



Pennoyer-Dodge Co.

American Gage Design / Short & Long Form Certifications Available

Accurate Formula To Compute The Pitch And Major/Minor Diameters For Before Plate Thread Plugs And Thread Rings*

If no plating tolerance is given, then it is assumed that the maximum plating thickness will be nominal or minimum thickness given plus 50%. (see ASME B1.1-1989, pg. 16, 7.4.2; pg. 18, 7.5.2) The diameters of the gaging for external threads will be smaller while the diameters of the gaging for internal threads will be larger, than standard.

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THREAD PLUGS

For the Go plug pitch diameter, **add** the **MAX.** amount of plate. For the Not Go pitch diameter, **add** the **MIN.** amount of plate. For the majors of work plugs, **increase** the major diameter on Go work plug by using half the **MAX.** amount of plate. On Not Go work plugs, **increase** the major diameter by using half the **MIN.** amount of plate.

Example

Based on .0002 to .0003 allowance per side (multiply by 4)
 .0002 X 4 = .0008 **MIN.**
 .0003 X 4 = .0012 **MAX.**
 1/4-28 UNF 2B B/P
Basic GO P.D. .2268 + .0012 **MAX.** = .2280 Go P.D.
Basic NOT GO P.D. .2311 + .0008 **MIN.** = .2319 Not Go P.D.
Basic GO major .2500 + (.0012 / 2) = .2506 B/P Go major.
Basic NOT GO major .2466 + (.0008 / 2) = .2470 B/P Not Go major.

THREAD RINGS

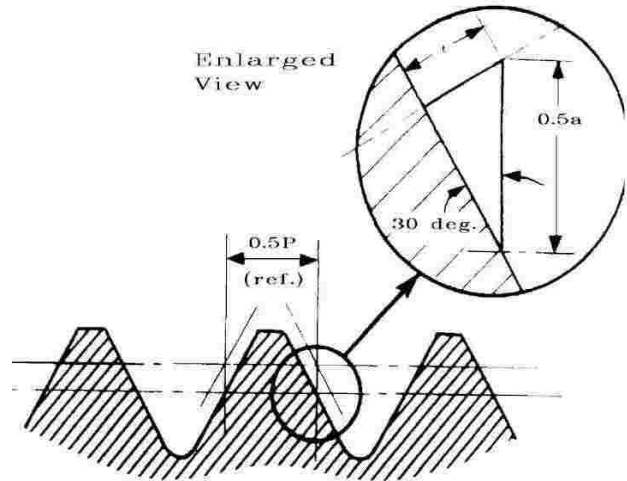
For the Go ring, **subtract** the **MAX.** amount of plate. For the Not Go ring, **subtract** the **MIN.** amount of plate. For the minors of thread rings, **decrease** the minor diameter on the Go thread ring by using half the **MAX.** amount of plate. On Not Go thread rings, **decrease** the minor diameter by using half the **MIN.** amount of plate.

Example

Based on .0002 to .0003 allowance per side (multiply by 4)
 .0002 X 4 = .0008 **MIN.** .0003 X 4 = .0012 **MAX.**
 1/4-28 UNF 2A B/P
Basic GO P.D. .2258 - .0012 **MAX.** = .2246 Go P.D.
Basic NOT GO P.D. .2225 - .0008 **MIN.** = .2217 Not Go P.D.

Basic GO minor .2103 - (.0012 / 2) = .2097 B/P Go minor.
Basic NOT GO minor .2148 - (.0008 / 2) = .2144 B/P Not Go minor.

* In accordance with ANSI/ASME B1.1-1989



RATIO OF PITCH DIAMETER CHANGE TO THICKNESS OF COATING (60° ONLY)

t = thickness of coating
 a = pitch diameter change due to coating

0.25a = t and a = 4t or the pitch diameter of a 60° thread changes by four times the thickness of the coating

BEFORE PLATING RATIOS

- 60° thread = 4:1
- 29° Acme = 8:1
- 7°-45° Buttress = 4.562544066:1
- 14° 30'-5° Buttress = 11.9311:1
- 10° Square thread = 23:1