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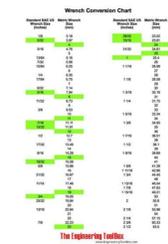


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Metric bolt and spanner size chart pdf

FASTENER SIZE	TORQUE TO BE USED WHEN TORQUES ARE NOT SPECIFIED IN TEXT			
	5.8 GRADE	8.8 GRADE	10.9 GRADE	12.9 GRADE
M4	1.8 ± 0.2 N•m (16 ± 2 lb•in)	2.8 ± 0.2 N•m (25 ± 2 lb•in)	3.8 ± 0.2 N•m (34 ± 2 lb•in)	4.5 ± 0.5 N•m (40 ± 4 lb•in)
M5	3.3 ± 0.2 N•m (29 ± 2 lb•in)	5.0 ± 0.5 N•m (44 ± 4 lb•in)	7.0 ± 0.7 N•m (69 ± 6 lb•in)	9.0 ± 1.0 N•m (80 ± 9 lb•in)
M6	7.5 ± 1.0 N•m (66 ± 9 lb•in)	10.0 ± 2.0 N•m (89 ± 18 lb•in)	12.8 ± 2.2 N•m (113 ± 19 lb•in)	16.0 ± 2.0 N•m (142 ± 18 lb•in)
M8	15.3 ± 1.7 N•m (135 ± 15 lb•in)	24.5 ± 3.5 N•m (18 ± 3 lb•ft)	31.5 ± 3.5 N•m (23 ± 3 lb•ft)	40.0 ± 5.0 N•m (30 ± 4 lb•ft)
M10	29 ± 3 N•m (21 ± 2 lb•ft)	48 ± 6 N•m (35 ± 4 lb•ft)	61 ± 9 N•m (45 ± 7 lb•ft)	73 ± 7 N•m (54 ± 5 lb•ft)
M12	52 ± 6 N•m (38 ± 4 lb•ft)	85 ± 10 N•m (63 ± 7 lb•ft)	105 ± 15 N•m (77 ± 11 lb•ft)	128 ± 17 N•m (94 ± 13 lb•ft)
M14	85 ± 10 N•m (63 ± 7 lb•ft)	135 ± 15 N•m (100 ± 11 lb•ft)	170 ± 20 N•m (125 ± 15 lb•ft)	200 ± 25 N•m (148 ± 18 lb•ft)
M16	126 ± 14 N•m (93 ± 10 lb•ft)	205 ± 25 N•m (151 ± 18 lb•ft)	255 ± 30 N•m (188 ± 22 lb•ft)	305 ± 35 N•m (225 ± 26 lb•ft)
M18	170 ± 20 N•m (125 ± 15 lb•ft)	273 ± 32 N•m (201 ± 24 lb•ft)	330 ± 25 N•m (243 ± 18 lb•ft)	413 ± 47 N•m (305 ± 35 lb•ft)

Thread	Spanner	Thread	Spanner
4mm	7mm	3/16"	3/8"
5mm	8mm	1/4"	7/16"
6mm	10mm	5/16"	1/2"
7mm	11mm	3/8"	9/16"
8mm	13mm	7/16"	5/8"
10mm	17mm	1/2"	3/4"
12mm	19mm	9/16"	1"
14mm	22mm	3/4"	1.1/8"
16mm	24mm		
20mm	30mm		



TIGHTENING TORQUE REFERENCE CHART FOR SAE AND METRIC BOLTS

NL = Not Lubricated
 L = Lubricated
 1 lbs ft = 1.356 N•M

MATERIAL	CLASS	TIGHTENING TORQUE FOR SAE BOLTS (50% of yield strength S _y) in lbs ft																
		1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"	1 1/2"	1 3/4"	2"					
GRADE 1	NL	4	6	10	17	27	40	58	87	120	170	240	340	480	670	920	1250	1700
	L	3	5	9	15	23	34	50	72	100	140	200	280	390	530	720	980	1350
GRADE 2	NL	6	12	20	35	54	78	110	160	220	310	430	590	810	1100	1500	2000	2700
	L	5	10	17	29	45	65	90	125	170	230	320	440	590	800	1080	1450	1950
GRADE 5/8.2	NL	10	20	36	62	100	145	210	290	400	540	730	990	1330	1780	2400	3200	4300
	L	7	15	27	48	75	105	145	195	265	360	480	640	860	1140	1530	2020	2700
GRADE 8	NL	14	28	50	88	135	195	270	370	500	670	900	1210	1610	2130	2830	3750	5000
	L	10	21	38	65	100	140	190	260	350	470	620	820	1080	1430	1880	2500	3300
GRADE 10.9	NL	18	36	65	115	175	250	340	460	610	810	1080	1440	1910	2520	3330	4380	5800
	L	13	27	50	85	125	175	235	315	420	560	740	980	1300	1720	2260	2980	3950
GRADE 12.9	NL	24	48	90	160	240	330	440	580	770	1020	1350	1780	2330	3050	3980	5200	6800
	L	17	35	65	115	170	230	310	410	540	710	930	1230	1610	2110	2760	3600	4700

MATERIAL	CLASS	TIGHTENING TORQUE FOR METRIC BOLTS (50% of yield strength S _y) in lbs ft											
		M3	M4	M5	M6	M8	M10	M12	M16	M20	M24	M30	M36
CLASS 4.6	NL	3	4	6	9	14	21	34	53	74	104	142	190
	L	2	3	5	7	11	17	28	43	61	84	114	154
CLASS 8.8	NL	4	6	10	15	24	37	58	87	120	160	220	290
	L	3	5	8	12	19	29	44	66	90	120	160	210
CLASS 10.9	NL	6	9	15	22	36	54	81	120	160	220	290	380
	L	4	6	10	15	24	36	54	81	110	140	180	240
CLASS 12.9	NL	9	14	24	36	58	87	130	190	260	340	450	590
	L	6	10	17	25	40	60	87	125	165	215	280	360



Metric bolt and spanner size chart pdf. How to calculate bolt spanner size.

For example, a bolt and nut may be described as being 1/2" diameter. (Nominal diameter is more of a label than a size. In fact, the bolt diameter is a little smaller and the nut diameter a little larger. A heavy hex nut is exactly 1/8 inches larger across the flats than a normal hex nut. BOLT DIAMETER (INCHES) AF SPANNER SIZE (INCHES) SPANNER SIZE (MM) 1/4 INCH 6.35 MM 5/16 INCH 7.94 MM 3/8 INCH 9.52 MM 1/4 INCH 11.11 MM 5/16 INCH 12.7 INCH 11.11 MM 1/2 INCH 12.7 MM 3/8 INCH 9.52 MM 1/2 INCH 12.7 MM 11/16 INCH 17.46 MM 1/2 INCH 12.7 MM 3/4 INCH 19.05 MM 9/16 INCH 15.88 MM 11/16 INCH 17.46 MM 1 INCH 25.40 MM 1.1/16 INCH 26.93 MM 3/4 INCH 1.1/8 INCH 28.57 MM Items you will need Allen Keys Spanners Sockets and Pliers PITCH is also described as the number of threads per inch. They also have a higher load strength than a normal hex nut. The above table shows the diameter, hex - and socket size as measured in millimeters. Functional diameter is a measure of the ability to assemble the thread. Call our bolting experts at 888-315-0175 with any torque questions. DIAMETER (BODY DIAMETER) The smallest or largest pitch diameter that fits onto a screw or into a nut, including all of the form deviations such as lead, thread angle, taper, and roundness. Home | Metric Spanner Sizes Nominal Size Spanner Size M1.6 3.2mm M2 4mm M2.5 5mm M3 5mm M3.5 6mm M4 7mm M5 8mm M6 10mm M7 11mm M8 13mm M10 17mm M12 19mm M14 22mm M16 24mm M18 27mm M20 30mm M22 32mm M24 36mm Here's a handy table for bolts and nuts with basic dimensions, thread pitches (all metric coarse) and spanner sizes etc. it covers Australian standard metric fasteners (not structural bolts), so sorry rest of the world, the spanner sizes may be slightly different for you. Threads are found on screws, nuts, and bolts. NOMINAL DIAMETER (NOMINAL BOLT DIAMETER) The diameter equal to the overall diameter of the part. COARSE THREADS & FINE THREADS Coarse threads are those with larger threads per axial distance), and fine threads are those with smaller pitch (more threads per axial distance). This means you need a 1/8 inches larger wrench or socket to be able to install this nut. If you'd like to view our range of nuts and bolts check them out here: Nuts and Bolts Thanks for reading our latest blog entry Best Regards, The Screw Fasteners Team www.screw.com.au Spanner Selection Chart (Hex Head Bolt) Metric Thread Size Spanner Size A/F DIN (mm) Spanner Size A/F ISO (mm) M1.6 3.2 3.2 M2 4 4 M2.5 5 5 M3 5.5 5.5 M3.5 6 6 M4 7 7 M5 8 8 M6 10 10 M7 11 - M8 13 13 M10 17 17 M12 19 19 M14 22 22 M16 24 24 M18 27 27 M20 30 30 M22 32 32 M24 36 36 M27 41 41 M30 46 46 M33 50 50 M36 55 55 M39 60 60 M42 65 65 M45 70 70 M48 75 75 M52 80 80 M56 85 85 M60 90 90 M64 95 95 M68 100 - M72 105 - M76 110 - M80 115 - M90 130 - M100 145 - M110 155 - M125 180 - M140 200 - M160 230 - Inch Thread Size Spanner Size A/F ASME (inch) Spanner Size A/F BS (inch) 1/4 0.438 0.445 5/16 0.500 0.525 3/8 0.562 0.600 7/16 0.625 0.710 1/2 0.750 0.820 9/16 0.812 0.920 5/8 0.938 1.010 3/4 1.125 1.200 7/8 1.312 1.300 1.500 1.480 1.1/8 1.688 1.670 1.1/4 1.875 1.860 1.3/8 2.062 2.050 1.1/2 2.250 2.220 1.3/4 2.625 2.580 2.300 2.760 2.1/4 3.375 - 2.1/2 3.750 - 2.3/4 4.125 - 3 4.500 - For detailed information, please refer to complete governing standards. Note: 1 inch = 25.4 mm The following chart shows the AF spanner sizes that should be used with UNC and UNF thread imperial bolts, along with the metric equivalent spanner size. This gives a clear indication of the relevant sizings for each standard bolt diameter. THREADS PER INCH The decimal equivalent of the number of threads in an inch. THREAD (BOLT THREADS) A raised, helical rib or ridge around the interior or exterior of a cylindrical shaped object. Coarse threads have a larger threadform relative to screw diameter, whereas fine threads have a smaller threadform relative to screw diameter. The table below covers Wrench and Hex sizes both in inches and in millimeters to ensure that you find yourself in the world you can obtain the information you need to make an informed decision on the subject of bolt sizing. The table above shows the diameter of the bolt with the size of both the hex and the heavy hex measured in inches. Below you will find a chart explaining the sizing of bolts and nuts complete with the basic sizing for which spanner fits which bolt. But neither the external threads of the bolt nor the internal threads of the nut are exactly .500 in diameter. But it is easier to specify the components by a single size designation since the bolt and nut are mating components.) PITCH (THREAD PITCH) Pitch is the distance from the crest of one thread to the next or the distance from one thread groove to the next, measured from crest to crest.

All the commonly used spanner and socket sizes, from 10BA up to 60mm with their decimal inch equivalents. This chart shows comparative sizes in increasing BA, A.F, B.S.W, B.S.F and MM bolt or nuts and can be used for example to find the next size up or down where a spanner (wrench in USA) or socket is too tight or loose on a fixing. T-Slots and T-Nuts - Metric Sizes - Standard metric T-slots and T-nuts. Threaded Bolts - Stress Area - Threaded bolts tensile stress area. UNC and UNF - Unified Inch Screw Threads - ANSI/ASME B1.1 Unified National Thread - UNC Coarse series and UNF Fine series. US Bolts - Head and Wrench Sizes - Hex Bolt, Lag Bolt, Square Bolt and Heavy Hex Bolt. The ISO metric screw thread is the most commonly used type of general-purpose screw thread worldwide. They were one of the first international standards agreed when the International Organization for Standardization (ISO) was set up in 1947. [citation needed]The "M" designation for metric screws indicates the nominal outer diameter of the screw thread, in millimeters. Metric bolts are made fractionally under their stated size, for instance an M16 bolt will fit through a 16mm hole but to allow for misalignment between parts it is common practice to drill bolt holes slightly larger. These are known as clearance holes. spanner jaw sizes comparison chart and corresponding nut/bolt difference jaw size jaw size spanner spanner spanner common nut/bolt (mm) (mm) (mm) (mm) (mm) (mm) (mm) metric Metric bolt conversion data for industrial bolts/rods, machine screws and small diameter fasteners from Raj Sagor Steels includes metric to standard bolt conversions. The chart below shows metric bolt conversions and DIN numbers for fasteners. The following chart shows the AF spanner sizes that should be used with UNC and UNF thread imperial bolts, along with the metric equivalent spanner size. BOLT DIAMETER (INCHES) AF SPANNER SIZE (INCHES) Size of Screws and Metric to Imperial Screw Conversion Chart and How to Identify the Diameter and Length of Imperial and Metric Screws. Make sure that you get the right sized screw. Sizing the right screw can be complicated unless you are familiar with the various screw sizings that are quoted on the packaging, often both in imperial and metric. Flanges - ASME/ANSI B16.5 Flanges and Bolt Dimensions - Class 150 to 2500 - Diameters and bolt circles for standard ASME B16.5 flanges - 1/4 to 24 inches - Class 150 to 2500. ISO 724 - Metric Threads - Dimensions of metric threads according ISO 724. 05/06/2019 - However, the only common wrench size that isn't included in the chart is 18 mm, and it's counterpart is 45/64". If you don't have that size, don't worry—neither do we. Converting Smaller Wrench Sizes. Didn't see the spanner size you were looking for? No worries! We have both metric to SAE and SAE to metric conversion charts for ...

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