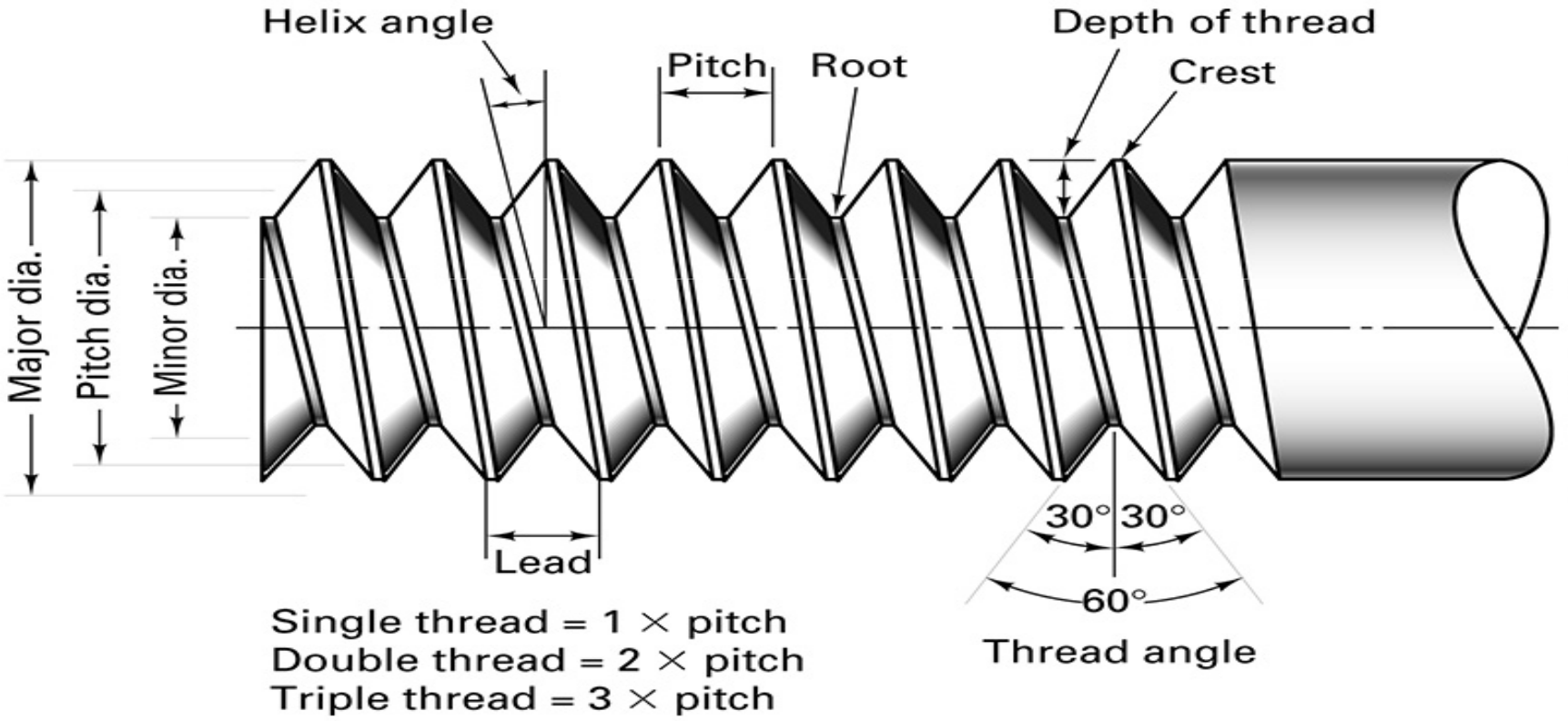
THREADS AND GEARS

SCREW-THREAD NOMENCLATURE



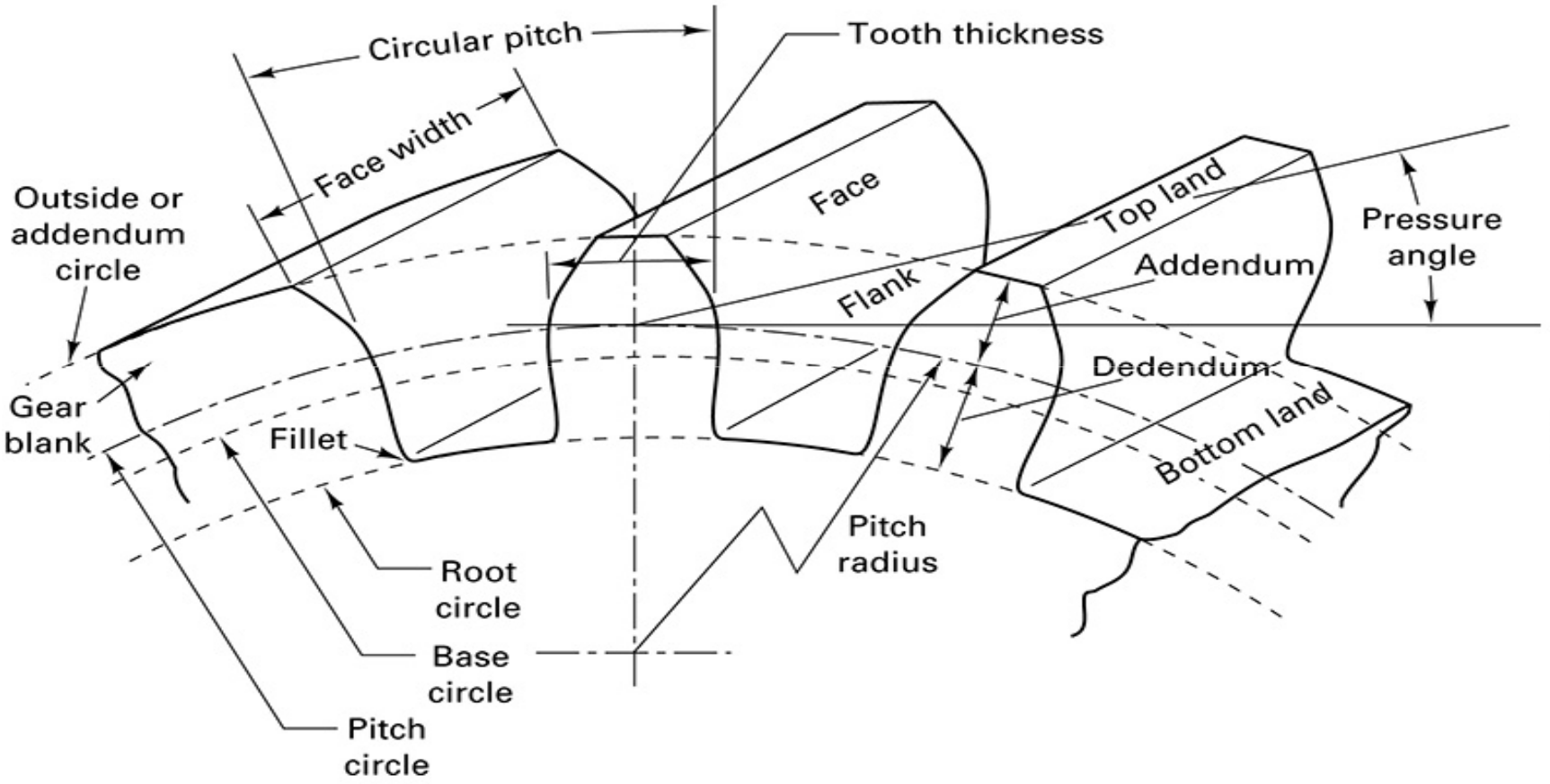
THREAD ELEMENTS

- Outside or major diameter
- Pitch is a number of threads per inch (ES)
- Pitch is a distance from a point on one screw thread to the corresponding point on the next thread measured parallel to the axis (SI)
- Lead or axial advantage during one revolution

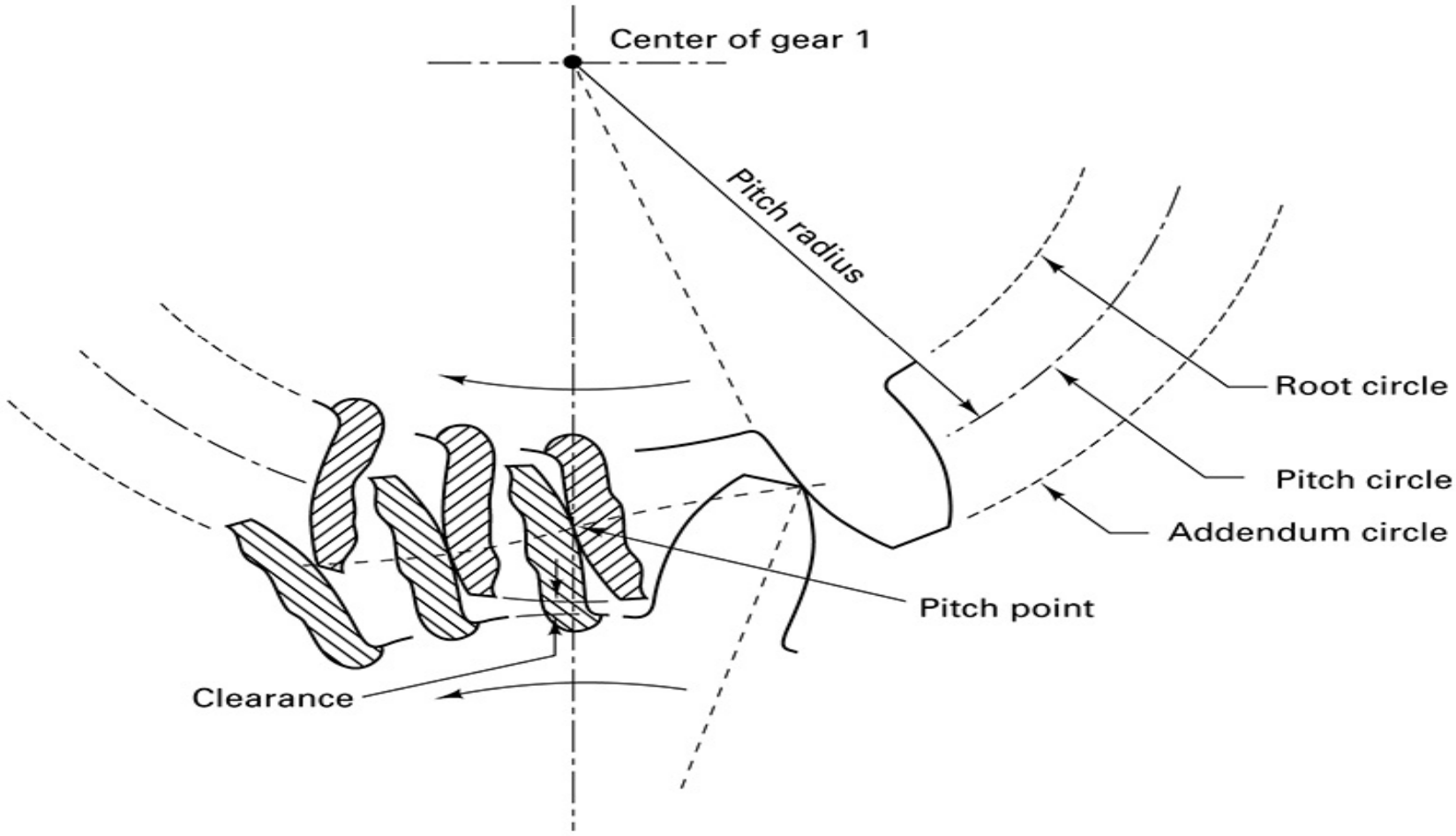
TYPES OF SCREW THREADS

- Coarse-thread series (UNC and NC). For general use where not subjected to vibration.
  - **2.** Fine-thread series (UNF and NF). For most automotive and aircraft work.
  - **3.** Extra-fine-thread series (UNEF and NEF). For use with thin-walled material or where a maximum number of threads are required in a given length.
  - **4.** Eight-thread series (8UN and 8N). Eight threads per inch for all diameters from
  - 1 to 6 in. Used primarily for bolts on pipe flanges and cylinder-head studs where an initial tension must be set up to resist steam or air pressures.
  - **5.** Twelve-thread series (12UN and 12N). Twelve threads per inch for diameters
  - from through 6 in. Not used extensively.
  - **6.** Sixteen-thread series (16UN and 16N). Sixteen threads per inch for diameters from through 6 in. Used for a wide variety of applications that require a fine thread.

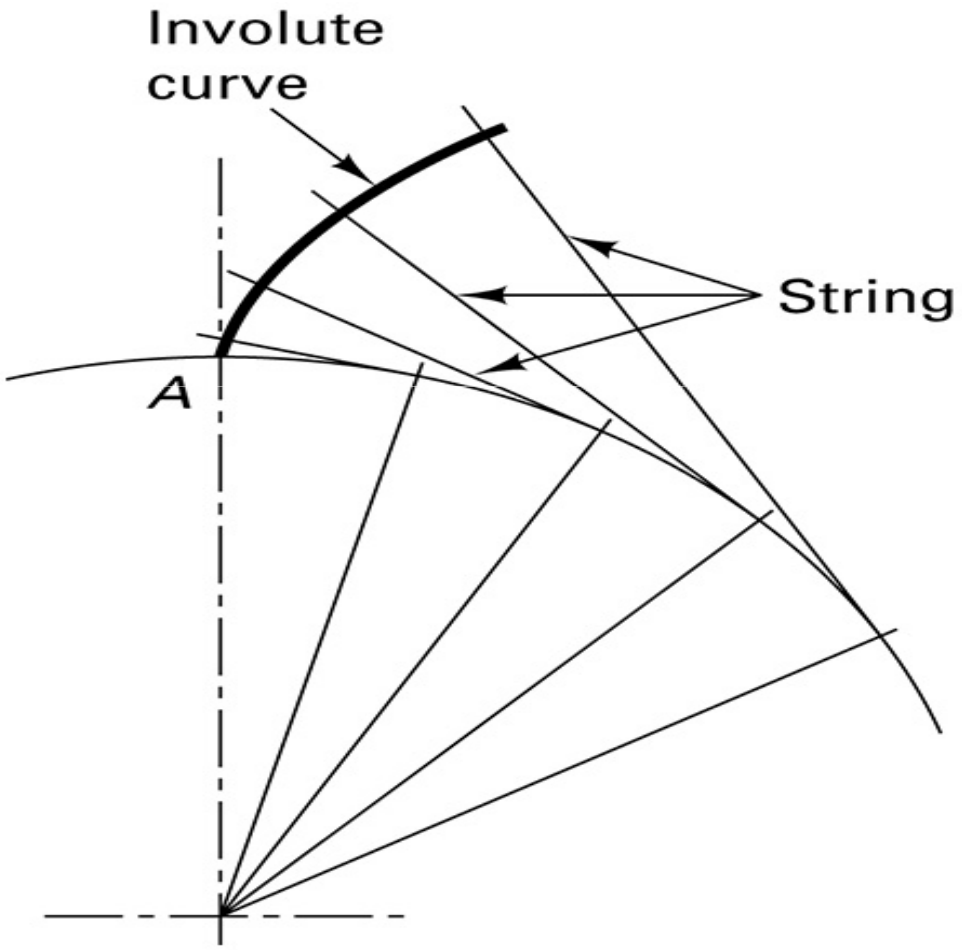
GEAR-TOOTH NOMENCLATURE



TOOTH GEOMETRY



GEAR FORMATION



TEETH DIMENSIONS

TABLE 29-2 Formula for Calculating the Standard Dimensions for Involute Gear Teeth

	$14^1/_2°$ Full Depth	20°, Stub Tooth
Pitch diameter (PD)	$\frac{N}{DP}$	$\frac{N}{DP}$
Addendum	$\frac{1}{DP}$	$\frac{0.8}{DP}$
Dedendum	$\frac{1.157}{DP}$	$\frac{1}{DP}$
Outside diameter	$\frac{N + 2}{DP}$	$\frac{N + 1.6}{DP}$
Clearance	$\frac{0.157}{DP}$	$\frac{0.2}{DP}$
Tooth thickness	$\frac{1.508}{DP}$	$\frac{1.508}{DP}$

DP = Number of teeth (N) per unit of pitch diameter (PD).