

ECCENTRICITY TOLERANCES OF TAP ELEMENTS WHEN TESTED ON DEAD CENTERS

(Ref. USCTI Table 317)

Applicable to Tables 302,303,303A,and 311

Element	Range			Ground Thread	
	Inch & Mach. Screw	Pipe	Metric	Eccentricity	t.i.v.*
Square (at central point)	#0 - 1/2"	1/16 - 1/8"	M1.6 - M12	.0030	.0060
	Over 1/2" thru 4"	1/4 - 4"	Over M12 Thru M100	.0040	.0080
Shank	#0 - 5/16"	1/16"	M1.6 - M8	.0005	.0010
	Over 5/16" thru 4"	1/8 - 4"	Over M8 thru M100	.0008	.0016
Major Diameter	#0 - 5/16"	1/16"	M1.6 - M8	.0005	.0010
	Over 5/16" thru 4"	1/8 - 4"	Over M8 thru M100	.0008	.0016
Pitch Diameter (at first full thread)	#0 - 1/2"	1/16"	M1.6 - M8	.0005	.0010
	Over 1/2" thru 4"	1/8 - 4"	Over M8 thru M100	.0008	.0016
Chamfer**	#0 - 1/2"	1/16 - 1/8"	M1.6 - M12	.0010	.0020
	Over 1/2" thru 4"	1/4 - 4"	Over M12 Thru M100	.0015	.0030

* t.i.v. = Total indicator variation. Figures are given for both eccentricity and total indicator variation to avoid misunderstanding.

**Chamfer should preferably be inspected by light projection to avoid errors due to indicator contact points dropping into the thread grooves.

SURFACE TREATMENT ABBREVIATIONS

AlCrN:	Aluminum Chromium Nitride	TiAlN+WC/C:	'Hardlube' - Titanium Aluminum Nitride
CrC:	Chromium Carbide		Aluminum Nitride
CrN:	Chromium Nitride		+Tungsten Carbide/Carbon
DLC:	Diamond-like Carbon	TiCN:	Titanium Carbonitride
N:	Nitride	TiN:	Titanium Nitride
N + Ox:	Nitride + Oxide*	WC/C:	Tungsten Carbide/Carbon
	*Oxide (Ox) may also be shown as 'O'	WS2:	Tungsten Disulfide
Ox:	Steam Oxide*	ZrN:	Zirconium Nitride
TiAlN:	Titanium Aluminum Nitride		

In many applications, a tap that is properly designed and used under recommended conditions will produce acceptable results without the use of surface treatments. However, under some conditions, such as tapping excessively hard, abrasive or challenging materials, the use of performance enhancing surface treatments will be beneficial to the overall results of your tapping operation in terms of improved tool life and internal thread quality. Coolant-through taps may also be a consideration.

Contact Allen Benjamin for tapping recommendations.