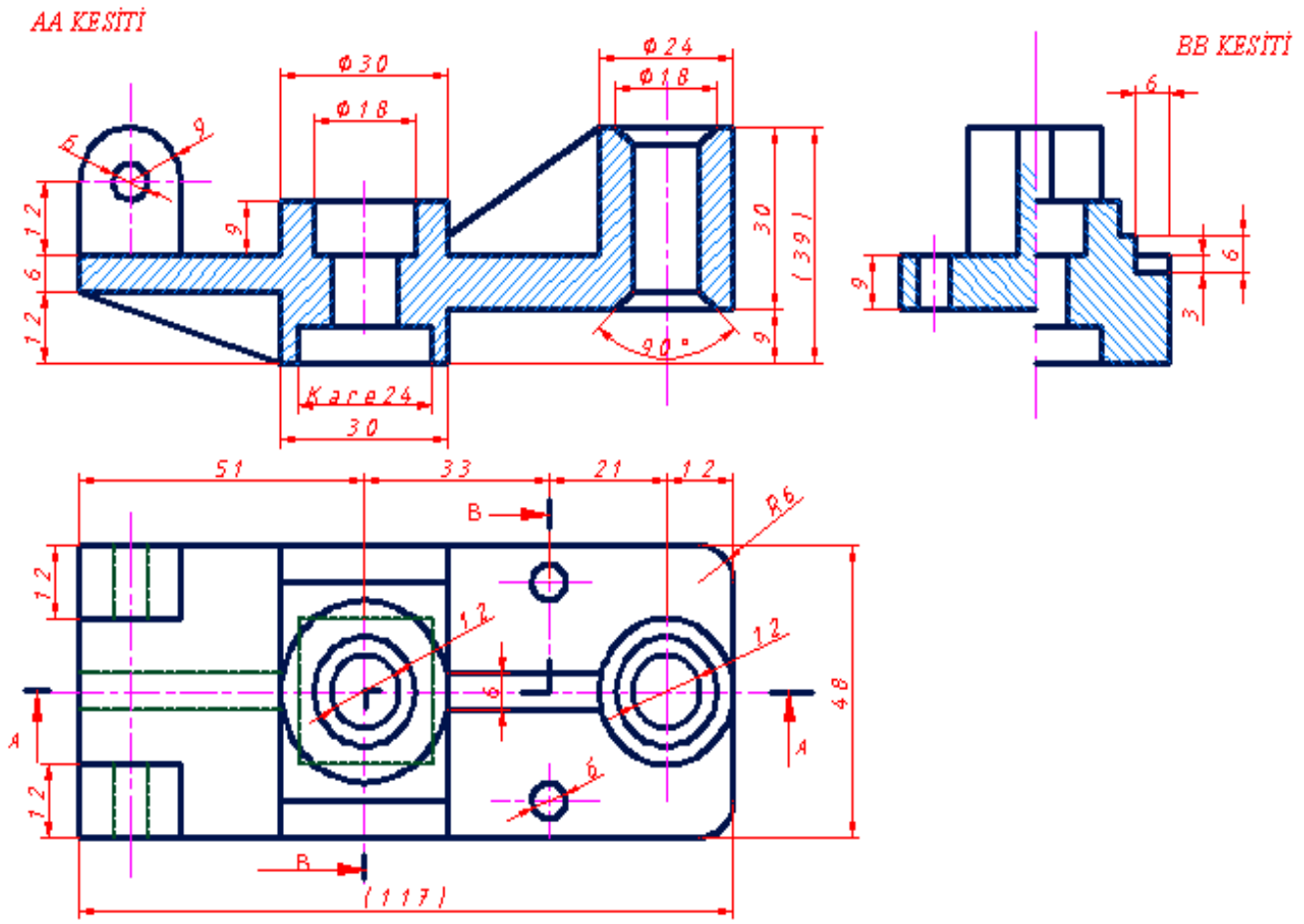
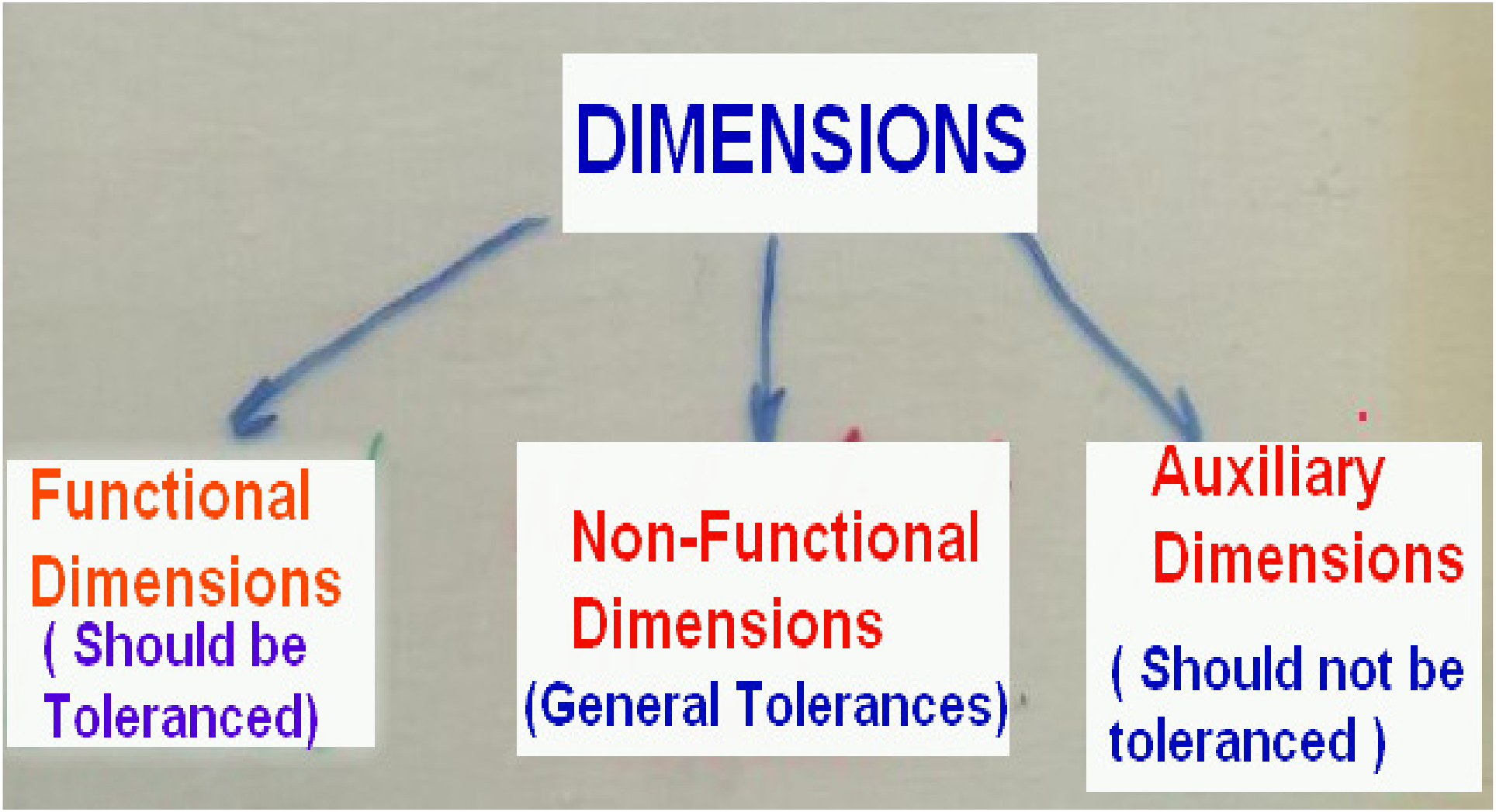
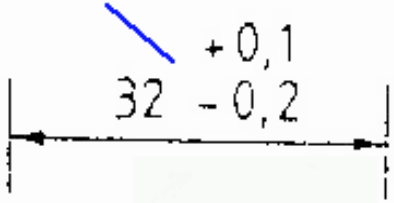
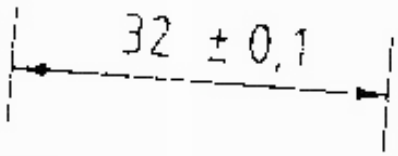


DIMENSIONING

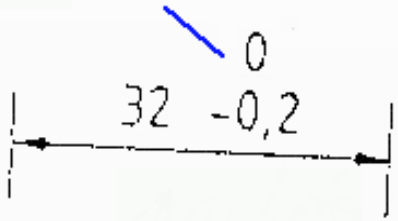

DIMENSIONS
Functional Dimensions
(Should be Toleranced)
Non-Functional Dimensions
(General Tolerances)
Auxiliary Dimensions
(Should not be toleranced)

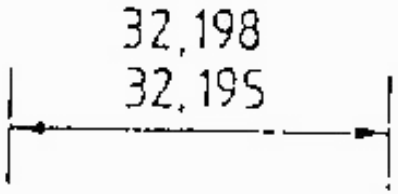
Bilateral tolerance

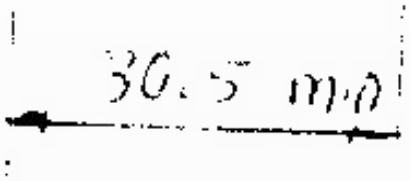


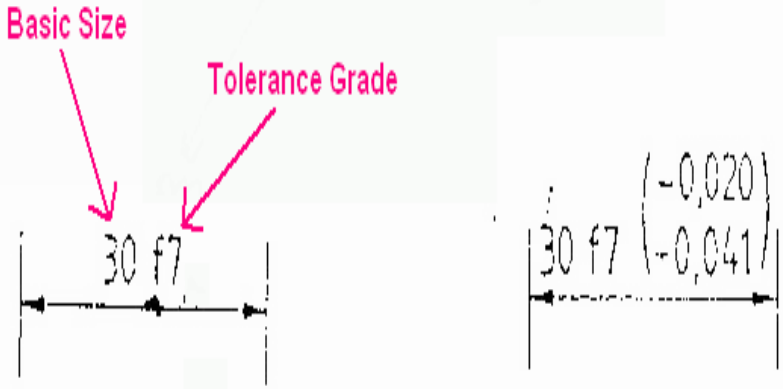


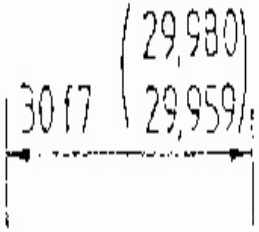
Unilateral tolerance











Examples:

for holes: 45 H8

for shafts: 40 f7

for fits : 40 H8/ f7

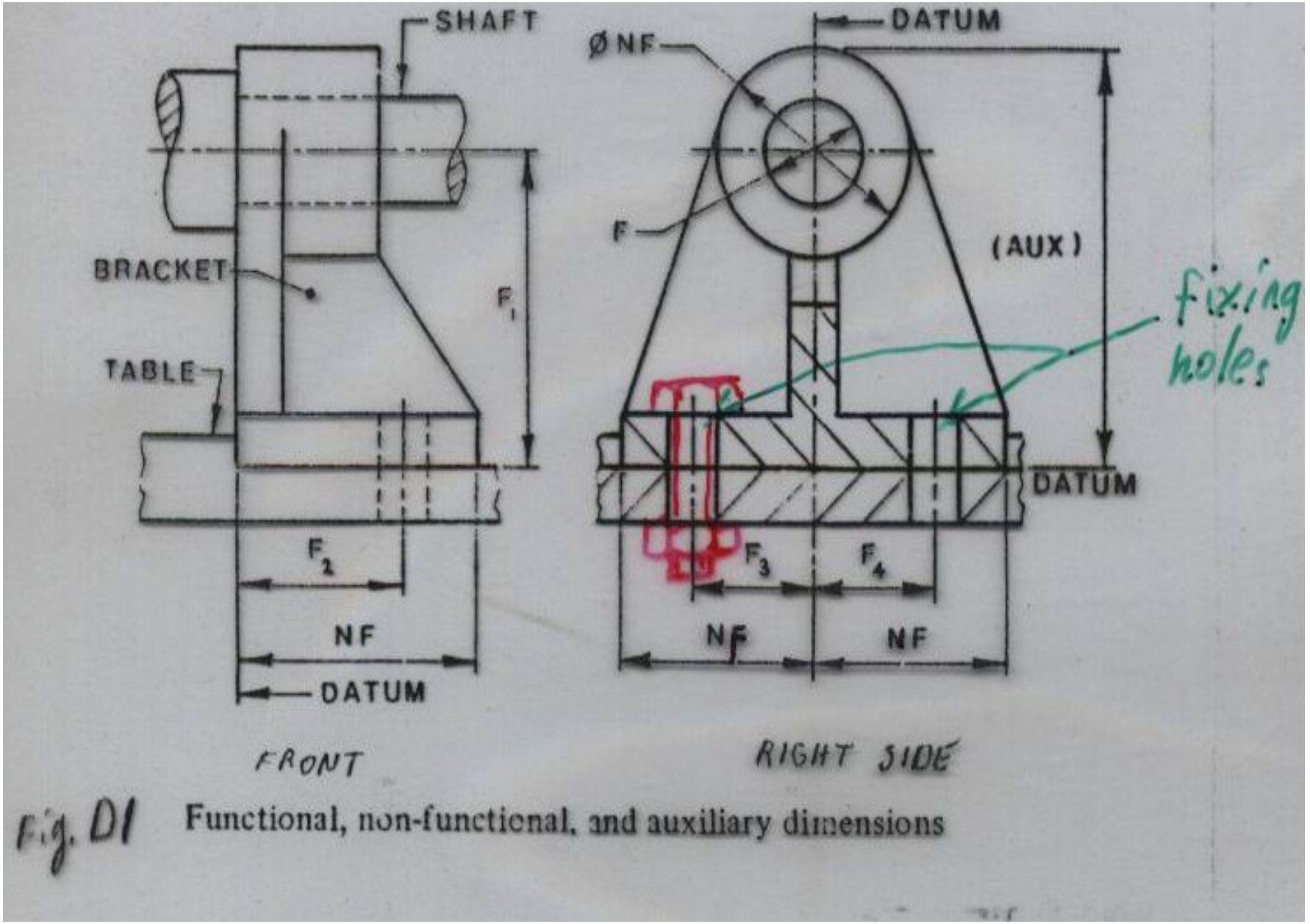
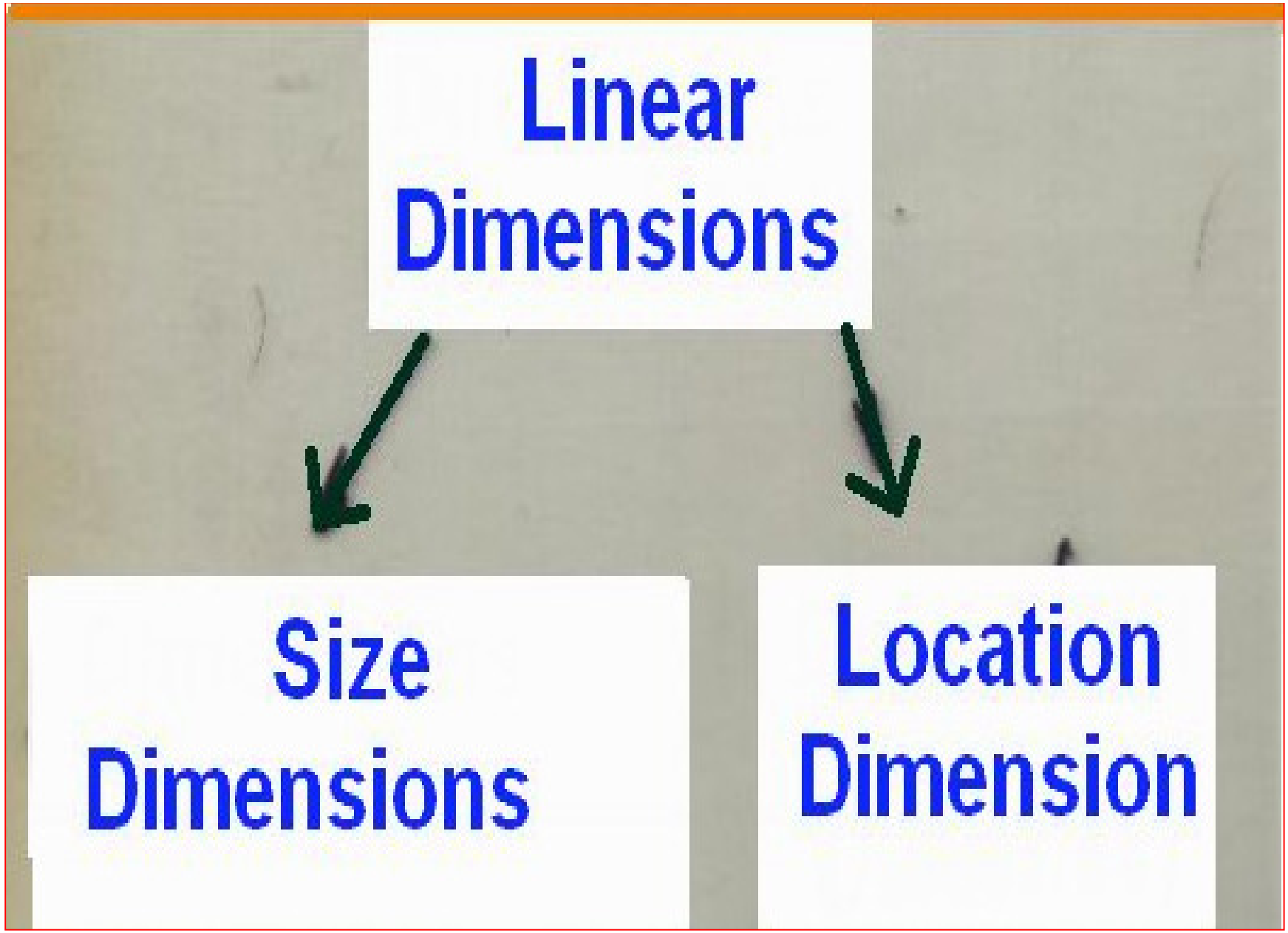


Fig. D1 Functional, non-functional, and auxiliary dimensions


Linear Dimensions
Size Dimensions
Location Dimension

Manufacturing Stages (from dimensioning point of view)

- Primary Stages of the Production (Req. Dimensioning for primary production)
- Secondary Stages of the Production (Req. Dimensioning for secondary production)

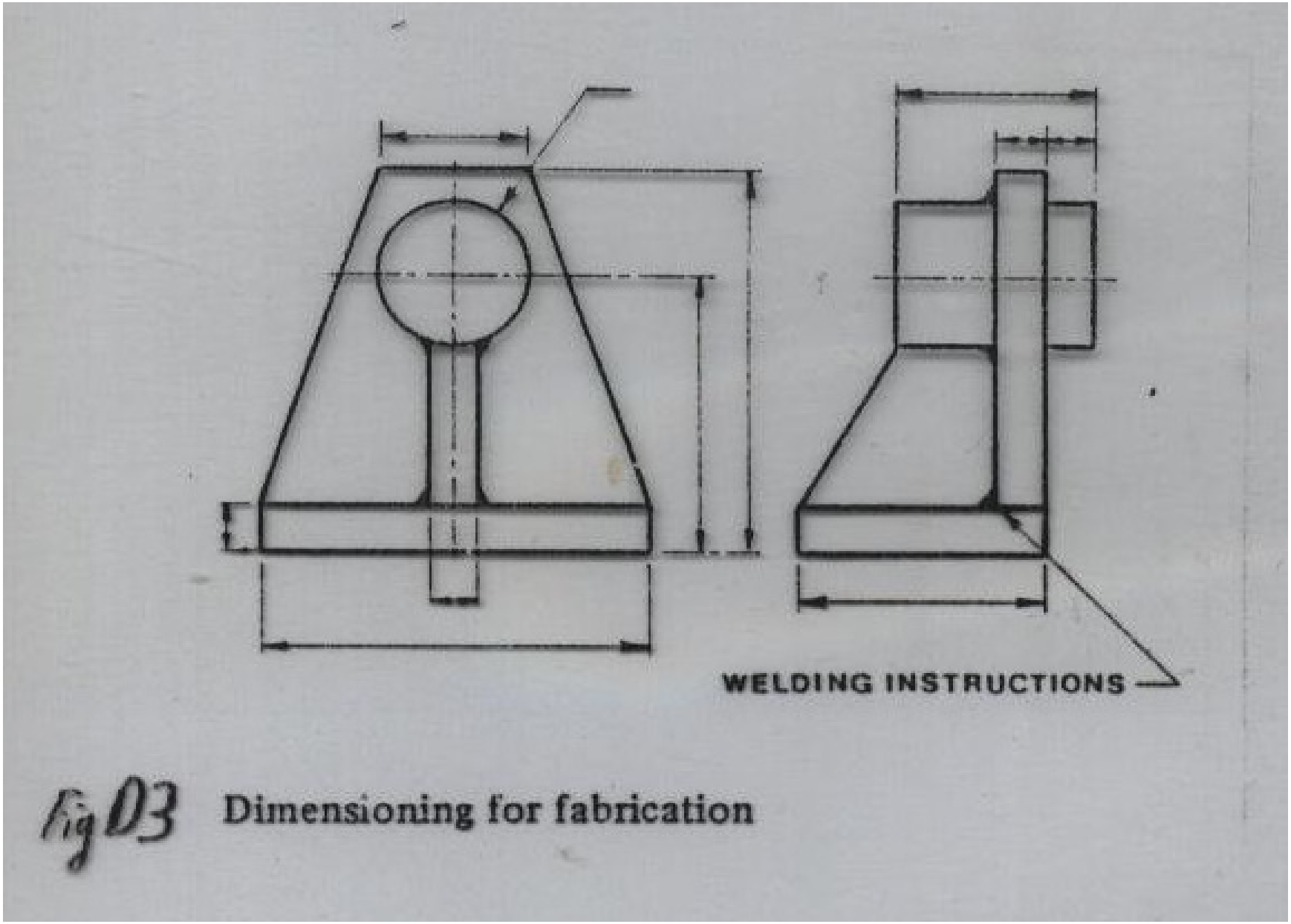


Fig 03 Dimensioning for fabrication

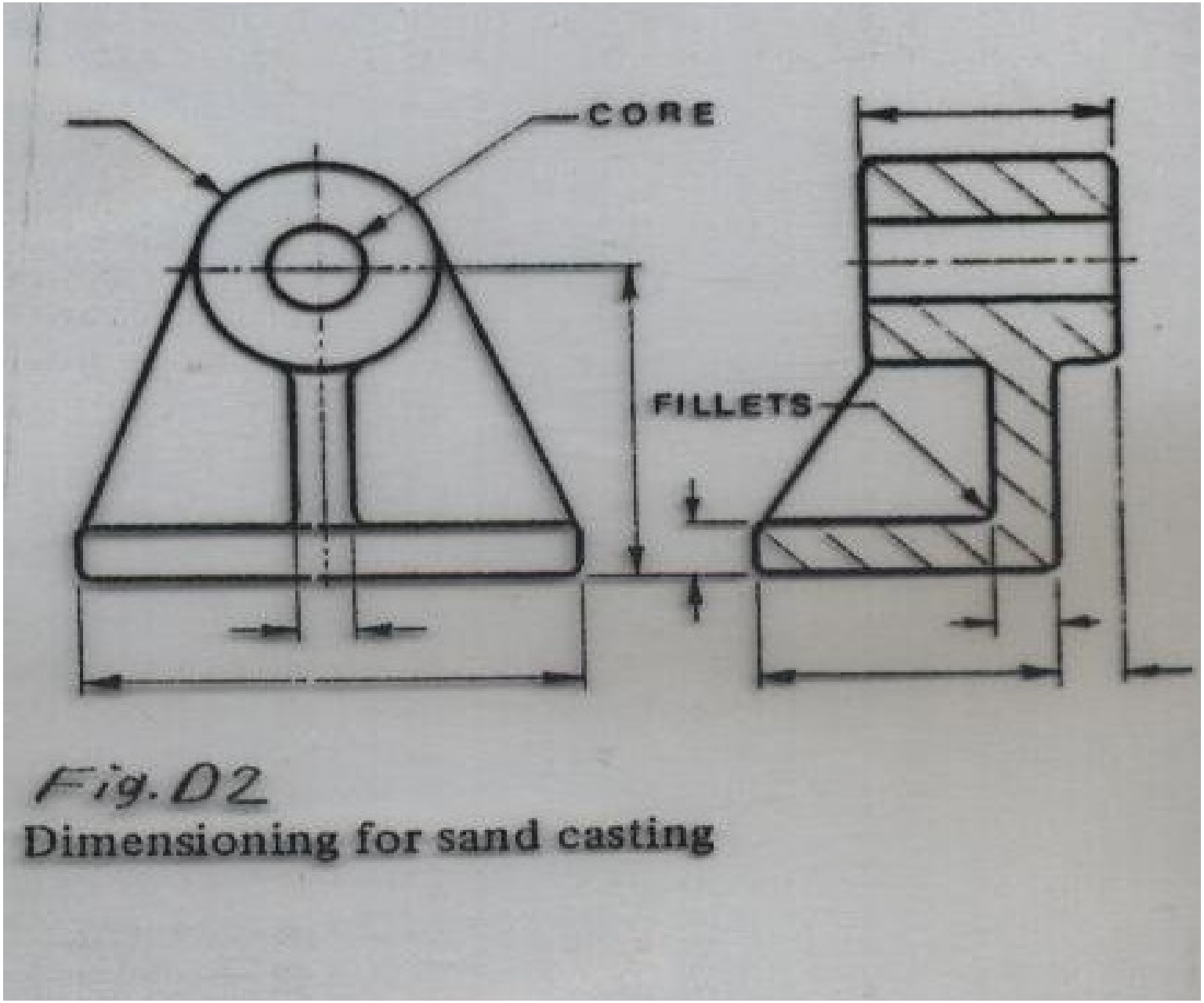


Fig. 02
Dimensioning for sand casting

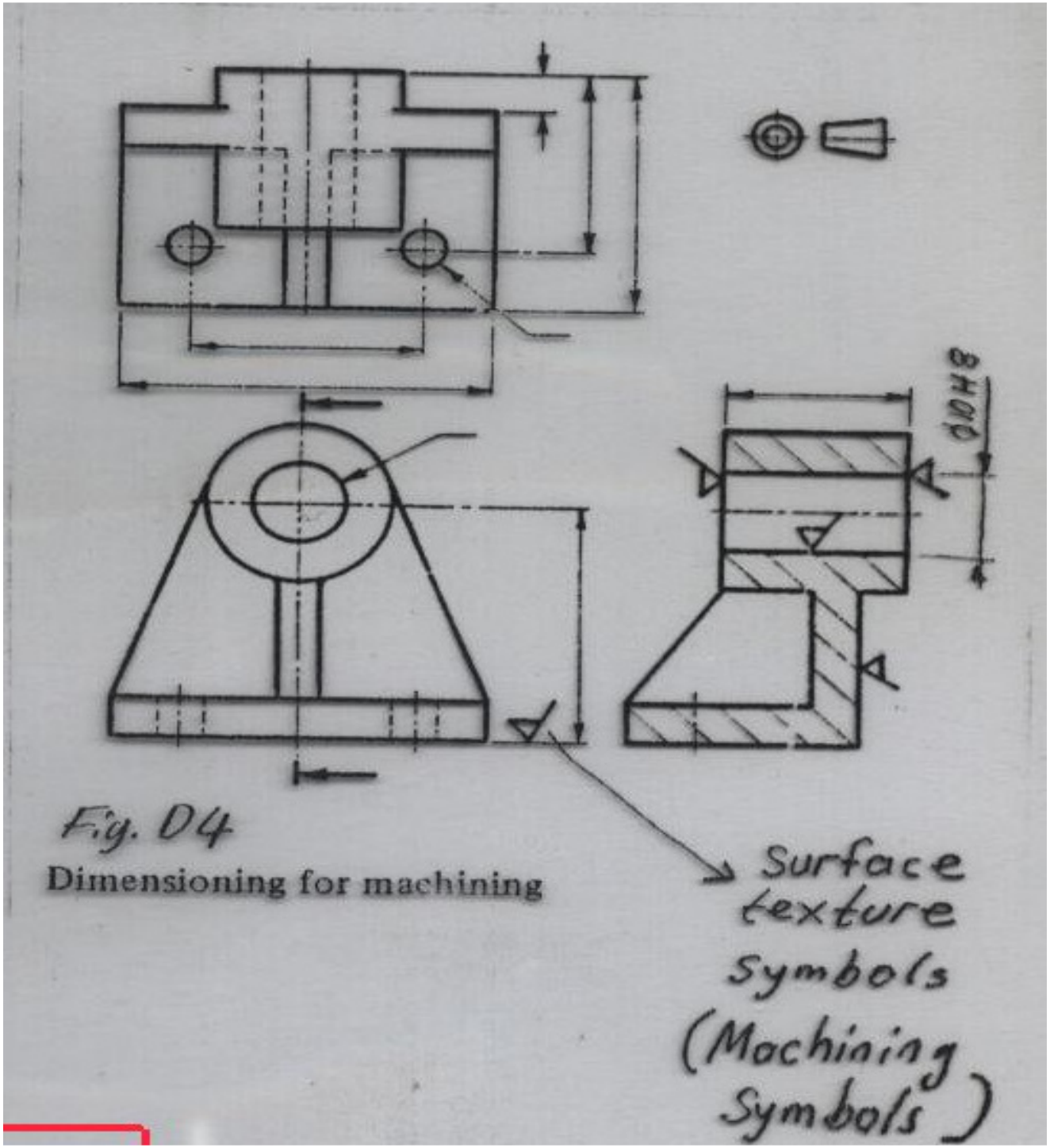
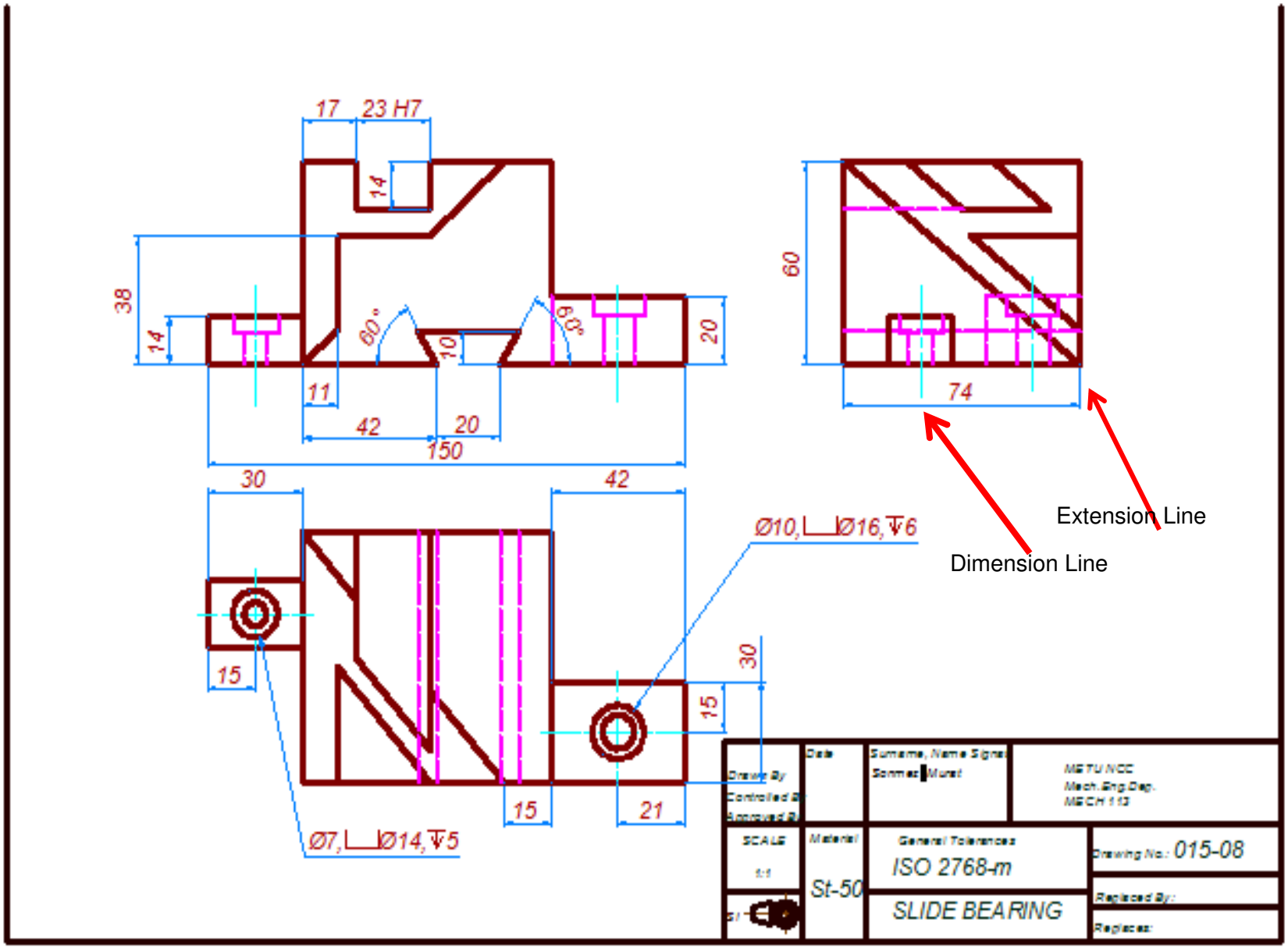


Fig. 04

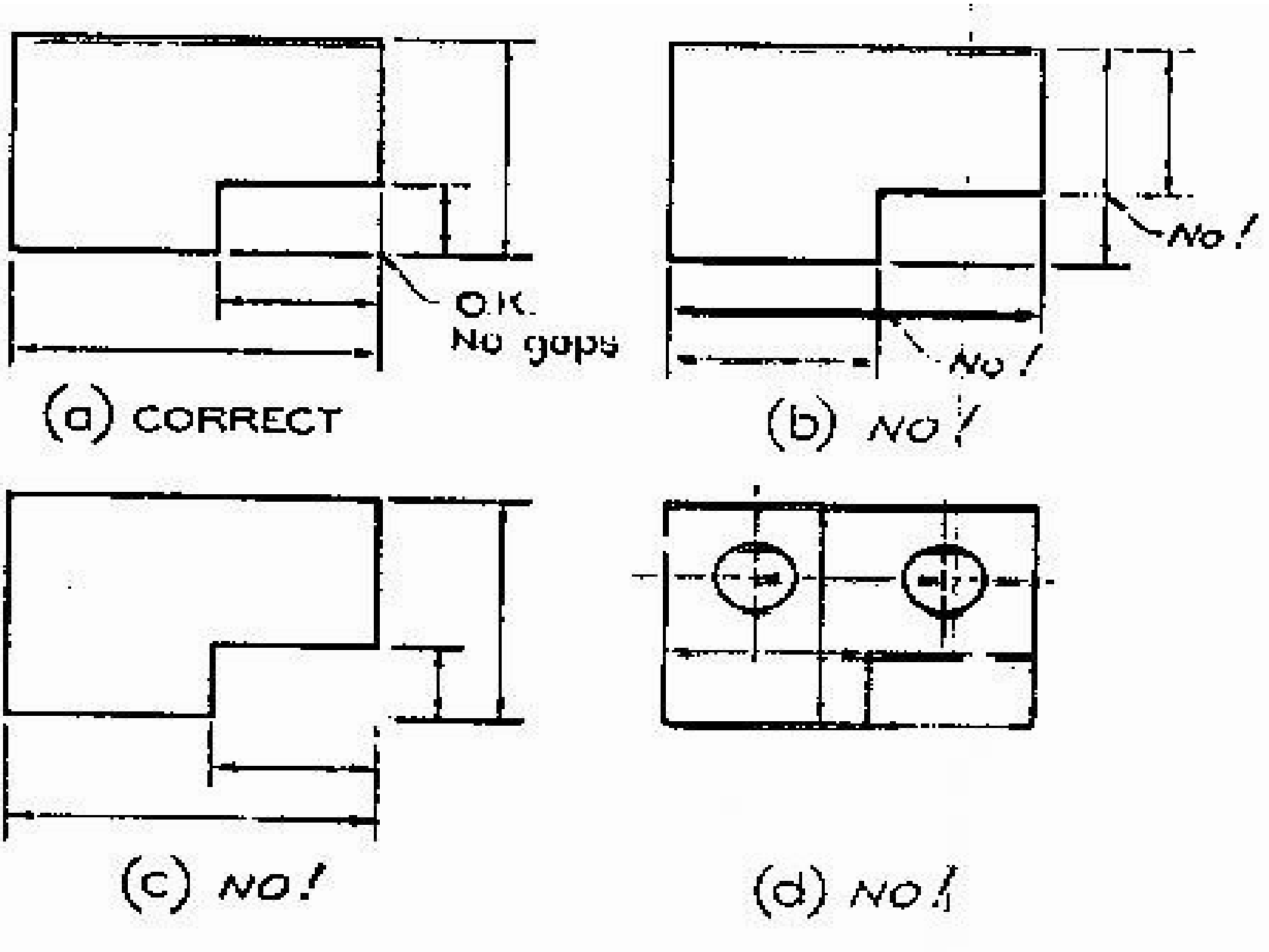
Dimensioning for machining

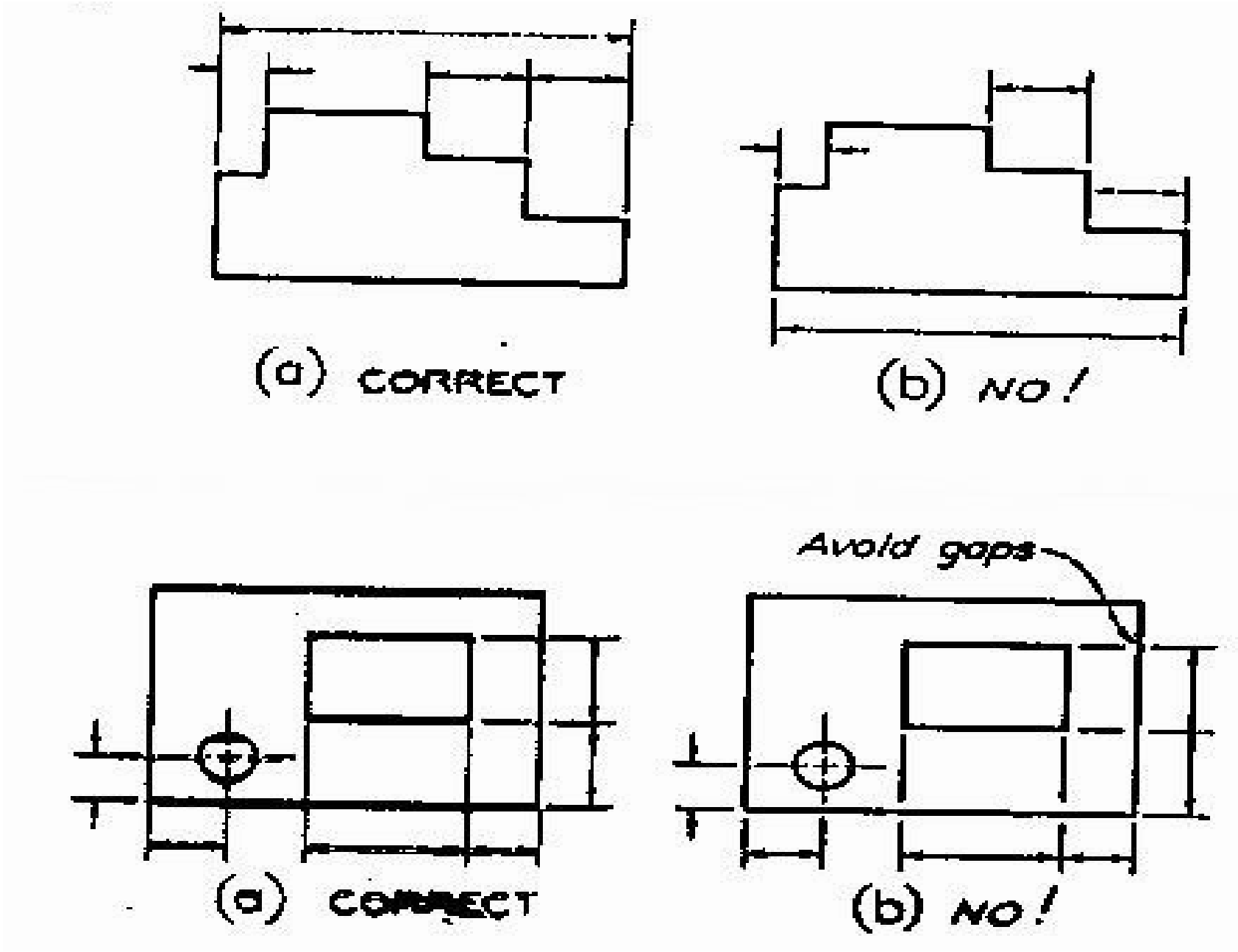

17
23 H7
14
38
14
60°
10
30°
20
11
42
20
150
60
74
30
42
Ø10,↧Ø16,↧6
Extension Line
Dimension Line
15
30
15
15
21
Ø7,↧Ø14,↧5
SCALE
1:1
Material
St-50
General Tolerances
ISO 2768-m
SLIDE BEARING
Drawing No.: 015-08
Replaced By:
Replaces:

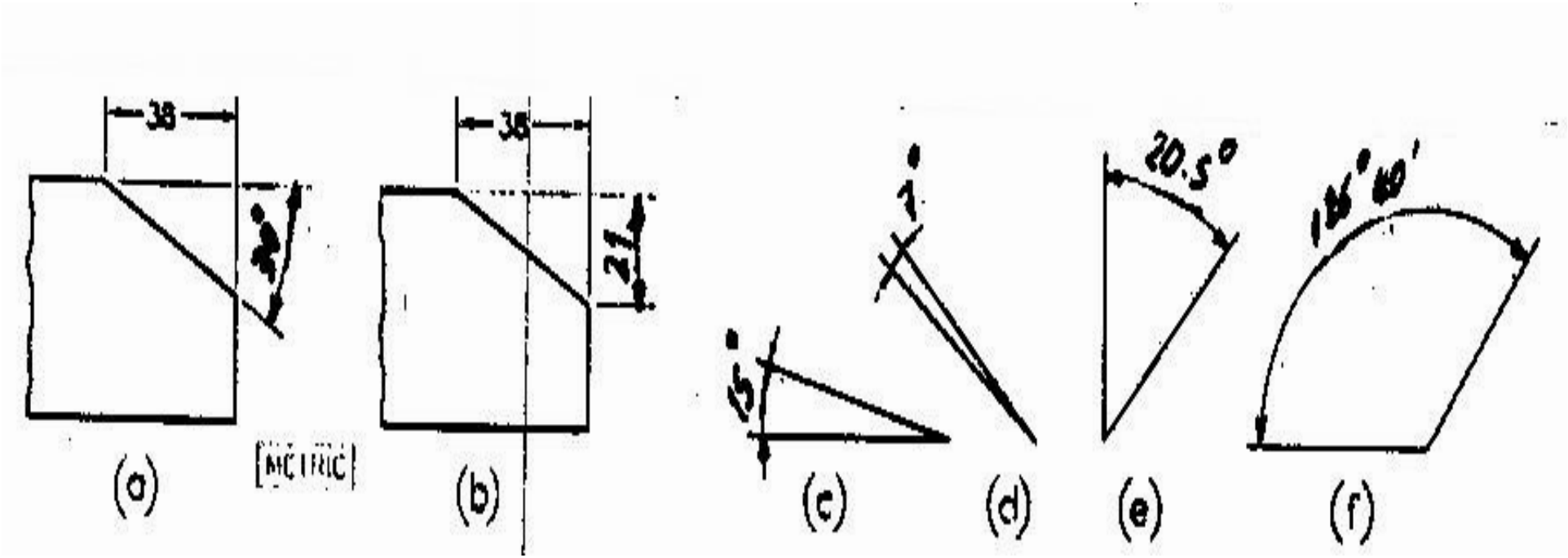
PLACEMENT OF DIMENSIONS

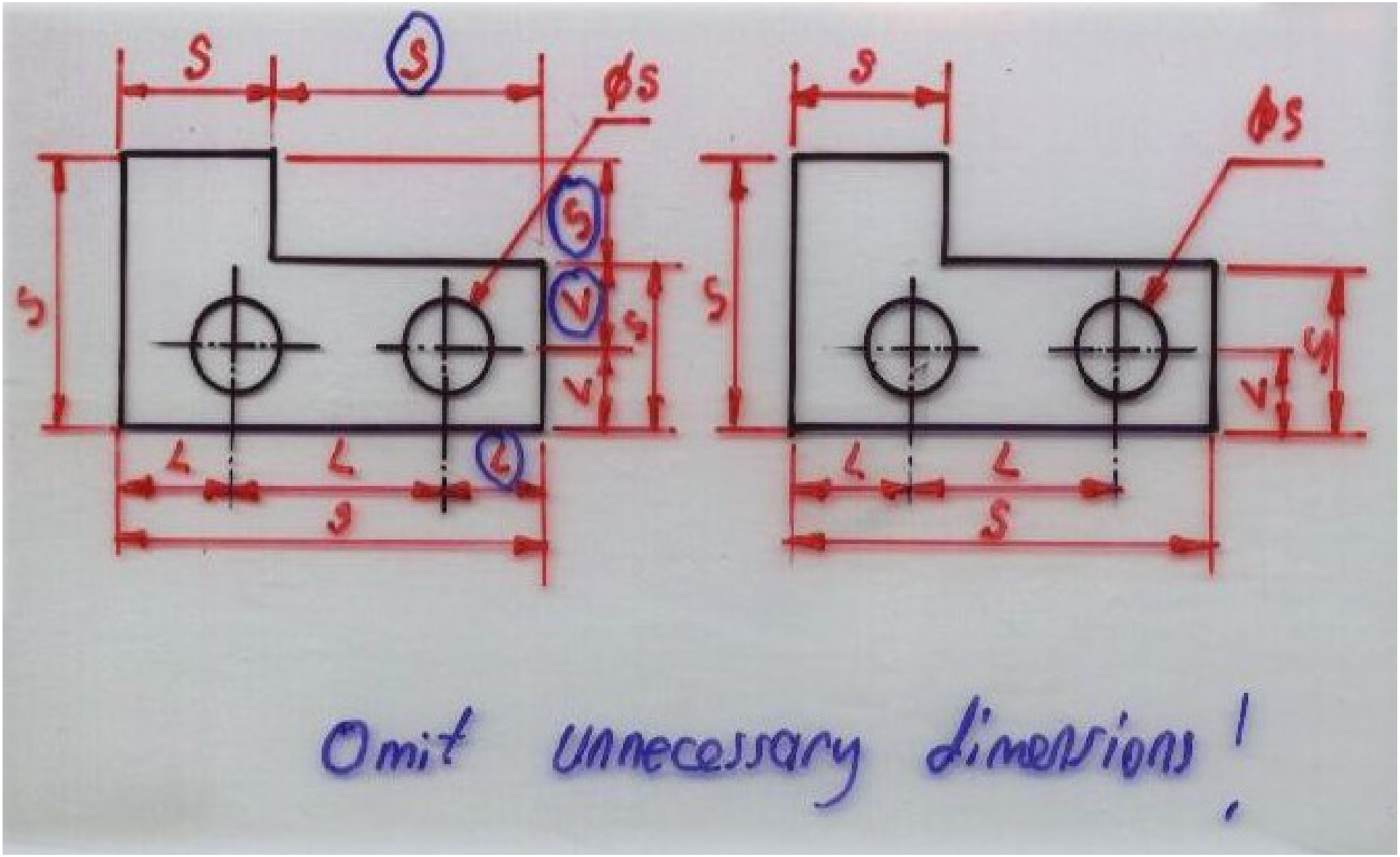
Some cautions should be taken into consideration while dimensioning:

1. Dimensions outside the view are preferred.
2. Dimensions should be applied to one view.
3. Dimensions should be placed on the view that shows the distance in its true length.
4. Dimension lines should be placed, in general 10 mm (1/2 in) away from the outlines of the view.
5. Parallel dimension lines should be placed uniformly.
6. Values should be midway (auto centered) between the arrow heads, except when a centerline interferes.
7. Dimensions arranged in continuous form are preferred upon readability.
8. Place a longer dimension line outside a shorter one.
9. Dimensions should never be crowded.
10. Center lines are used to indicate the symmetry, they should be considered as part of dimensioning.
11. All notes must be read horizontally.
12. Never use a center line, a line of a view, or an extension line as a dimension line.
13. Never allow outline of any kind to pass through a dimension line.
14. Avoid dimensioning to dashed lines if possible.

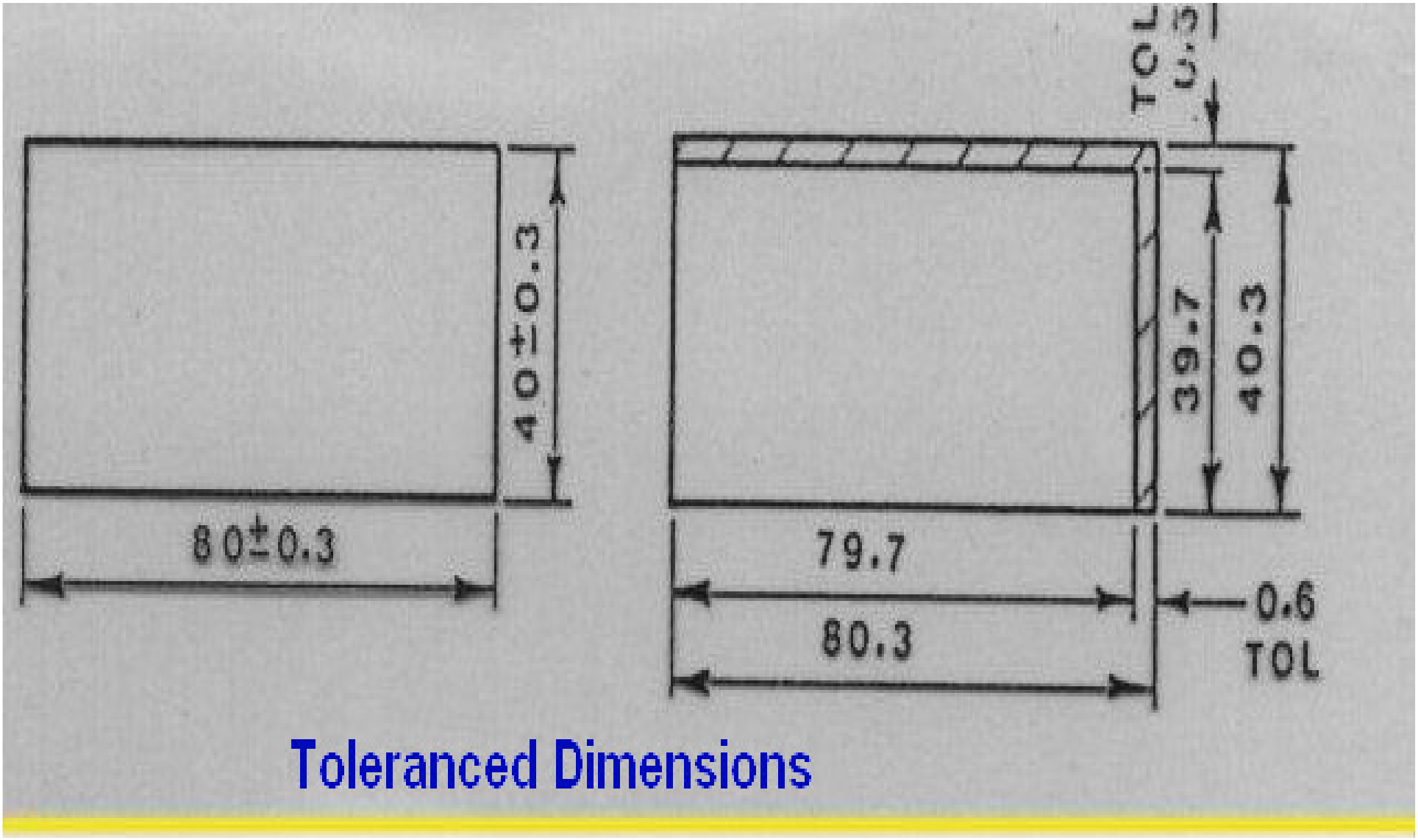

O.K.
No gaps
(a) CORRECT
No !
No !
(b) NO !
(c) NO !
(d) NO !


(a) CORRECT
(b) NO!
Avoid gaps
(a) CORRECT
(b) NO!

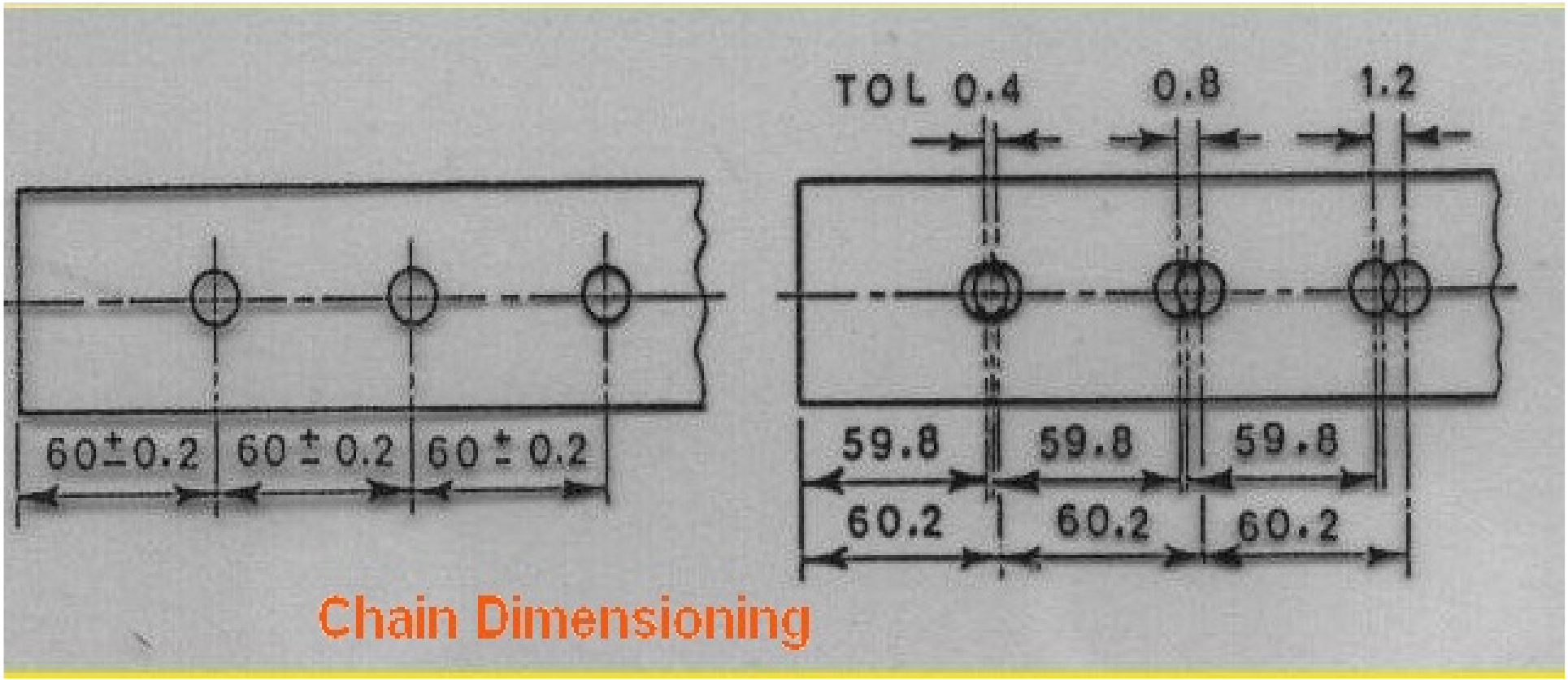

38
30°
(a)
METRIC
38
21
(b)
15°
(c)
(d)
20.5°
(e)
135°40'
(f)



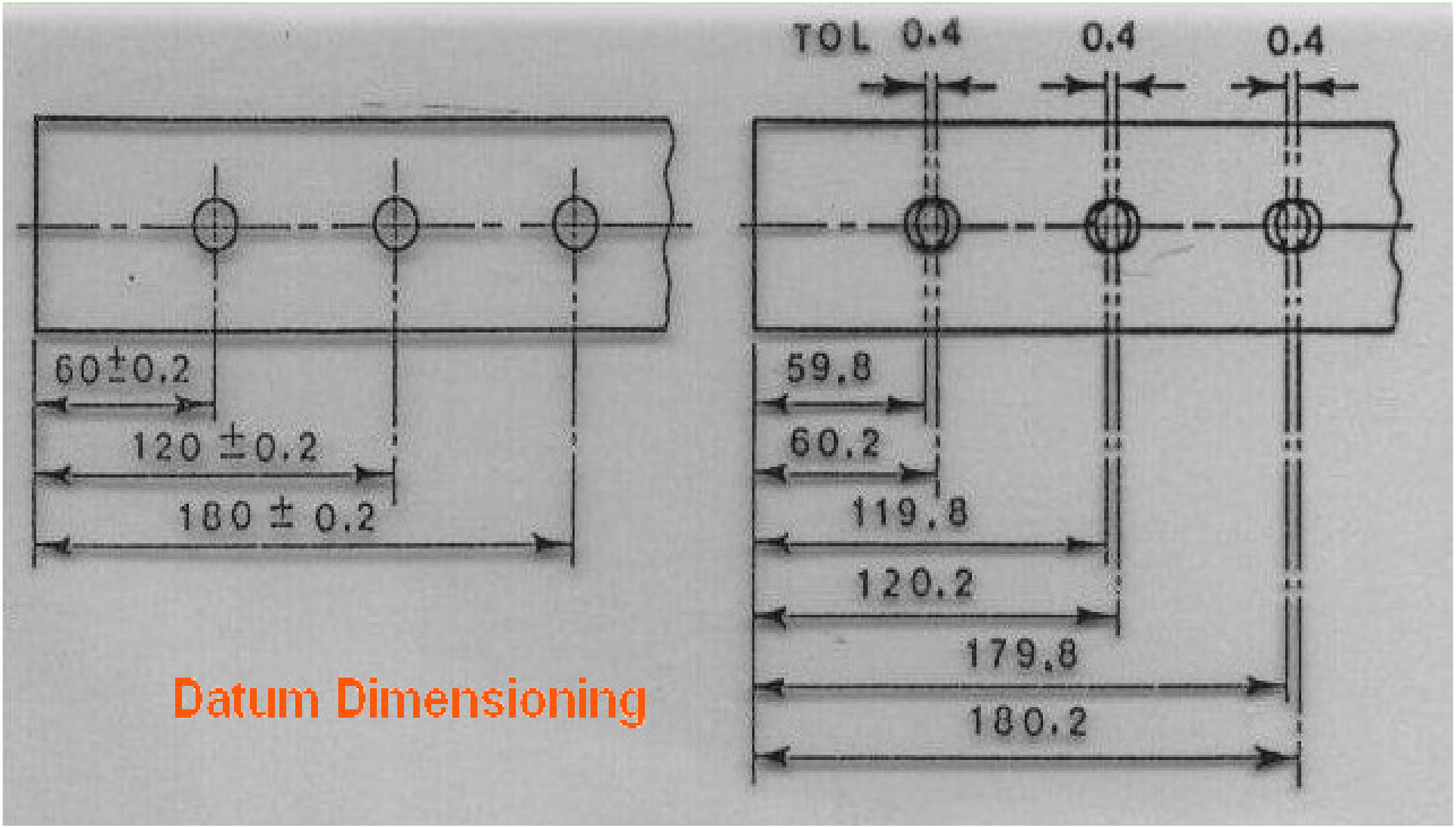
Omit unnecessary dimensions!

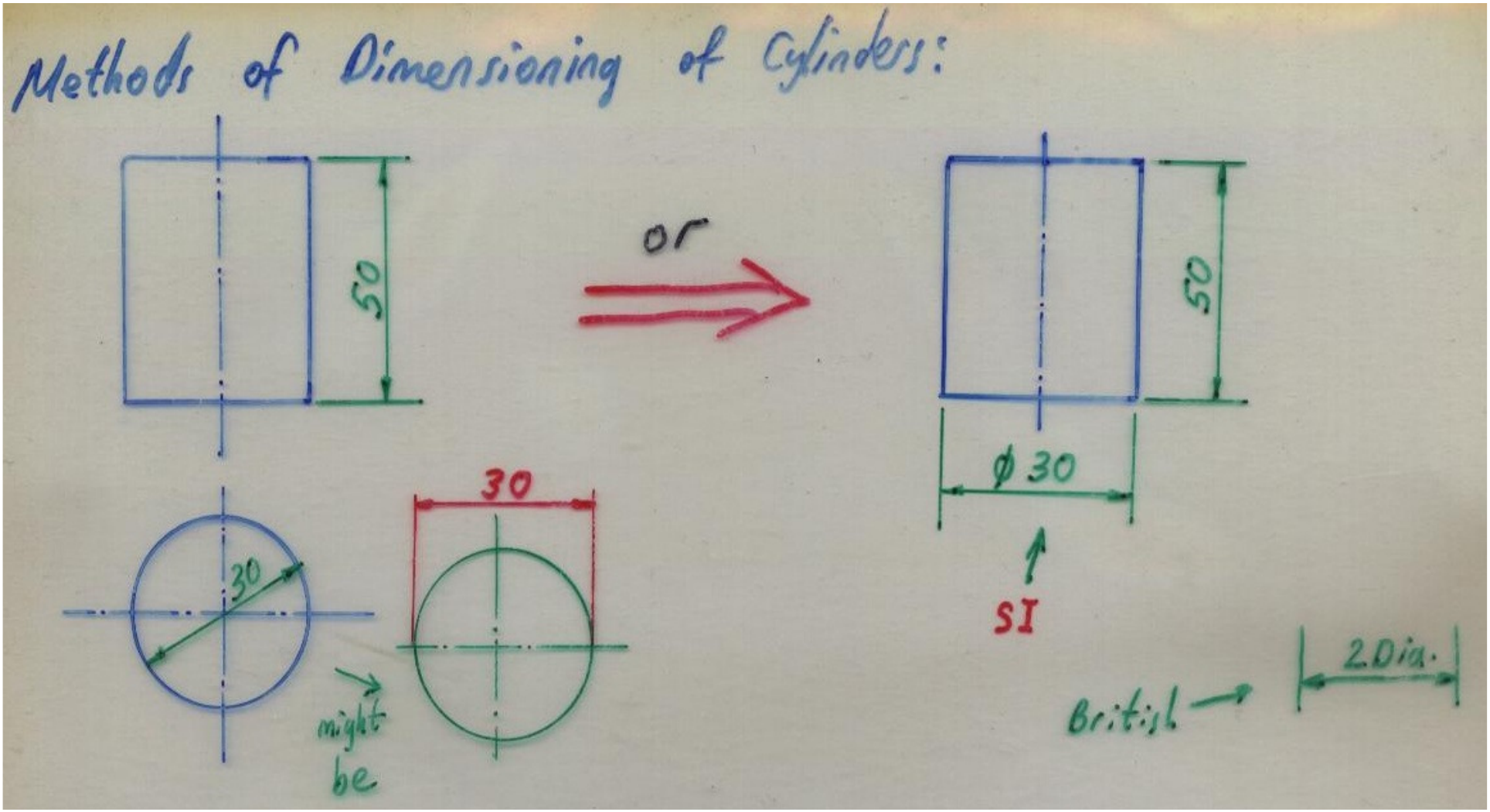


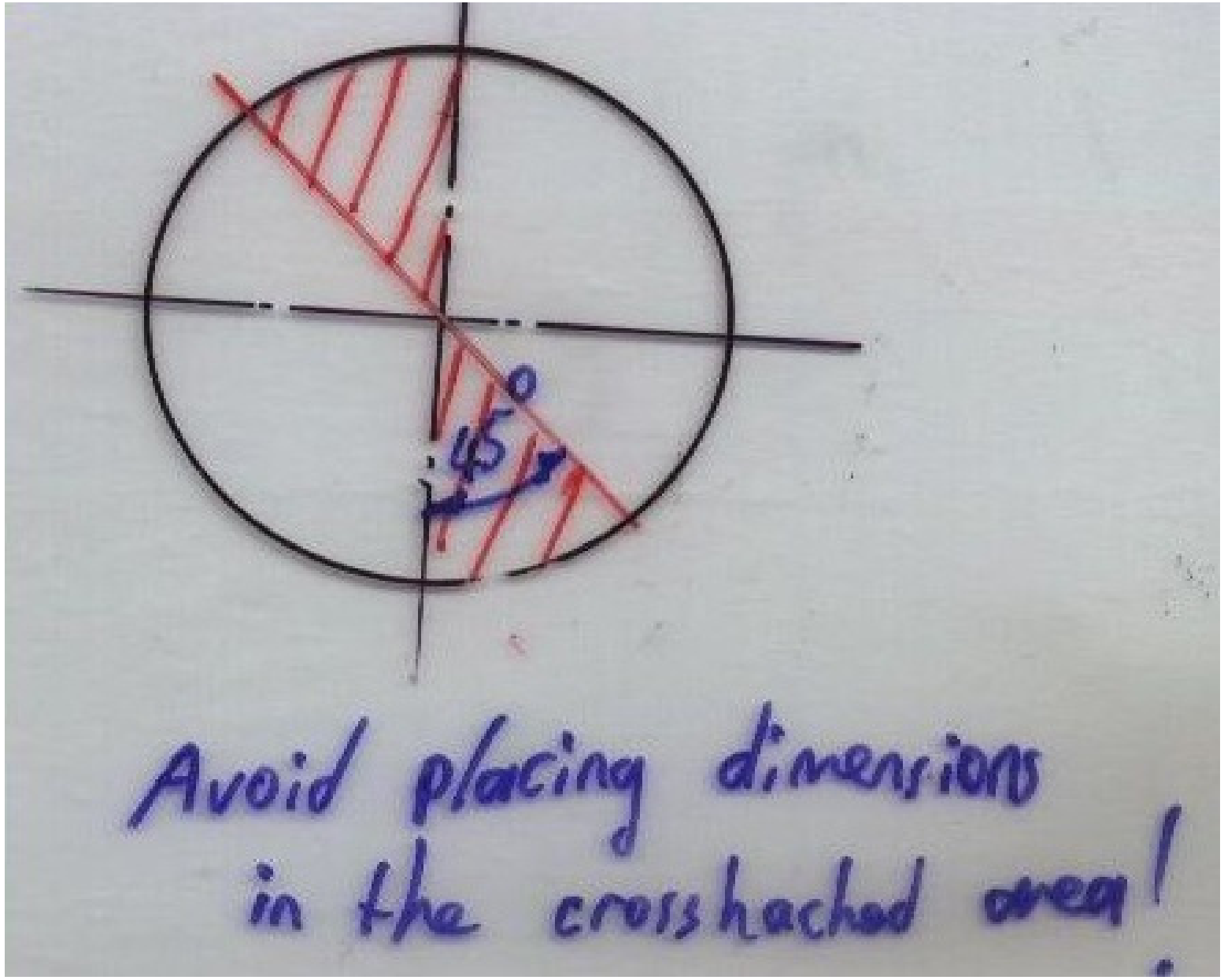
Toleranced Dimensions



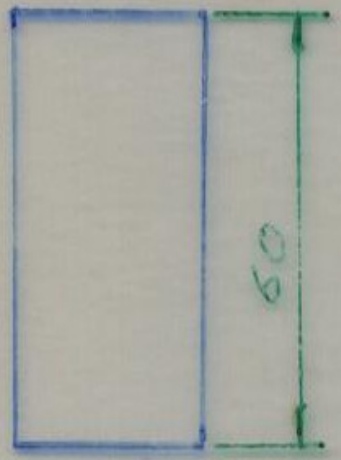
Chain Dimensioning

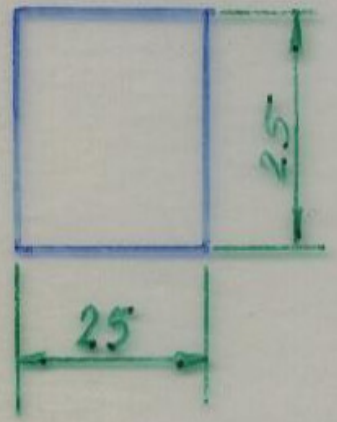

TOL 0.4
0.4
0.4
60±0.2
120 ±0.2
180 ± 0.2
59.8
60.2
119.8
120.2
179.8
180.2
Datum Dimensioning


Methods of Dimensioning of Cylinders:
50
or
50
ϕ 30
SI
30
30
might be
British
2.Dia.

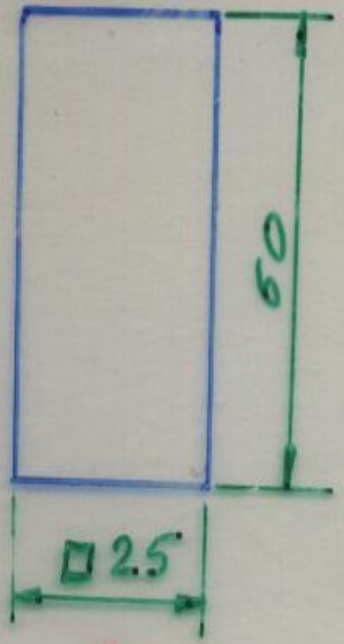

45°
Avoid placing dimensions
in the crosshached area!

Method of Dimensioning of a Square Prism :





or



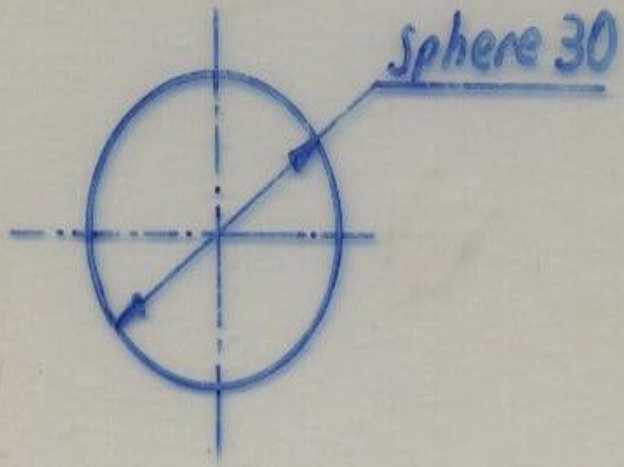
SI

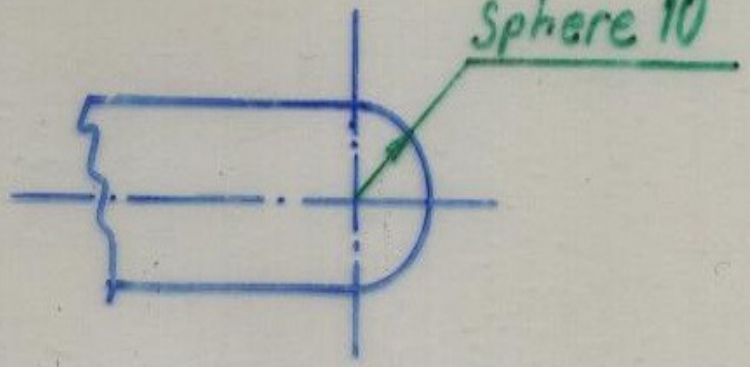
or sq.

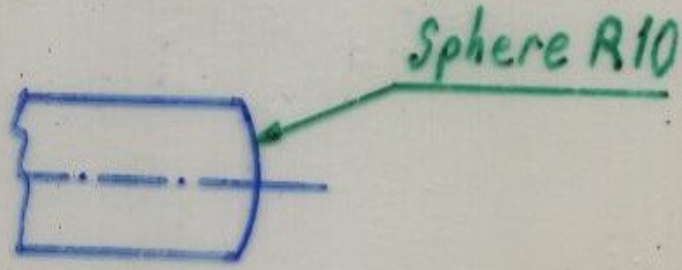
1 Square

British

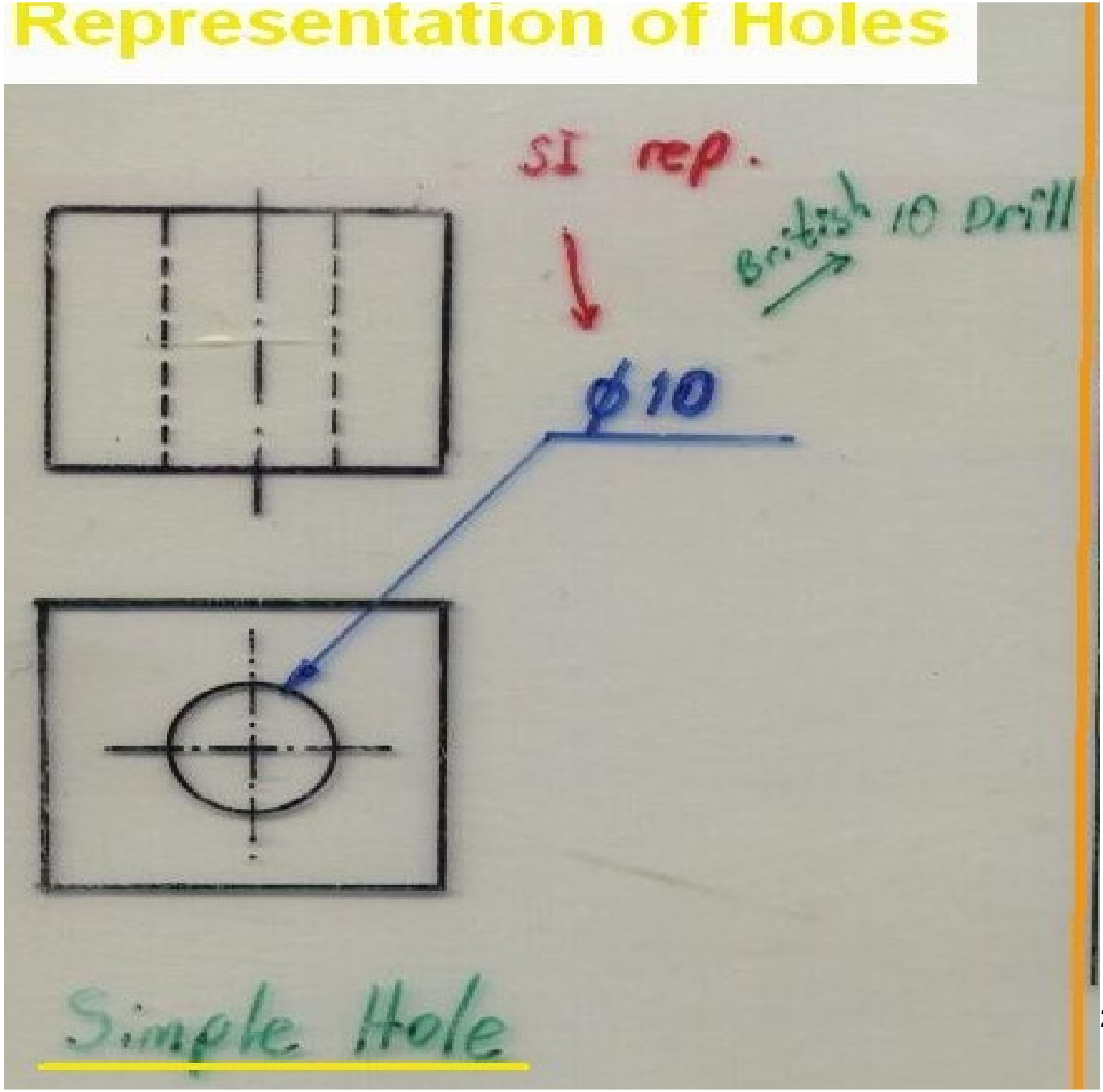
Dimensioning of a Sphere :

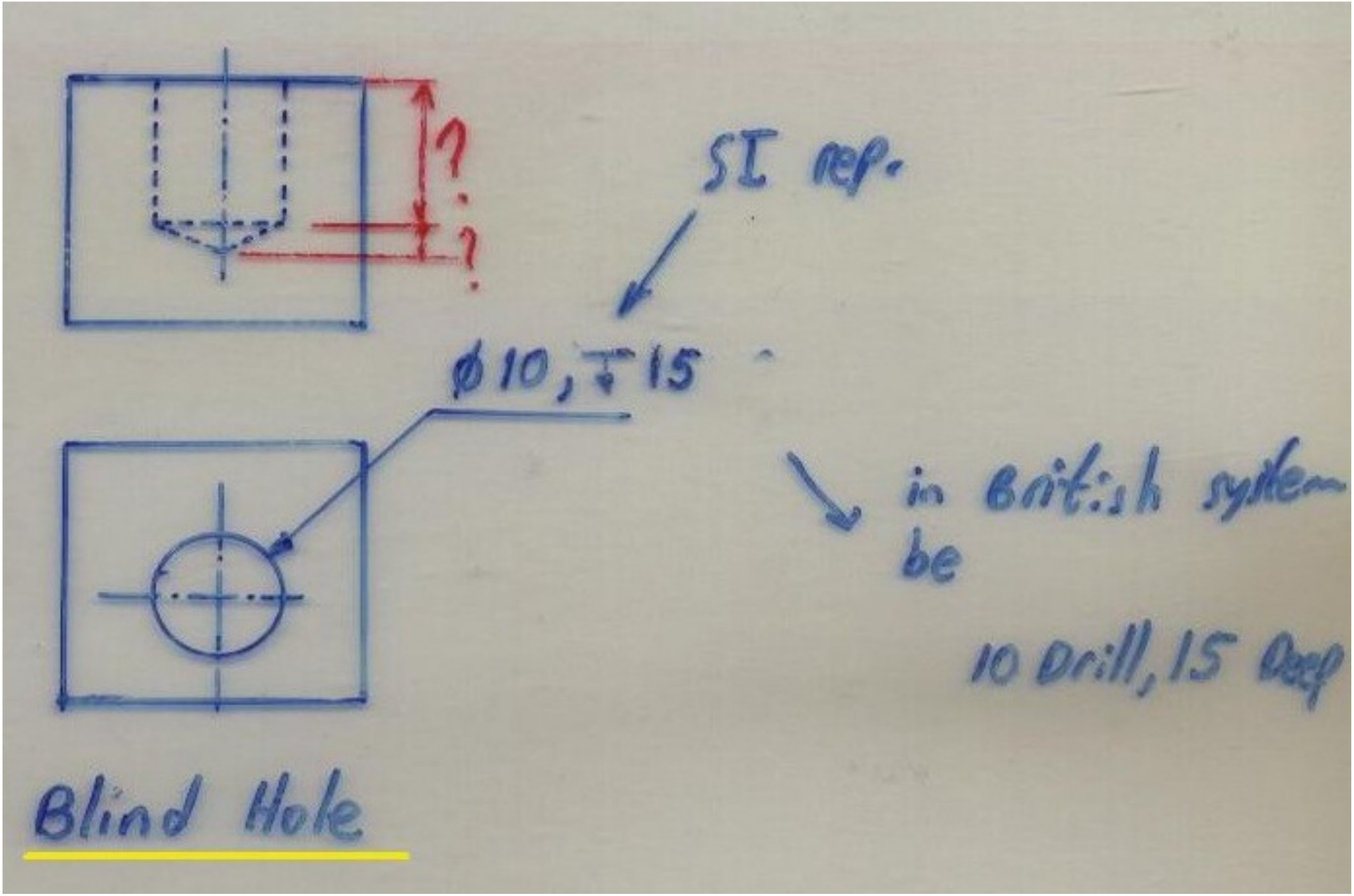


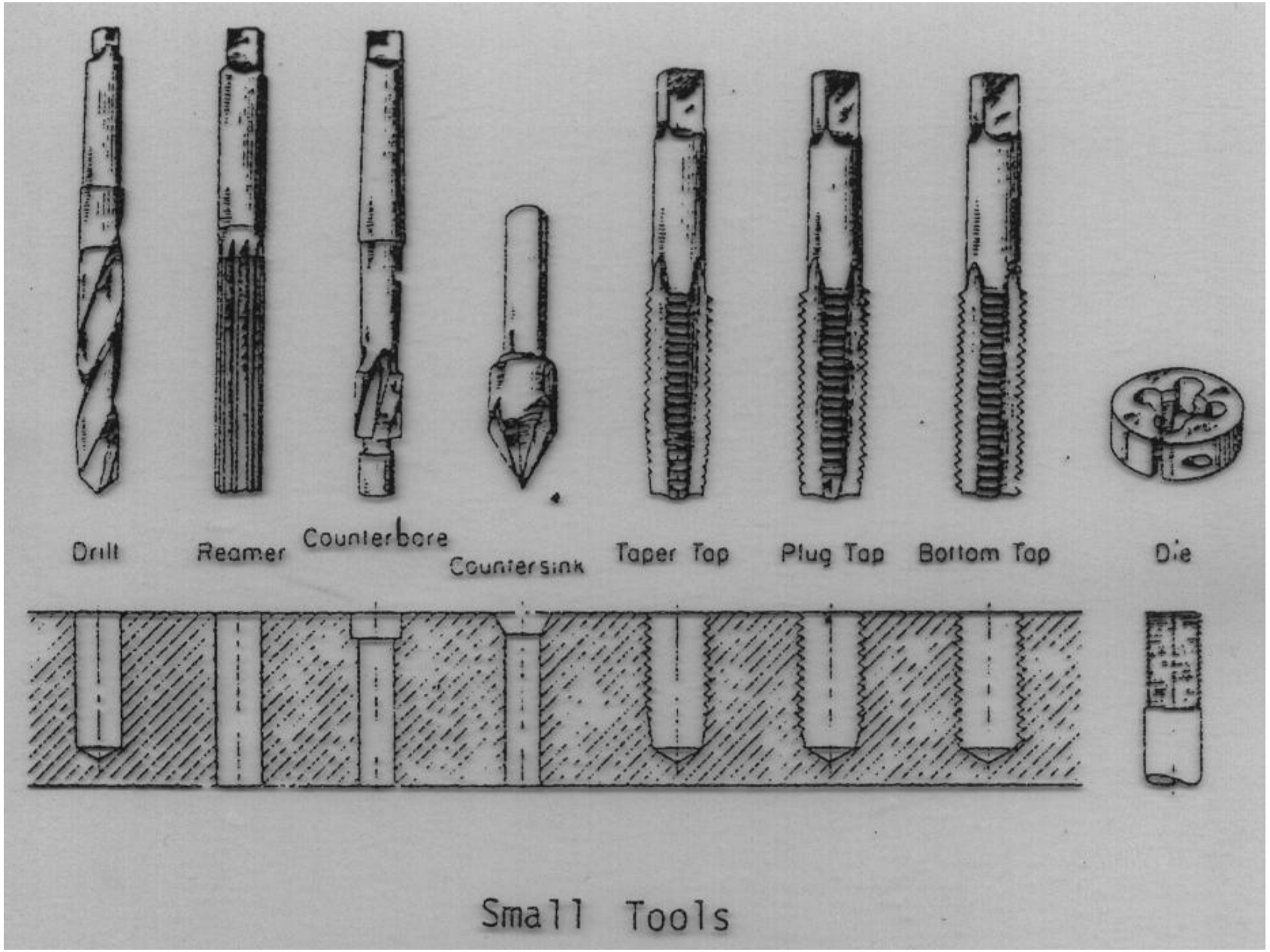




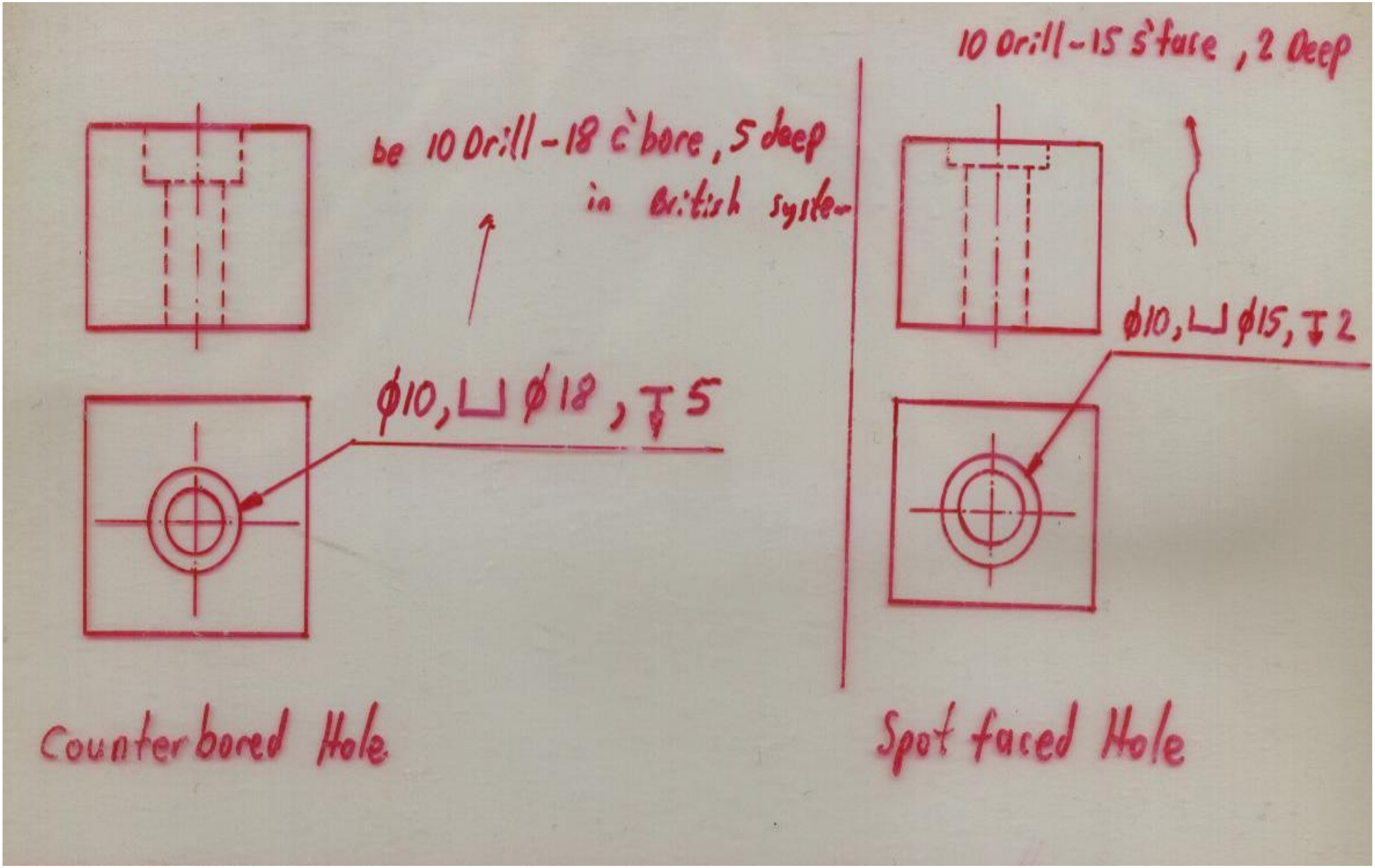
Representation of Holes

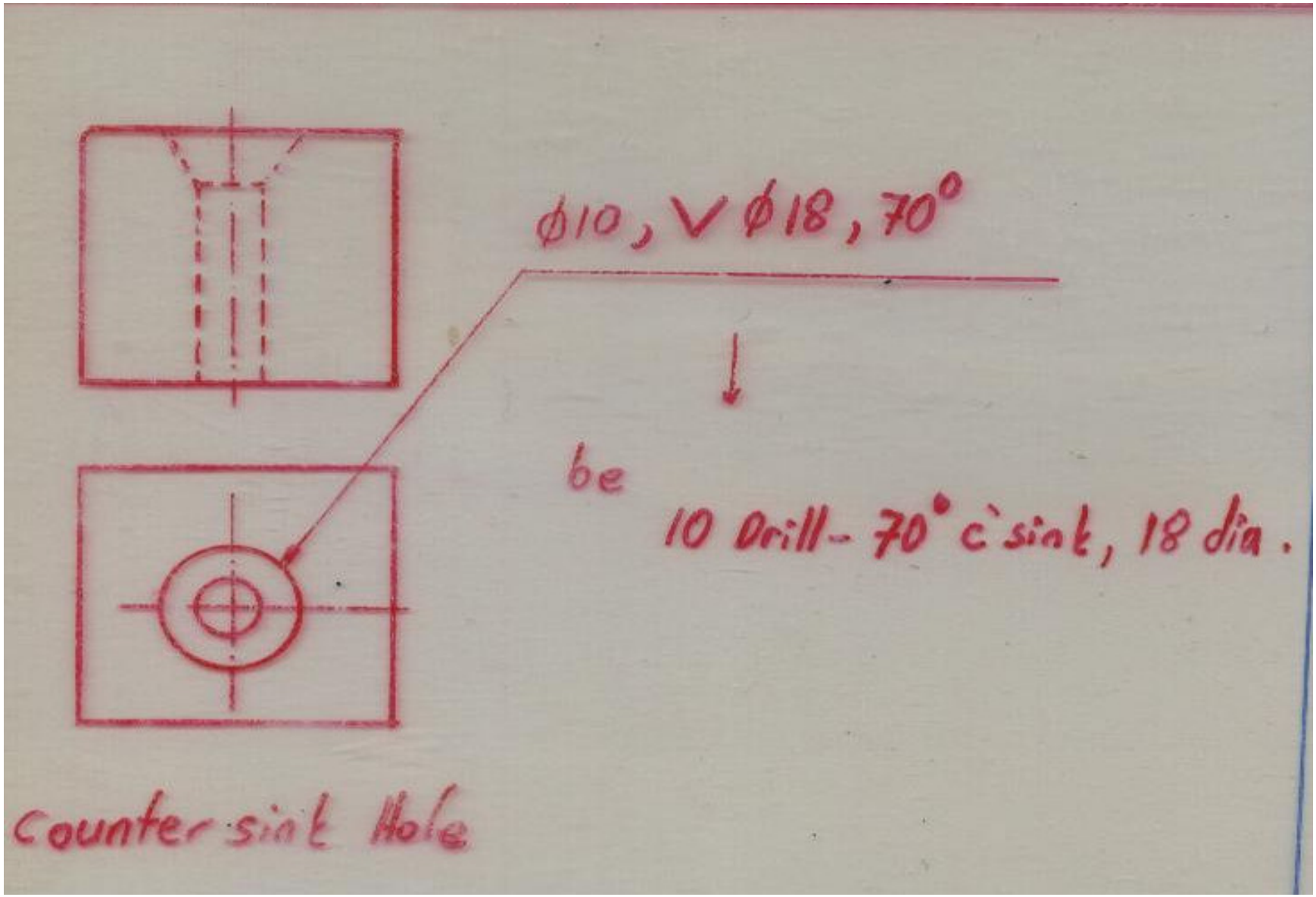



?
?
SI ref.
Ø10, ↧15
in British system
be
10 Drill, 15 Deep
Blind Hole

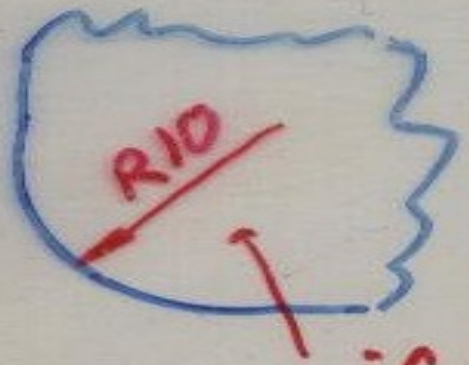

Drill
Reamer
Counterbore
Countersink
Taper Tap
Plug Tap
Bottom Tap
Die

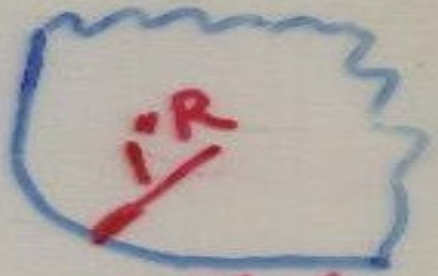
Small Tools


10 Drill - 15 S'face , 2 Deep
be 10 Drill - 18 C'bore , 5 deep
in British syste-
ϕ10, ⌴ ϕ18, ↧5
ϕ10, ⌴ ϕ15, ↧2
Counterbored Hole
Spot faced Hole


ϕ10, ∨ ϕ18, 70°
be
10 Drill - 70° c'sink, 18 dia.
Counter sink Hole

Method of Dimensioning Radii



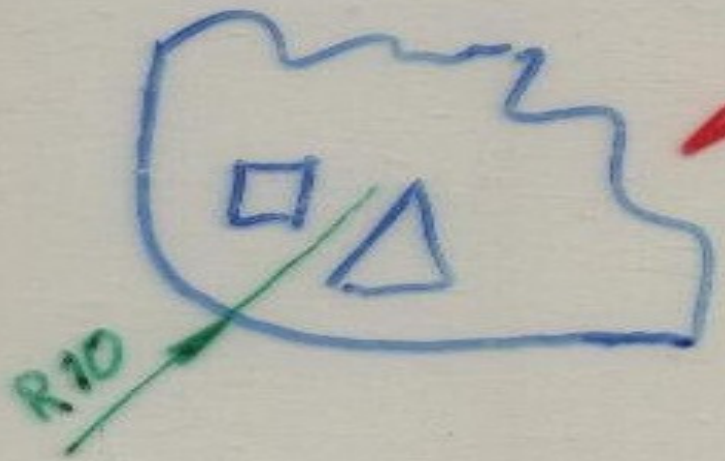


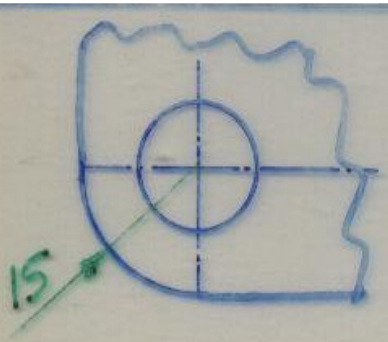
British

SI

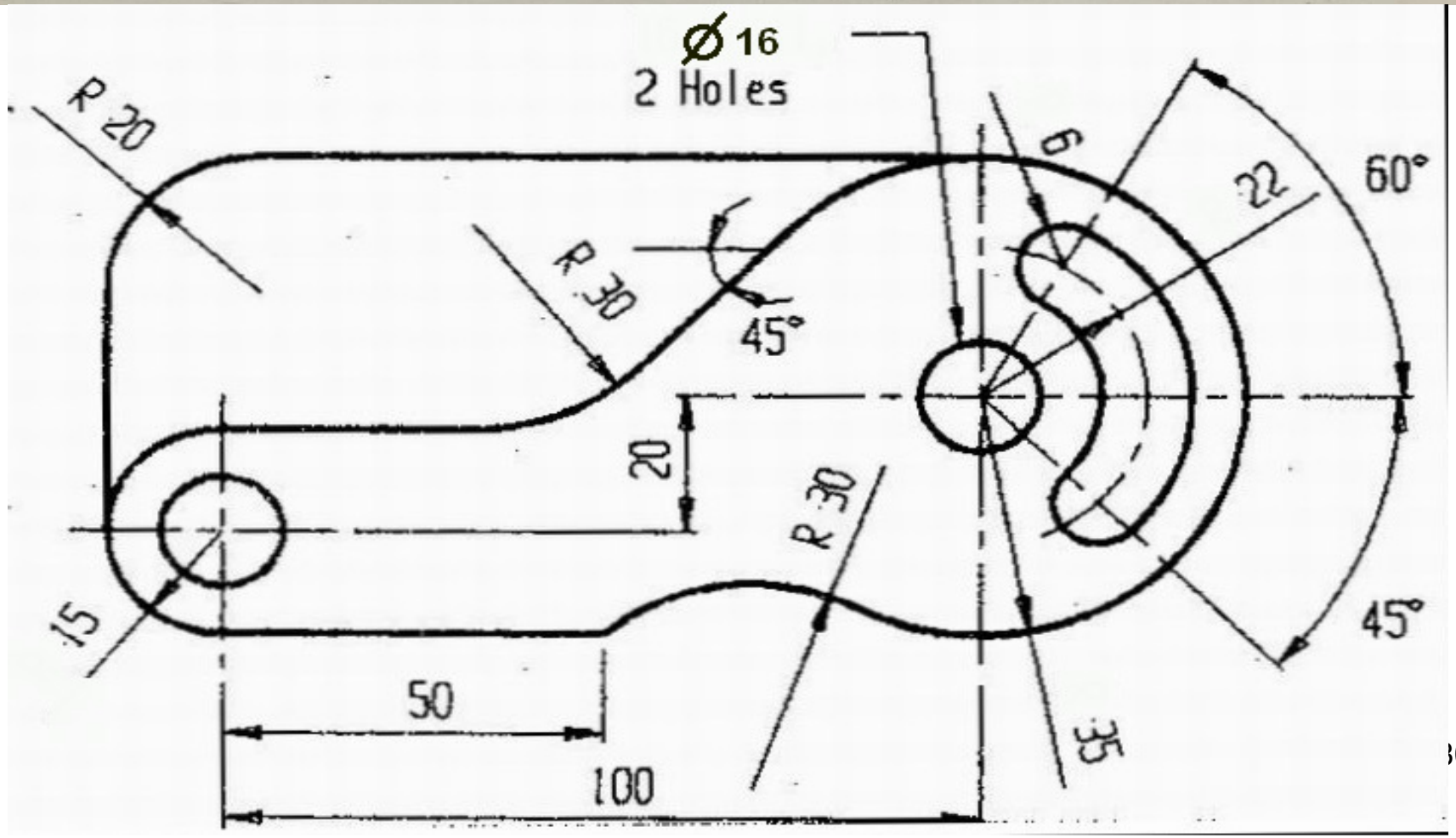
if there is a free space to indicate the dimension

if no



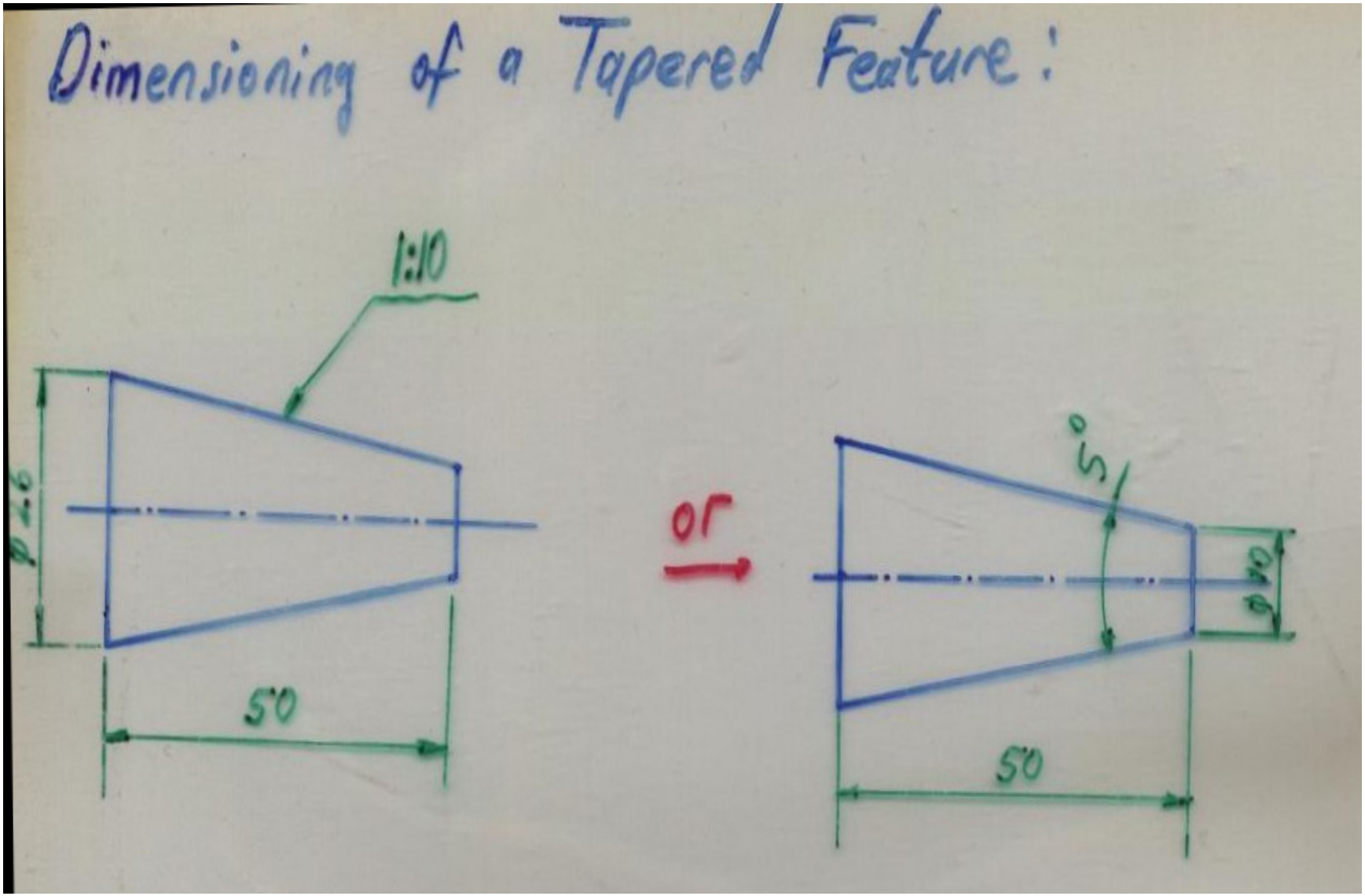


Dimension line is always directed towards the center of the arc and should be finished with one arrow head only that touches the curve.

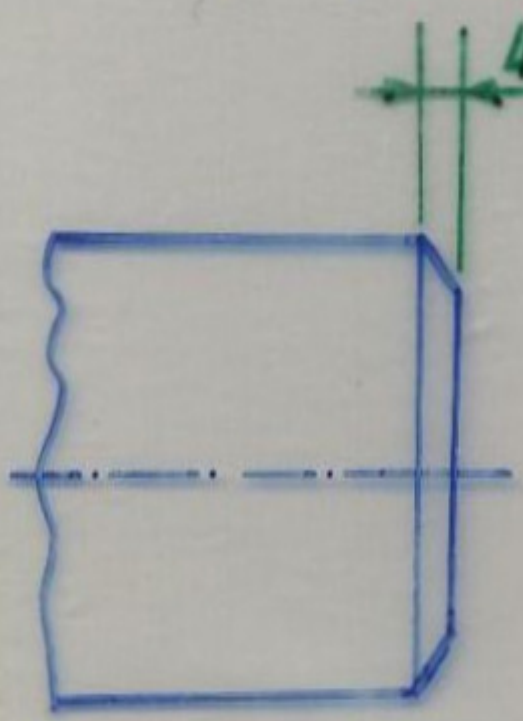


30

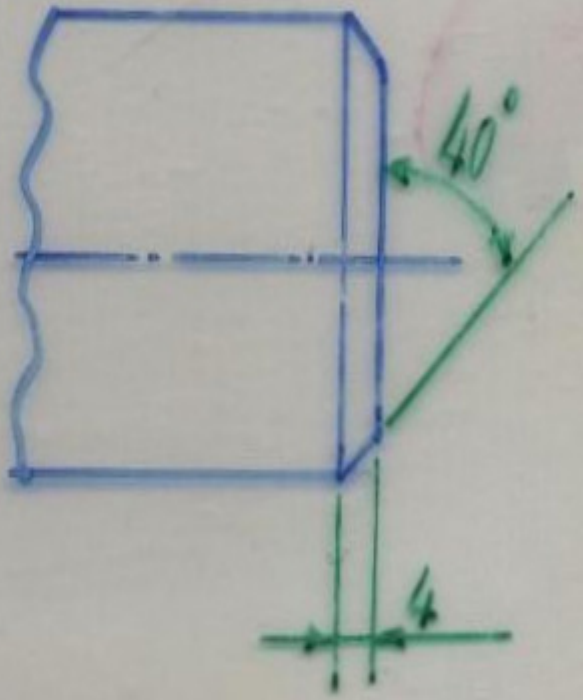
Dimensioning of a Tapered Feature:

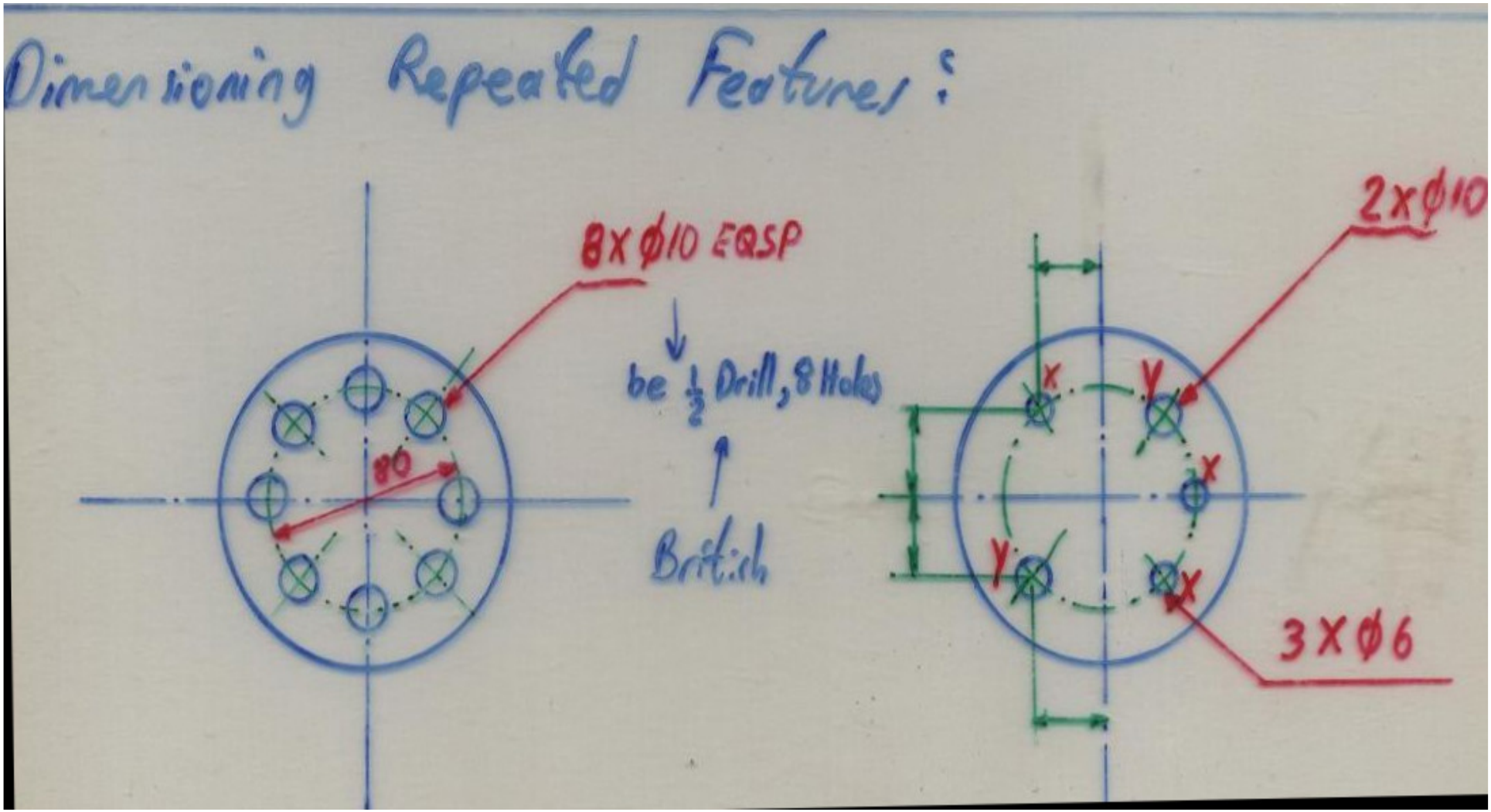


Dimensioning of a Chamfer:



أو




Dimensioning Repeated Features:
8X ϕ10 EQSP
80
be ½ Drill, 8 Holes
British
2X ϕ10
3X ϕ6
X
Y