

METRIC THREAD AND DIN# INFORMATION

	Standard Thread	Fine Thread	Extra Fine Thread
Size	Pitch	Pitch	Pitch
2mm	0.40	–	–
3mm	0.50	–	–
4mm	0.70	–	–
5mm	0.80	–	–
6mm	1.00	–	–
7mm	1.00	–	–
8mm	1.25	1.00	–
10mm	1.50	1.25	1.00
12mm	1.75	1.50	–
14mm	2.00	1.50	–
16mm	2.00	1.50	–
18mm	2.50	1.50	–
20mm	2.50	2.00	1.50
22mm	2.50	1.50	–
24mm	3.00	2.00	–
27mm	3.00	–	–
30mm	3.50	–	–
33mm	3.50	–	–
36mm	4.00	–	–

Din#	Description	
931	Coarse Thread Cap Screws	(Partially Threaded)
933	Coarse Thread Cap Screws	(Fully Threaded)
960	Fine Thread Cap Screws	(Partially Threaded)
961	Fine Thread Cap Screws	(Fully Threaded)
84	Cheese (Fillister) Machine Screws	(Slotted)
85	Pan Head Machine Screws	(Slotted)
963	Flat Head Machine Screws	(Slotted)
964	Oval Head Machine Screws	(Slotted)
966	Oval Head Machine Screws	(Phillips)
7985	Fillister Head Machine Screws	(Phillips)
125	Flat Washers	
127	Split Lock Washers	
6797	Tooth Lock Washers	
936	Jam Nuts	
934	Finished Hex Nuts	
985	Nylon Stop Nuts	
912	Socket Cap Screw	
439	Hex Jam Nut	
916	Socket Set Screw	

METRIC CONVERSION GUIDE

CONVERSION OF METRIC UNITS OF MEASUREMENTS INTO CUSTOMARY EQUIVALENTS

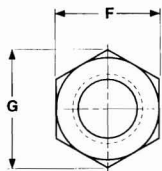
To convert from	To	Multiply by
Millimeters (mm)	Inches (in.)	3.937×10^{-2}
Meters (m)	Inches (in.)	3.937×10
Square Millimeters (mm ²)	Square Inches (in. ²)	1.55×10^{-3}
Square Meters (m ²)	Square Inches (in. ²)	1.55×10^3
Cubic Millimeters (mm ³)	Cubic Inches (in. ³)	6.10234×10^{-5}
Cubic Meters (m ³)	Cubic Inches (in. ³)	6.10234×10^4
Grams (g)	Ounces (avdp) (oz)	3.5274×10^{-2}
Kilograms (kg)	Pounds (avdp) (lb)	2.20462
Newtons (N)	Pound Force (lbf)	2.248×10^{-1}
Kilogram Force Per Square Millimeter (kgf/mm ²)	Pounds Per Square Inch (psi)	1.4223×10^3
Newton Per Square Millimeter (N/mm ²)	Pounds Per Square Inch (psi)	1.45038×10^2
Newton Per Square Meter (N/m ²)	Pounds Per Square Inch (psi)	1.45038×10^{-4}
Newton-Meter (N.m)	Ounce-Inch (oz-in.)	1.41612×10^2
Newton-Meter (N.m)	Pound-Inch (lb-in.)	8.85073
Newton-Meter (N.m)	Pound-Foot (lb-ft)	7.3756×10^{-1}
Degree Fahrenheit	Degree Celsius	$t_c = (t_f - 32)/1.8$
Kelvin (K)	Degree Celsius	$t_c = t_k - 273.15$
CONVERSION OF CUSTOMARY UNITS OF MEASURE INTO METRIC EQUIVALENTS		
Inches (in.)	Millimeters (mm)	2.54×10
Inches (in.)	Meters (m)	2.54×10^{-2}
Square Inches (in. ²)	Square Millimeters (mm ²)	6.4516×10^2
Square Inches (in. ²)	Square Meters (m ²)	6.4516×10^{-4}
Cubic Inches (in. ³)	Cubic Millimeters (mm ³)	1.638706×10^4
Cubic Inches (in. ³)	Cubic Meters (m ³)	1.638706×10^{-5}
Ounces (avdp) (oz)	Kilograms (kg)	2.83495×10^{-2}
Pounds (avdp) (lb)	Kilograms (kg)	4.53592×10^{-1}
Pound Force (lbf)	Newtons (N)	4.448
Pounds Per Square Inch (psi)	Kilograms Force Per Square Millimeter (kgf/mm ²)	7.0307×10^{-4}
Pounds Per Square Inch (psi)	Newton Per Square Meter (N/m ²)	6.894757×10^3
Pounds Per Square Inch (psi)	Mega Newton Per Square Meter (MN/m ²)	6.894757×10^{-3}
Ounce-Inch (oz-in.)	Newton-Meter (N.m)	7.061552×10^{-3}
Pound-Inch (lb-in.)	Newton-Meter (N.m)	1.129848×10^{-1}
Pound-Foot (lb-ft)	Newton-Meter (N.m)	1.355818
Degree Celsius	Kelvin (K)	$t_k = t_c + 273.15$
Degree Fahrenheit	Kelvin (K)	$t_k = (t_f + 459.67)/1.8$
Degree Rankine	Kelvin (K)	$t_k = t_R/1.8$

ISO METRIC AND UNIFIED SCREW THREAD DESIGNATIONS

ISO metric screw threads are designated by basic diameter and thread pitch. As an example, M8 × 1 is a standard ISO Metric screw thread having a basic diameter of 8 millimeters and a thread pitch of 1 millimeter. To convert on ISO Metric screw thread designation to a Unified (American) designation divide the basic diameter by 25.4 and multiply the reciprocal of the pitch by 25.4 to determine nominal size in inches and threads per inch. By so doing, M8 × 1 becomes 0.315-25.4 UNS.

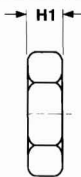
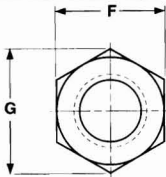
Unified screw threads are designated by nominal size and number of threads per inch. As an example, 3/4-10 UNC is a standard Unified screw thread having a nominal size of 3/4 inches and 10 threads per inch. To convert a Unified screw thread designation to an ISO Metric screw thread designation multiply nominal size by 25.4 and multiply the reciprocal of threads per inch by 25.4 to determine basic diameter in millimeters and pitch in millimeters. By so doing, 3/4-10 UNC converted to ISO Metric become M19.05 × 2.54.

METRIC



HEX NUTS

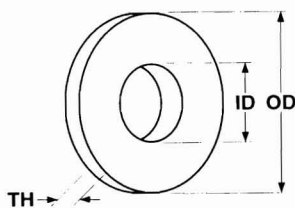
Nominal Size	Thread Pitch	F		G	H	
		Width Across Flats		Width Across Corners	Thickness	
		Max	Min	Min	Max	Min
M1.6	0.35	3.2	3.02	3.41	1.3	1.05
M2	0.4	4	3.82	4.32	1.6	1.35
M2.5	0.45	5	4.82	5.45	2	1.75
M3	0.5	5.5	5.32	6.01	2.4	2.15
M4	0.7	7	6.78	7.66	3.2	2.9
M5	0.8	8	7.78	8.79	4.7	4.4
M6	1	10	9.78	11.05	5.2	4.9
M8	1.25	13	12.73	14.38	6.8	6.44
M10	1.5	16	15.73	17.77	8.4	8.04
M12	1.75	18	17.73	20.03	10.8	10.37
M14	2	21	20.67	23.35	12.8	12.1
M16	2	24	23.67	26.75	14.8	14.1
M20	2.5	30	29.16	32.95	18	16.9
M24	3	36	35	39.55	21.5	20.2
M30	3.5	46	45	50.85	25.6	24.3
M36	4	55	53.8	60.79	31	29.4
M42	4.5	65	63.1	71.30	34	32.4
M48	5	75	73.1	82.60	38	36.4
M56	5.5	85	82.8	93.56	45	43.4
M64	6	95	92.8	104.86	51	49.1



JAM NUTS

Nominal Size	Thread Pitch	F		G	H	
		Width Across Flats		Width Across Corners	Thickness	
		Max	Min	Min	Max	Min
M1.6	0.35	3.2	3.02	3.41	1	0.75
M2	0.4	4	3.82	4.32	1.2	0.95
M2.5	0.45	5	4.82	5.45	1.6	1.35
M3	0.5	5.5	5.32	6.01	1.8	1.55
M4	0.7	7	6.78	7.66	2.2	1.95
M5	0.8	8	7.78	8.79	2.7	2.45
M6	1	10	9.78	11.05	3.2	2.9
M8	1.25	13	12.73	14.38	4	3.7
M10	1.5	16	15.73	17.77	5	4.7
M12	1.75	18	17.73	20.03	6	5.7
M14	2	21	20.67	23.35	7	6.42
M16	2	24	23.67	26.75	8	7.42
M20	2.5	30	29.16	32.95	10	9.10
M24	3	36	35	39.55	12	10.9
M30	3.5	46	45	50.85	15	13.9
M36	4	55	53.8	60.79	18	16.9
M42	4.5	65	63.1	71.30	21	19.70
M48	5	75	73.1	82.60	24	22.7

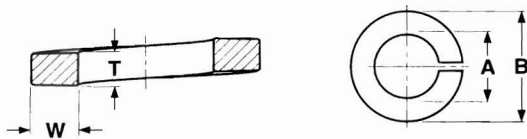
METRIC FLAT WASHERS



METRIC - STANDARD FLAT WASHERS (NORMAL SERIES, GRADE A)

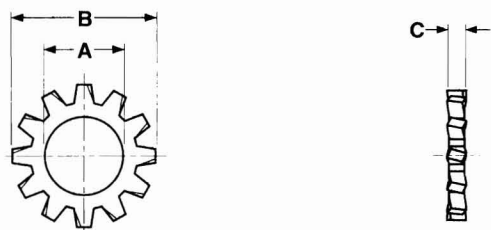
Nominal Size	ID		OD		T	
	Internal Diameter		Outside Diameter		Thickness	
	Max	Min	Max	Min	Max	Min
1.6	1.84	1.7	4	3.7	0.35	0.25
2	2.34	2.2	5	4.7	0.35	0.25
2.5	2.84	2.7	6	5.7	0.55	0.45
3	3.38	3.2	7	6.64	0.55	0.45
3.5	3.88	3.7	8	7.64	0.55	0.45
4	4.48	4.3	9	8.64	0.9	0.7
5	5.48	5.3	10	9.64	1.1	0.9
6	6.62	6.4	12	11.57	1.8	1.4
8	8.62	8.4	16	15.57	1.8	1.4
10	10.77	10.5	20	19.48	2.2	1.8
12	13.27	13	24	23.48	2.7	2.3
14	15.27	15	28	27.48	2.7	2.3
16	17.27	17	30	29.48	3.3	2.7
20	21.33	21	37	36.38	3.3	2.7
24	25.33	25	44	43.38	4.3	3.7
30	31.39	31	56	55.26	4.3	3.7
36	37.62	37	66	64.8	5.6	4.4

METRIC SPLIT LOCK WASHERS



Nominal Washer Size	A		B	T	W
	Inside Diameter		Outside Diameter	Section Thickness	Section Width
	Max	Min	Ref	Ref	Ref
M2	2.4	2.1	4.4	0.50	0.9
M2.5	2.9	2.6	5.1	0.60	1
M3	3.4	3.1	6.2	0.80	1.3
M4	4.4	4.1	7.6	0.90	1.5
M5	5.4	5.1	9.2	1.20	1.8
M6	6.5	6.1	11.8	1.60	2.5
M8	8.5	8.1	14.8	2	3
M10	10.7	10.2	18.1	2.2	3.5
M12	12.7	12.2	21.1	2.5	4
M16	17.0	16.2	27.4	3.5	5
M20	21.2	20.2	33.6	4	6
M24	25.5	24.5	40	5	7
M30	31.7	30.5	48.2	6	8
M36	37.7	36.5	58.2	6	10
M42	43.7	42.5	68.2	7	12
M48	50.5	49	75	7	12

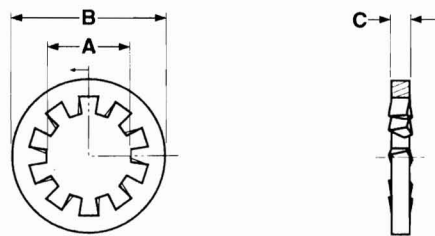
METRIC



EXTERNAL TOOTH LOCK WASHER

Nominal Size	A		B		C		Preferred Number of Teeth*
	Inside Diameter		Outside Diameter		Thickness		
	Max	Min	Max	Min	Max	Min	
M3	3.4	3.2	6.5	6.1	0.485	0.415	8
M3.5	3.9	3.7	7.5	7.1	0.485	0.415	8
M4	4.5	4.3	8.5	8.1	0.485	0.415	9
M5	5.5	5.3	10	9.6	0.64	0.56	10
M6	6.7	6.4	11	10.5	0.64	0.56	12
M8	8.7	8.4	15	14.5	0.85	0.75	12
M10	10.9	10.5	18	17.5	0.95	0.85	12
M12	12.9	12.5	21	20.4	1.055	0.945	12
M14	14.9	14.5	23	22.4	1.055	0.945	12
M16	16.9	16.5	26	25.4	1.265	1.135	14
M20	21.5	21	32	31.2	1.47	1.33	14

* Slight deviation from the preferred number of teeth is permitted.

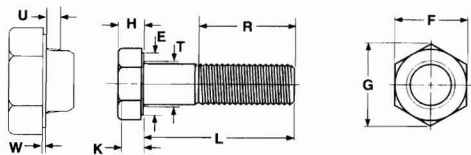


INTERNAL TOOTH LOCK WASHERS

Nominal Size	A		B		C		Preferred Number of Teeth*
	Inside Diameter		Outside Diameter		Thickness		
	Max	Min	Max	Min	Max	Min	
M2	2.4	2.2	4.8	4.5	0.325	0.275	7
M2.5	2.9	2.7	5.7	5.4	0.325	0.275	7
M3	3.4	3.2	6.5	6.1	0.485	0.415	8
M3.5	3.9	3.7	7.5	7.1	0.485	0.415	8
M4	4.5	4.3	8.5	8.1	0.485	0.415	8
M5	5.5	5.3	10	9.6	0.64	0.56	8
M6	6.7	6.4	11	10.5	0.64	0.56	9
M8	8.7	8.4	15	14.5	0.85	0.75	9
M10	10.9	10.5	18	17.5	0.95	0.85	9
M12	12.9	12.5	21	20.4	1.055	0.945	10
M14	14.9	14.5	23	22.4	1.055	0.945	10
M16	16.9	16.5	26	25.4	1.265	1.135	12
M20	21.5	21	32	31.2	1.47	1.33	12

* Slight deviation from the preferred number of teeth is permitted.

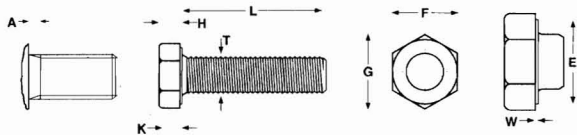
METRIC



HEX HEAD BOLTS

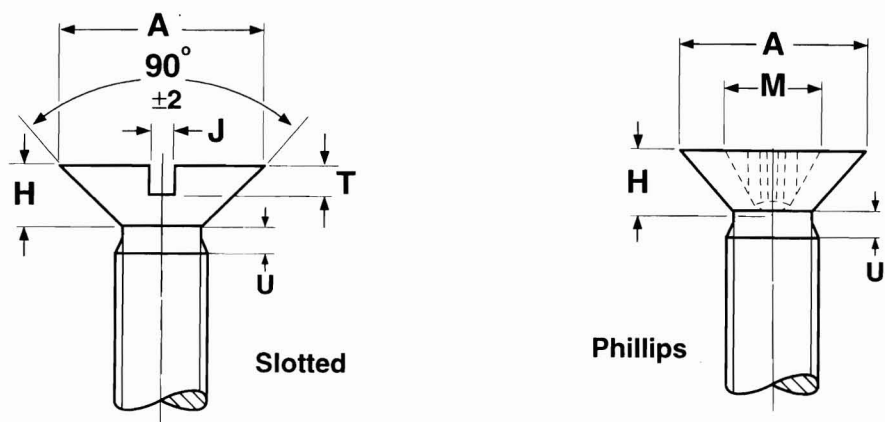
Nominal Size	Thread Pitch	R		W		T	U	E	H		F		G	K
		Threaded Length		Washer Face Thickness		Fillet Transition Diameter	Under-head Fillet	Washer Face Diameter	Head Height		Width Across Flats		Width Across Corners	Wrenching Height
		L≤125 mm	L>125 mm ≤200mm	Max	Min	Max	Max	Min	Max	Min	Max	Min	Min	Min
M1.6	0.35	9	-	0.25	0.1	2	0.6	2.27	1.225	0.975	3.2	3.02	3.41	0.68
M2	0.4	10	-	0.25	0.1	2.6	0.8	3.07	1.525	1.275	4	3.82	4.32	0.89
M2.5	0.45	11	-	0.25	0.1	3.1	1	4.07	1.825	1.575	5	4.82	5.45	1.1
M3	0.5	12	-	0.4	0.15	3.6	1	4.57	2.125	1.875	5.5	5.32	6.01	1.31
M4	0.7	14	-	0.4	0.15	4.7	1.2	5.88	2.925	2.675	7	6.78	7.66	1.87
M5	0.8	16	-	0.5	0.15	5.7	1.2	6.88	3.65	3.35	8	7.78	8.79	2.35
M6	1	18	-	0.5	0.15	6.8	1.4	8.88	4.15	3.85	10	9.78	11.05	2.7
M8	1.25	22	-	0.6	0.15	9.2	2	11.63	5.45	5.15	13	12.73	14.38	3.61
M10	1.5	26	-	0.6	0.15	11.2	2	14.63	6.58	6.22	16	15.73	17.77	4.35
M12	1.75	30	-	0.6	0.15	13.7	3	16.63	7.68	7.32	18	17.73	20.03	5.12
M14	2	34	40	0.6	0.15	15.7	3	19.37	8.98	8.62	21	20.67	23.36	6.03
M16	2	38	44	0.8	0.2	17.7	3	22.49	10.18	9.82	24	23.67	26.75	6.87
M20	2.5	46	52	0.8	0.2	22.4	4	28.19	12.715	12.285	30	29.67	33.53	8.6
M24	3	54	60-73	0.8	0.2	26.4	4	33.61	15.215	14.785	36	35.38	39.98	10.35

HEX HEAD CAP SCREWS
FULL THREAD



Nomi- nal Size	Thread Pitch	A		W		T	E	H		F		G	K
		Thread Run-Out		Washer Face Thickness		Fillet Transition Diameter	Washer Face Diameter	Head Height		Width Across Flats		Width Across Corners	Wrenching Height
		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Min	Min
M1.6	0.35	1.05	0.35	0.25	0.1	2	2.27	1.225	0.975	3.2	3.02	3.41	0.68
M2	0.4	1.2	0.4	0.25	0.1	2.6	3.07	1.525	1.275	4	3.82	4.32	0.89
M2.5	0.45	1.35	0.45	0.25	0.1	3.1	4.07	1.825	1.575	5	4.82	5.45	1.1
M3	0.5	1.5	0.5	0.4	0.15	3.6	4.57	2.125	1.875	5.5	5.32	6.01	1.31
M4	0.7	2.1	0.7	0.4	0.15	4.7	6.03	2.925	2.675	7	6.78	7.66	1.87
M5	0.8	2.4	0.8	0.5	0.15	5.7	6.88	3.65	3.35	8	7.78	8.79	2.35
M6	1	3	1	0.5	0.15	6.8	8.88	4.15	3.85	10	9.78	11.05	2.7
M8	1.25	4	1.25	0.6	0.15	9.2	11.63	5.45	5.15	13	12.73	14.38	3.61
M10	1.5	4.5	1.5	0.6	0.15	11.2	14.63	6.58	6.22	16	15.73	17.77	4.35
M12	1.75	5.3	1.75	0.6	0.15	13.7	16.63	7.68	7.32	18	17.73	20.03	5.12
M14	2	6	2	0.6	0.15	15.7	19.37	8.98	8.62	21	20.67	23.36	6.03
M16	2	6	2	0.8	0.2	17.7	22.49	10.18	9.82	24	23.67	26.75	6.87
M20	2.5	7.5	2.5	0.8	0.2	22.4	28.19	12.715	12.285	30	29.67	33.53	8.6
M24	3	9	3	0.8	0.2	26.4	33.61	15.215	14.785	36	35.38	39.98	10.35

METRIC FLAT HEAD MACHINE SCREWS



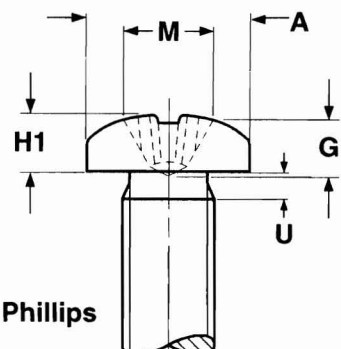
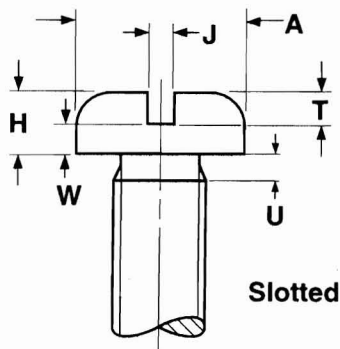
METRIC - SLOTTED FLAT HEAD MACHINE SCREWS

Nominal Size	Thread Pitch	A		H	J		T		U
		Head Diameter		Head Height	Width of Slot		Depth of Slot		Thread Runout
		Max	Min	Max	Max	Min	Max	Min	Max
M1.6	0.35	3.0	2.7	1	0.60	0.46	0.50	0.32	0.7
M2	0.4	3.8	3.5	1.2	0.70	0.56	0.60	0.4	0.8
M2.5	0.45	4.7	4.4	1.5	0.80	0.66	0.75	0.50	0.9
M3	0.5	5.5	5.2	1.65	1.00	0.86	0.85	0.60	1
M4	0.7	8.40	8.04	2.7	1.51	1.26	1.3	1.0	1.4
M5	0.8	9.30	8.94	2.7	1.51	1.26	1.4	1.1	1.6
M6	1	11.30	10.87	3.3	1.91	1.66	1.6	1.2	2
M8	1.25	15.80	15.37	4.65	2.31	2.06	2.3	1.8	2.5
M10	1.5	18.30	17.78	5	2.81	2.56	2.6	2.0	3

METRIC - PHILLIPS FLAT HEAD MACHINE SCREWS

Nominal Size	Thread Pitch	A		H	M	G		U	Phillips Driver Size
		Head Diameter		Head Height	Recess Diameter	Recess Penetration		Thread Runout	
		Max	Min	Max	Ref	Max	Min	Max	
M1.6	0.35	3.0	2.7	1	1.6	0.9	0.6	0.7	0
M2	0.4	3.8	3.5	1.2	1.9	1.2	0.9	0.8	0
M2.5	0.45	4.7	4.4	1.5	2.9	1.8	1.4	0.9	1
M3	0.5	5.5	5.2	1.65	3.2	2.1	1.7	1	1
M3.5	0.6	7.3	6.9	2.35	4.4	2.4	1.9	1.2	2
M4	0.7	8.40	8.04	2.7	4.6	2.6	2.1	1.4	2
M5	0.8	9.30	8.94	2.7	5.2	3.2	2.7	1.6	2
M6	1	11.30	10.87	3.3	6.8	3.5	3.0	2	3
M8	1.25	15.80	15.37	4.65	8.9	4.6	4.0	2.5	4
M10	1.5	18.30	17.78	5	10	5.7	5.1	3	4

METRIC PAN HEAD MACHINE SCREWS



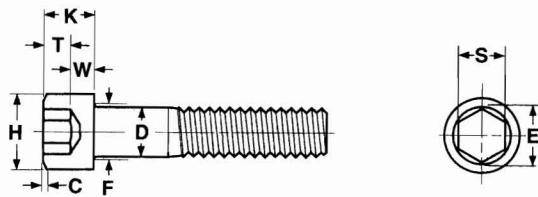
METRIC - SLOTTED PAN HEAD MACHINE SCREWS

Nominal Size	Thread Pitch	A		H		J		T	W	U
		Head Diameter		Head Height		Width of Slot		Depth of Slot	Wall Thickness	Thread Runout
		Max	Min	Max	Min	Max	Min	Min	Min	Max
M1.6	0.35	3.2	2.9	1.00	0.86	0.60	0.46	0.35	0.3	0.7
M2	0.4	4.0	3.7	1.30	1.16	0.70	0.56	0.5	0.4	0.8
M2.5	0.45	5.0	4.7	1.50	1.36	0.80	0.66	0.6	0.5	0.9
M3	0.5	5.6	5.3	1.80	1.66	1.00	0.86	0.7	0.7	1
M4	0.7	8.00	7.64	2.40	2.26	1.51	1.26	1	1	1.4
M5	0.8	9.50	9.14	3.00	2.86	1.51	1.26	1.2	1.2	1.6
M6	1	12.00	11.57	3.6	3.3	1.91	1.66	1.4	1.4	2
M8	1.25	16.00	15.57	4.8	4.5	2.31	2.06	1.9	1.9	2.5
M10	1.5	20.00	19.48	6.0	5.7	2.81	2.56	2.4	2.4	3

METRIC - PHILLIPS PAN HEAD MACHINE SCREWS

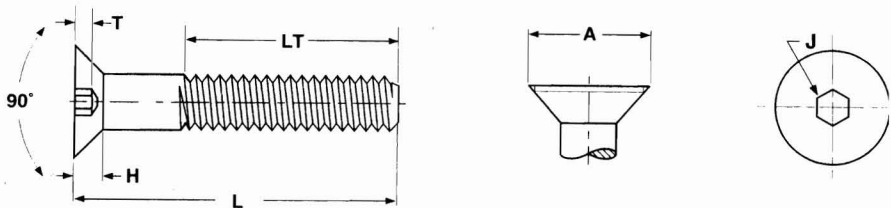
Nominal Size	Thread Pitch	A		H1		M	G		U	Phillips Driver Size
		Head Diameter		Height of Head		Recess Diameter	Recess Penetration		Thread Runout	
		Max	Min	Max	Min	Ref	Max	Min	Max	
M1.6	0.35	3.2	2.9	1.30	1.16	1.7	0.95	0.70	0.7	0
M2	0.4	4.0	3.7	1.60	1.46	1.9	1.2	0.9	0.8	0
M2.5	0.45	5.0	4.7	2.10	1.96	2.7	1.55	1.15	0.9	1
M3	0.5	5.6	5.3	2.40	2.26	3	1.8	1.4	1	1
M3.5	0.6	7.00	6.64	2.60	2.46	3.9	1.9	1.4	1.2	2
M4	0.7	8.00	7.64	3.10	2.92	4.4	2.4	1.9	1.4	2
M5	0.8	9.50	9.14	3.70	3.52	4.9	2.9	2.4	1.6	2
M6	1	12.00	11.57	4.6	4.3	6.9	3.6	3.1	2	3
M8	1.25	16.00	15.57	6.0	5.7	9	4.6	4.0	2.5	4
M10	1.5	20.00	19.48	7.50	7.14	10.1	5.8	5.2	3	4

METRIC SOCKET PRODUCTS



METRIC - SOCKET HEAD CAP SCREWS, CLASS 12.9

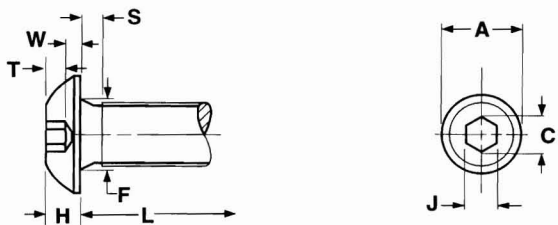
Basic Screw Diameter	Thread Pitch	D		H		K		C	F	S		E	T	W
		Body Diameter		Head Diameter		Head Height		Top Chamfer of Radius	Fillet Transition Diameter	Socket Size Across the Flats		Socket Size Across the Corners	Key Engage- ment	Wall Thick- ness
		Max	Min	Max	Min	Max	Min	Max	Max	Max	Min	Min	Min	Min
M1.6	0.35	1.60	1.46	3.14	2.86	1.60	1.46	0.16	2	1.545	1.520	1.73	0.7	0.55
M2	0.4	2.00	1.86	3.98	3.62	2.00	1.86	0.2	2.6	1.545	1.520	1.73	1	0.55
M2.5	0.45	2.50	2.36	4.68	4.32	2.50	2.36	0.25	3.1	2.045	2.020	2.3	1.1	0.85
M3	0.5	3.00	2.86	5.68	5.32	3.00	2.86	0.3	3.6	2.56	2.52	2.87	1.3	1.15
M4	0.7	4.00	3.82	7.22	6.78	4.00	3.82	0.4	4.7	3.071	3.020	3.44	2	1.4
M5	0.8	5.00	4.82	8.72	8.28	5.00	4.82	0.5	5.7	4.084	4.020	4.58	2.5	1.9
M6	1	6.00	5.82	10.22	9.78	6.00	5.7	0.6	6.8	5.084	5.020	5.72	3	2.3
M8	1.25	8.00	7.78	13.27	12.73	8.00	7.64	0.8	9.2	6.095	6.020	6.86	4	3.3
M10	1.5	10.00	9.78	16.27	15.73	10.00	9.64	1	11.2	8.115	8.025	9.15	5	4
M12	1.75	12.00	11.73	18.27	17.73	12.00	11.57	1.2	13.7	10.115	10.025	11.43	6	4.8
M16	2	16.00	15.73	24.33	23.67	16.00	15.57	1.6	17.7	14.142	14.032	16	8	6.8
M20	2.5	20.00	19.67	30.33	29.67	20.00	19.48	2	22.4	17.23	17.05	19.44	10	8.6
M24	3	24.00	23.67	36.39	35.61	24.00	23.48	2.4	26.4	19.275	19.065	21.73	12	10.4
M30	3.5	30.00	29.67	45.39	44.61	30.00	29.48	3	33.4	22.275	22.065	25.15	15.5	13.1
M36	4	36.00	35.61	54.46	53.54	36.00	35.38	3.6	39.4	27.275	27.065	30.85	19	15.3
M42	4.5	42.00	41.61	63.46	62.54	42.00	41.38	4.2	45.6	32.33	32.08	36.57	24	16.3
M48	5	48.00	47.61	72.46	71.54	48.00	47.38	4.8	52.6	36.33	36.08	41.13	28	17.5
M56	5.5	56.00	55.54	84.54	83.46	56.00	55.26	5.6	63	41.33	41.08	46.83	34	19
M64	6	64.00	63.54	96.54	95.46	64.00	63.26	6.4	71	46.33	46.08	52.53	38	22



METRIC - FLAT HEAD SOCKET CAP SCREWS, CLASS 10.9

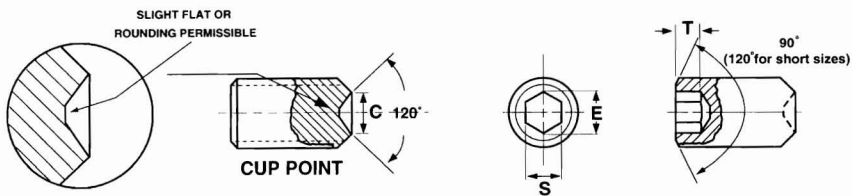
Nominal Size	Thread Pitch	B		A		H		J	T	W	D
		Body Diameter		Head Diameter		Head Height		Hex Socket Size	Key Engage- ment	Wall Thickness	Drill Allowance
		Max	Min	Theoretical Sharp	Absolute Min	Ref	Flush Tolerance	Nom	Min	Min	Max
M3	0.5	3.00	2.86	6.72	5.35	1.86	0.30	2.0	1.1	0.25	0.3
M4	0.7	4.00	3.82	8.96	7.80	2.48	0.30	2.5	1.5	0.45	0.4
M5	0.8	5.00	4.82	11.20	9.75	3.10	0.35	3.0	1.9	0.66	0.5
M6	1	6.00	5.82	13.44	11.70	3.72	0.35	4.0	2.2	0.70	0.6
M8	1.25	8.00	7.78	17.92	15.60	4.96	0.40	5.0	3.0	1.16	0.8
M10	1.5	10.00	9.78	22.40	19.50	6.20	0.50	6.0	3.6	1.62	0.9

METRIC SOCKET PRODUCTS



METRIC - BUTTON HEAD SOCKET CAP SCREWS, CLASS 10.9

Nominal Size	Thread Pitch	A		H		C	J		T	W	S		F	Min Ultimate Tensile Load, N
		Head Diameter		Head Height		Socket Size Across the Corners	Socket Size Across the Flats		Key Engagement	Wall Thickness	Unthreaded Section Under the Head		Fillet Transition Diameter	
		Max	Min	Max	Min	Min	Max	Min	Min	Min	Max	Min	Max	
M3	0.5	5.7	5.4	1.65	1.40	2.3	2.045	2.020	1.04	0.2	1.0	0.5	3.6	4,910
M4	0.7	7.60	7.24	2.20	1.95	2.87	2.56	2.52	1.3	0.3	1.4	0.7	4.7	8,560
M5	0.8	9.50	9.14	2.75	2.50	3.44	3.071	3.020	1.56	0.38	1.6	0.8	5.7	13,800
M6	1	10.50	10.07	3.3	3.0	4.58	4.084	4.020	2.08	0.74	2	1	6.8	19,600
M8	1.25	14.00	13.57	4.4	4.1	5.72	5.084	5.020	2.6	1.05	2.50	1.25	9.2	35,700
M10	1.5	17.50	17.07	5.5	5.2	6.86	6.095	6.020	3.12	1.45	3.0	1.5	11.2	56,600
M12	1.75	21.00	20.48	6.60	6.24	9.15	8.115	8.025	4.16	1.63	3.50	1.75	14.2	82,400
M16	2	28.00	27.48	8.80	8.44	11.43	10.115	10.025	5.2	2.25	4	2	18.2	154,000



METRIC - SOCKET SET SCREWS, CUP POINT

Nominal Size	Thread Pitch	C		E	S		Screws Below this Length are Short Sizes	T		Min Length of Screw for Torque Test	Test Torque
		Point Diameter		Socket Size Across Corners	Socket Size Across the Flats			Key Engagement (Min)			N. m
		Max	Min	Min	Max	Min		Short Sizes	Long Sizes		
M1.6	0.35	0.80	0.55	0.803	0.724	0.711	2.5	0.7	1.5	-	-
M2	0.4	1.00	0.75	1.003	0.902	0.889	3	0.8	1.7	-	-
M2.5	0.45	1.20	0.95	1.427	1.295	1.270	4	1.2	2	-	-
M3	0.5	1.40	1.15	1.73	1.545	1.520	5	1.2	2	4	0.9
M4	0.7	2.00	1.75	2.3	2.045	2.020	6	1.5	2.5	5	2.5
M5	0.8	2.50	2.25	2.87	2.560	2.520	6	2	3	6	5
M6	1	3.00	2.75	3.44	3.071	3.020	8	2	3.5	8	8.5
M8	1.25	5.0	4.7	4.58	4.084	4.020	10	3	5	10	20
M10	1.5	6.0	5.7	5.72	5.084	5.020	12	4	6	12	40
M12	1.75	8.00	7.64	6.86	6.095	6.020	16	4.8	8	16	65
M16	2	10.00	9.64	9.15	8.115	8.025	20	6.4	10	20	160
M20	2.5	14.00	13.57	11.43	10.115	10.025	25	8	12	25	310
M24	3	16.00	15.57	13.72	12.142	12.032	30	10	15	30	520

METRIC TAP DRILL SIZES

TAP	TAP DRILL	DECI. EQUIV.	THEOR. % OF THREAD	TAP	TAP DRILL	DECI. EQUIV.	THEOR. % OF THREAD	TAP	TAP DRILL	DECI. EQUIV.	THEOR. % OF THREAD
M1.6 x 0.35	1.25mm	0.0492	77		I	0.2720	67	M22 x 1.5	20.5mm	0.8071	77
	1.3mm	0.0512	66	M8 x 1	7mm	0.2756	77		13/16	0.8125	70
	#55	0.0520	61		J	0.2770	74	M24 x 3	21mm	0.8268	77
M1.8 x 0.35	1.45mm	0.0571	77	M10 x 1.5	8.5mm	0.3346	77		27/32	0.8438	66
	1.5mm	0.0591	66		R	0.3390	71	M24 x 2	22mm	0.8661	77
	#53	0.0595	64	M10 x 1.25	8.75mm	0.3445	77		7/8	0.8750	68
M2 x 0.4	1.6mm	0.0630	77		S	0.3480	71	M27 x 3	24mm	0.9449	77
	#52	0.0635	74	M12 x 1.75	13/32	0.4062	74		61/64	0.9531	72
M2.2 x 0.45	1.75mm	0.0689	77		Z	0.4130	66	M27 x 2	25mm	0.9843	77
	#50	0.0700	72	M12 x 1.25	27/64	0.4219	79		63/64	0.9844	77
M2.5 x 0.45	2.05mm	0.0807	77		11mm	0.4331	62	M30 x 3.5	26.5mm	1.0433	77
	#45	0.0820	71	M14 x2	12mm	0.4724	77		1-1/16	1.0625	66
M3 x 0.5	2.5mm	0.0984	77		31/64	0.4844	65	M30 x 2	28mm	1.1024	77
	#39	0.0995	73	M14 x 1.5	12.5mm	0.4921	77		1-7/64	1.1094	70
M3.5 x 0.6	2.9mm	0.1142	77		1/2	0.5000	67	M33 x 3.5	29.5mm	1.1614	77
	#32	0.1160	71	M16 x 2	14mm	0.5512	77		1-11/64	1.1719	71
M4 x 0.7	3.3mm	0.1299	77		9/16	0.5625	66	M33 x 2	31mm	1.2205	77
	3.4mm	0.1339	66	M16 x 1.5	14.5mm	0.5709	77		1-15/64	1.2344	63
	#29	0.1360	60		37/64	0.5781	68	M36 x 4	32mm	1.2598	77
M4.5 x 0.75	3.75mm	0.1476	77	M18 x 2.5	15.5mm	0.6102	77		1-17/64	1.2656	74
	#25	0.1495	72		5/8	0.6250	65	M36 x 3	1-19/64	1.2969	78
M5 x 0.8	4.2mm	0.1654	77	M18 x 1.5	16.5mm	0.6496	77		33mm	1.2992	77
	#18	0.1695	67		21/32	0.6562	68		1-5/16	1.3125	68
M6 x 1	5mm	0.1969	77	M20 x 2.5	17.5mm	0.6890	77	M39 x 4	1-3/8	1.3750	78
	#8	0.1990	73		45/64	0.7031	66		35mm	1.3780	77
M7 x 1	6mm	0.2362	77	M20 x 1.5	18.5mm	0.7283	77		1-25/64	1.3906	71
	B	0.2380	74		47/64	0.7344	69	M39 x 3	36mm	1.4173	77
M8 x 1.25	6.75mm	0.2657	77	M22 x 2.5	19.5mm	0.7677	77		1-27/64	1.4219	74
	6.8mm	0.2677	74		25/32	0.7812	66				

PIPE TAP DRILL SIZES

[illegible]