



GURUKUL 
Pvt. Industrial Training Institute

Making Youth Employable Through Skill Development

Manglam City, Govindpura, Kalwar Road, Jhotwara, JAIPUR

9887442244 www.gurukulitjaipur.in

Drawing of Stud

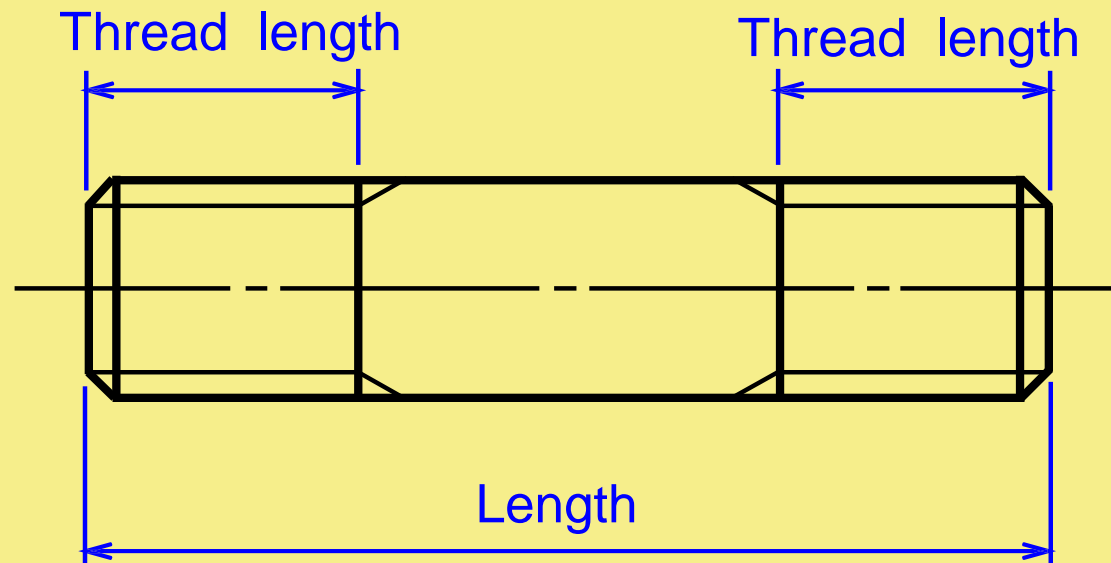


STUD : Terminology

Stud is a *headless* bolt, threaded at both ends.

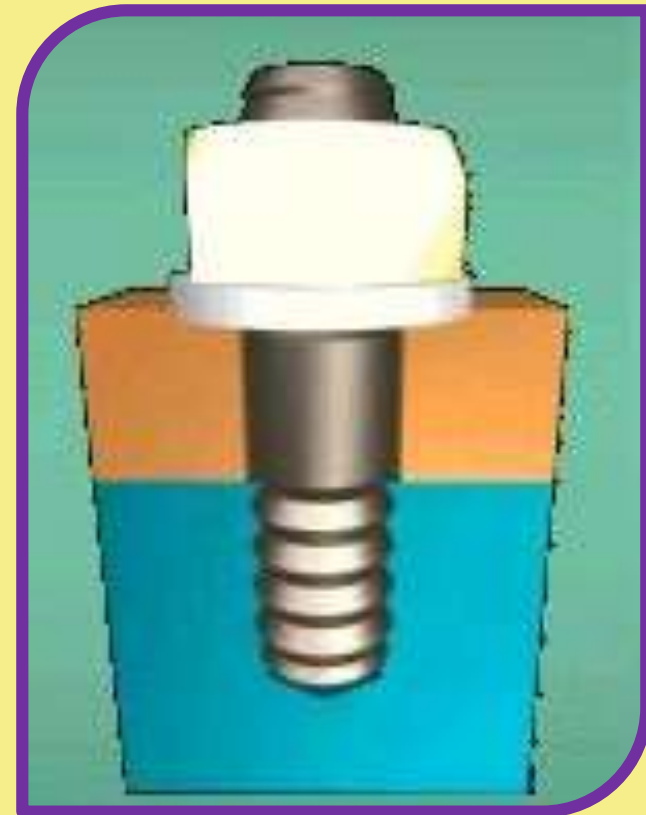


*Drawing
representation*



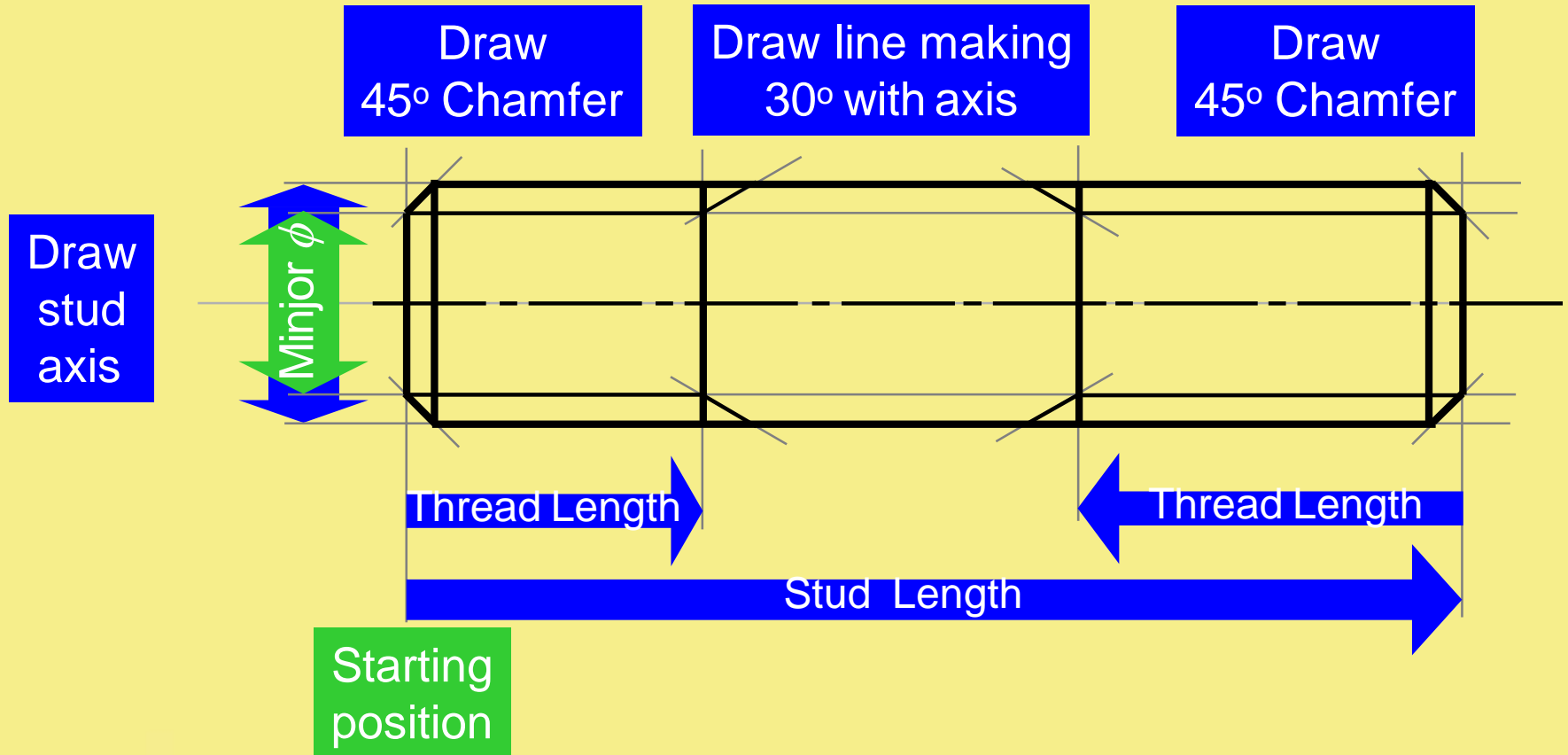


In threaded fastening if **one** of the connected pieces is **too thick**, or in case the bolt fastening is **not suitable** or the connected pieces need be **taken apart frequently**, then the studs are used.





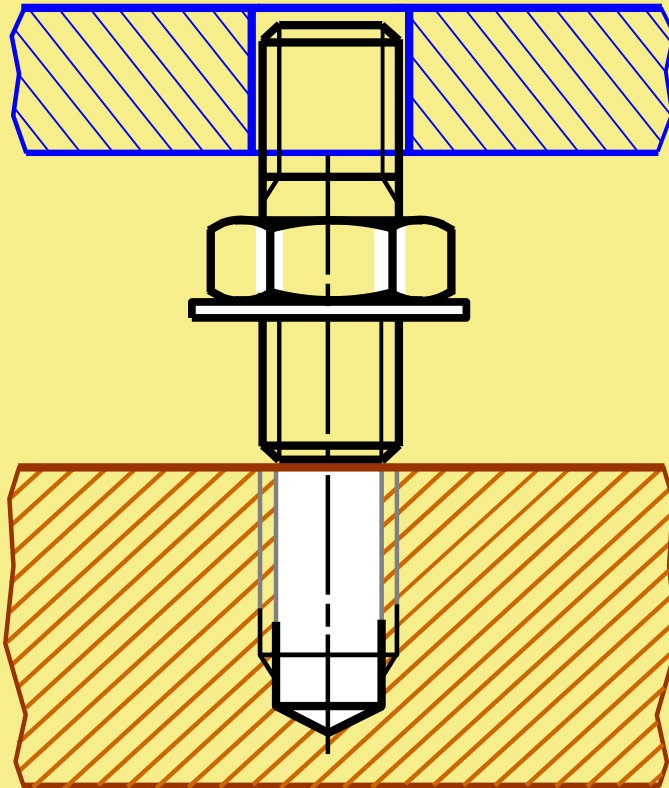
STUD : Drawing steps





STUD

Application



1. Drill a hole.

2. Tap a hole.

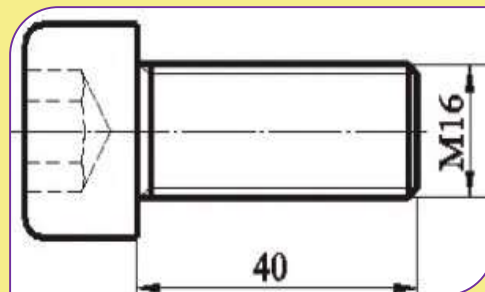
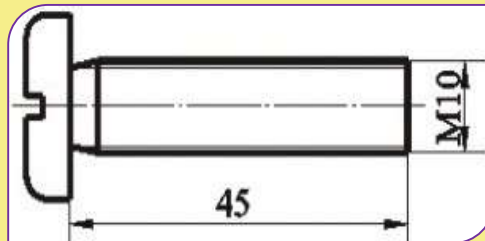
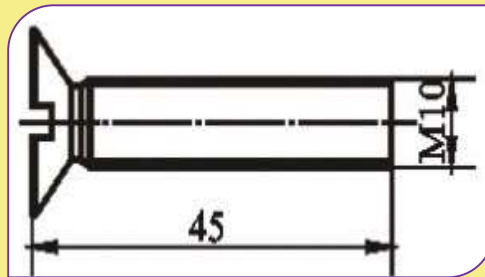
3. Screw a stud.

4. Place the part to be fastened.

5. Insert washer and fastened a nut.



Cap screws and set screws



Similar to the stud fastening, cap screws are used for fastening two pieces together by passing through a clearance hole in one and screwing into a tapped hole in the other.



Note

That the slot on screw head is generally drawn at 45° with the horizontal center line in the top view.



Types of Scales

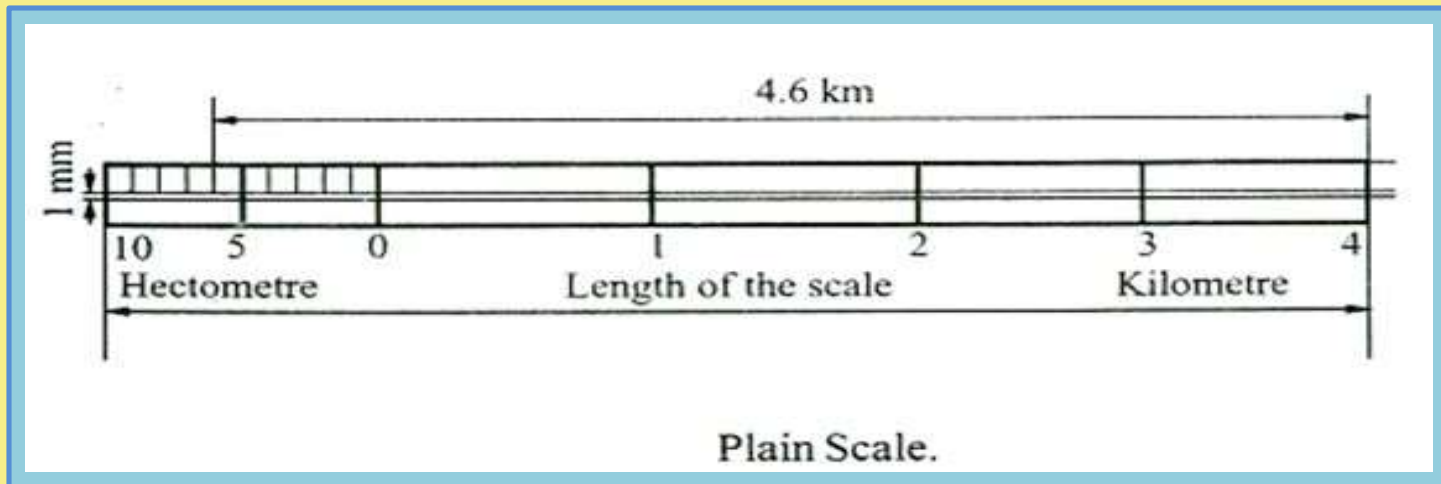
The types of scale normally used are:

- A. Plain Scales
- B. Diagonal



1. Plain Scales

A plain scale is simply a line which is divided into a suitable number of equal parts, the first of which part is further subdivided into small parts. It is used to represent either two units.





Example: On a survey map the distance between two places 1 km apart is 5 cm. Construct the scale to read 4.6 km

$$\text{R.F.} = \frac{5 \text{ cm}}{1 \times 1000 \times 100 \text{ cm}} = \frac{1}{20000}$$

If X is the drawing size required $X = 5 \times 1000 \times 100 \times \frac{1}{20000}$

Therefore, $X = 25 \text{ cm}$

Draw a line of length 25 cm.

Divide this into 5 equal parts. Now each part is 1 km.

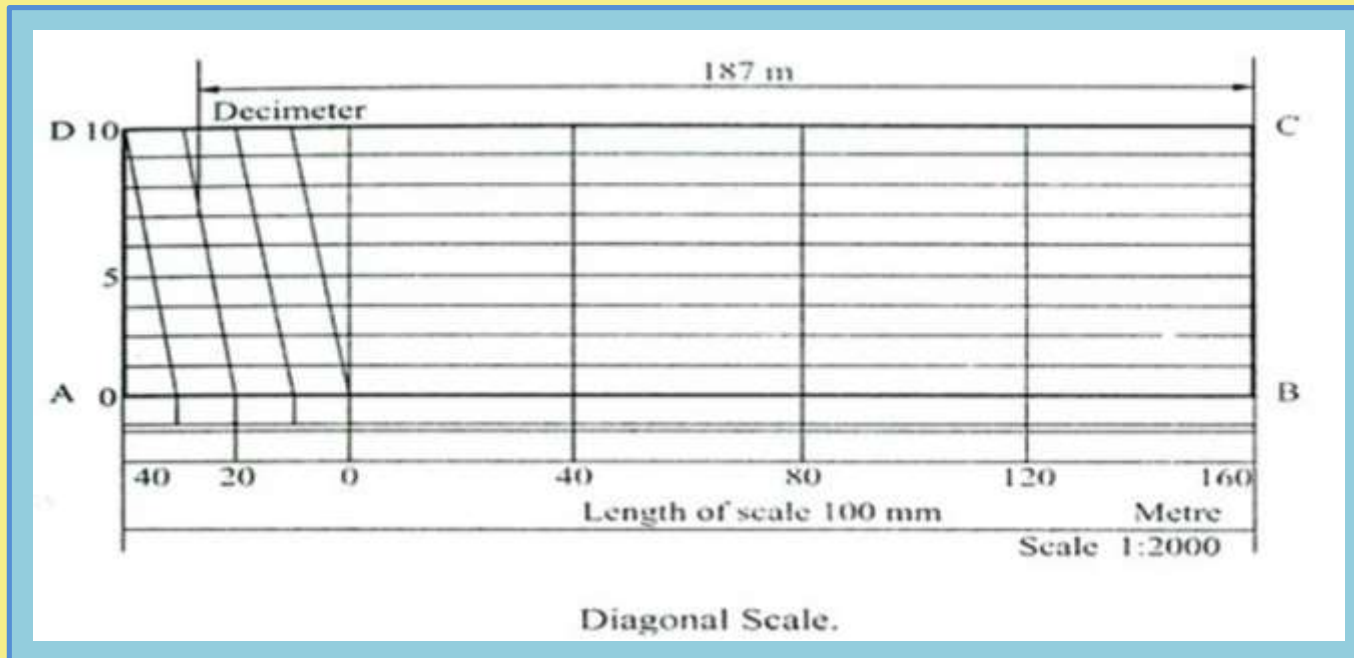
Divide the first part into 10 equal division. Each division is 0.1 km.

Mark on the scale the required distance 4.6 km



2. Diagonal Scales

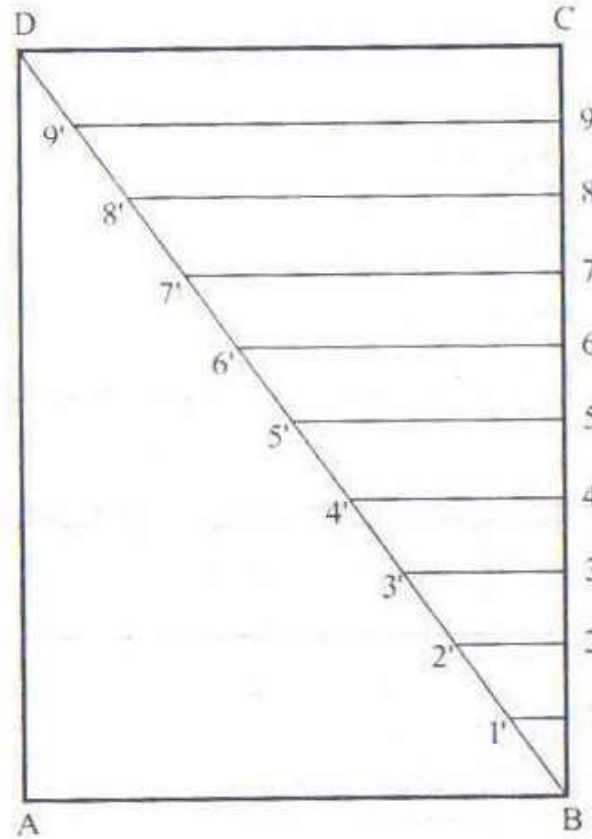
Diagonal scales are used to represent either three units of measurement such as meters, decimeters, centimeters or to read to the accuracy correct to two decimals.





Principle of diagonal scale:

- . Draw a line AB and erect a perpendicular at B.
- . Mark 10 equal distant points (1, 2, 3 etc.) of any suitable length along this perpendicular and mark C.
- . Complete the rectangle ABCD.
- . Draw a diagonal BD.
- . Draw a horizontal through the division points to meet BD at 1', 2' etc.
The line 1-1', 2-2' etc. measure $0.1CD$, $0.2CD$, etc. respectively.
The line CD is divided into 1/10 the divisions by the diagonal BD, i.e. each horizontal lines is a multiple of $1/10CD$.



Principle of diagonal scale



Problem:

On a plan, a line of 22 cm long represents a distance of 440 meters. Draw a diagonal scale for the plan to read up to a single meter. Measure and mark a distance of 187 m on the scale.

Solution:

$$1. \text{ R.F.} = \frac{22}{440 \times 100} = \frac{1}{2000}$$

2. As 187 m are required, consider 200 m.

$$3. \text{ Drawing size} = \text{R.F.} \times \text{actual size} = \frac{1}{2000} \times 200 \times 100 = 10 \text{ cm}$$

4. When a length of 10 cm representing 200 m is divided into 5 equal parts, each part represents 40 m as marked in the figure.

5. The first part is sub-divided into 4 divisions, so that each division is 10 m.

6. On the diagonal portion 10 divisions are taken to get 1 m.



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The End

Thanks