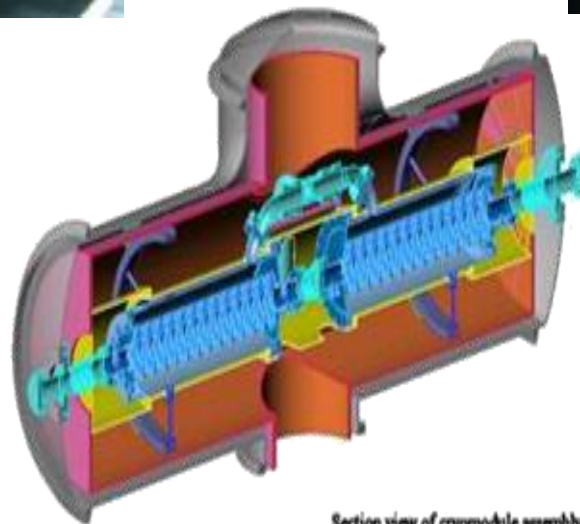


بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Sectional Views



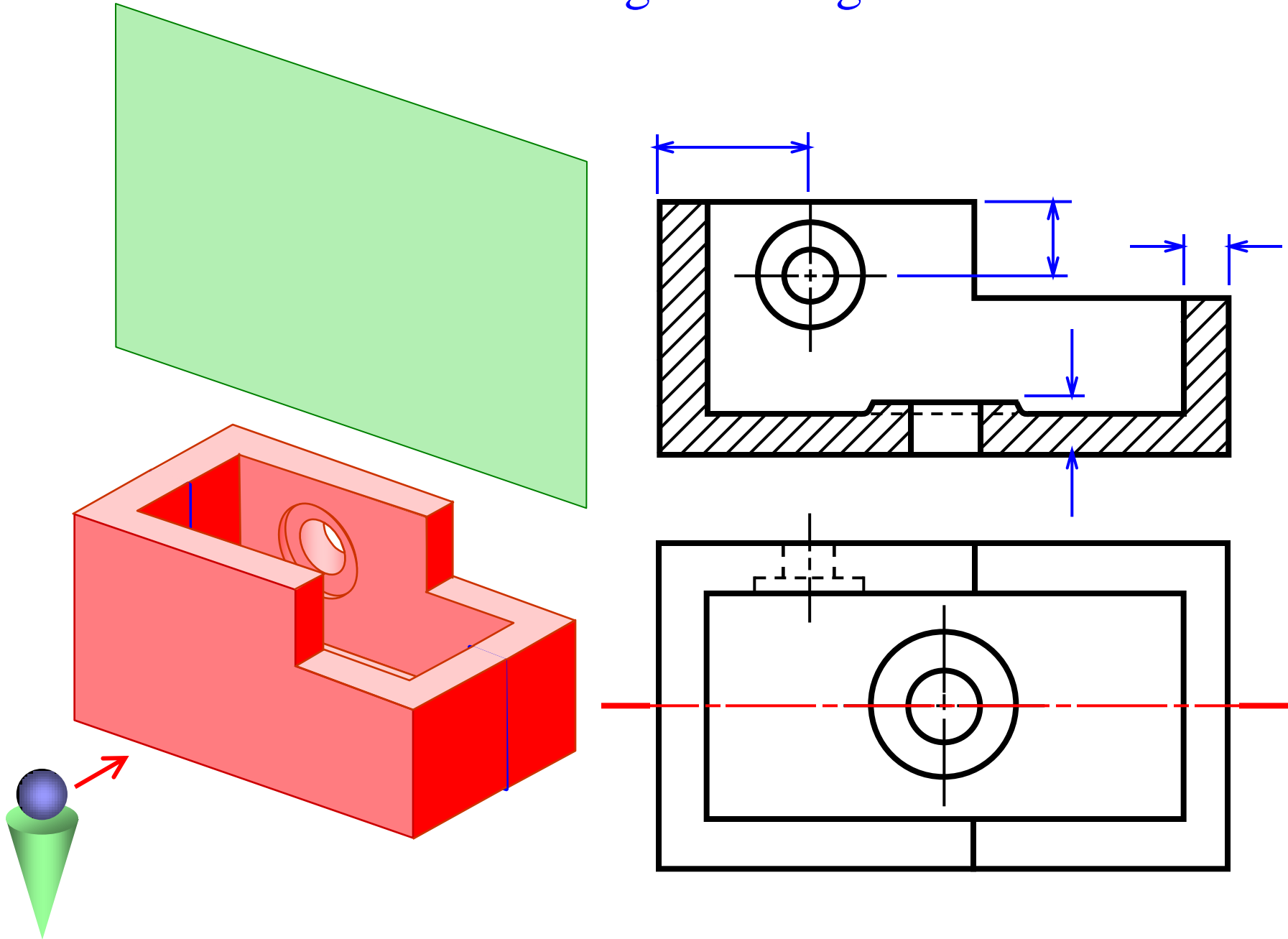
Section view of cryomodule assembly.

PURPOSES OF SECTIONAL VIEWS

- Clarify the views by
 - ❖ reducing or eliminating the hidden lines.
 - ❖ revealing the cross sectional's shape.
- Facilitate the dimensioning.

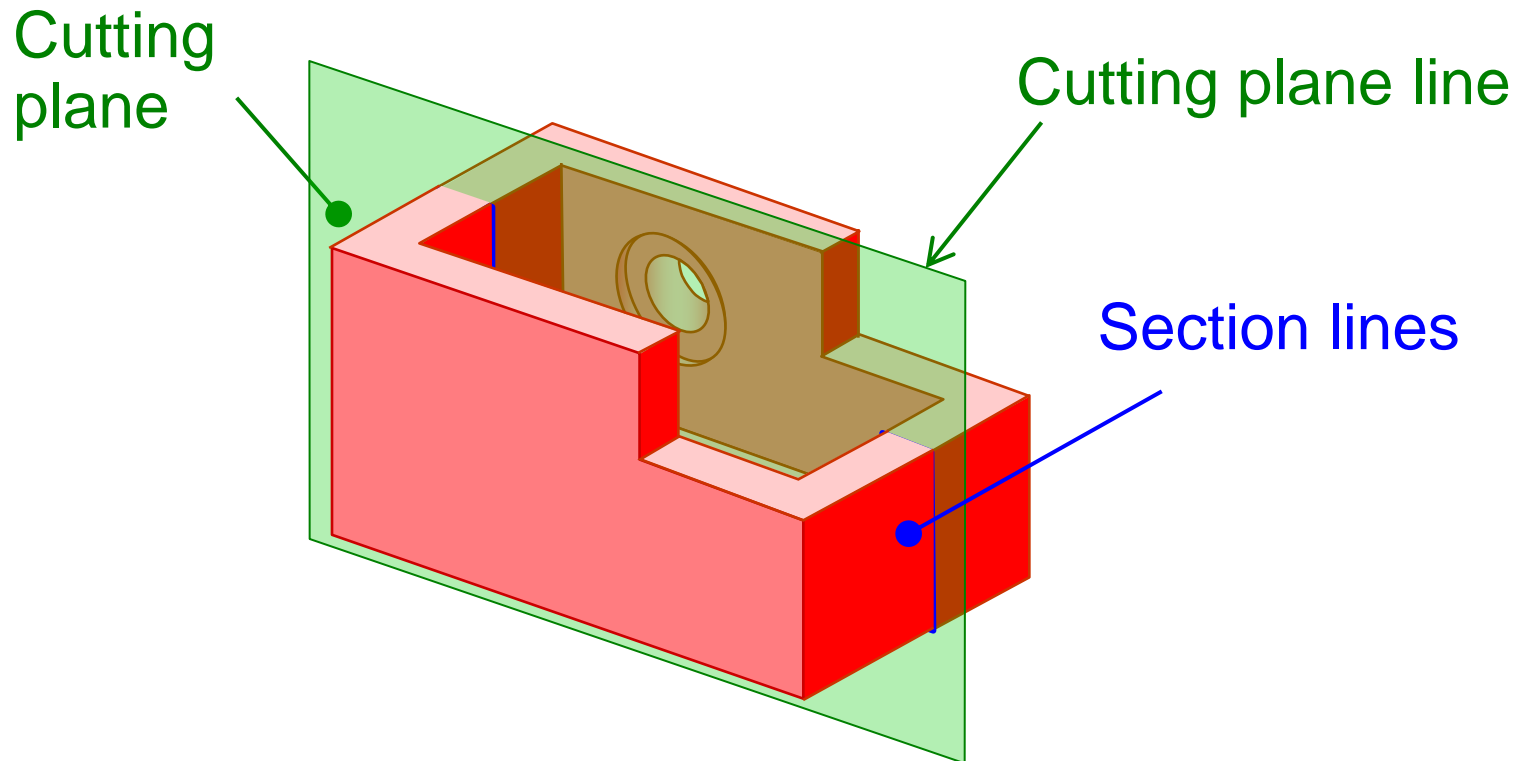
Let us see an example

EXAMPLE : Advantage of using a sectional view



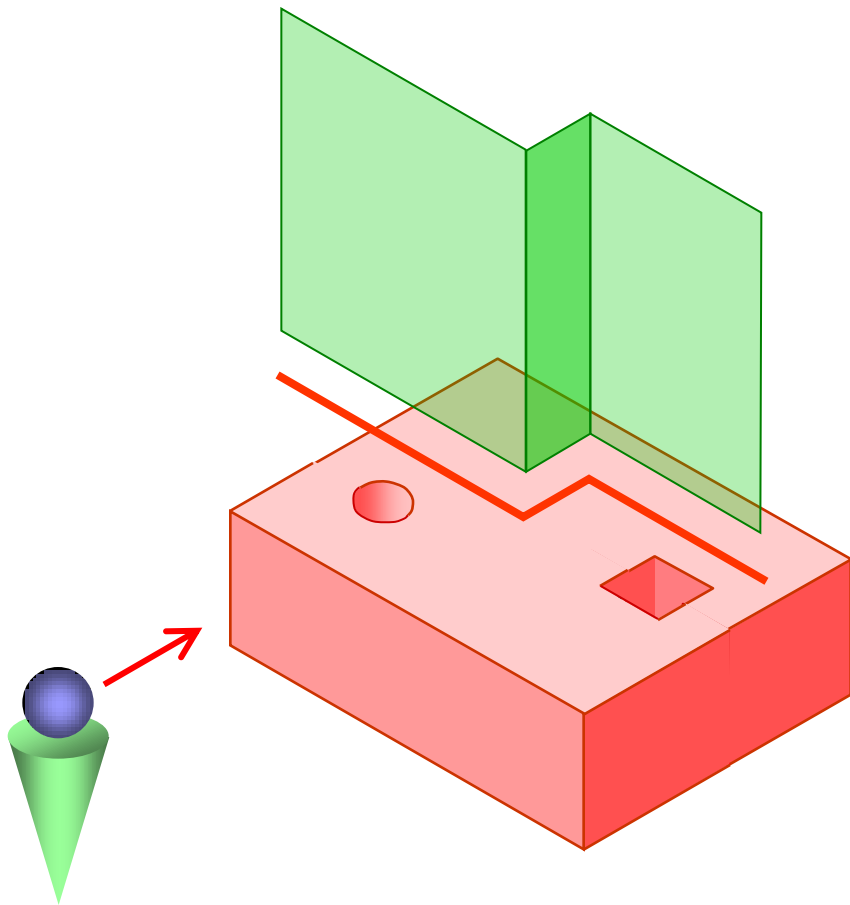
CUTTING PLANE

Cutting plane is a plane that *imaginarily cuts* the object to reveal the internal features.

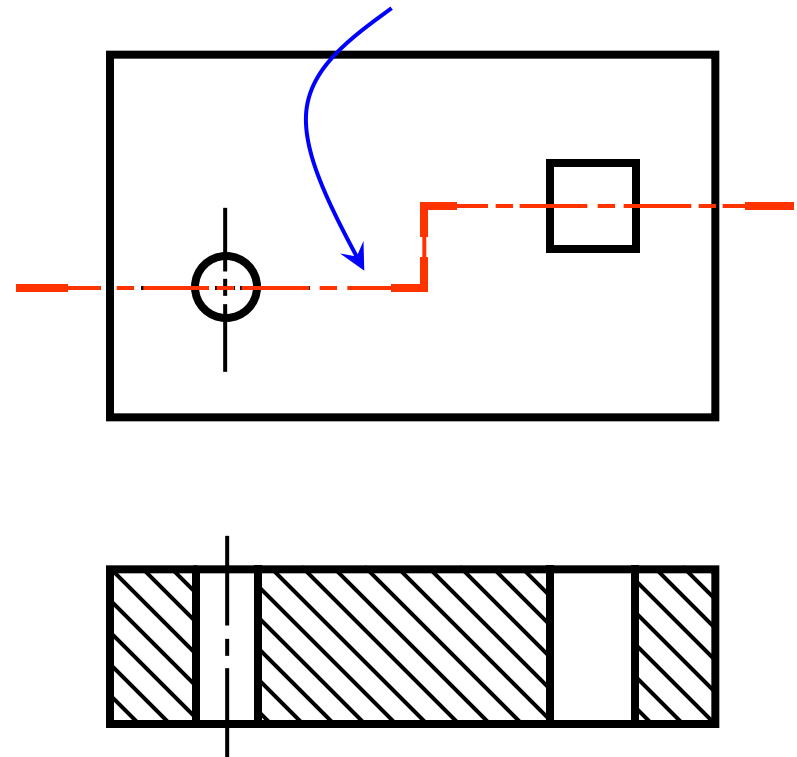


CUTTING PLANE LINE

Cutting plane line is an *edge view* of the cutting plane.



Indicate the *path* of cutting plane.



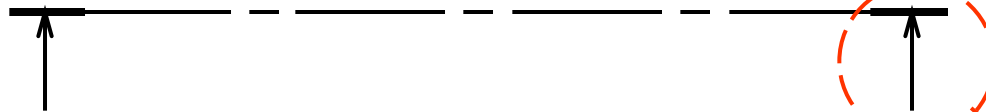
CUTTING PLANE LINETYPE

JIS & ISO
standard

Thick line (HB)

Thin line (3H)

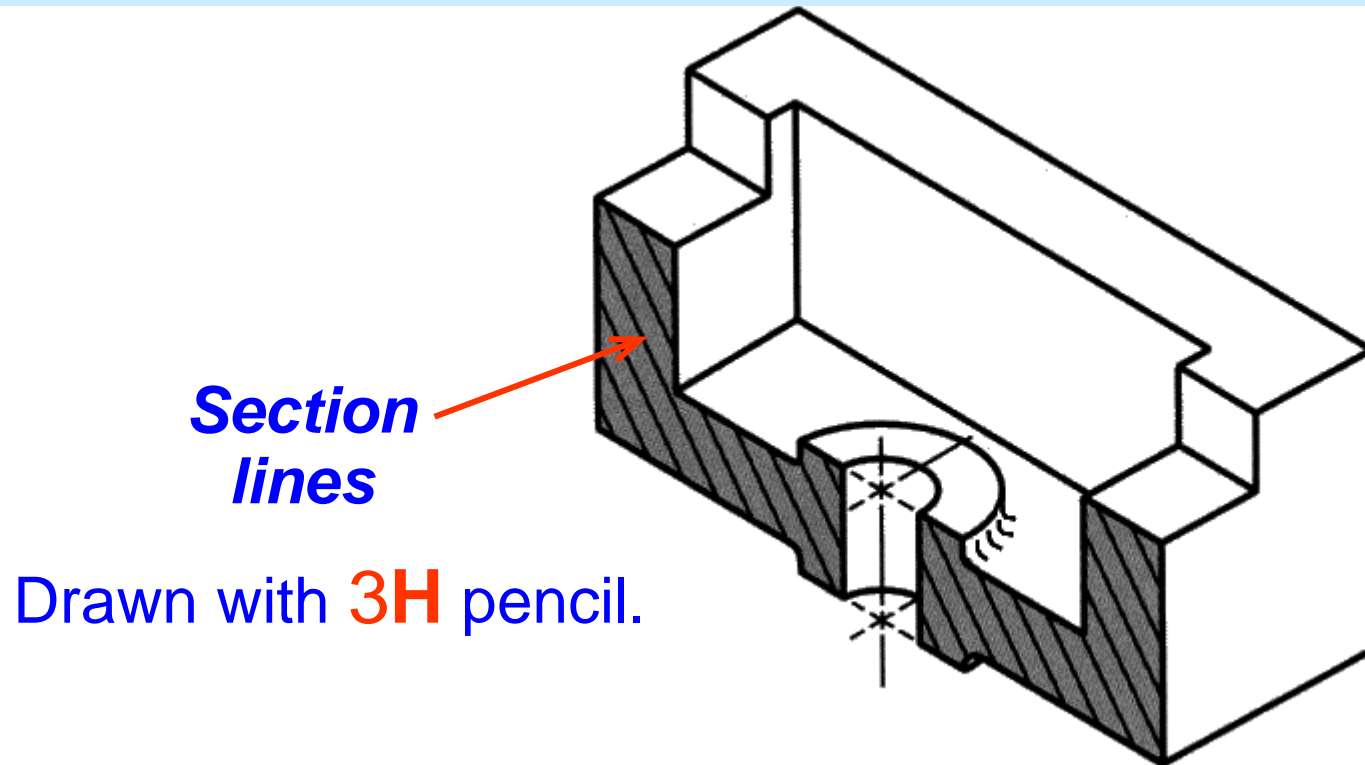
Thick line (HB)



**Viewing
direction**

SECTION LINING

Section lines or **cross-hatch lines** are used to indicate the surfaces that are cut by the cutting plane.



SECTION LINES SYMBOLS

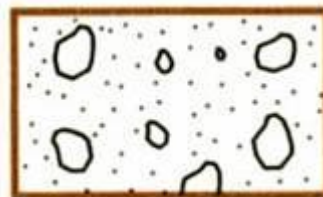
- The section lines are different for each of material's type.
- For practical purpose, the cast iron symbol is used most often for any materials.



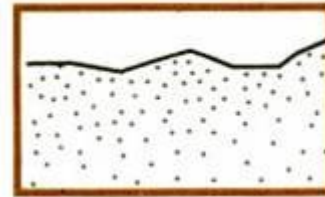
Cast iron,
Malleable iron



Steel



Concrete



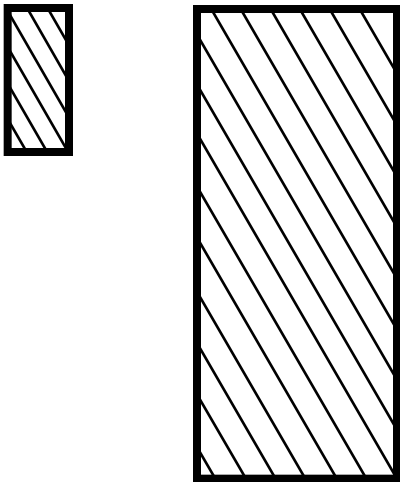
Sand



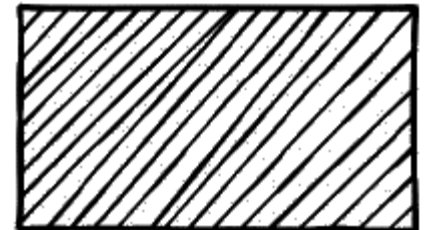
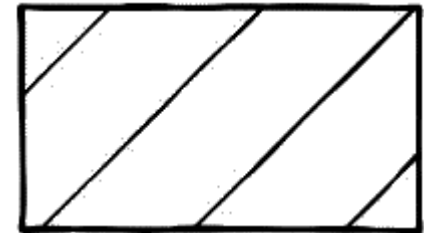
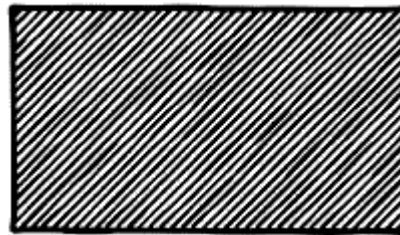
Wood

SECTION LINING PRACTICE

The spaces between lines may vary from 3 mm for small sections to 8 mm for large sections, (use 5mm).



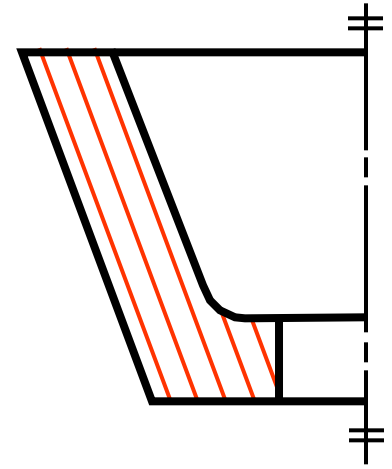
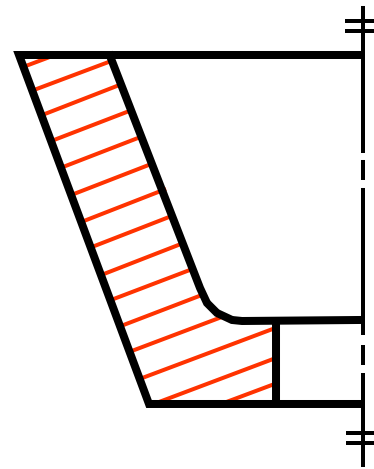
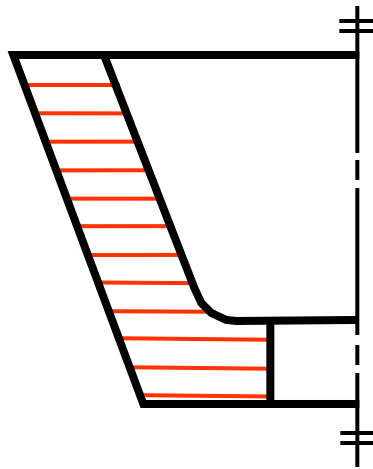
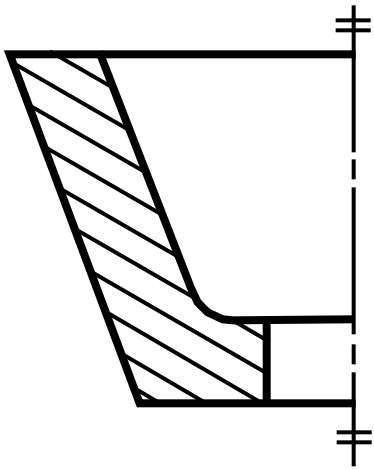
COMMON MISTAKE



SECTION LINING PRACTICE

- It **should not** be drawn *parallel* or *perpendicular* to contour of the view.

COMMON MISTAKE

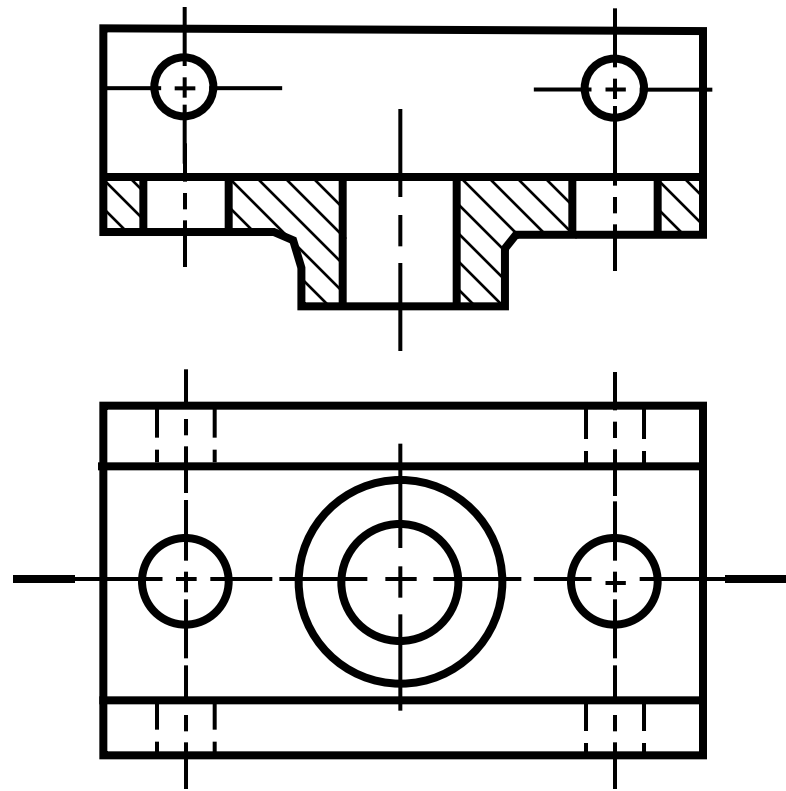
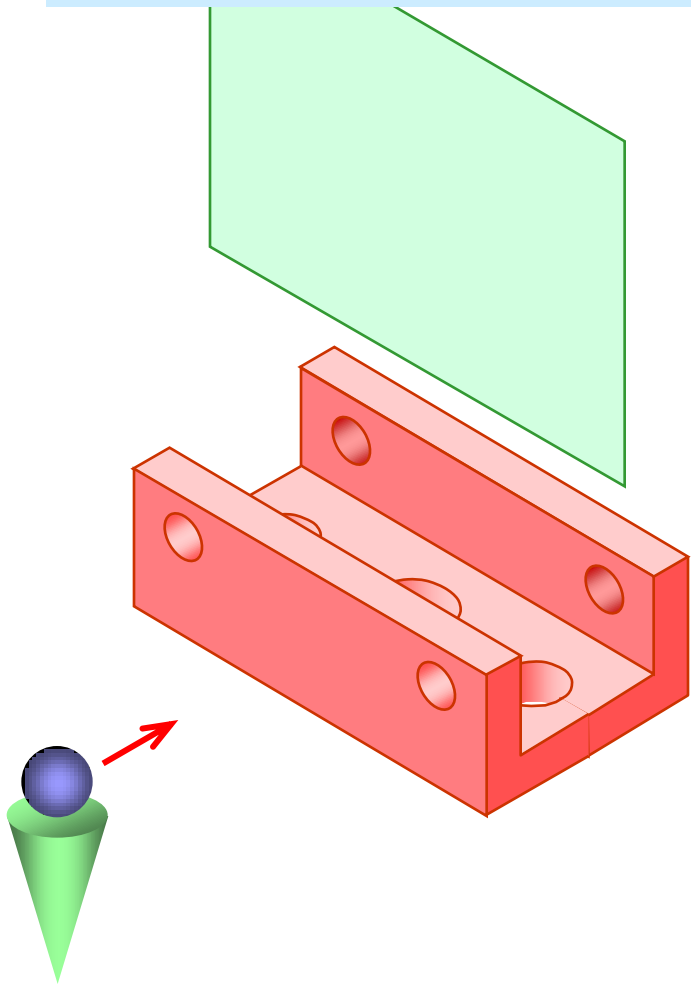


KINDS OF SECTIONS

1. Full section
2. Offset section
3. Half section
4. Broken-out section (Located section)
5. Revolved section (Aligned section)
6. Removed section (Detailed section)

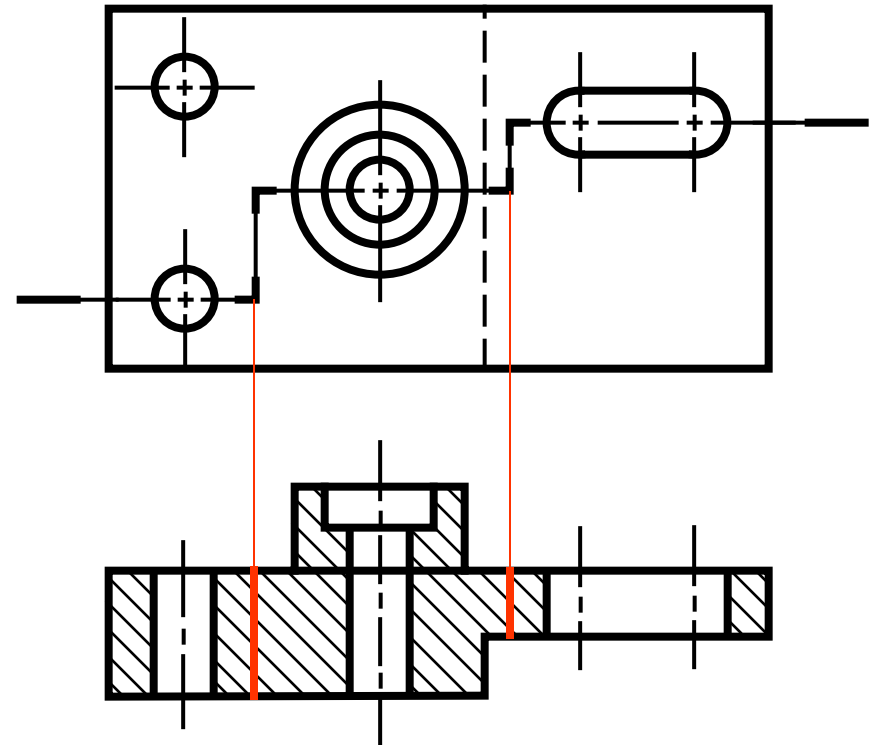
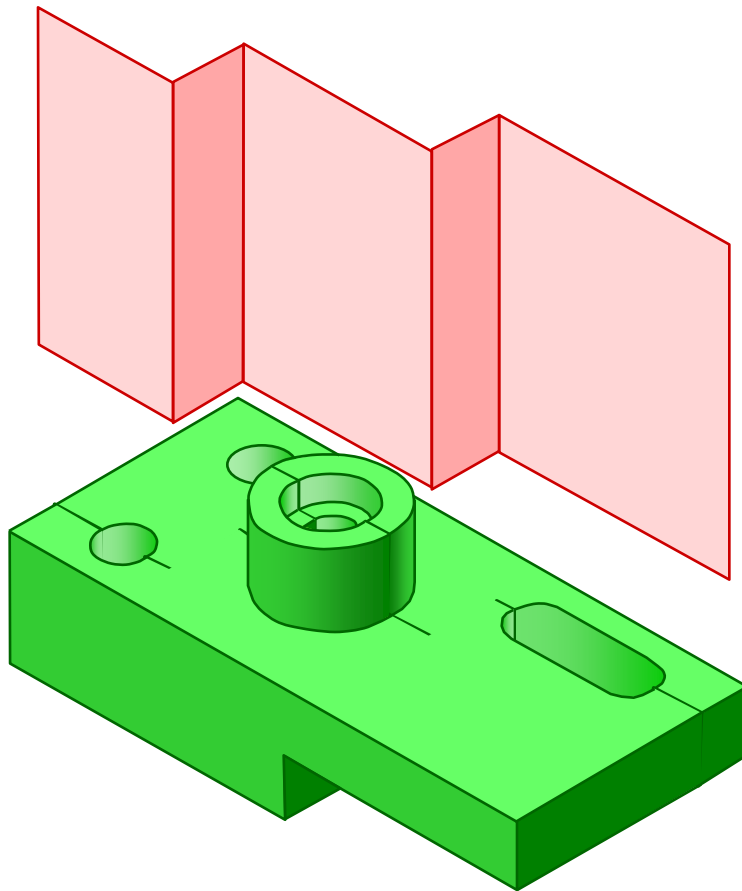
FULL SECTIONAL VIEW

The view is made by passing the *straight* cutting plane *completely through* the part.



OFFSET SECTION VIEW

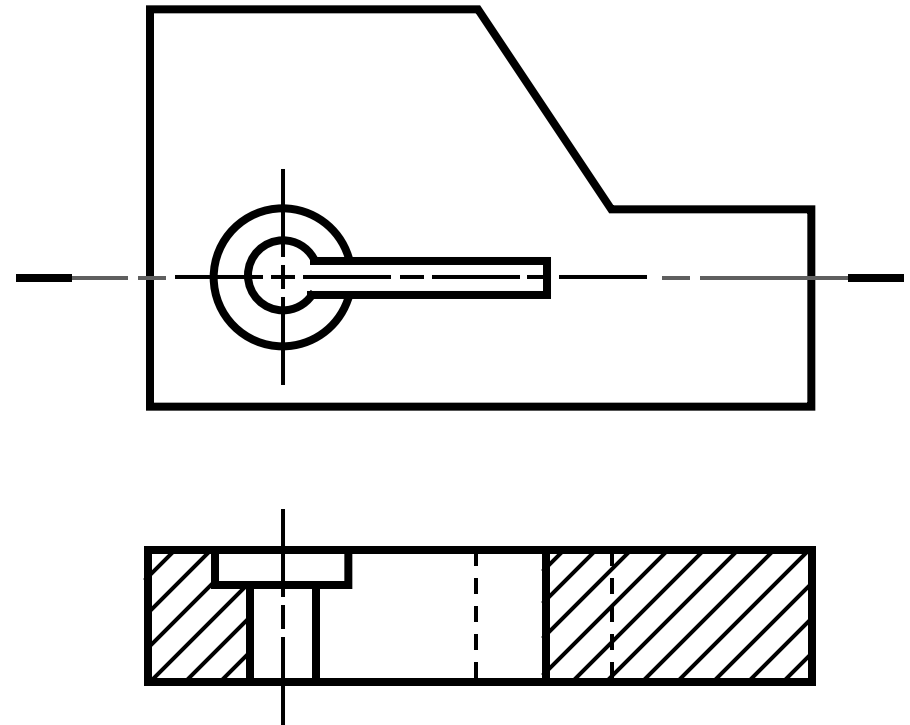
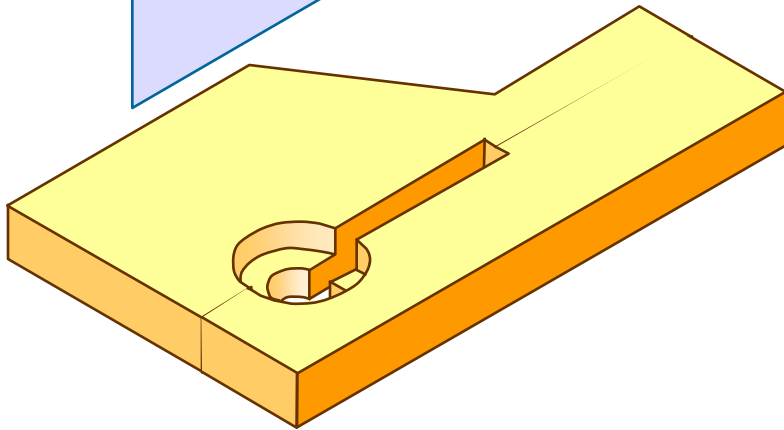
The view is made by passing the *bended* cutting plane *completely through* the part.



Do not show the edge views of the cutting plane.

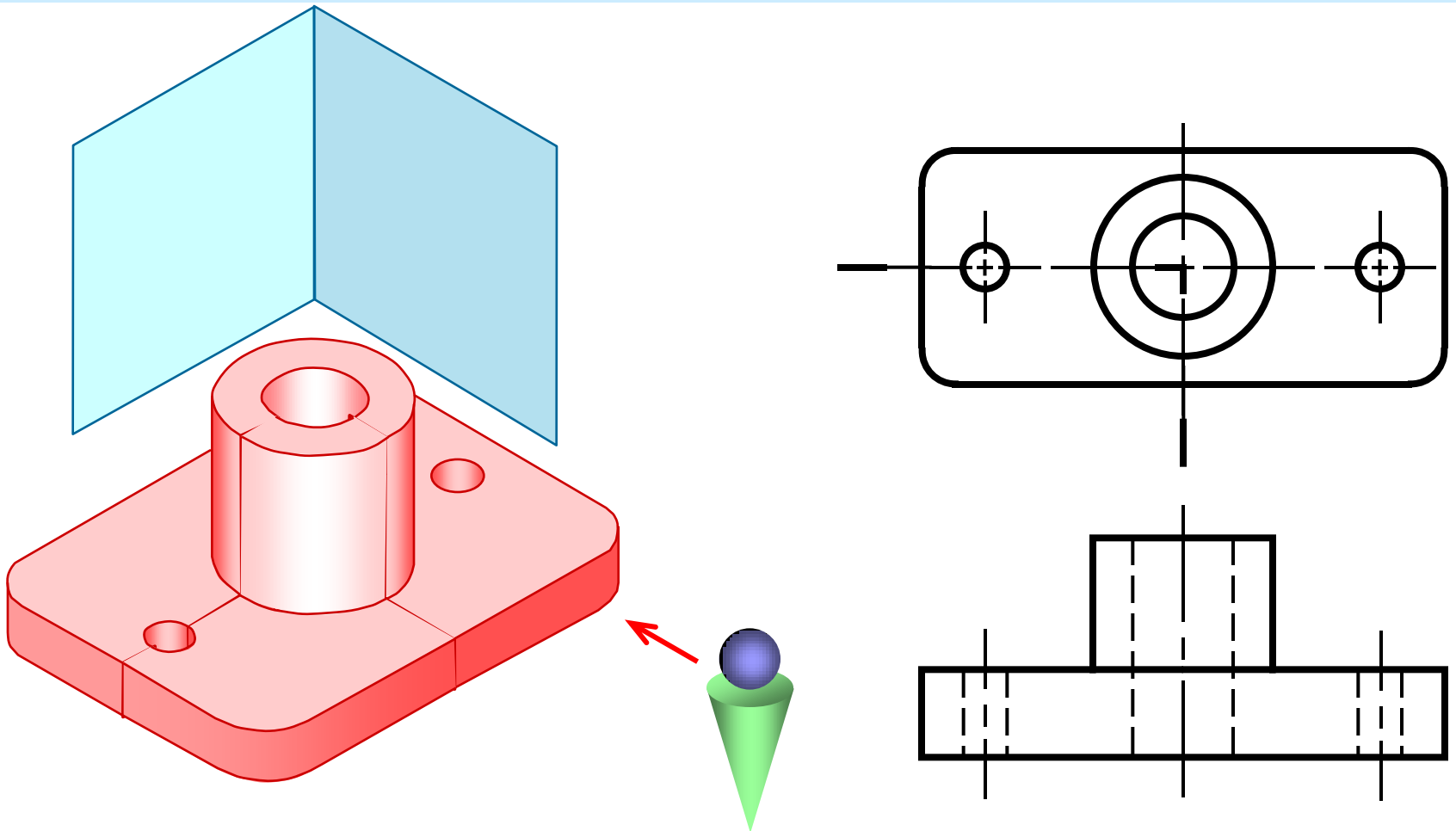
TREATMENT OF HIDDEN LINES

- Hidden lines are *normally omitted* from section views.



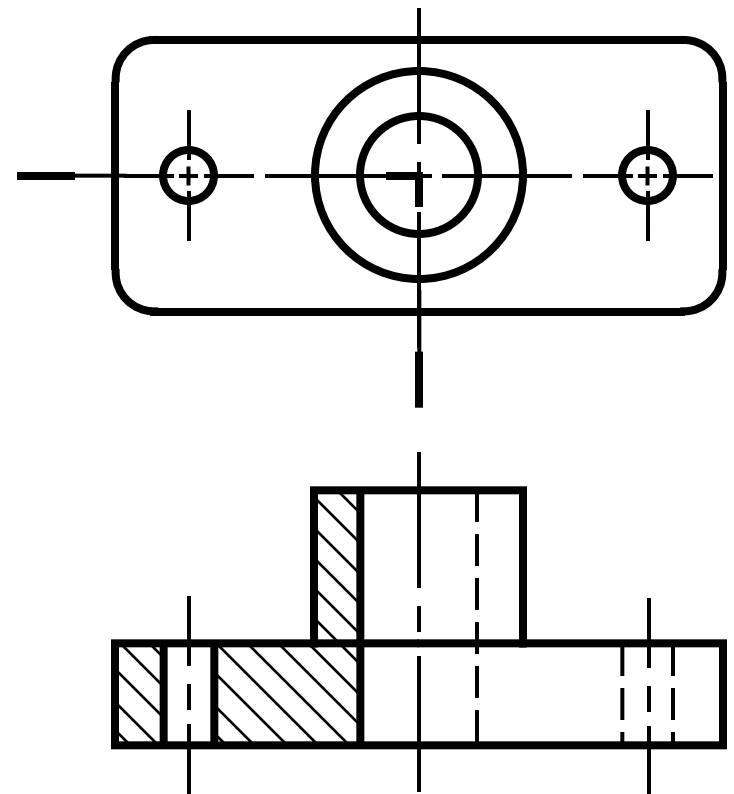
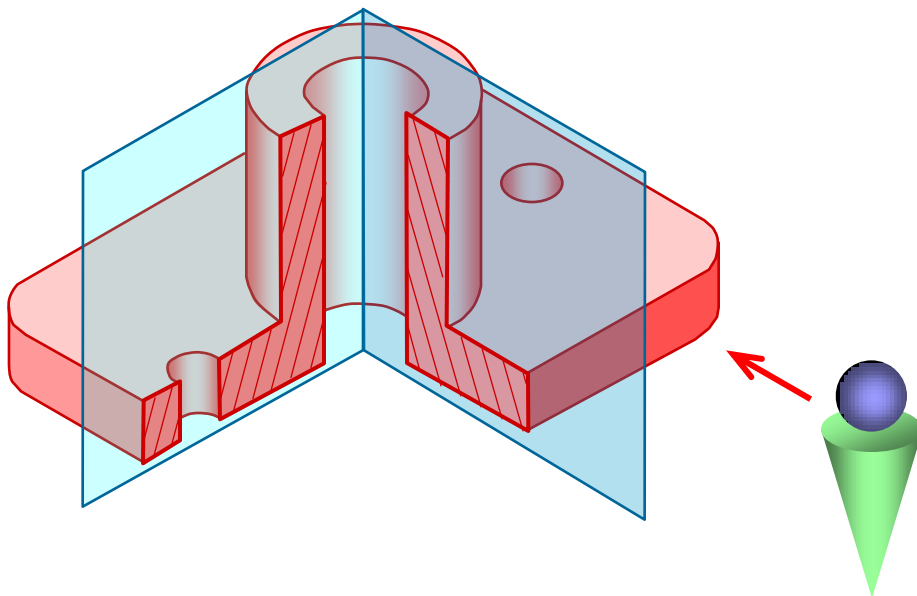
HALF SECTION VIEW

The view is made by passing the cutting plane *halfway* through an object and remove a *quarter* of it.



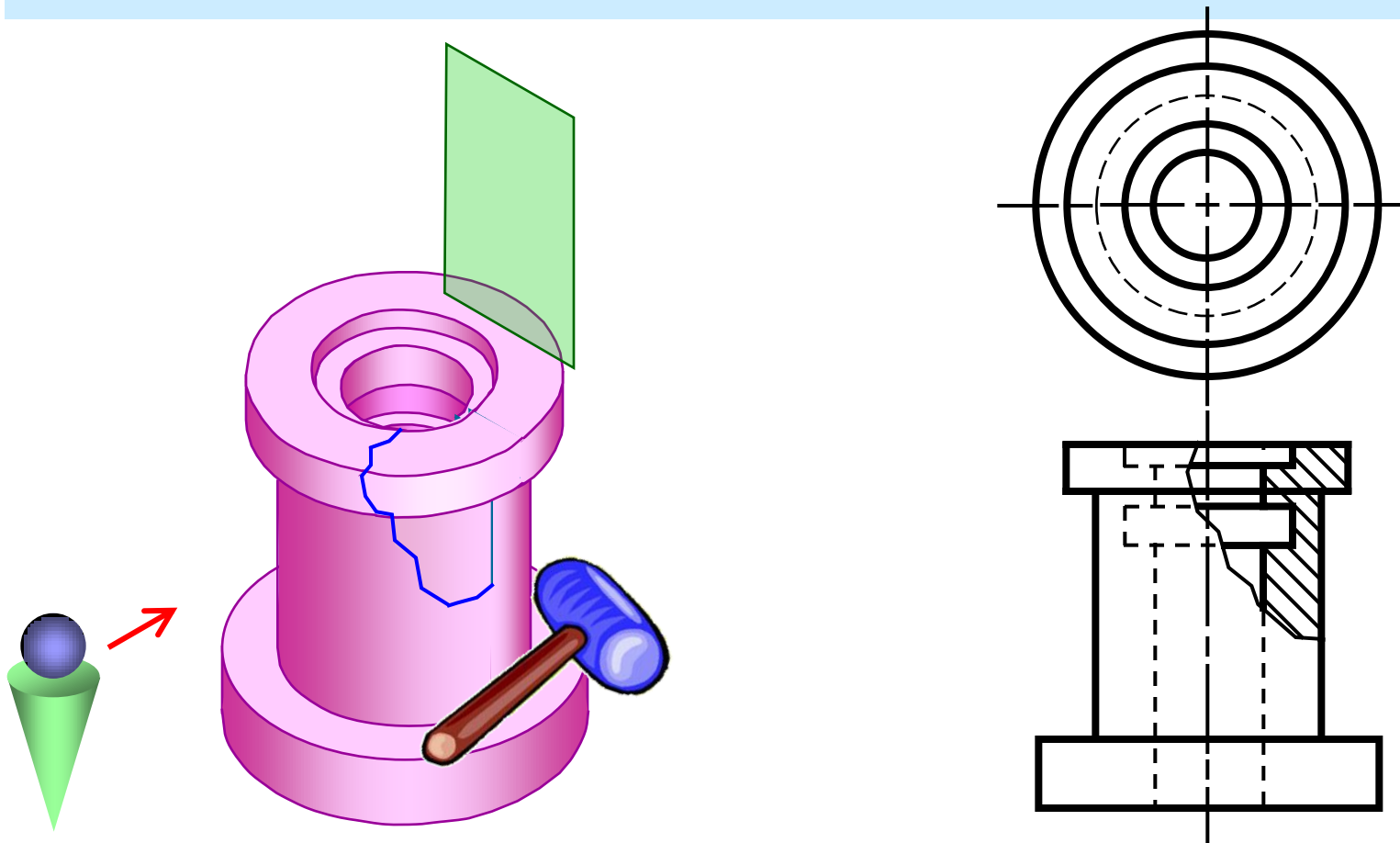
HALF SECTION VIEW

- A **center line** is used to separate the sectioned half from the unsectioned half of the view.
- **Hidden line** is omitted in unsection half of the view.



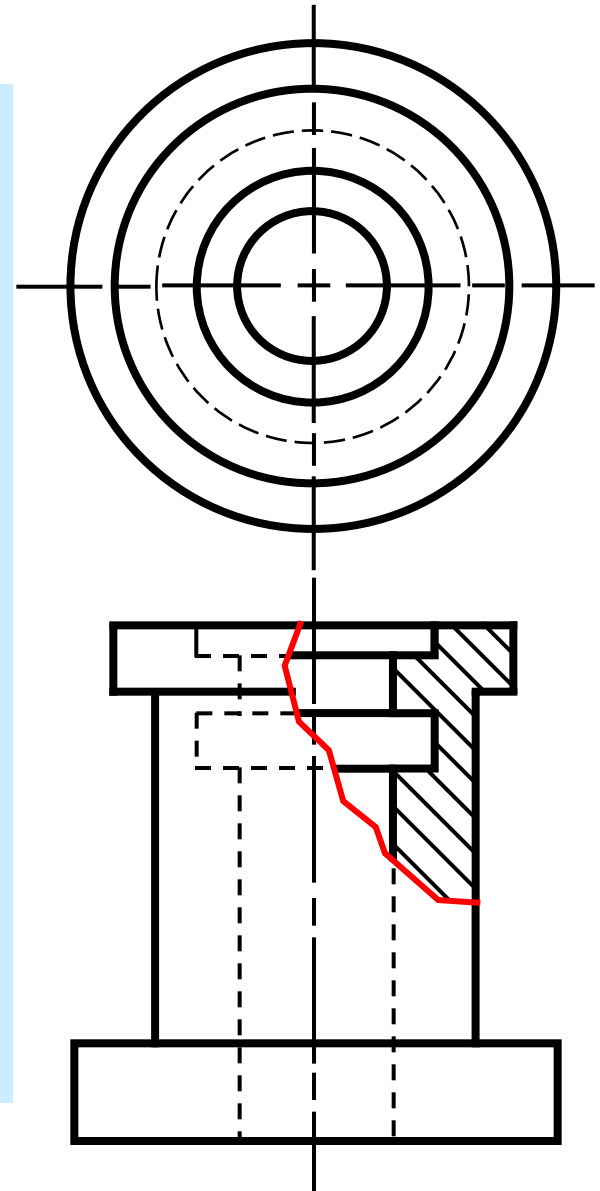
BROKEN-OUT SECTION VIEW

The view is made by passing the cutting plane normal to the viewing direction and removing the portion of an object in front of it.

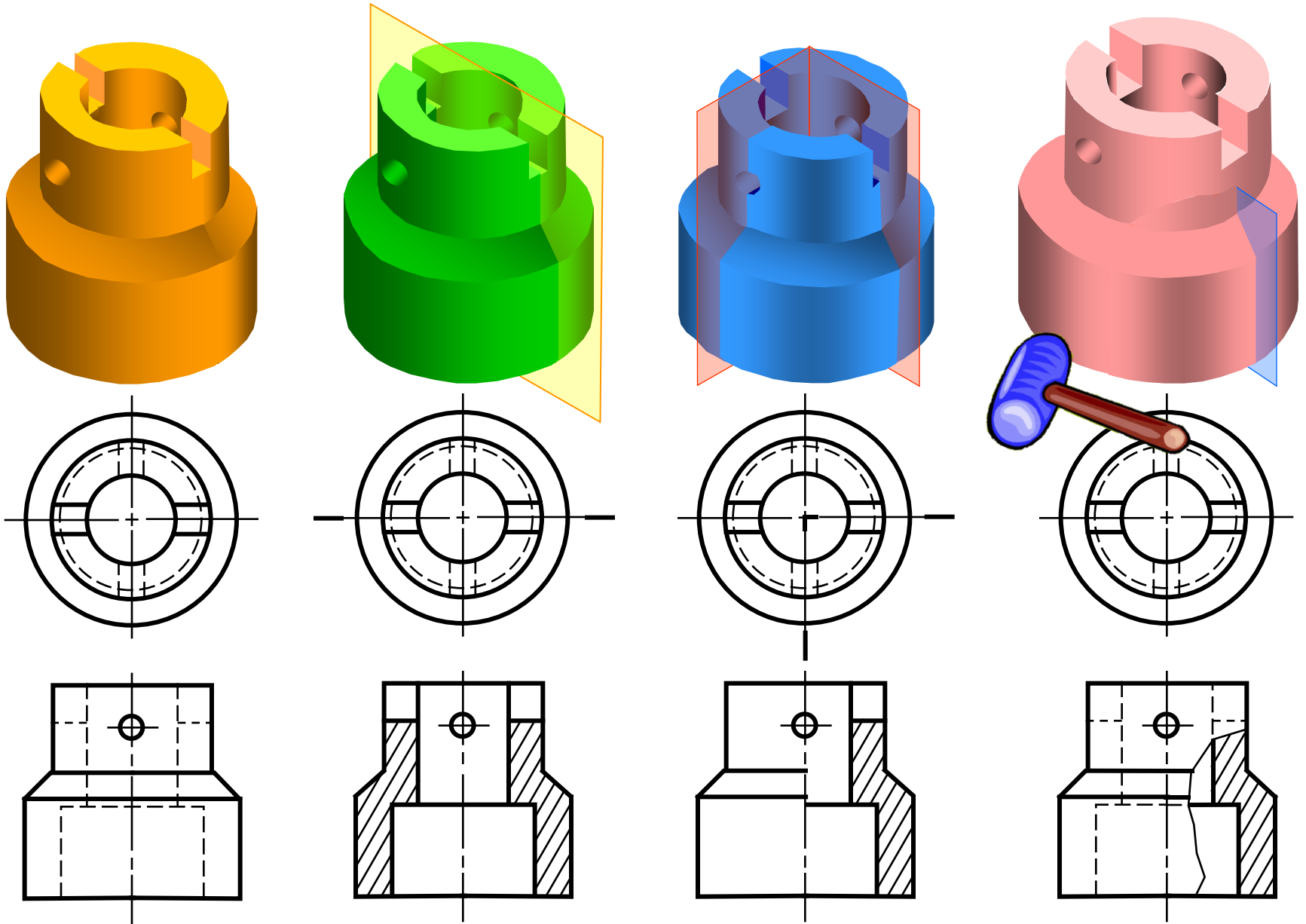


BROKEN-OUT SECTION VIEW

- A **break line** is used to separate the sectioned portion from the unsectioned portion of the view.
- Break line is a thin continuous line (**3H**) and is drawn freehand.
- There is **no** cutting plane line.



EXAMPLE : Comparison among several section techniques

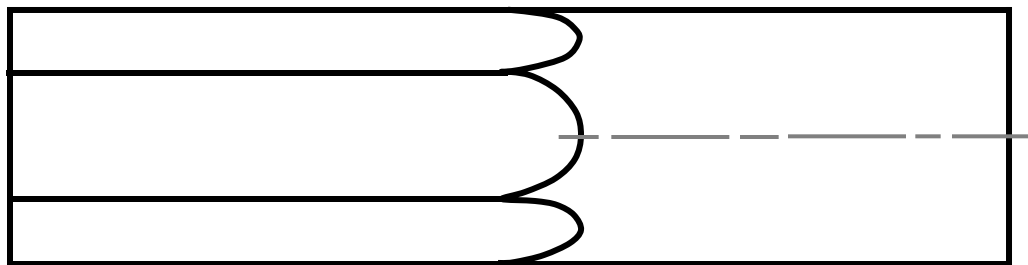
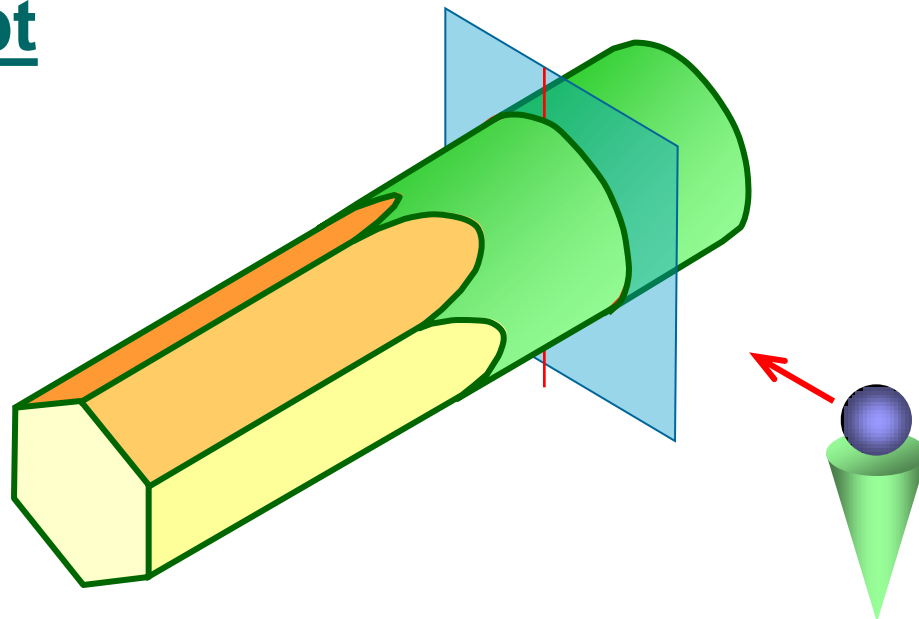


REVOLVED SECTION VIEW

- Revolved sections *show cross-sectional features* of a part.
- No need for additional orthographic views.
- This section is especially helpful when a cross-section varies.

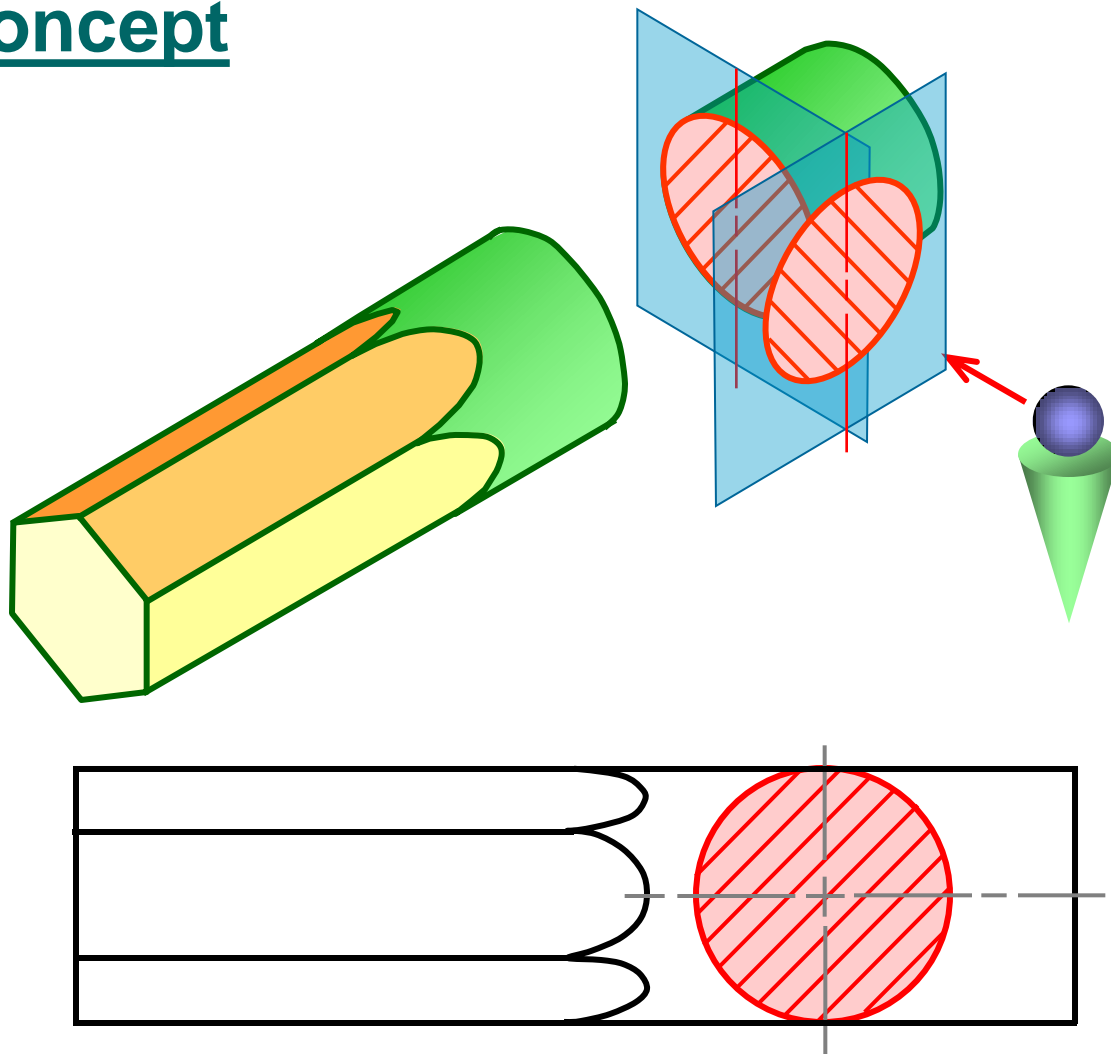
REVOLVED SECTION VIEW

Basic concept



REVOLVED SECTION VIEW

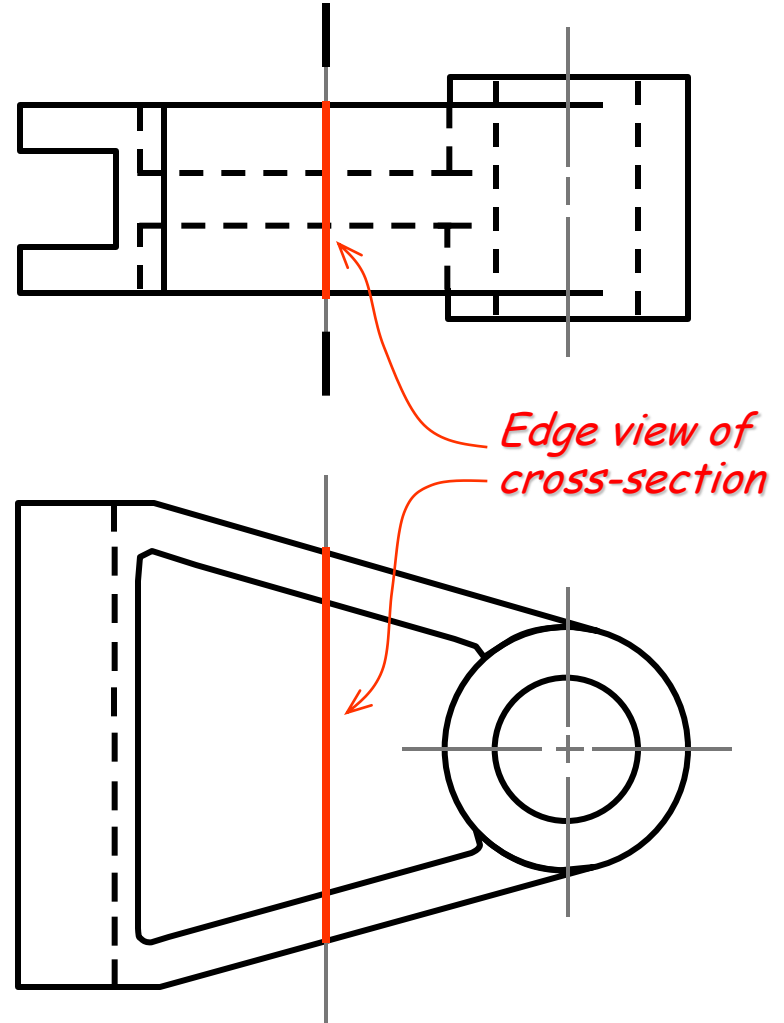
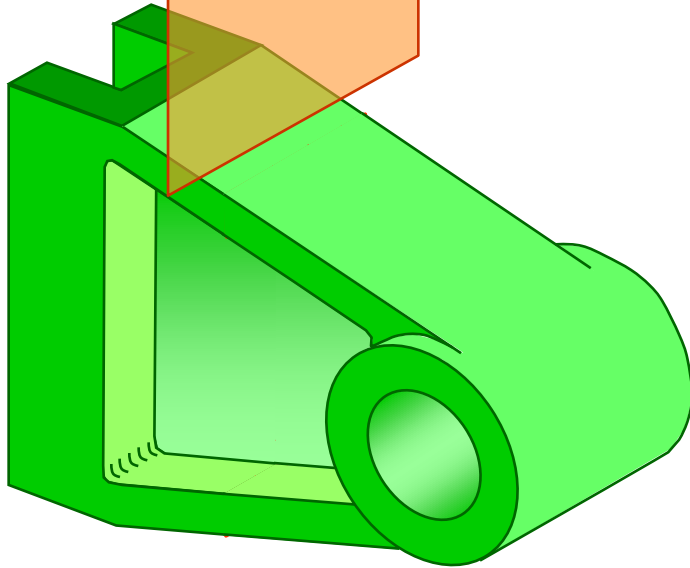
Basic concept



REVOLVED SECTION VIEW

Steps in construction

Given



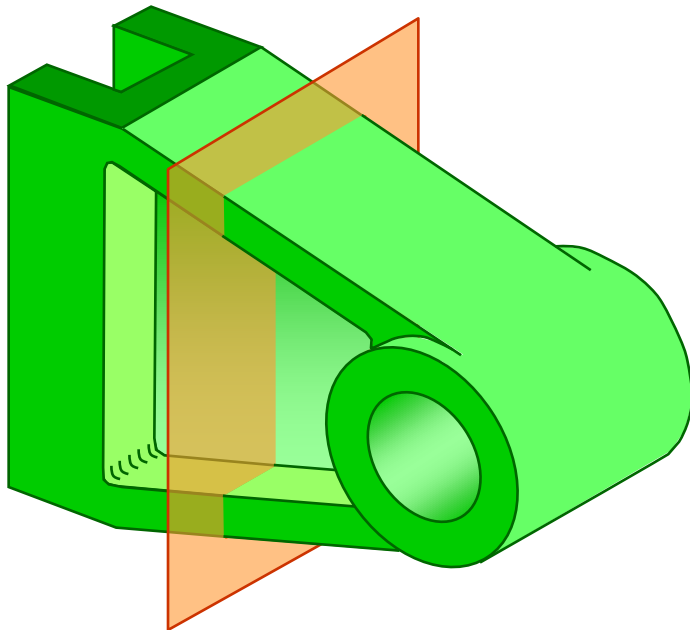
Step 1

- Assign position of cutting plane.
- Draw axis of rotation in front view.

REVOLVED SECTION VIEW

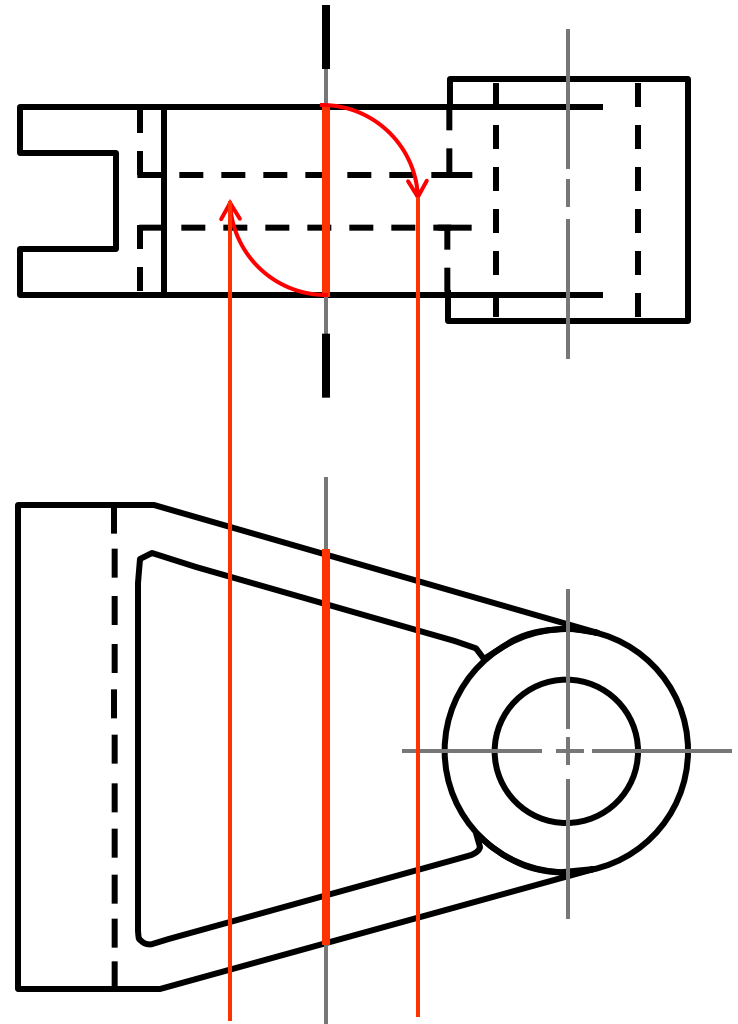
Steps in construction

Given



Step 2

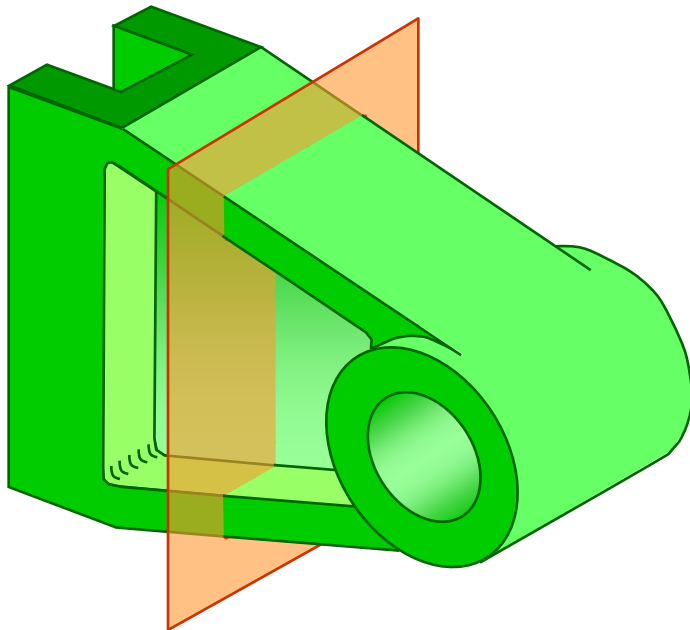
- a. Transfer the depth dimension to the front view.



REVOLVED SECTION VIEW

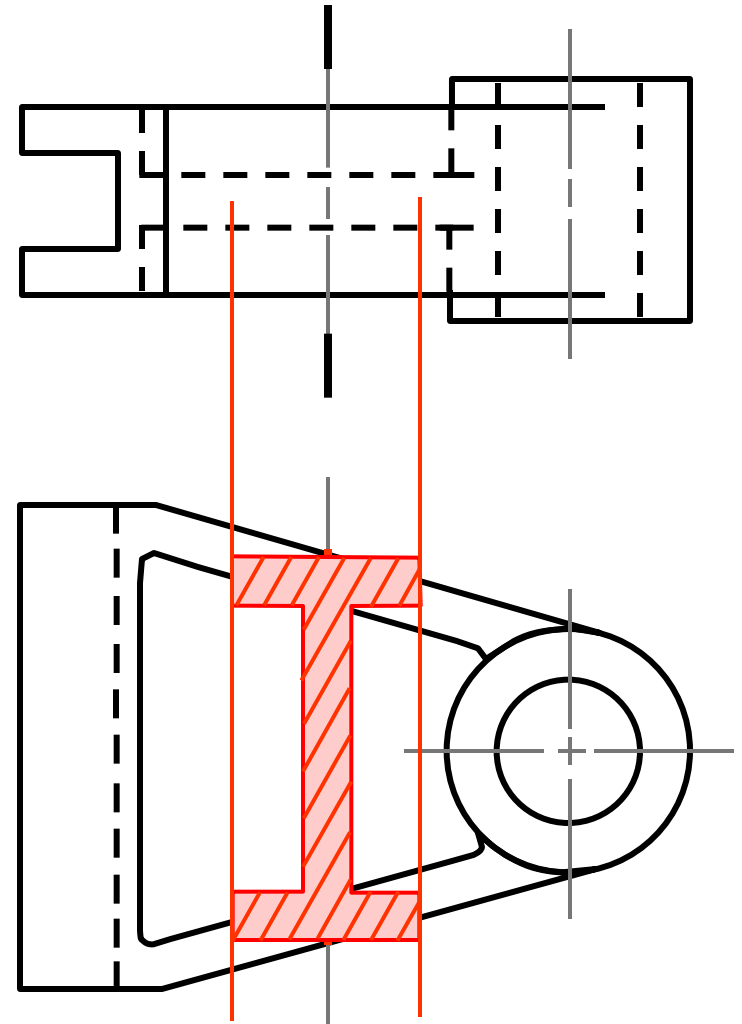
Steps in construction

Given



Step 3

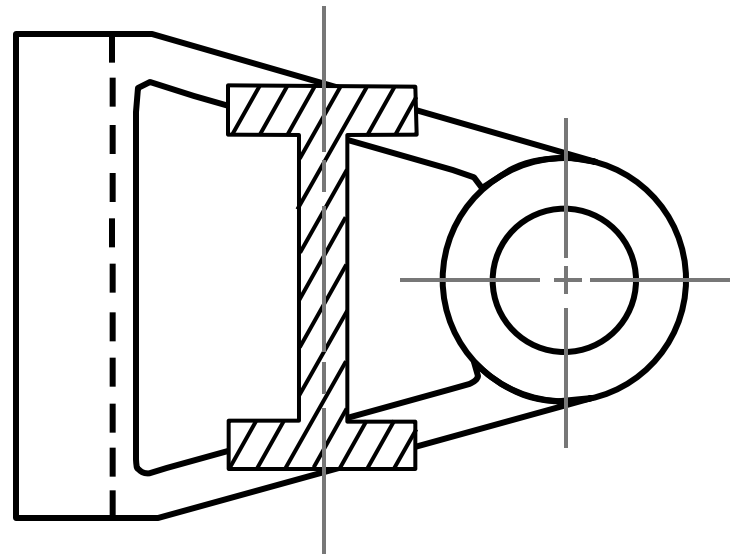
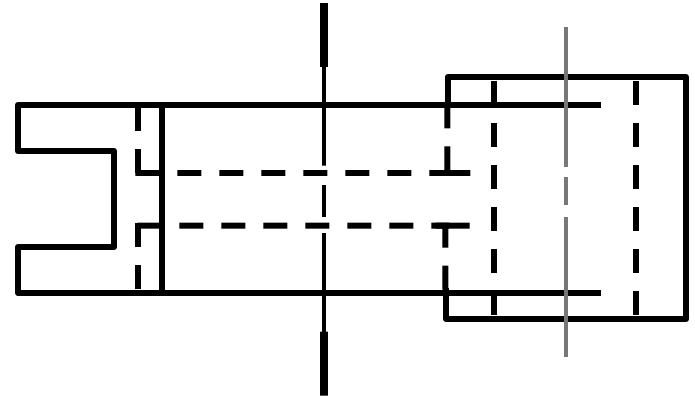
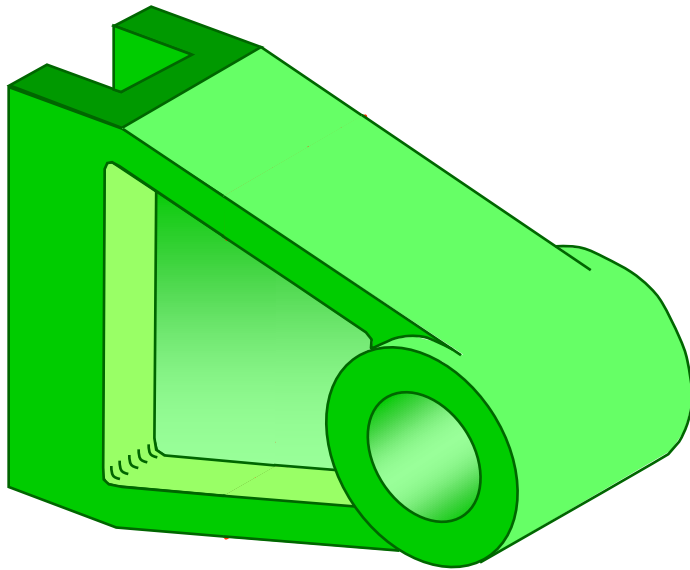
- Draw the revolved section.
- Add section lines.



REVOLVED SECTION VIEW

Steps in construction

Given

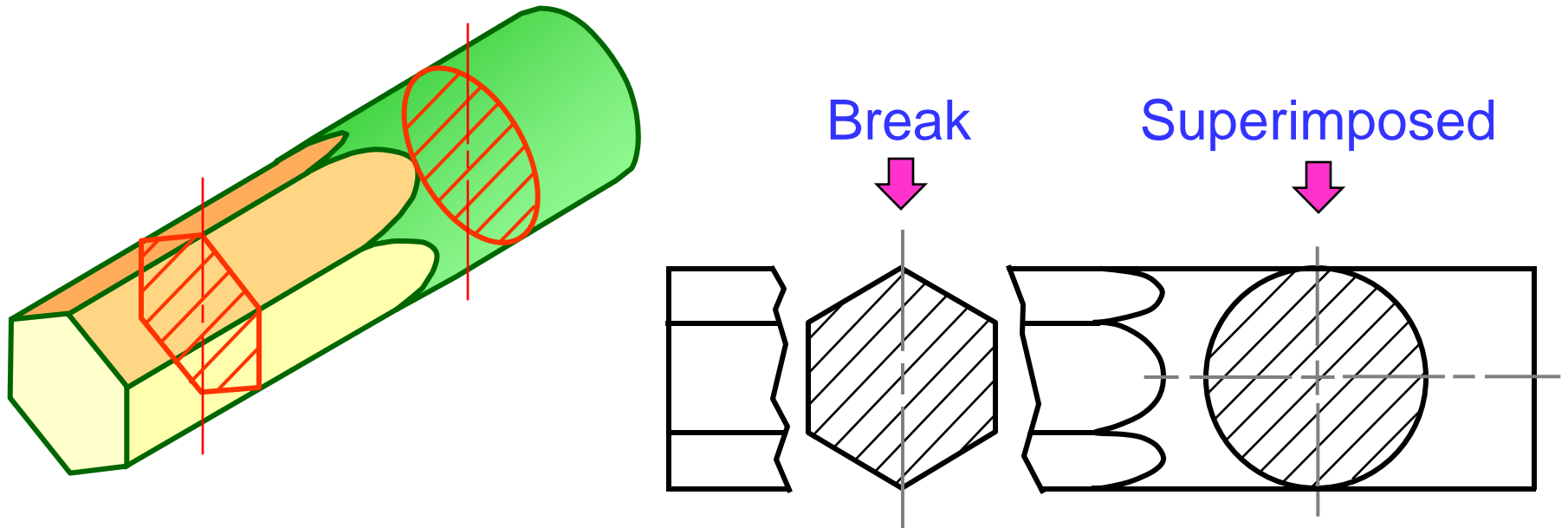


FINAL PICTURE

REVOLVED SECTION VIEW

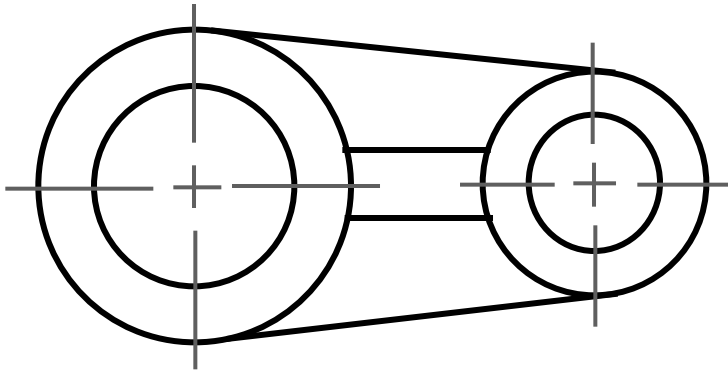
Placement of revolved section

1. Superimposed to orthographic view.
2. Break from orthographic view.

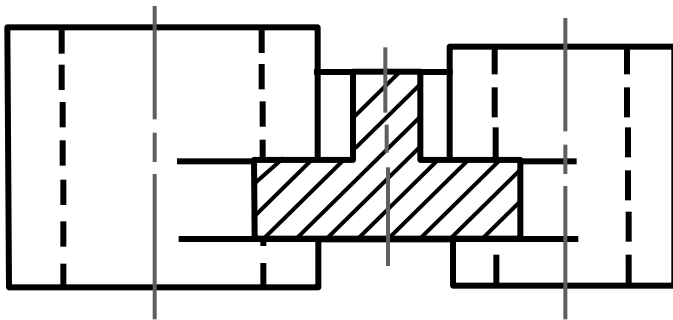


REMOVED SECTION VIEW

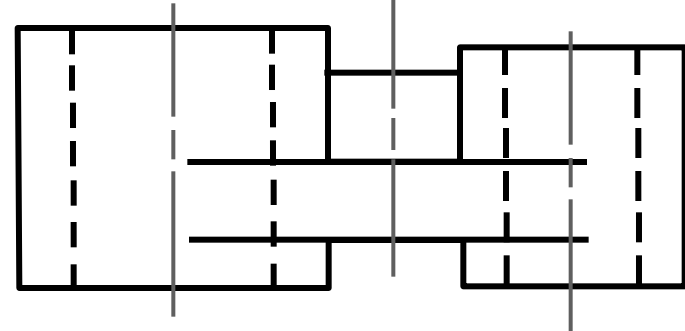
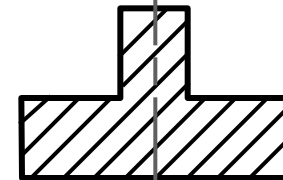
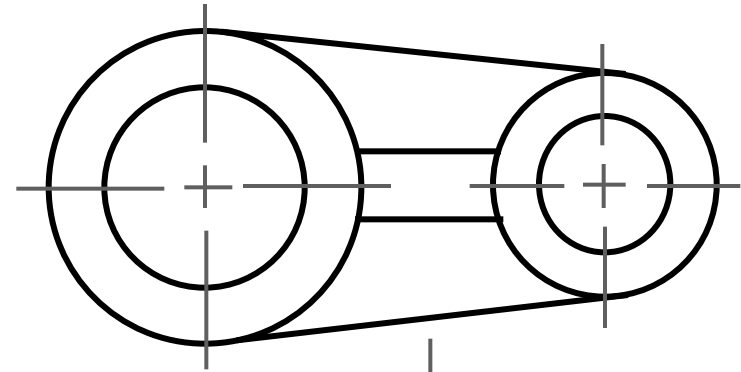
Poor



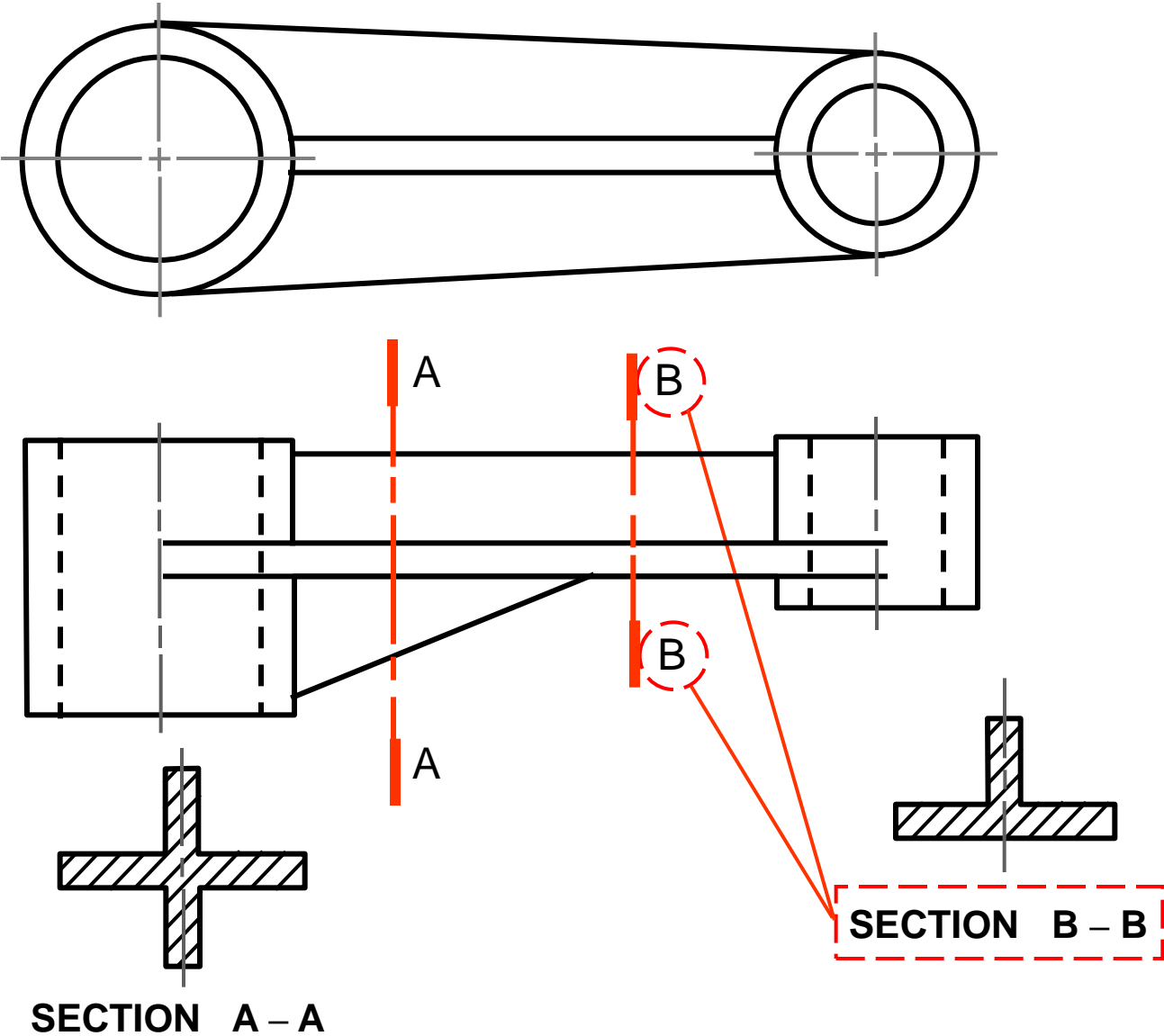
Too messy !!



Preferred



REMOVED SECTION VIEW

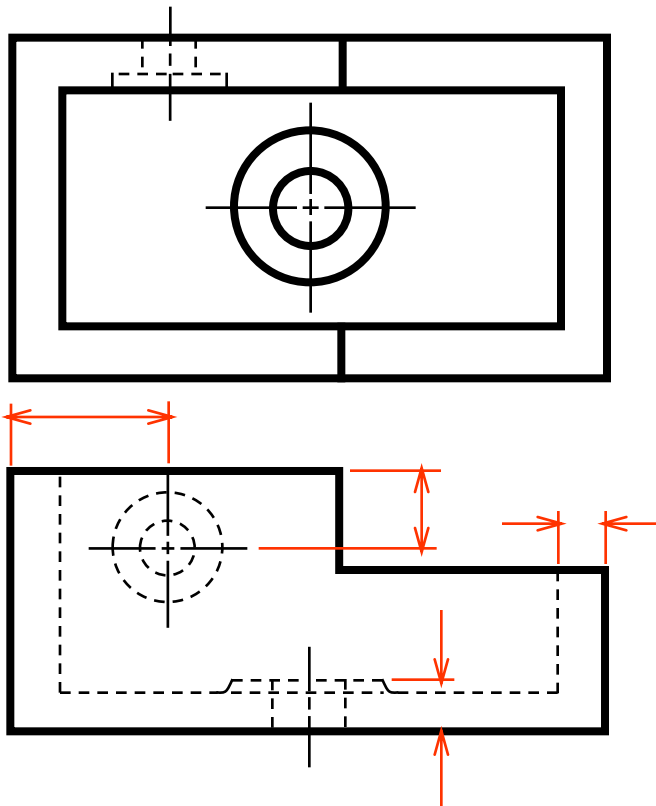


Dimensioning in Section View

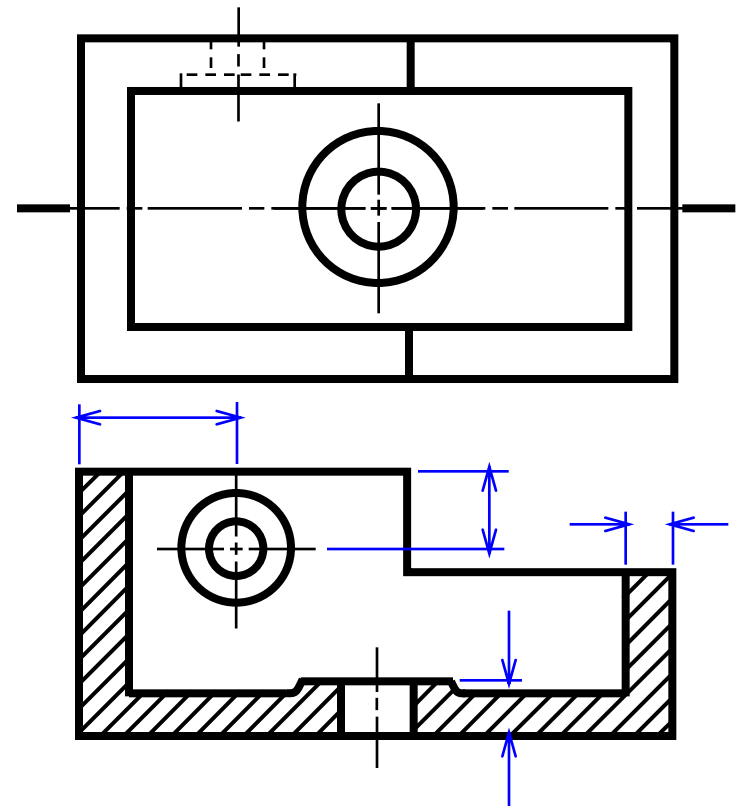


- In most cases, dimensioning of the section views follows the typical rules of dimensioning.

POOR

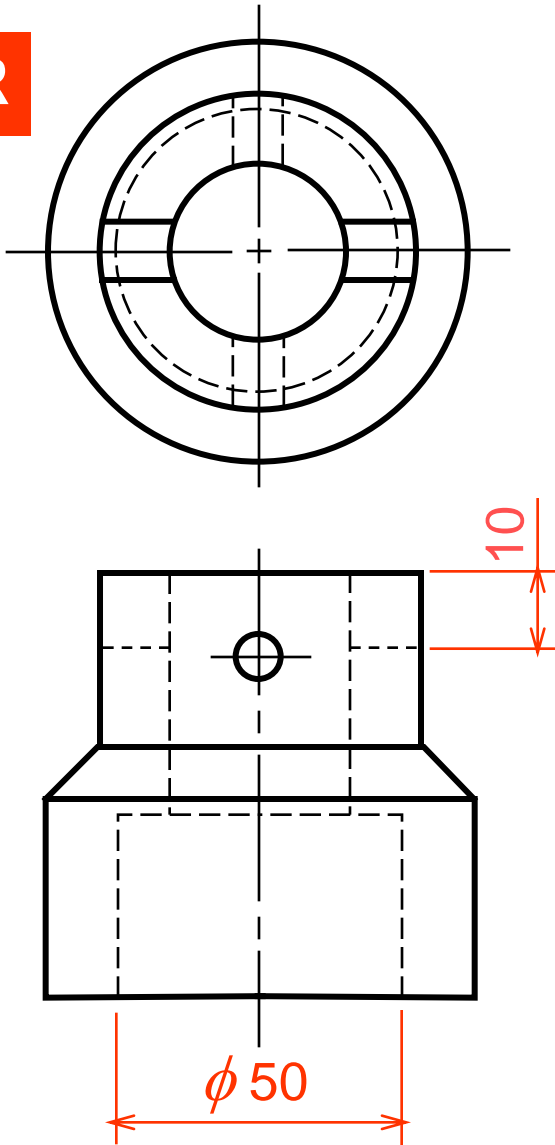


GOOD

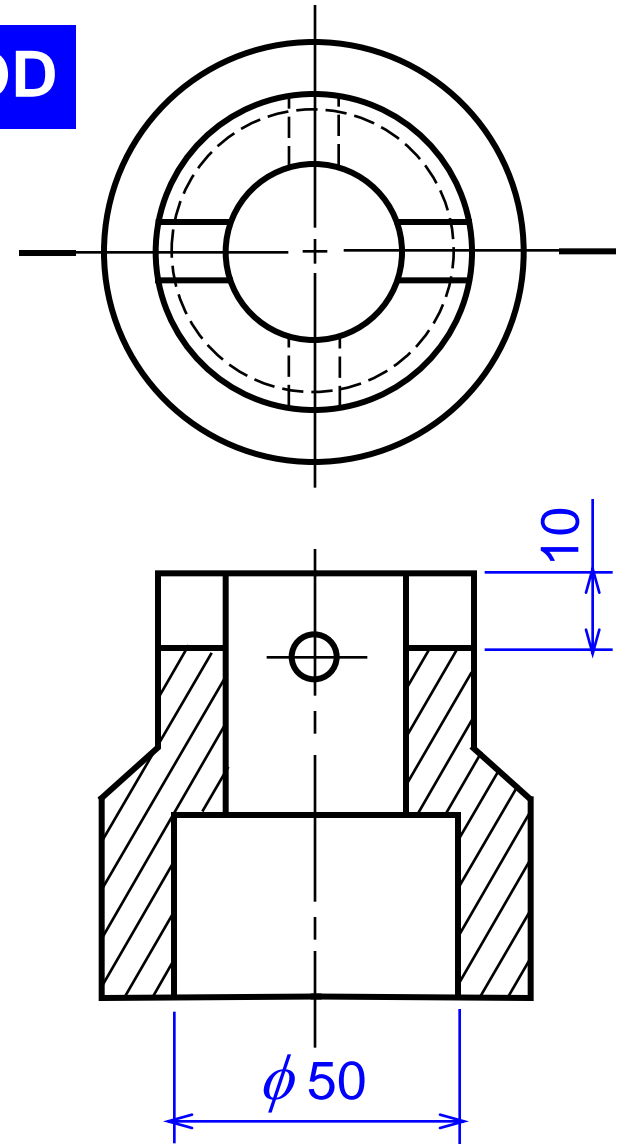


DIMENSIONING

POOR

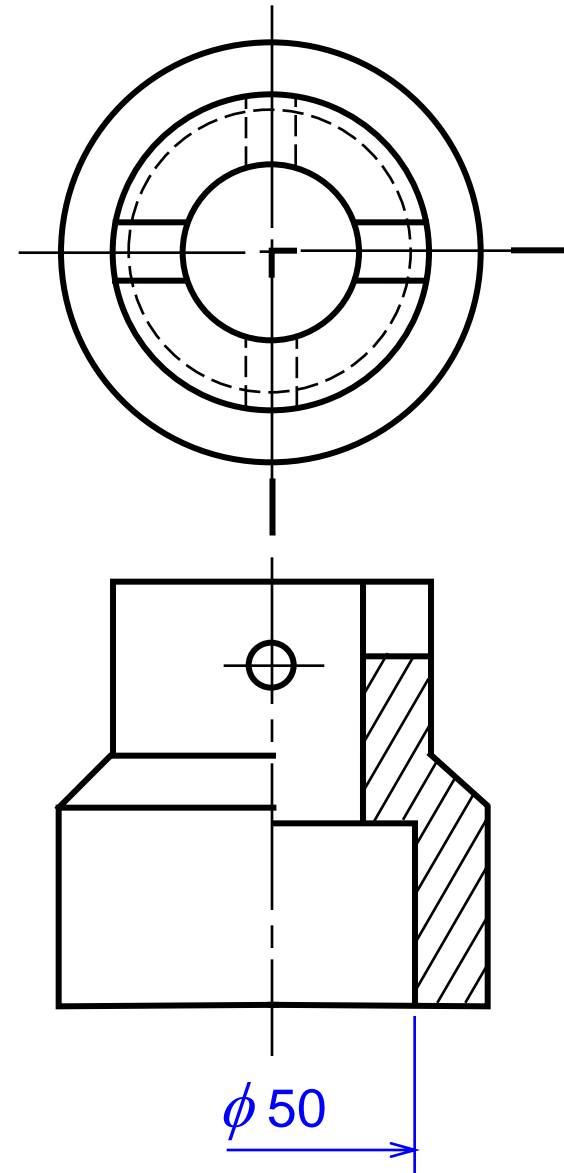



GOOD



DIMENSIONING

- For a half-section view, use dimension line with only one arrowhead that points to the position inside the sectioned portion.





END