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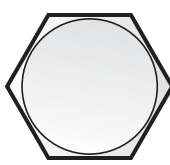
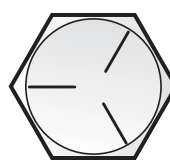
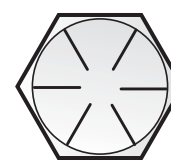





ORANGE COUNTY 2072 Alton Parkway, Irvine, CA 92606 949-250-3343
INLAND EMPIRE 301 Main Street, Riverside, CA 92501 951-300-9933

METRIC THREAD SIZES	
Thread Size*	Tap Drill Size**
M1.6 x 0.35	1.25mm or #55
M2 x 0.4	1.60mm or #52
M2.5 x 0.45	2.05mm or #46
M3 x 0.5	2.50mm or #39
M3.5 x 0.6	2.90mm or #32
M4 x 0.7	3.30mm or #30
M5 x 0.8	4.20mm or #19
M6 x 1	5.00mm or #8
M8 x 1.25	6.8mm or H
M8 x 1	7.00mm or J
M10 x 1.5	8.50mm or R
M10 x 1.25	8.80mm or 11/32
M12 x 1.75	10.20mm or 13/32
M12 x 1.25	10.8mm or 27/64
M14 x 2	12.00mm or 15/32
M14 x 1.5	12.50mm or 1/2
M16 x 2	14.00mm or 35/64
M16 x 1.5	14.50mm or 37/64
M18 x 2.5	15.50mm or 39/64
M18 x 1.5	16.50mm or 21/32
M20 x 2.5	17.50mm or 11/16
M20 x 1.5	18.50mm or 47/64
M22 x 2.5	19.50mm or 49/64
M22 x 1.5	20.50mm or 13/16
M24 x 3	21.00mm or 53/64
M24 x 2	22.00mm or 7/8
M27 x 3	24.00mm or 15/16
M27 x 2	25.00mm or 1.0
M30 x 3.5	26.50mm or 1 3/64
M30 x 2	28mm or 1 7/64

*Coarse Series in Bold

** Represents 75% theoretical thread

US TAPERED PIPE THREADS	
Thread Size	Tap Drill Size
1/16"-27	C
1/8"-27	Q
1/4"-18	7/16"
3/8"-18	9/16"
1/2"-14	45/64"
3/4"-14	29/32"
1"-11 1/2	1 9/64"
1 1/4"-11 1/2	1 31/64"
1 1/2"-11 1/2	1 21/32"

US and METRIC STEEL BOLT GRADES				
				
	SAE 2	SAE 5	SAE 8	ALLEN
SAE ID Marks	No Marks	3 Lines	6 Lines	None
Material	Low Carbon	Medium Carbon Tempered	Medium Carbon Quenched & Tempered	High Carbon Quenched & Tempered
Tensile	74,000 psi	120,000 psi	150,000 psi	160,000 psi
				
	METRIC	METRIC	METRIC	ALLEN
ID Marks	8.8	10.9	12.9	12.9
Tensile	116,000 psi	151,000 psi	177,000 psi	177,000 psi

US BOLT TORQUE SPECIFICATIONS * (lbs/ft)**

Bolt	Grade 2	Grade 5	Grade 8	SHCS
1/4"-20	5	8	12	14
1/4"-28	6	10	14	16
5/16" -18	9	17	25	29
5/16" -24	12	19	29	33
3/8"-16	16	30	45	49
3/8"-24	22	35	50	54
7/16"-14	24	50	70	76
7/16"-20	34	55	80	85
1/2"-13	47	75	110	113
1/2"-20	52	90	120	126
5/8"-11	98	150	220	230
5/8"-18	115	180	240	255
3/4"-10	157	260	380	400
3/4"-16	180	300	420	440
7/8"-9	210	430	600	640
7/8"-14	230	470	660	700
1"-8	320	640	900	980
1"-12	350	710	990	1060

METRIC BOLT TORQUE SPECIFICATIONS* (lbs/ft)**

Bolt	Grade 8.8	Grade 10.9	Grade 12.9	Allen
M6 x 1.0	7	11	12	12
M8 x 1.25	17	26	29	29
M10 x 1.5	34	51	57	57
M12 x 1.75	59	88	99	99
M14 x 2	94	139	158	158
M16 x 2	146	210	250	250
M18 x 2.5	210	285	341	341
M20 x 2.5	292	401	489	489

*** Decrease Values 15-25% for lubricated or plated bolts