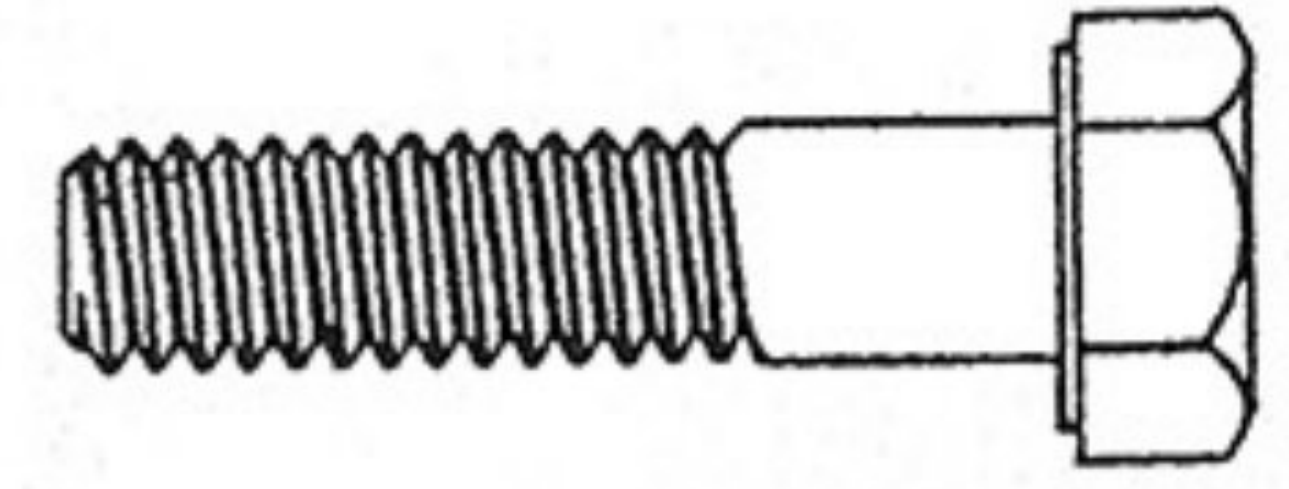
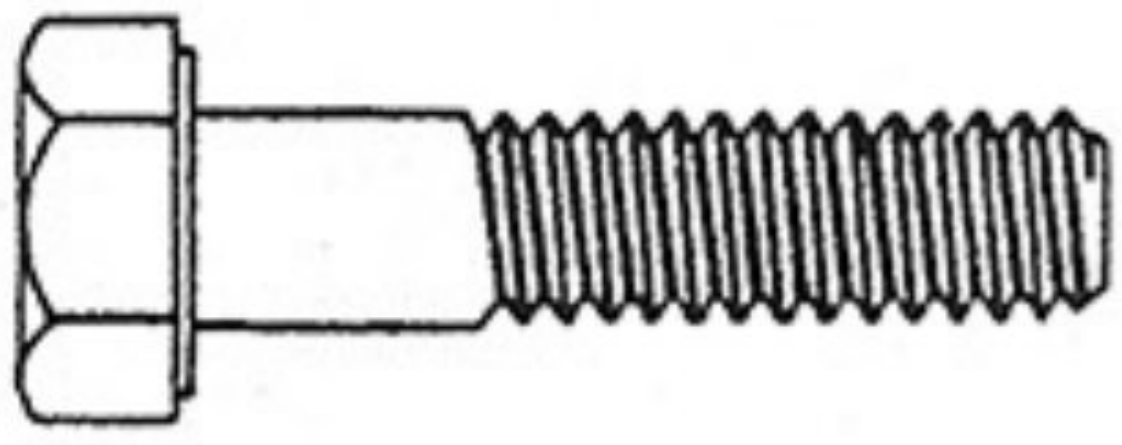


METRIC

TORQUE TIGHTENING GUIDE



STANDARD THREAD - ZINC PLATED - CLASS 8.8

DIAMETER	Tightening Torque	
	FOOT-POUNDS	NEWTON-METERS
M 4 x .70	2.1	2.9
M 5 x .80	4.2	5.8
M 6 x 1.0	7.3	9.9
M 7 x 1.0	12	17
M 8 x 1.25	17	24
M10 x 1.50	35	48
M12 x 1.75	61	83
M14 x 2.0	97	132
M16 x 2.0	147	200
M20 x 2.5	287	390
M24 x 3.0	497	675
M30 x 3.5	995	1350

STANDARD THREAD - ZINC PLATED - CLASS 10.9

DIAMETER	Tightening Torque	
	FOOT-POUNDS	NEWTON-METERS
M 6 x 1.00	10	14
M 7 x 1.00	17	23
M 8 x 1.25	25	34
M10 x 1.50	49	67
M12 x 1.75	86	117
M14 x 2.0	136	185
M16 x 2.0	210	285
M20 x 2.5	405	550
M24 x 3.0	708	960
M30 x 3.5	1401	1900

FINE THREAD - ZINC PLATED - CLASS 8.8

DIAMETER	Tightening Torque	
	FOOT-POUNDS	NEWTON-METERS
M 8 x 1.0	18	25
M10 x 1.25	36	49
M10 x 1.0	37	50
M12 x 1.50	63	85
M12 x 1.25	64	88
M14 x 1.50	103	140
M16 x 1.50	154	210
M20 x 1.5	313	425

FINE THREAD - ZINC PLATED - CLASS 10.9

DIAMETER	Tightening Torque	
	FOOT-POUNDS	NEWTON-METERS
M 8 x 1.0	25	35
M10 x 1.25	50	68
M10 x 1.0	51	69
M12 x 1.50	90	122
M12 x 1.25	92	125
M14 x 1.50	143	195
M16 x 1.50	217	295
M20 x 1.50	442	600

These torque values represent an estimate of torque (a measurement of friction not tension) required to induce a given preload in non-critical applications only. In critical applications where greater control is desired this should be experimentally determined.

Due to the many interrelated variables that directly or indirectly affect the torque to clampload relationship, such as surface texture, plating, lubrication, human error, etc., it is possible to experience as much as $\pm 25\%$ deviation in preload (clampload) with the use of a torque wrench.

TAP DRILL SIZE CHART

Recommended Tap Drill Size For Approximately 75% Thread Formation

THREAD DIAMETER	TAP DRILL	THREAD DIAMETER	TAP DRILL	THREAD DIAMETER	TAP DRILL
M 3 x .50	2.5mm	M10 x 1.50	8.5mm	M14 x 2.0	12.0mm
M 4 x .70	3.3mm	M10 x 1.25	11/32	M14 x 1.5	12.5mm
M 5 x .80	4.2mm	M10 x 1.00	9.0mm	M16 x 2.0	14.0mm
M 6 x 1.00	5.0mm	M12 x 1.75	"Y"	M16 x 1.5	14.5mm
M 7 x 1.00	6.0mm	M12 x 1.50	10.5mm	M20 x 2.5	17.5mm
M 8 x 1.25	"H"	M12 x 1.25	27/64	M20 x 1.5	18.5mm
M 8 x 1.00	7.0mm				

