

Mechanical Drawing I

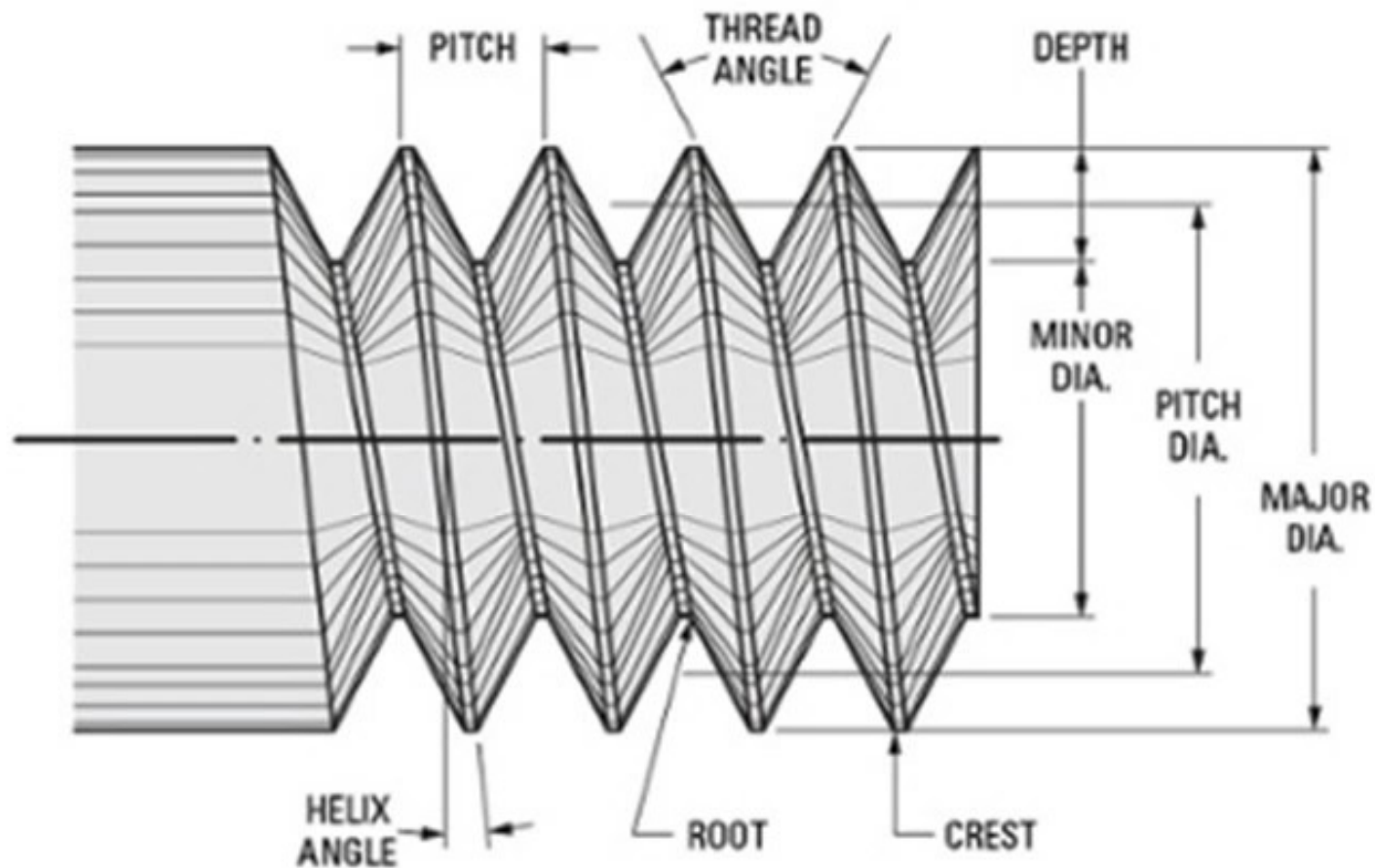
Code: MAE217

Screw and Nuts

Screw and Nuts:



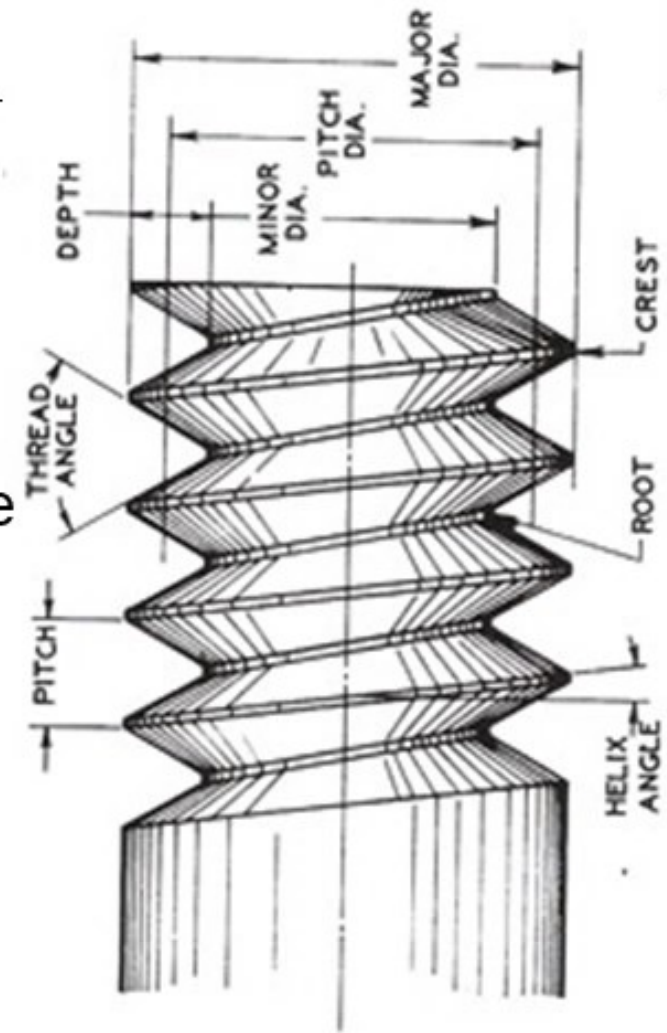
Screw Thread:



Screw and Nuts:

Definitions:

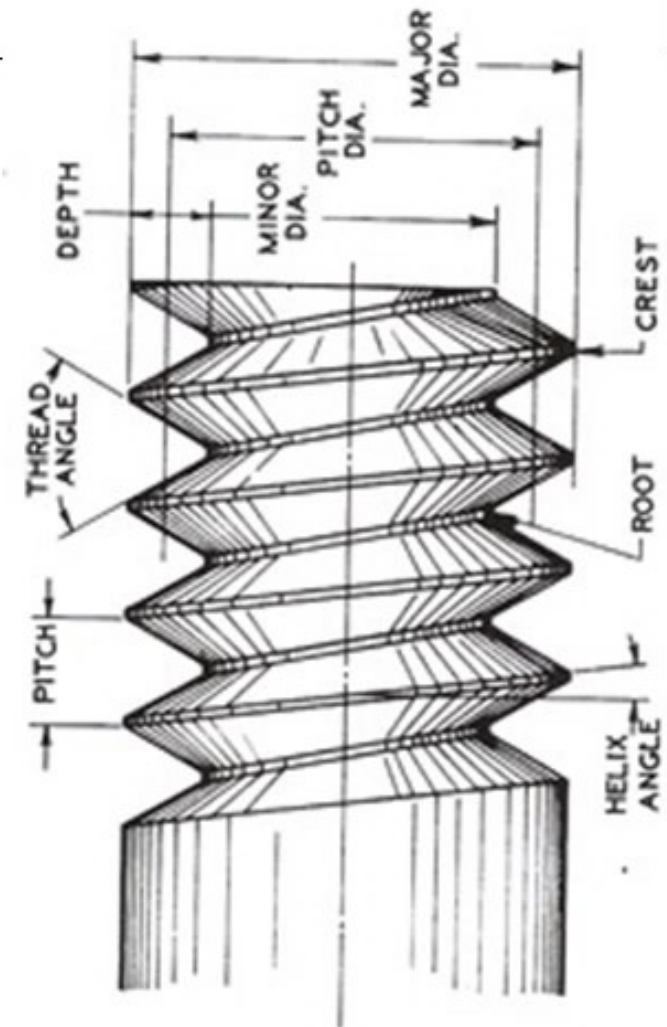
- Crest: The outermost part of the thread.
- Root: The innermost portion of the thread.
- Flank: The surface between the crest and the root of the thread.
- Angle: the angle between the flanks.
- Depth: The distance between the crest and the root.



Screw and Nuts:

Definitions:

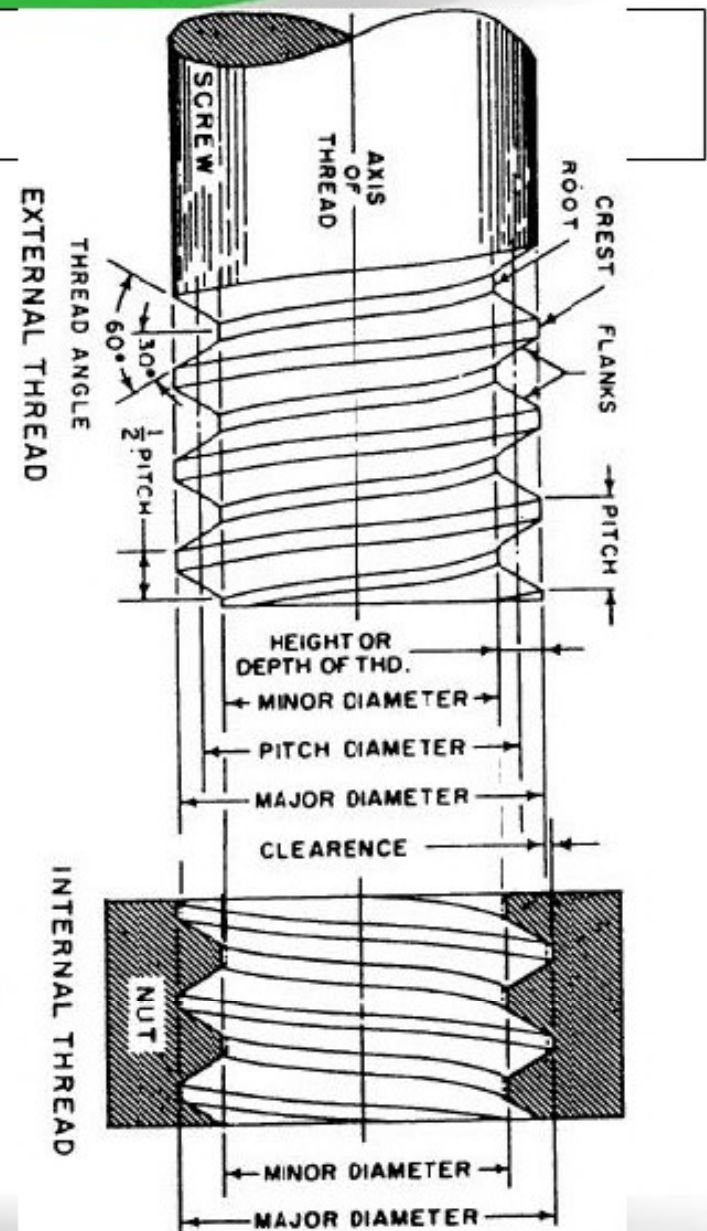
- Nominal Diameter: The diameter of the cylindrical piece on which the thread is cut. The screw is specified by this diameter.
- Outside or major diameter: The diameter at the crest of thread measured.
- Core or minor diameter: The diameter at the core or root of the thread.



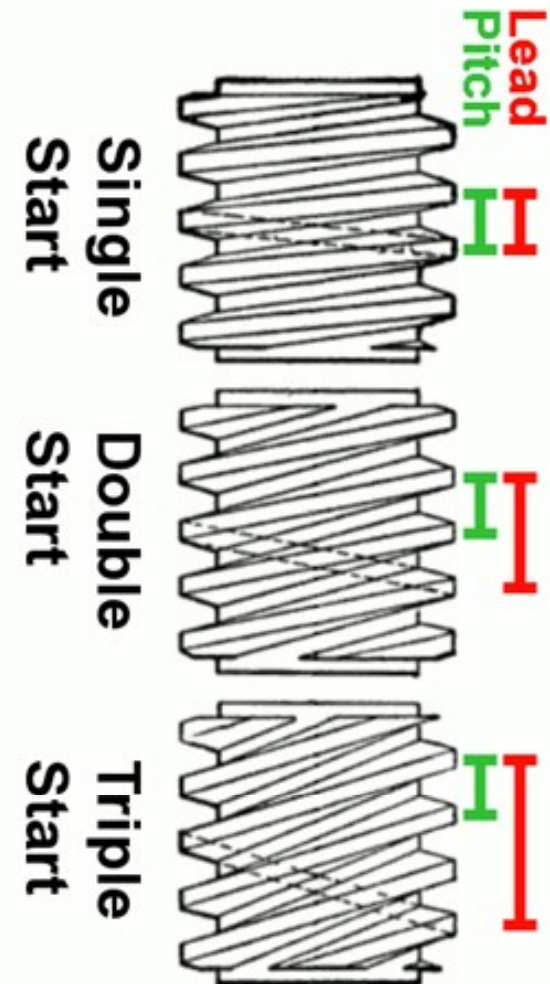
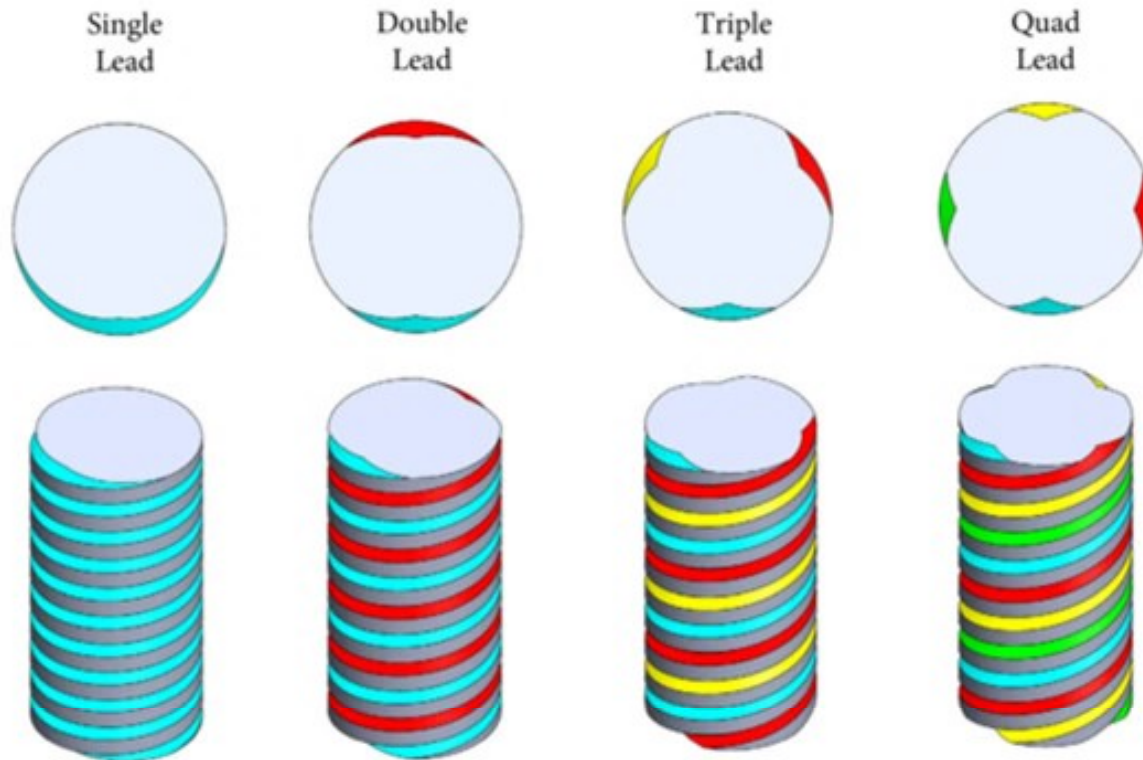
Screw and Nuts:

Definitions:

- Effective Diameter (pitch diameter): Equal to the length of the line, perpendicular to and passing through the axis, and measured between the points where it cut the flanks of the thread.
- Pitch: The distance from crest to crest or root to root.
- Lead: The distance measured from a point on a thread to a corresponding point on the same thread after one complete revolution



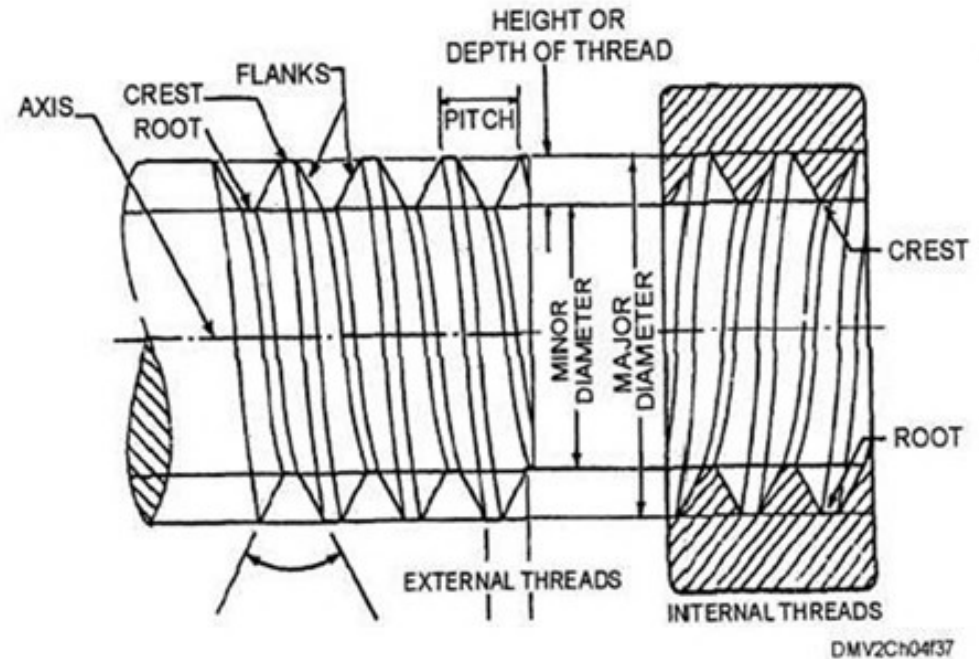
Screw and Nuts:



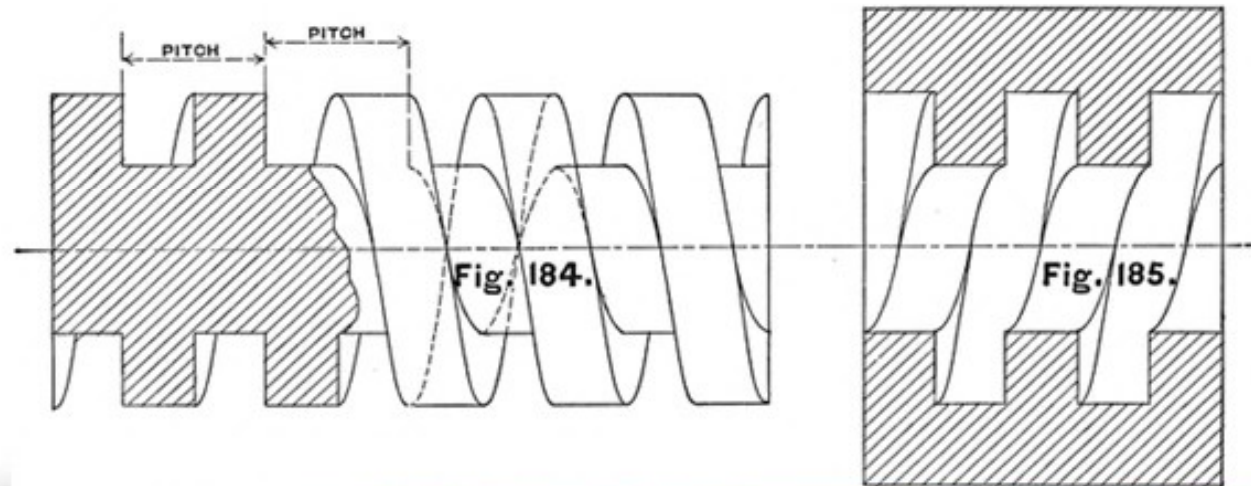
Screw and Nuts:

Forms of screw threads:

Triangular or V threads



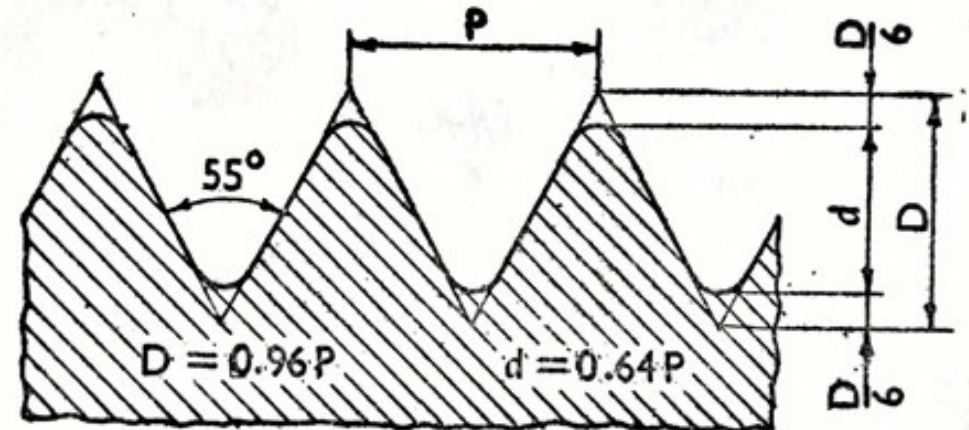
Square threads



Screw and Nuts:

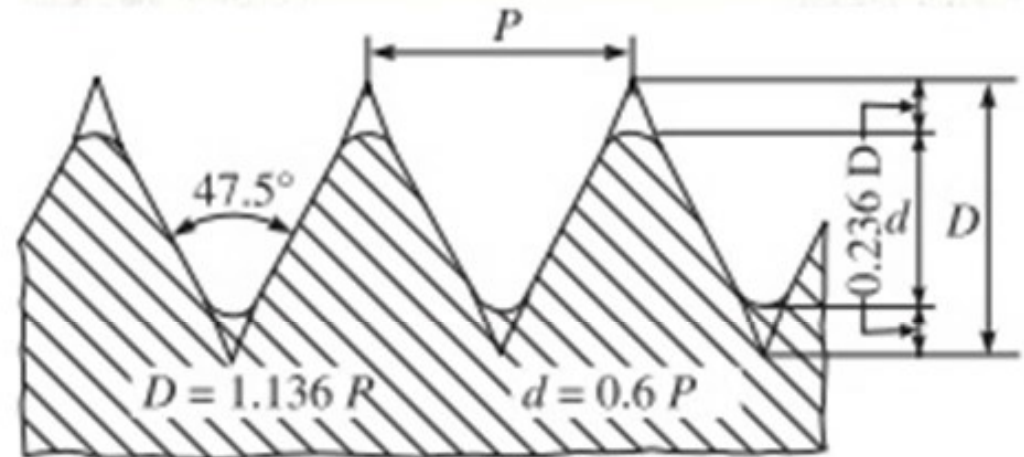
Types of threads:

1. Whitworth thread
(British Standard Whitworth).



Whitworth thread

2. British Association thread.

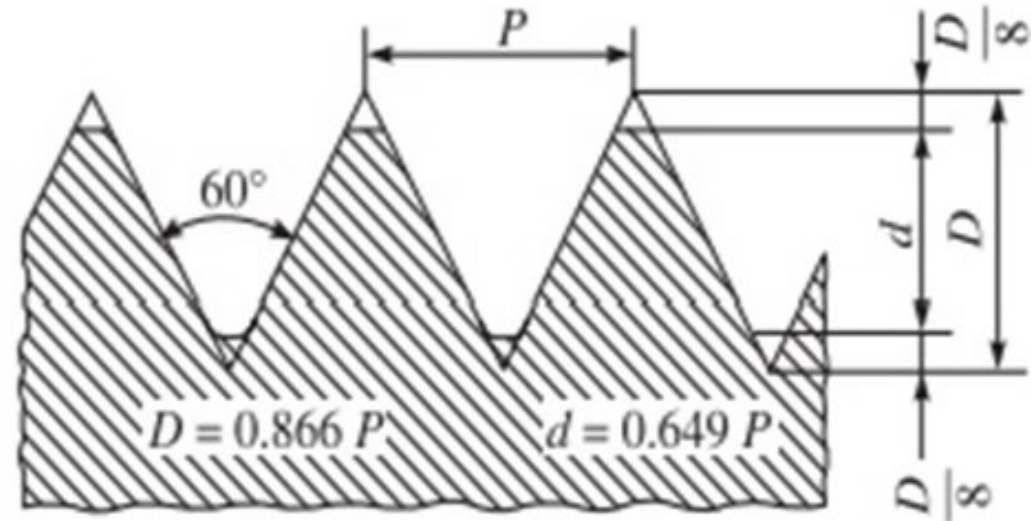


British Association (B.A.) threads

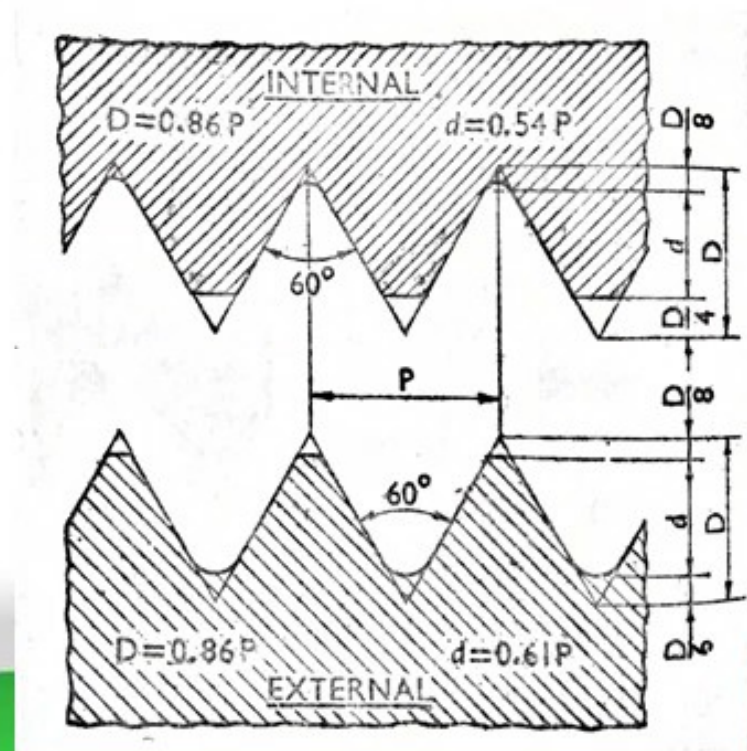
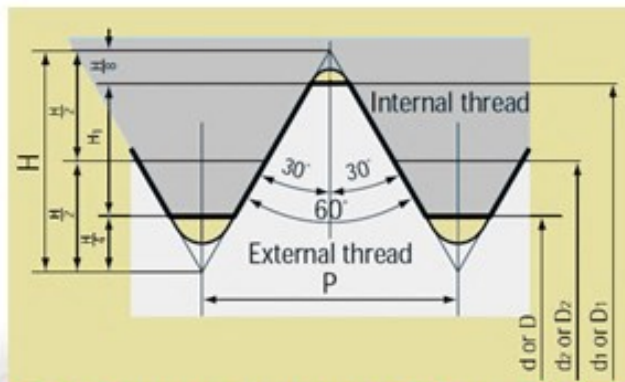
Screw and Nuts:

Types of threads:

3. Seller thread.



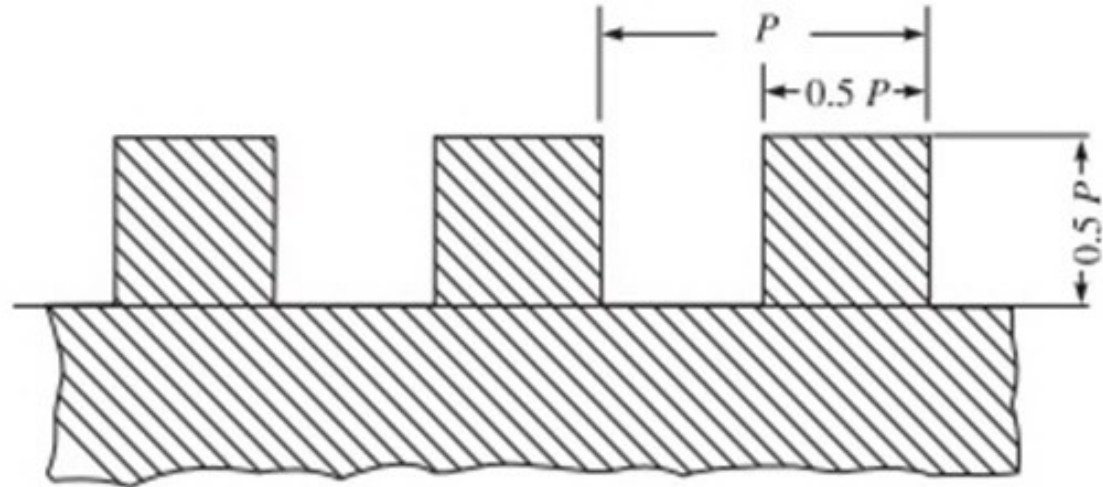
4. Unified thread.



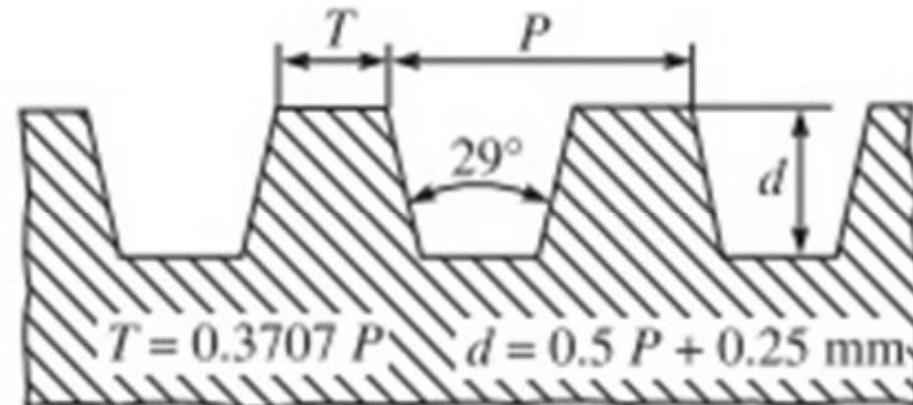
Screw and Nuts:

Types of threads:

5. Square thread.



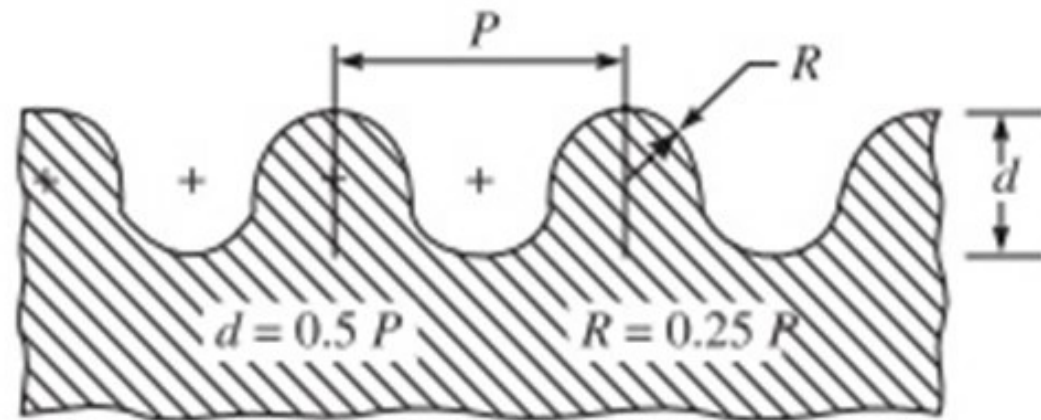
6. Acme thread.



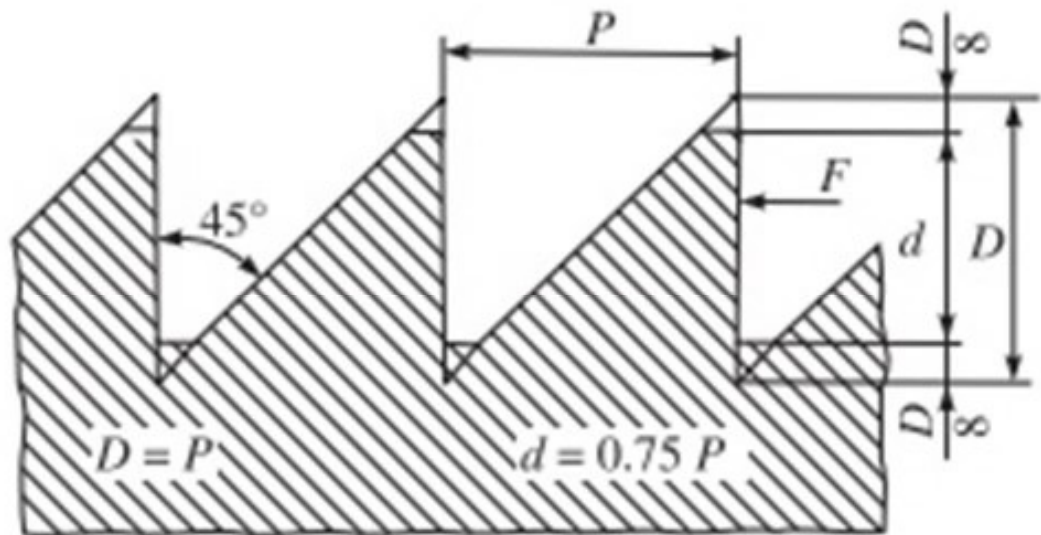
Screw and Nuts:

Types of threads:

7. Knuckle thread.

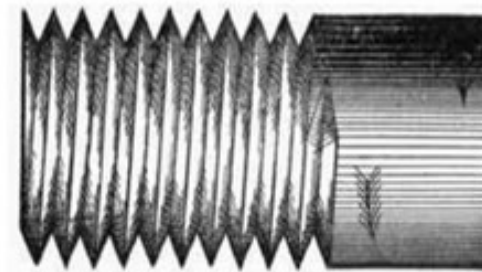


8. Buttress thread.



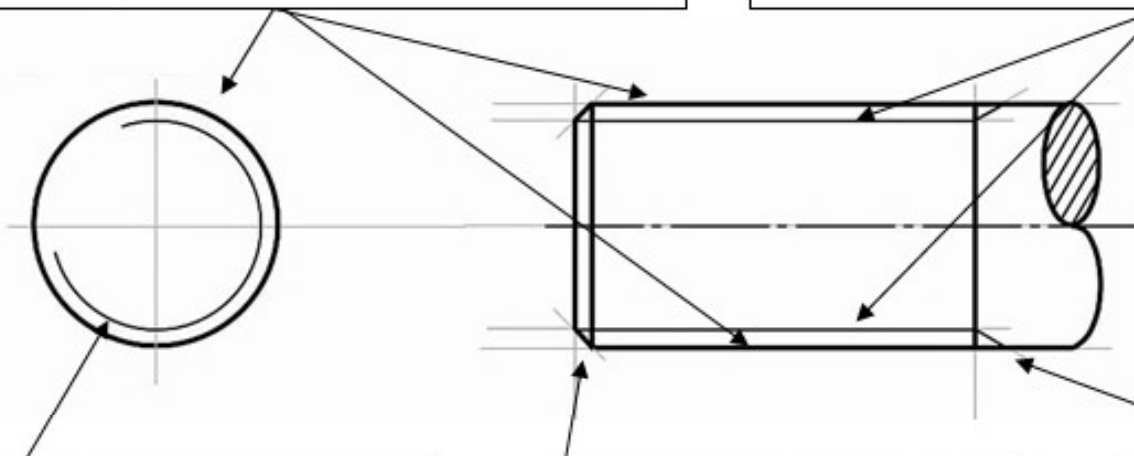
Screw and Nuts:

External Threads:



Thick line (major or outside diameter)

Thin lines indicate the minor or the root diameter



Thin line circle about three quarters of the circumference

Chamfer at 45°

Line at 30°

Screw and Nuts:

• Internal thread

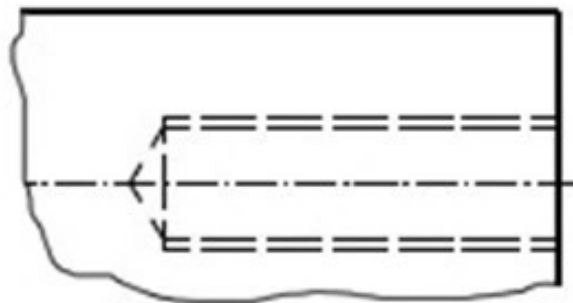


Internal Threads:

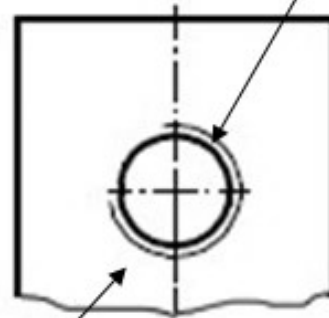
Thick dashed line indicate the minor or the root diameter

Thin dashed line indicate the major or outside diameter

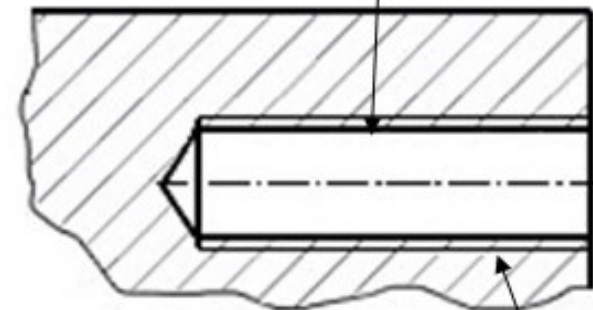
Thick lines indicate the minor or the root diameter



Side view



Thin line (3/4) circle for the major diameter



Section

Thin line (major or outside diameter)

Screw and Nuts:

Dimensions of Metric Screw Threads:

Metric thread size and tolerance calculator was developed to calculate major, minor and pitch diameters of the external and internal metric threads according to ISO 724:1993 standard.

Example (1):

M10 * 1.25 * LH * 100 * H9

M: Metric screw thread

10: Major diameter 10 mm

1.25: Pitch size 1.25 mm, fine screw thread.

(if it given = fine screw thread, if not = coarse screw thread)

LH: Left hand thread (if not given = Right hand thread)

100: Thread length = 100mm

H9: The tolerance of the dimension

H: Internal thread (Capital letter = Internal thread, Small letter = External thread)

Screw and Nuts:

Dimensions of Metric Screw Threads:

Metric thread size and tolerance calculator was developed to calculate major, minor and pitch diameters of the external and internal metric threads according to ISO 724:1993 standard.

Example (2):

M20 * 50 * f6

M: Metric screw thread

20: Major diameter 20 mm

Pitch size is not given = coarse screw thread.

Right hand thread

f6: The tolerance of the dimension

f: External thread