

EXTERNAL THREAD BASICS

Figure #2 External Thread Basics

MAJOR DIAMETER - BASIC:

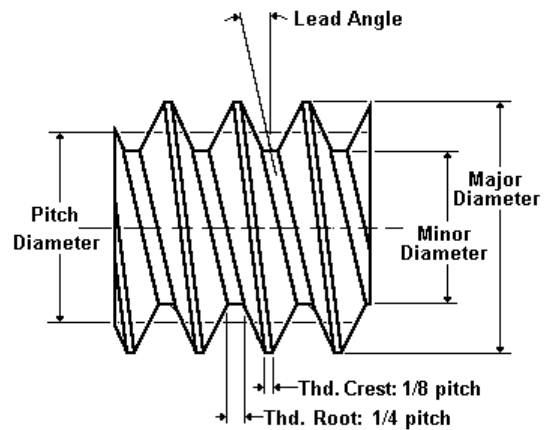
All thread dimensions, internal & external are based on this dimension.

MINOR DIAMETER - ROOT:

Must clear the mating product's minor diameter.

PITCH DIAMETER:

Controls the fit of the mating parts, looseness & tightness.



GO THREAD RING GAGES

Minus tolerance on ID (Inner or Minor Diameter) and PD (Pitch Diameter)

Functional check; checks maximum pitch diameter, maximum minor diameter, flank angles, and lead.

Engages for full length of thread free and easy

NOGO, NOTGO, LO THREAD RING GAGES

Plus tolerance on ID (Inner or Minor Diameter) and PD (Pitch Diameter)

Checks one feature only: minimum functional pitch diameter

Engagement

Inch: Acceptable when gage does not enter product more than three complete turns. Thin or soft material, or small number of threads may require altering three-turn limit. Per ANSI B1.2-1983, page 128, par. 5.2.1

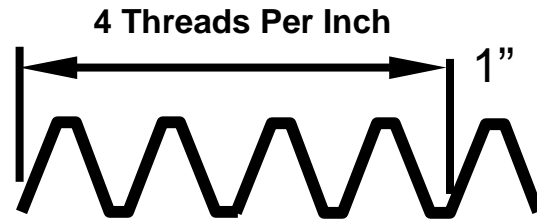
Metric: Acceptable when a definite drag from contact with the product material results on or before the second turn of entry. Per ANSI B1.16M-1984, page 75, par. 5.2.1



TPI / PITCH / LEAD

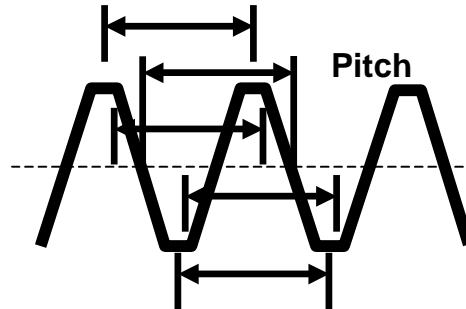
THREADS PER INCH:

The number of threads within one inch, measured along the axis of the thread.



PITCH:

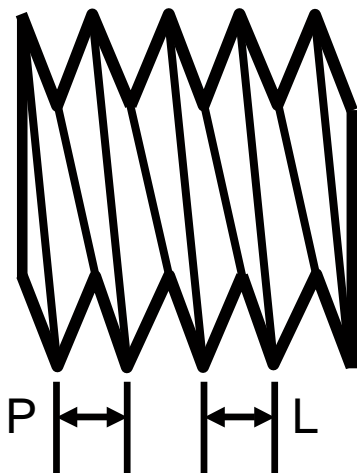
The distance between corresponding points on adjacent threads.



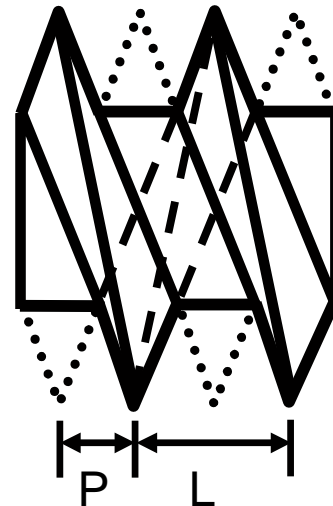
LEAD:

The distance advanced by a thread when rotated 360 degrees on its mating thread.

One Start or Single Lead Thread



Two Start or Double Lead Thread



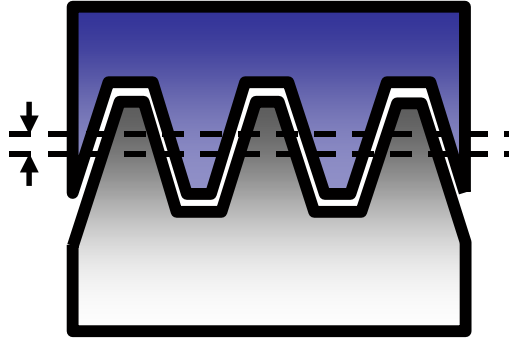
$$\text{Pitch} \times (\# \text{ of Starts}) = \text{Lead}$$



ALLOWANCE / CLEARANCE

ALLOWANCE:

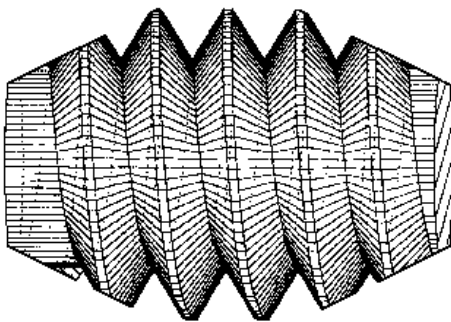
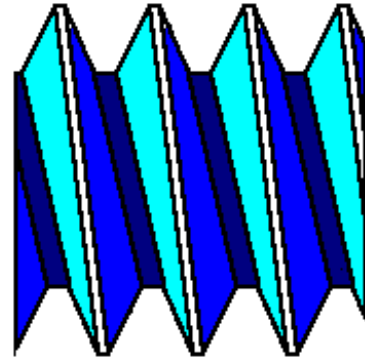
The minimum clearance between two mating parts. The variations from the basic size which are prescribed to permit the desired amount of play in a metal-to-metal fit. For threads, the difference in pitch diameters.



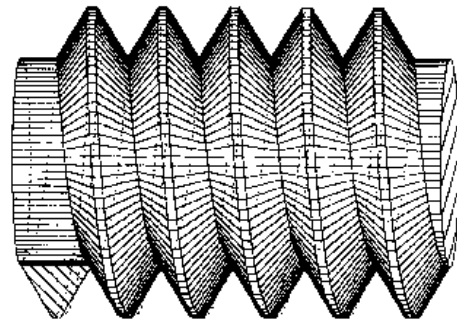
FEATHER EDGE REMOVAL

When a part is threaded, whether internally or externally, the beginning and/or ending of the thread is a partial or feather thread. The partial thread must be removed for two reasons.

- 1) Safety. The feather edge will cut like a razor on metal parts.
- 2) Function. The feather edge will roll over blocking the thread vee and not allowing the threads to assemble.



Removal by Chamfer



Removal by Convolute

