# American Standard Taper Pipe Threads

Basic Dimensions
The basic form of external NPT thread is shown in the figure below. The angle between the flanks of the threads is 60° measured in an axial plane. The 30° half angle is measured from a line perpendicular to axis of the thread. The crests of the threads may be truncated either parallel to the pitch line or parallel to the axis. The height of thread and minimum and maximum truncation are given below for nominal pipe sizes of 1/16 thru 2″. The crests of the threads may be either flat or rounded. Rounding of the roots, however, should be within the root truncation limits and not extend along the flanks of the thread beyond the maximum truncation. Taper on diameter is one inch in sixteen inches, or .75 inches per foot. The angle of taper is 1°47′ from the axis.

Manufacturing Tolerance
The maximum allowable variation in diameters E_0 and E_1 is one turn large or small from the basic dimension below. The external thread is within permissible tolerance when the gaging face of the working ring gage is not more than one turn, large or small, from being flush with the small end of the thread.

The basic effective length of the external taper thread, L_2, includes two usable threads with slightly imperfect crests located against the the vanish threads. The length, L_1, is the normal engagement between external and internal taper threads when screwed together hand tight. For general low pressure (less than 300 pounds) applications, ring gage practice provides a satisfactory check of accumulated variations of taper, lead and angle deviations. NPT threads require the use of a sealer for tight joints.
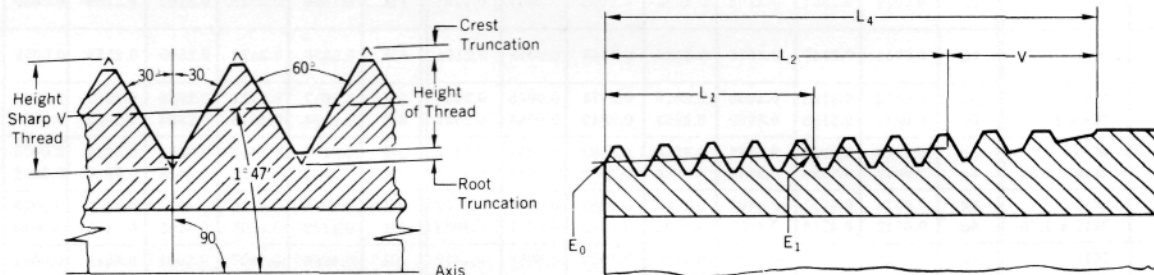
Nominal Pipe Size	Outside Diameter of Pipe	Threads Per Inch	Pitch of Thread	Pitch Diameter At Beginning of External Thread E_0	Height of Sharp V Thread	Height of Thread		Truncation Crest or Root		Hand Tight Engagement		Effective Thread Length L_2	Vanish Thread Length V	Overall Length of External Thread L_4
						Max.	Min.	Max.	Min.	Length *L_1	Diameter E_1			
1/16	.313	27	.03703	.2712	.0321	.0296	.0250	.0036	.0012	.160	.2812	.261	.129	.390
1/8	.405	27	.03703	.3635	.0321	.0296	.0250	.0036	.0012	.180	.3745	.264	.129	.392
1/4	.540	18	.05556	.4774	.0481	.0444	.0383	.0049	.0018	.200	.4899	.402	.193	.595
3/8	.675	18	.05556	.6120	.0481	.0444	.0383	.0049	.0018	.240	.6270	.408	.193	.601
1/2	.840	14	.07143	.7584	.0619	.0571	.0507	.0056	.0024	.320	.7784	.534	.248	.782
3/4	1.050	14	.07143	.9677	.0619	.0571	.0507	.0056	.0024	.339	.9889	.546	.248	.794
1	1.315	11-1/2	.08696	1.2136	.0753	.0696	.0626	.0063	.0029	.400	1.2386	.683	.302	.985
1-1/4	1.660	11-1/2	.08696	1.5571	.0753	.0696	.0626	.0063	.0029	.420	1.5834	.707	.302	1.009
1-1/2	1.900	11-1/2	.08696	1.7961	.0753	.0696	.0626	.0063	.0029	.420	1.8223	.724	.302	1.025
2	2.375	11-1/2	.08696	2.2690	.0753	.0696	.0626	.0063	.0029	.436	2.2963	.757	.302	1.058

*Also length of Thin Ring Gage.