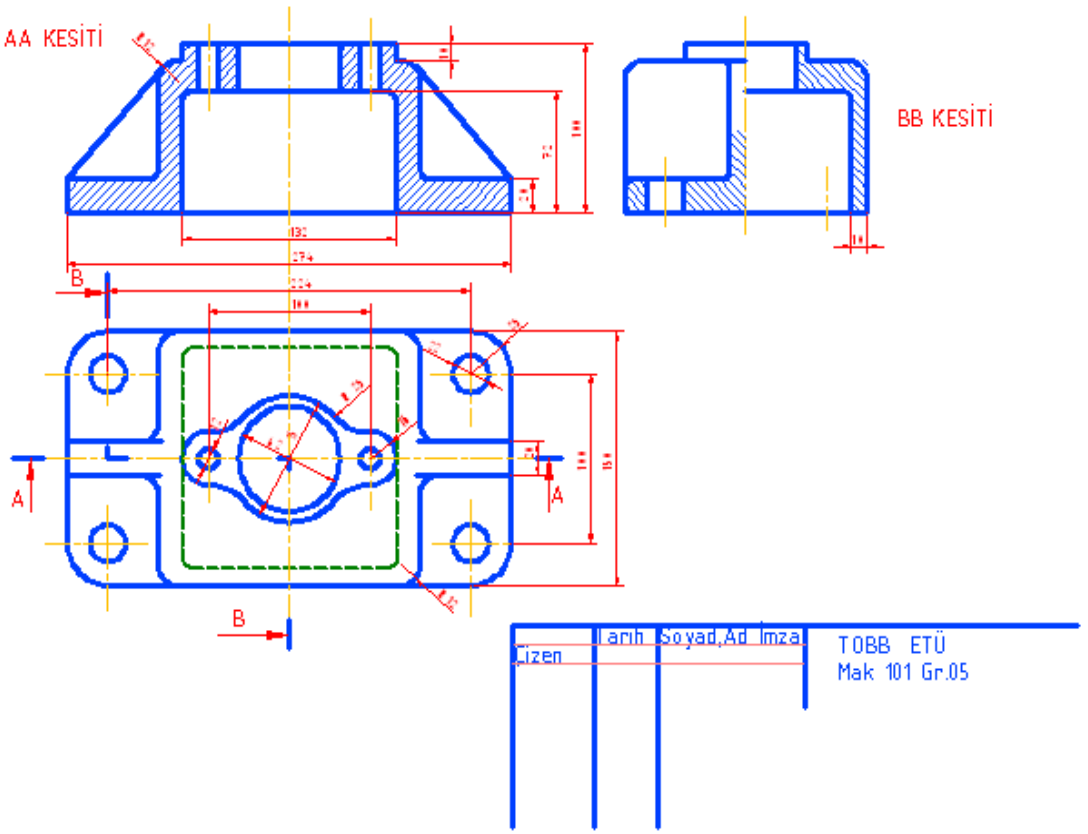
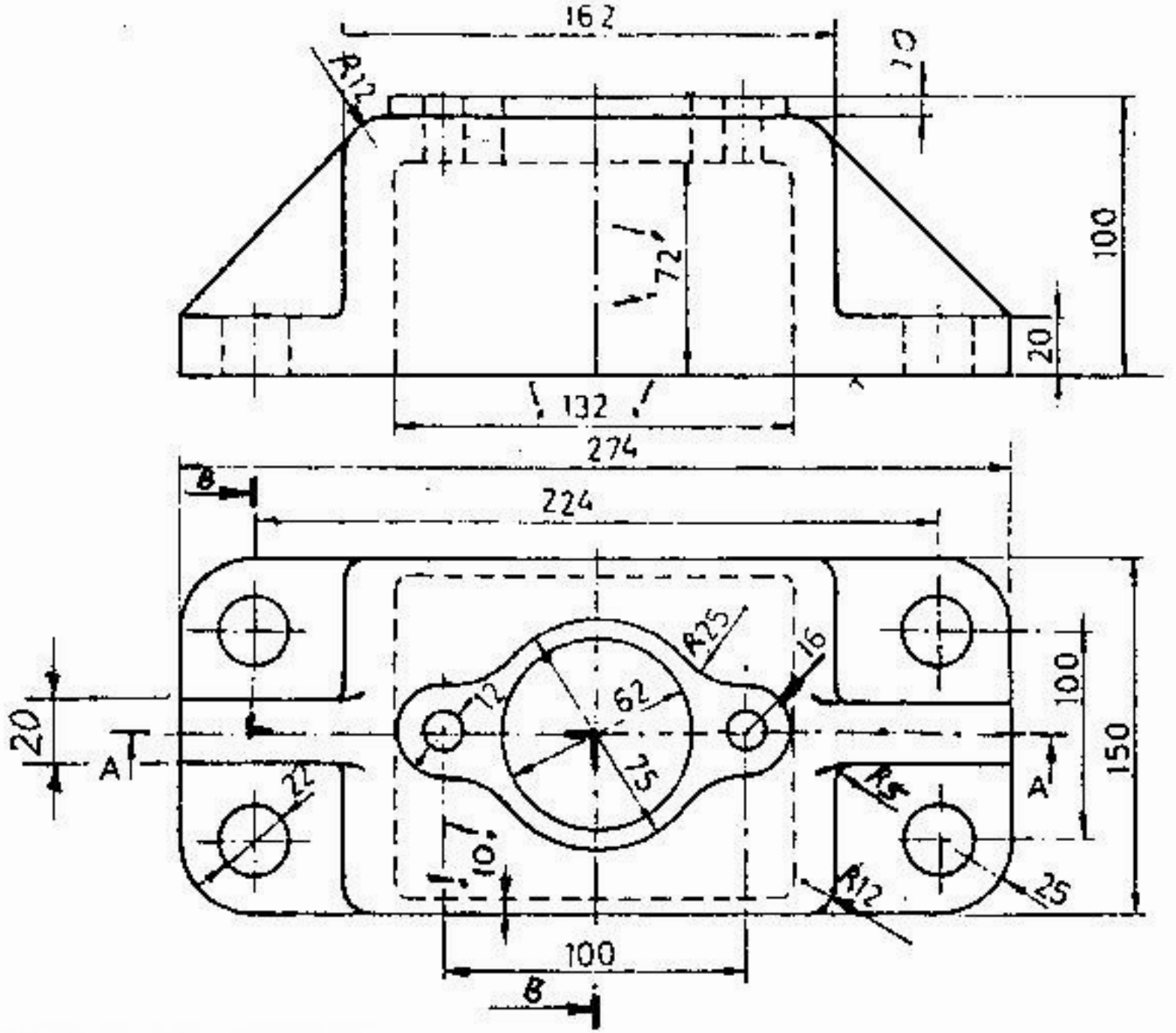
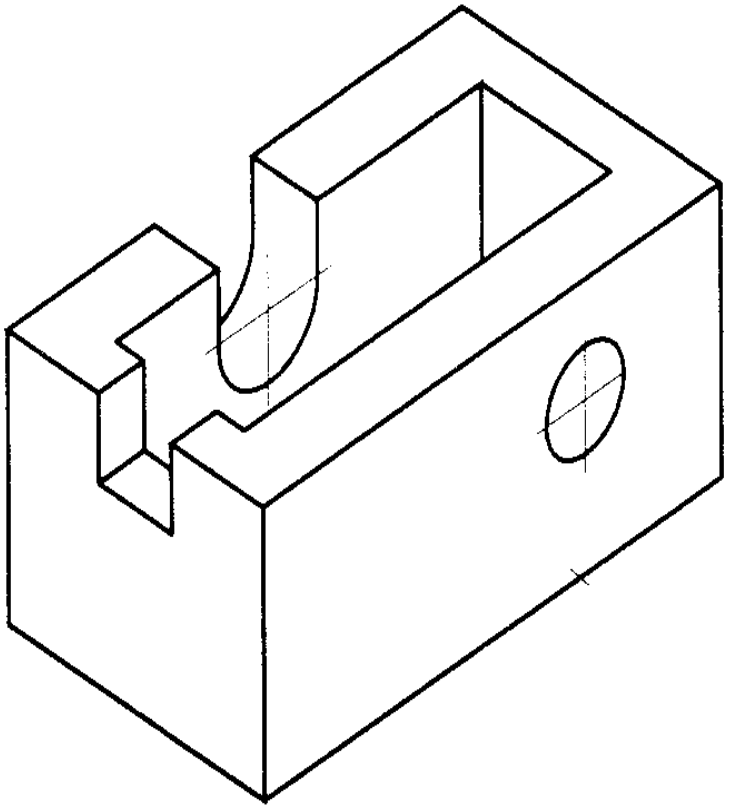
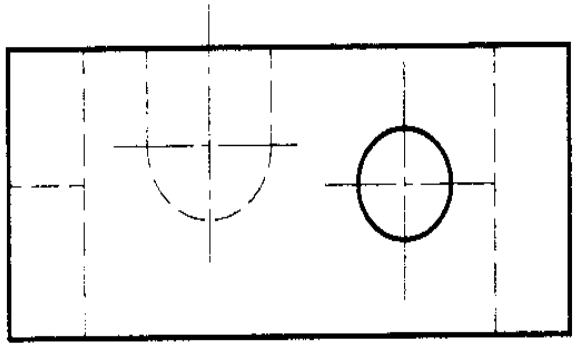
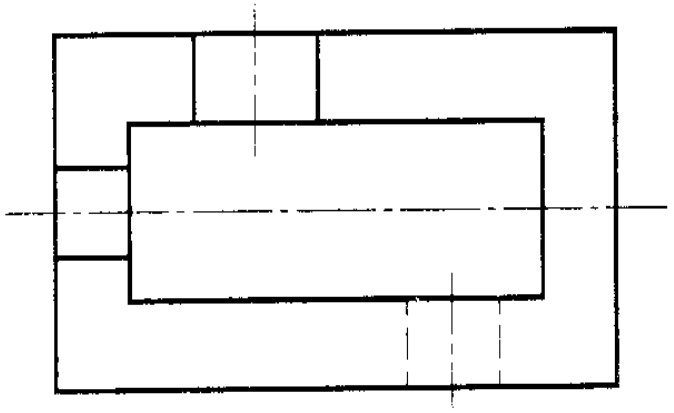
SECTIONAL VIEWS

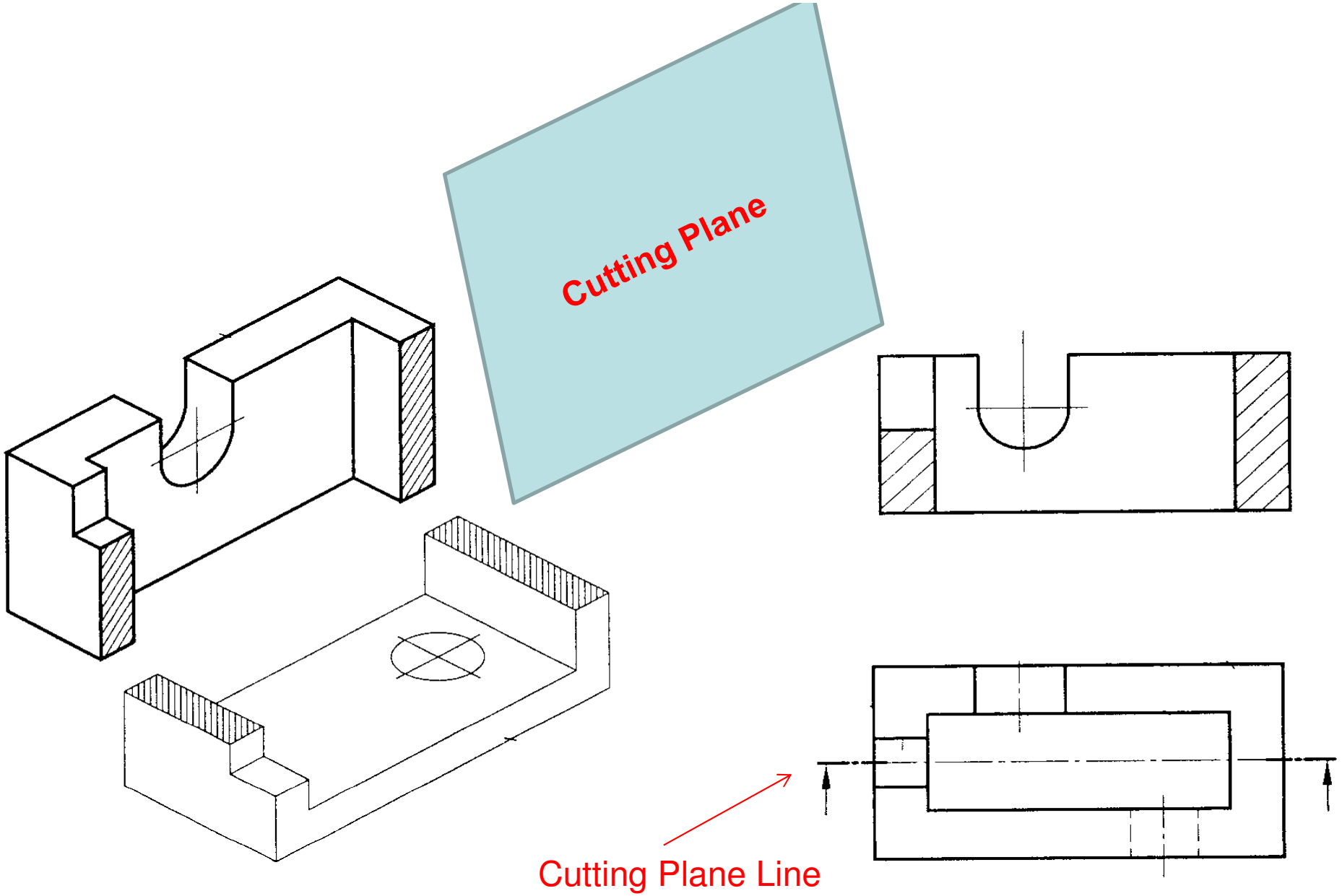



162
10
R12
72
100
20
132
274
B
224
R25
16
62
12
25
20
A
100
150
R5
25
R12
10
100
B







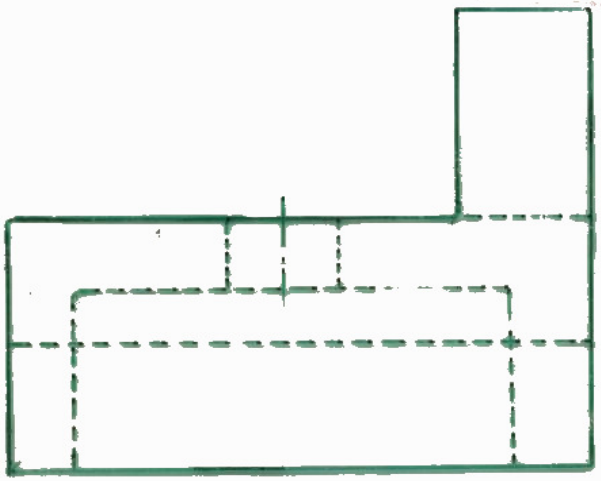

Cutting Plane
Cutting Plane Line

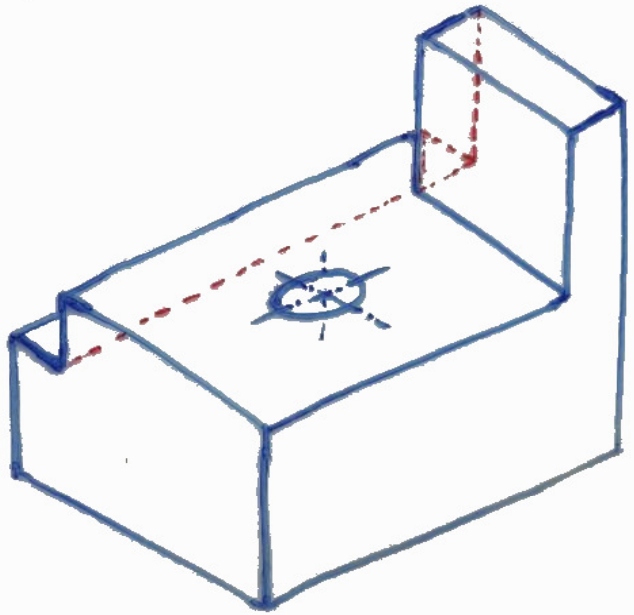
Cutting-plane line

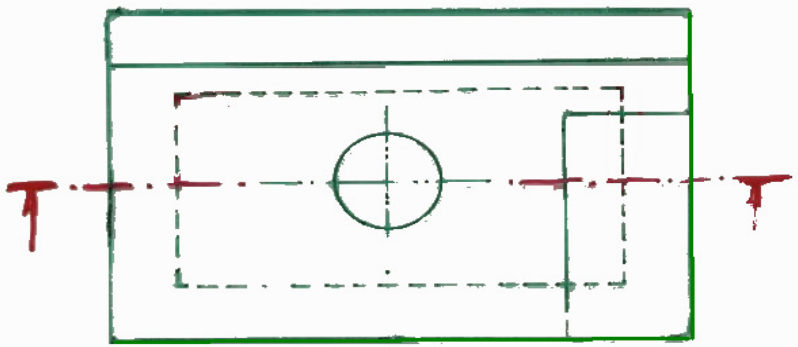
!!! ANSI !!!!

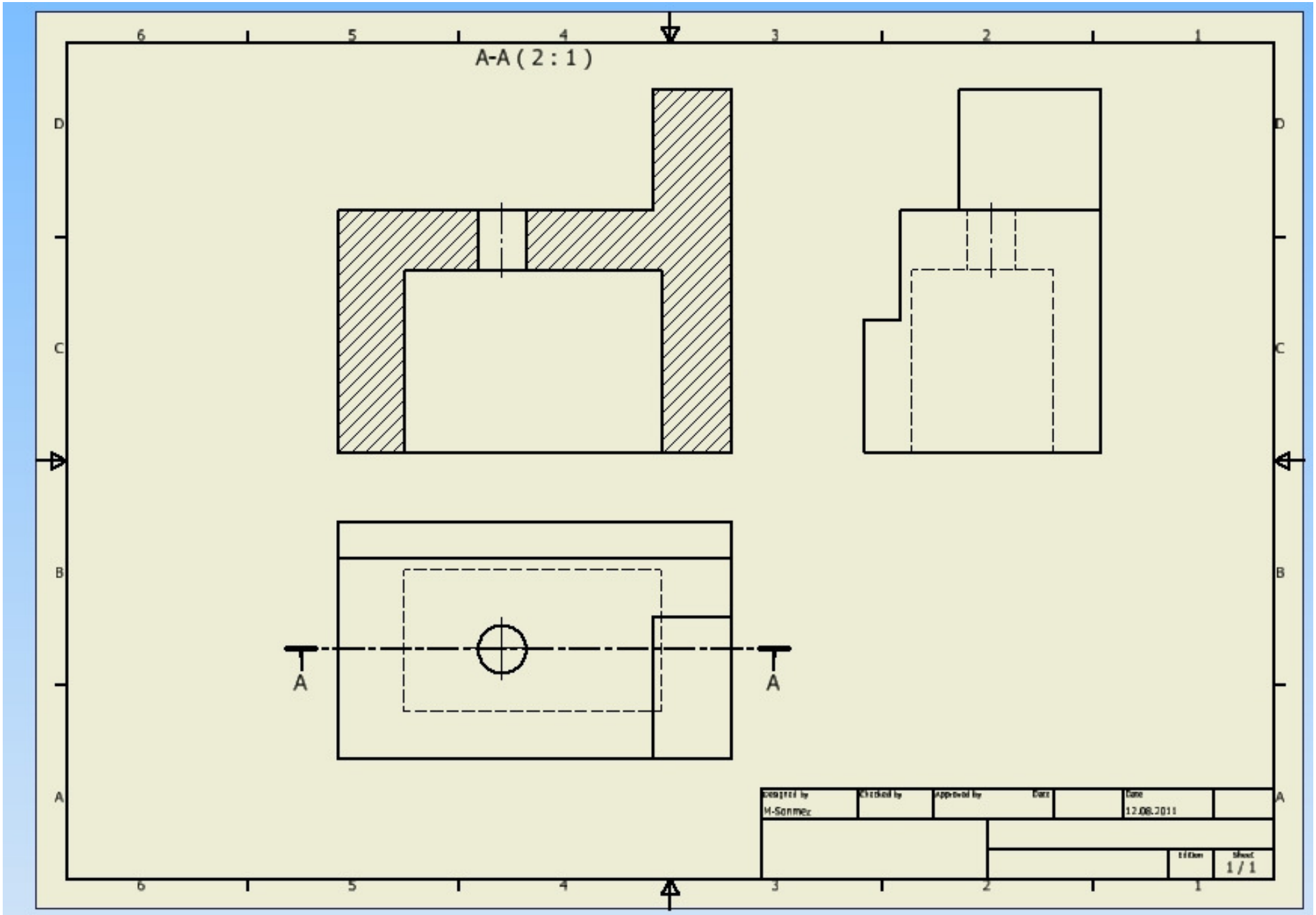
OR

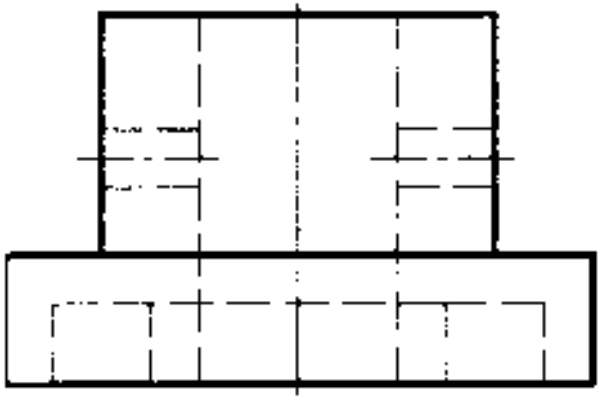
ISO rep.

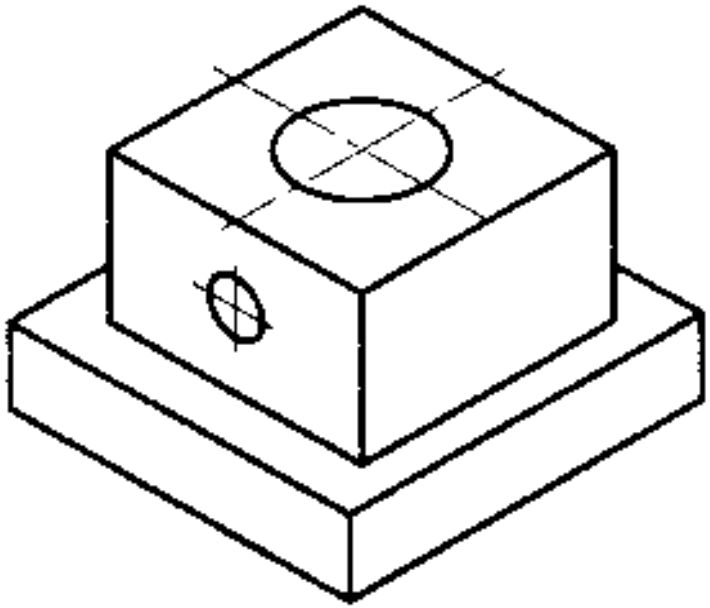


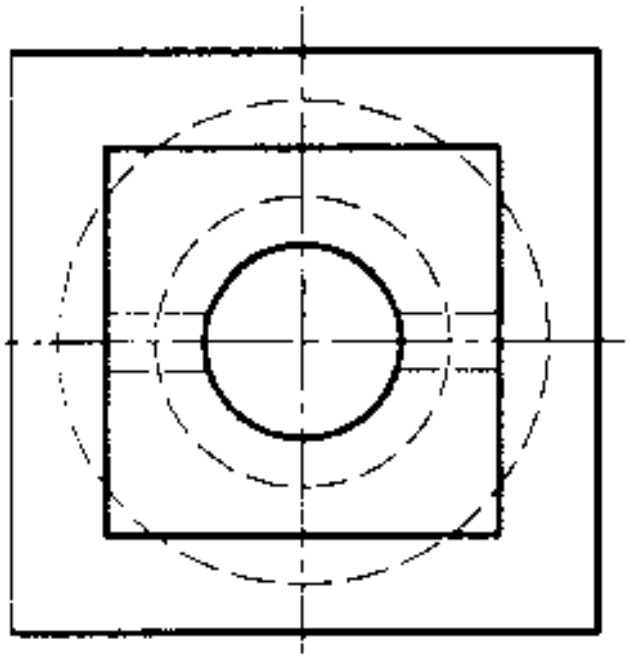


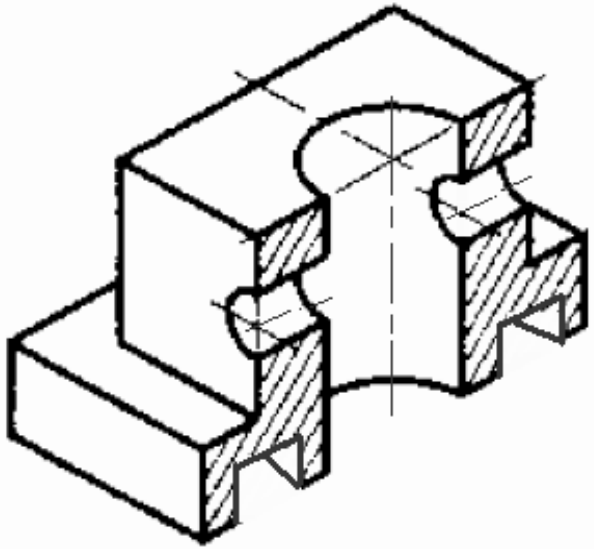

T
T

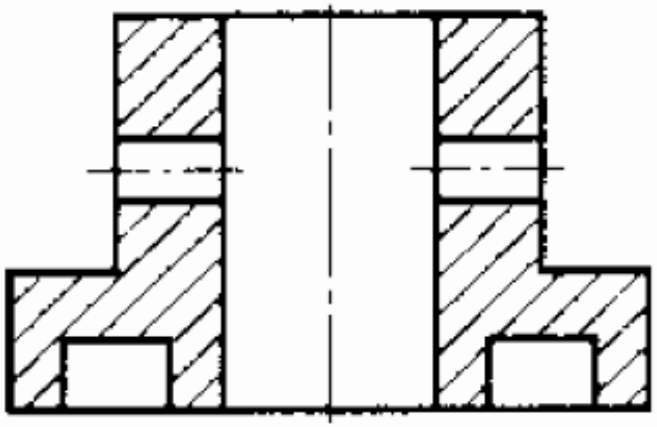

A-A (2 : 1)
A
A
Designed by
M-Sonmez
Checked by
Approved by
Date
Date
12.08.2011
1 / 1

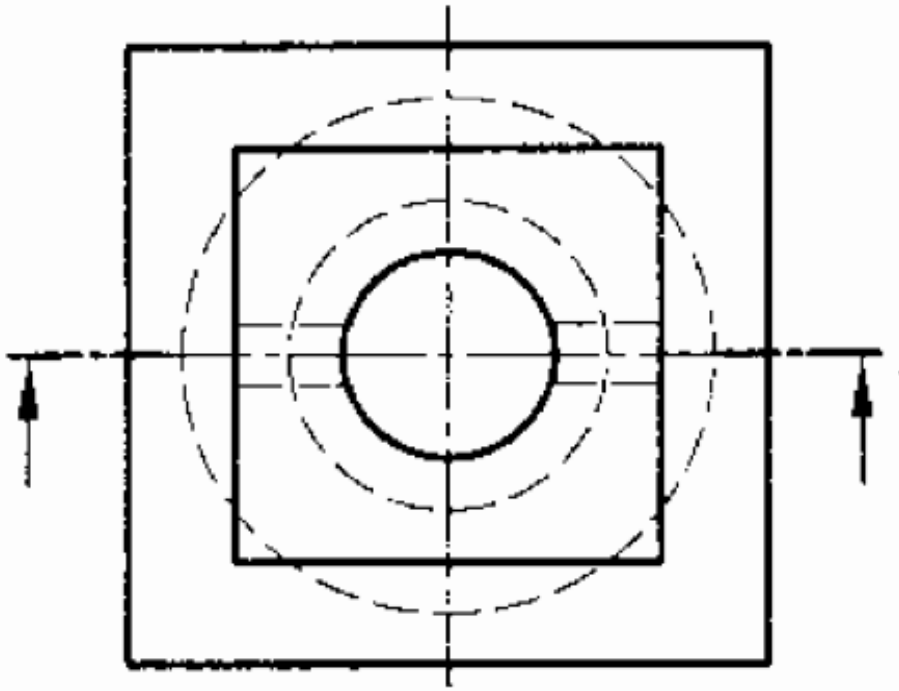


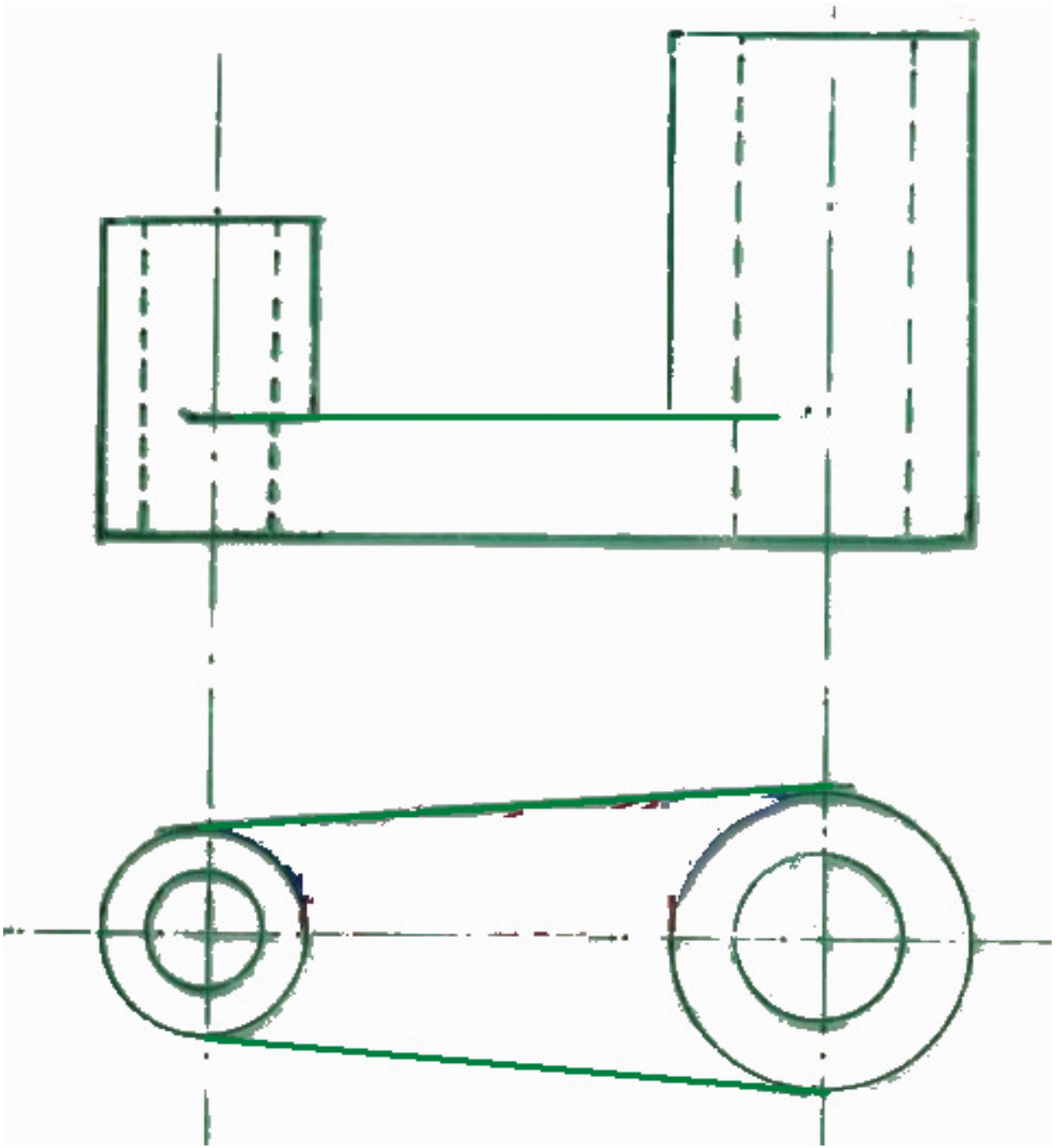


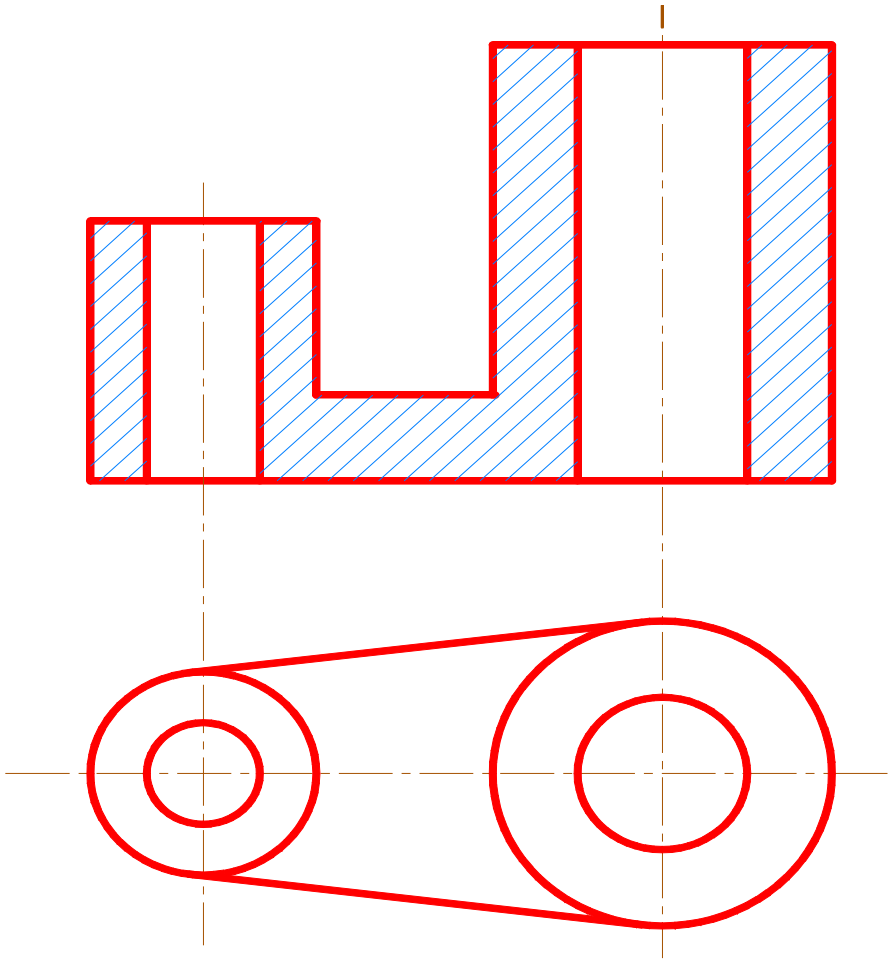


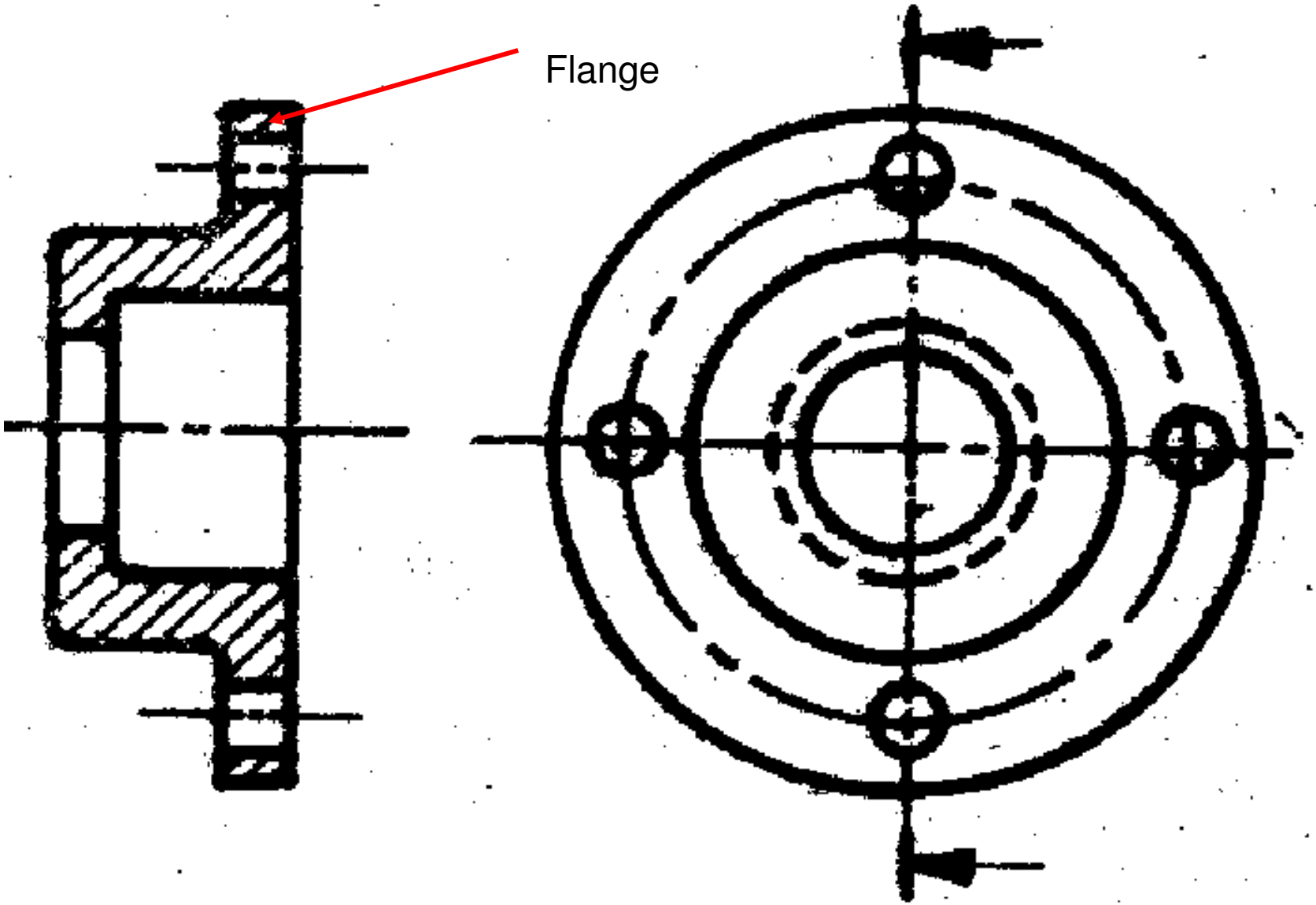


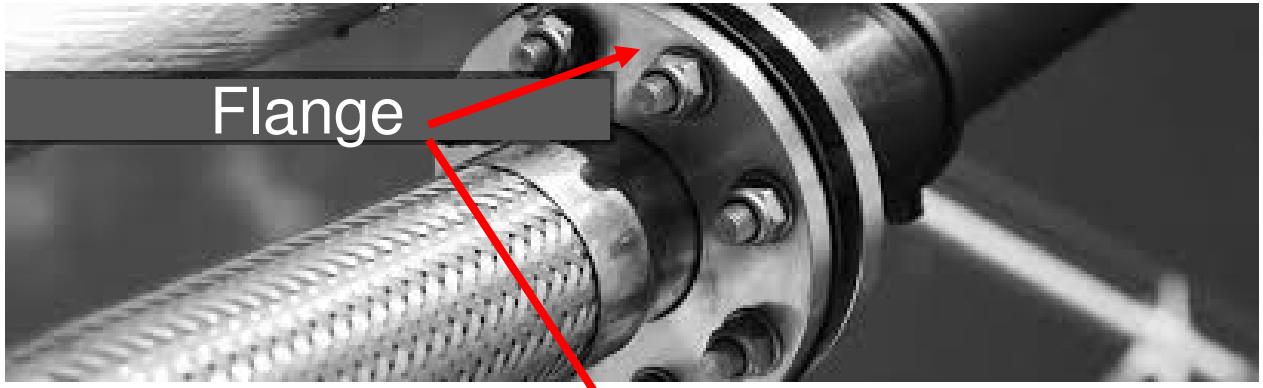


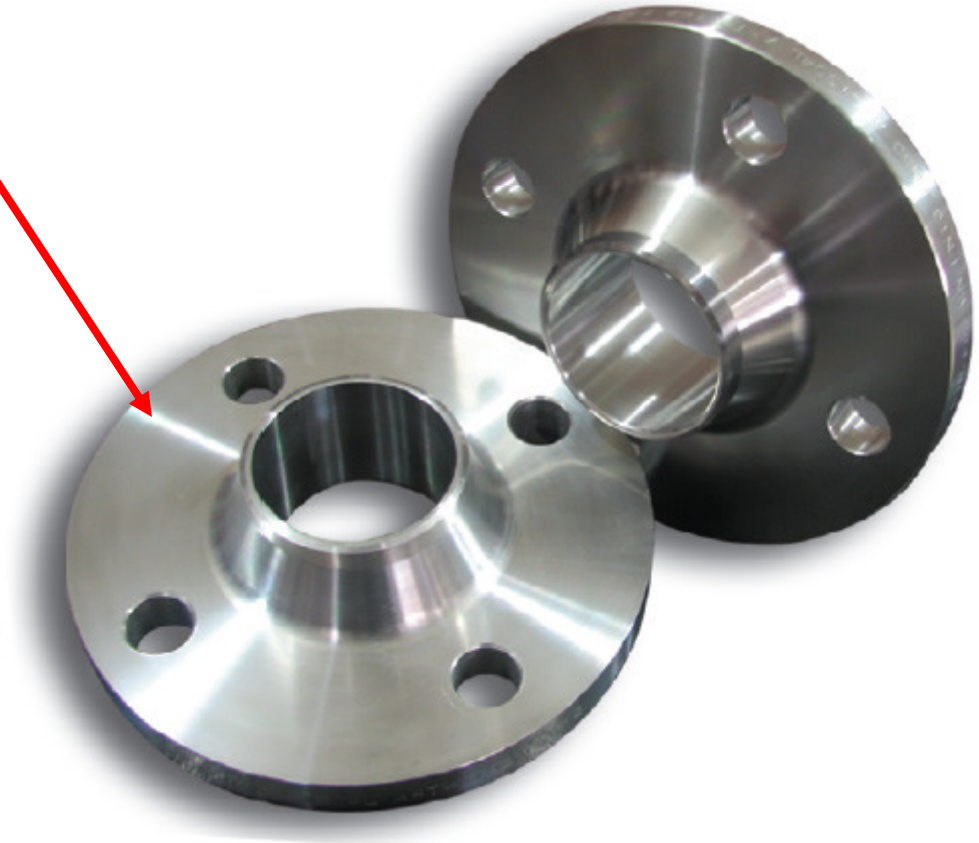


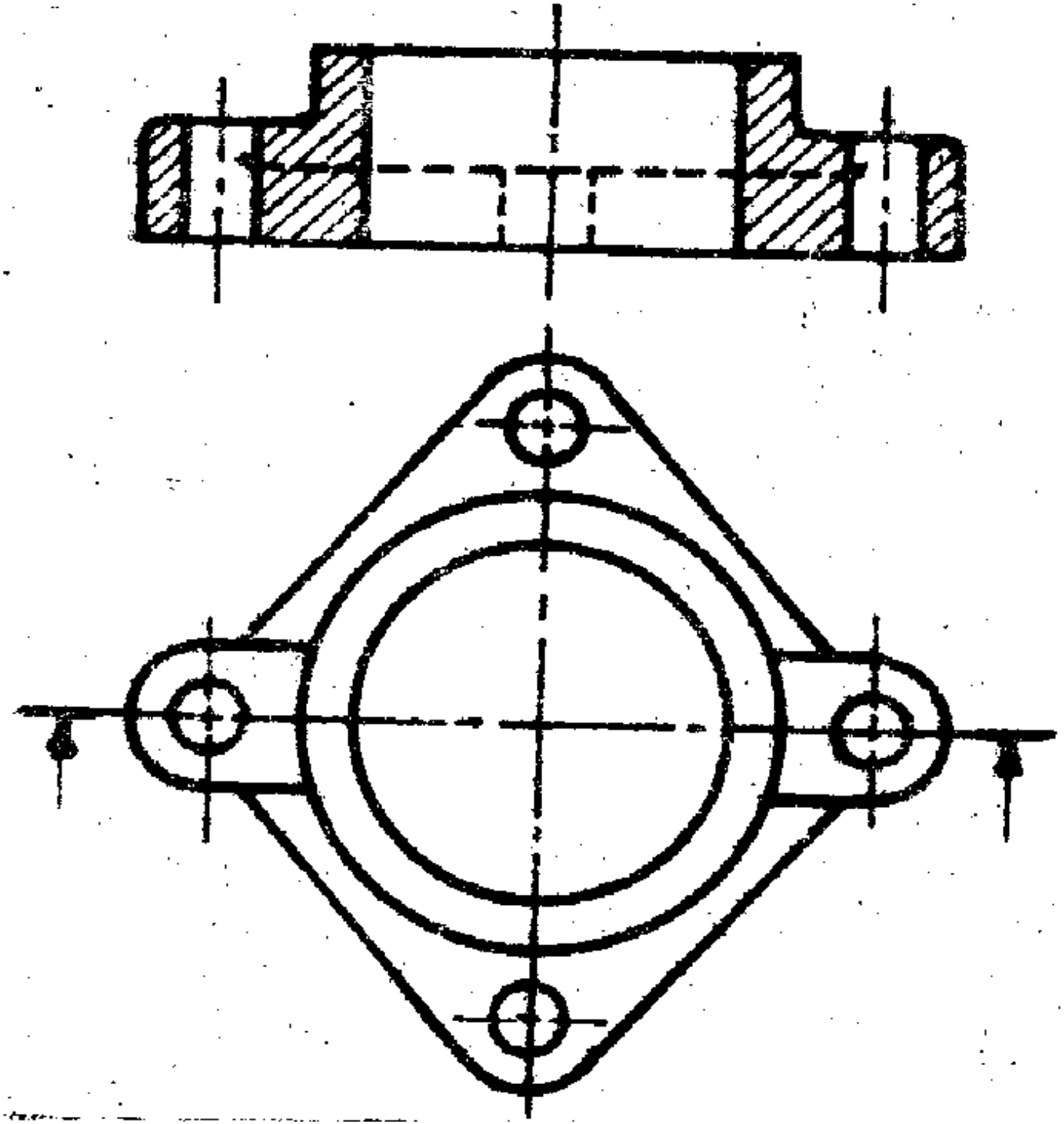


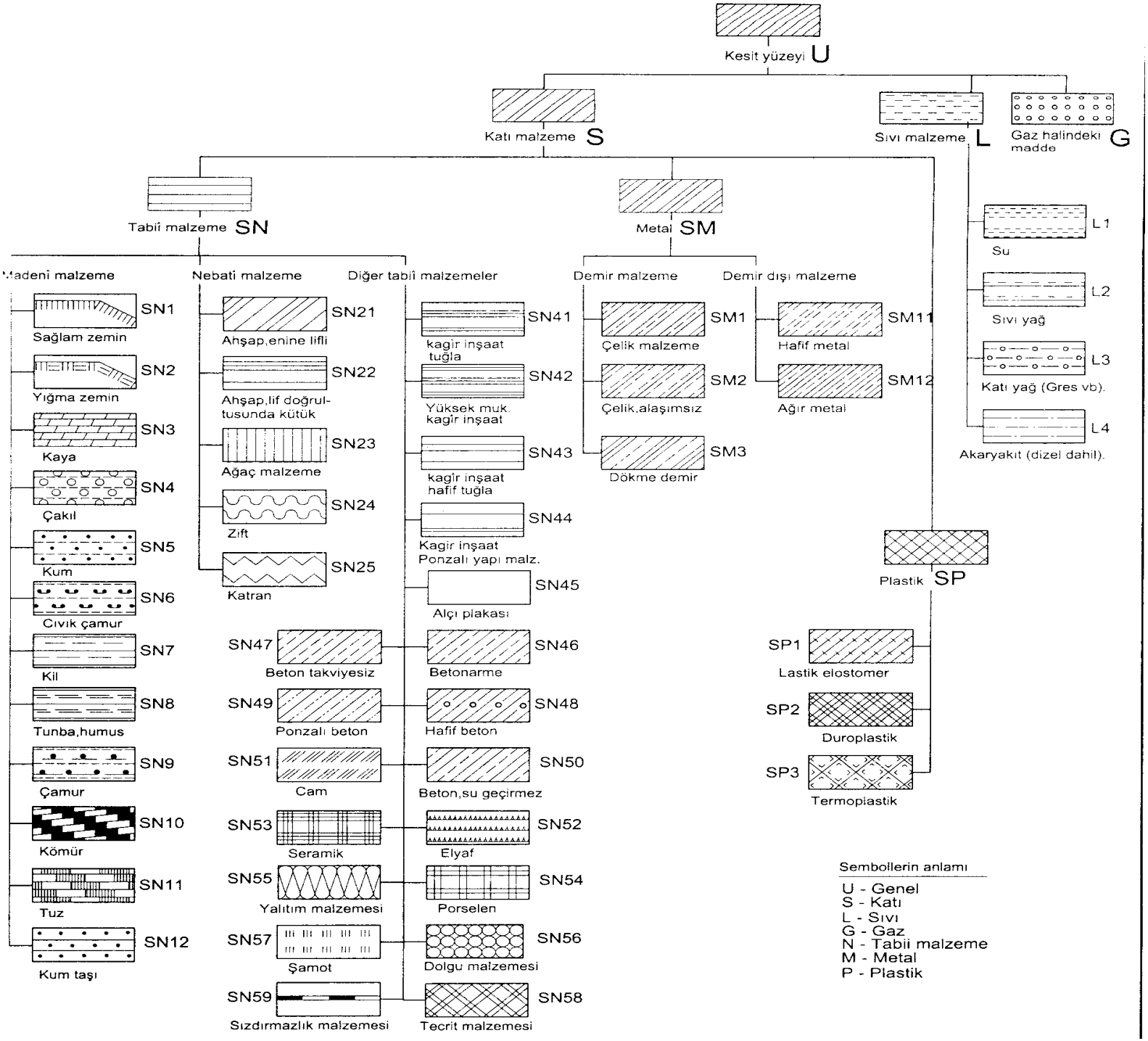


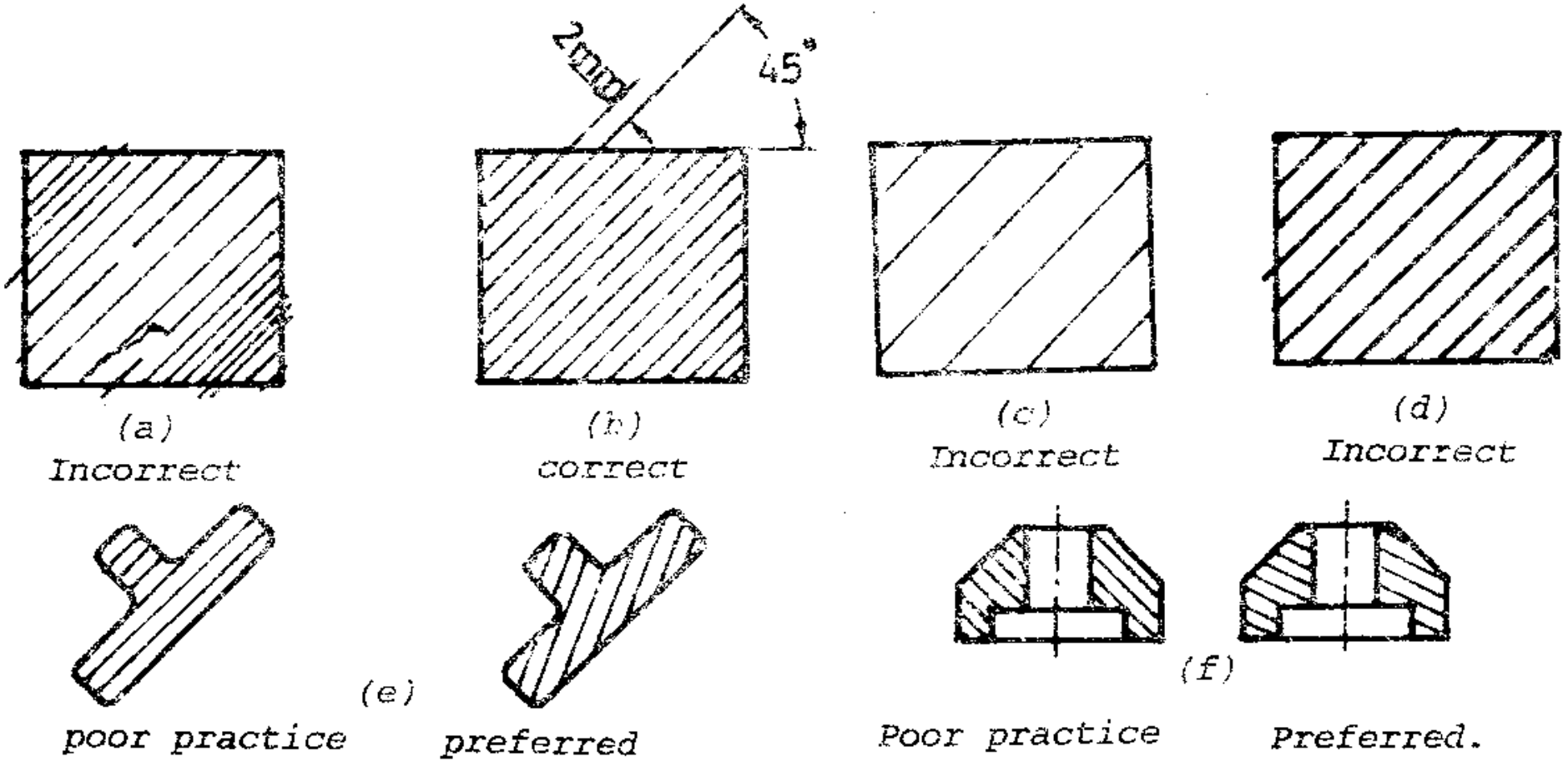

Flange


Flange





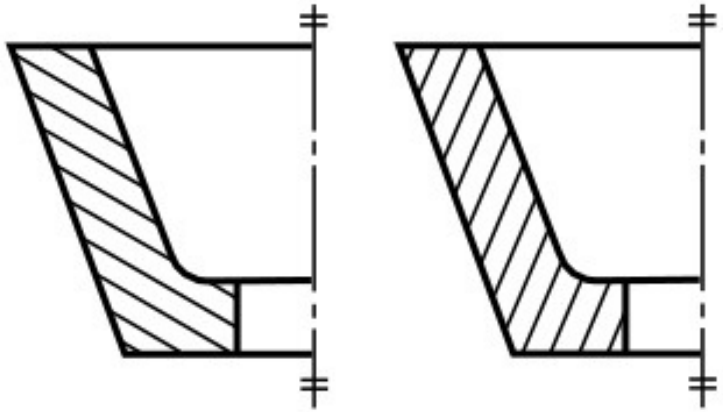

Kesit yüzeyi U
Katı malzeme S
Sıvı malzeme L
Gaz halindeki madde G
Tabiî malzeme SN
Metal SM
Madenî malzeme
Nebati malzeme
Diğer tabiî malzemeler
Demir malzeme
Demir dışı malzeme
SN1 Sağlam zemin
SN2 Yığma zemin
SN3 Kaya
SN4 Çakıl
SN5 Kum
SN6 Cıvık çamur
SN7 Kil
SN8 Tunba,humus
SN9 Çamur
SN10 Kömür
SN11 Tuz
SN12 Kum taşı
SN21 Ahşap,enine lifli
SN22 Ahşap,lif doğrultusunda kütük
SN23 Ağaç malzeme
SN24 Zift
SN25 Katran
SN41 kagir inşaat tuğla
SN42 Yüksek muk. kagir inşaat
SN43 kagir inşaat hafif tuğla
SN44 Kagir inşaat Ponzalı yapı malz.
SN45 Alçı plakası
SN46 Betonarme
SN47 Beton takviyesiz
SN48 Hafif beton
SN49 Ponzalı beton
SN50 Beton,su geçirmez
SN51 Cam
SN52 Elyaf
SN53 Seramik
SN54 Porselen
SN55 Yalıtım malzemesi
SN56 Dolgu malzemesi
SN57 Şamot
SN58 Tecrit malzemesi
SN59 Sızdırmazlık malzemesi
SM1 Çelik malzeme
SM2 Çelik,alaşımsız
SM3 Dökme demir
SM11 Hafif metal
SM12 Ağır metal
L1 Su
L2 Sıvı yağ
L3 Katı yağ (Gres vb).
L4 Akaryakıt (dizel dahil).
Plastik SP
SP1 Lastik elostomer
SP2 Duroplastik
SP3 Termoplastik
Sembollerin anlamı
U - Genel
S - Katı
L - Sıvı
G - Gaz
N - Tabii malzeme
M - Metal
P - Plastik


2mm
45°
(a)
Incorrect
(b)
correct
(c)
Incorrect
(d)
Incorrect
(e)
poor practice
preferred
(f)
Poor practice
Preferred.

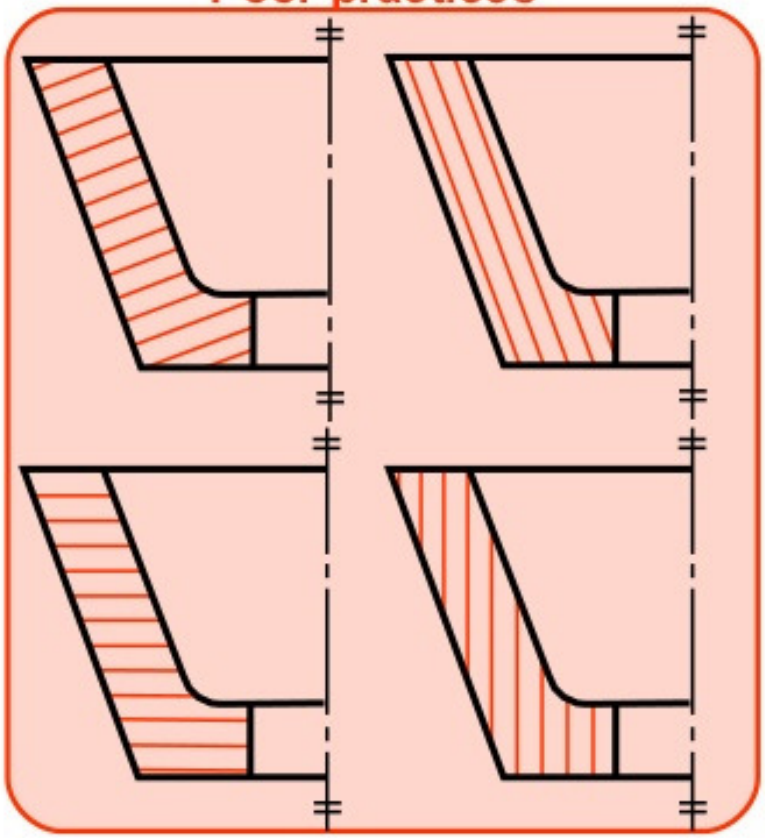
Section lining : Recommended practice 2

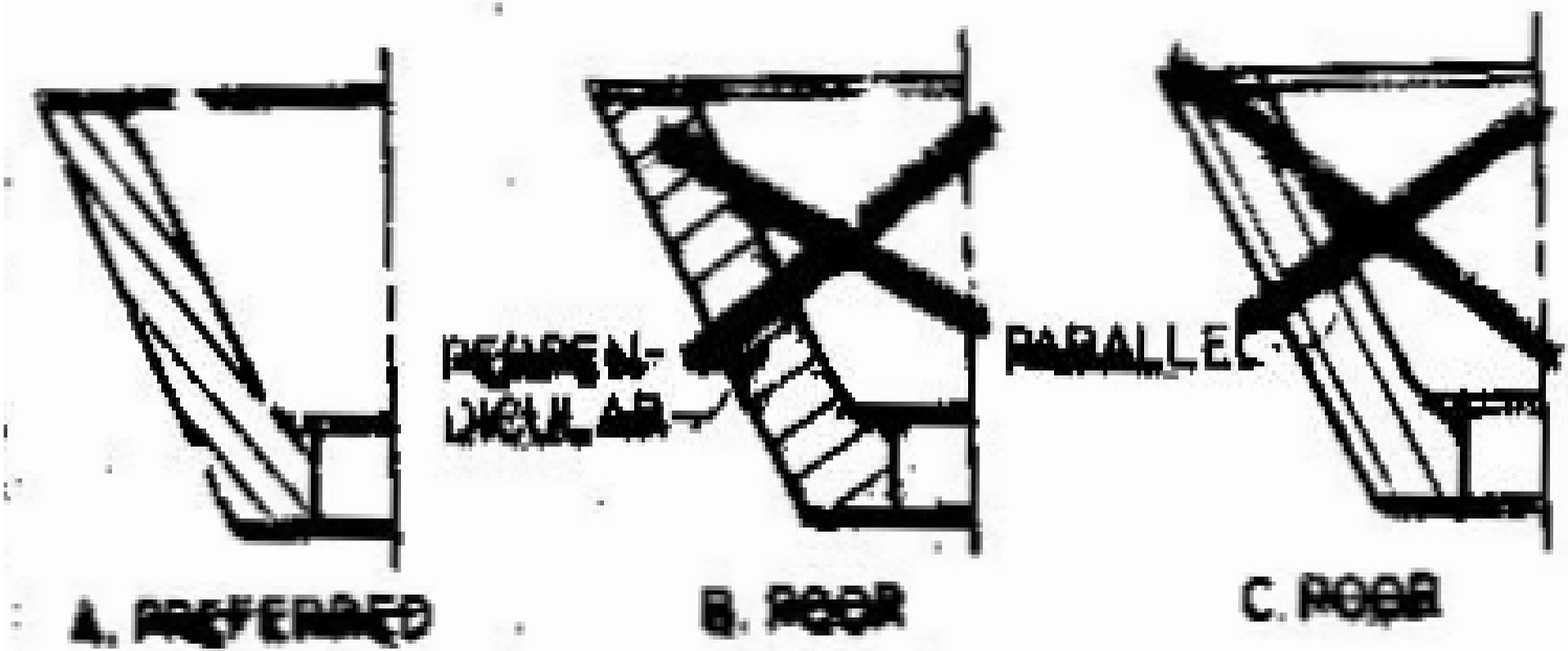
- It ***should not*** run *parallel* or *perpendicular* to contour of the view.

Examples



Poor practices

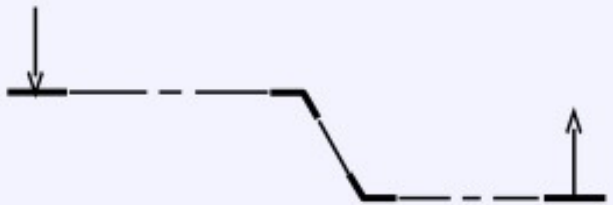



PERPENDICULAR
PARALLEL
A. PREFERRED
B. POOR
C. POOR

Class activity

Do you find something **wrong** in the following cutting plane lines?

1



Yes

No

2

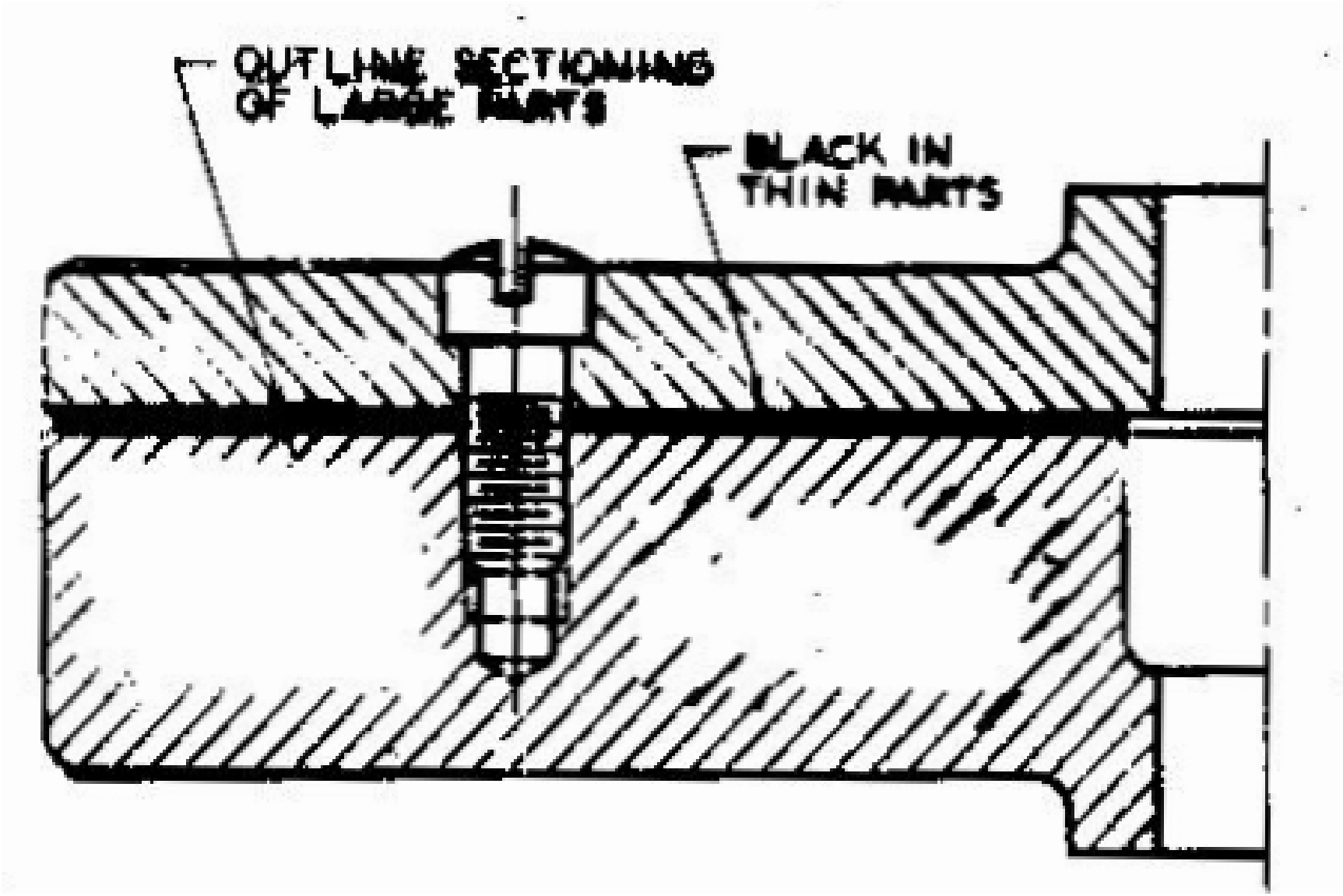
Yes

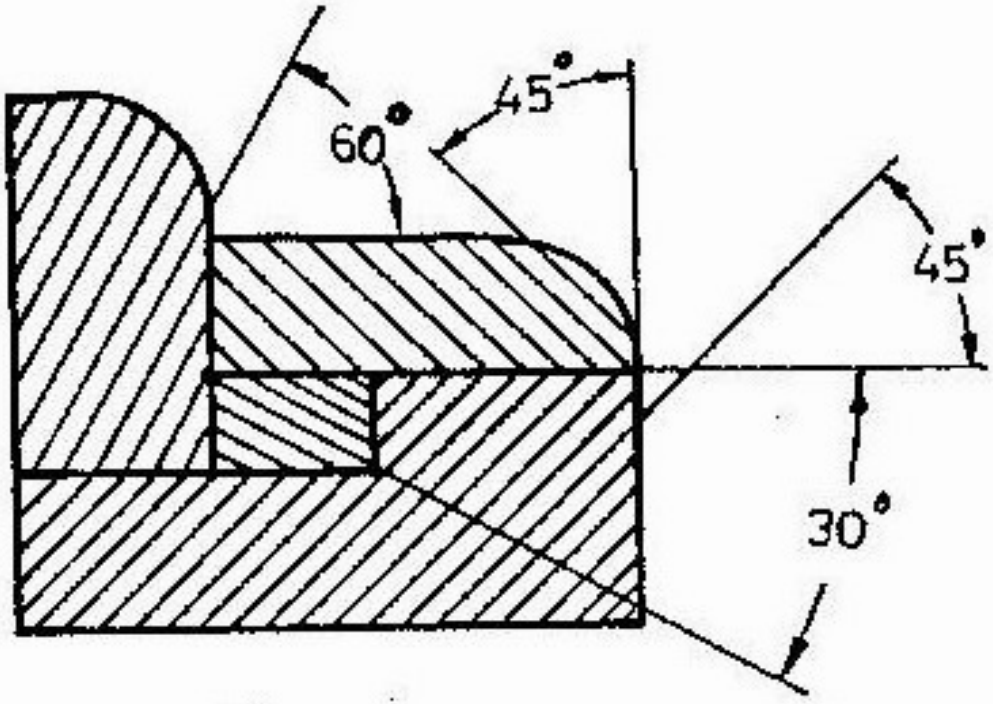
No

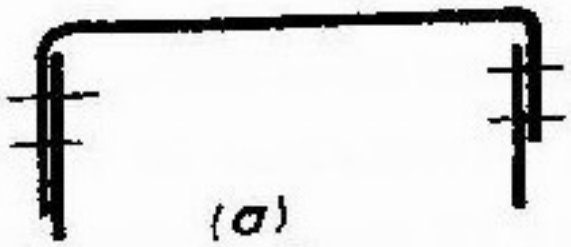
3

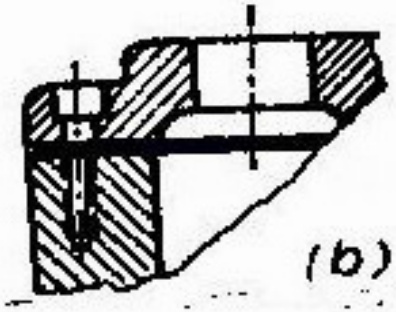
Yes

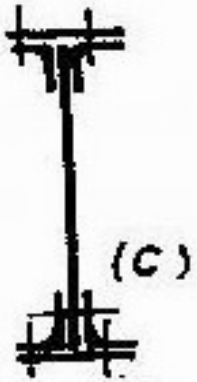
No

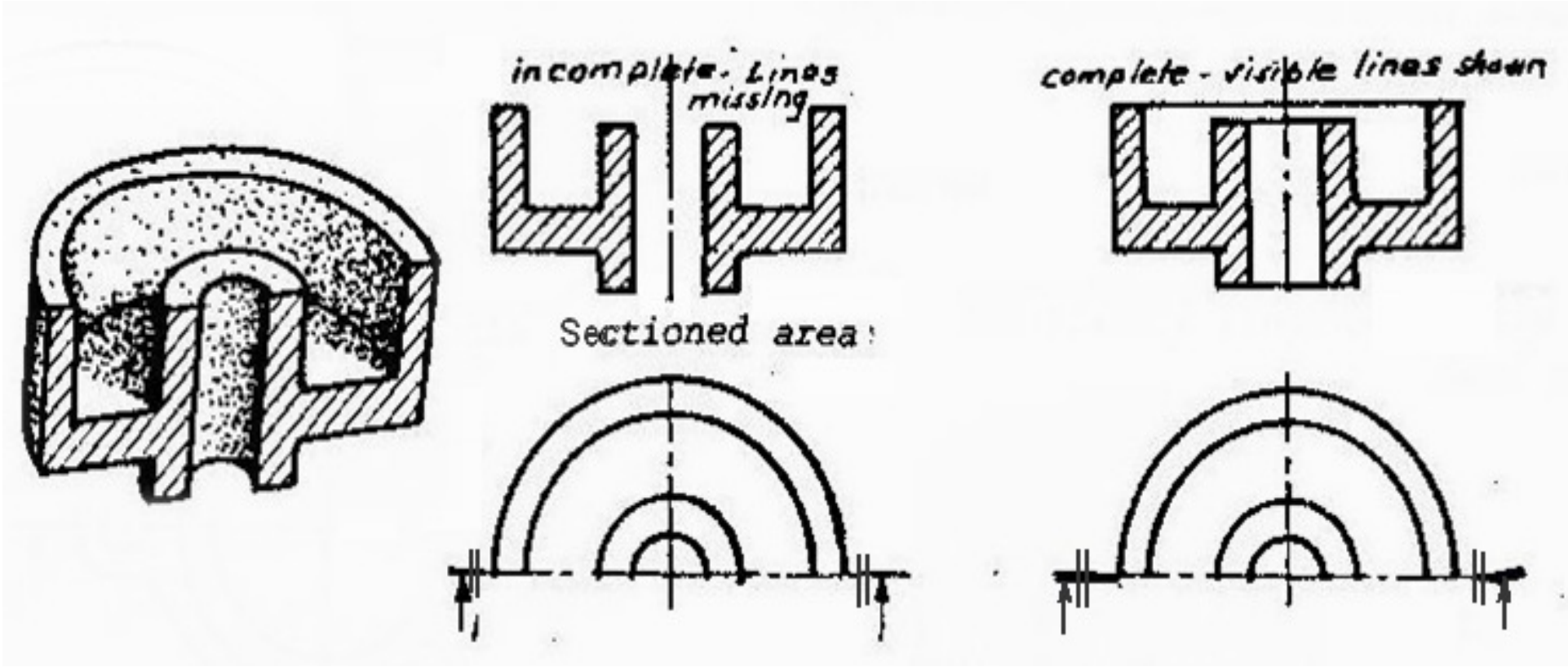

OUTLINE SECTIONING
OF LARGE PARTS
BLACK IN
THIN PARTS


60°
45°
45°
30°

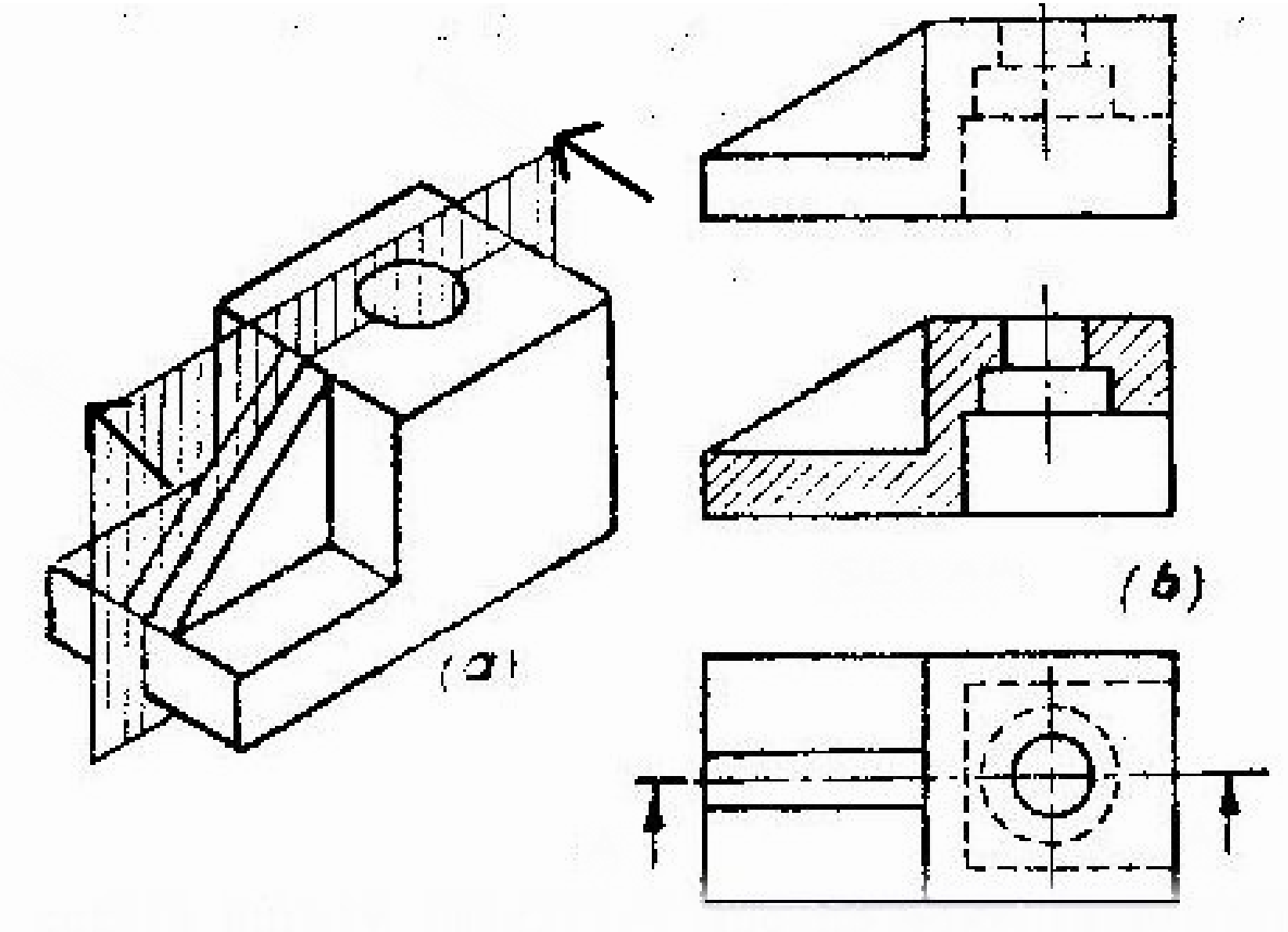

(a)

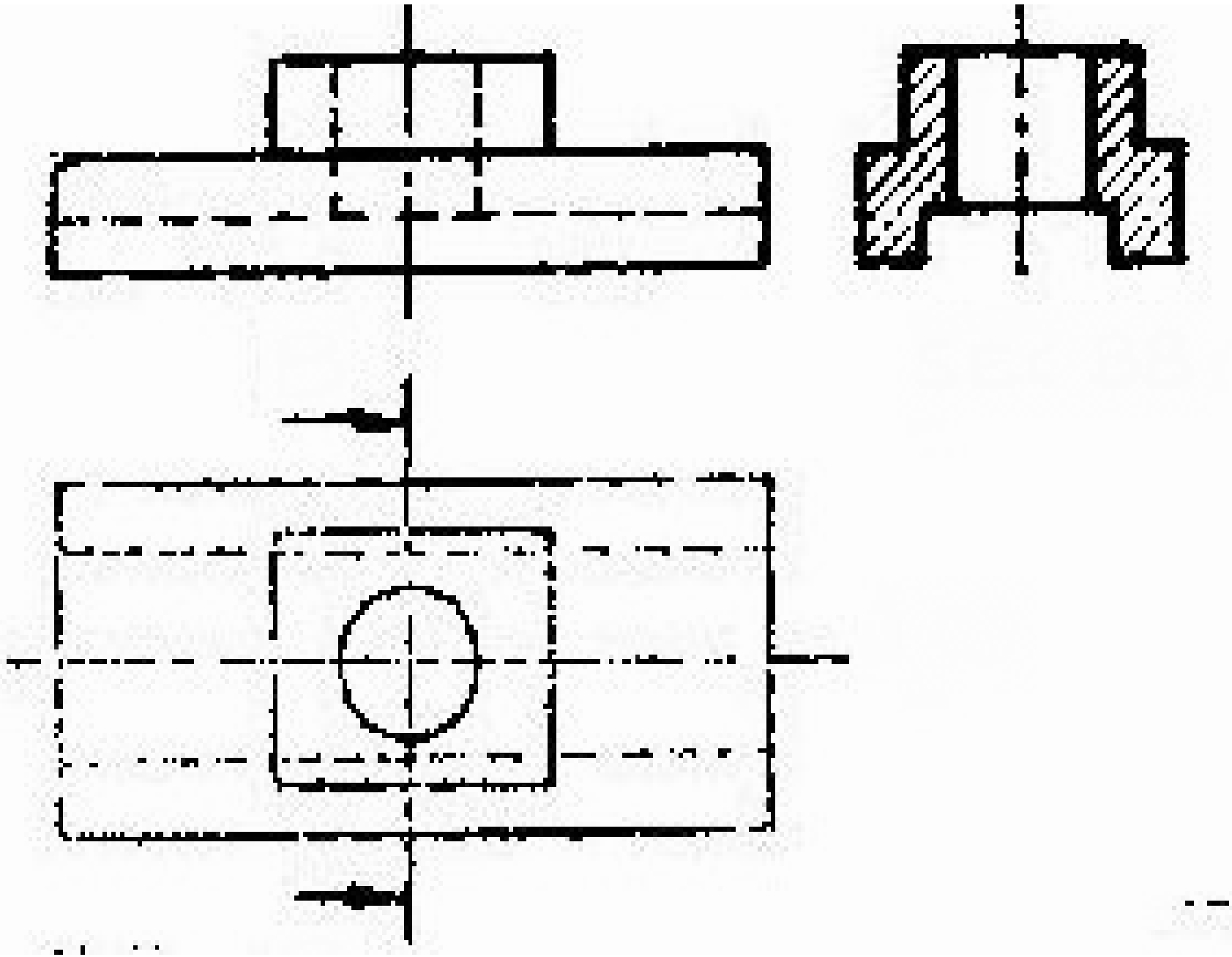

(b)

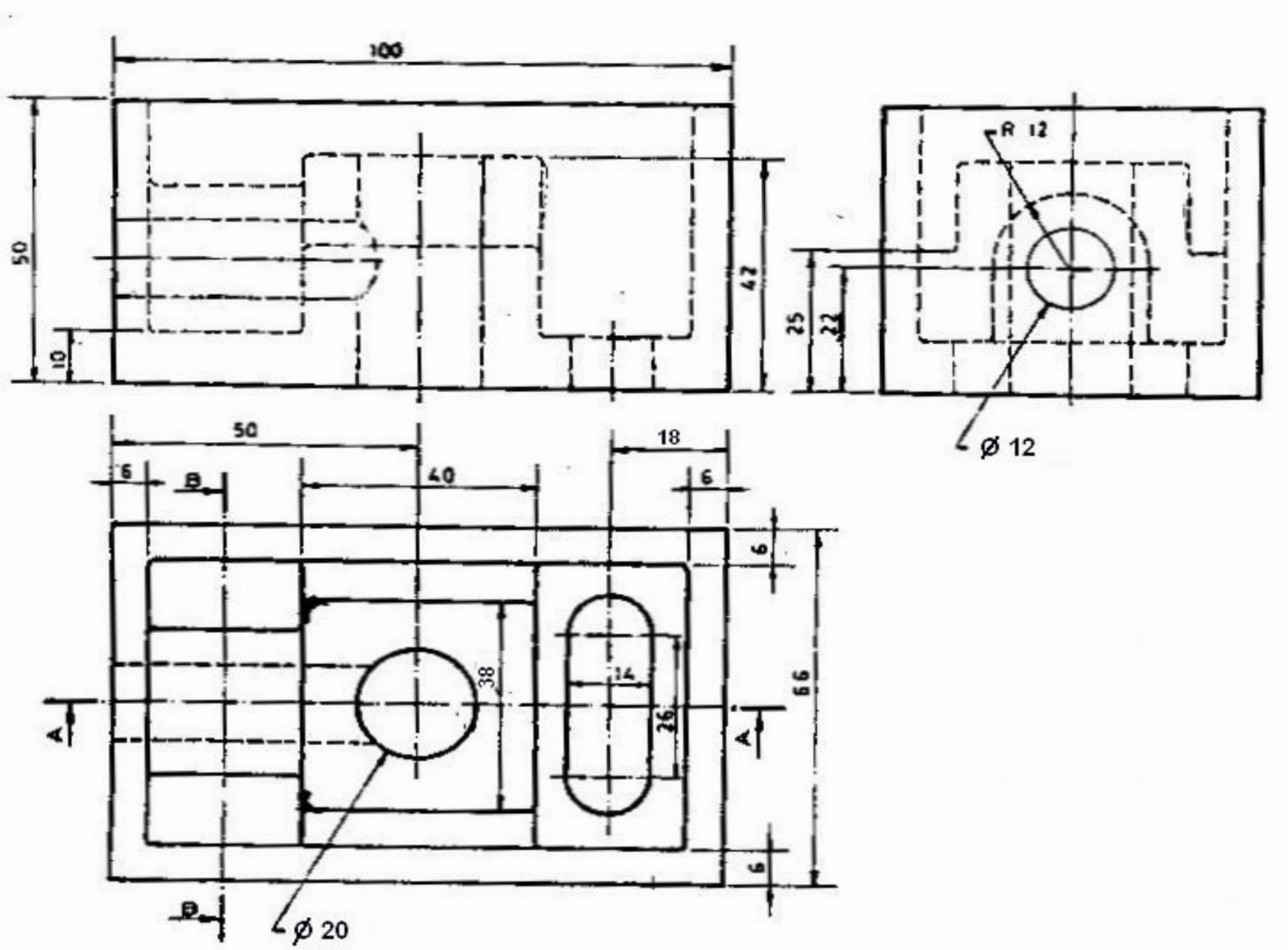

(c)


incomplete - Lines missing
complete - visible lines shown
Sectioned area

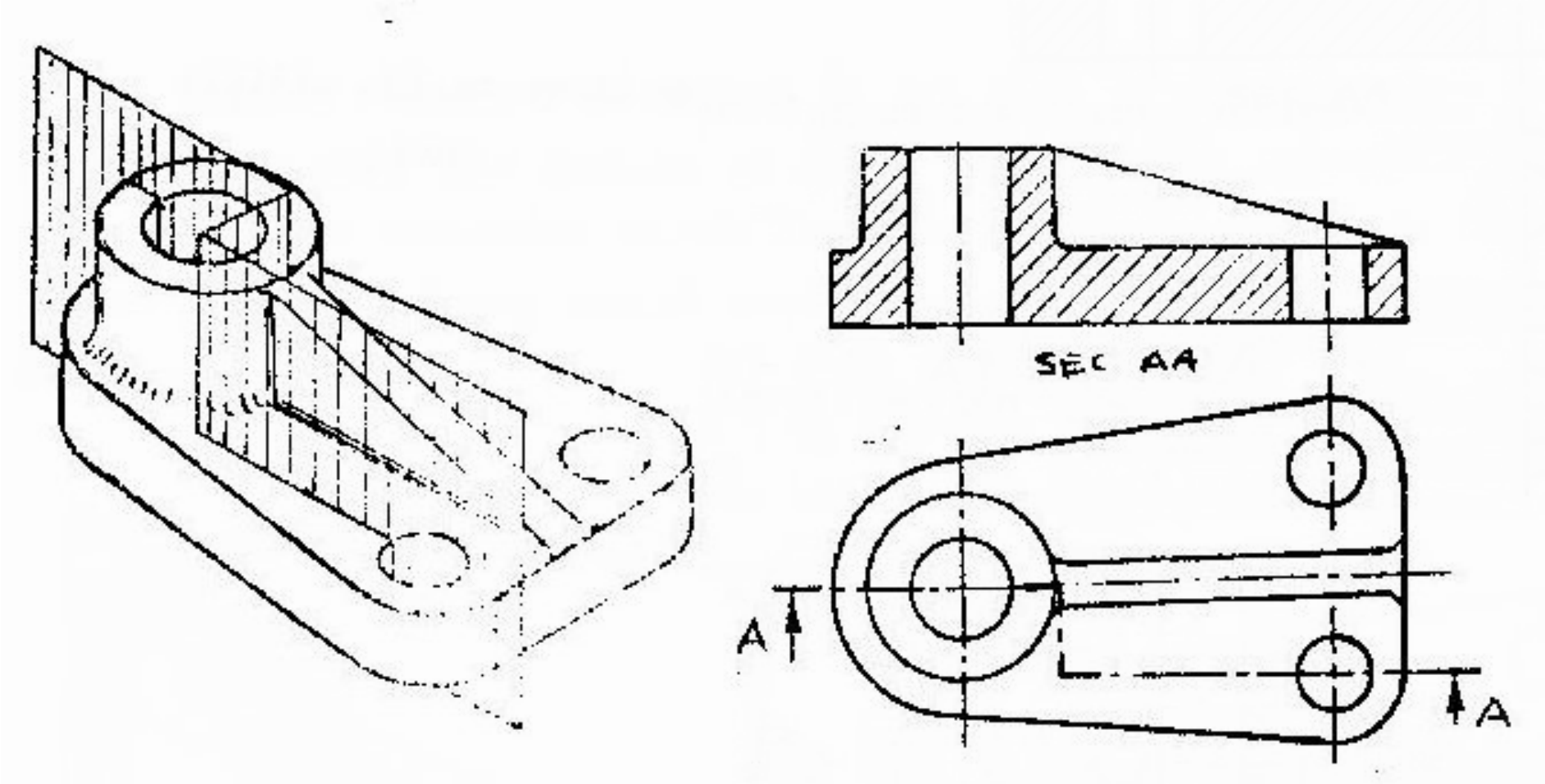
Full Sectional View



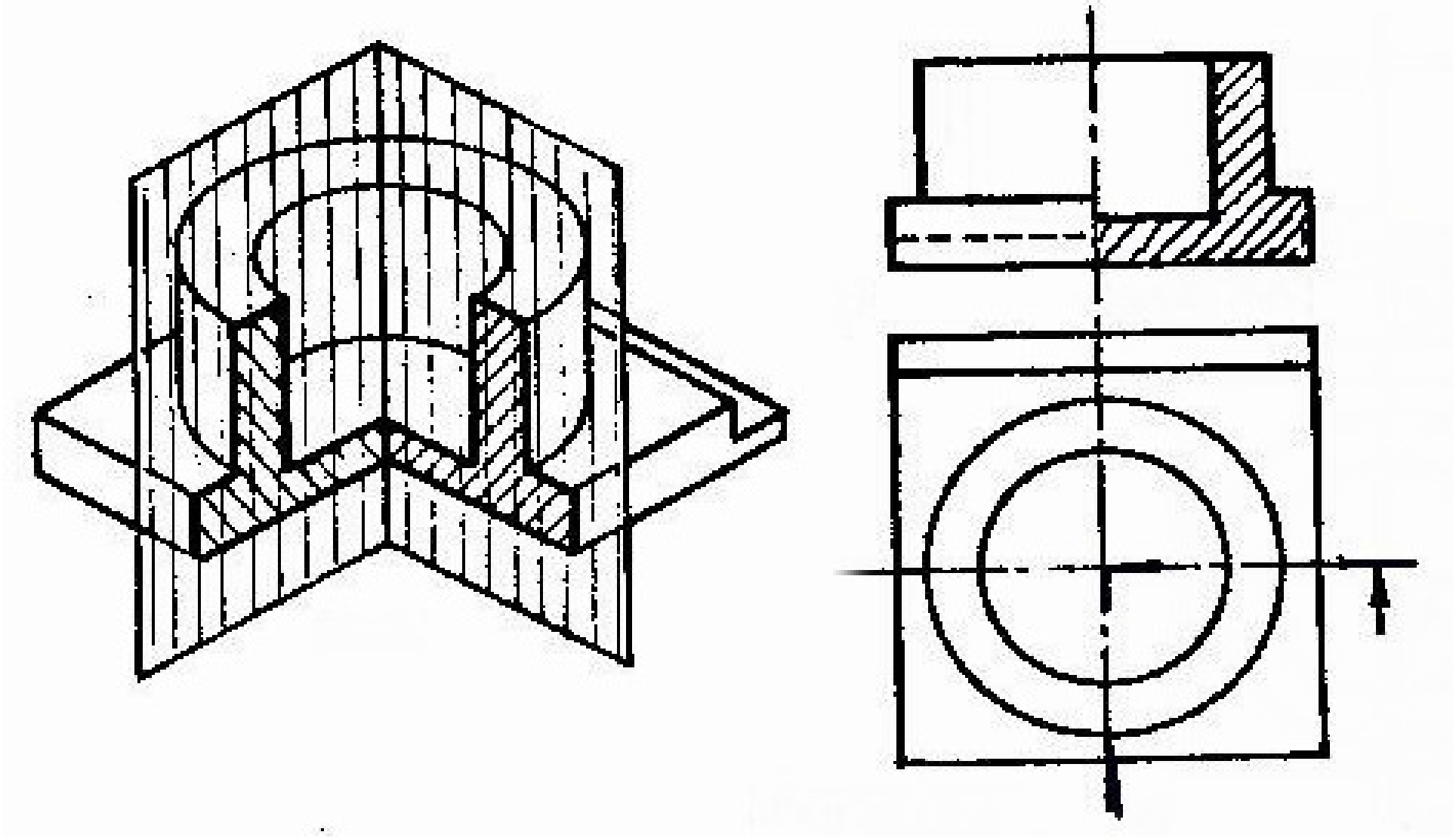


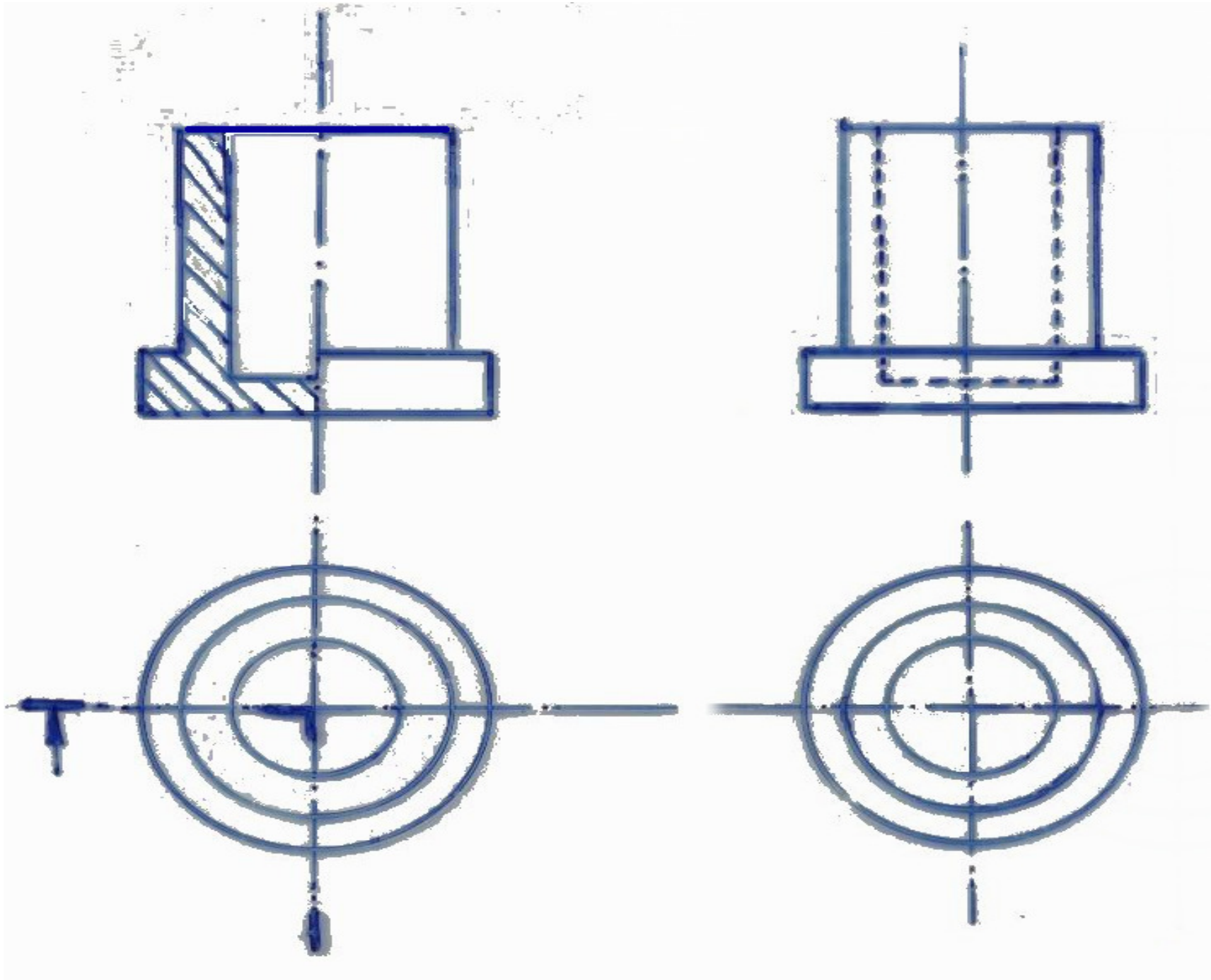

100
50
10
42
R 12
25
22
Ø 12
50
18
6
B
40
6
6
38
14
26
66
A
A
6
B
Ø 20

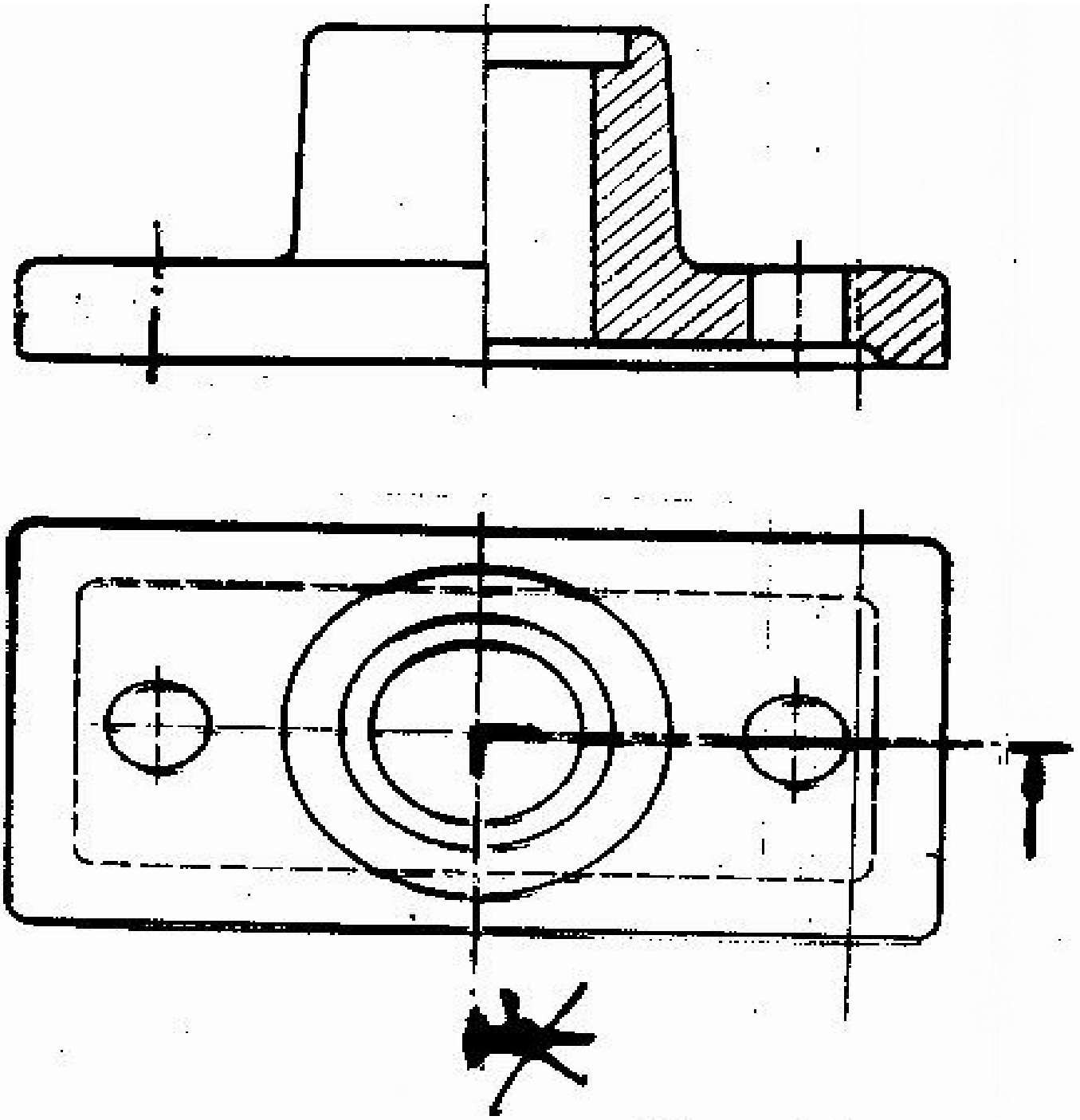
Offset Sectional View



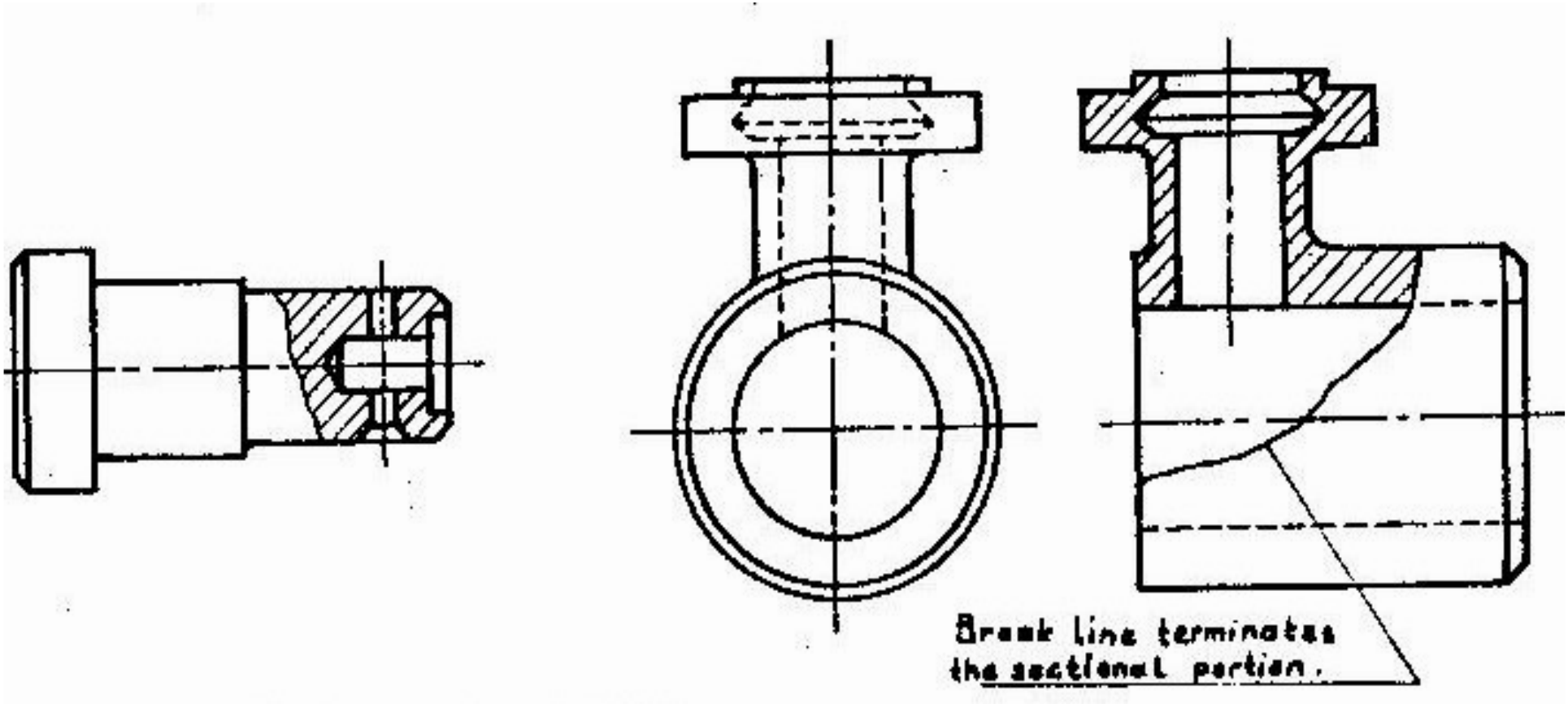
Half Sectional View







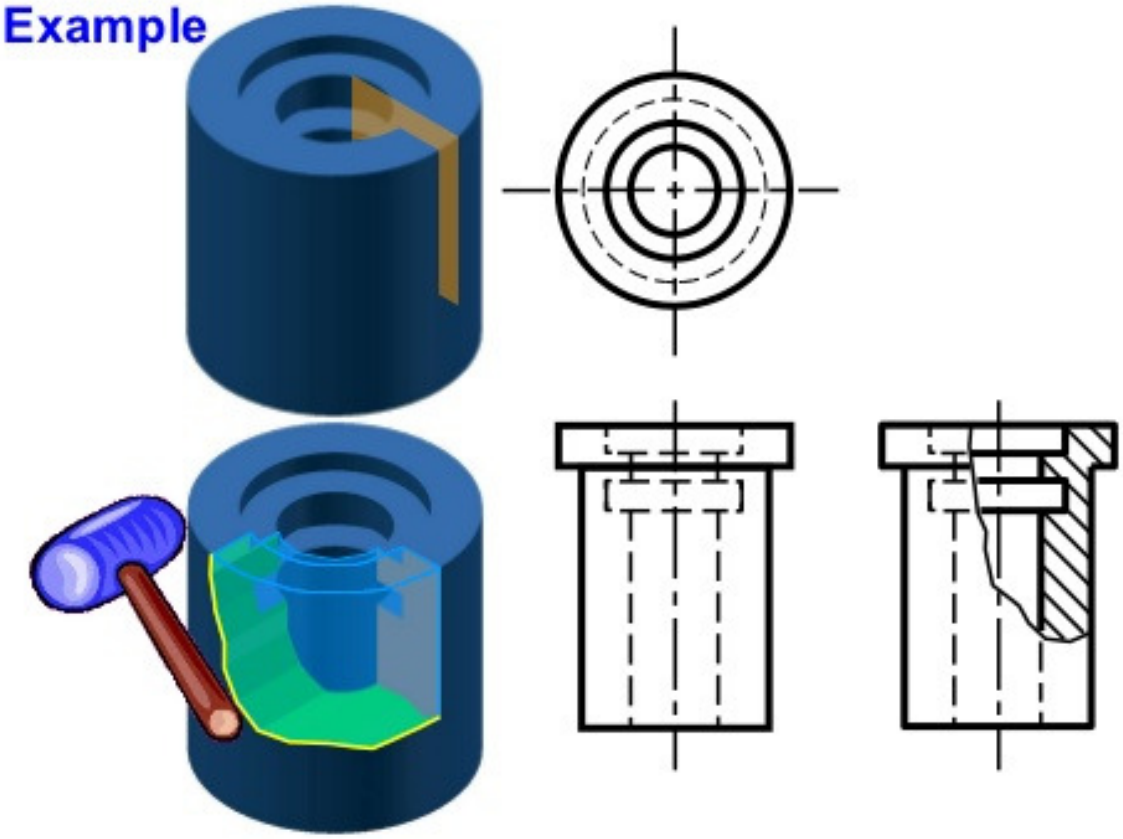
Broken-Out Sections



Broken-out section : Concept & example

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

Example

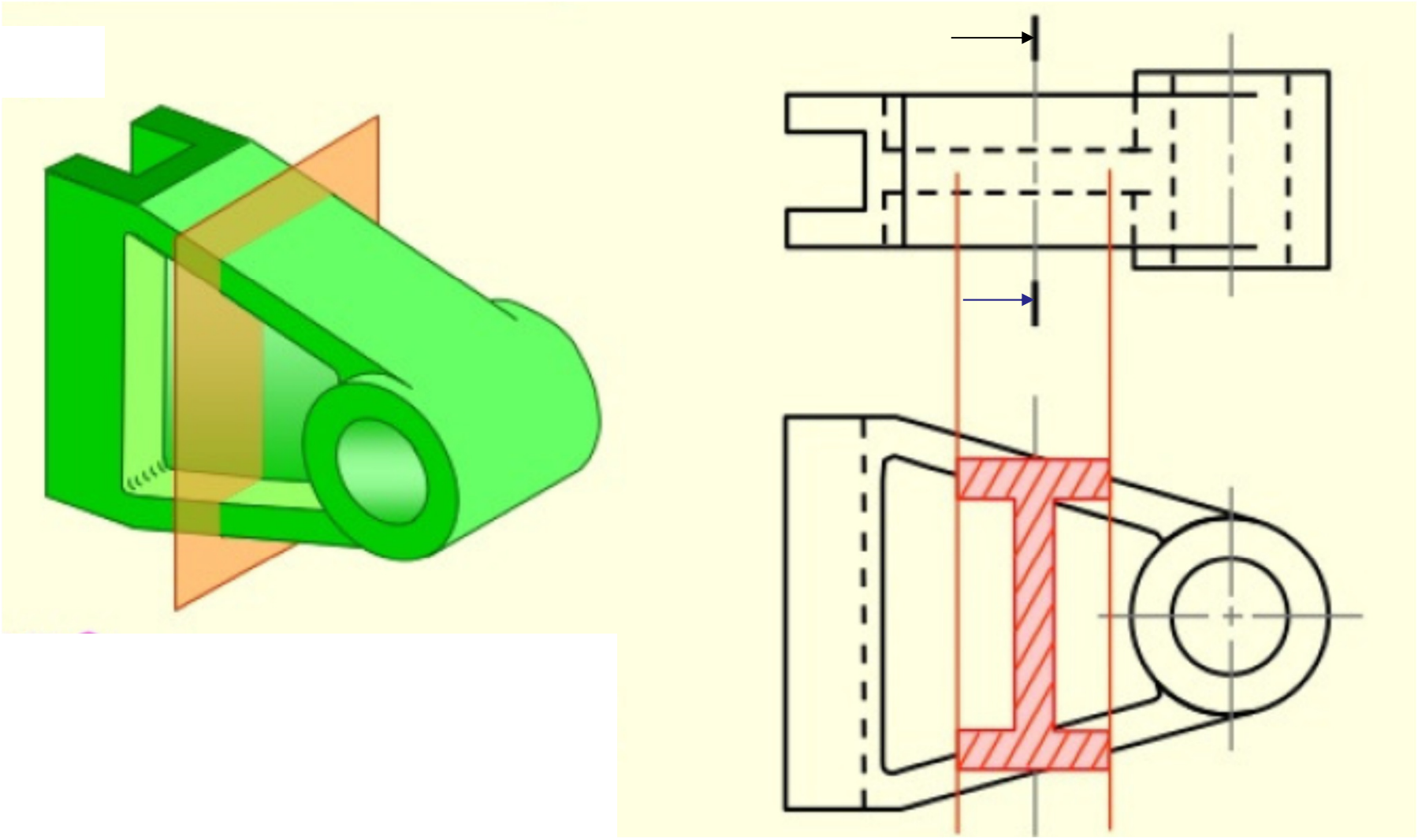


Conventional practices

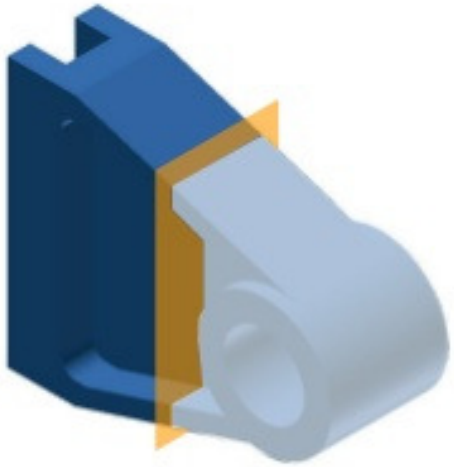
- The sectioned and unsectioned portions are separated by a ***break line.***
- Break line is freehand drawn as a thin continuous line (4H).
- Cutting plane line is not necessary.

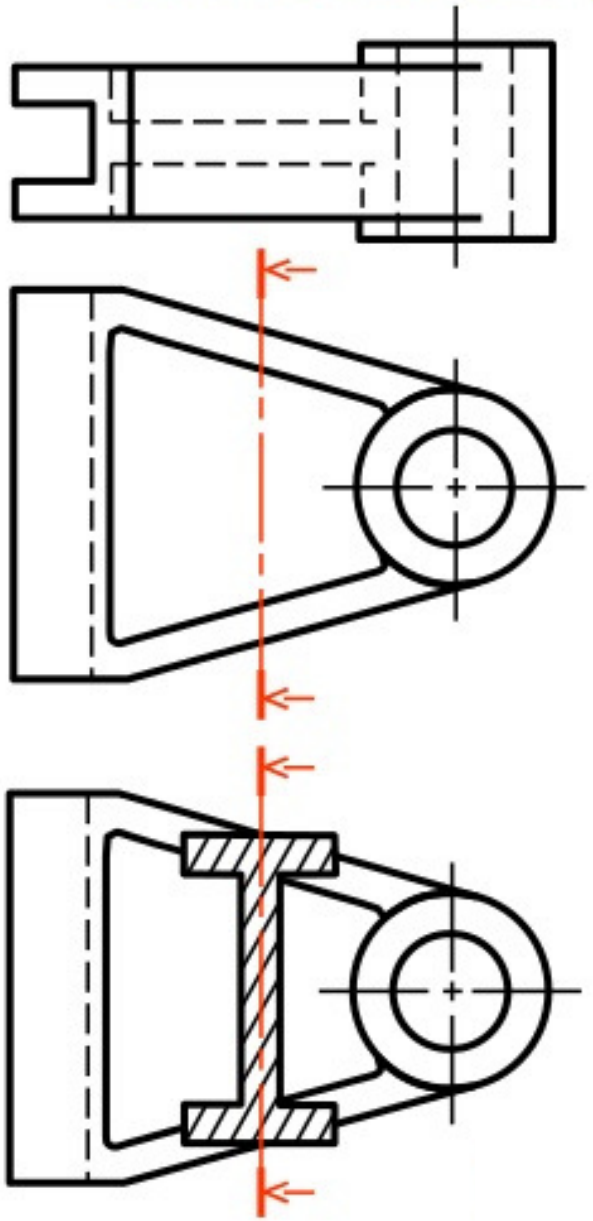
Kinds of sections

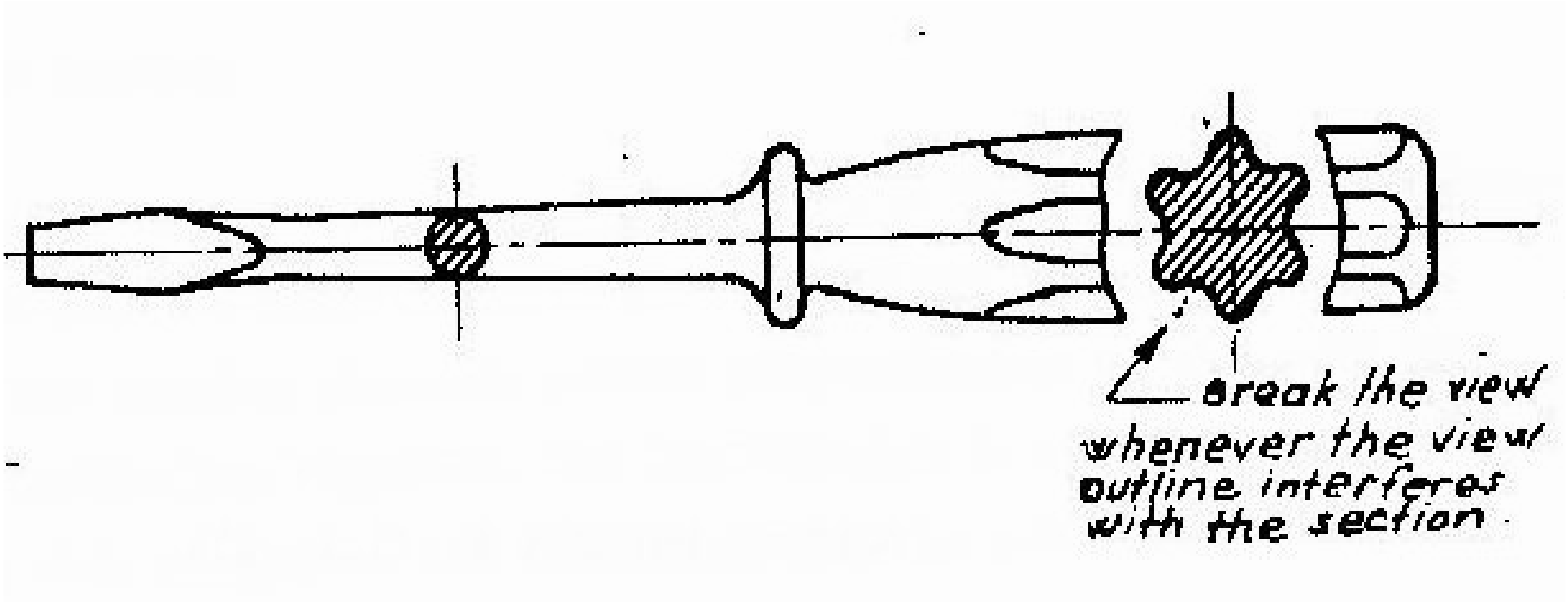
Revolved Sections



Revolved section :

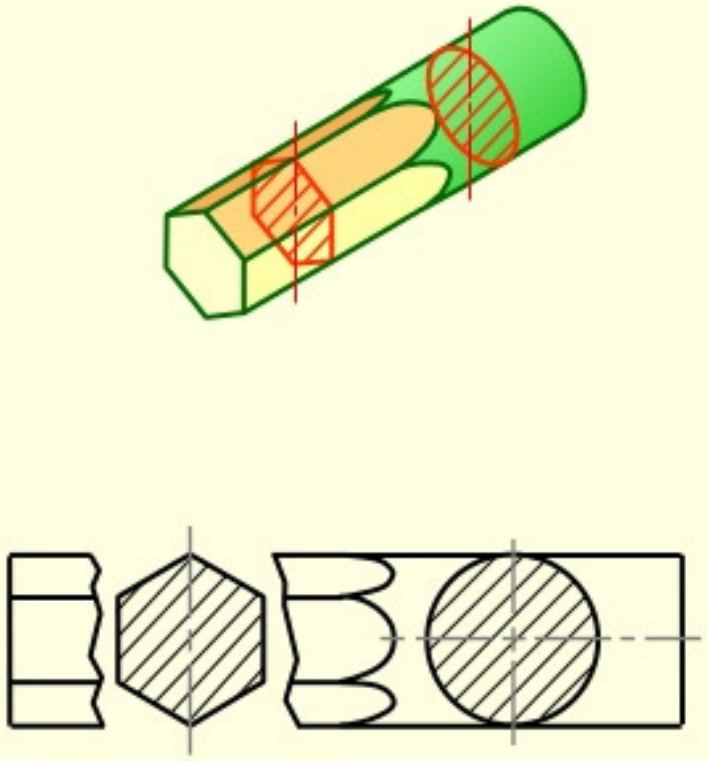




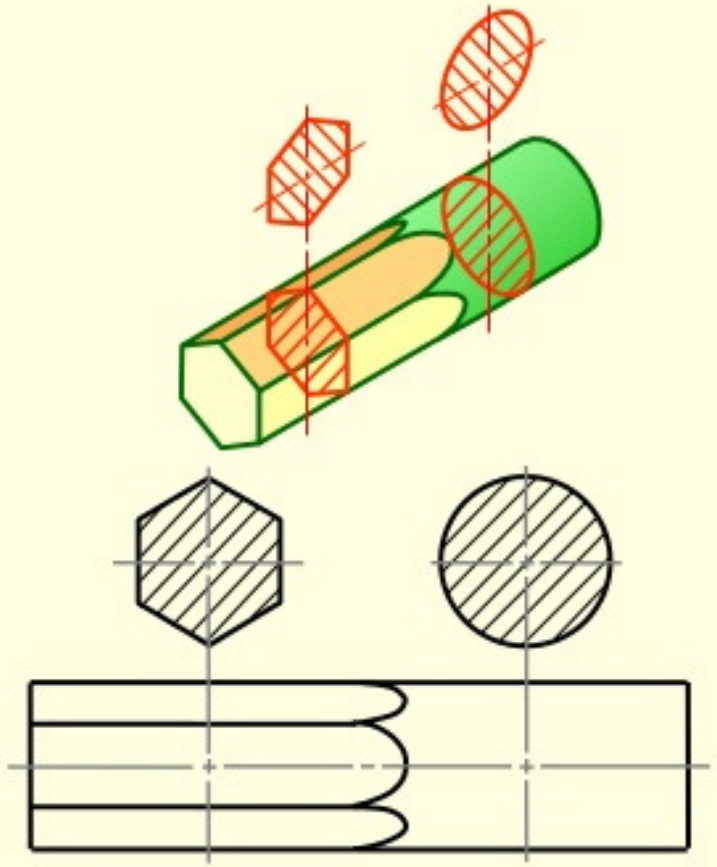

break the view
whenever the view
outline interferes
with the section

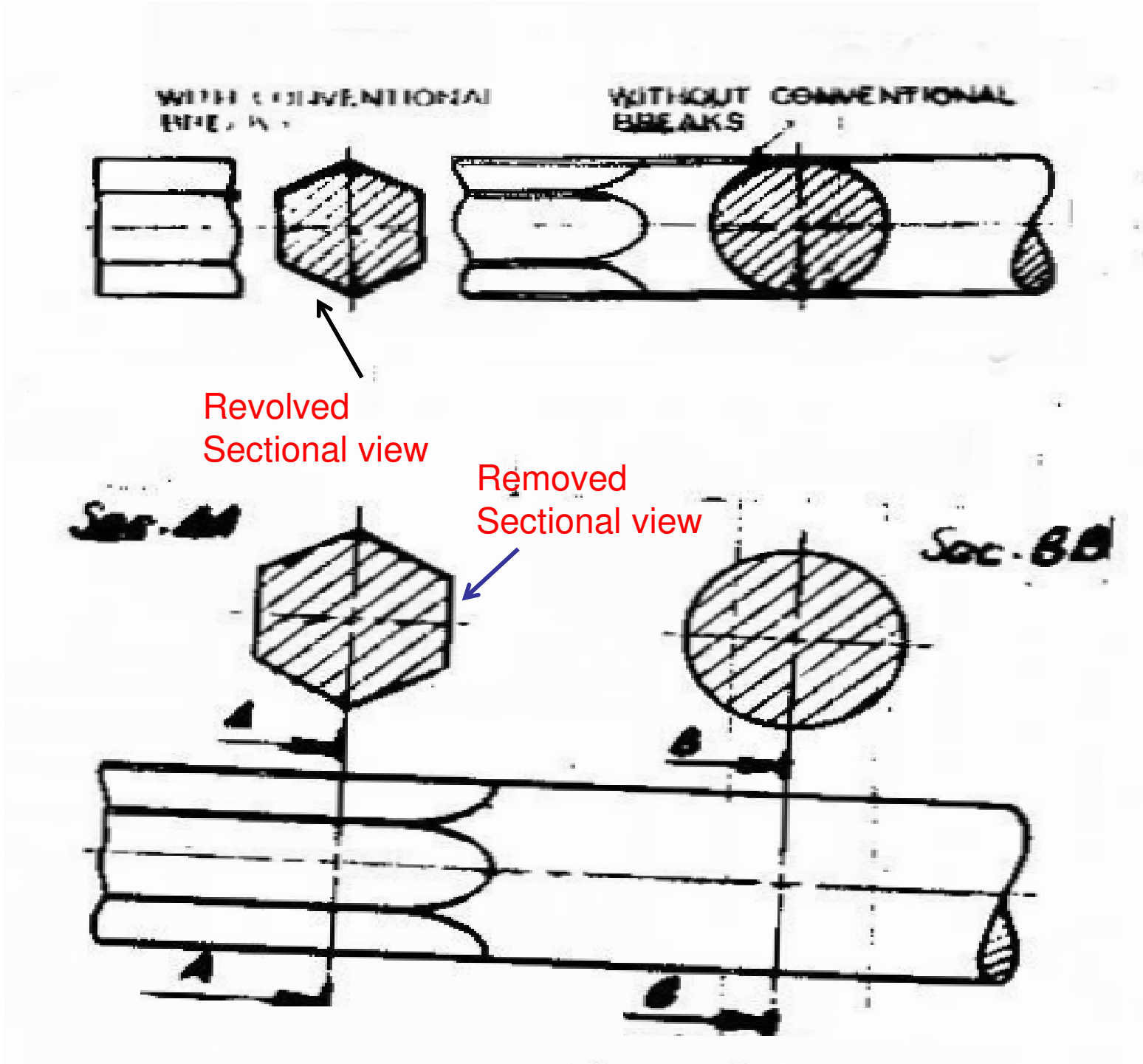
REMOVED SECTION VIEW

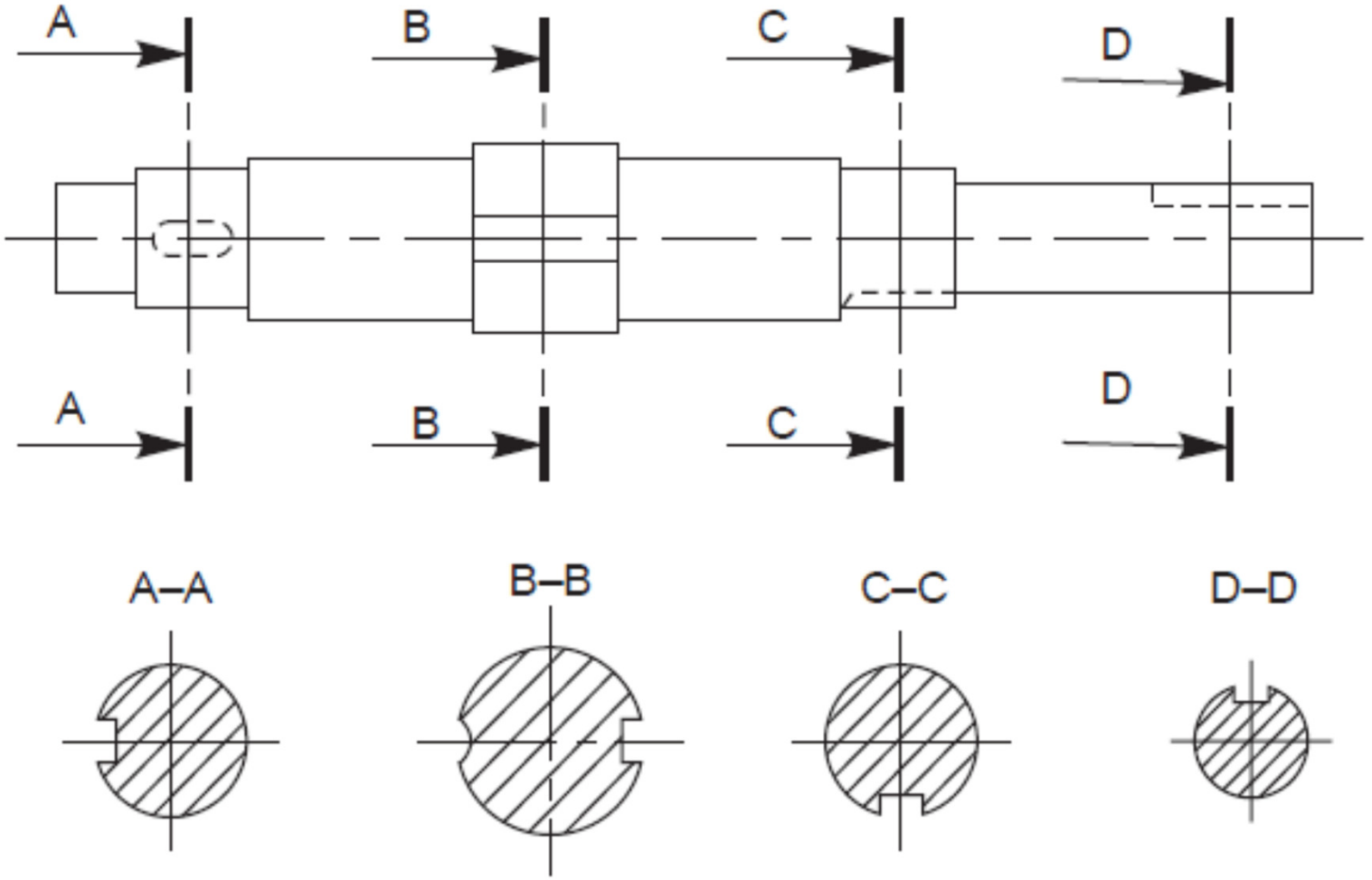
Revolved section

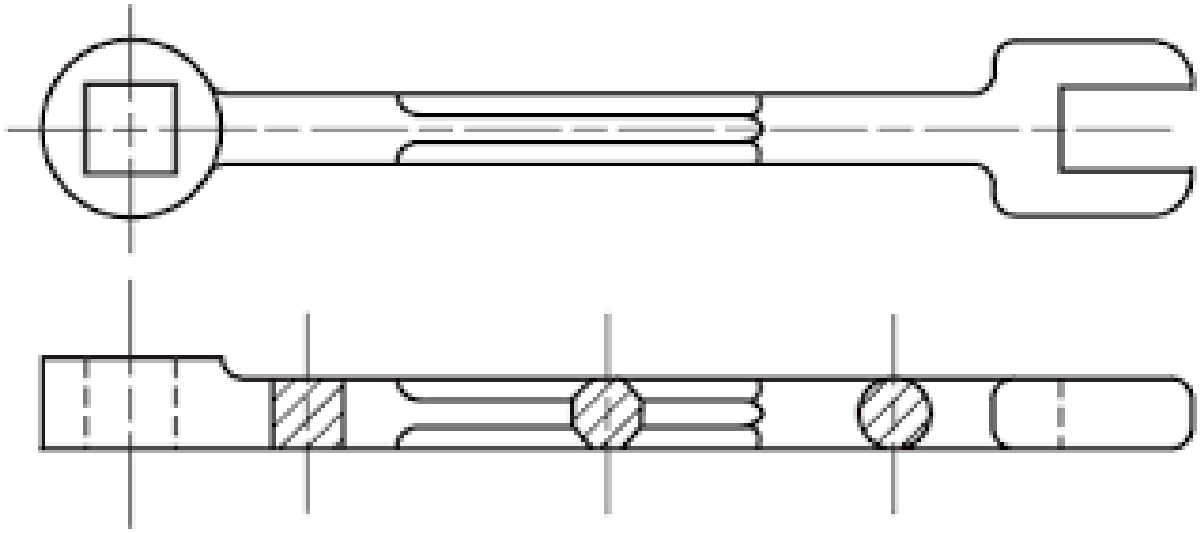


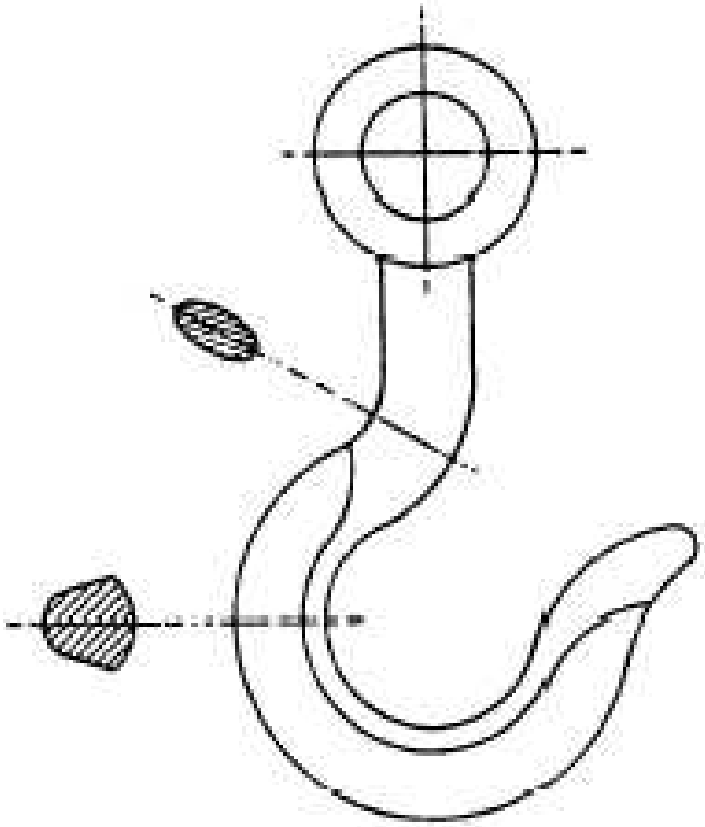
Removed section



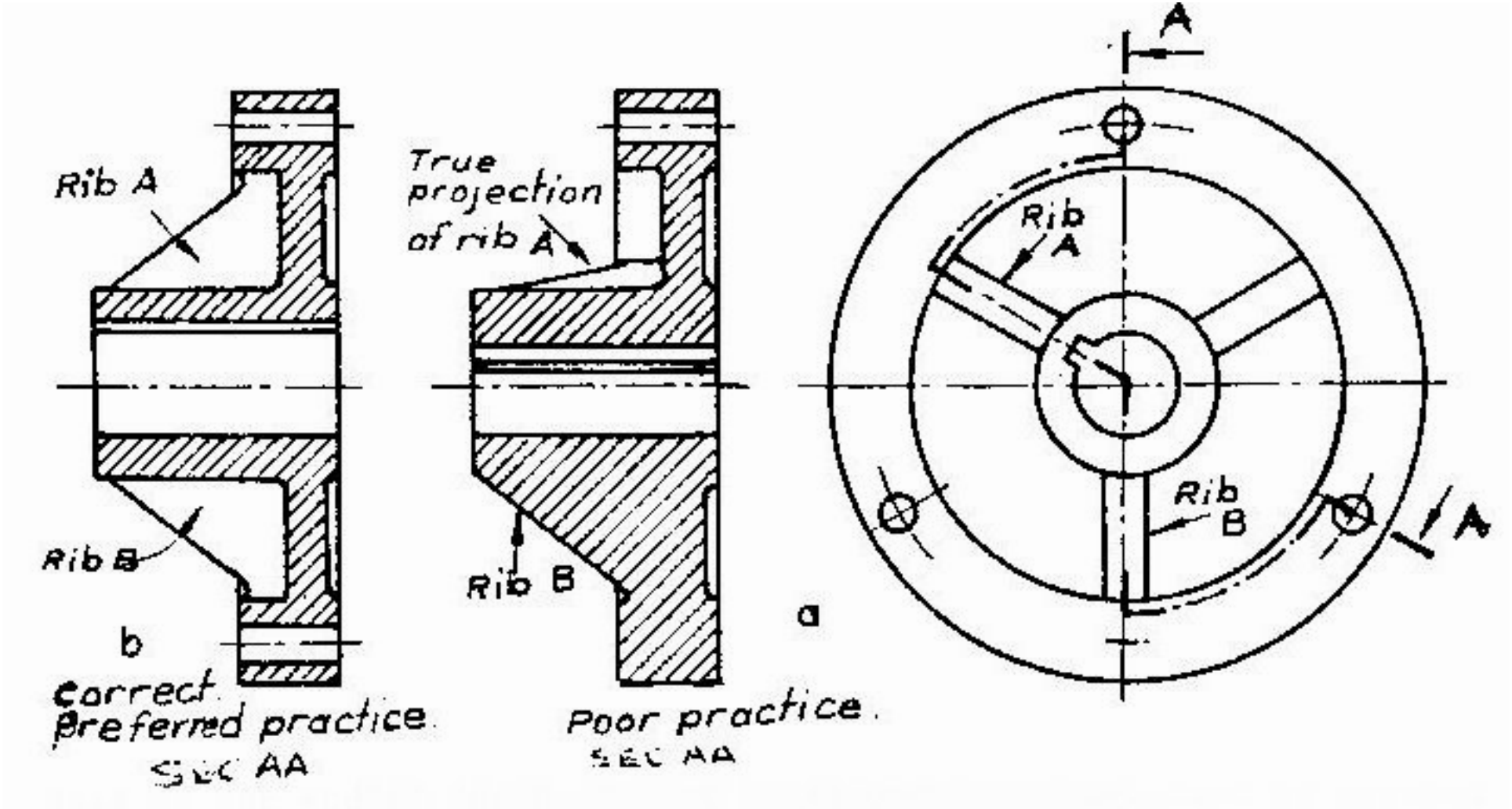

WITHOUT CONVENTIONAL
BREAKS
Revolved
Sectional view
Removed
Sectional view
Sec. BB

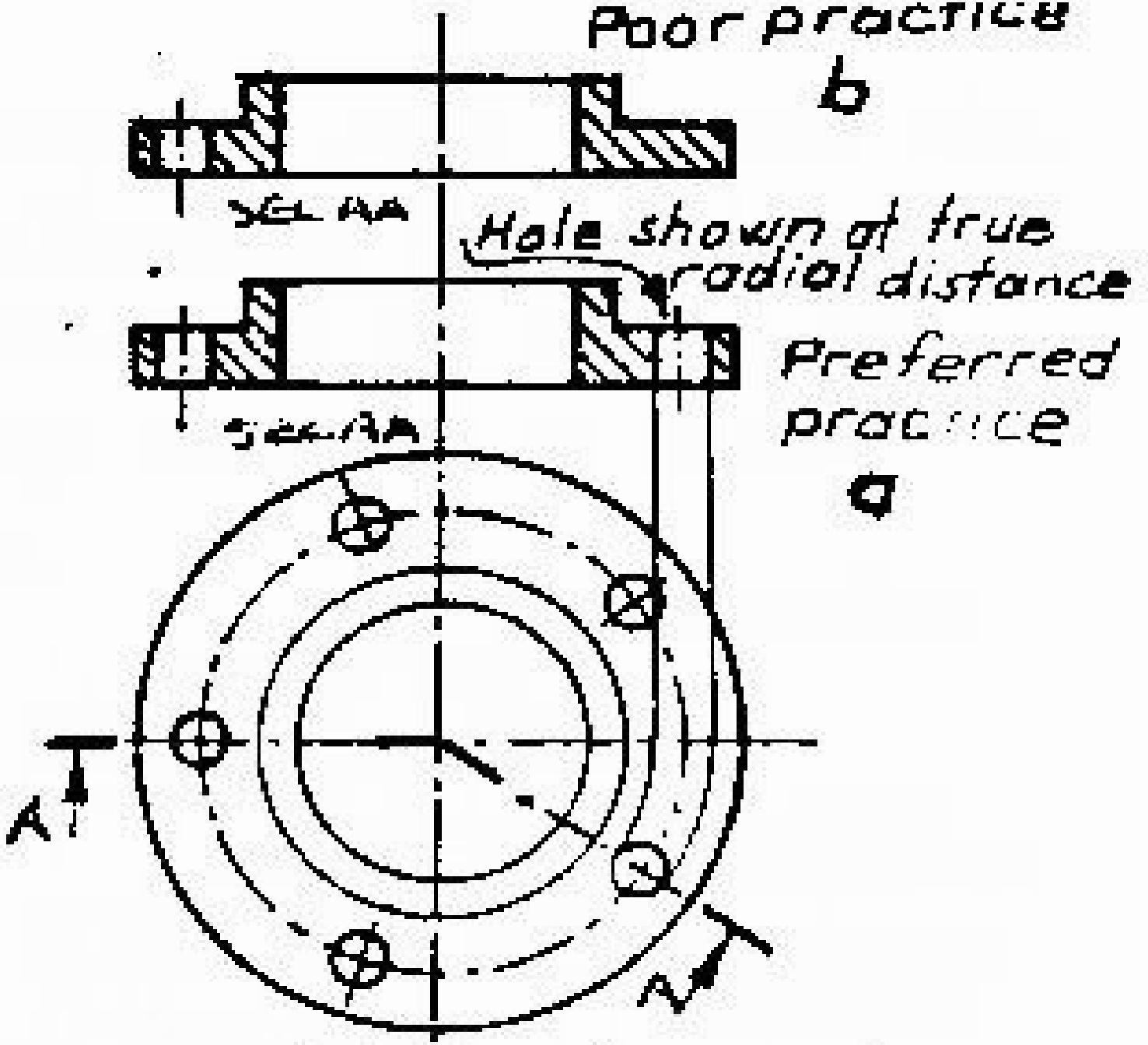

A
B
C
D
A
B
C
D
A–A
B–B
C–C
D–D

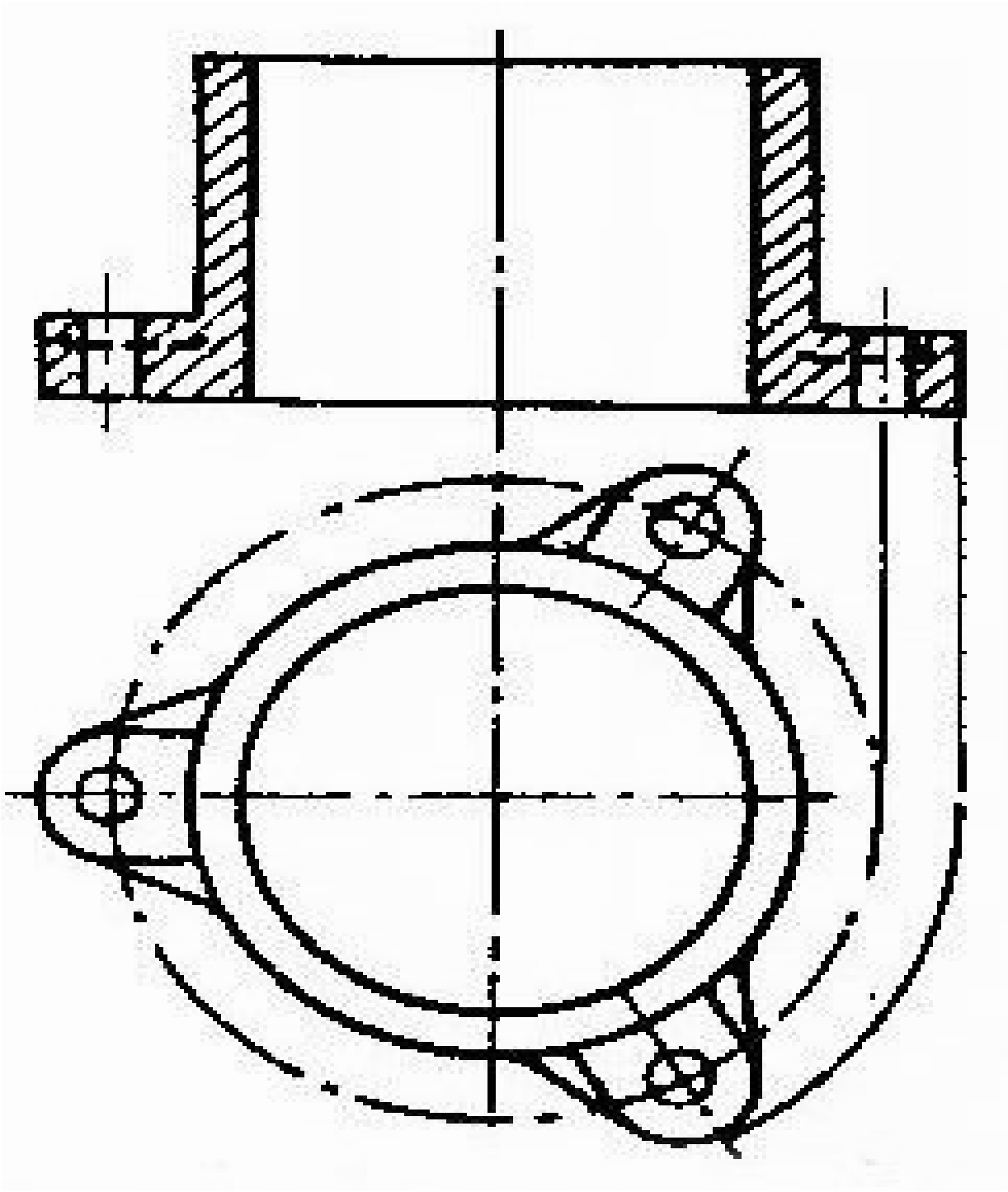




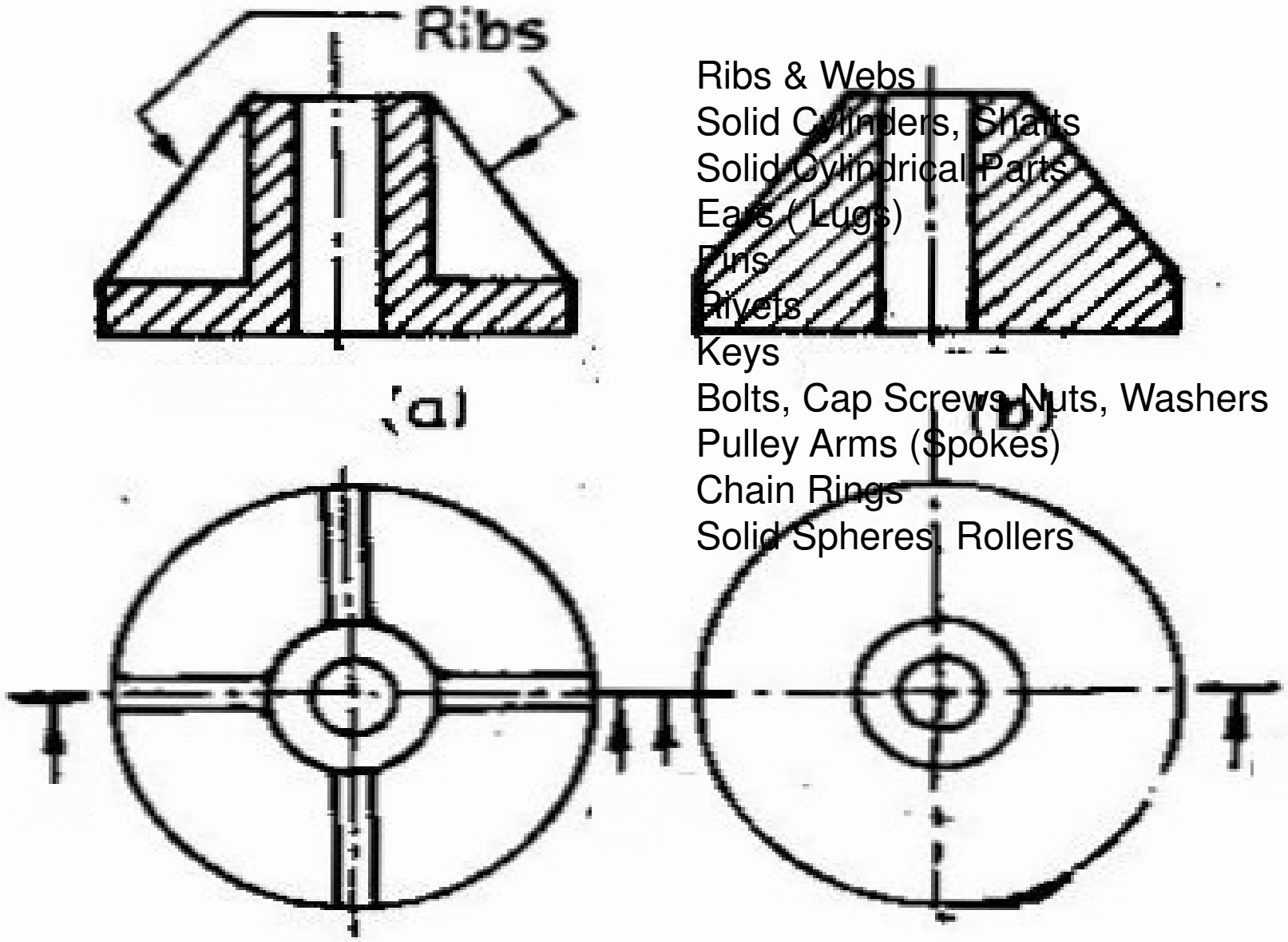
Alined Sections



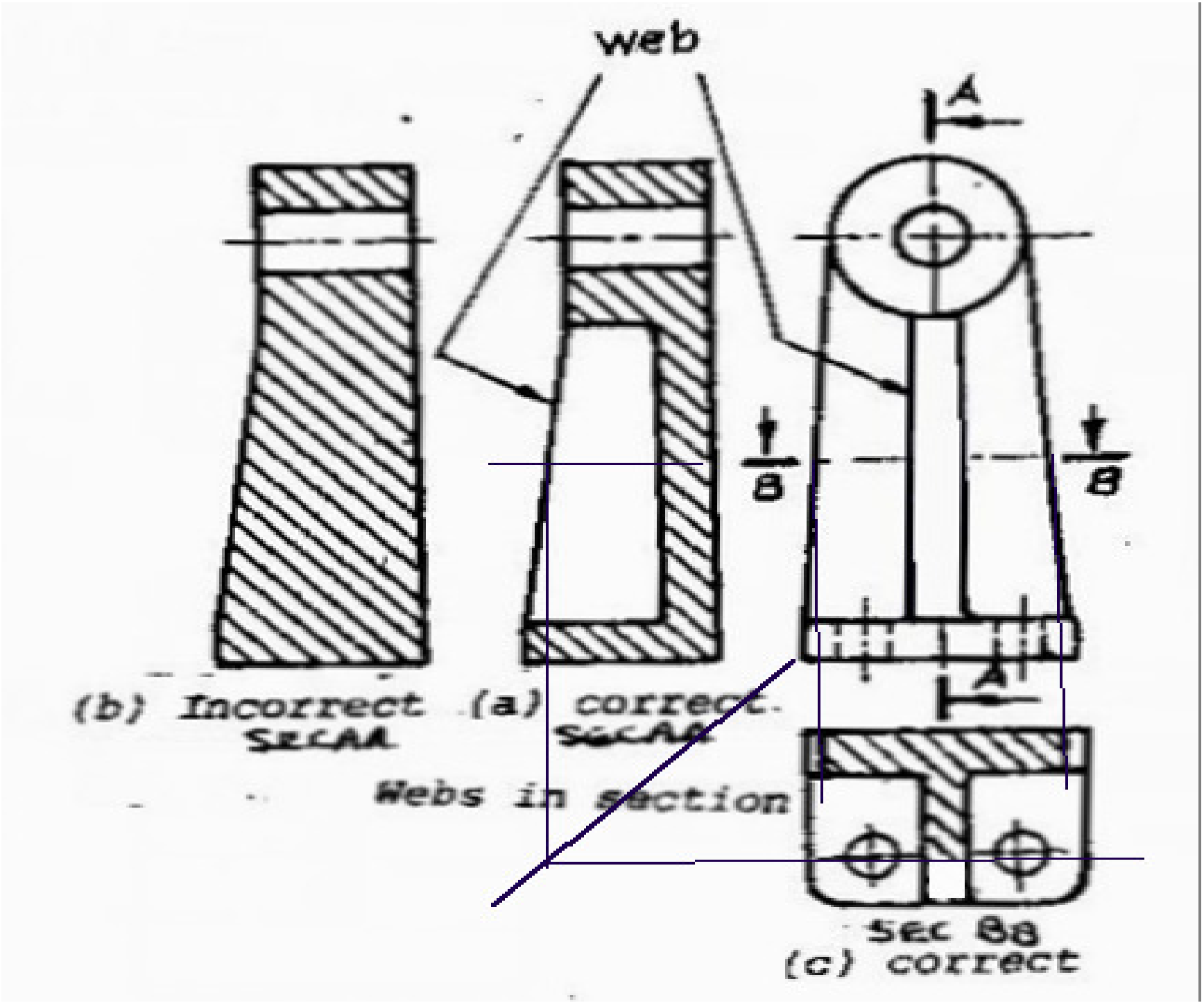

Poor practice
b
Hole shown at true radial distance
Preferred practice
a
A
A

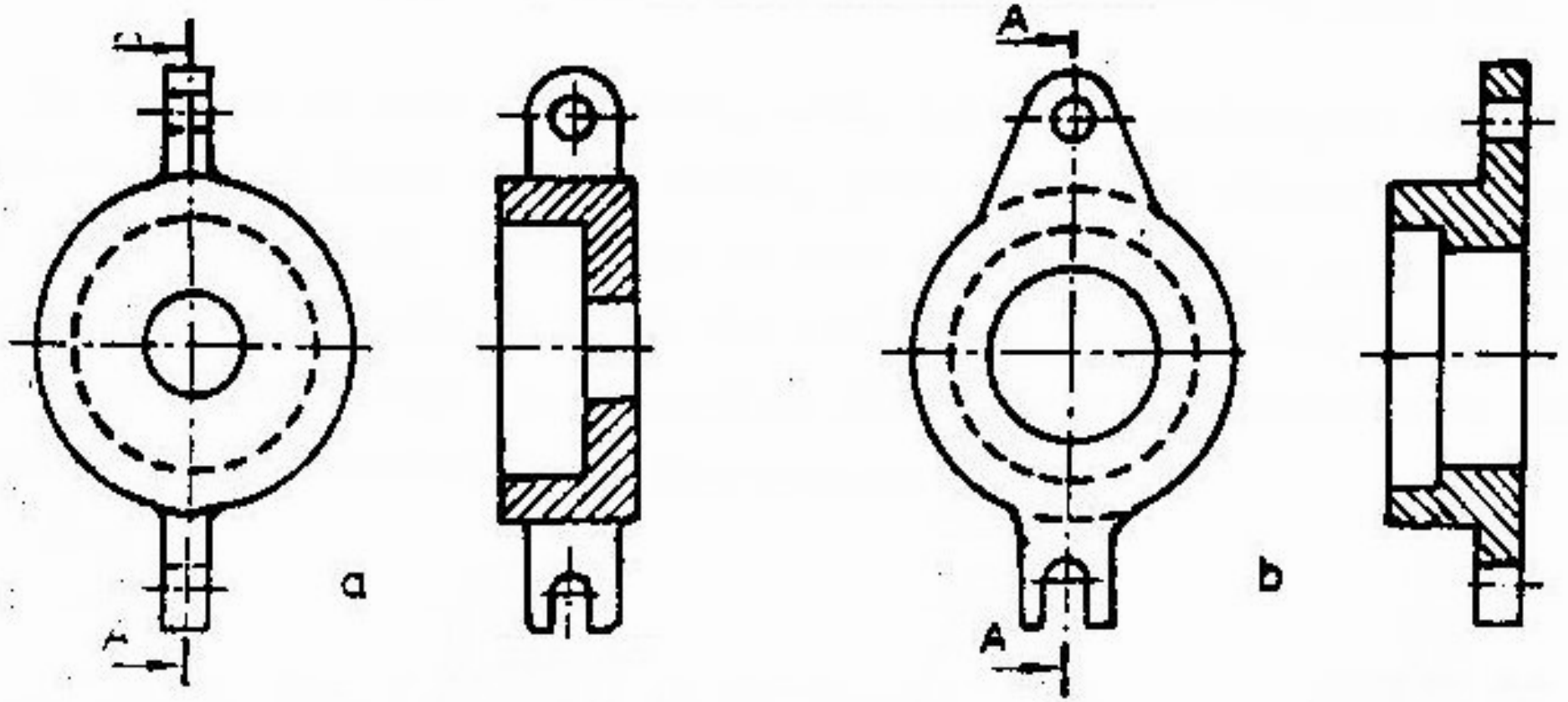


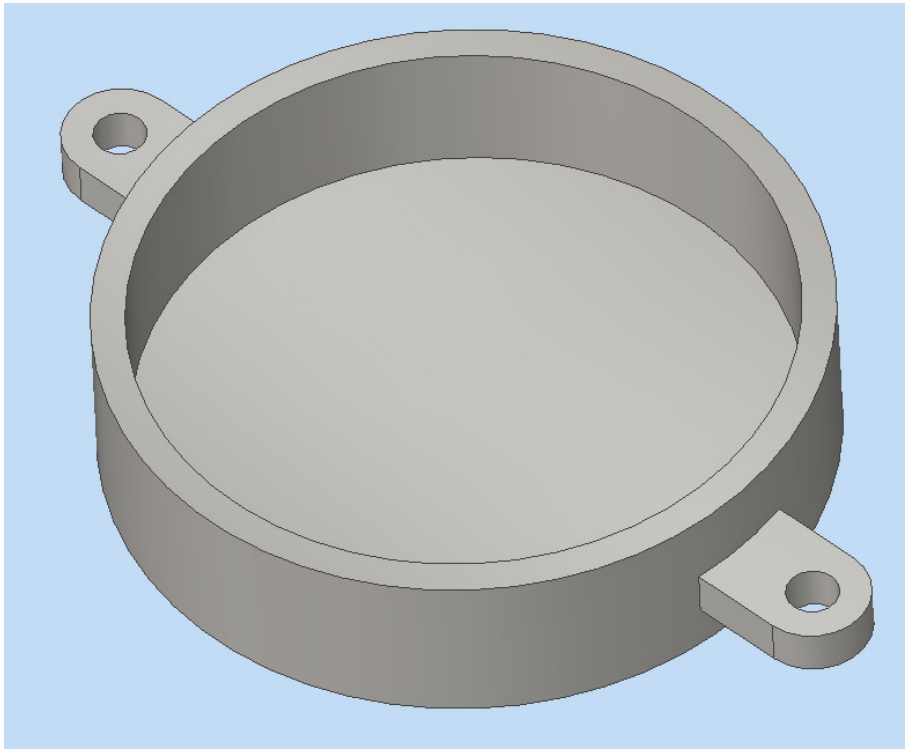
Special Hatching Convention for Some Machine Elements/ Parts

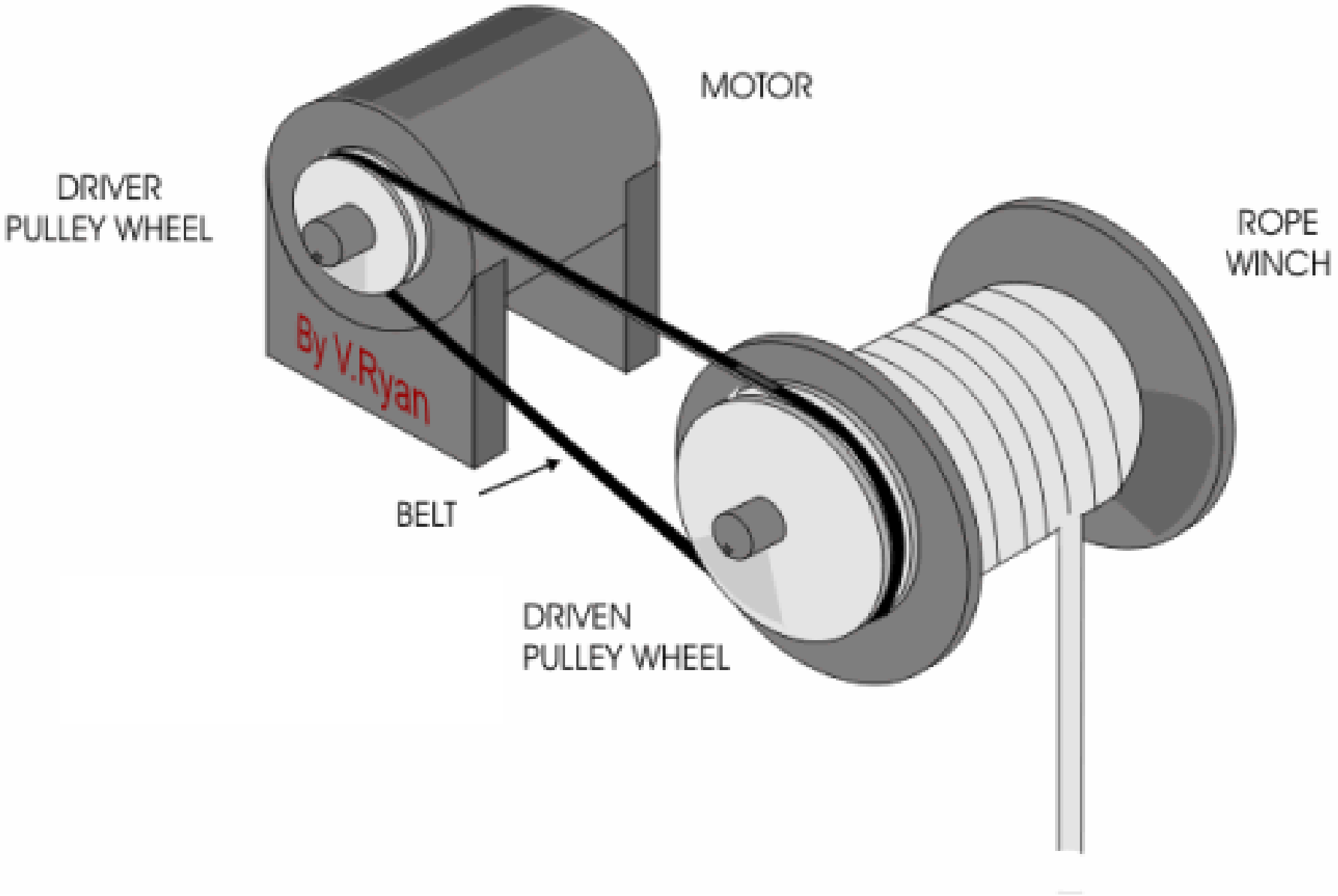


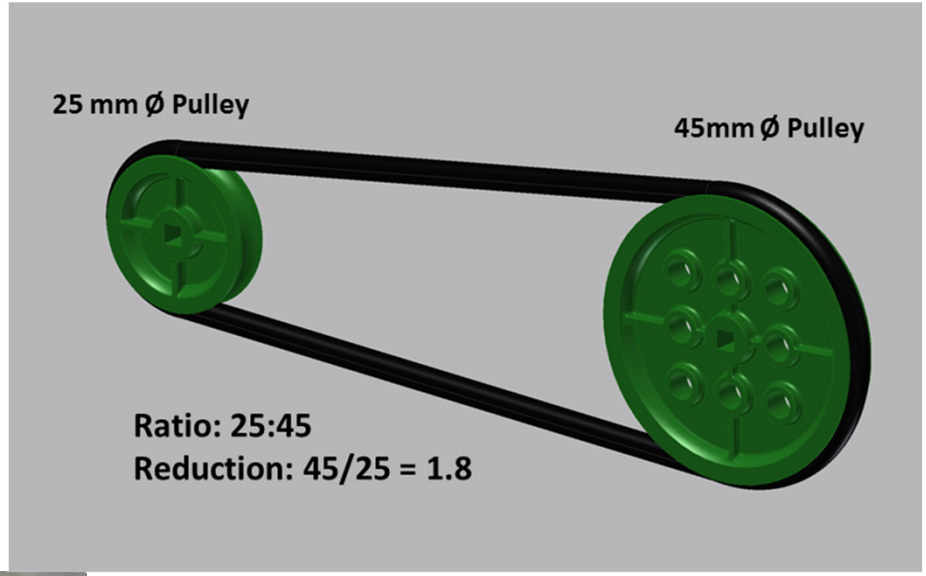
Ribs & Webs
Solid Cylinders, Shafts
Solid Cylindrical Parts
Ears (Lugs)
Pins
Rivets
Keys
Bolts, Cap Screws, Nuts, Washers
Pulley Arms (Spokes)
Chain Rings
Solid Spheres, Rollers

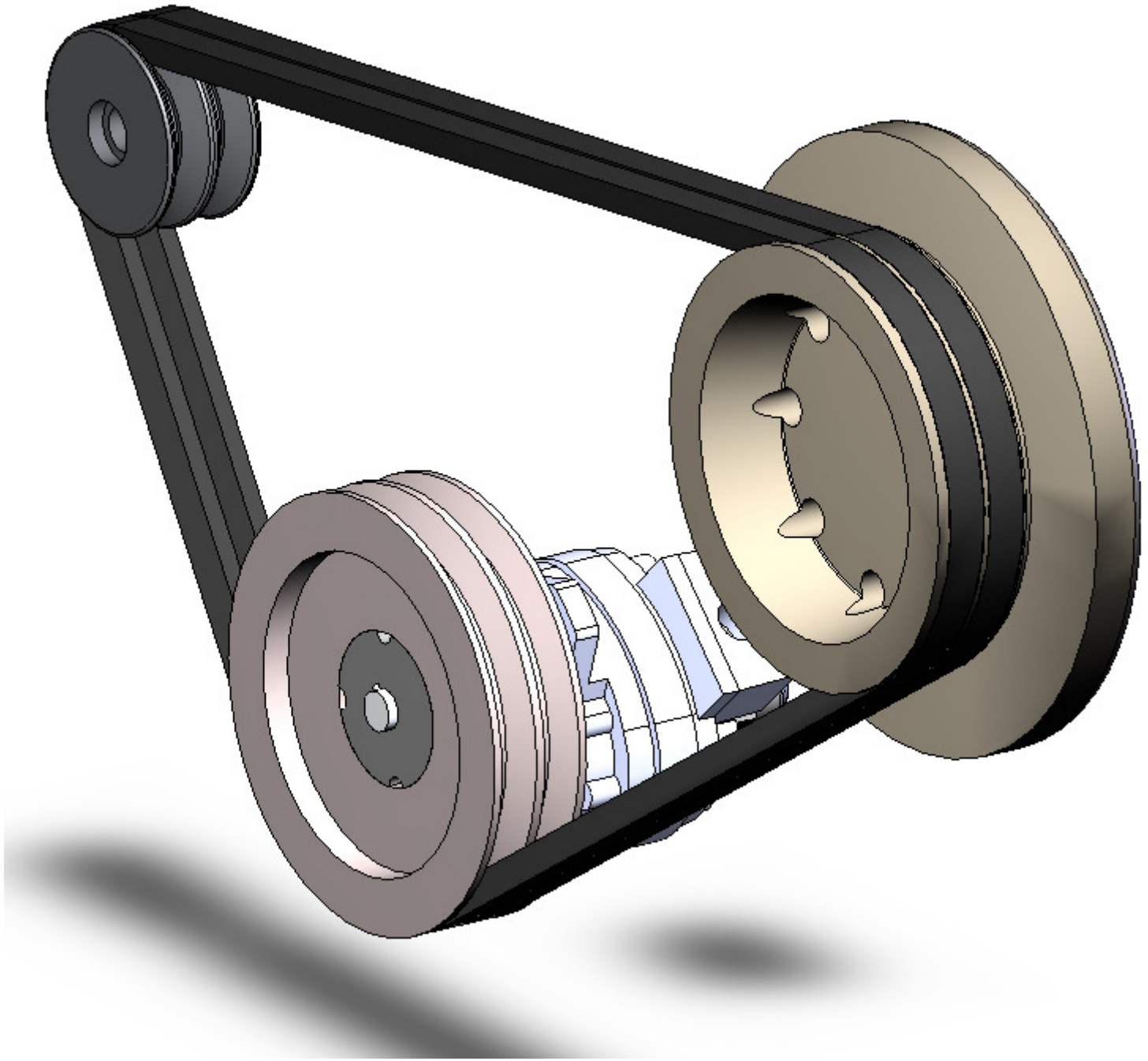

web
A
B
B
A
(b) Incorrect
Sec AA
(a) correct
Sec AA
Webs in section
Sec BB
(c) correct

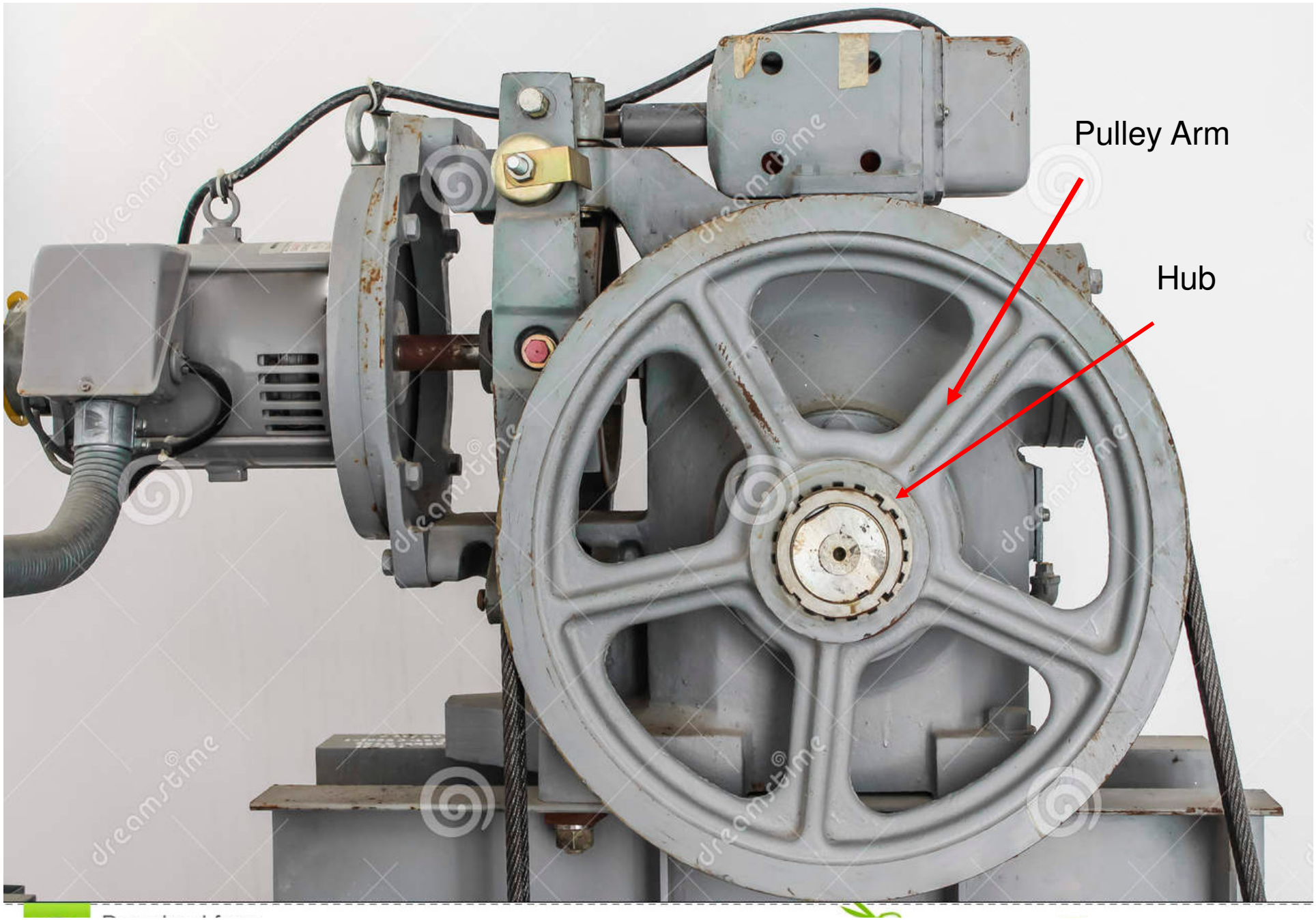

A
A
a
A
A
b

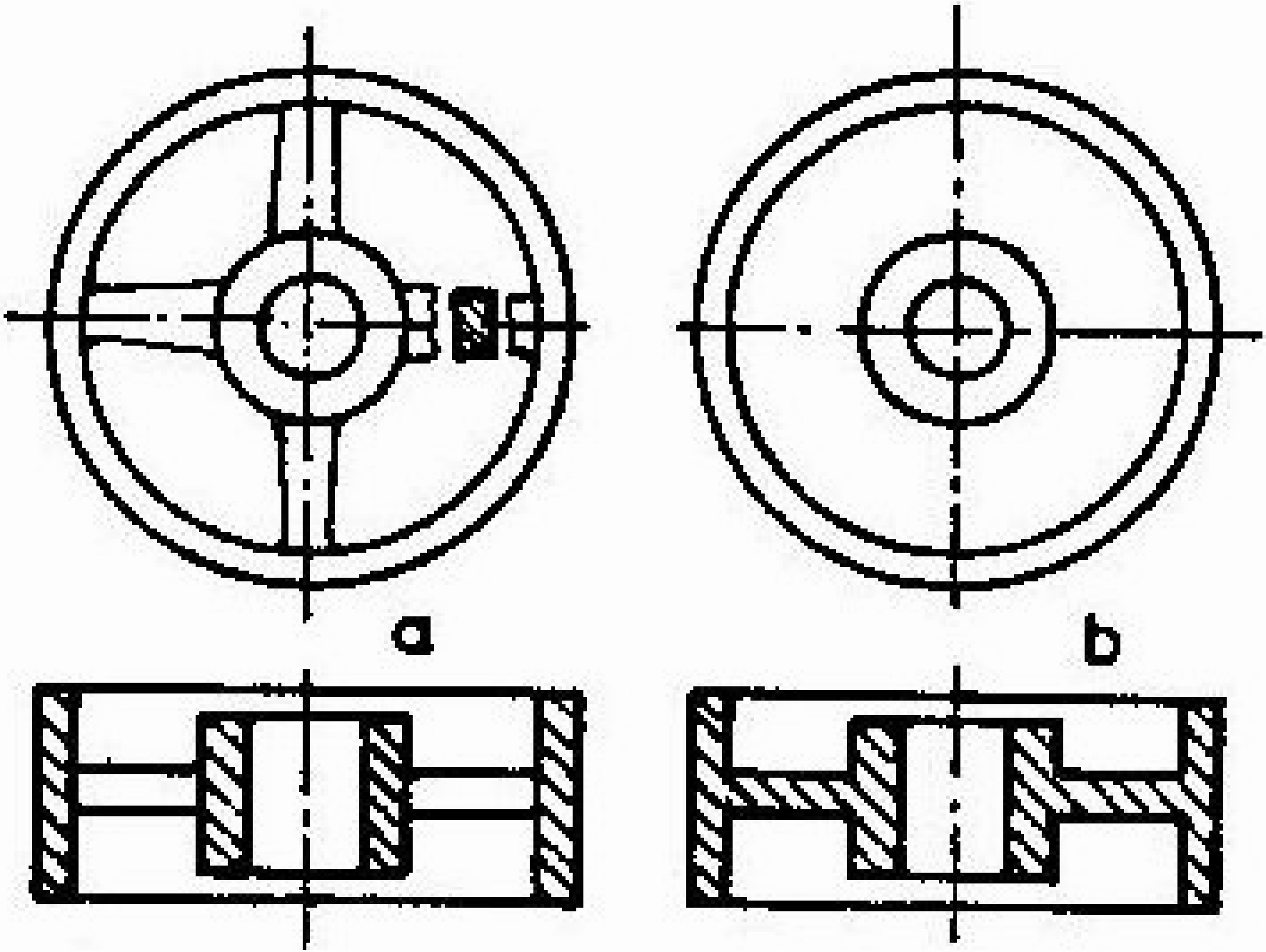



MOTOR
DRIVER
PULLEY WHEEL
ROPE
WINCH
By V.Ryan
BELT
DRIVEN
PULLEY WHEEL


25 mm Ø Pulley
45mm Ø Pulley
Ratio: 25:45
Reduction: 45/25 = 1.8




Pulley Arm
Hub


a
b

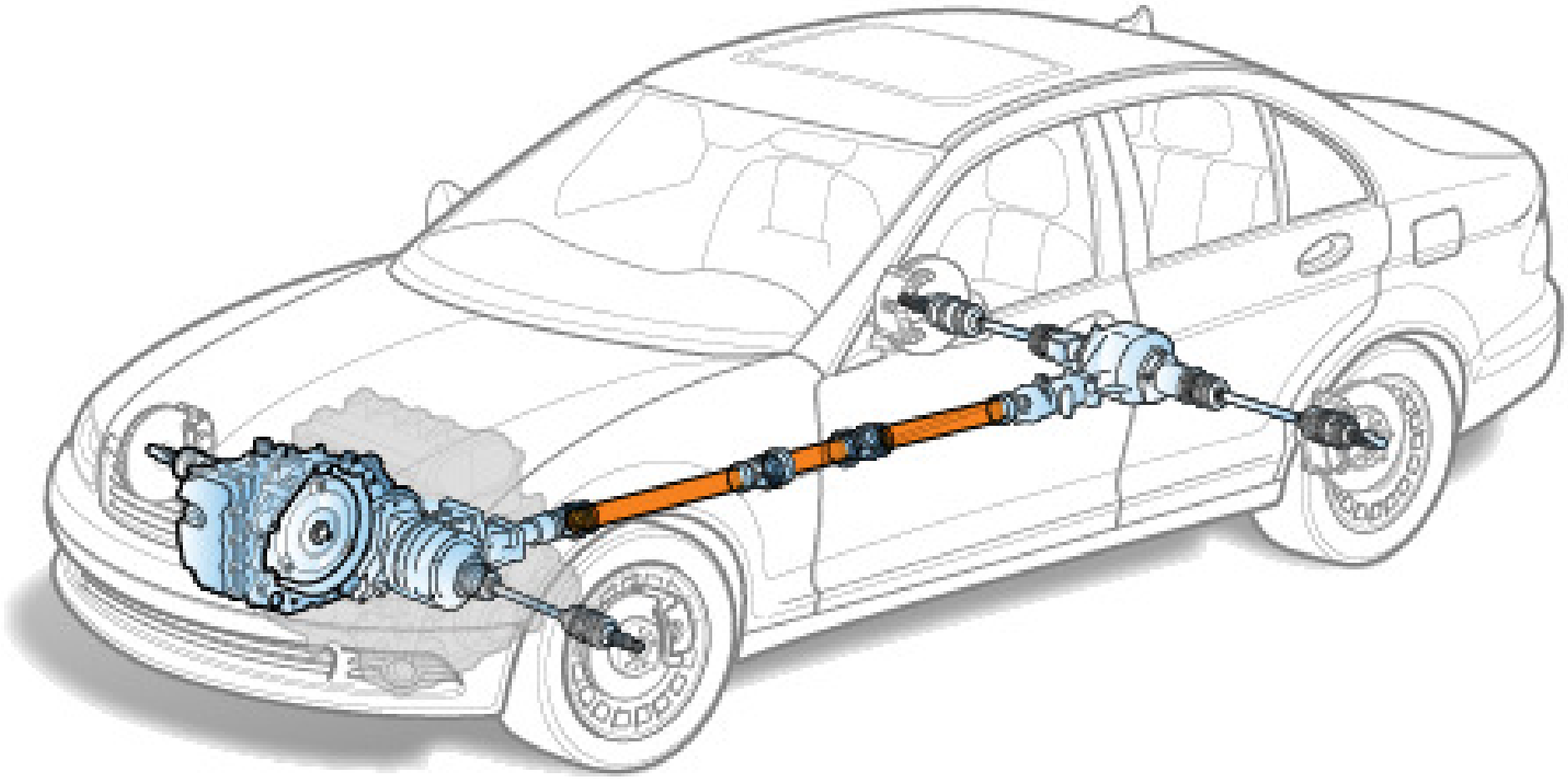
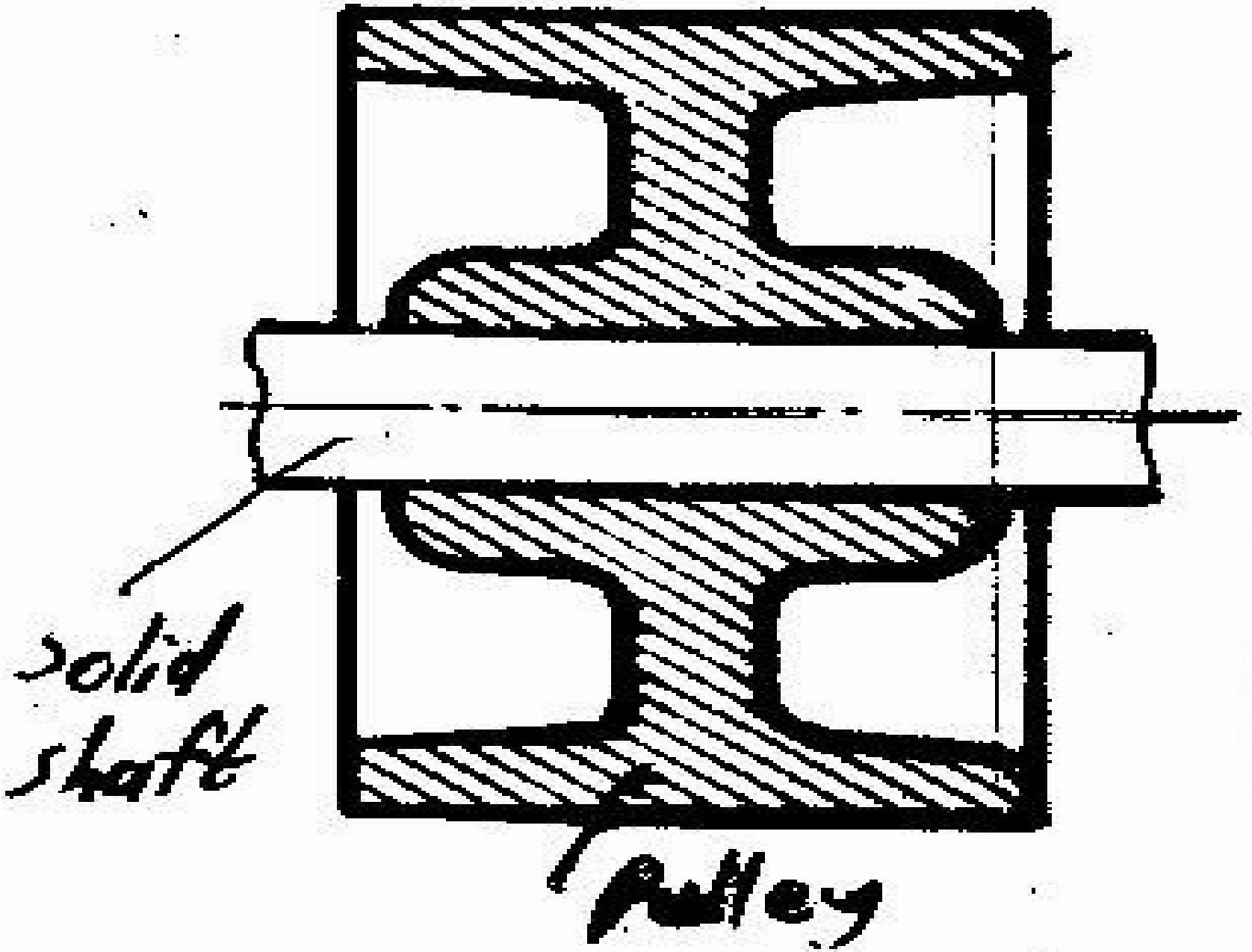
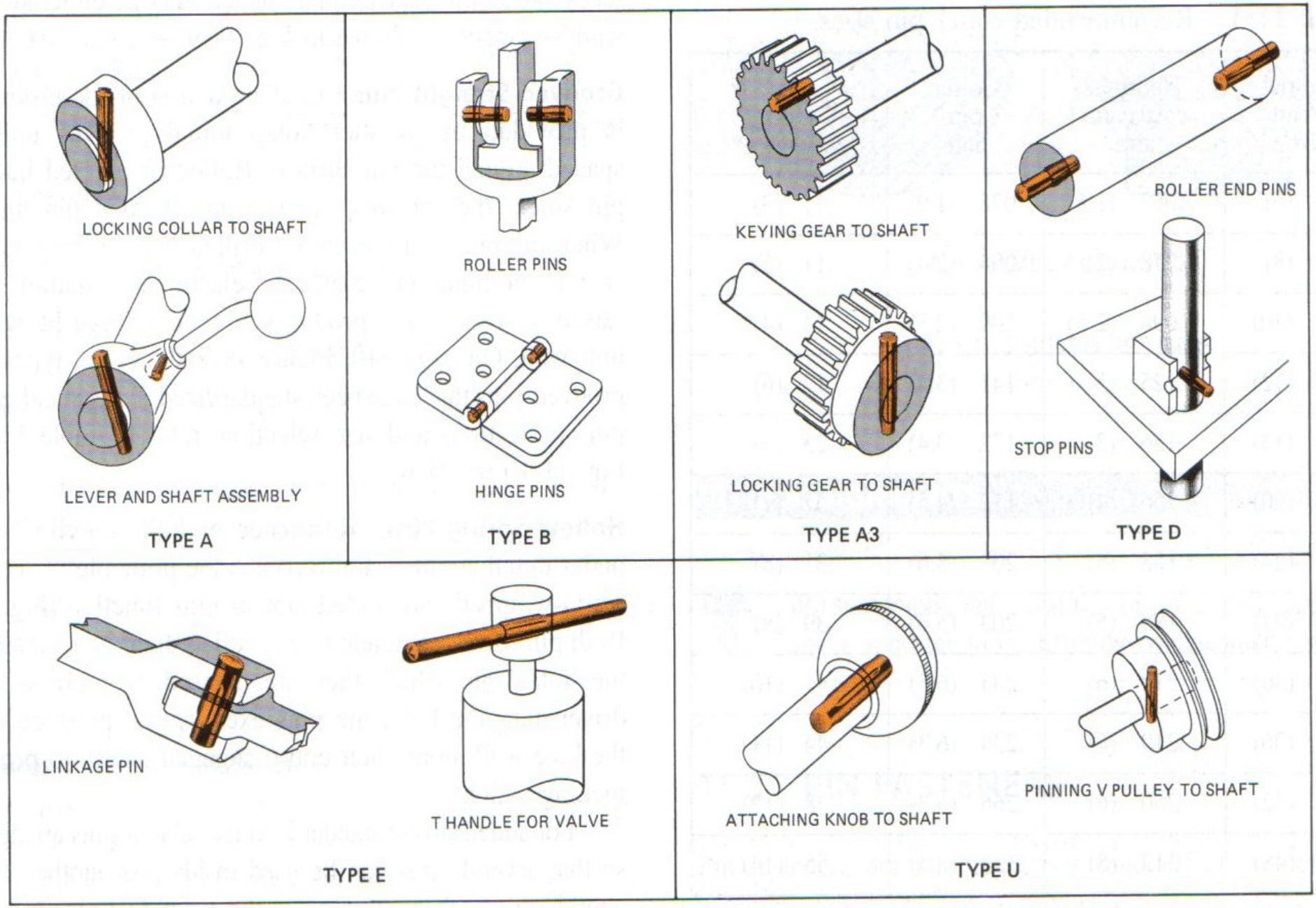


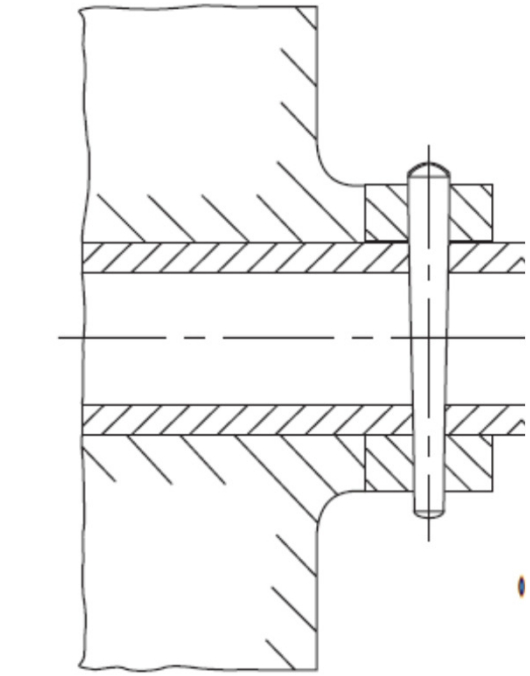
Image courtesy of ClearMechanic.com

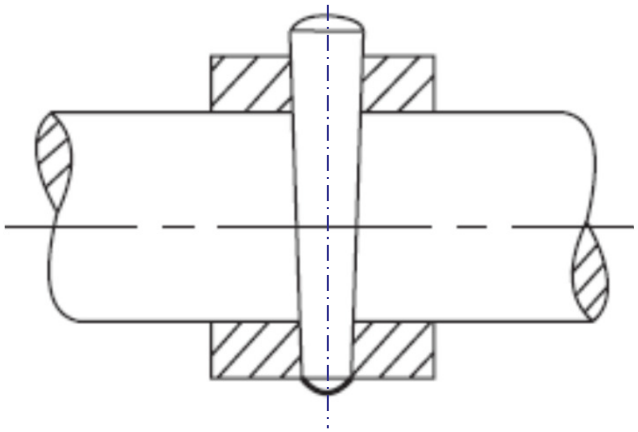

solid
shaft
Pulley

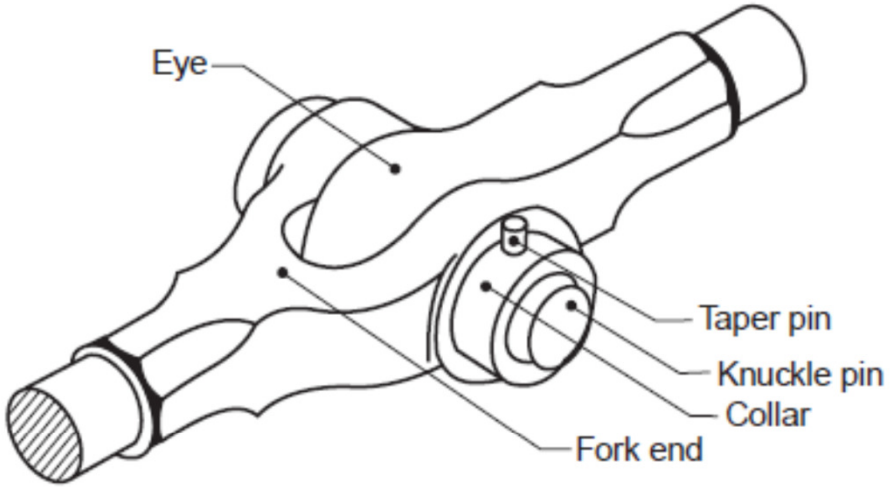

Q 3200



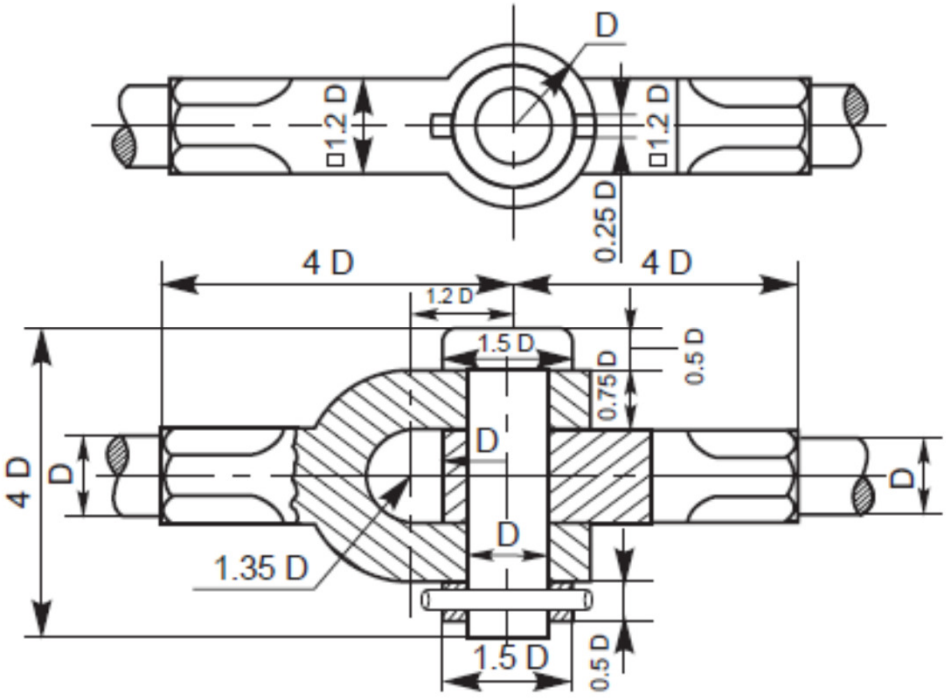
Groove pin applications.



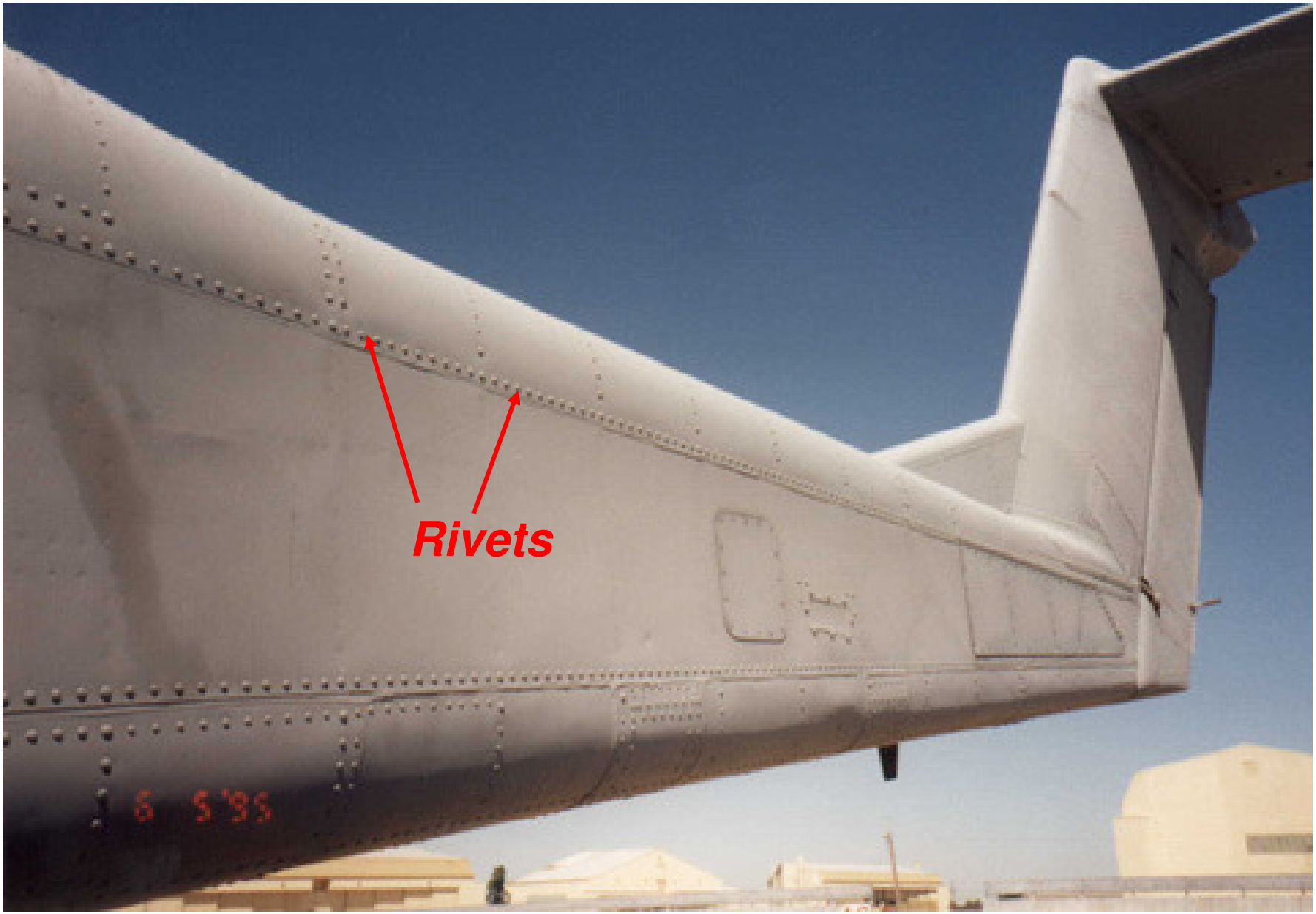



Eye
Taper pin
Knuckle pin
Collar
Fork end

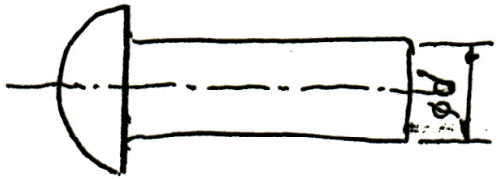
(a)


D
1.2 D
1.2 D
0.25 D
4 D
4 D
1.2 D
1.5 D
0.75 D
0.5 D
4 D
D
D
D
D
1.35 D
1.5 D
0.5 D

(b)

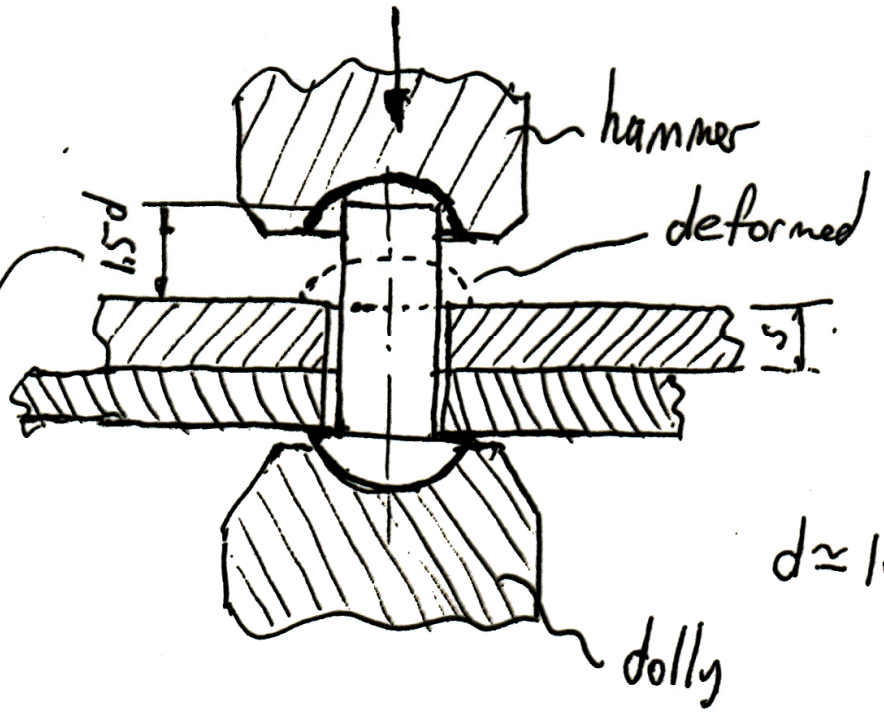

Rivets


All-Clad

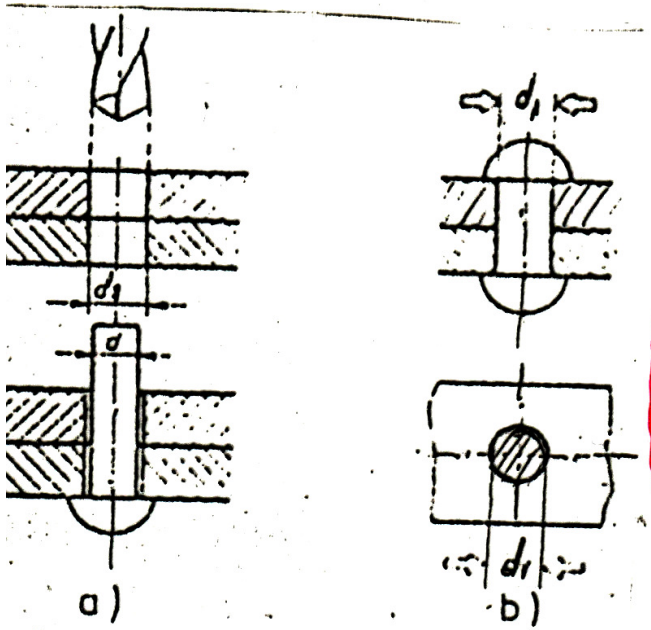


Rivet

(undeformed)



$d \simeq 1.8\ s$



For button heads if $d < 20$

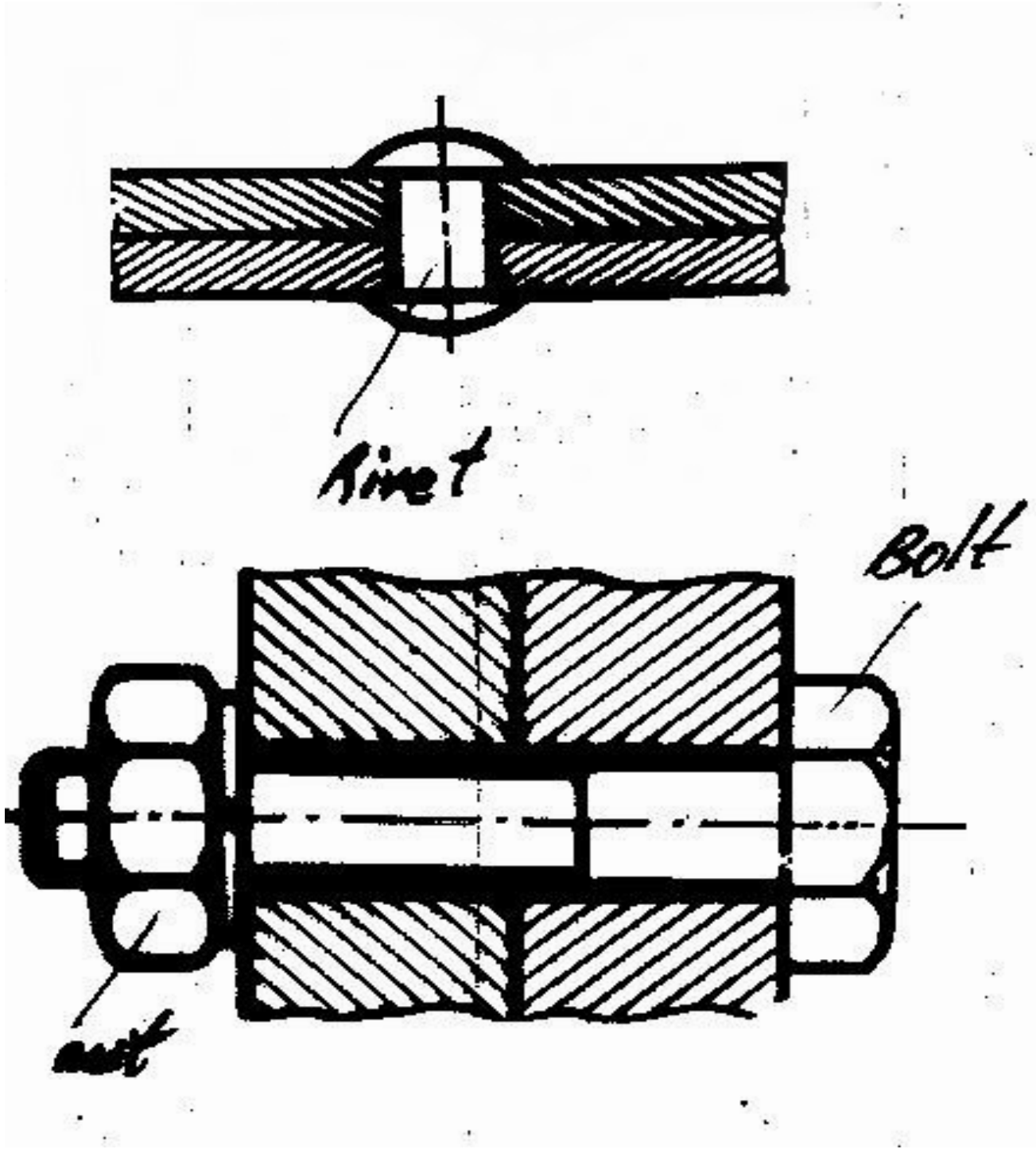
if $d > 20 \Rightarrow 1.7\,d$

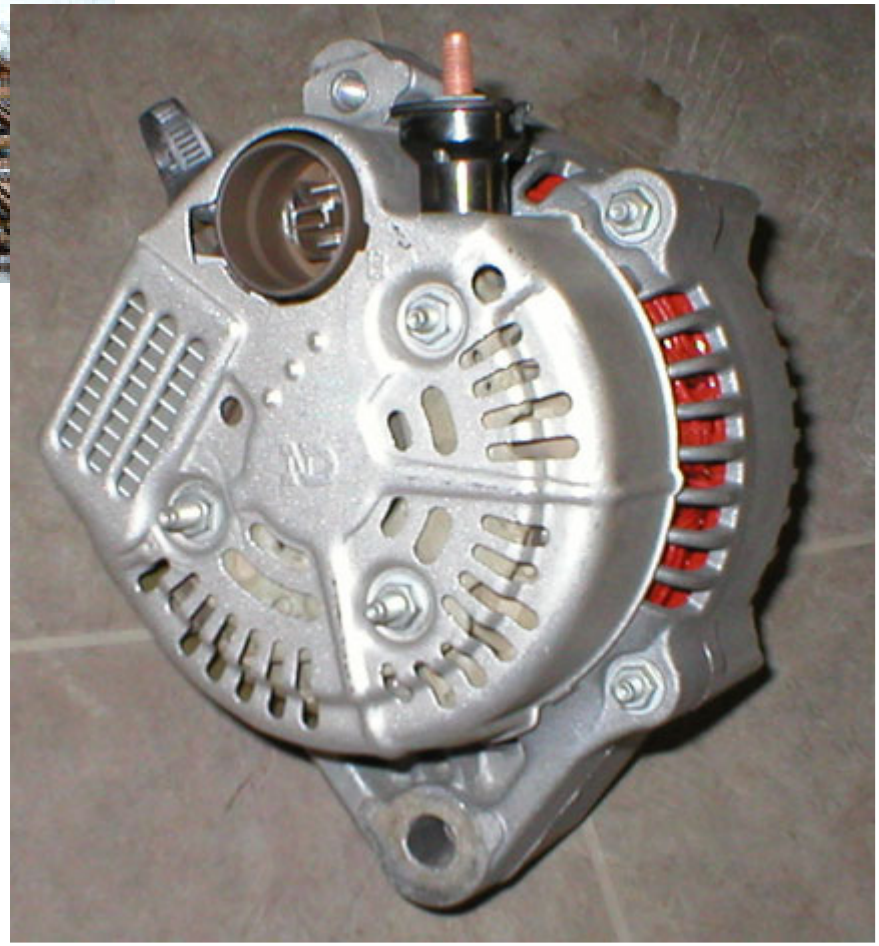
round top countersun { heads $\rightarrow 1.2\,d$

countersun { heads $\rightarrow (0.5 \sim 0.7)\,d$

$d_1 = d_{rivet} + (0.2 \sim 0.5)$ [mm] if $d_{rivet} < 10$

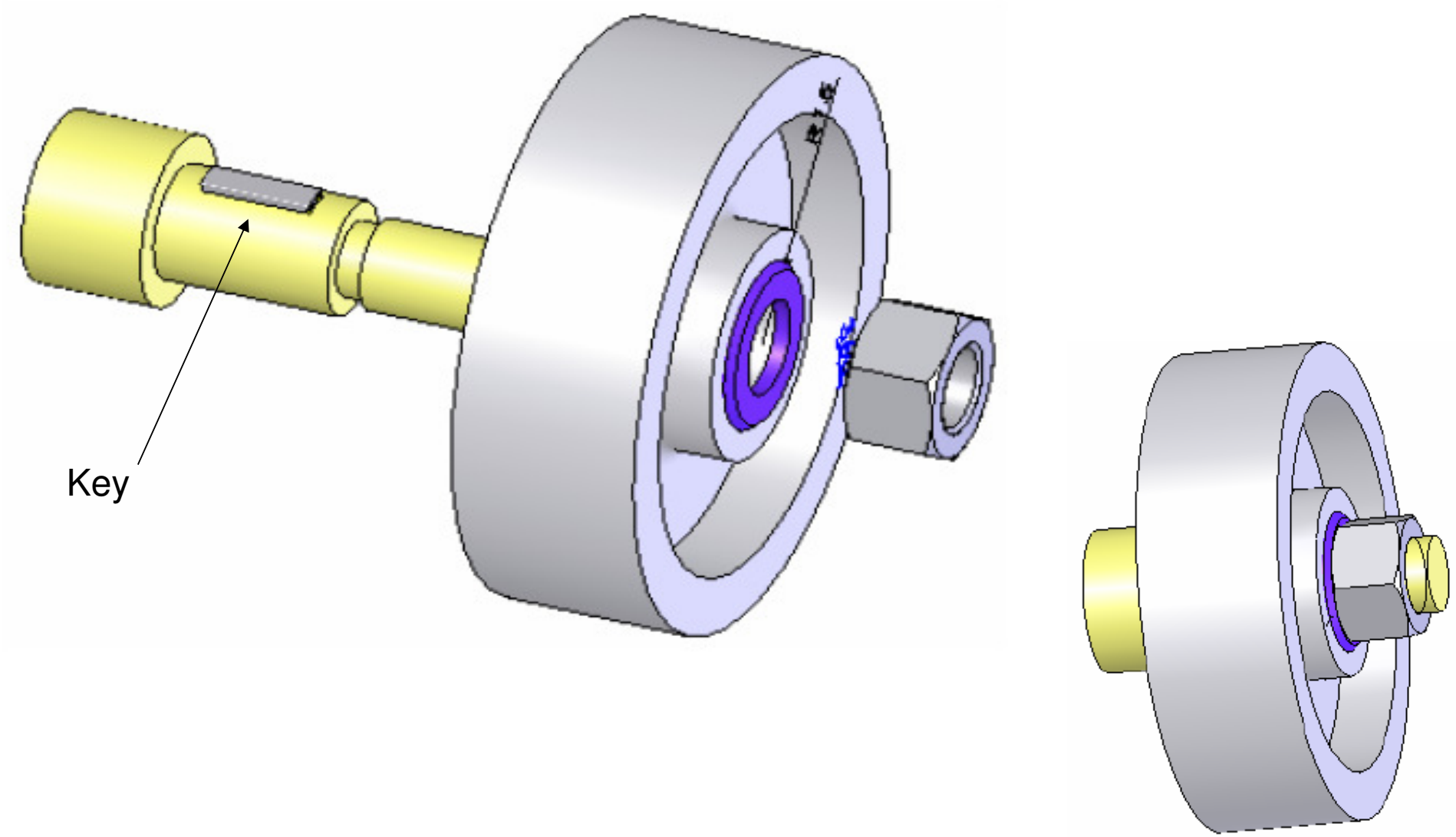
$+ 1$ [mm] if $d_{riv.} > 10$

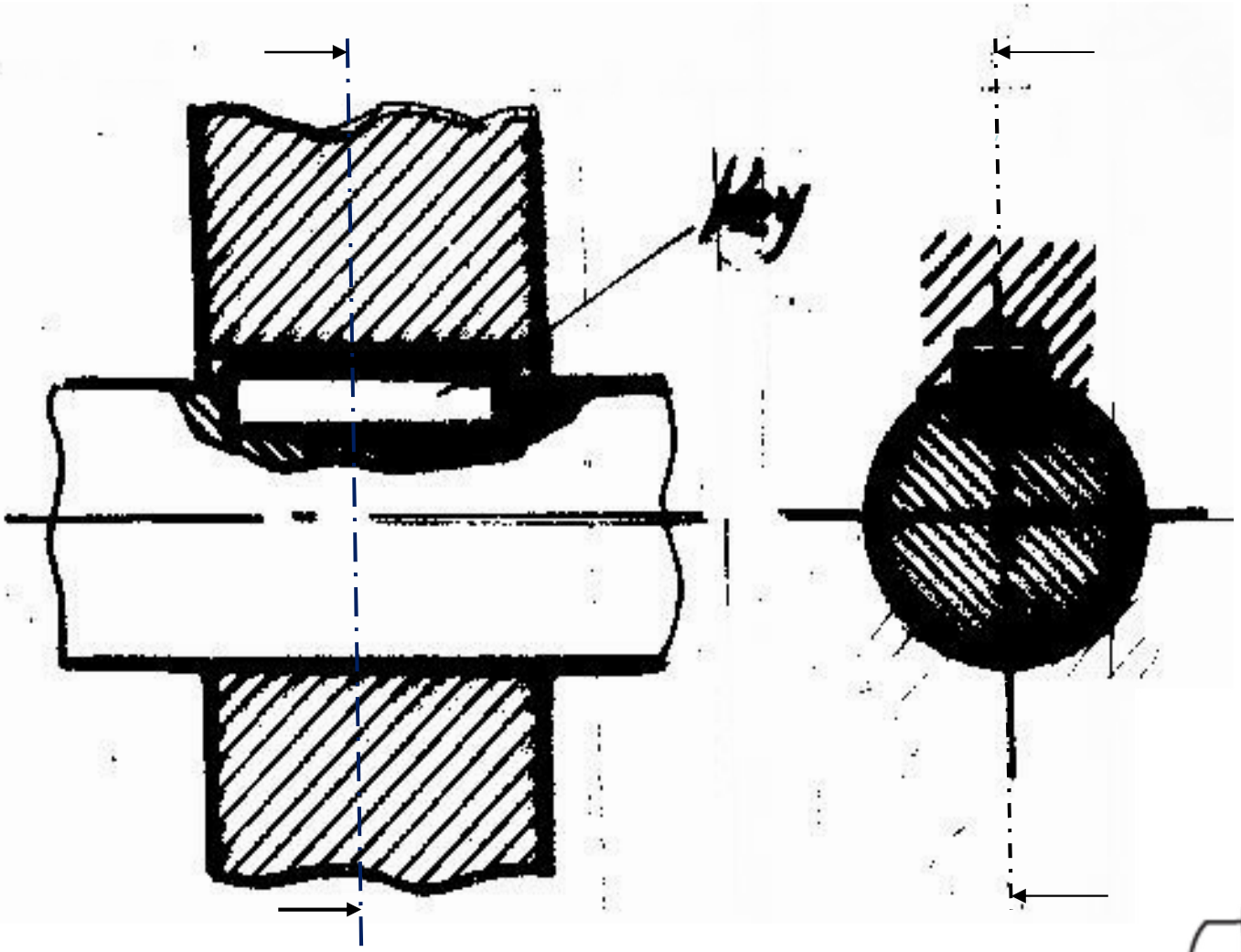

Rivet
Bolt
nut

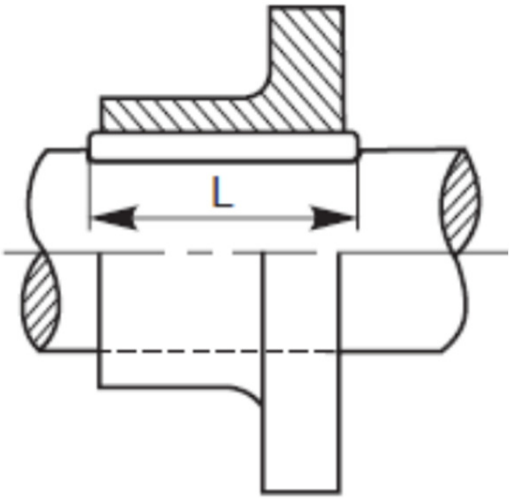


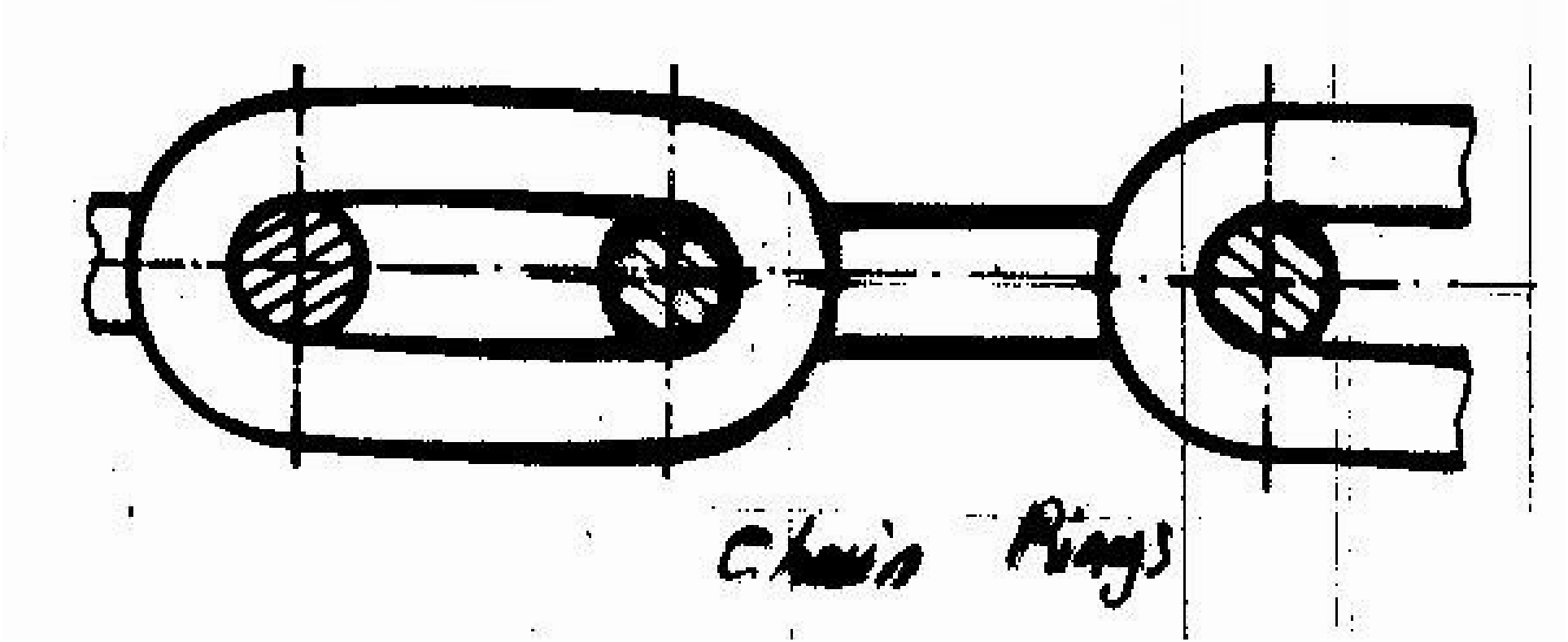
KEYs

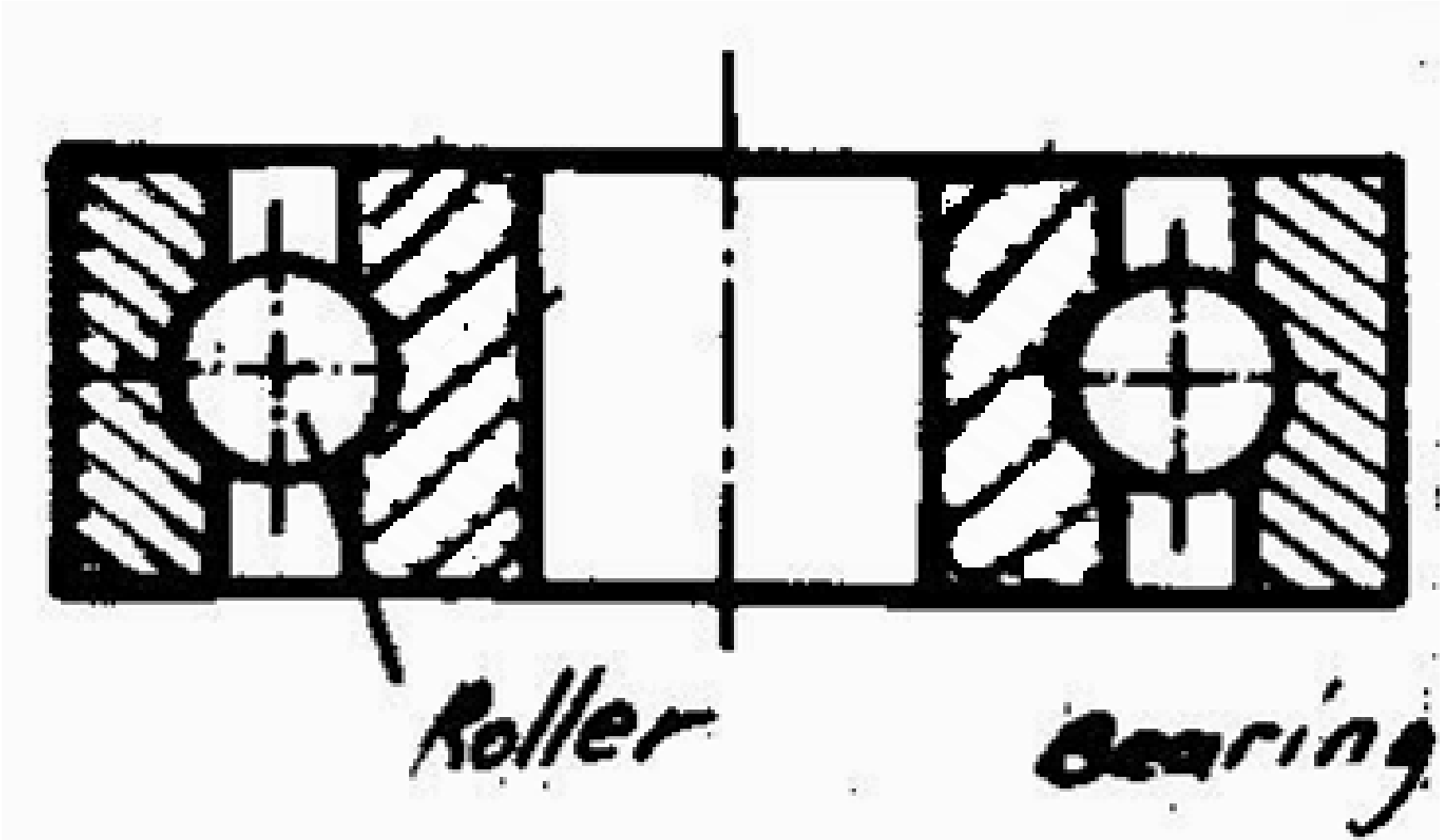
KAMAlar



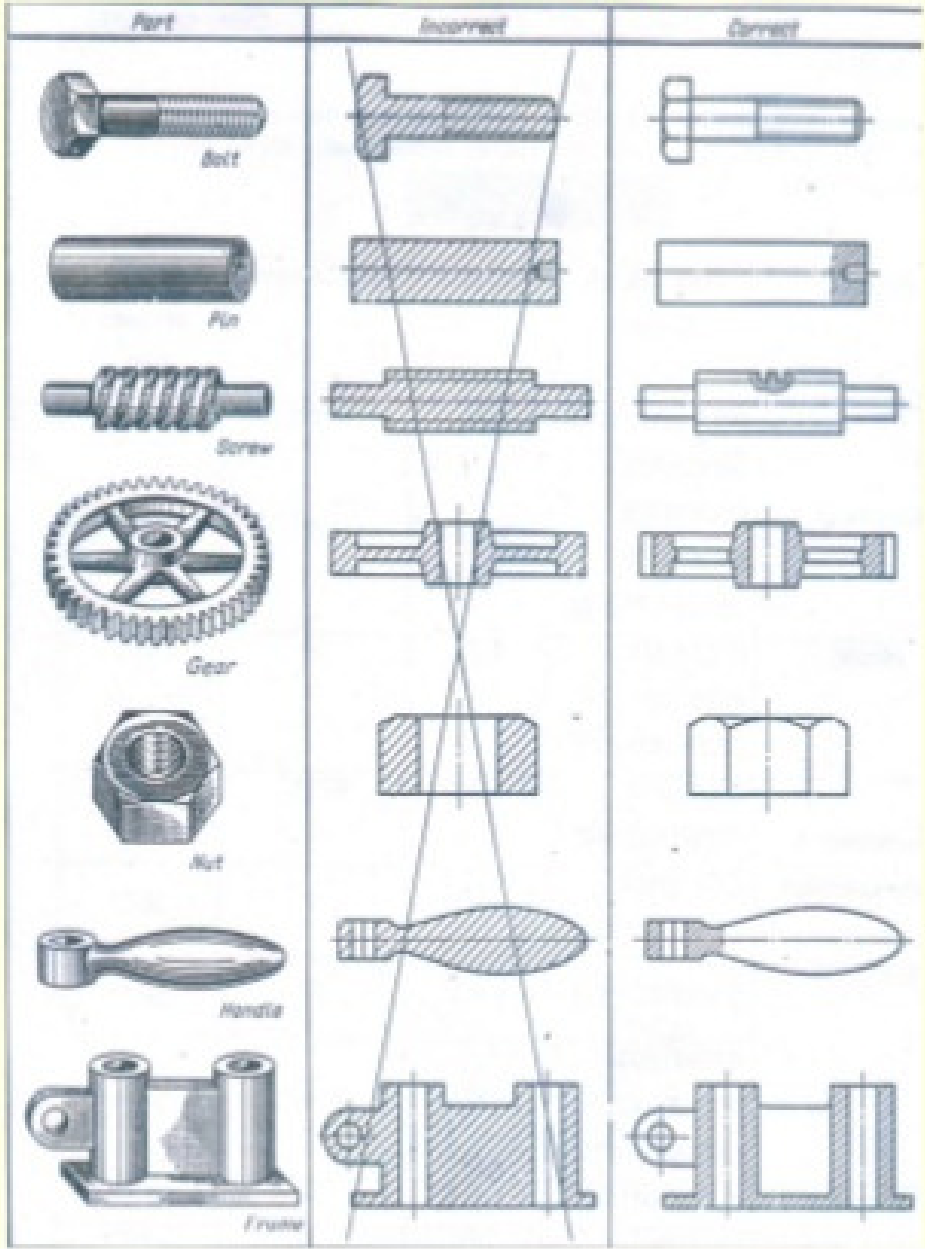


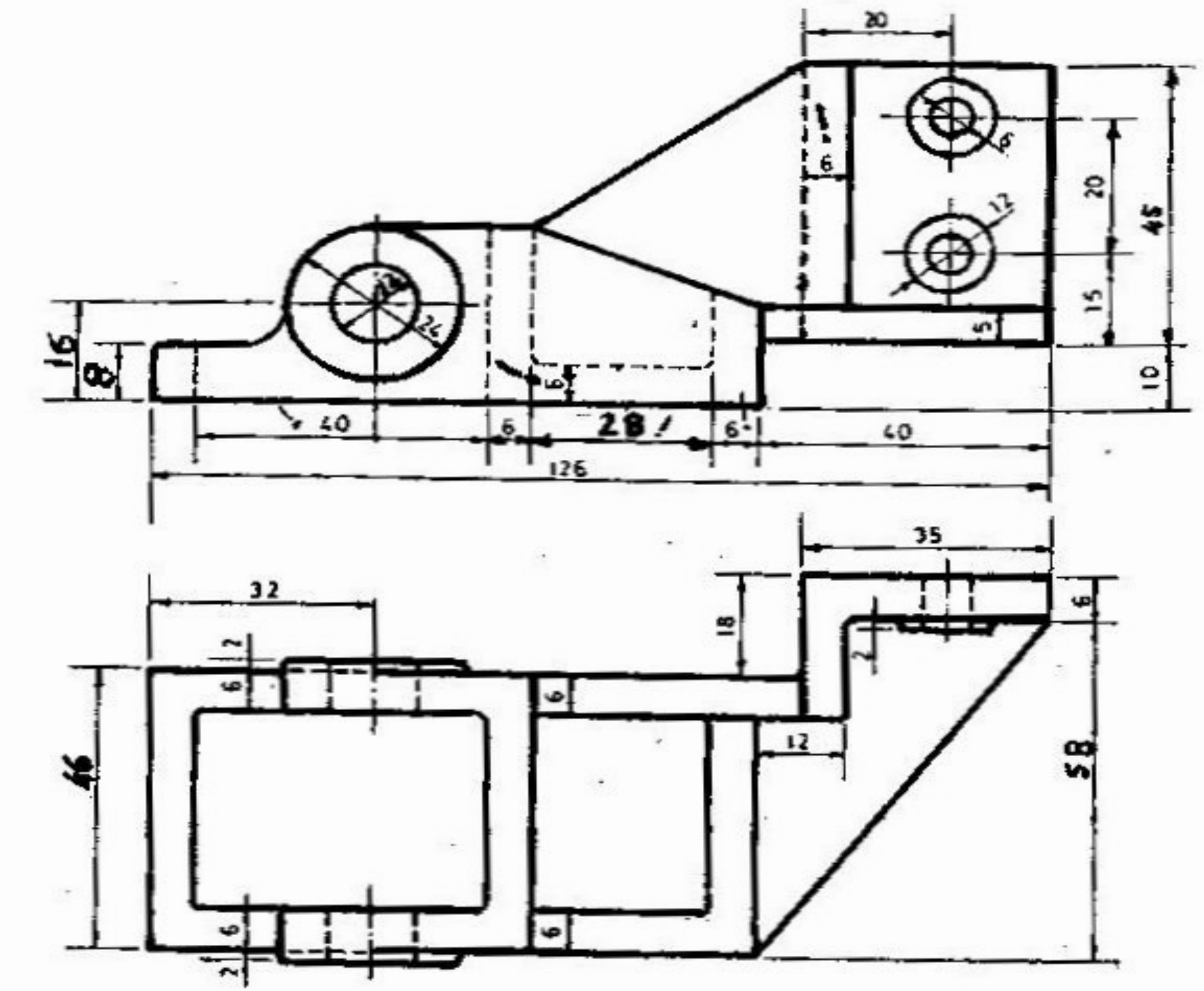

L


Chain Rings


Roller
Bearing

PARTS IN WHICH SECTIONS ARE NOT TO BE SHOWN




20
6
6
20
45
12
15
5
10
16
8
24
6
40
6
28
6
40
126
35
32
18
6
2
6
6
12
46
58
6
6
2