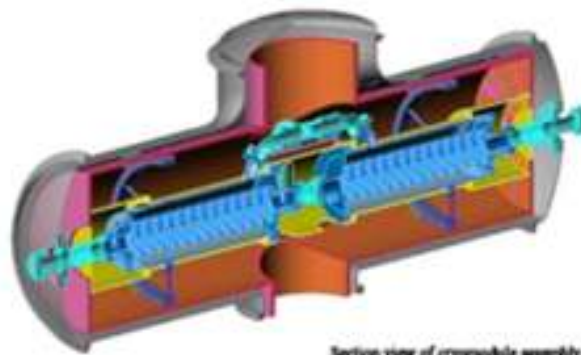


# Chapter 8

## Section Views



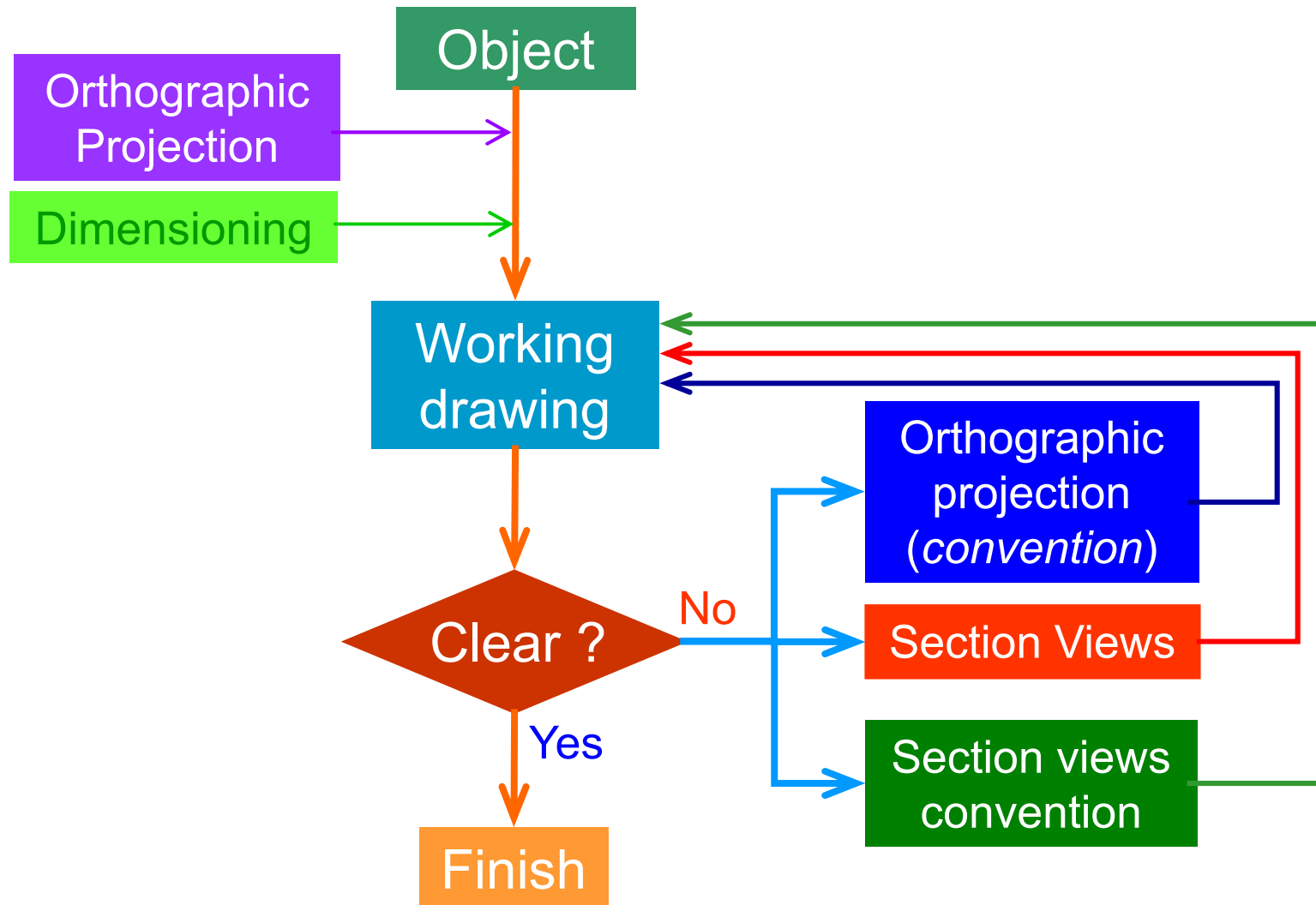
# TOPICS

- Introduction
- Terminology & common practices
- Kind of sections
- Dimensioning

# *Introduction*



# GRAPHICS COMMUNICATION WITH ENGINEERING DRAWING

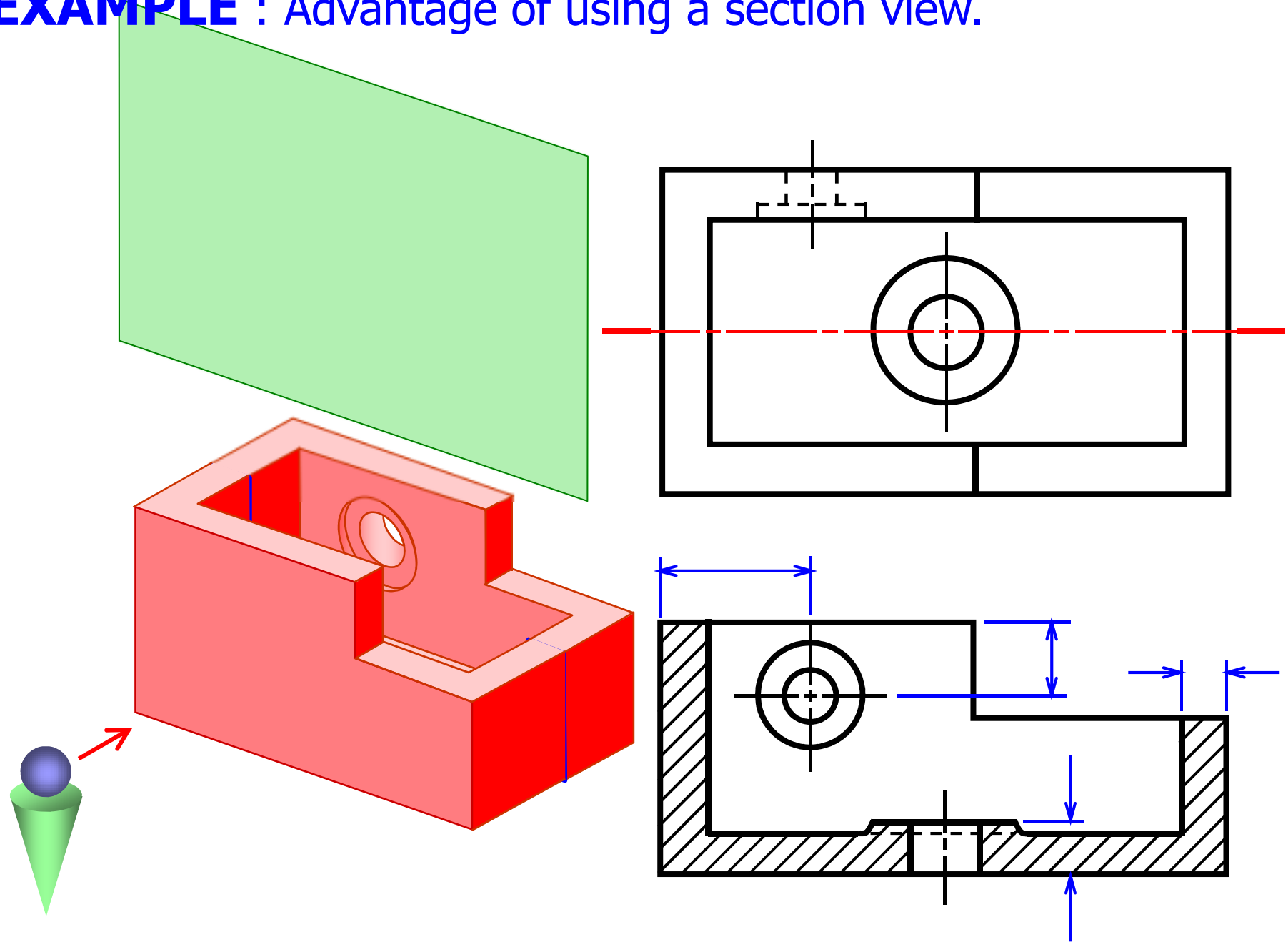


# PURPOSES OF SECTION VIEWS

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

*Let See the example*

**EXAMPLE** : Advantage of using a section view.

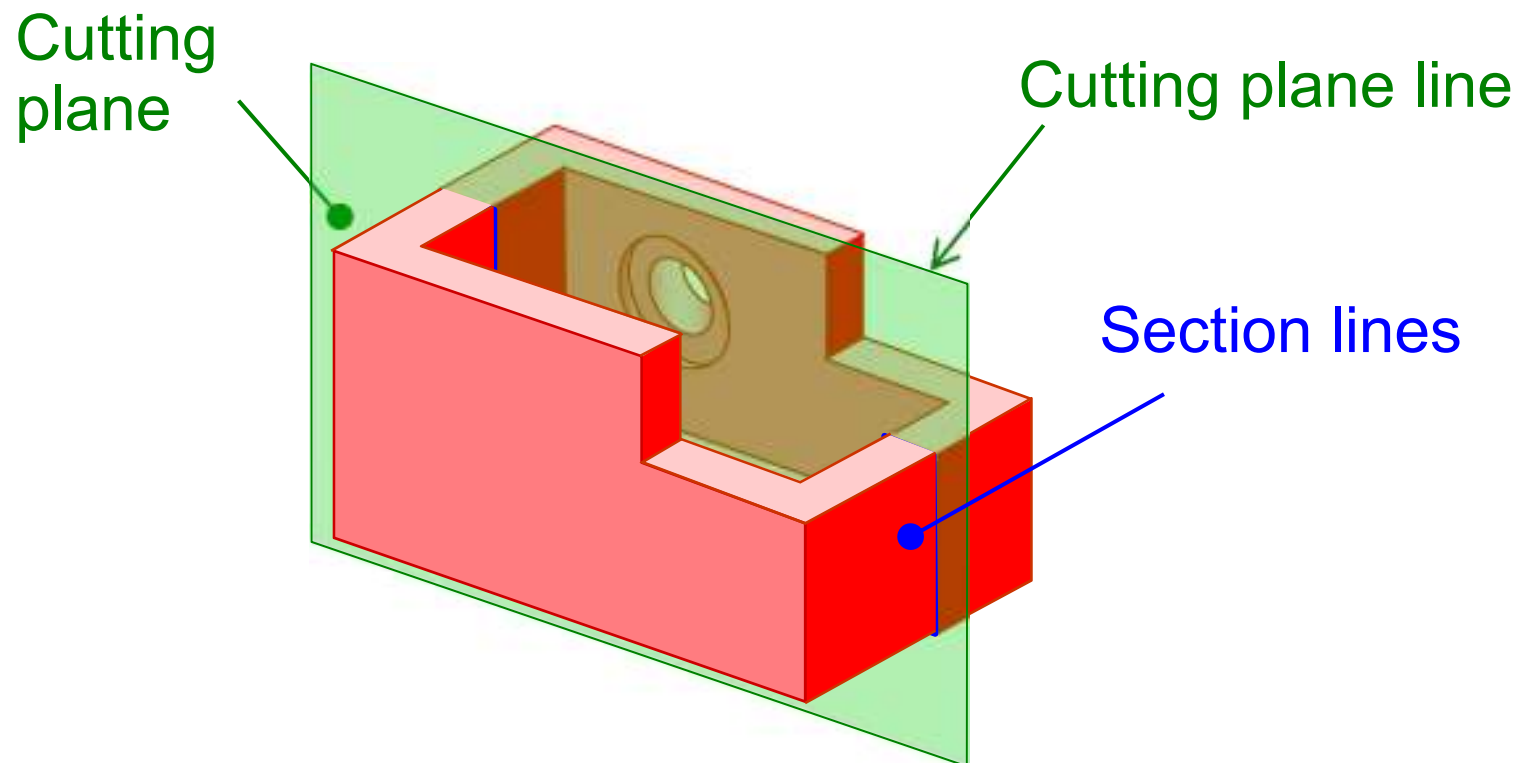


# *Terminology and common practices*



# CUTTING PLANE

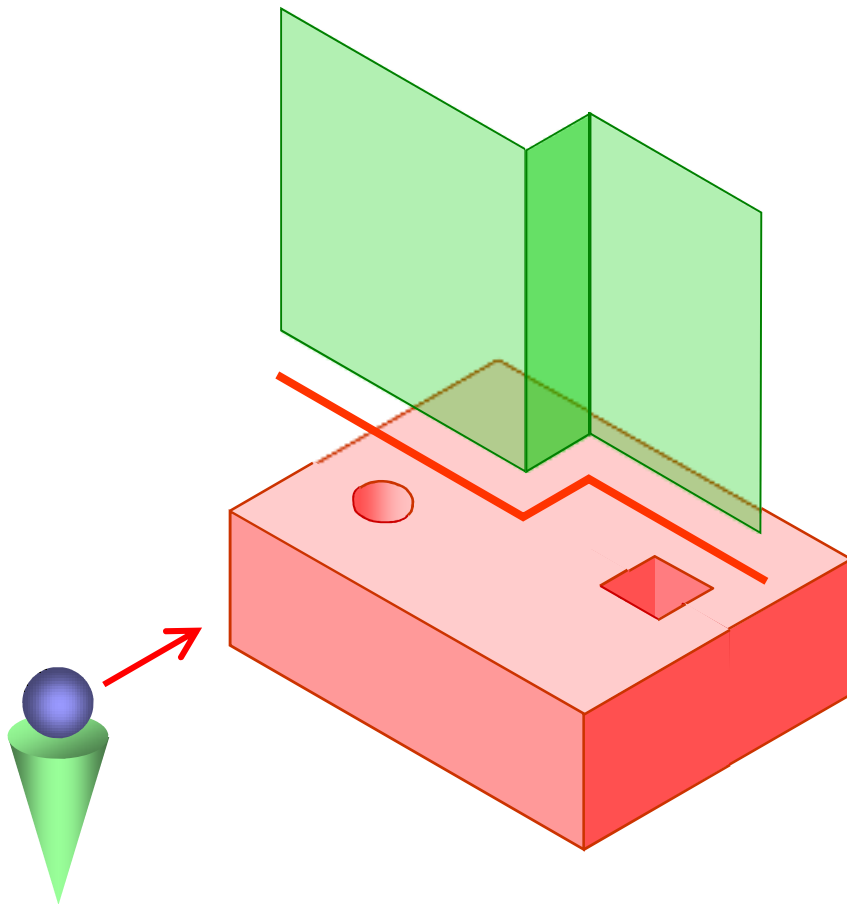
***Cutting plane*** is a plane that ***imaginarily cuts*** the object to reveal the internal features.



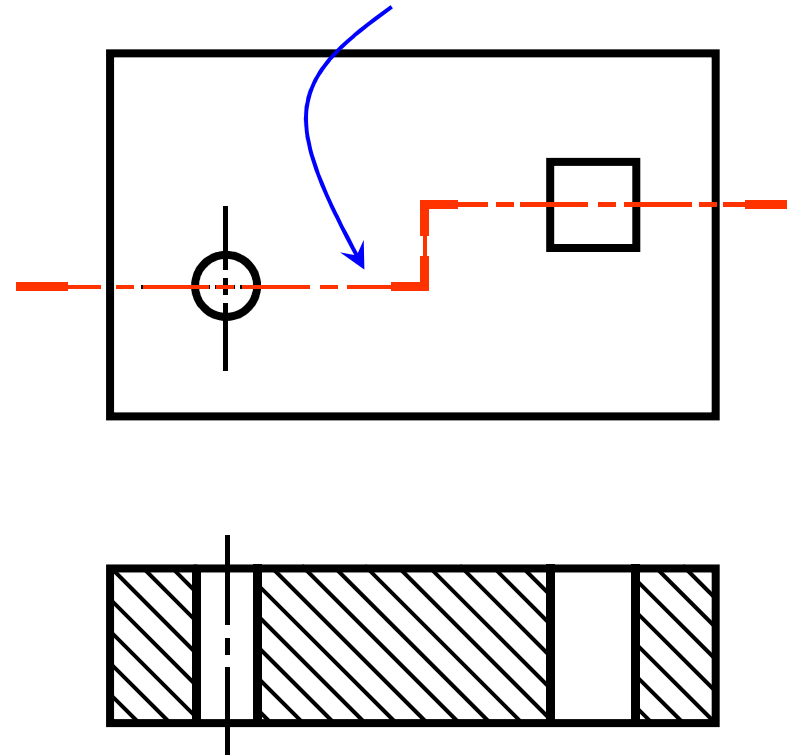


# CUTTING PLANE LINE

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

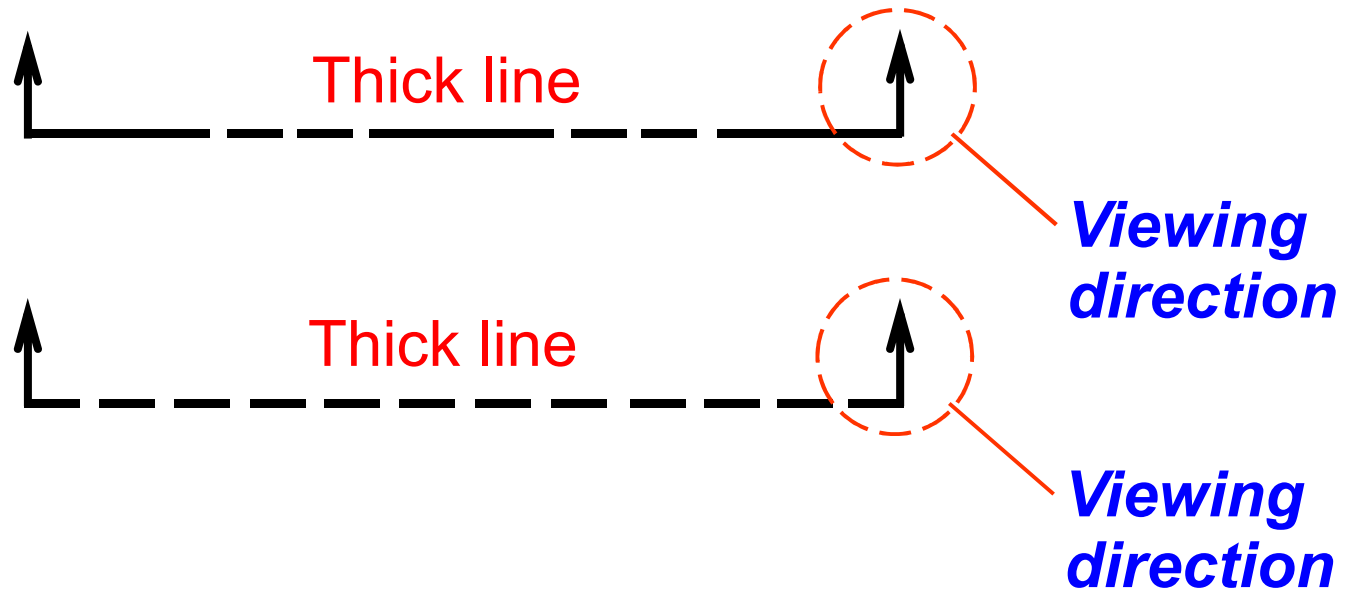


Indicate the *path* of cutting plane.

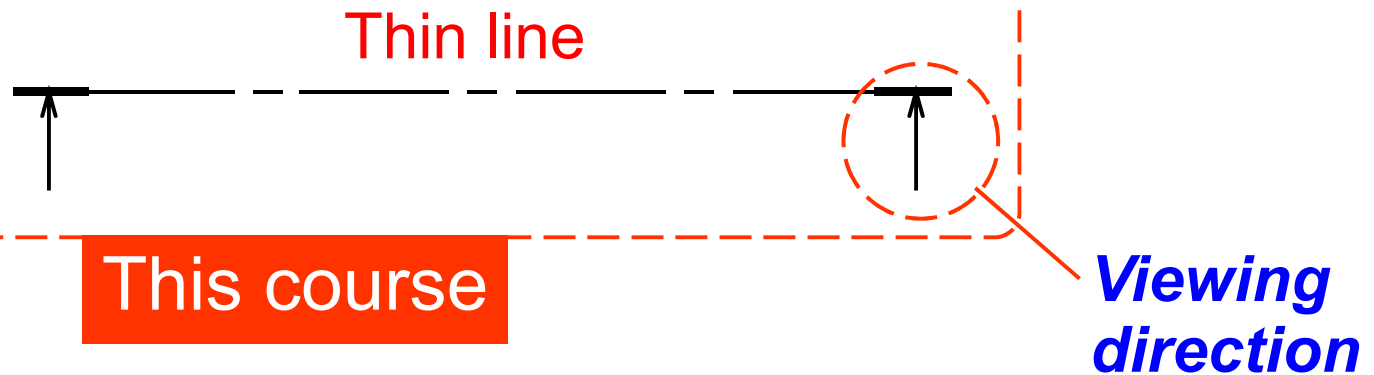


# CUTTING PLANE LIFESTYLES

ANSI  
standard

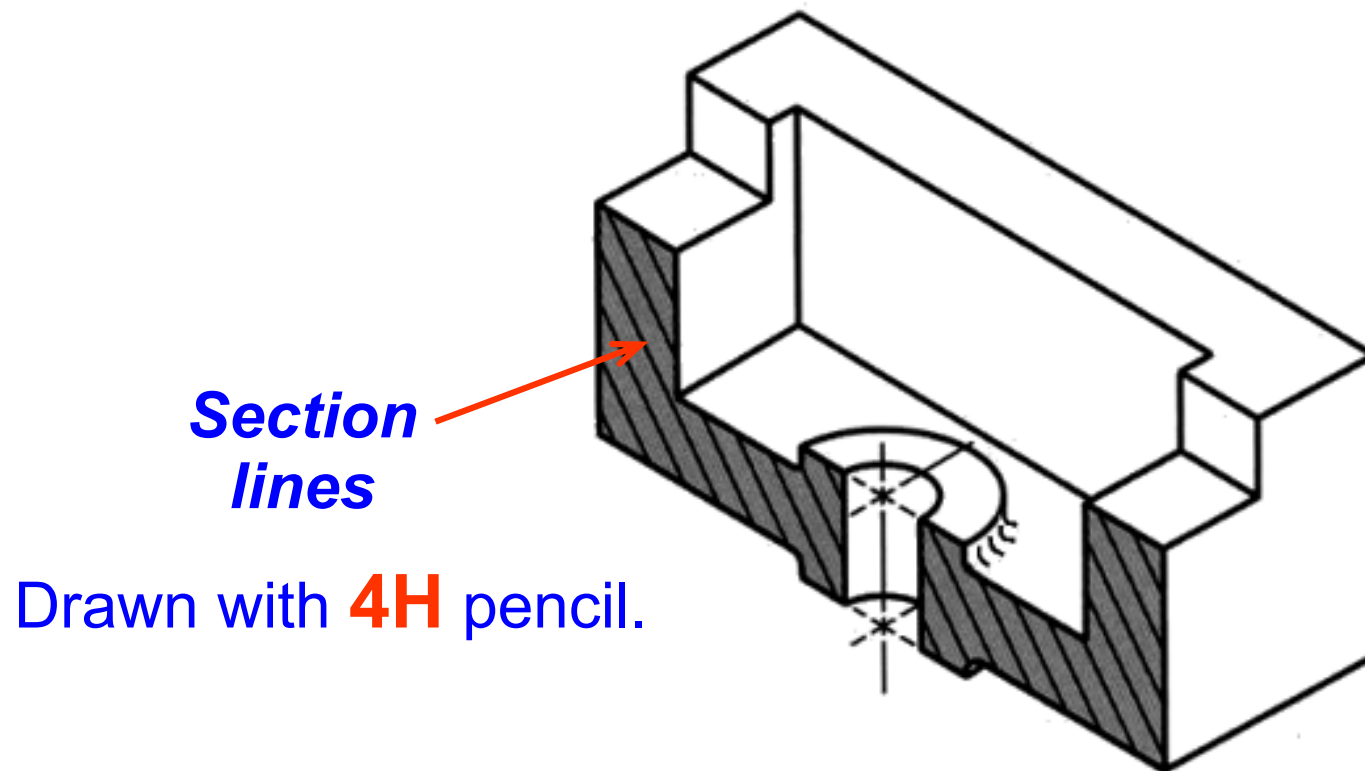


JIS & ISO  
standard



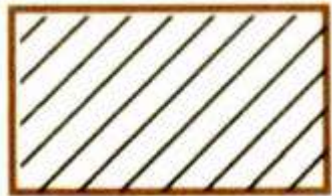
# SECTION LINING

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

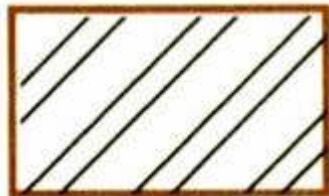


# SECTION LINES SYMBOLS

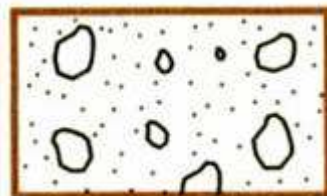
- The section lines are different for each of material's type.
- For practical purpose, the cast iron symbol is used most often for any materials.



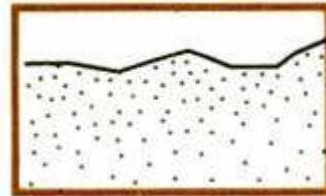
Cast iron,  
Malleable iron



Steel



Concrete



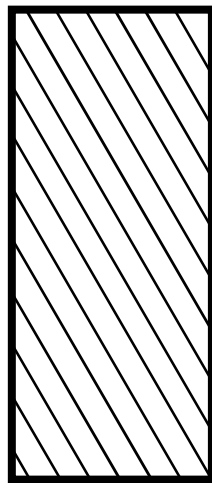
Sand



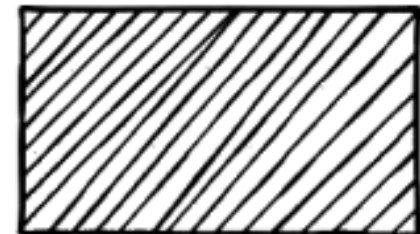
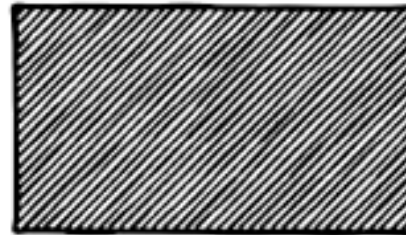
Wood

# SECTION LINING PRACTICE

- The spaces between lines may vary from 1.5 mm for small sections to 3 mm for large sections.



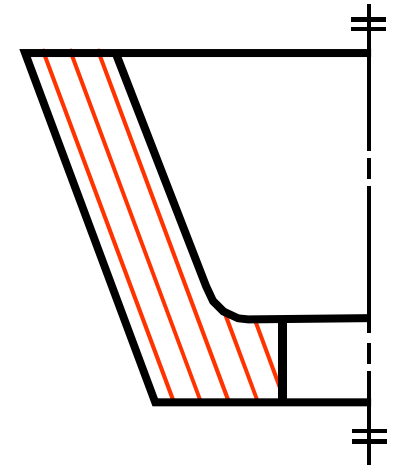
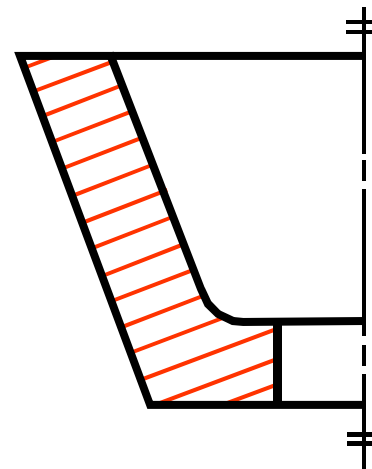
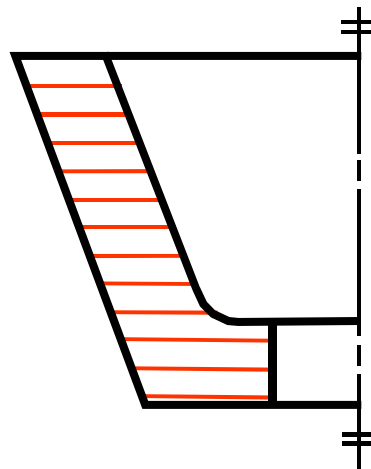
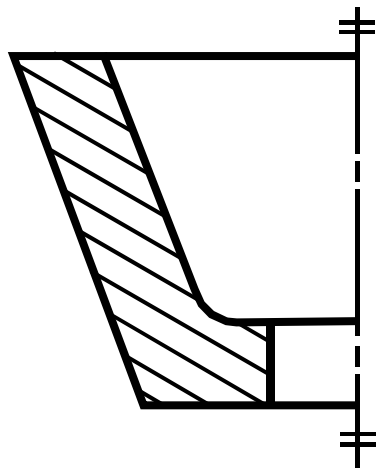
## COMMON MISTAKE



# SECTION LINING PRACTICE

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

## COMMON MISTAKE



# *Kinds of Sections*



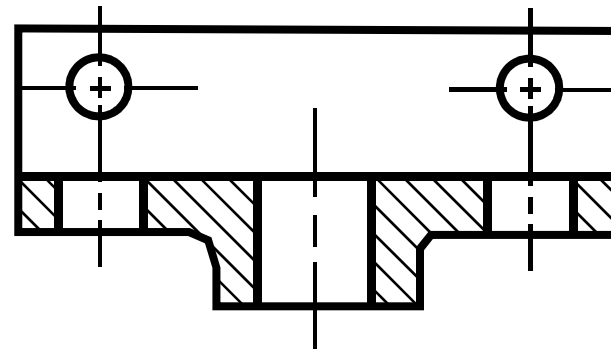
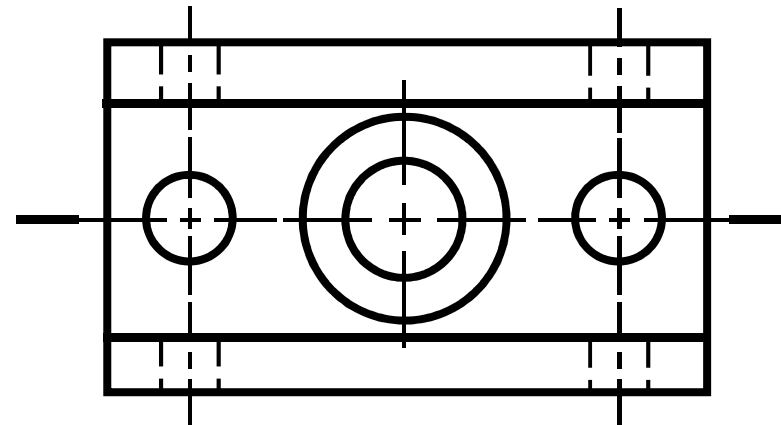
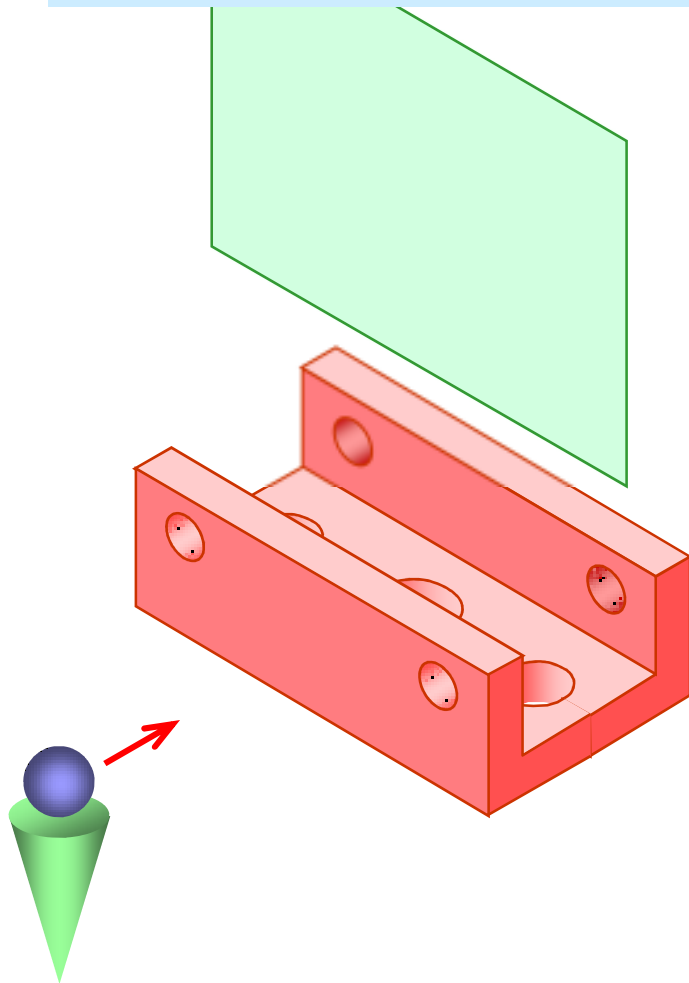
# KIND OF SECTIONS

1. Full section
2. Offset section
3. Half section
4. Broken-out section
5. Revolved section (aligned section)
6. Removed section (detailed section)



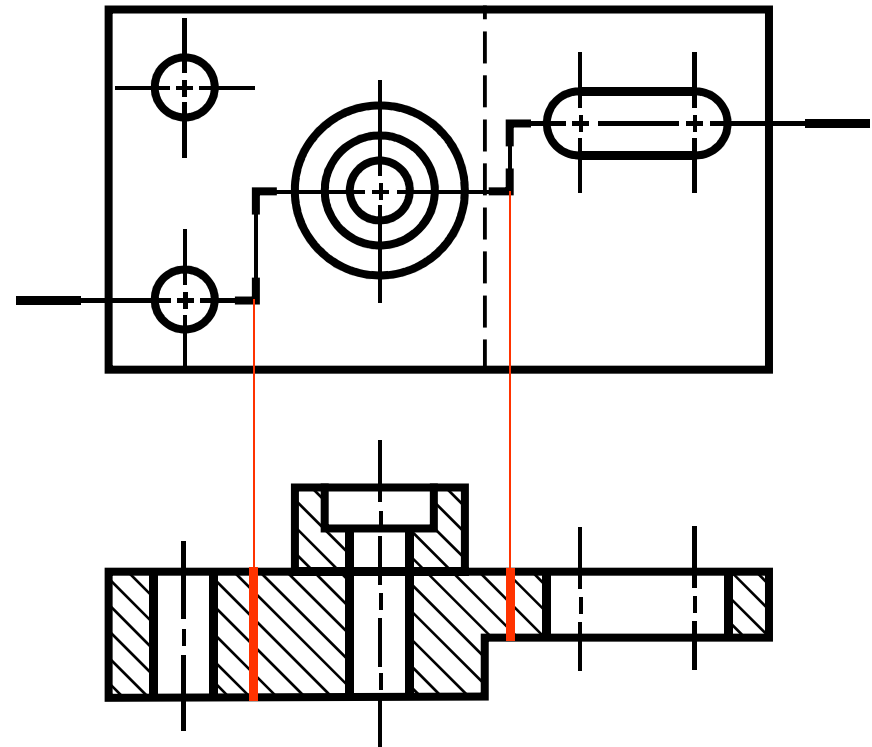
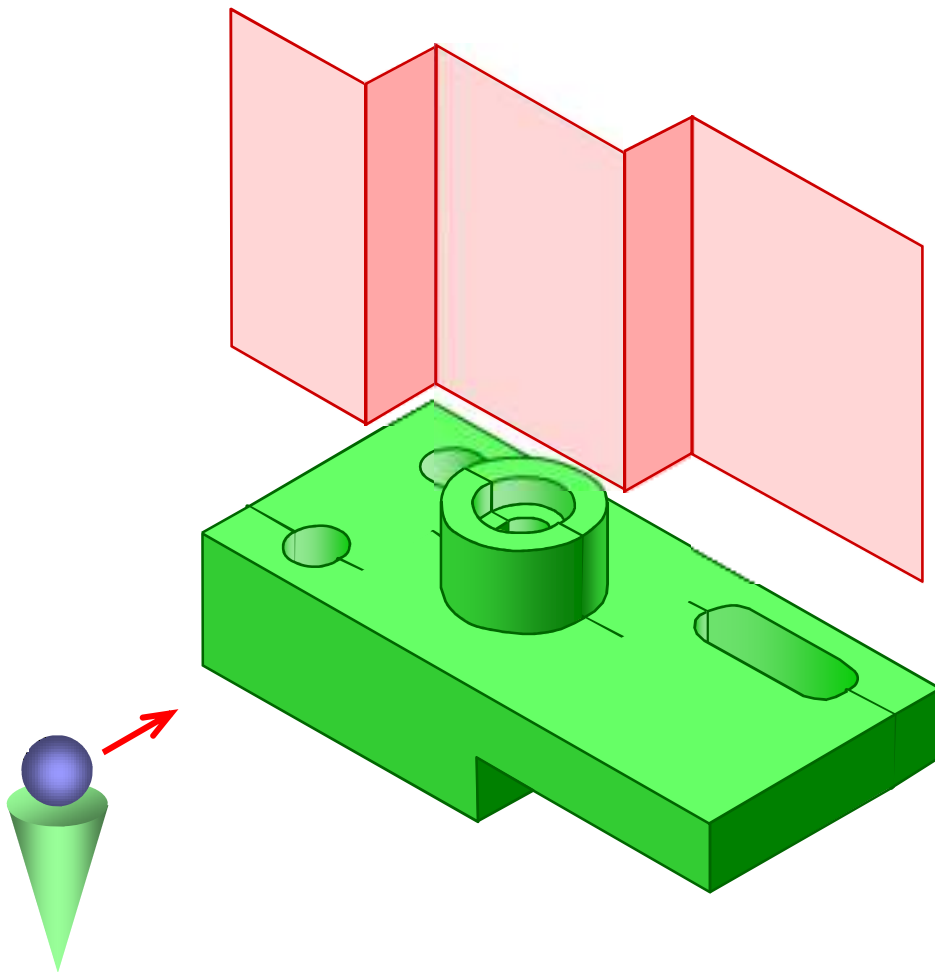
# FULL SECTION VIEW

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



# OFFSET SECTION VIEW

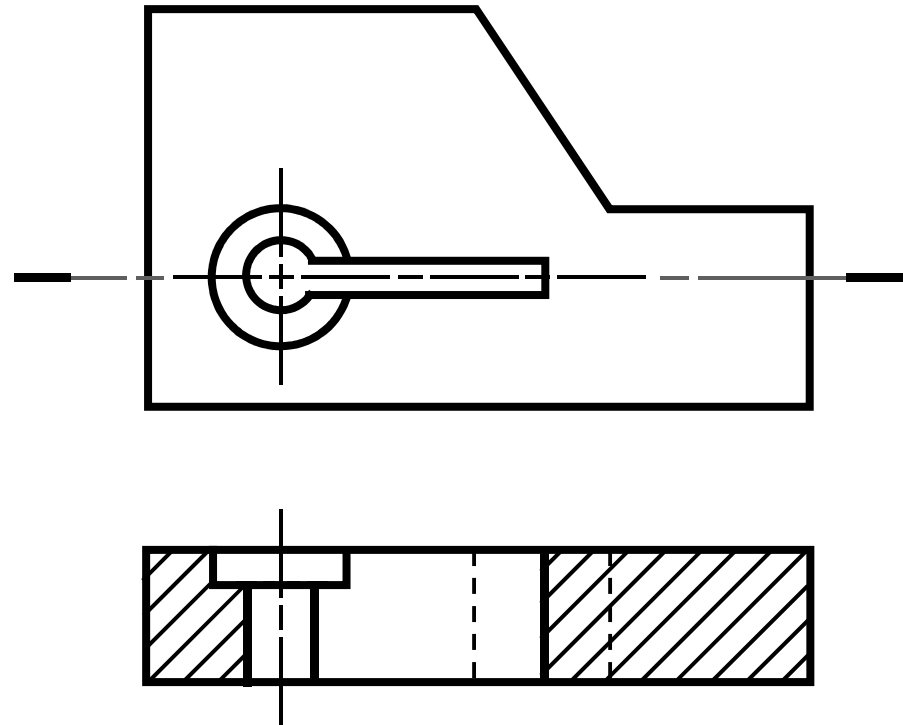
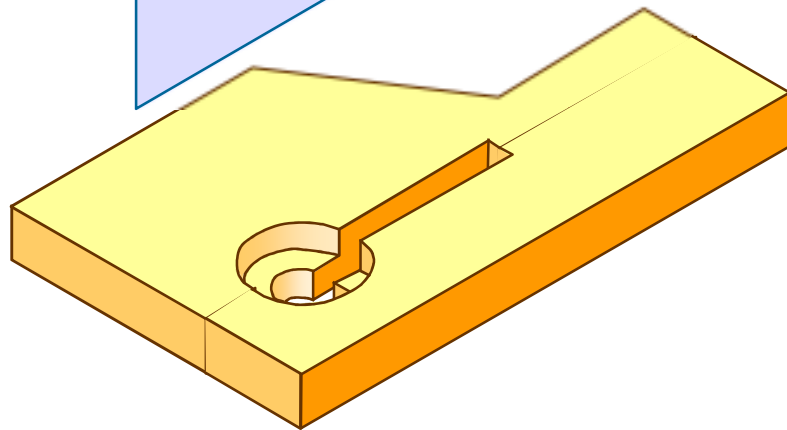
The view is made by passing the *bended* cutting plane *completely through* the part.



**Do not show the edge views of the cutting plane.**

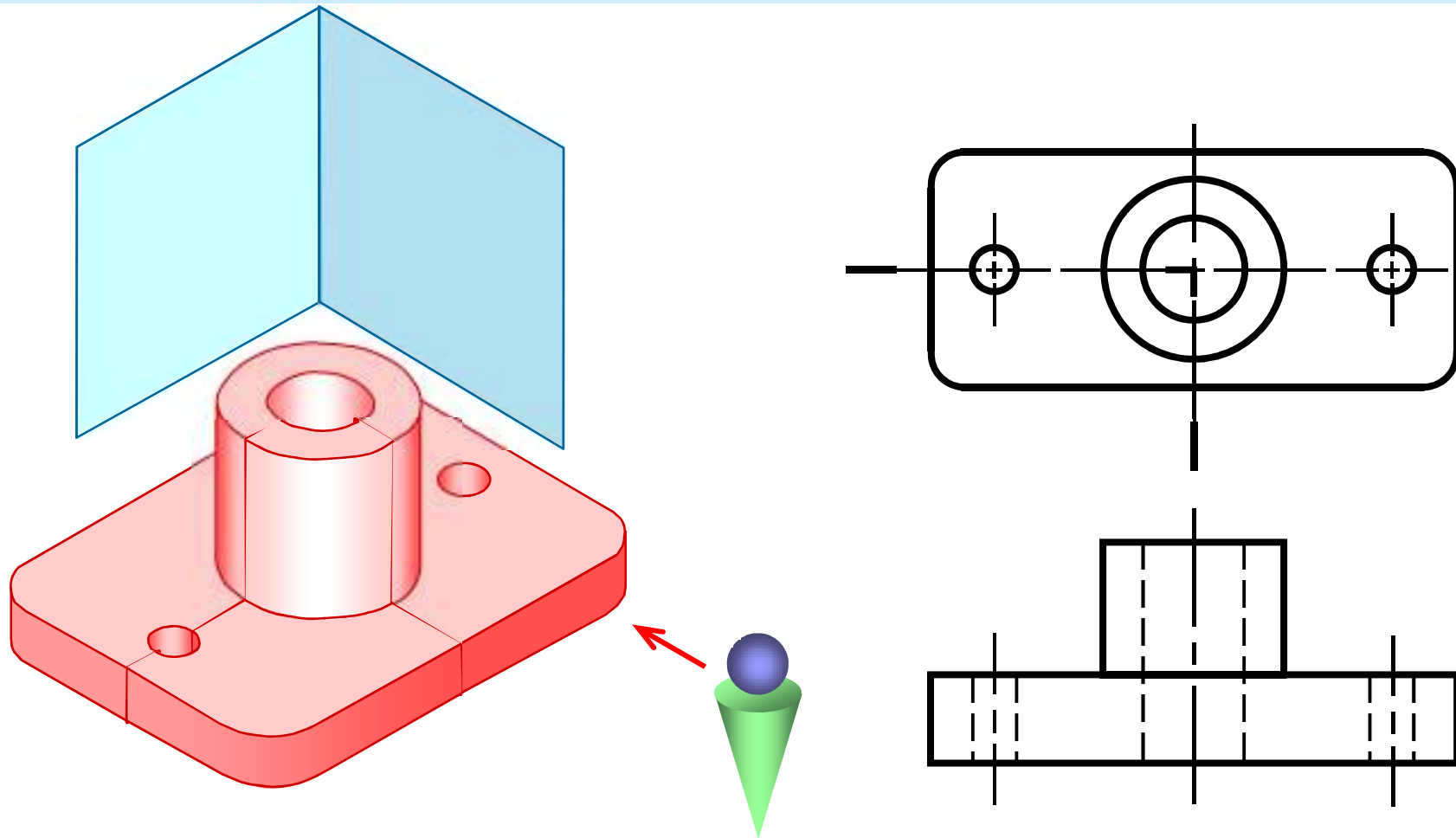
# TREATMENT OF HIDDEN LINES

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



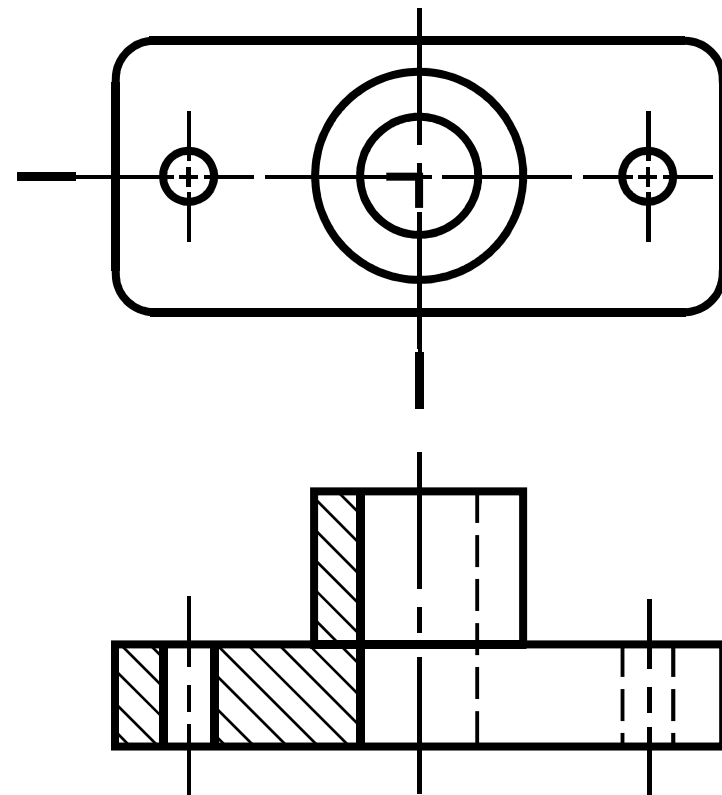
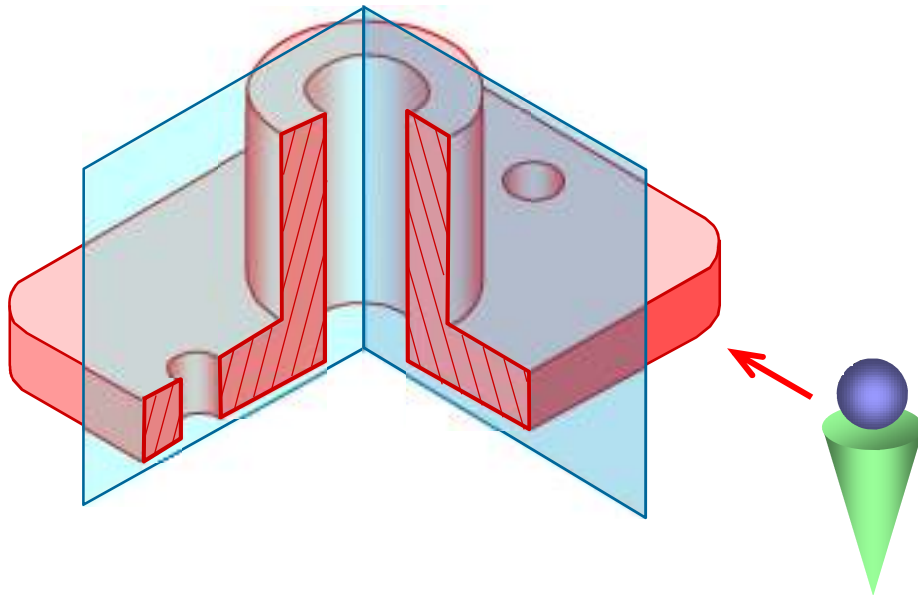
# HALF SECTION VIEW

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



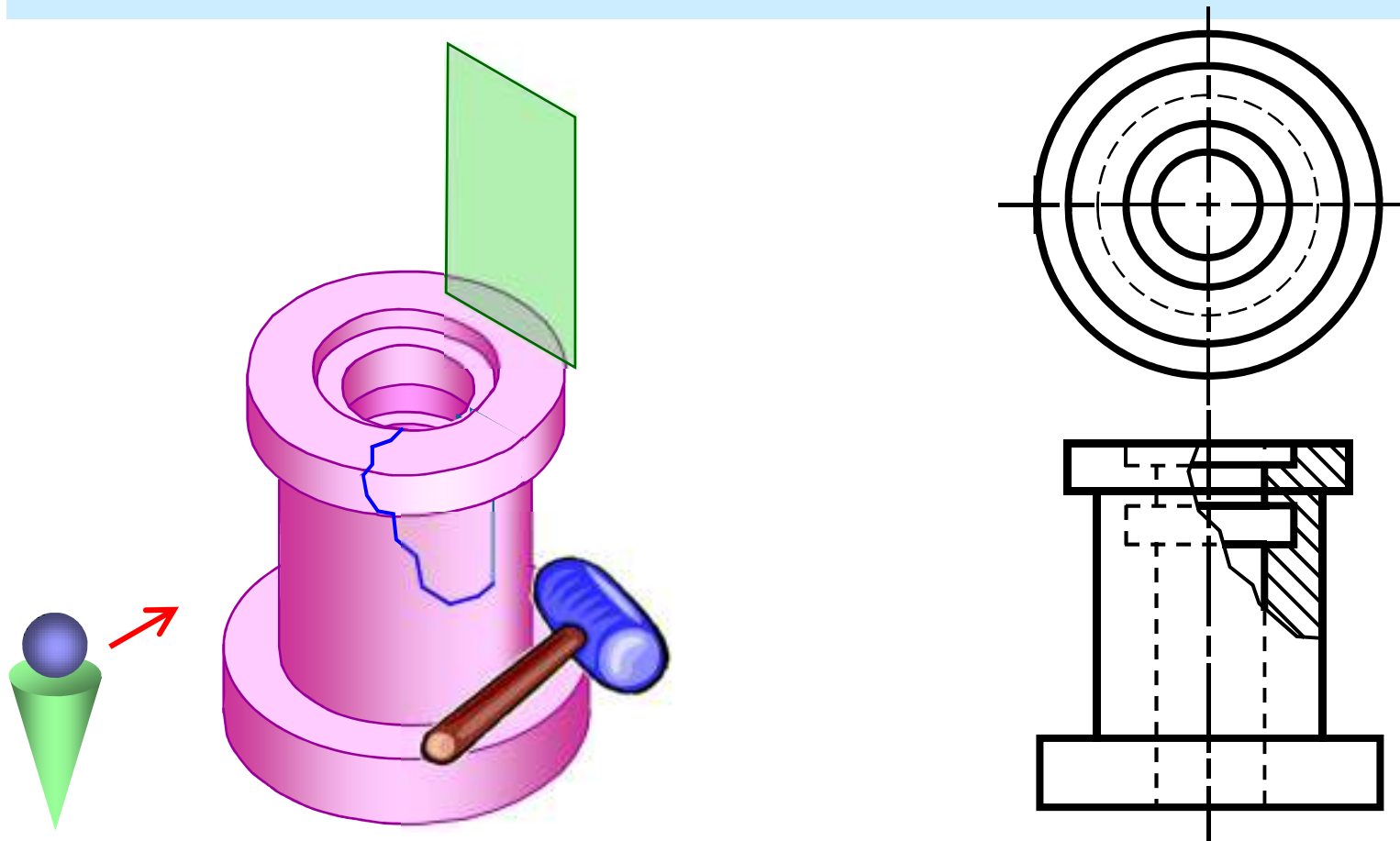
# HALF SECTION VIEW

- 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.



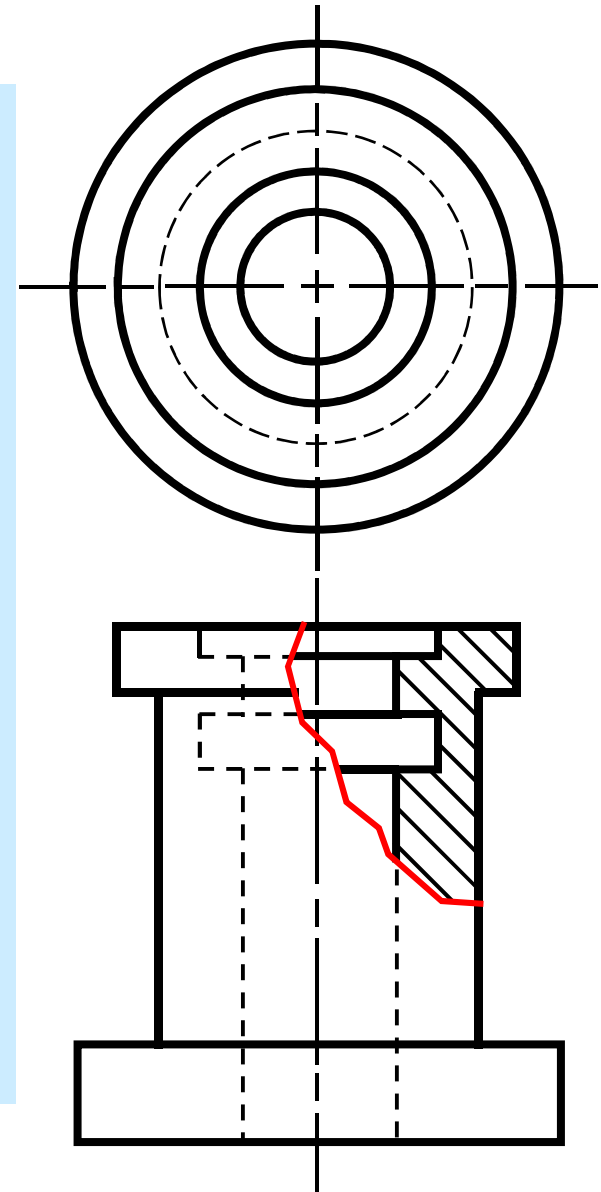
# BROKEN-OUT SECTION VIEW

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.

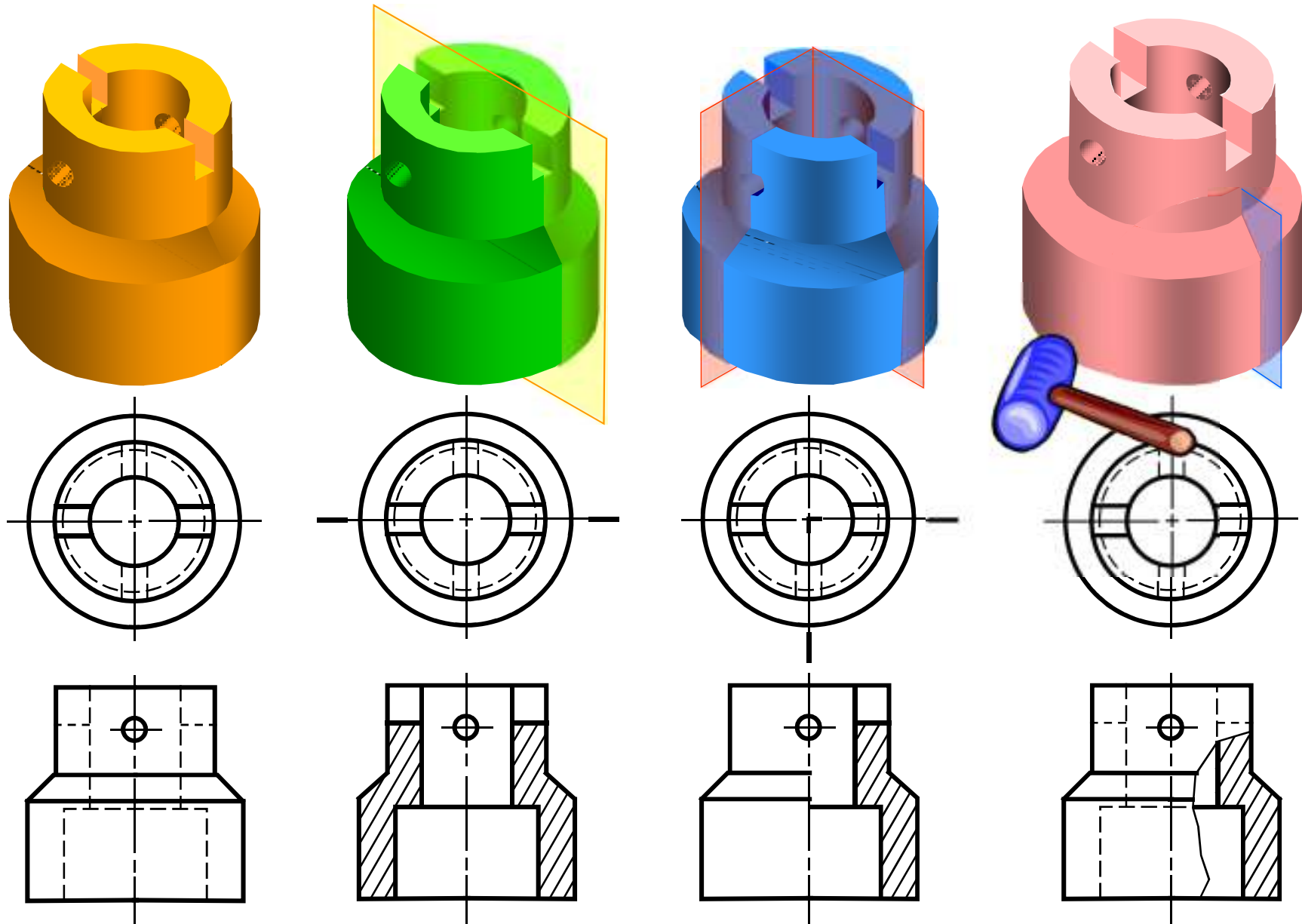


# BROKEN-OUT SECTION VIEW

- A **break line** is used to separate the sectioned portion from the unsectioned portion of the view.
- Break line is a thin continuous line (**4H**) and is drawn freehand.
- There is **no** cutting plane line.



## EXAMPLE : Comparison among several section techniques



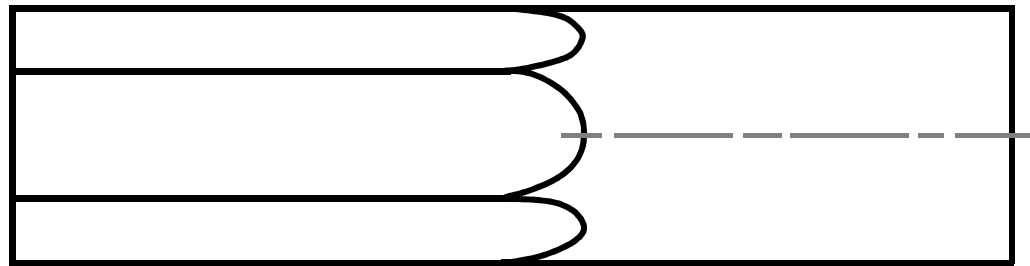
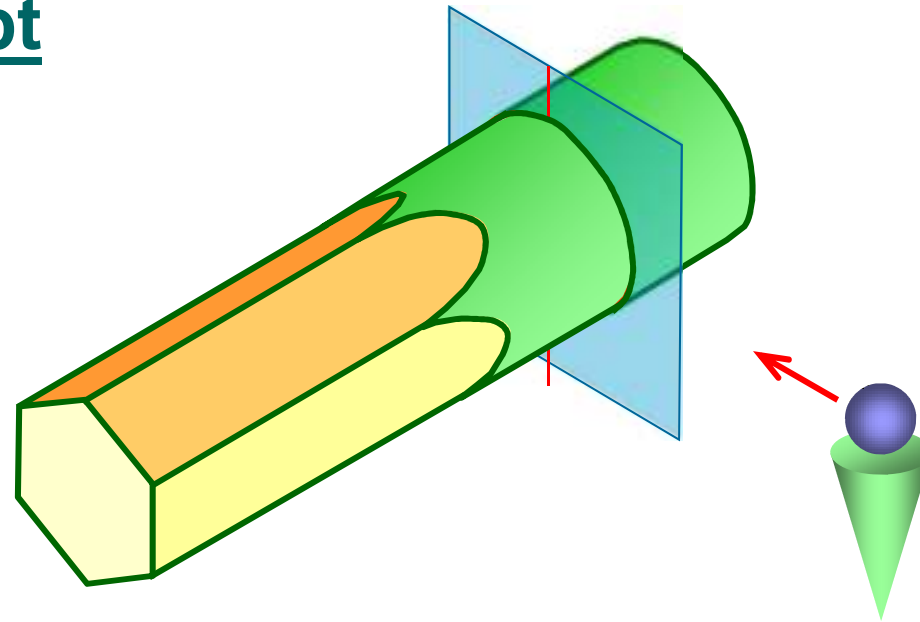


# REVOLVED SECTION VIEW

- 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.

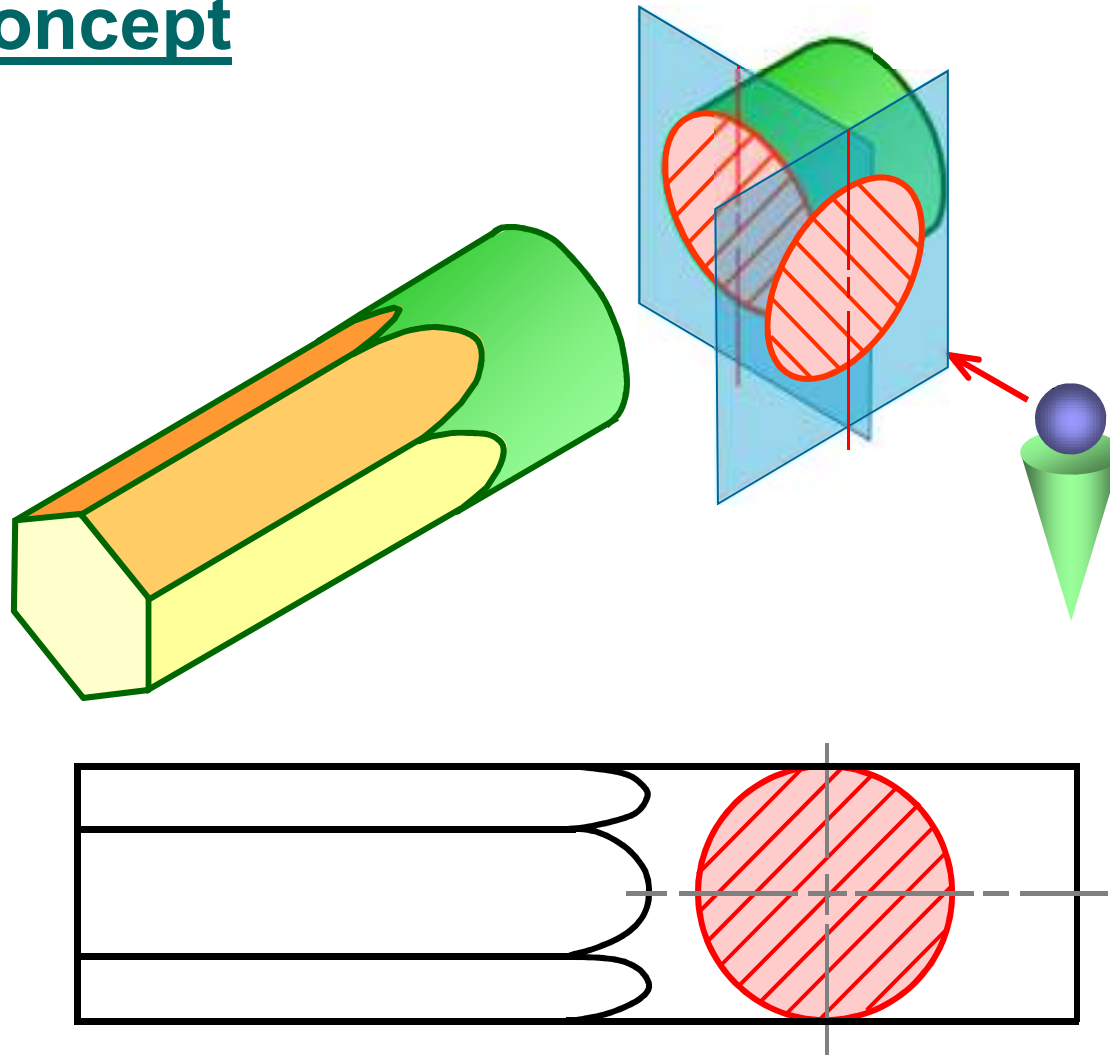
# REVOLVED SECTION VIEW

## Basic concept



# REVOLVED SECTION VIEW

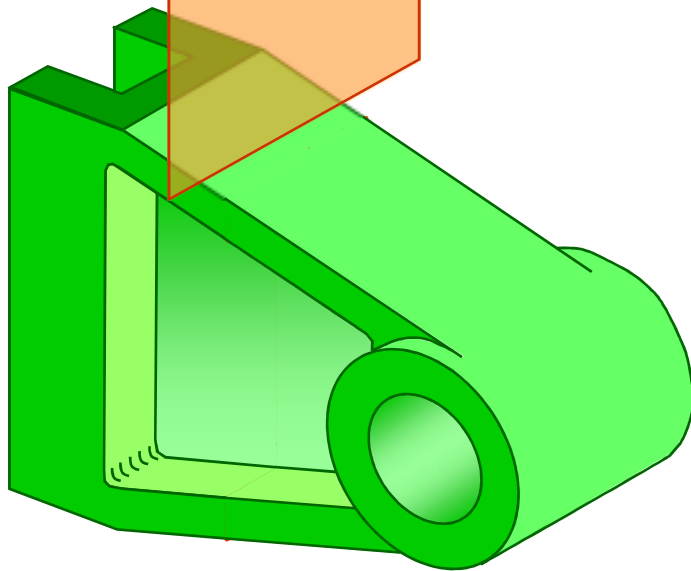
## Basic concept



# REVOLVED SECTION VIEW

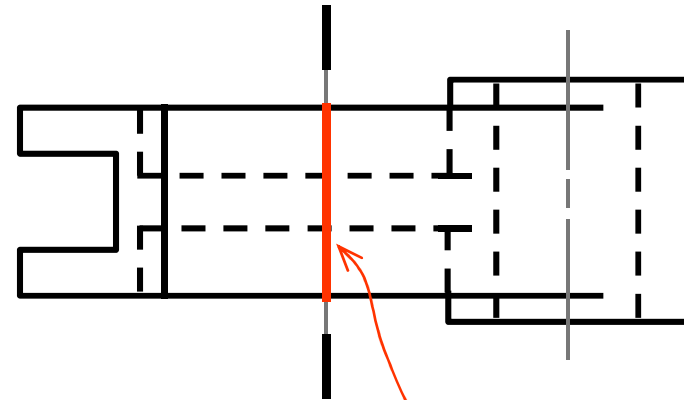
## Steps in construction

Given

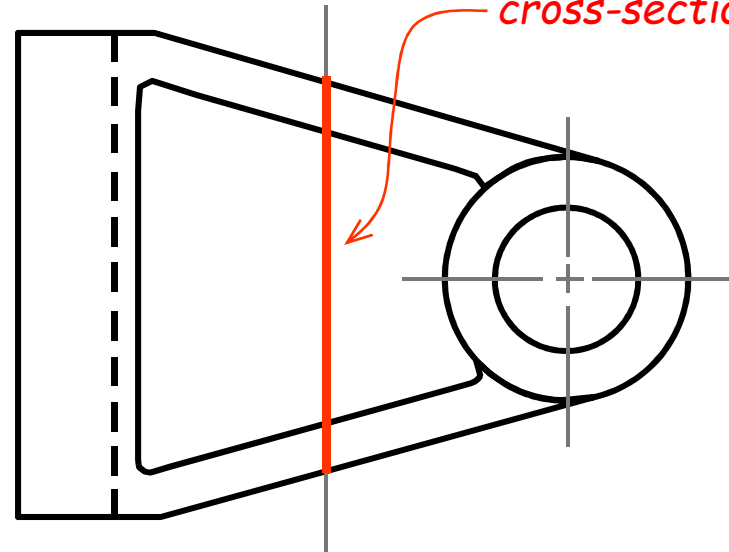


### Step 1

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



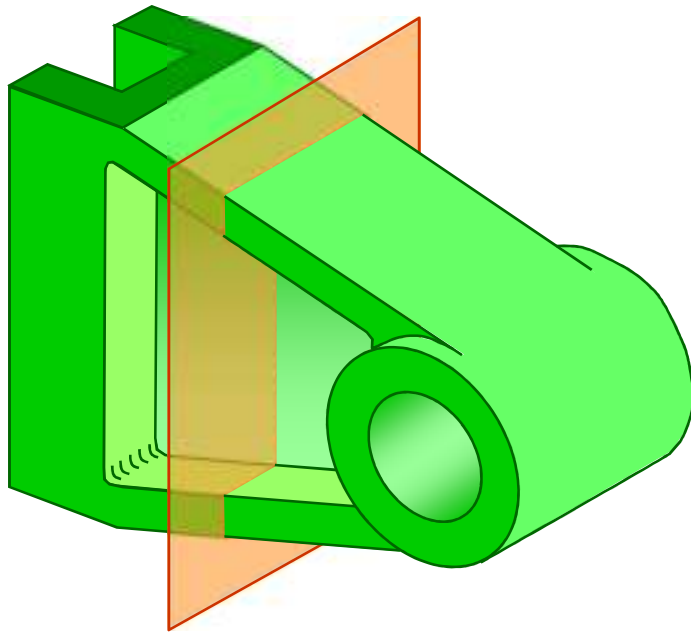
*Edge view of  
cross-section*



# REVOLVED SECTION VIEW

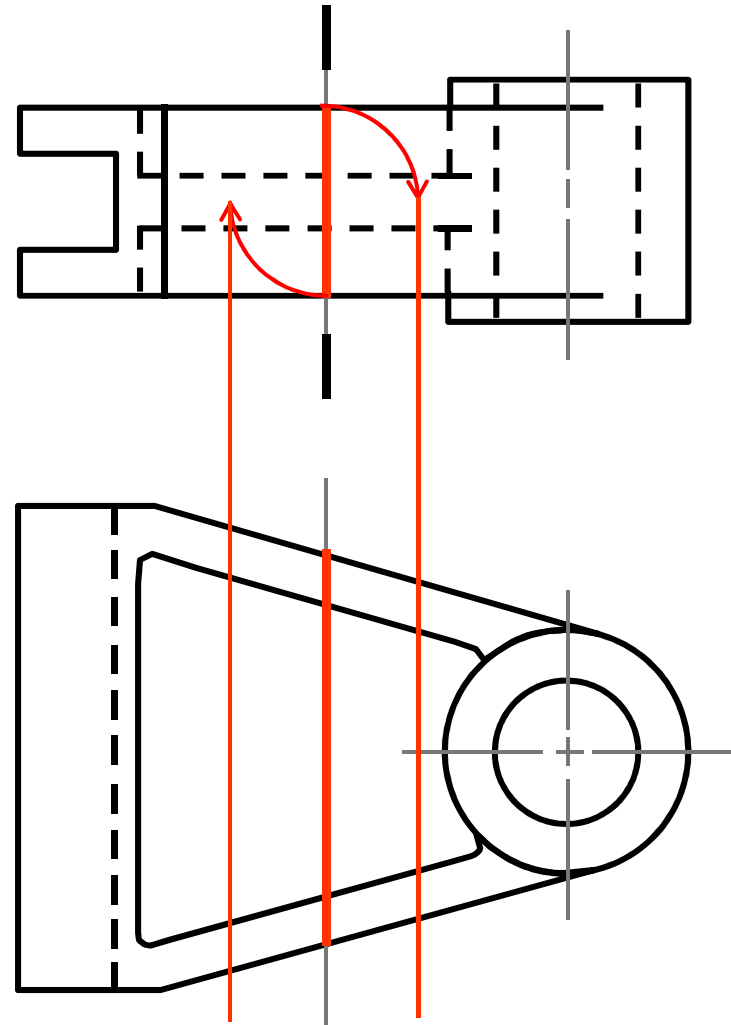
## Steps in construction

Given



## Step 2

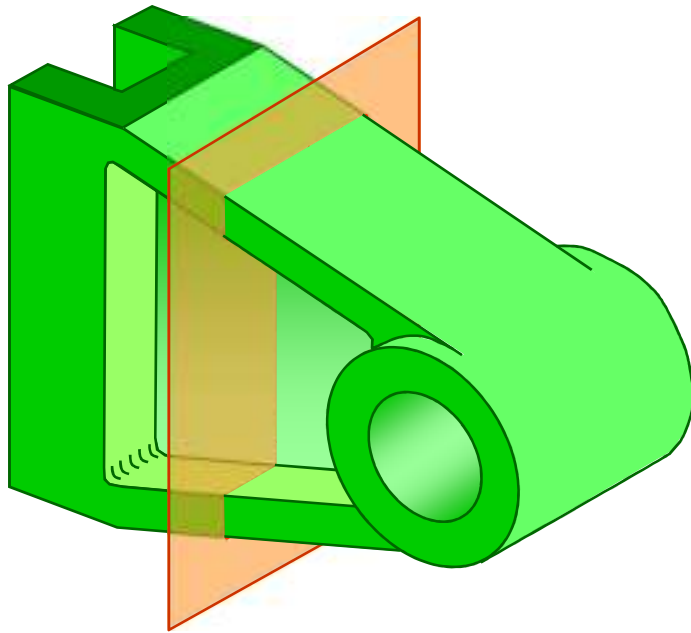
- a. Transfer the depth dimension to the front view.



# REVOLVED SECTION VIEW

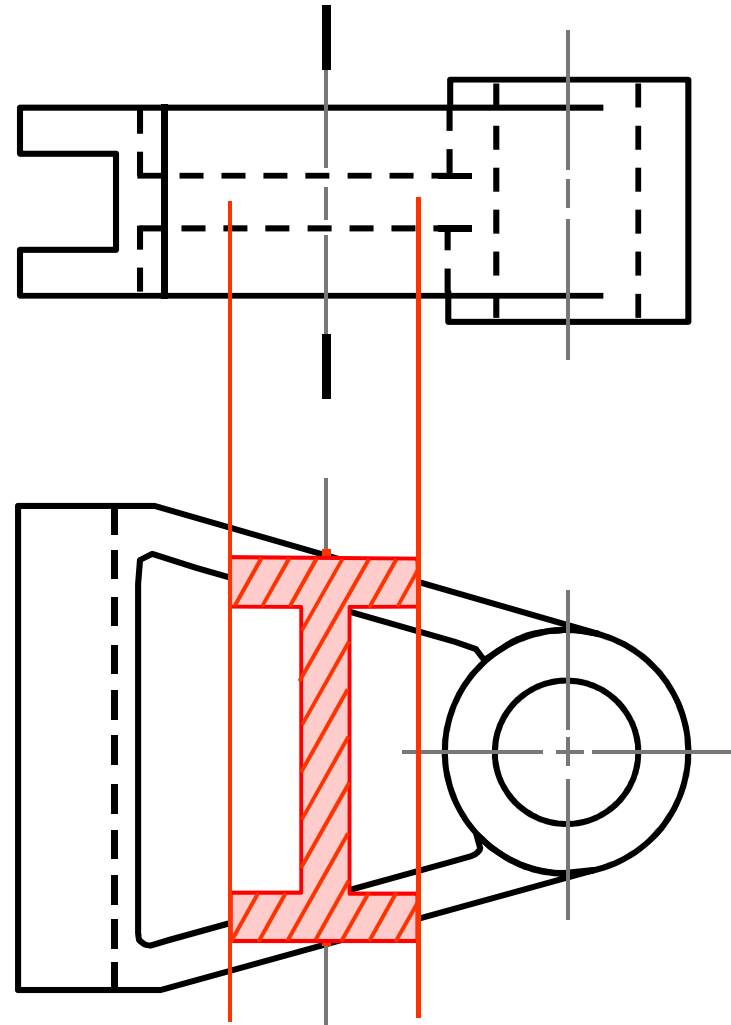
## Steps in construction

Given



### Step 3

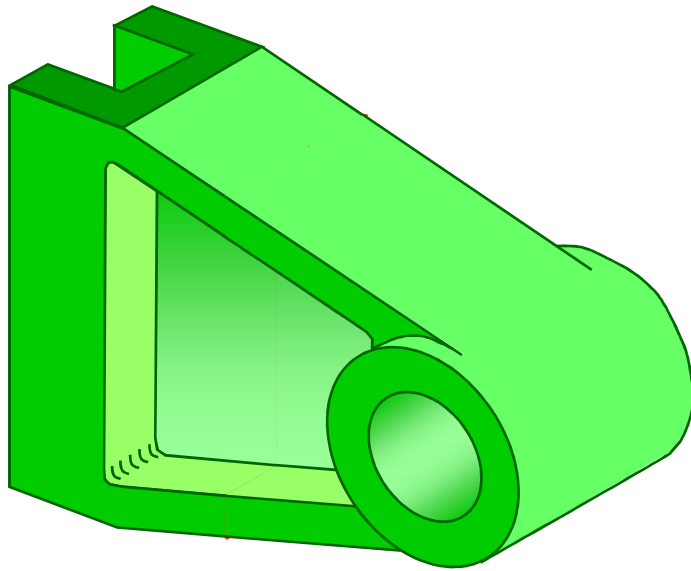
- Draw the revolved section.
- Add section lines.



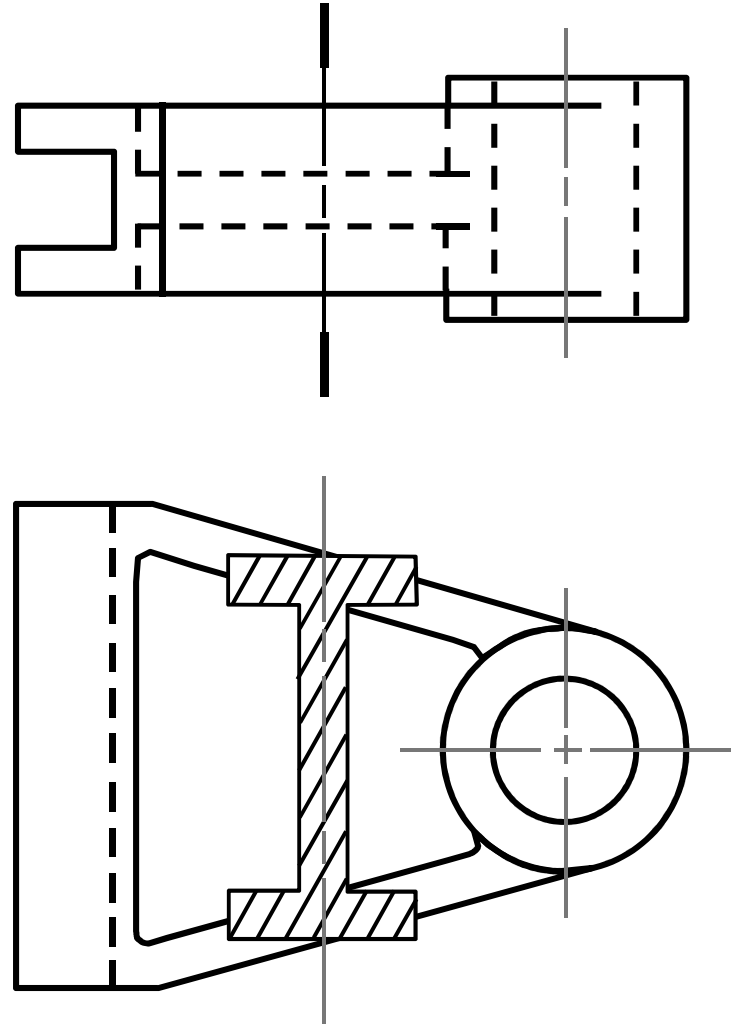
# REVOLVED SECTION VIEW

## Steps in construction

Given



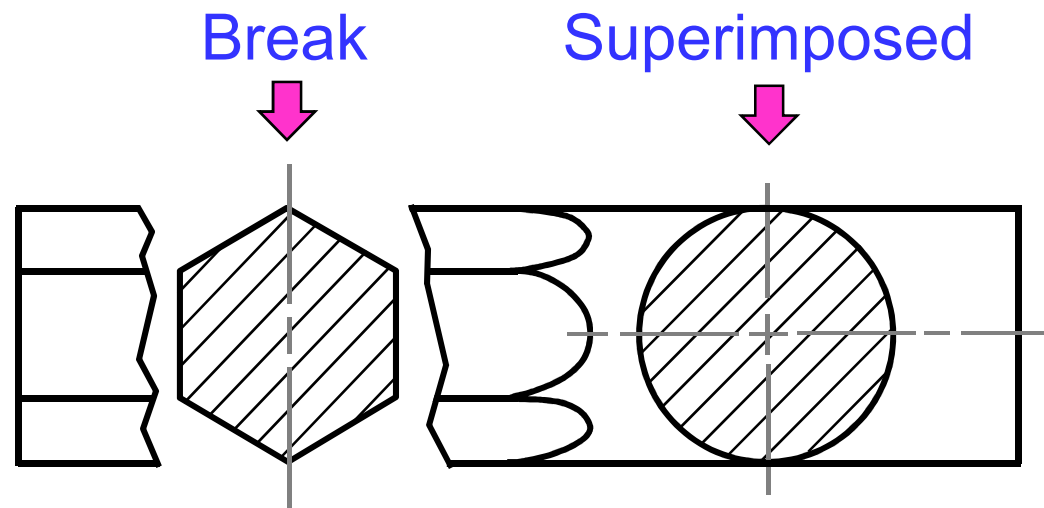
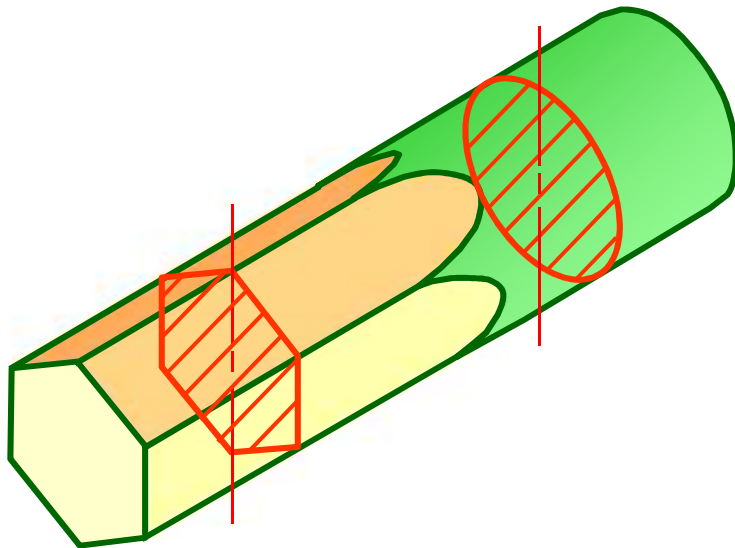
**FINAL PICTURE**



# REVOLVED SECTION VIEW

## Placement of revolved section

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



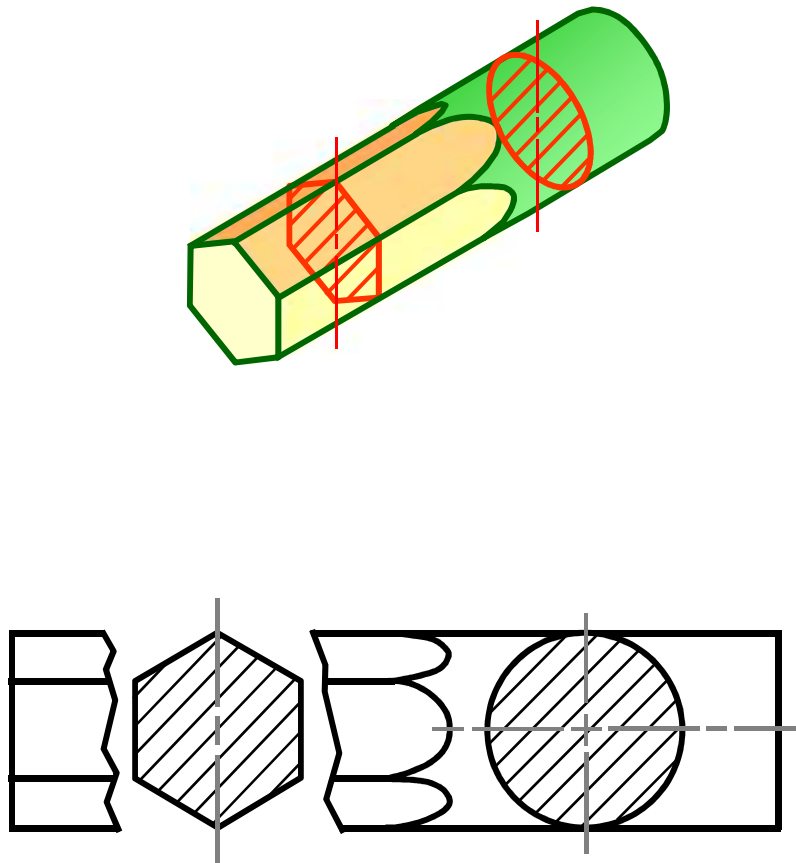


# REMOVED SECTION VIEW

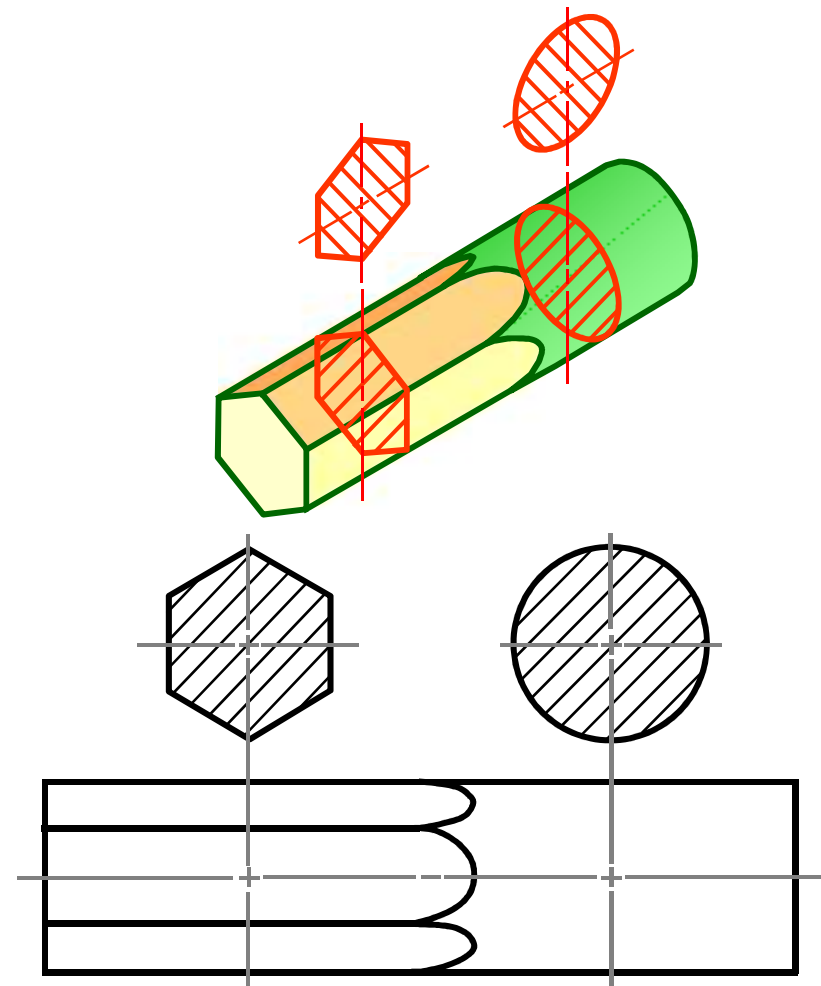
- Removed section is revolved section.
- Section view is shown outside the view.
- Used where space does not enough for revolved section
- Can be located elsewhere on a drawing with *properly labeled*

# REMOVED SECTION VIEW

Revolved section

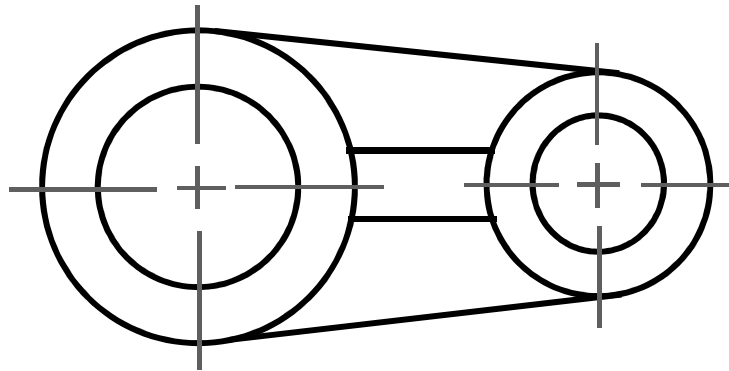


Removed section

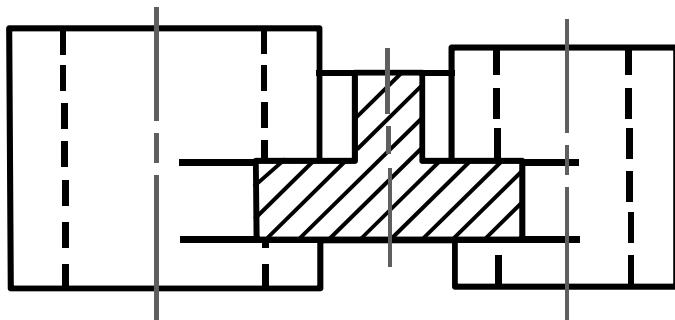


# REMOVED SECTION VIEW

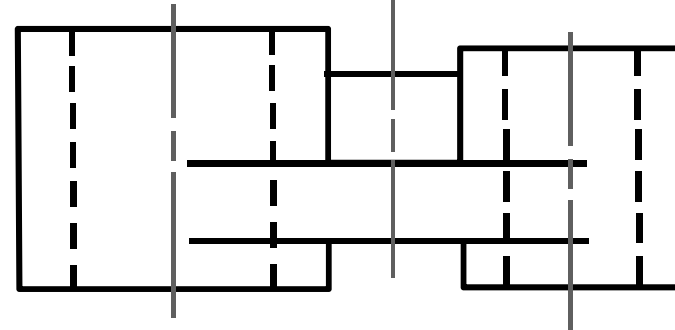
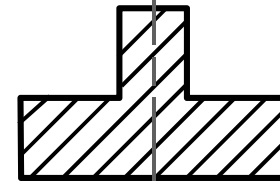
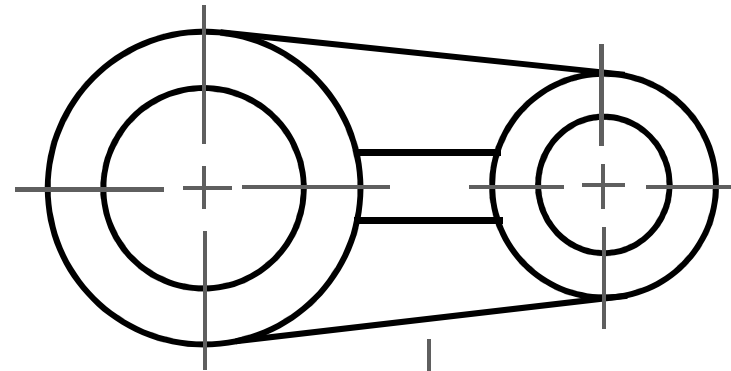
Poor



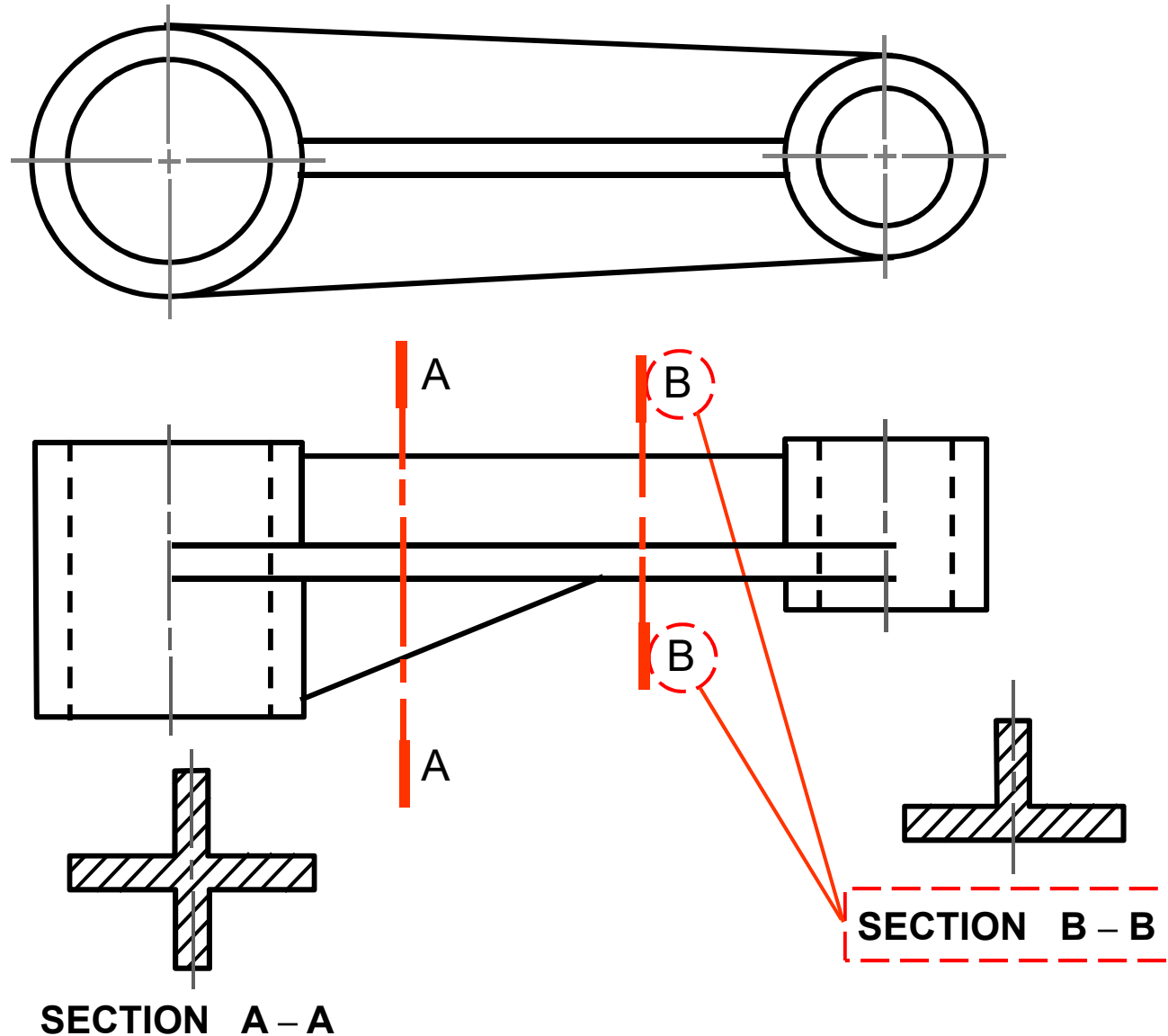
Too messy !!



Preferred



# REMOVED SECTION VIEW

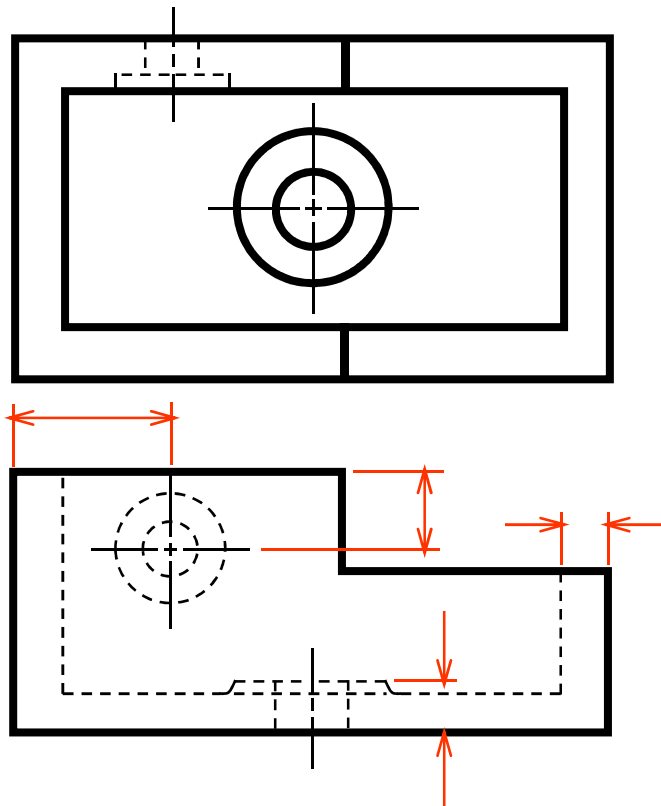


# *Dimensioning in Section View*

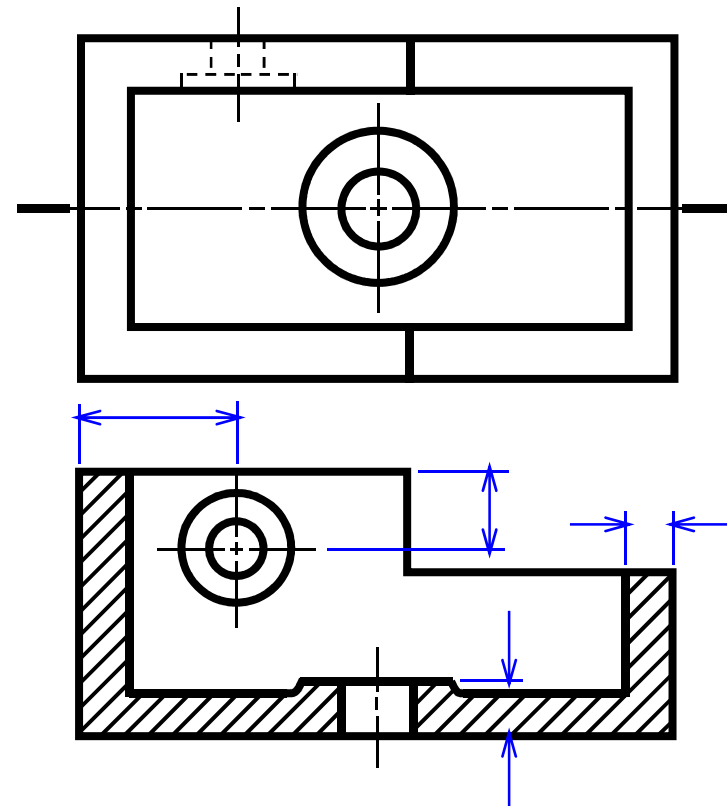


- In most cases, dimensioning of the section views follows the typical rules of dimensioning.

**POOR**

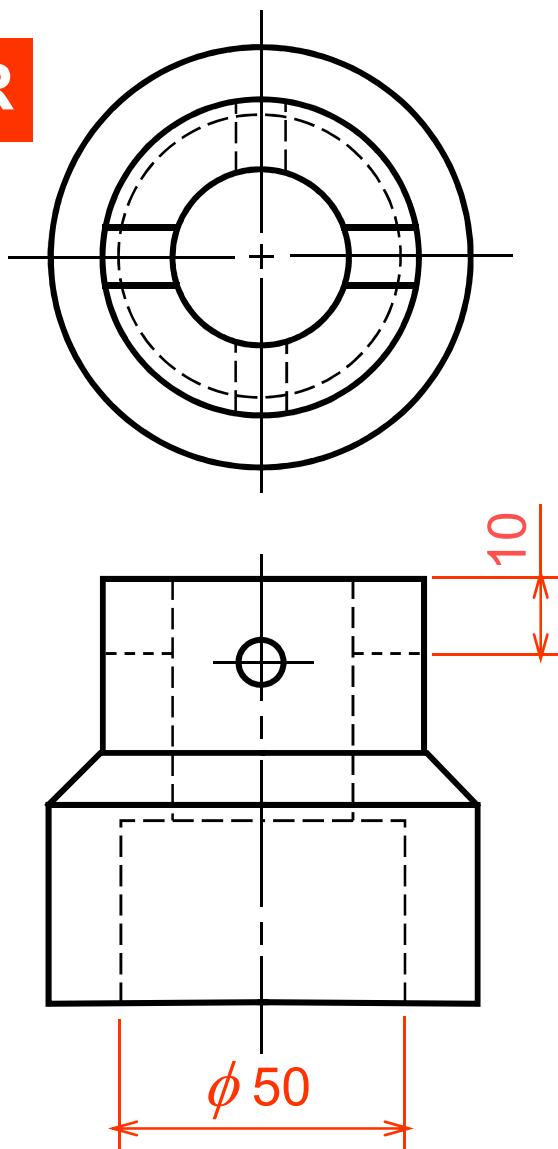


**GOOD**

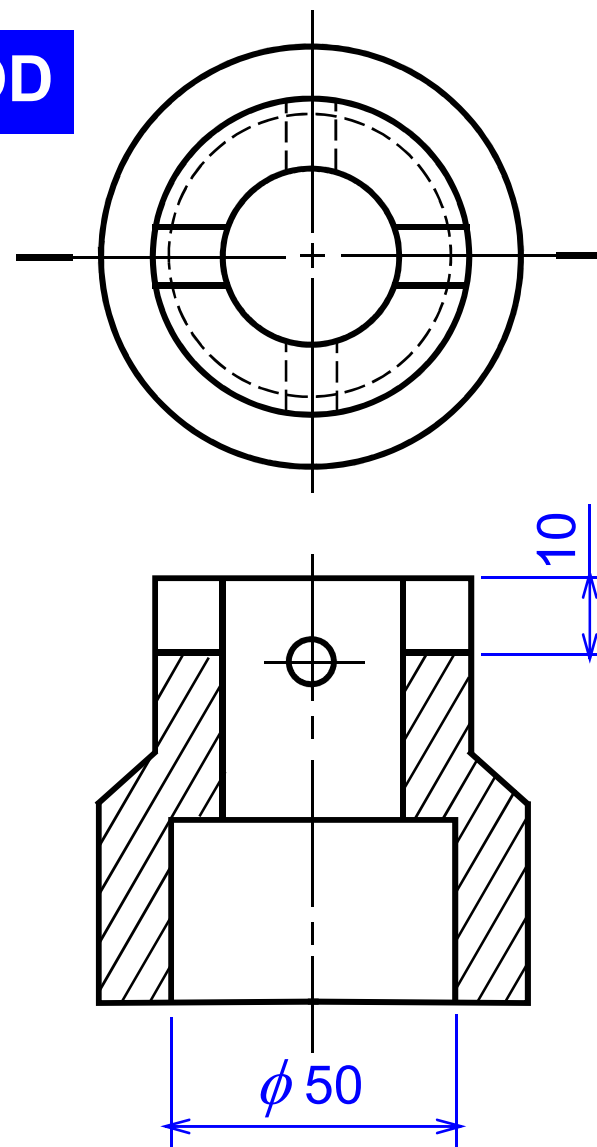


# DIMENSIONING

POOR



GOOD



# DIMENSIONING

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

