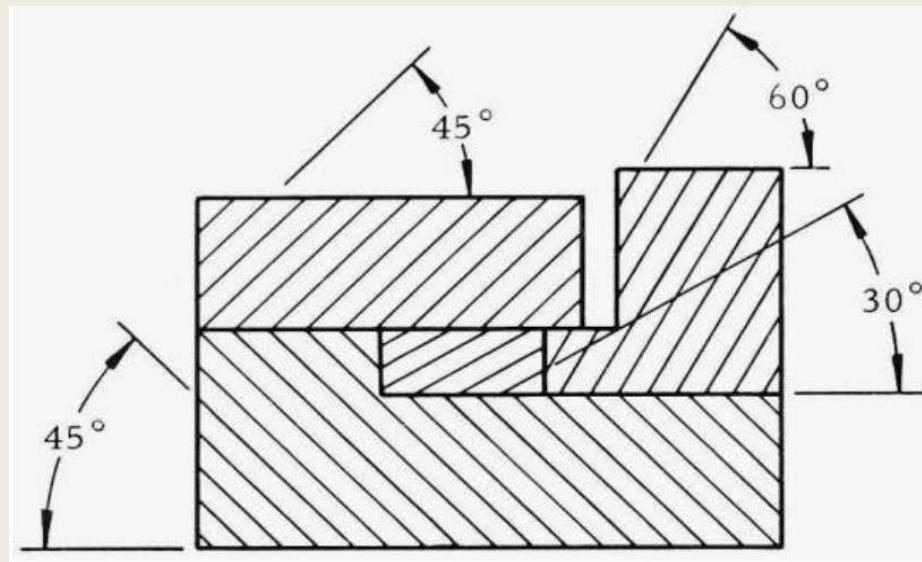
Hatching

- Material which has been cut by the cutting plane is hatched.
- Dimensions are NOT inserted in hatched areas.



Hatching

- Section lines on two adjacent parts should slope at 45° in opposite directions.
- If there are more than two parts/materials, they ordinarily cross-hatched at 30° and 60° .

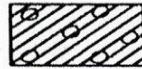


Hatching

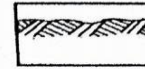
Section Lining



Cast Iron



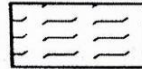
Sound
Insulation



Earth



Steel



Cork, Felt,
Leather & Fiber



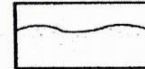
Rock



Bronze, Brass,
Copper and
Compositions



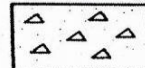
Fire Brick
and Refractory
Materials



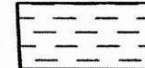
Sand



White Metal,
Zinc, Lead,
Babbit and
Alloys



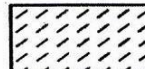
Concrete



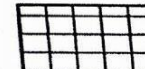
Water &
Other Liquids



Magnesium,
Aluminum



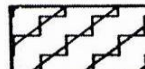
Marble, Slate,
Glass, Porcelain



Electric
Windings,
Electromagnets etc.



Rubber, Plastic,
Electrical Insulation



Thermal
Insulation



Wood

Symbols for Section Lining

Lines

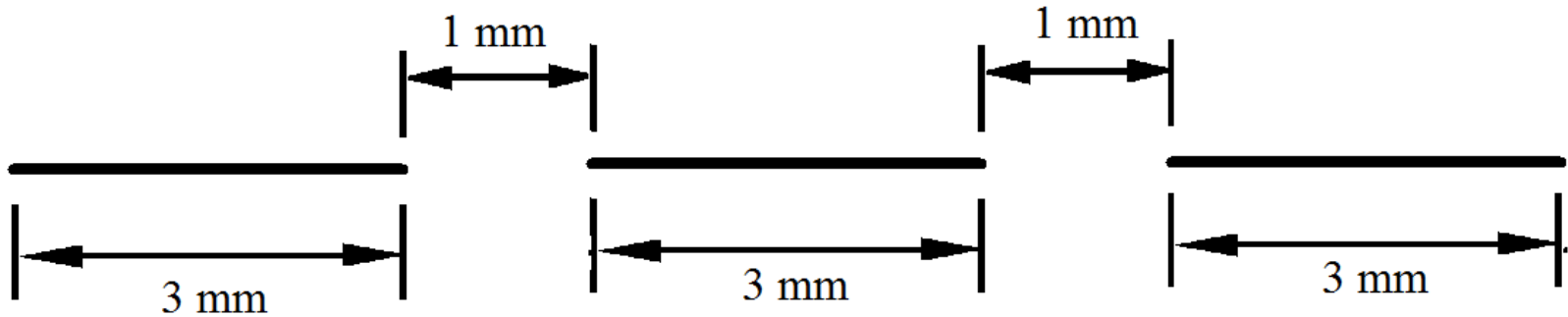
- Object Line : 100% thick
- Hidden Line: 50% thick
- Dimension, Extension Line: 25% thick
- Center Line : 50% thick
- Cutting Plane Line : 125% thick
- Hatchet line :25% thick

Object Line

Thickness: 100 %

Hidden Line

Thickness: 50 %



Center Line

Thickness: 50 %

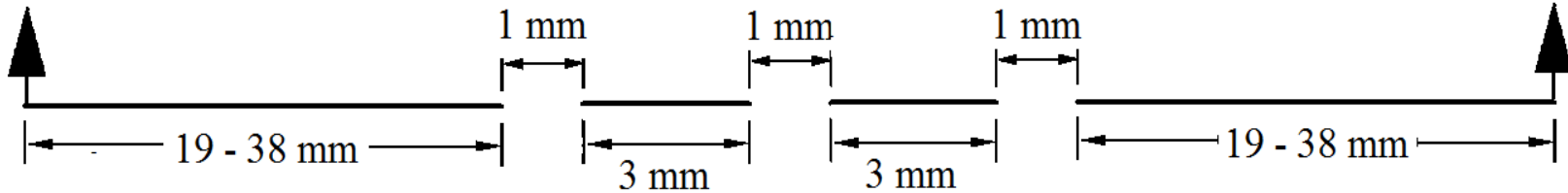
Dimension and
Extension Lines

Light
3.000

Thickness: 25 %

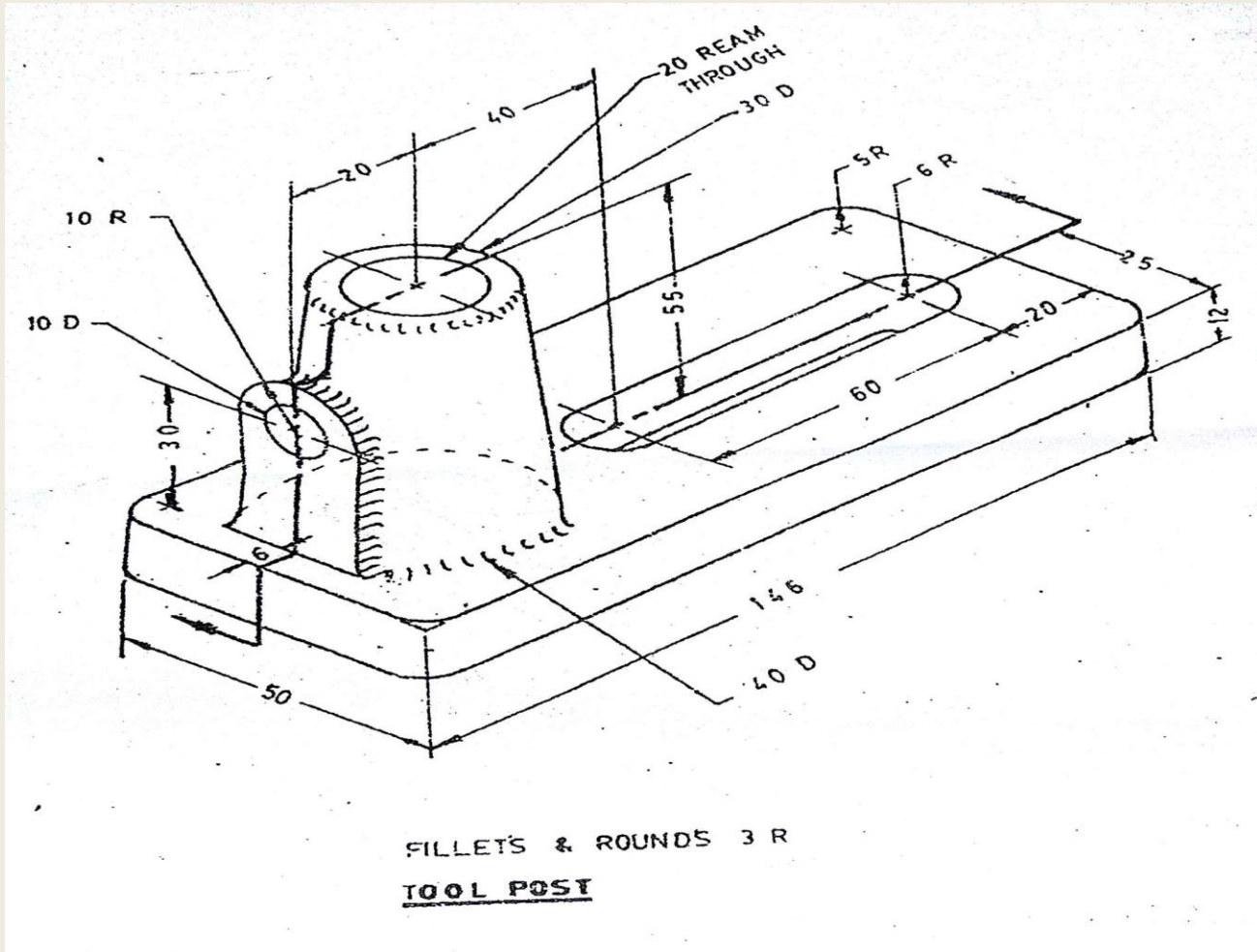
Thickness: 125 %

Section Line

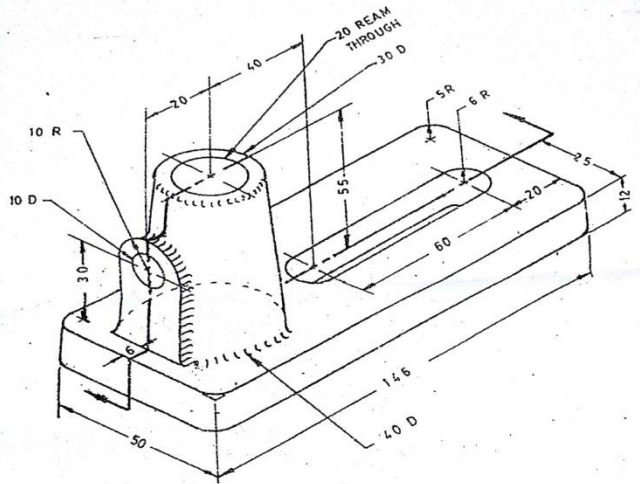


N.B.: All Percentages are with respect to the object line

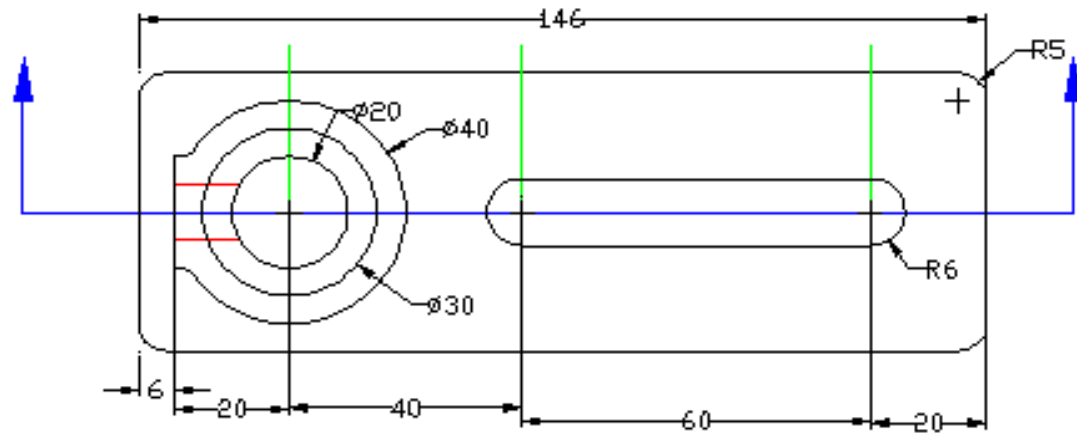
First Problem



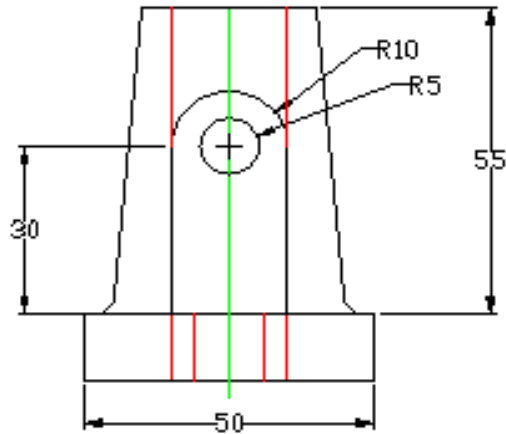
First Problem



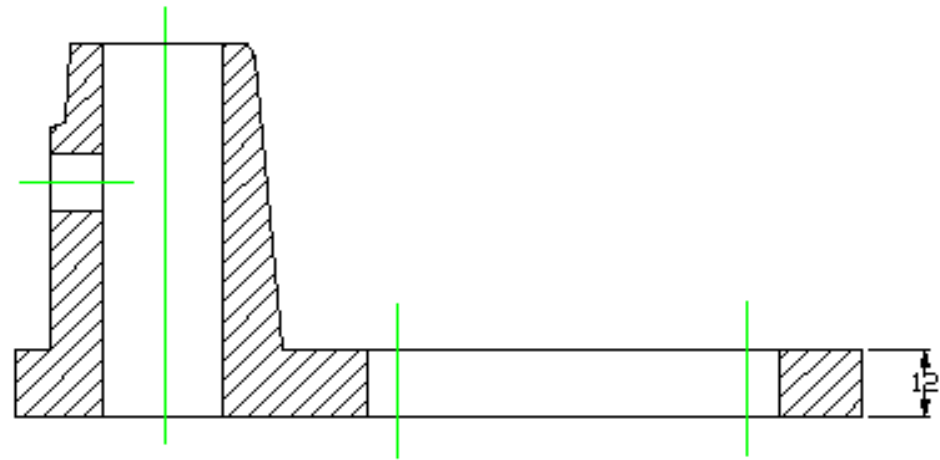
FILLETS & ROUNDS 3 R
TOOL POST



TOP VIEW



L.H.S VIEW



FRONT SECTIONAL VIEW

Persist Until Succeed !!!