

Today's Thoughts

The thing that's so wonderful about using beautiful, appropriate [CAD] tools is that they become an extension of you, your body, your fingertips, and your mind. They get out of the way and let you directly interact with the problem you are solving. Everyone's tried to remove a screw without a screwdriver; a task quickly becomes impossible that otherwise would be trivial.

— Luke Crawford

Here is one of the few effective keys to the design problem — the ability of the designer to recognize as many of the constraints as possible — his willingness and enthusiasm for working within these constraints. Constraints of price, of size, of strength, of balance, of surface, of time and so forth.

— Charles Eames

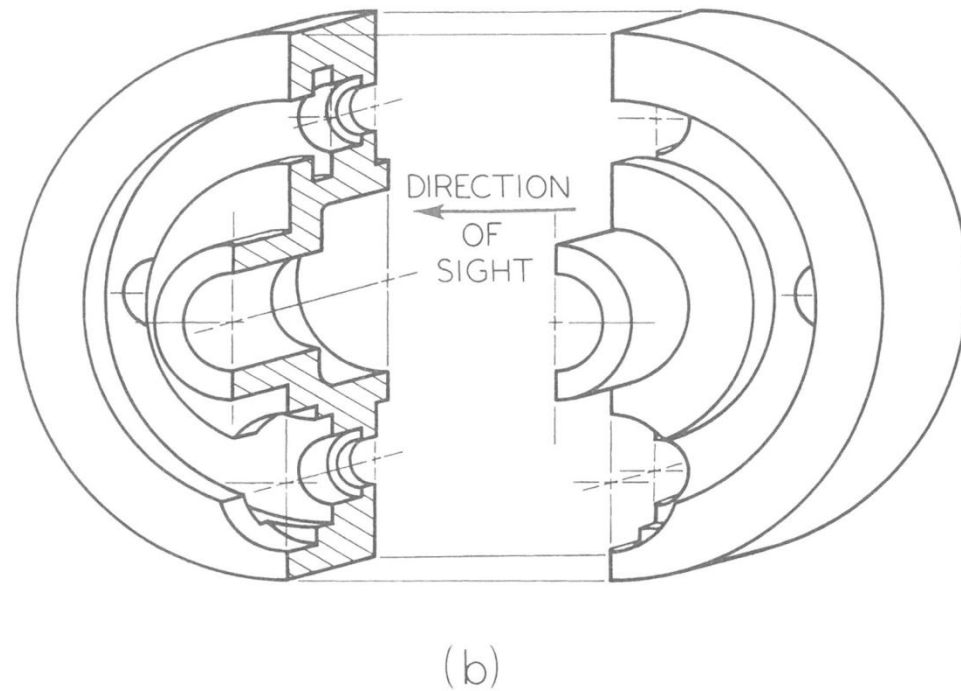
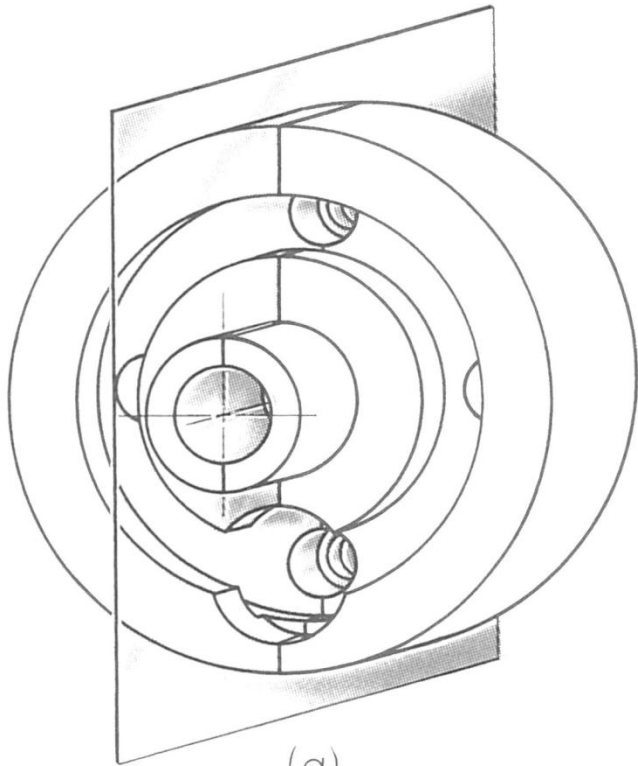
Section Views

ME 172

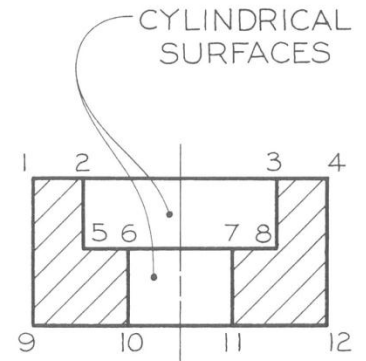
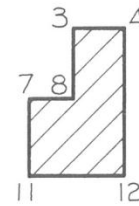
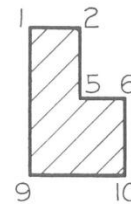
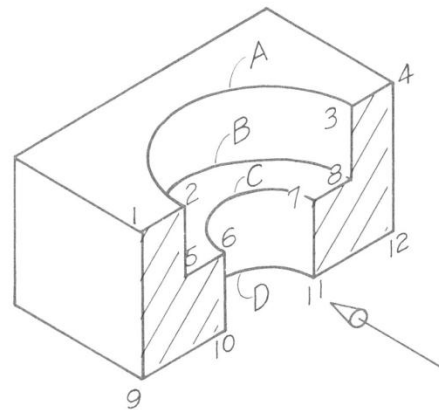
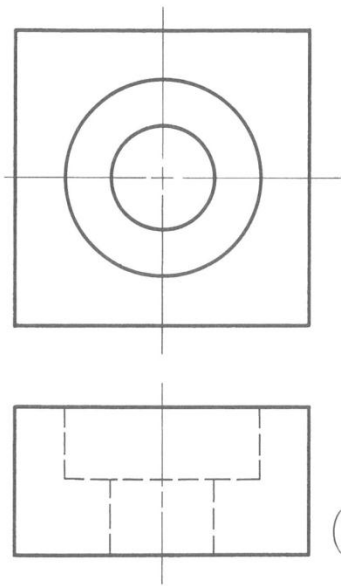
Outline

- Full Section
- Half Section
- Offset Section
- Broken-out Section
- Revolved Section
- Removed Section
- Sectioning Problems
- Sectioning Quiz

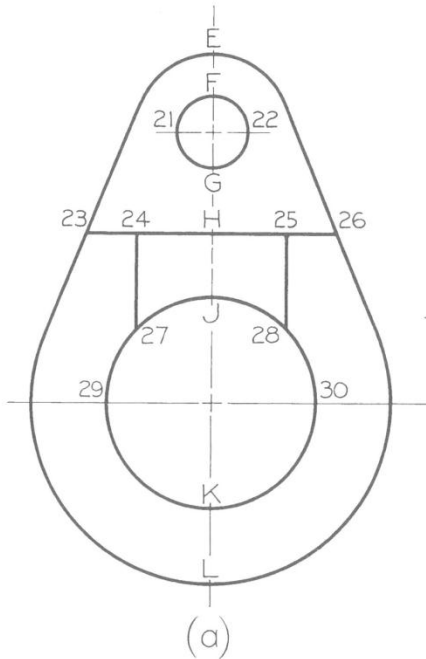
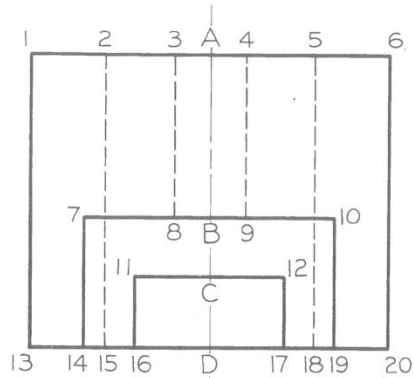
A Section View



Visualizing a Section View

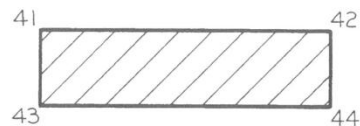
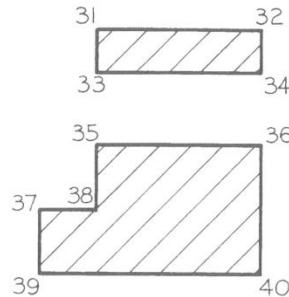
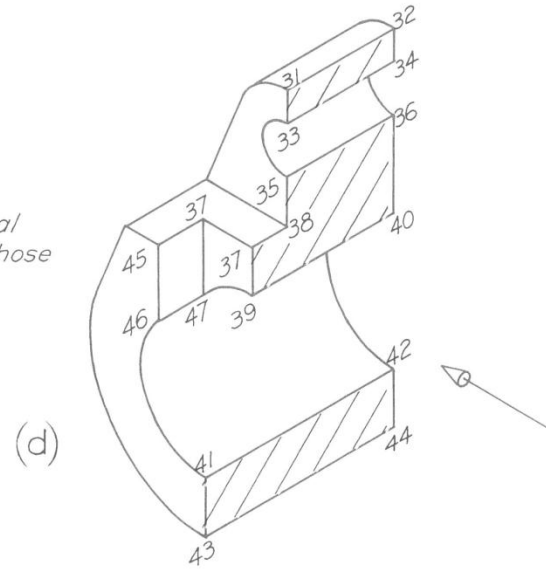


Visualizing a Section View

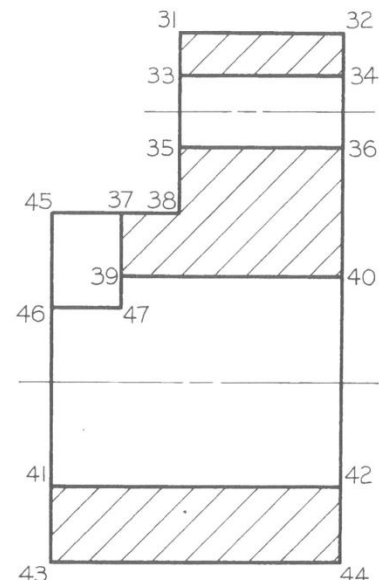


DIRECTION OF SIGHT ←

Numbers in pictorial correspond with those on sectional view.

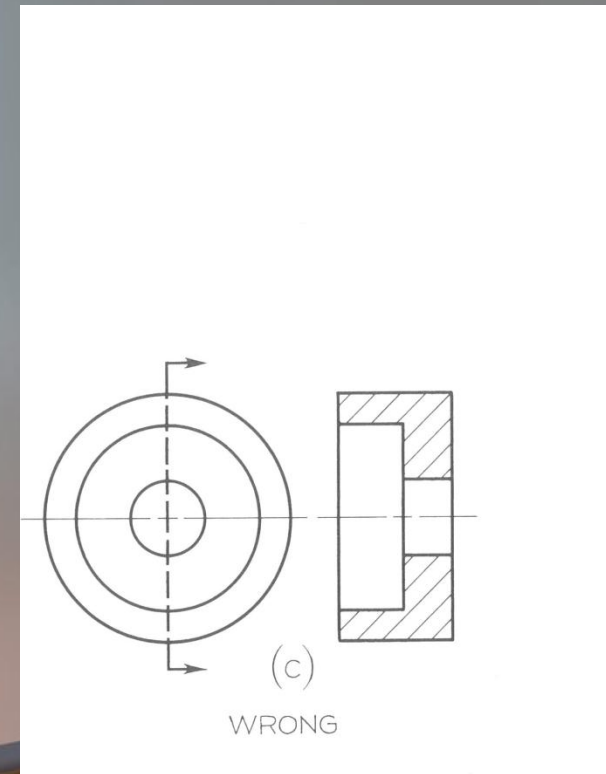
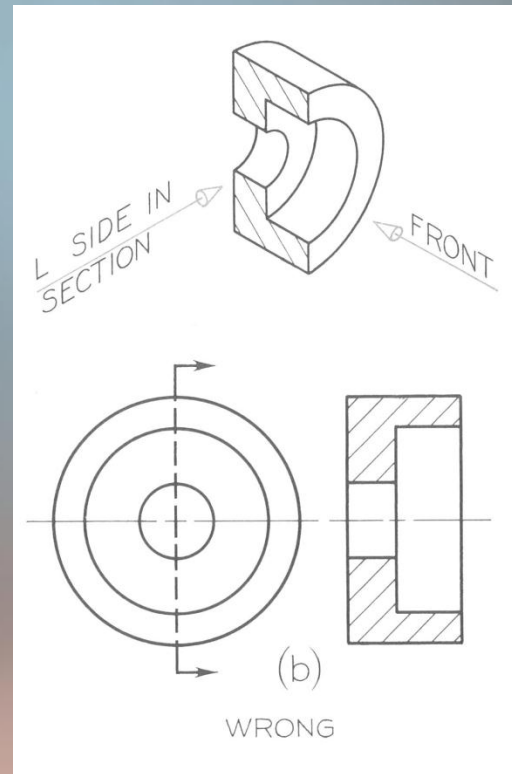
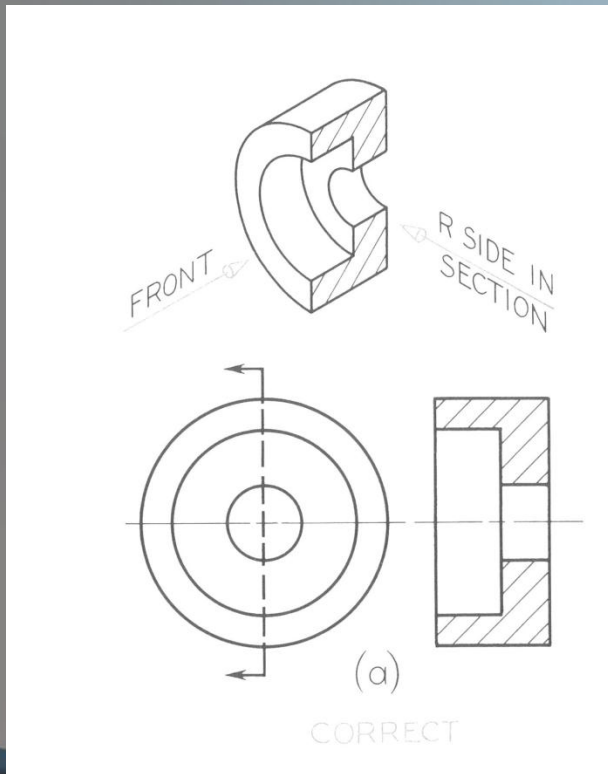
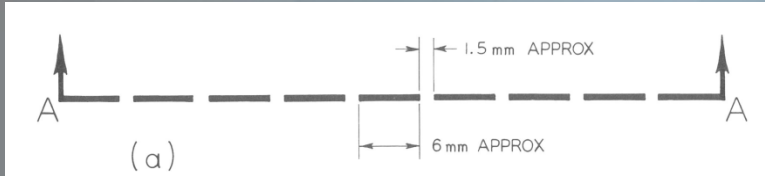


(b)

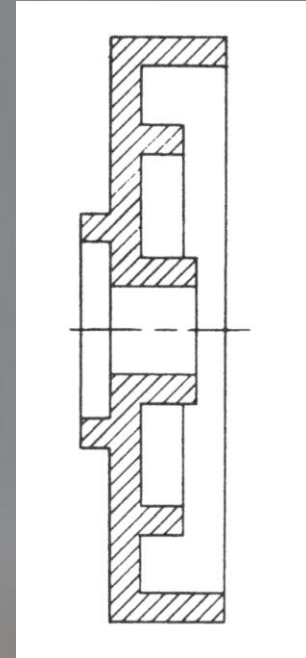
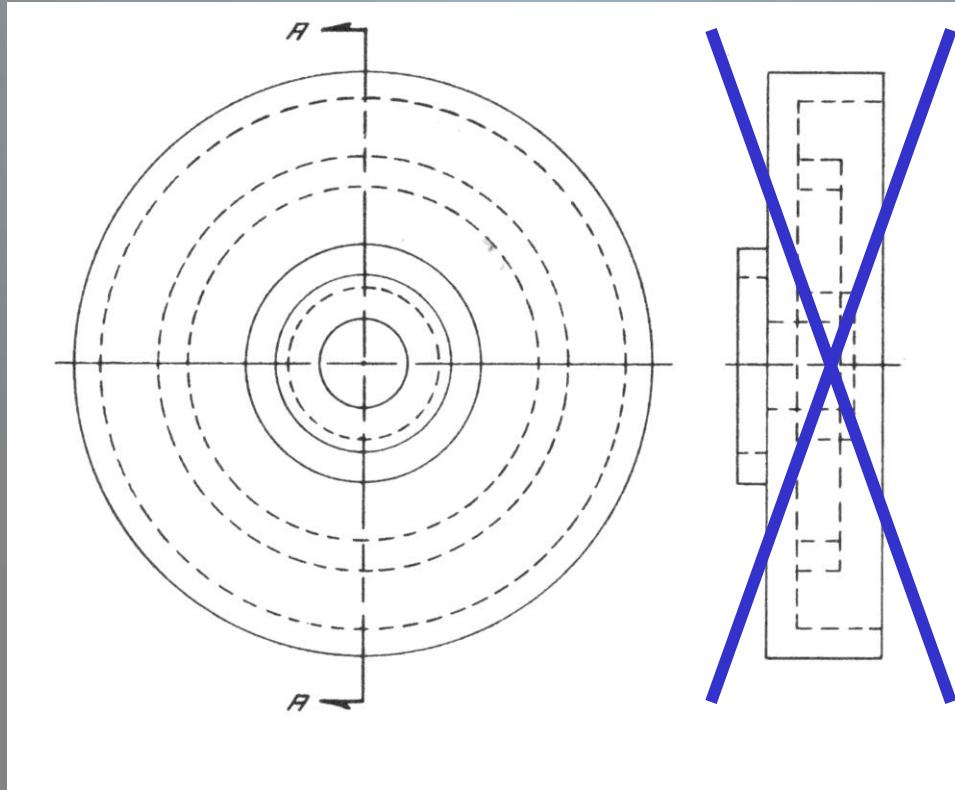


(c)

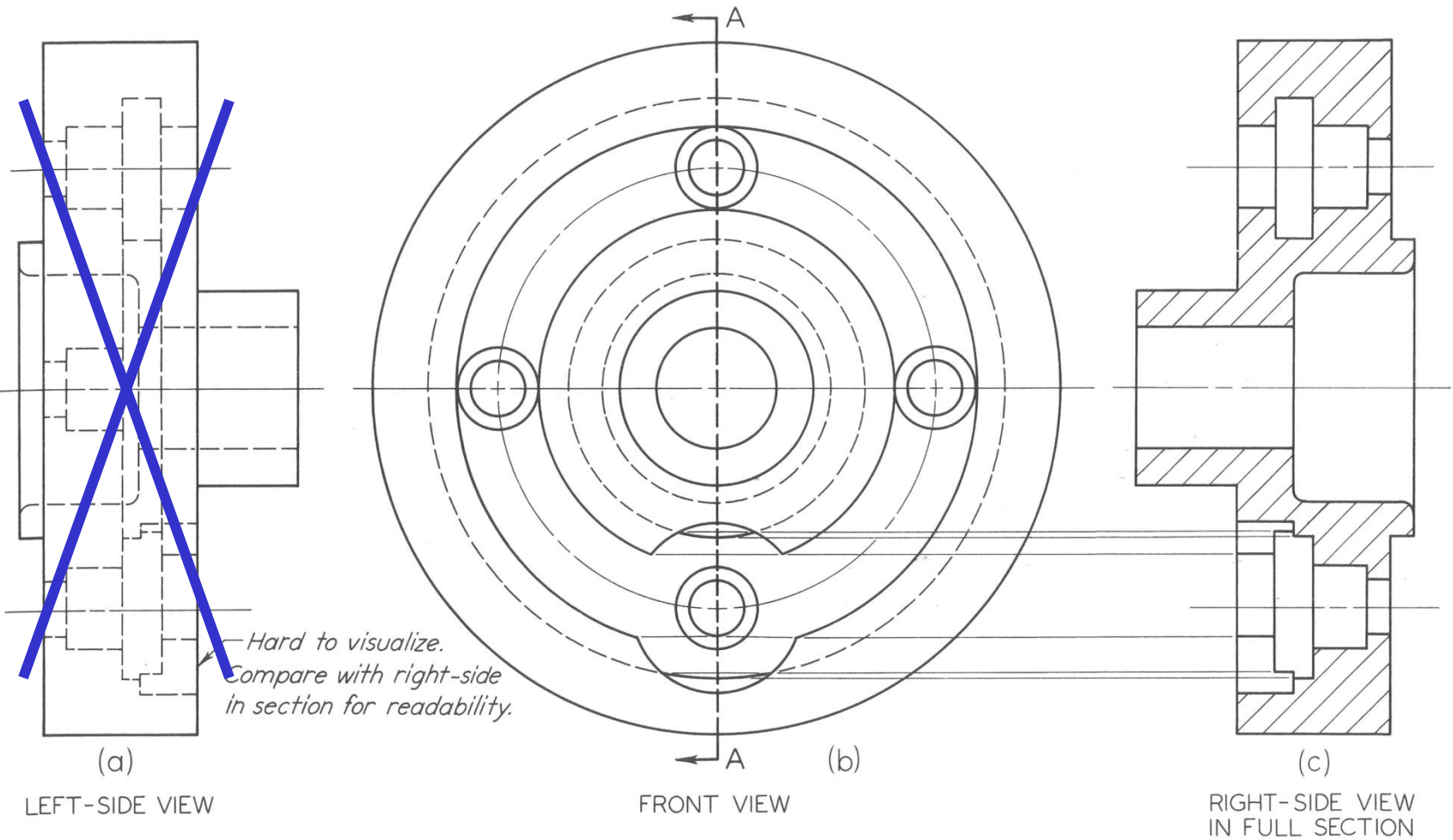
A Cut Plane Line



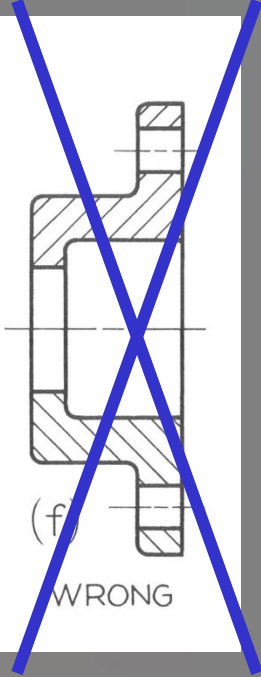
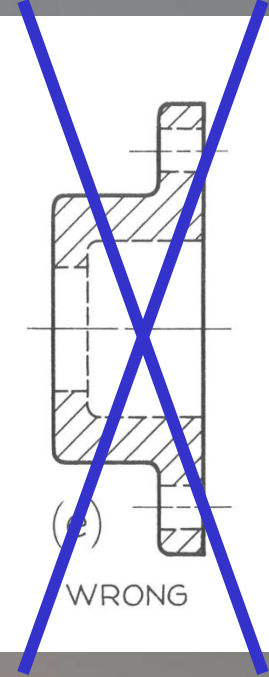
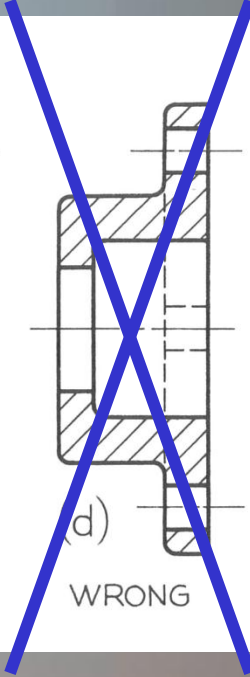
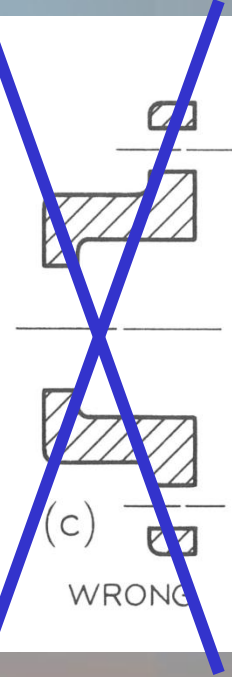
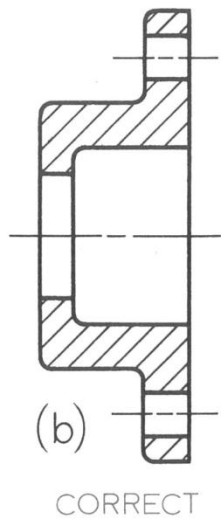
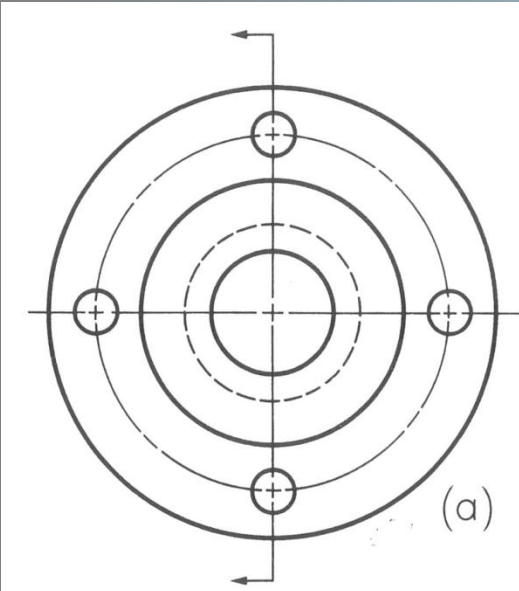
Full Section View



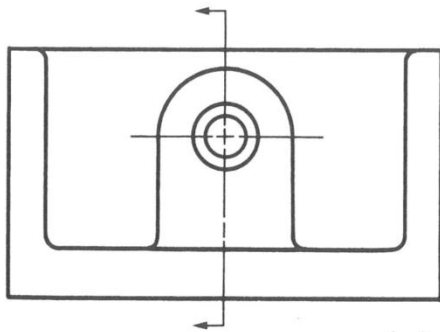
Full Section View



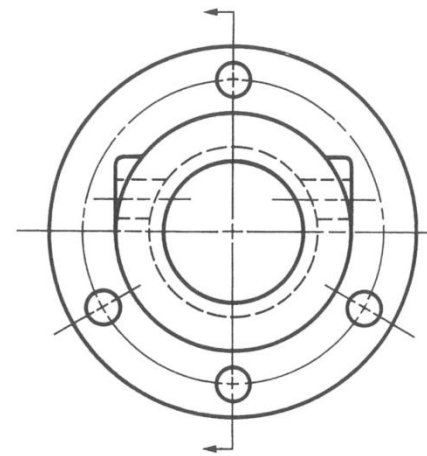
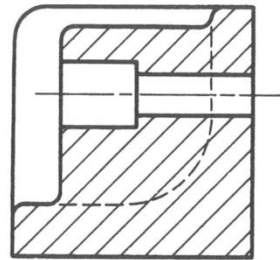
Correct Full Section View



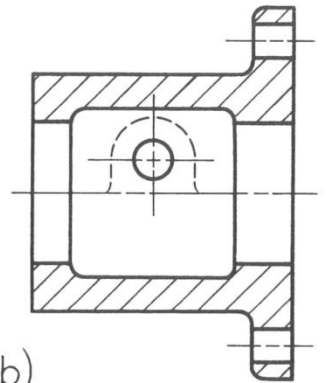
Correct Full Section View



(a)



(b)



Correct Full Section View

FRONT

TOP

FRONT VIEW IN SECTION

TOP VIEW IN SECTION

(a)

FRONT

TOP

FRONT VIEW IN SECTION

TOP VIEW IN SECTION

(b)

FRONT

TOP

R SIDE

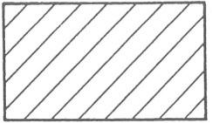
FRONT & R SIDE VIEWS IN SECTION

SECTION A-A

SECTION B-B

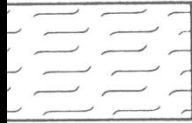
(c)

Sectioning Symbols



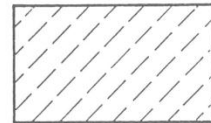
CAST OR MALLEABLE
IRON AND GENERAL
USE FOR ALL
MATERIALS

1



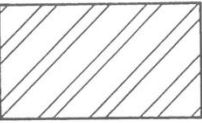
Cork, felt,
fabric, leather,
and fiber

7



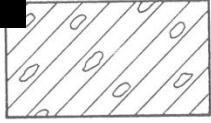
Marble, slate,
glass, porcelain,

13



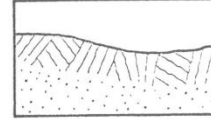
Steel

2



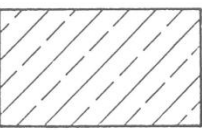
Sound
insulation

8



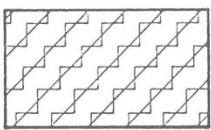
Earth

14



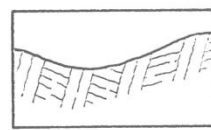
Bronze, brass,
copper, and
compositions

3



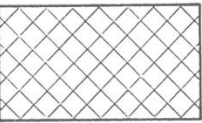
Thermal
insulation

9



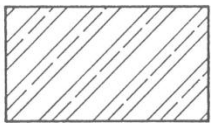
Rock

15



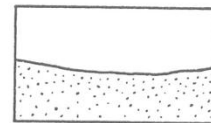
White metal,
zinc, lead, babbitt,
and alloys

4



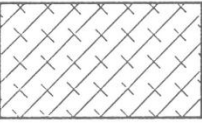
Titanium and
refractory
material

10



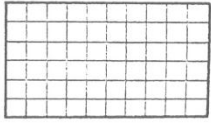
Sand

16



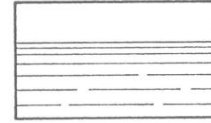
Magnesium,
aluminum, and
aluminum alloys

5



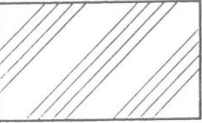
Electric windings,
electromagnets,
resistances, etc.

11



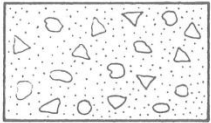
Water and
other liquids

17



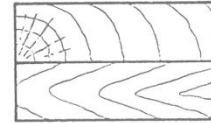
Rubber, plastic,
and electrical
insulation

6



Concrete

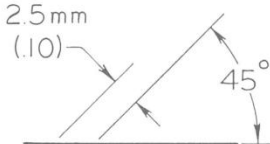
12



Across grain }
With grain } Wood

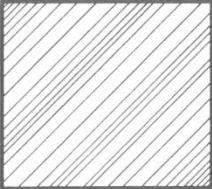
18

Correct Sectioning Lines



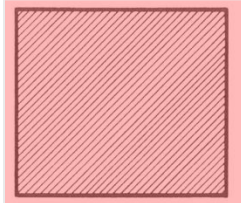
CORRECT
(a)

SPACING
IRREGULAR



INCORRECT
(b)

LINES
TOO CLOSE



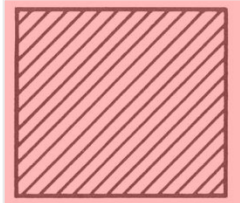
INCORRECT
(c)

VARYING
LINE WIDTHS



INCORRECT
(d)

LINES
TOO THICK

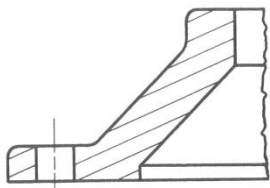


INCORRECT
(e)

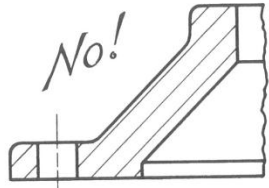
LINES SHORT
OR OVERRUNNING



INCORRECT
(f)

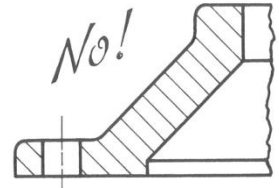


CORRECT
(a)



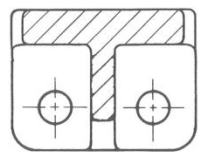
No!

(b)

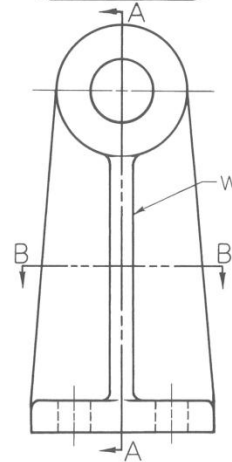


No!

(c)

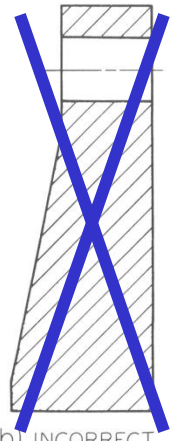


(c)
CORRECT



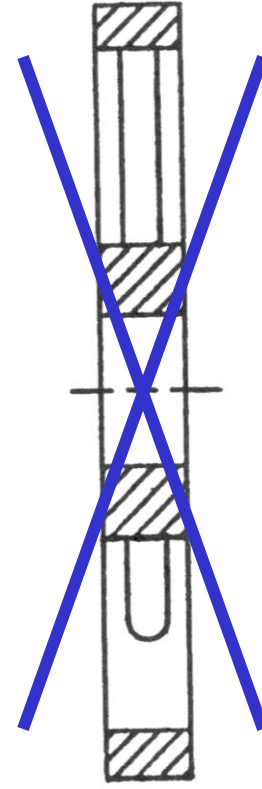
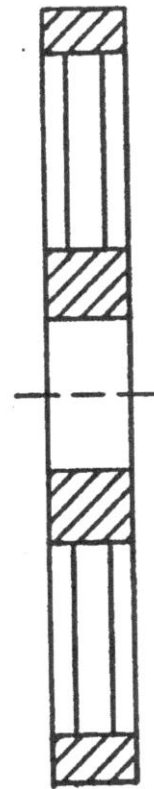
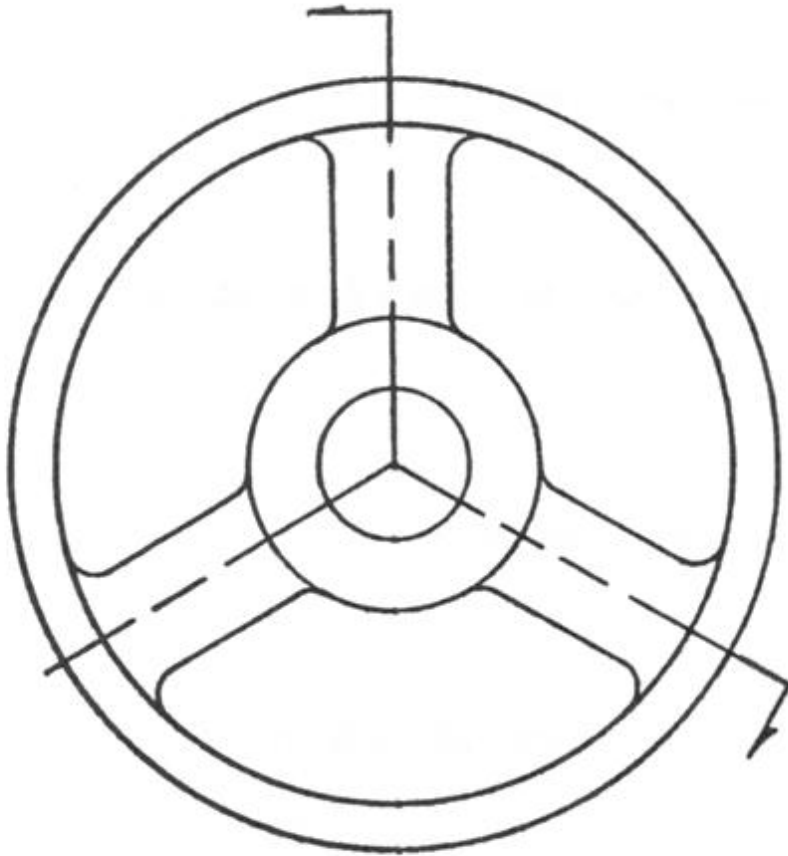
(a) CORRECT

WEB

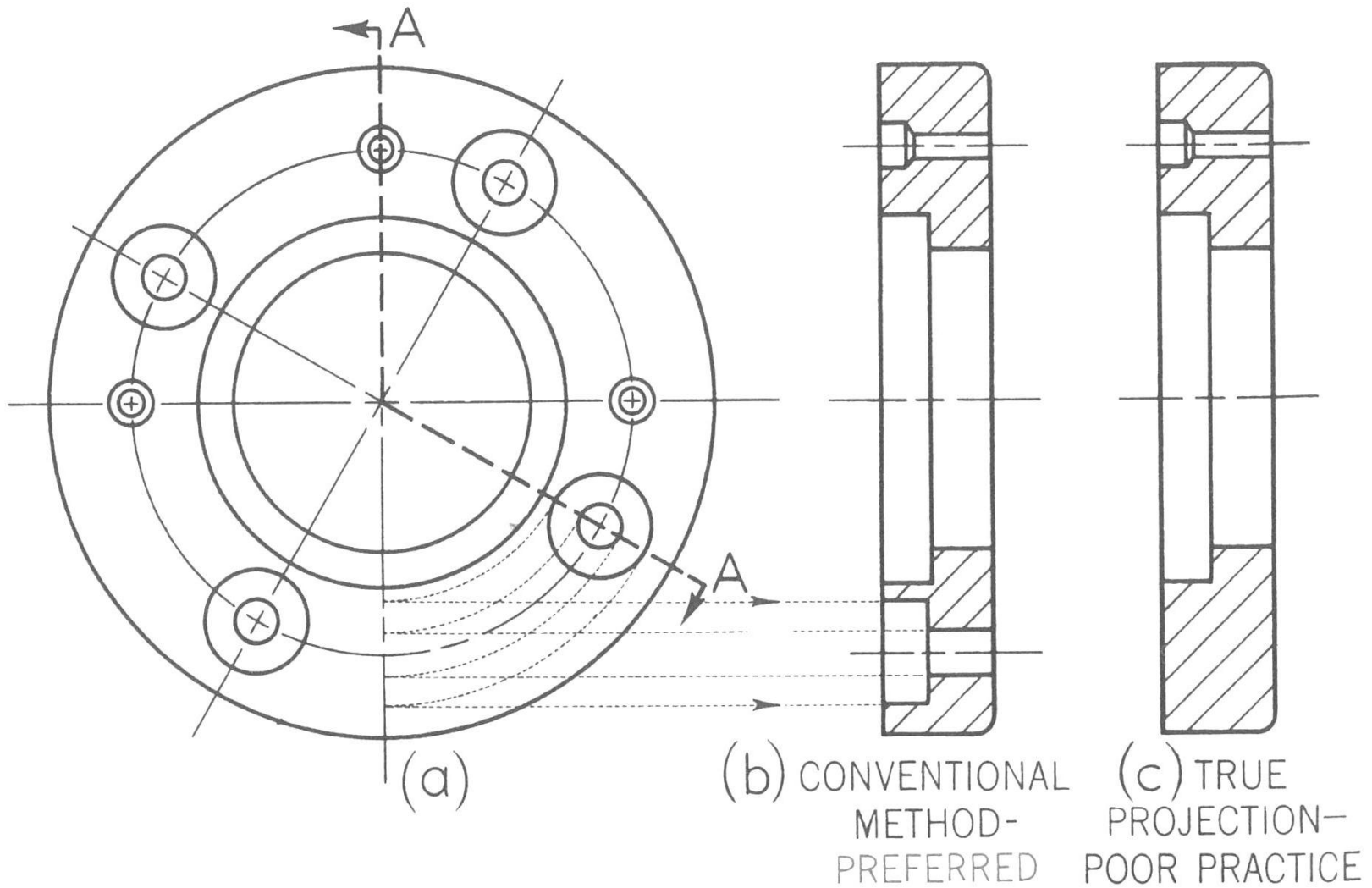


(b) INCORRECT

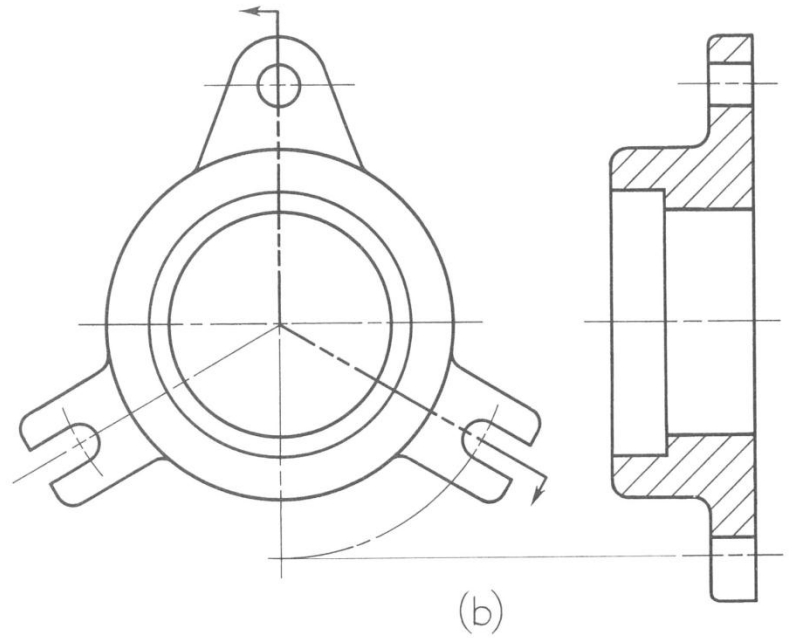
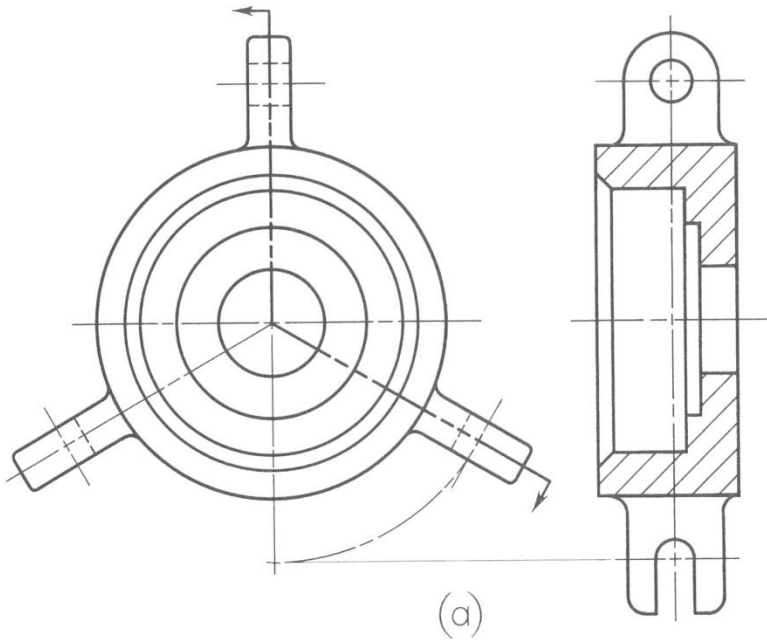
Angled Falt Section



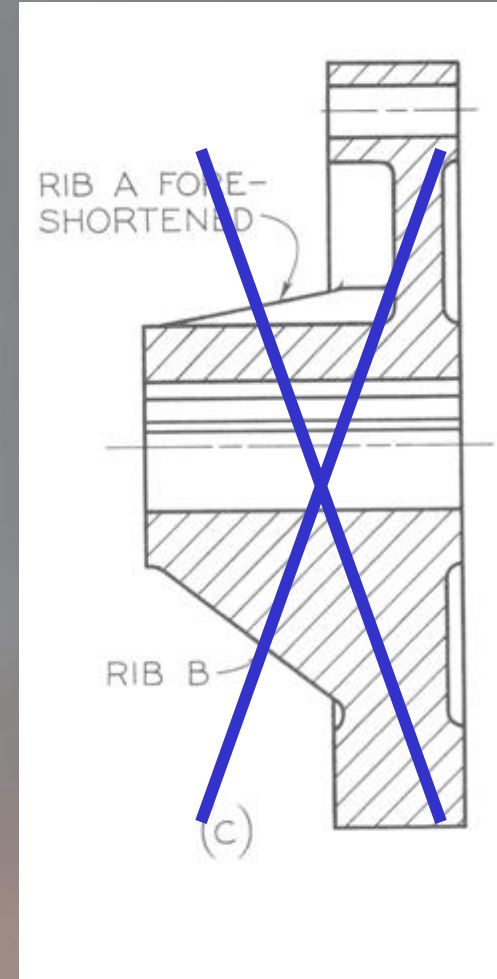
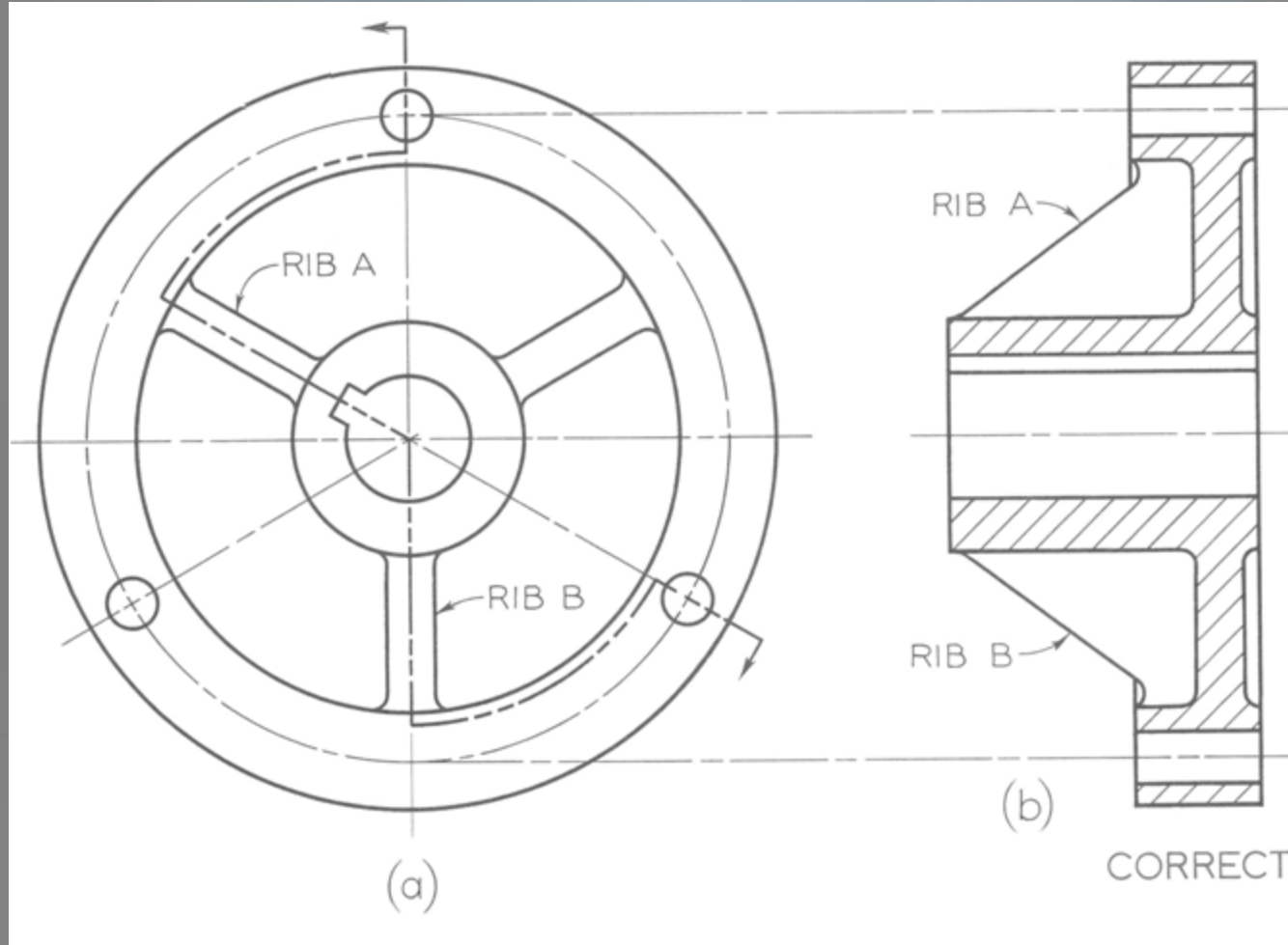
Aligned Full Section



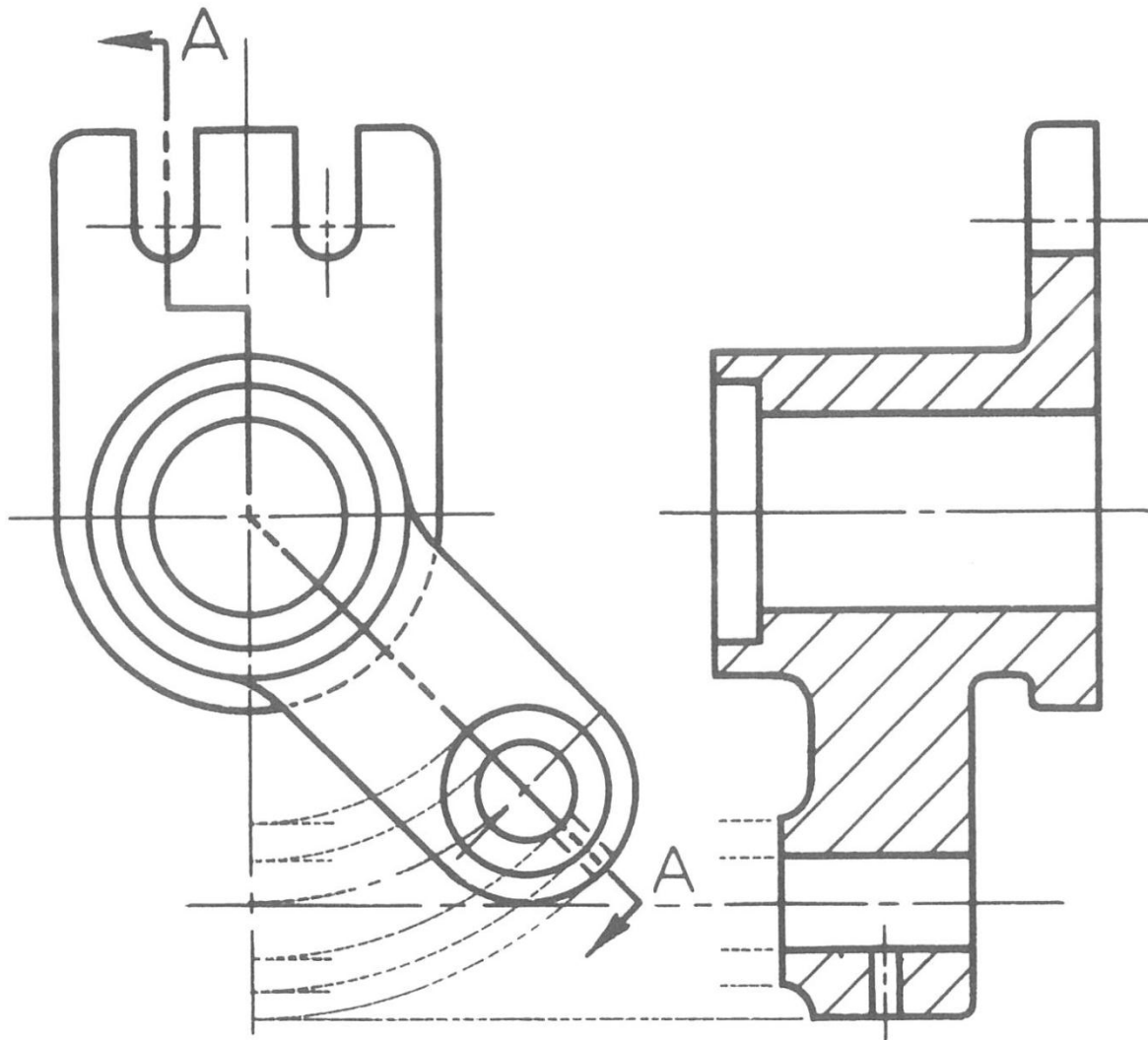
Aligned Full Section



Aligned Full Section

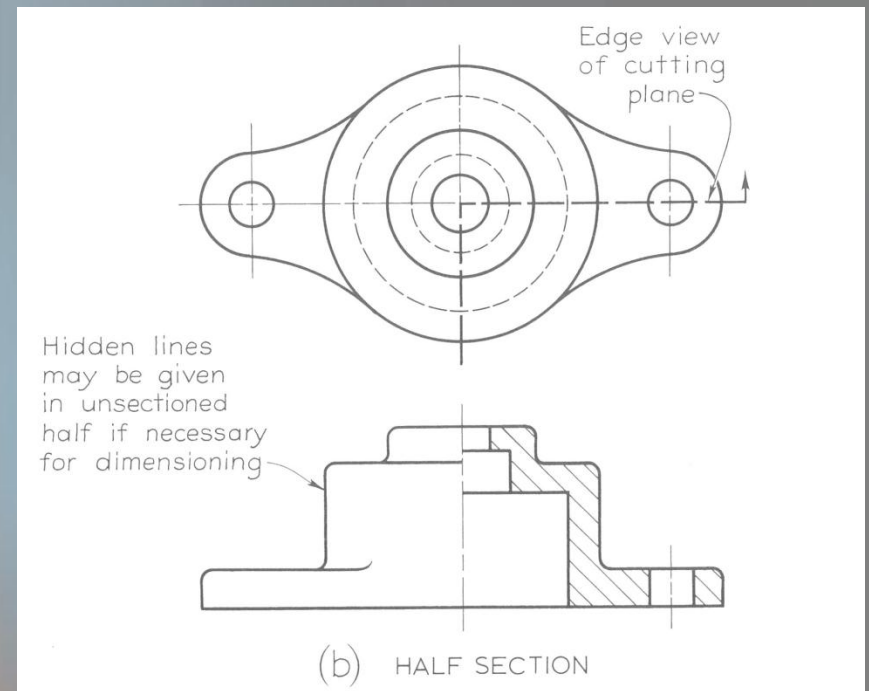
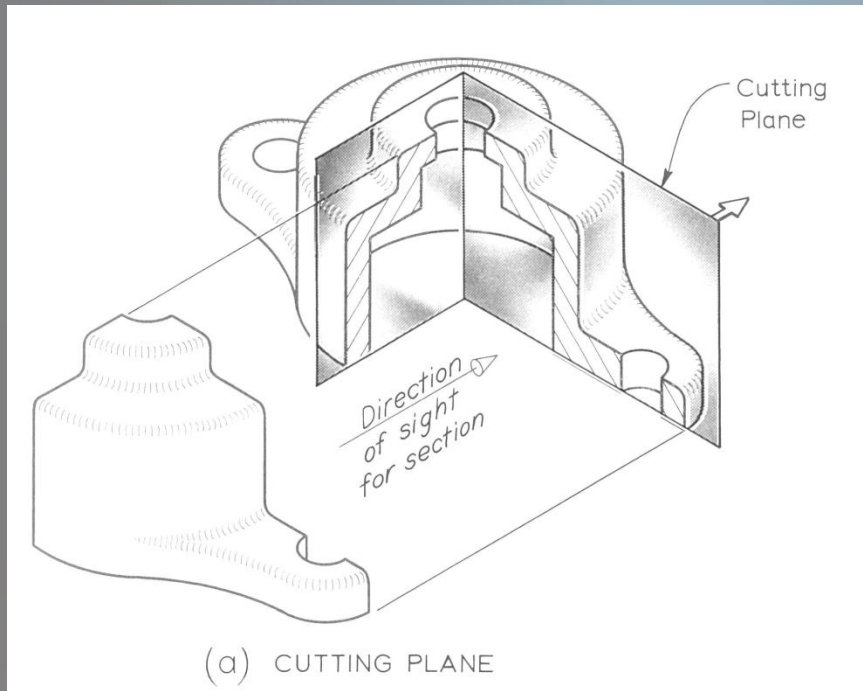


Aligned Full Section

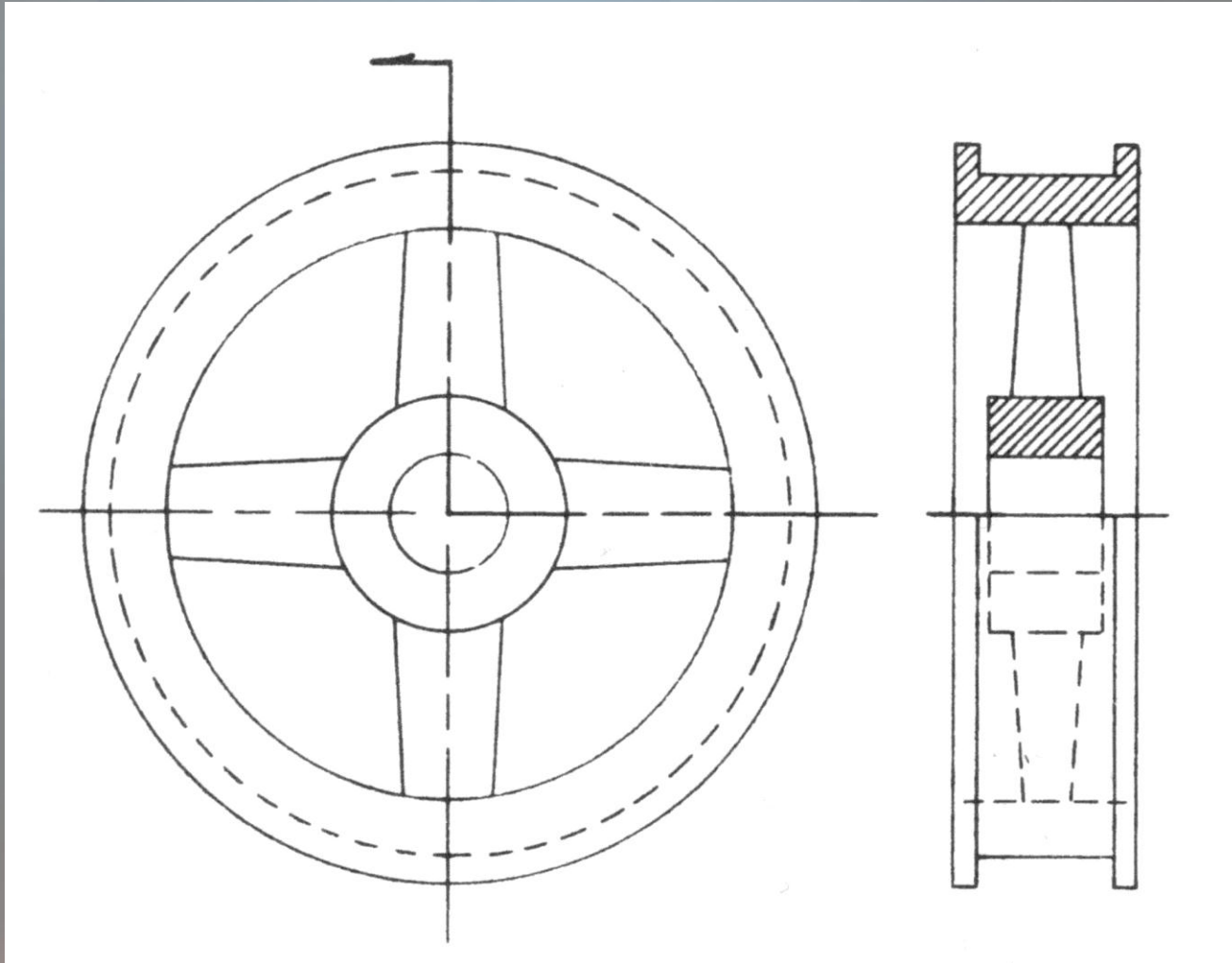


SECTION A-A

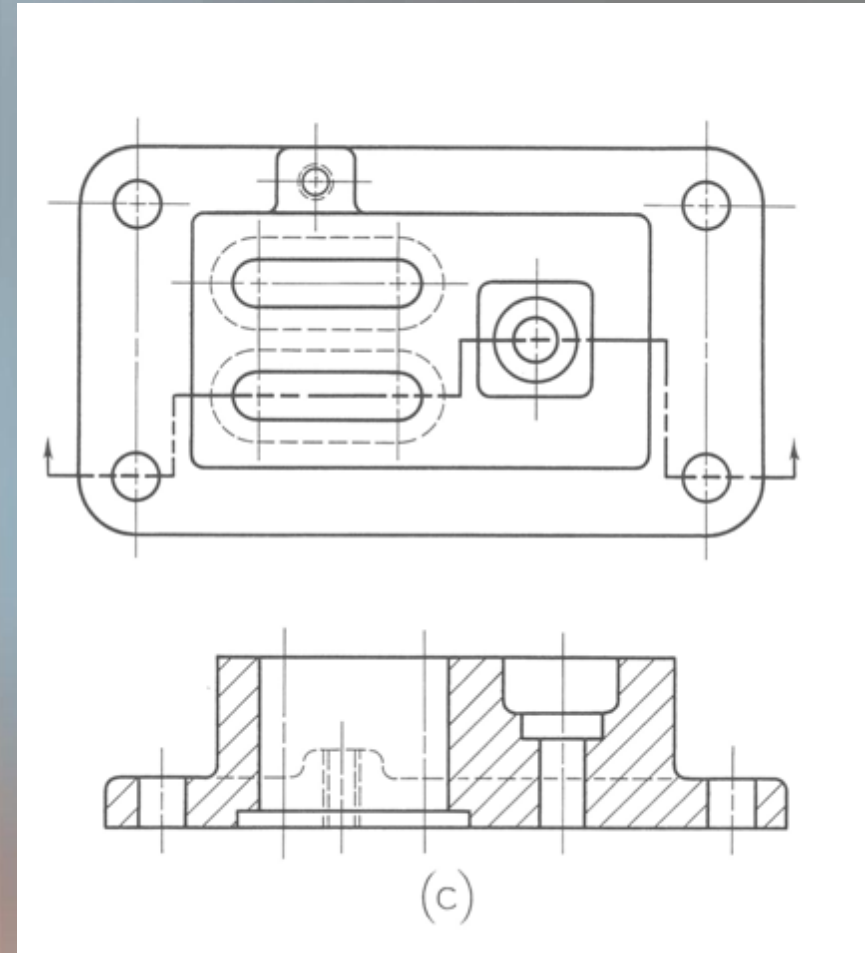
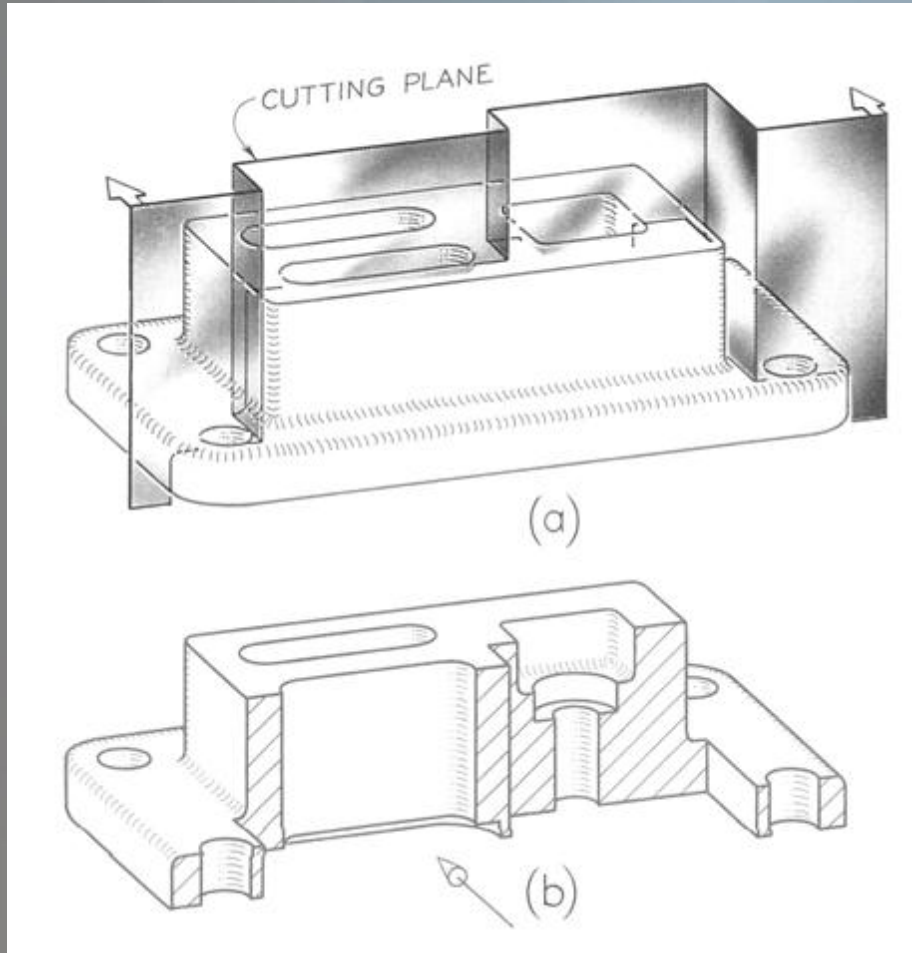
Half Section



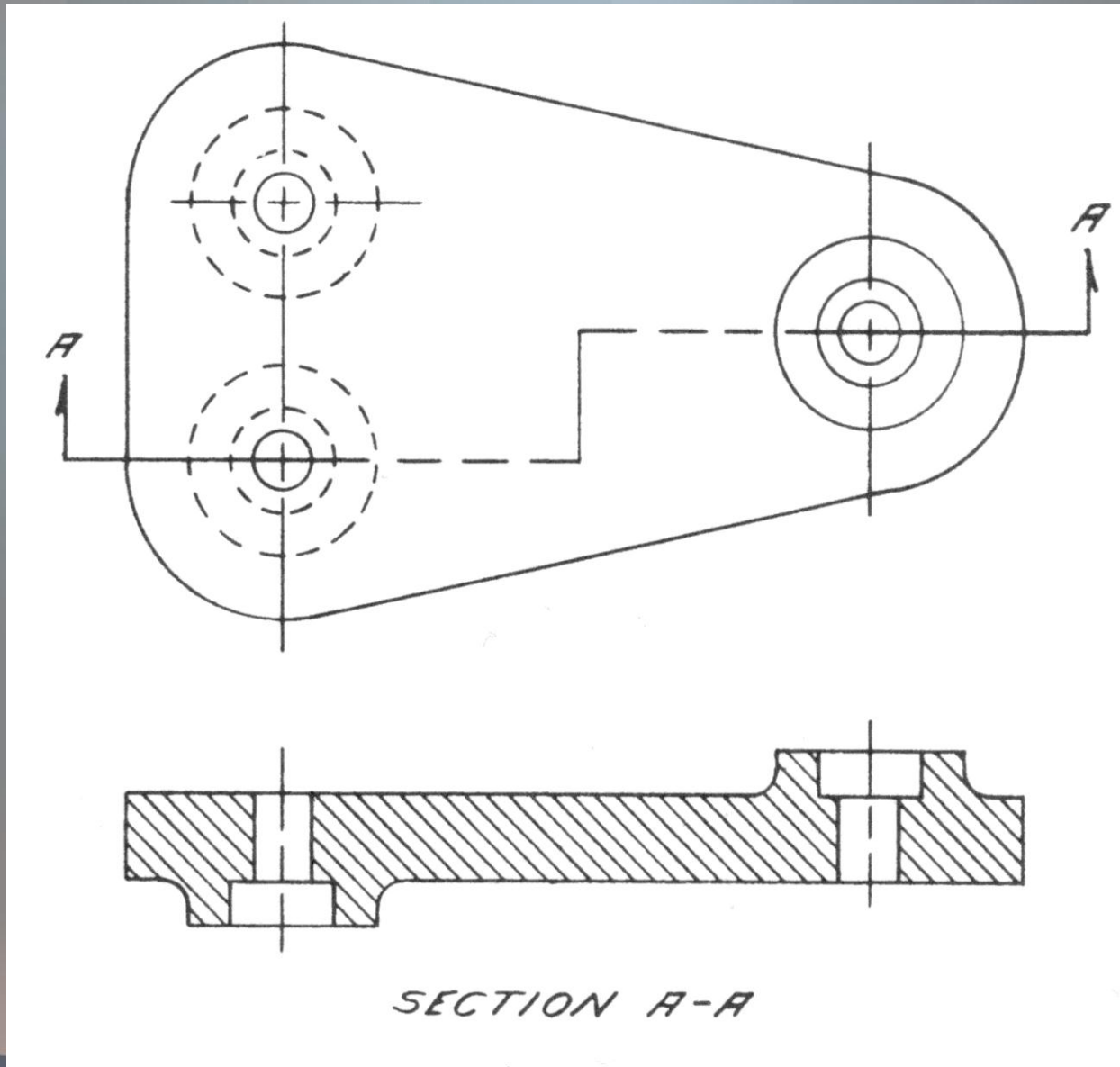
Half Section



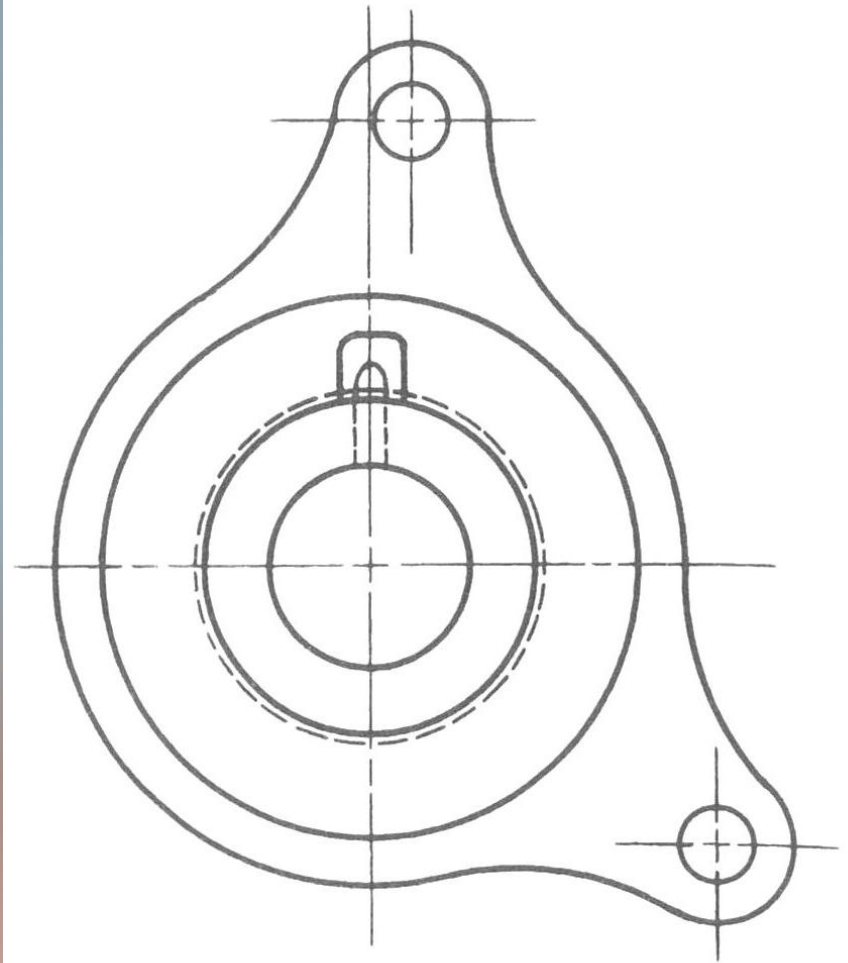
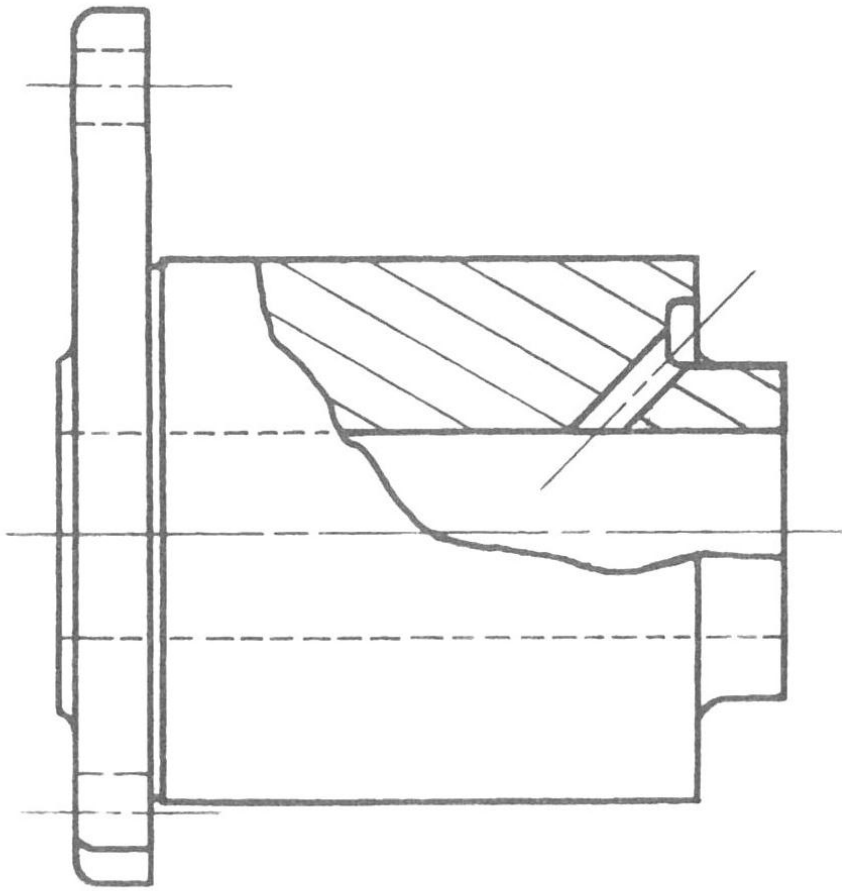
Offset Section



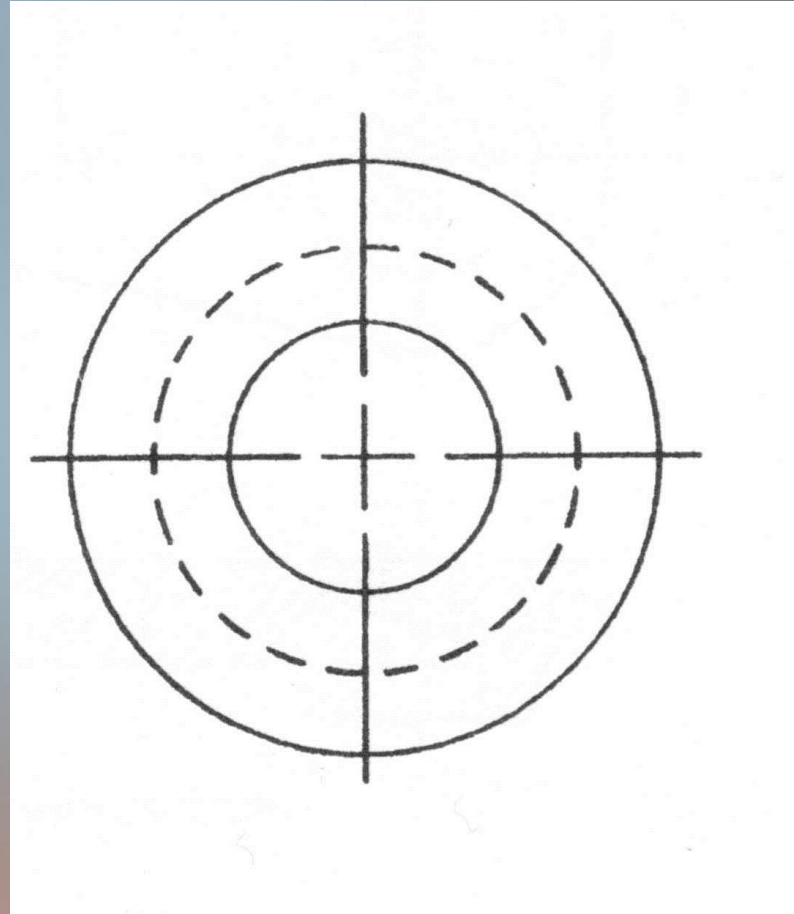
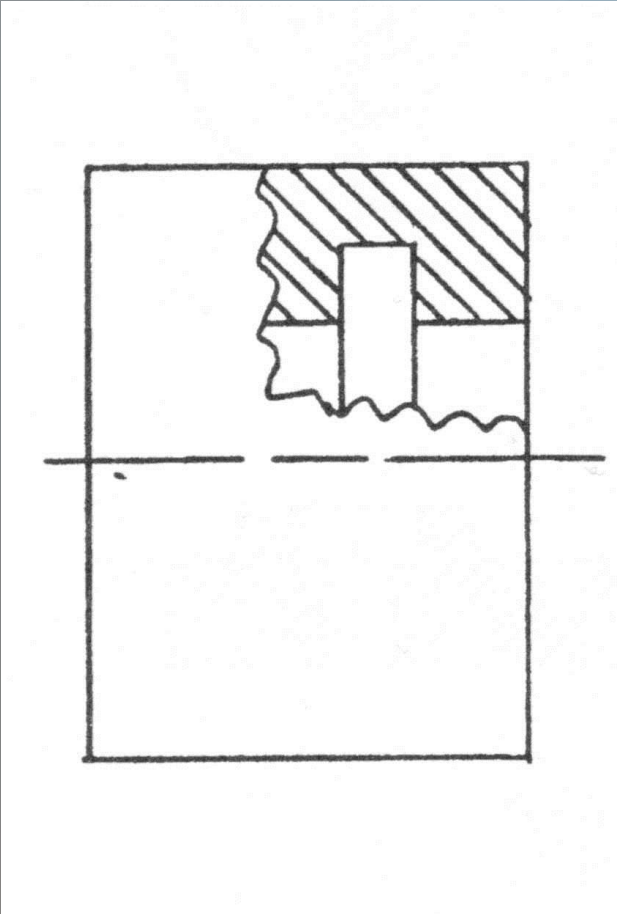
Offset Section



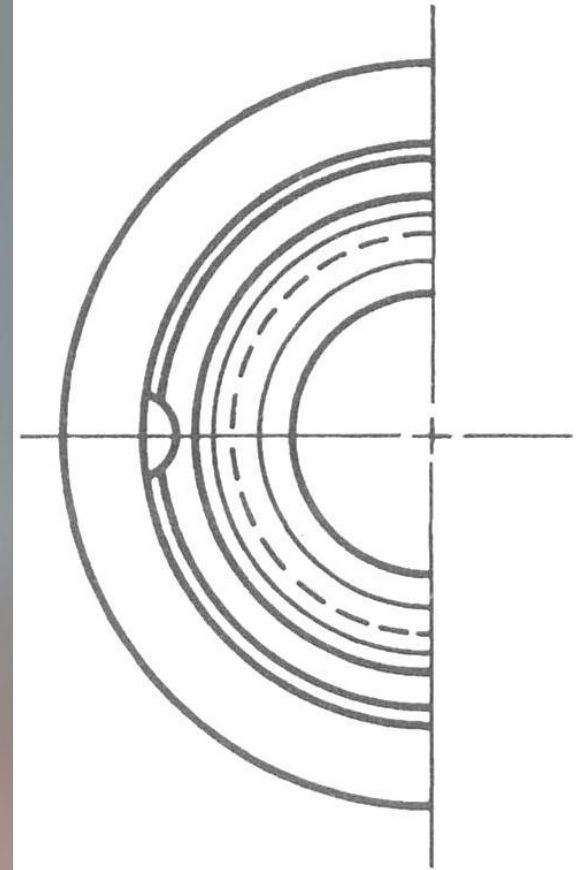
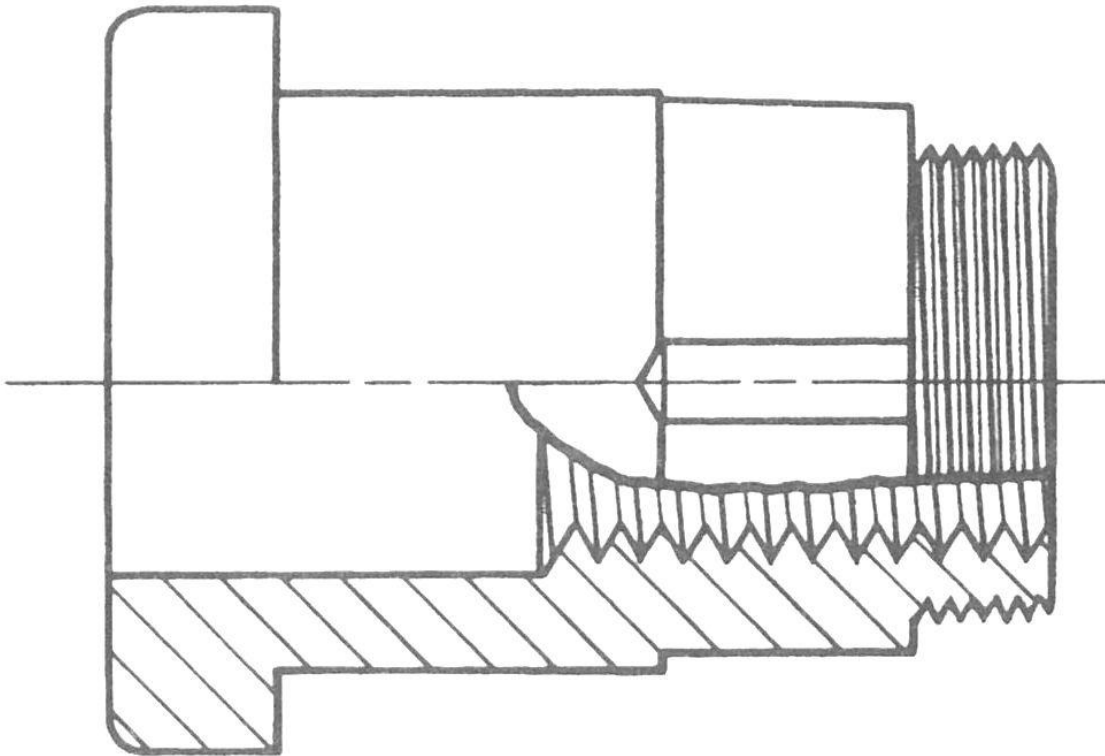
Broken-Out Section



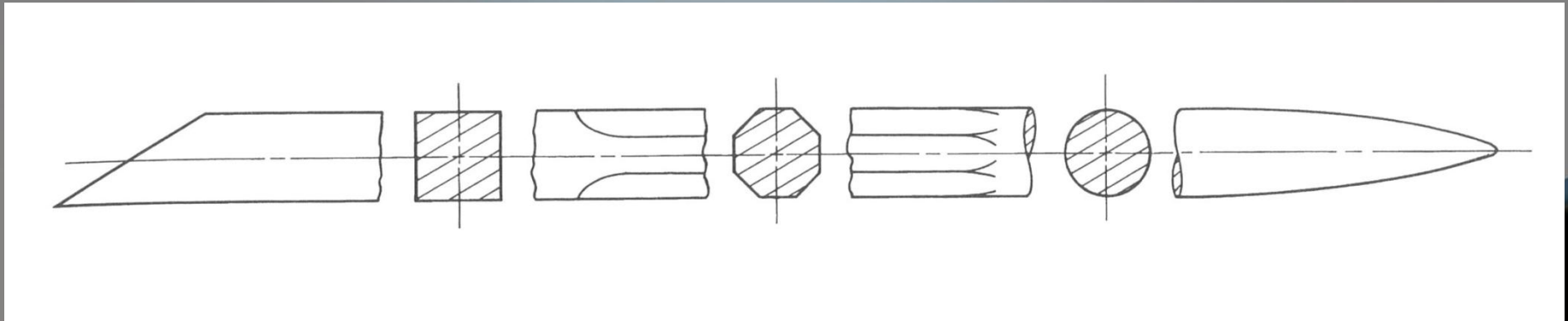
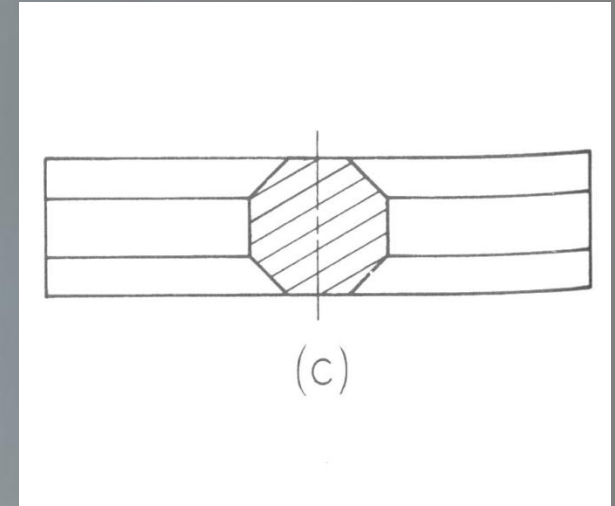
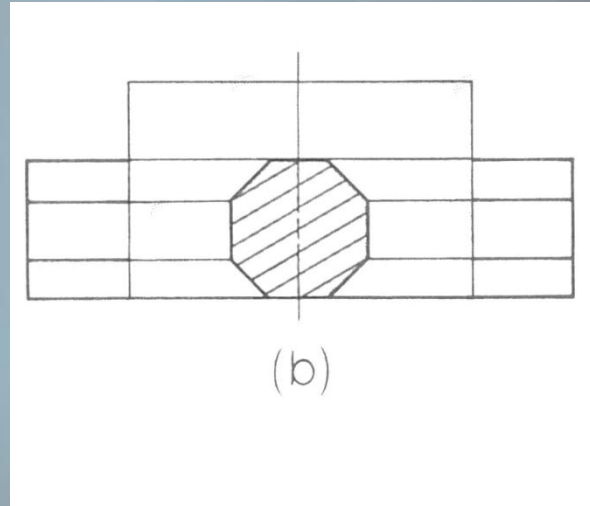
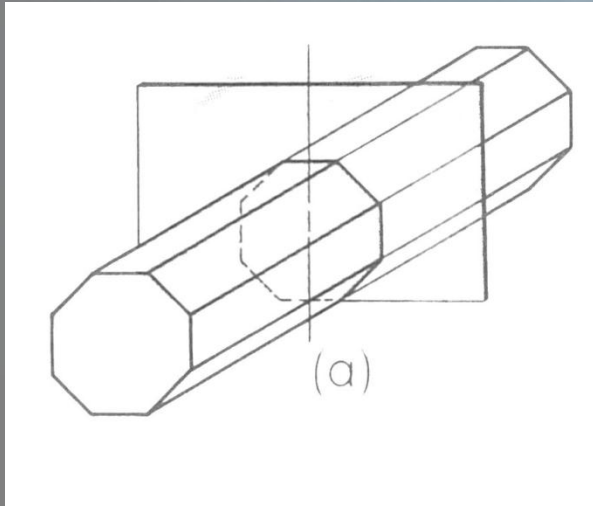
Broken-out Section



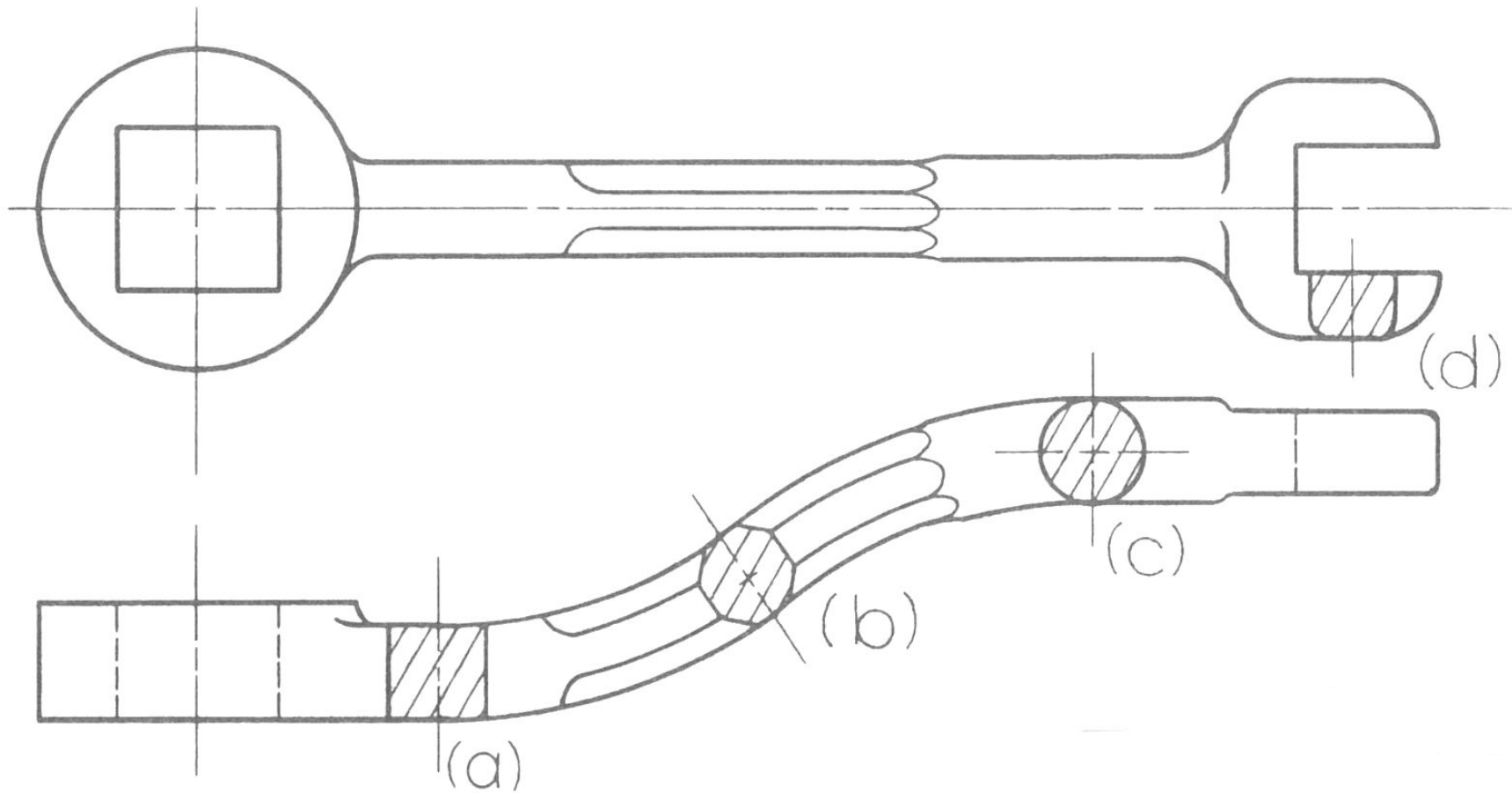
Break Around Section



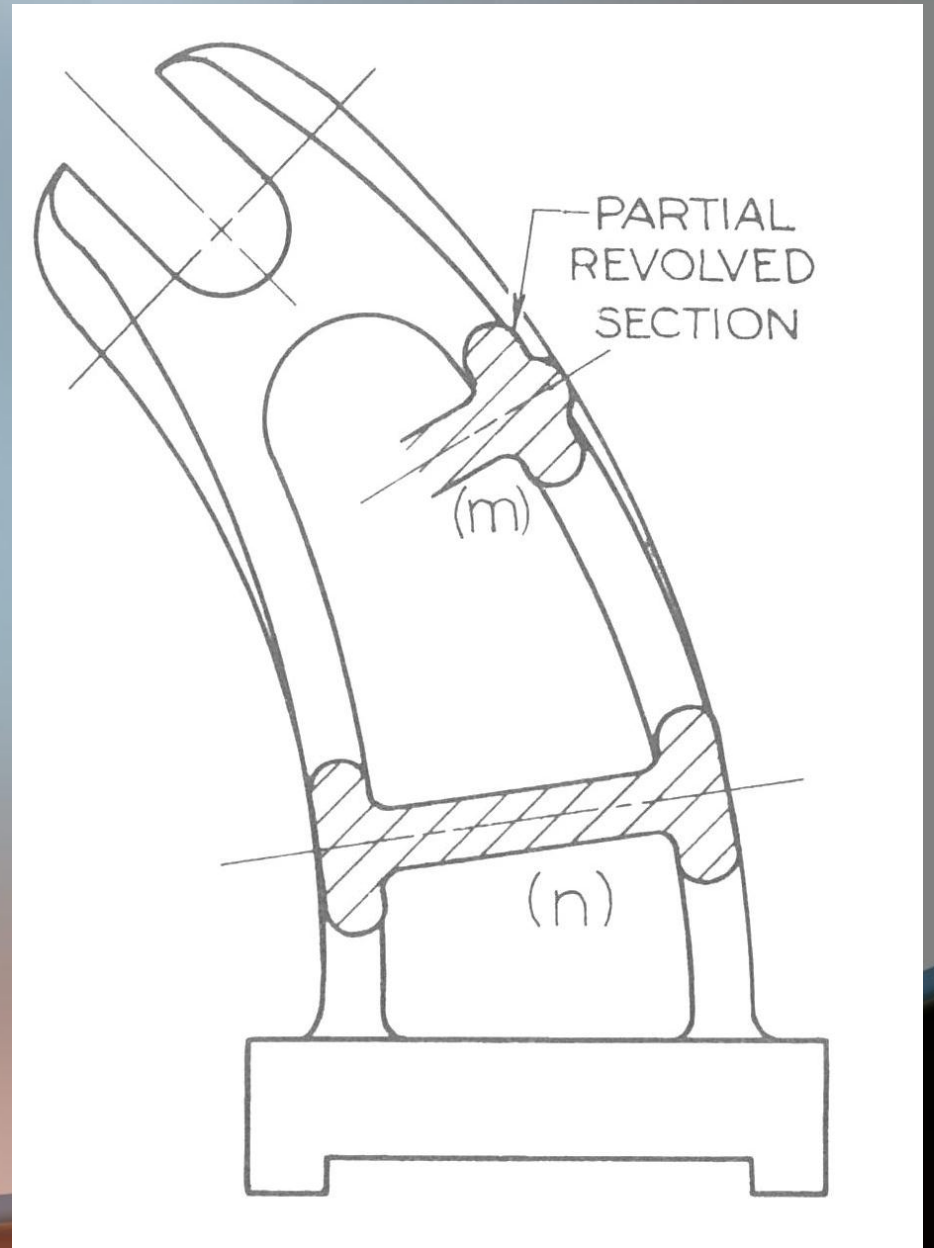
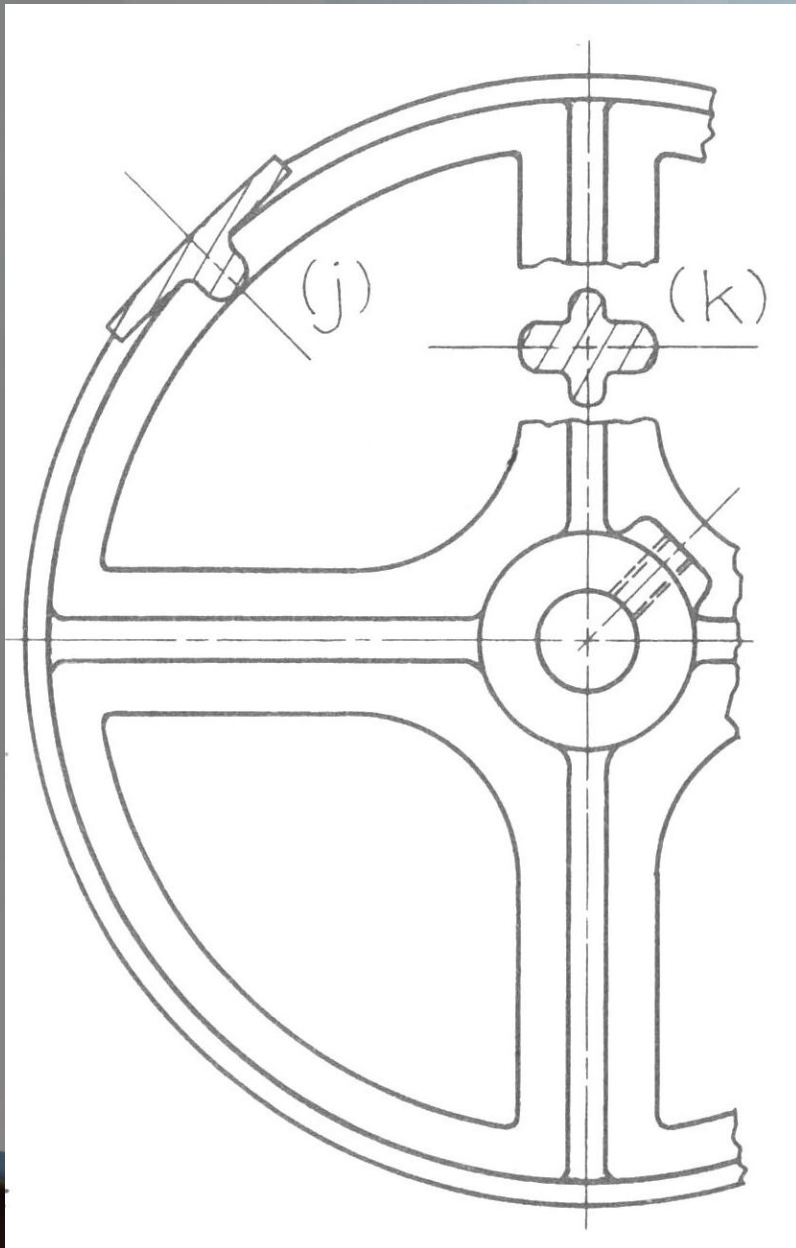
Revolved Section



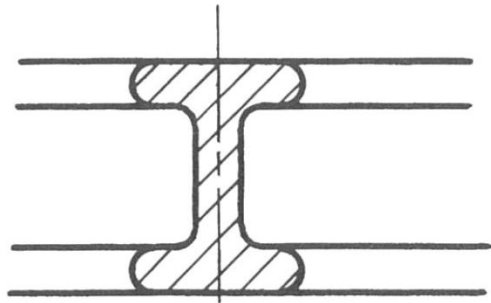
Revolved Section



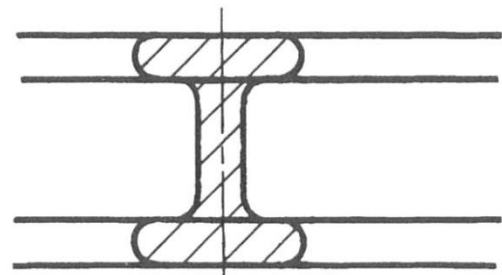
Revolved Section



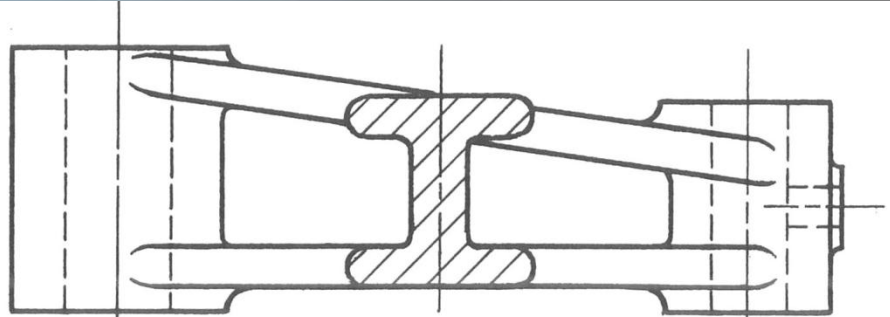
Common Errors: Revolved Section



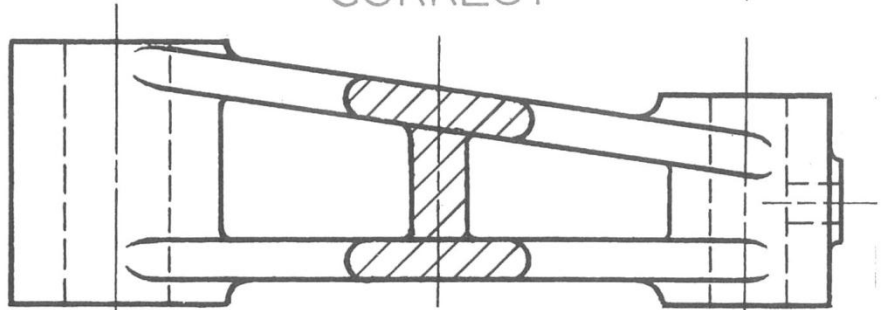
CORRECT



INCORRECT

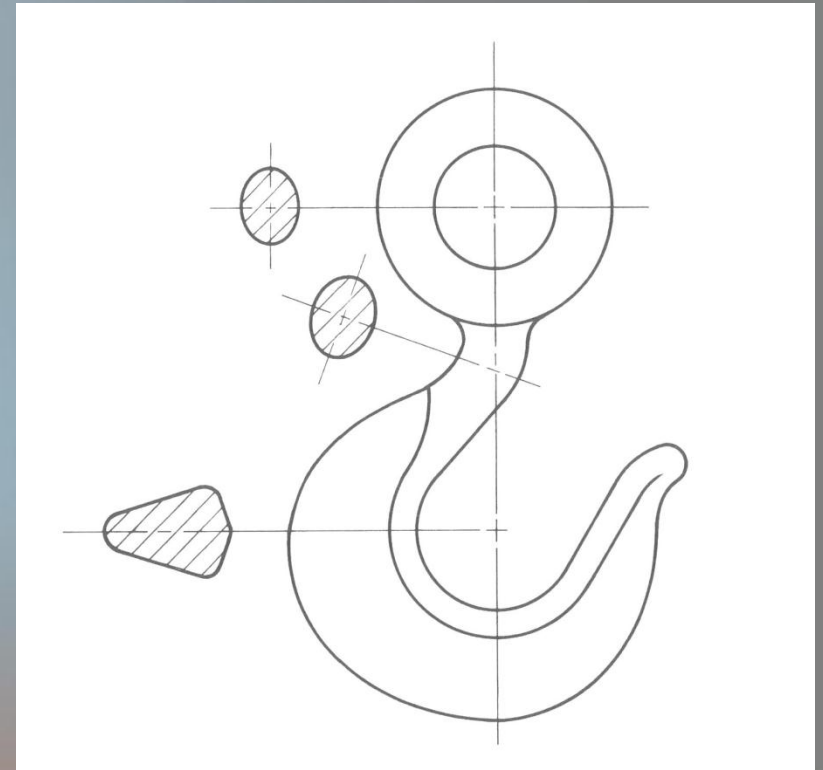
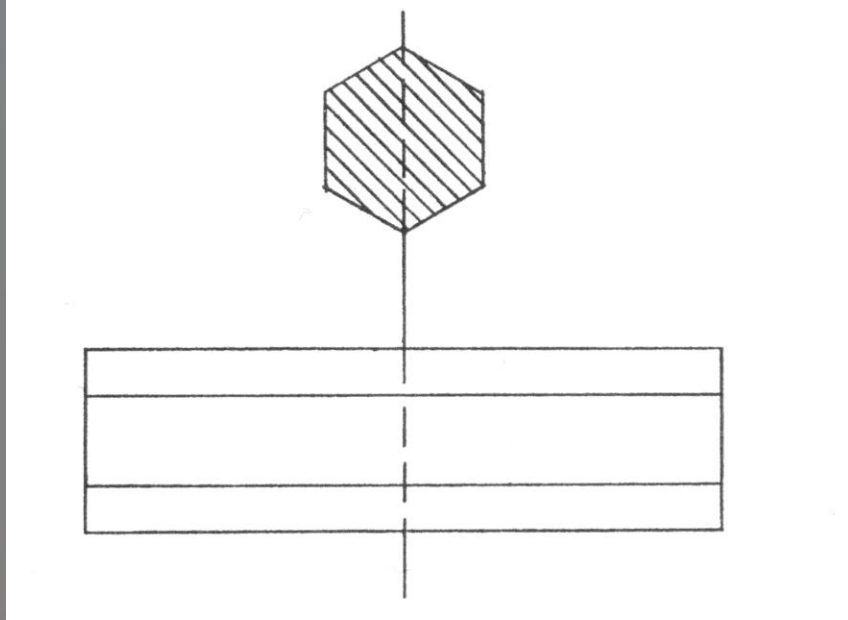


CORRECT



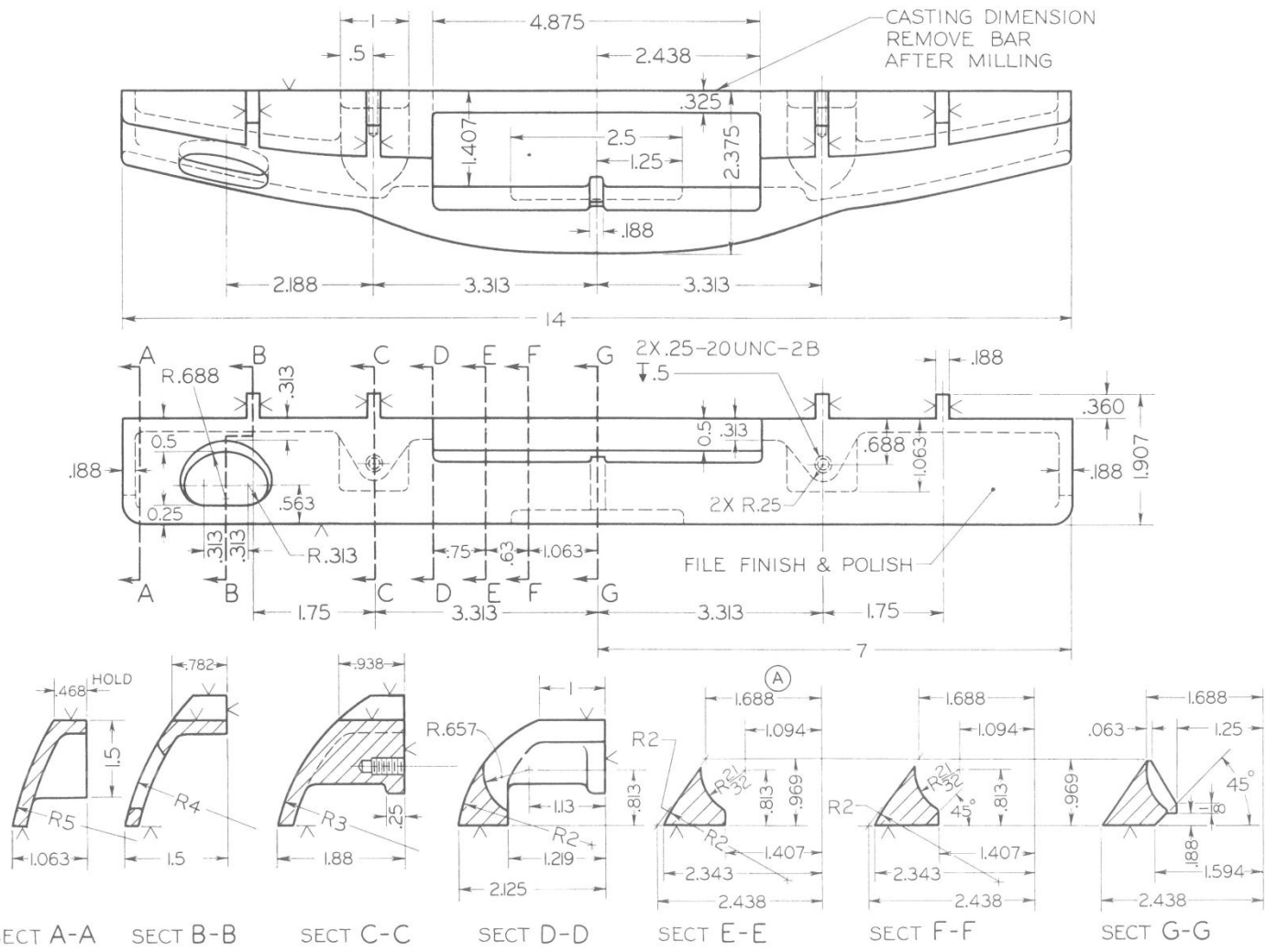
INCORRECT

Removed Section



Removed Section

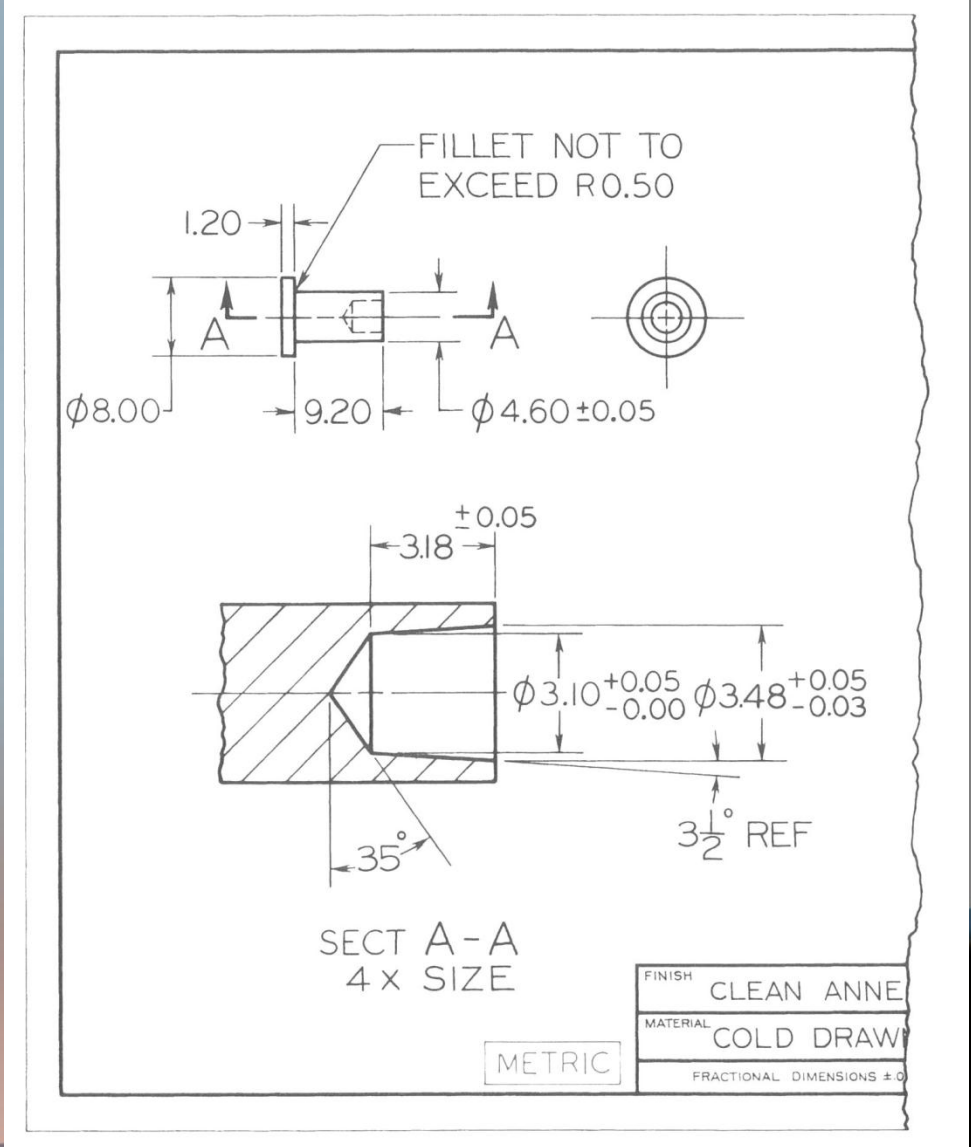
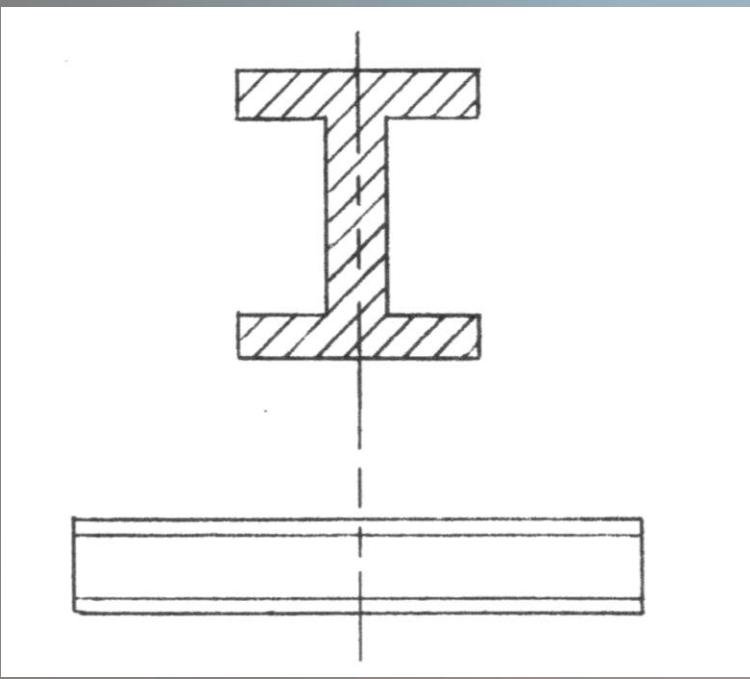
3254 J



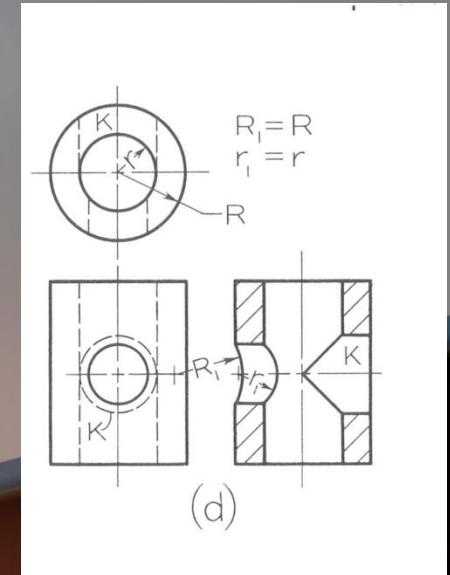
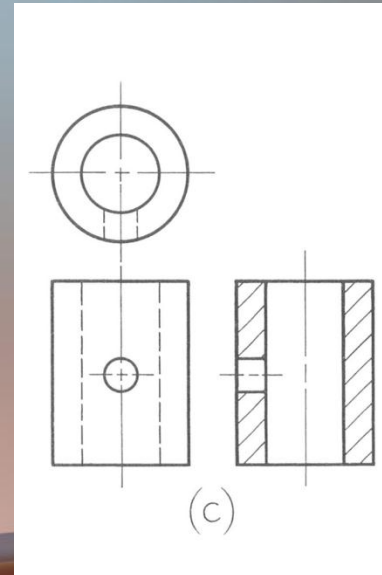
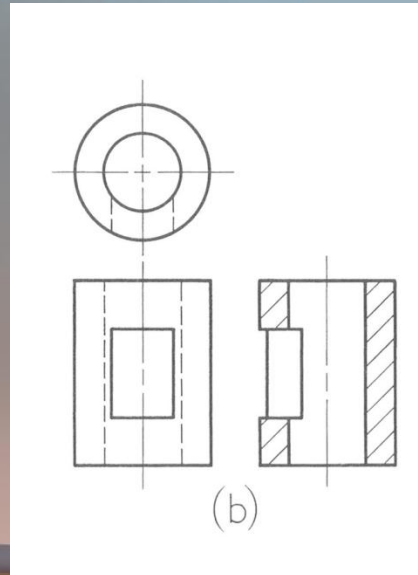
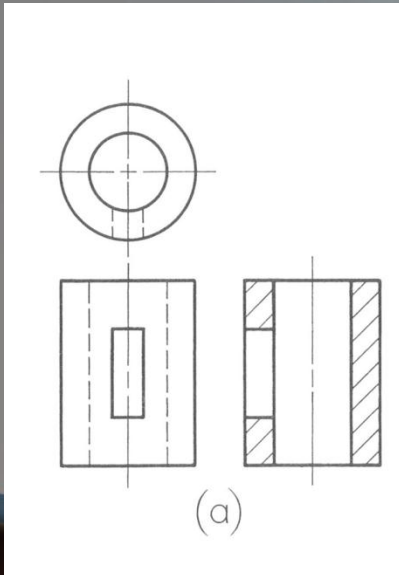
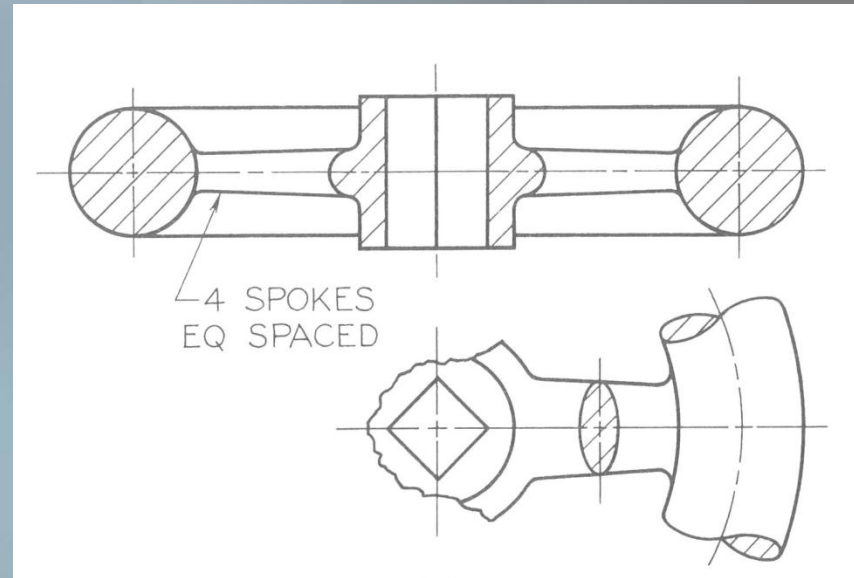
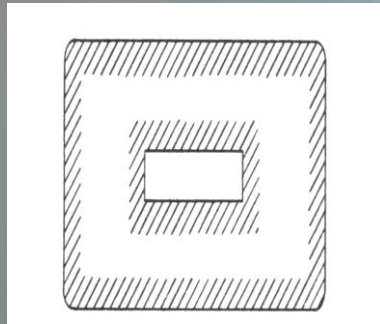
LIMITS ON FRACTIONAL MACHINE DIMENSIONS: 1/64 AND ON DECIMAL DIMENSIONS: .001 UNLESS OTHERWISE SPECIFIED

TITLE		FEED BLADE	
MACHINE	K-35	SHOP ORDER	4683
DRAWN BY	H.C.S.	CHECKED	J.J.
MATERIAL		CAST AL	
HEAT TREATMENT		HARDNESS	
LETTER	CHANGE	BY	DATE
A	WAS 1 3/4"	J.S.	11-1-85
AJAX MACHINE CO., INC.			3254 J
CHICAGO, ILL.			

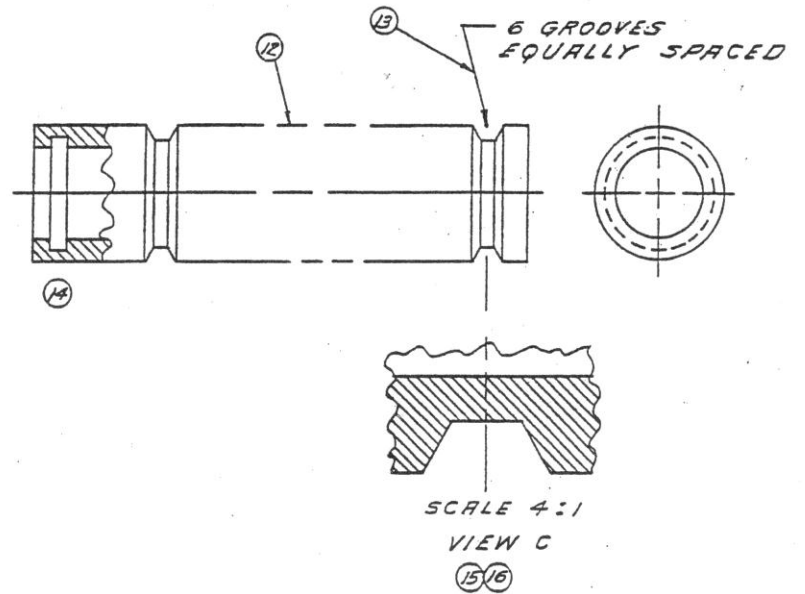
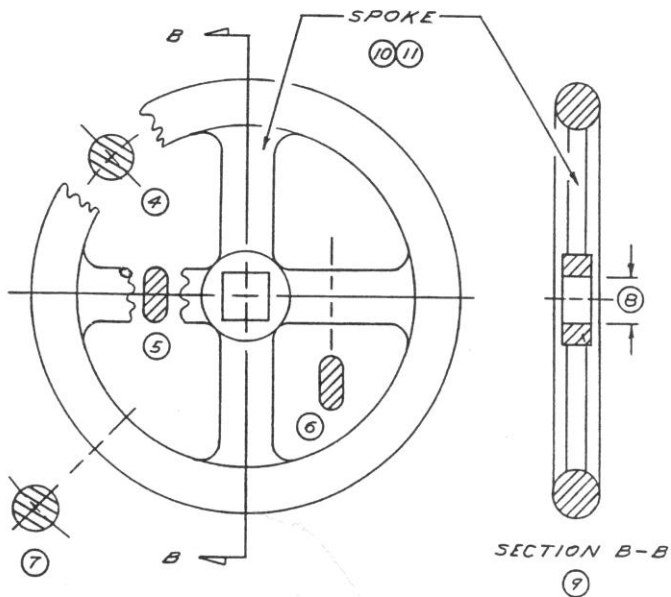
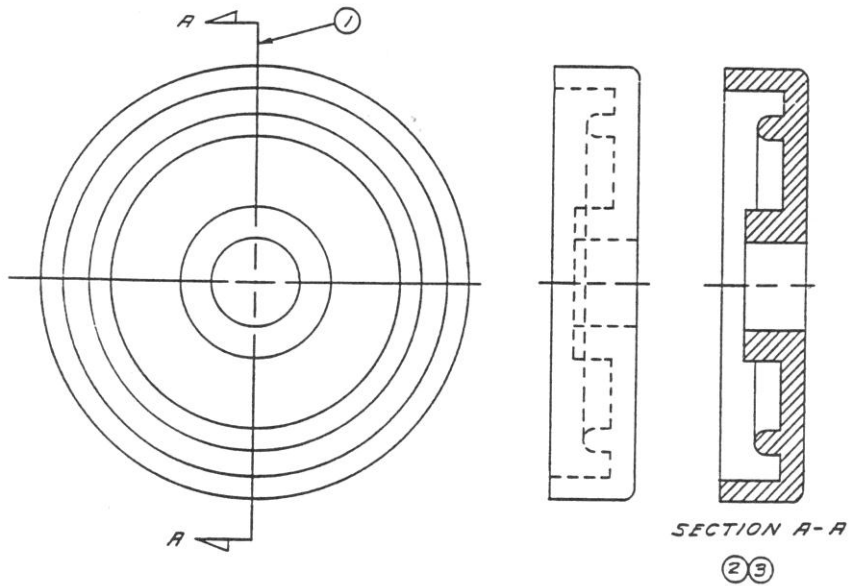
Enlarged Removed Section



Sectioning Problems



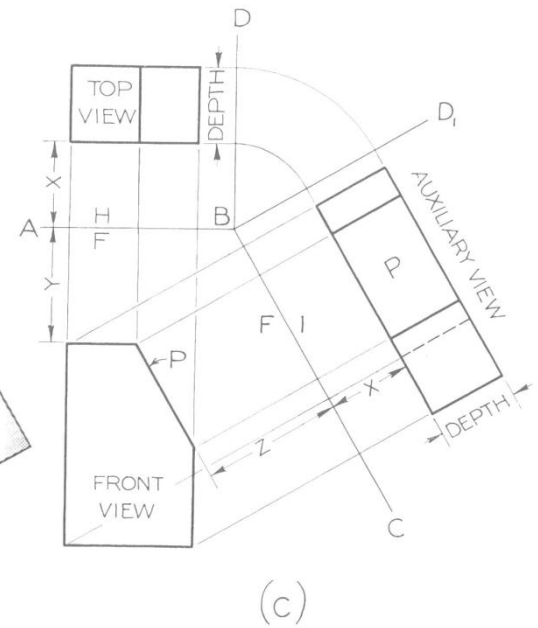
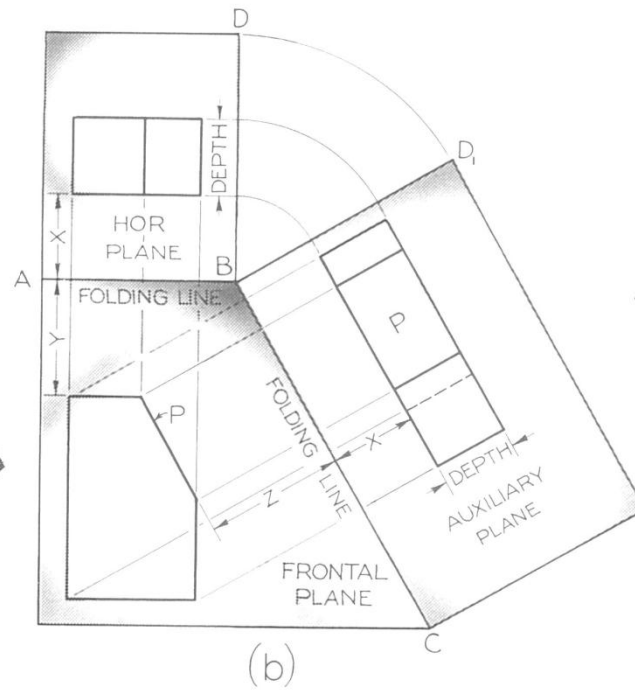
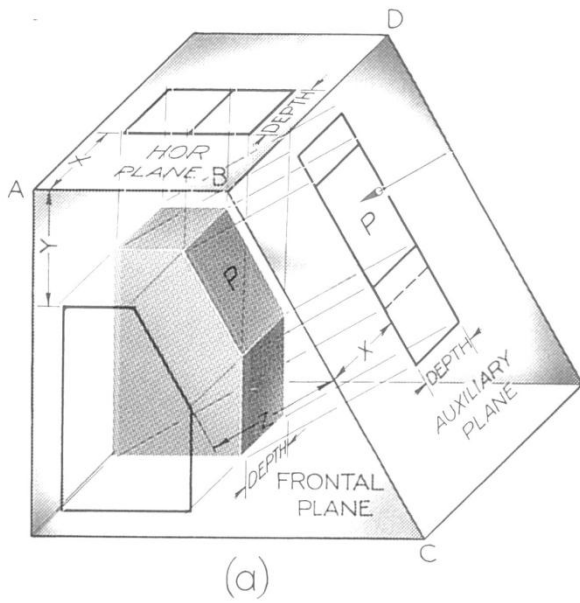
Sectioning Quiz



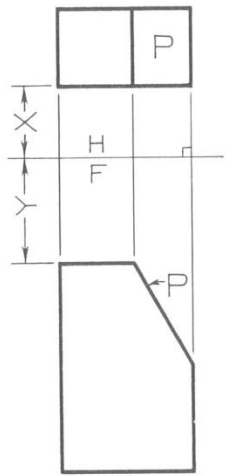
Auxiliary Views

ME 172

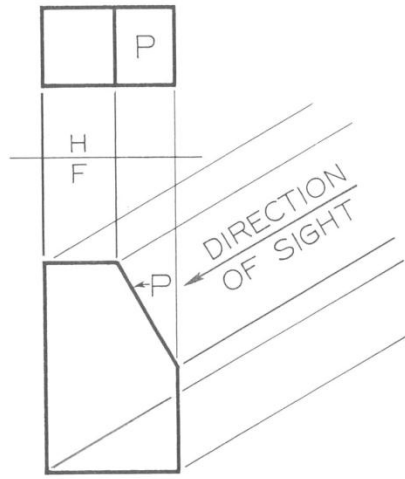
Auxiliary View



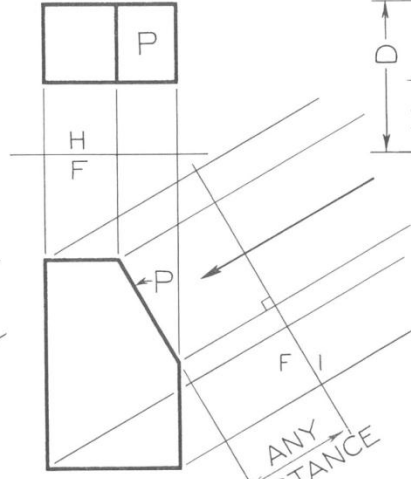
Auxiliary Views



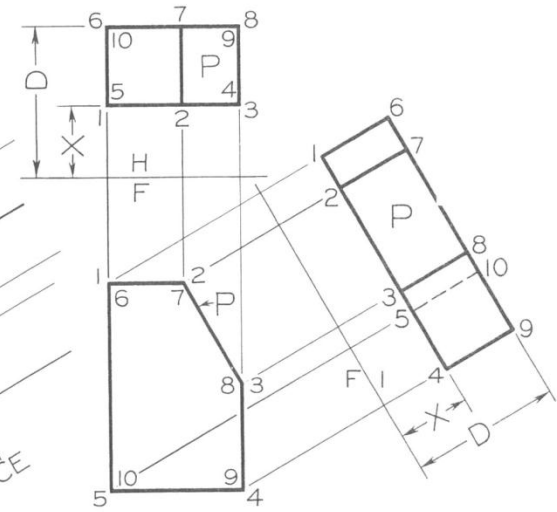
I



II

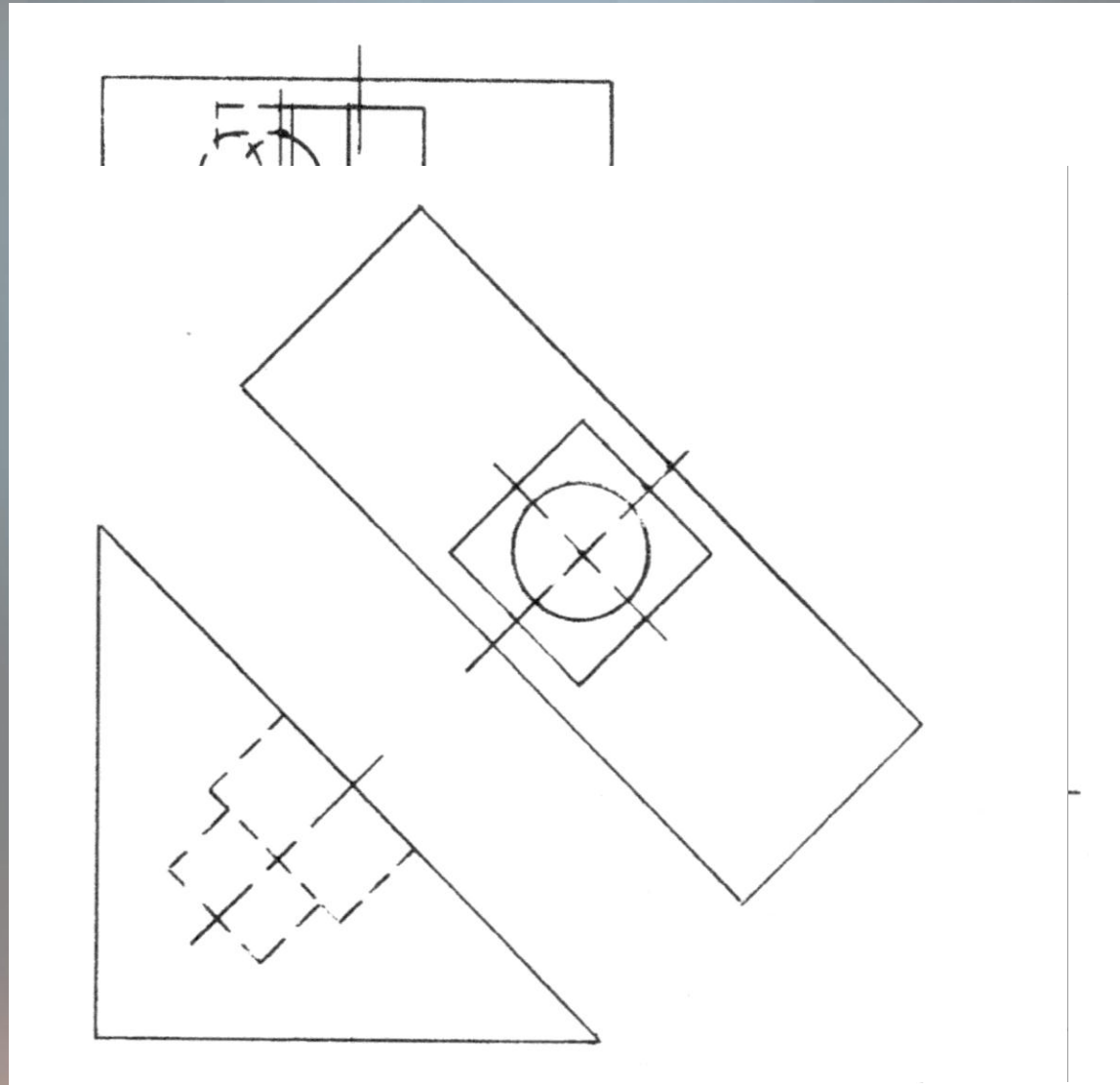


III

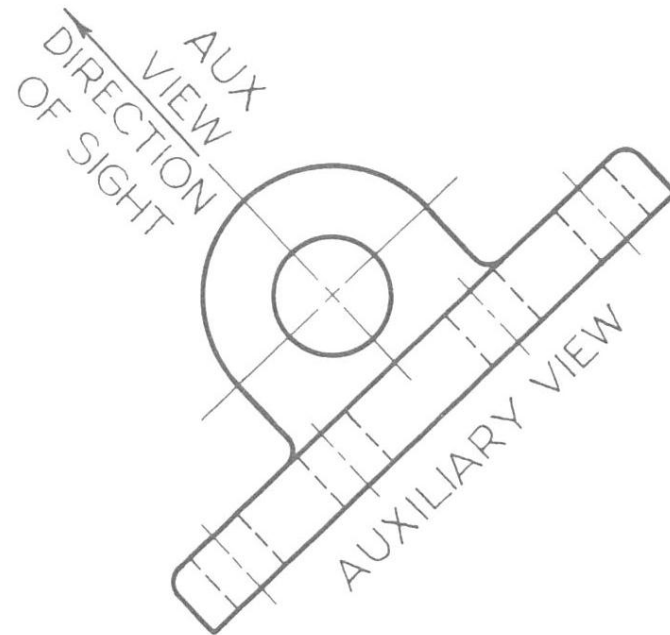
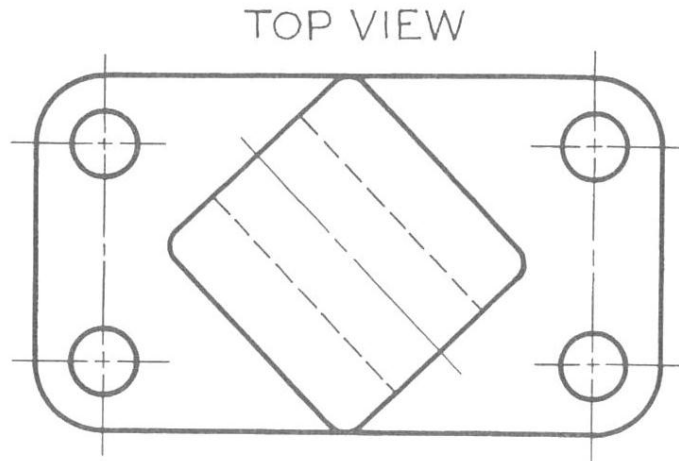


IV

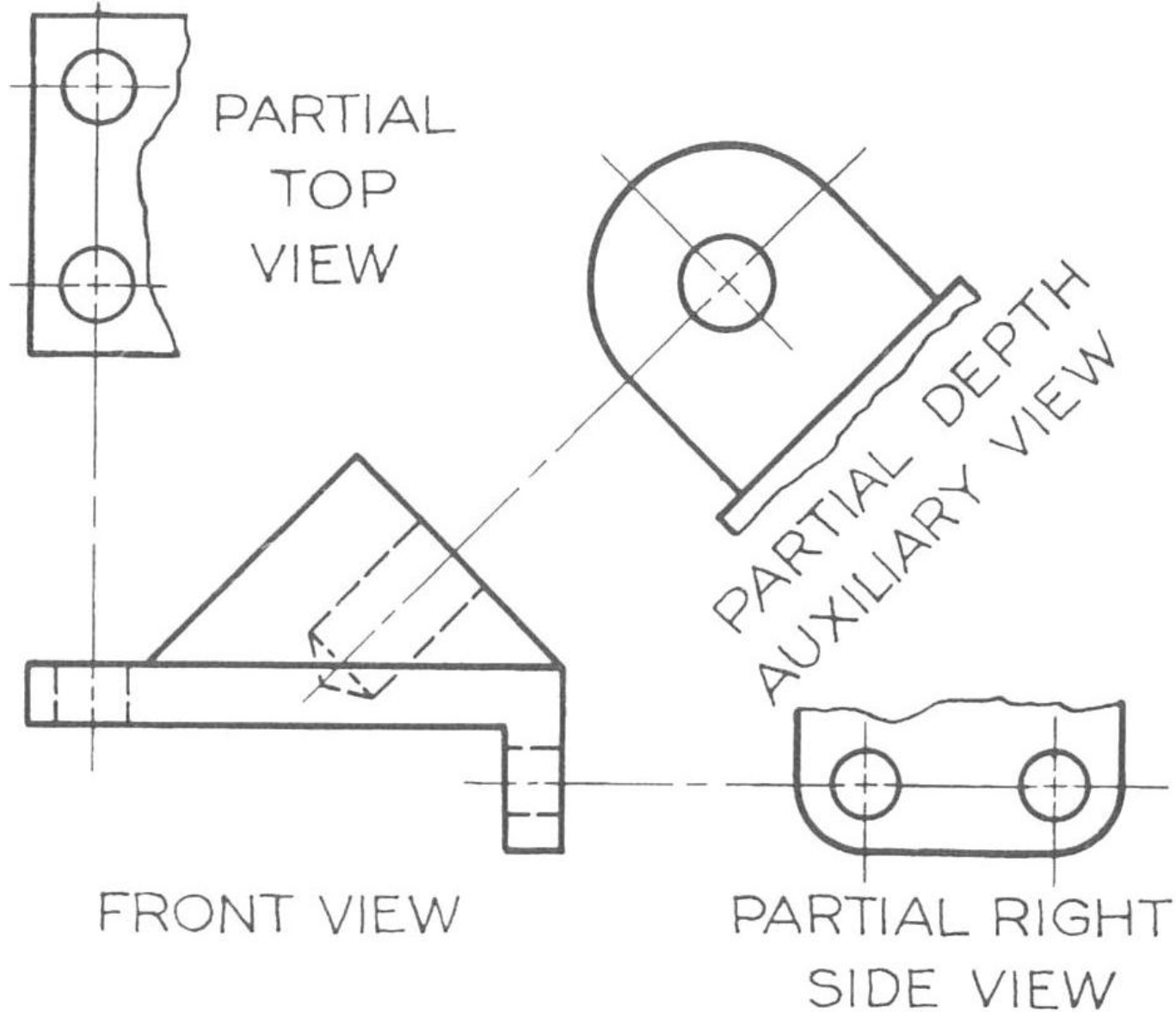
Orthographic Views



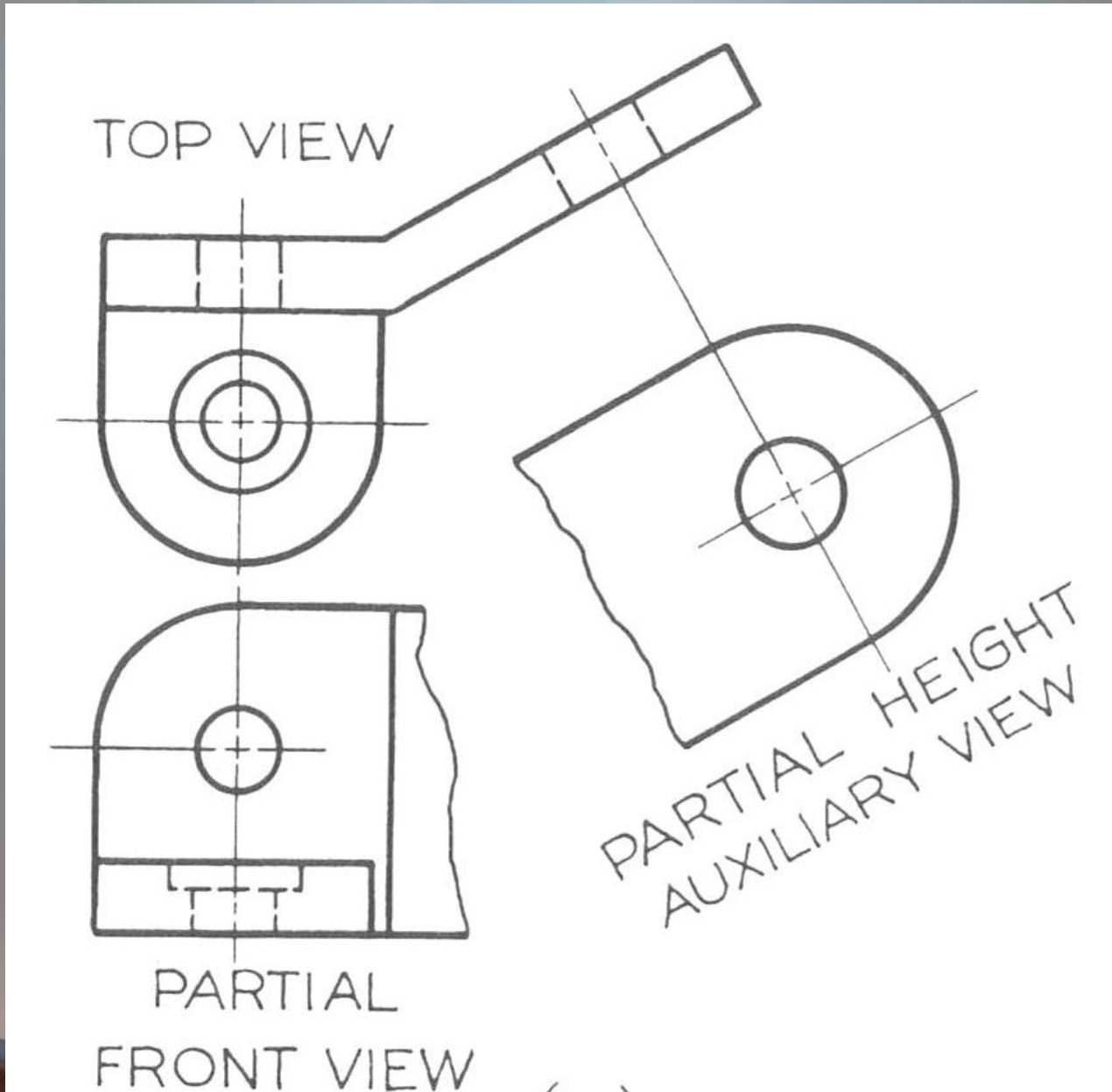
Orthographic Views



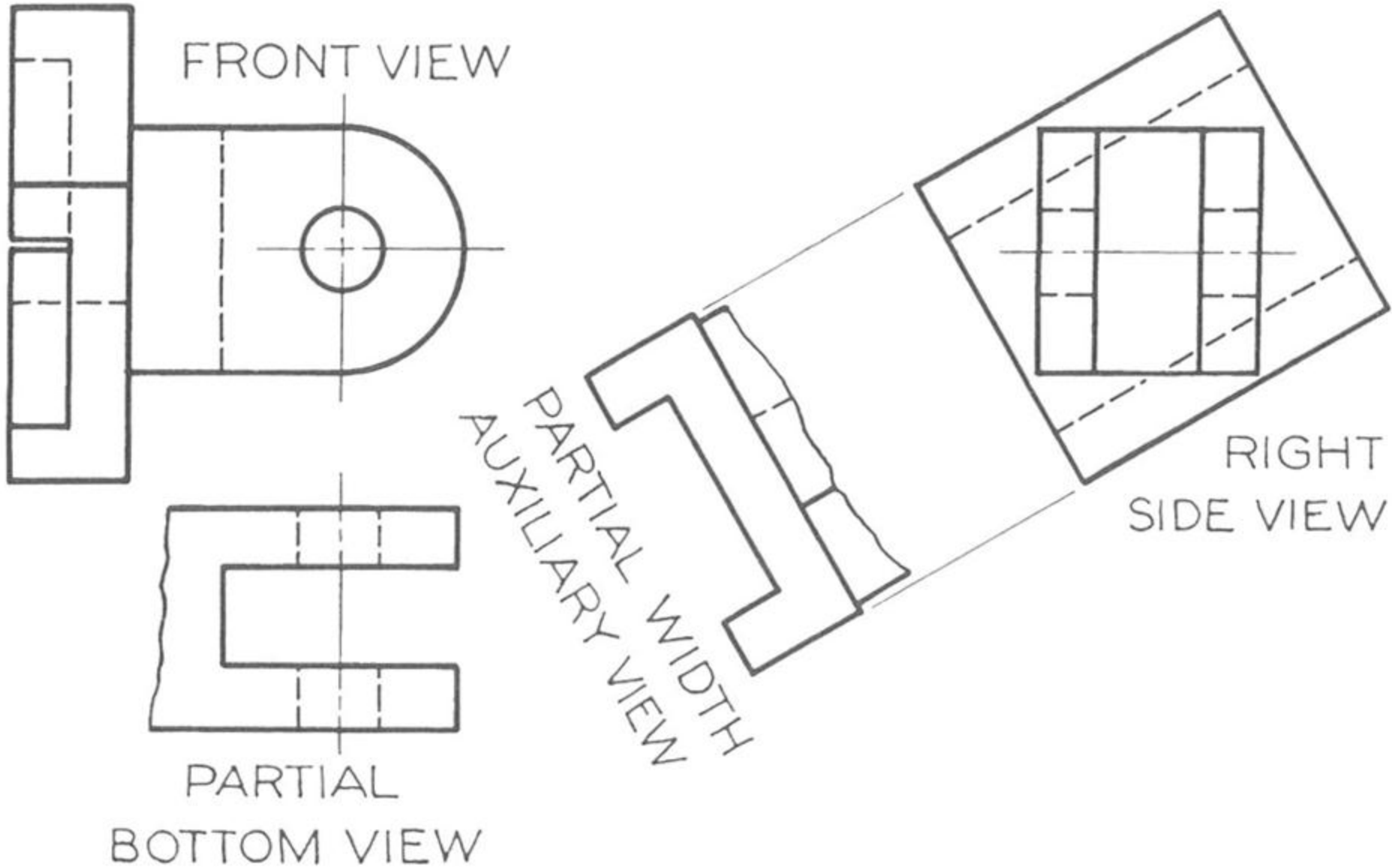
Auxiliary Views



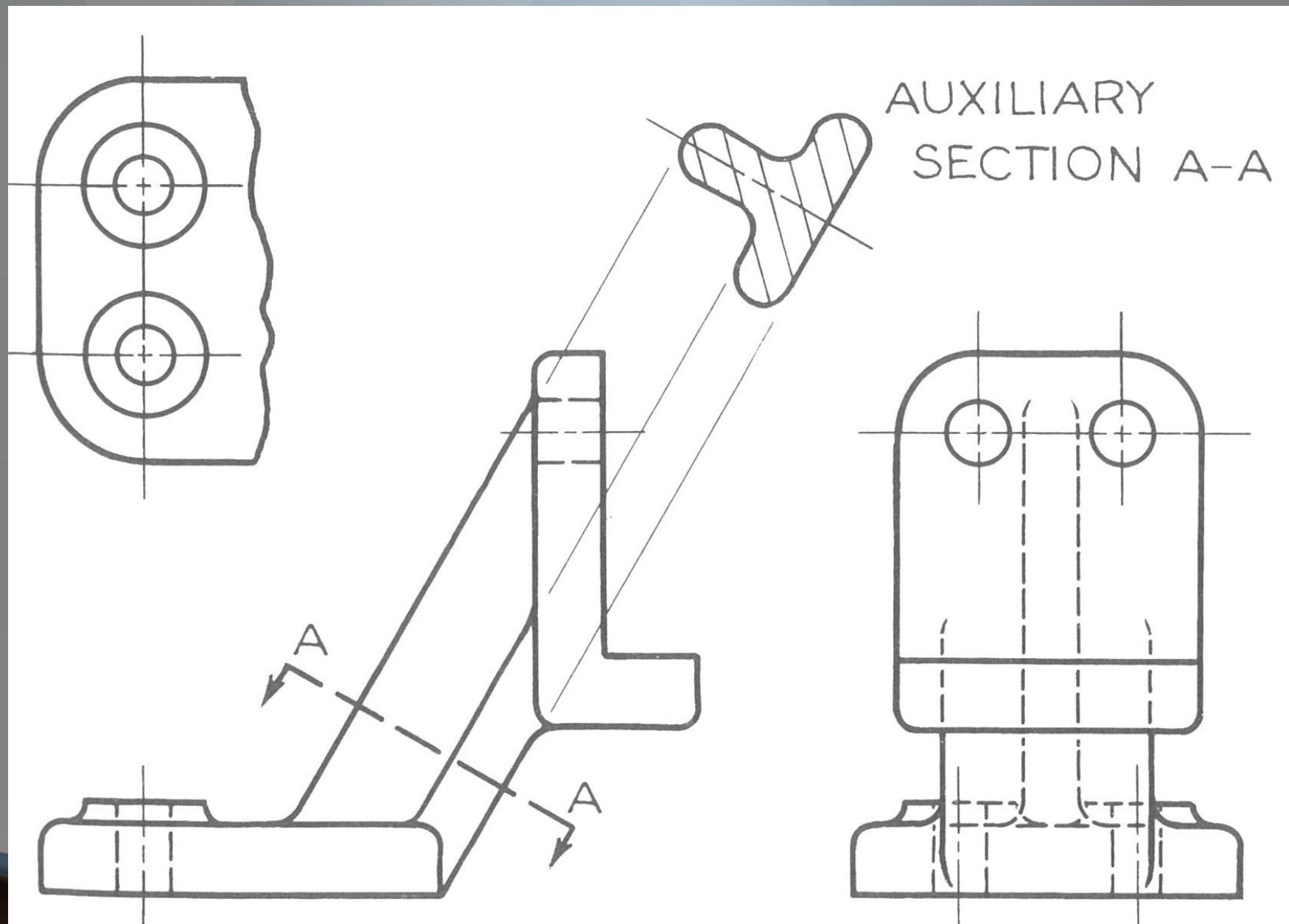
Auxiliary Views



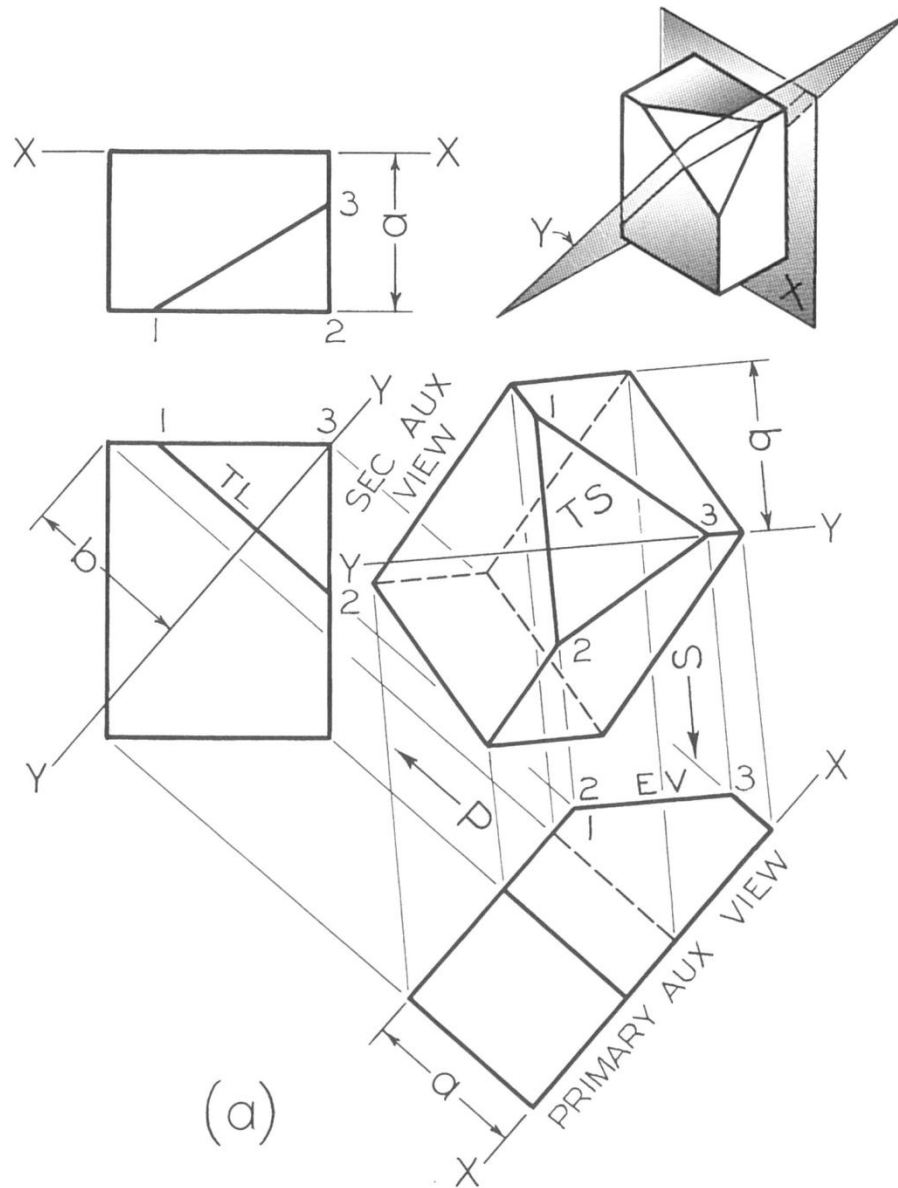
Auxiliary Views



Auxiliary Section View



Auxiliary Section View



CAD: Auxiliary Views

- Two step process
 - Get primary view showing oblique surface as an edge
 - Rotate primary view 90° about the edge view of the oblique surface.
- One step process
 - Ask for the normal view of the oblique surface.

