

FASTENER TERMINOLOGY

Bolt: Externally threaded, headed fastener. Difference between a bolt and a screw: a bolt is generally used through a hole with a mating nut. A screw is used in a threaded hole without a nut.

Class of Thread: A system to distinguish thread tolerance differences. Classes 1A, 2A, and 3A apply to external threads. 1B, 2B, and 3B apply to internal threads. Classes 2 and 3 apply to both external and internal threads.

Crest: Outermost tip of male thread from the fastener cylinder, or innermost tip of female thread.

Driving Recess: Recess in the fastener head designed to accept a driving tool.

External Thread: Male thread. Thread outside of the cylinder surface.

Internal Thread: Female thread. Thread on the inside surface of a cylinder or cone.

Left-Hand Thread: Thread that winds counter-clockwise from the starting end of a fastener.

Right-Hand Thread: Thread that winds clockwise from the starting end of a fastener (viewed from starting end).

Major Diameter: Largest diameter of a screw thread on a straight thread. It is the diameter of an imaginary cylinder which would pass through the crest of an external thread or the root of an internal thread.

Minor Diameter: On a straight thread it is the diameter of an imaginary cylinder bounding the root of an external thread or the crest of an internal thread.

Nominal Diameter: Basic diameter that determines the size and dimensional limits of fasteners.

Pitch: Distance from a point of a screw thread to a corresponding point on the next thread measured parallel to the axis.

Screw: Headed fastener which is externally threaded.

Sems®: Pre-assembled screw and washer assemblies. Washers are placed on screws before roll threading. Threads of larger diameter than the washer hole thus prevent the washer from slipping off the screw.

Stud: Threaded rod at both ends or for entire length.

Tapping Screw: Hardened thread screw made to cut or form its own mating thread in an untapped hole.

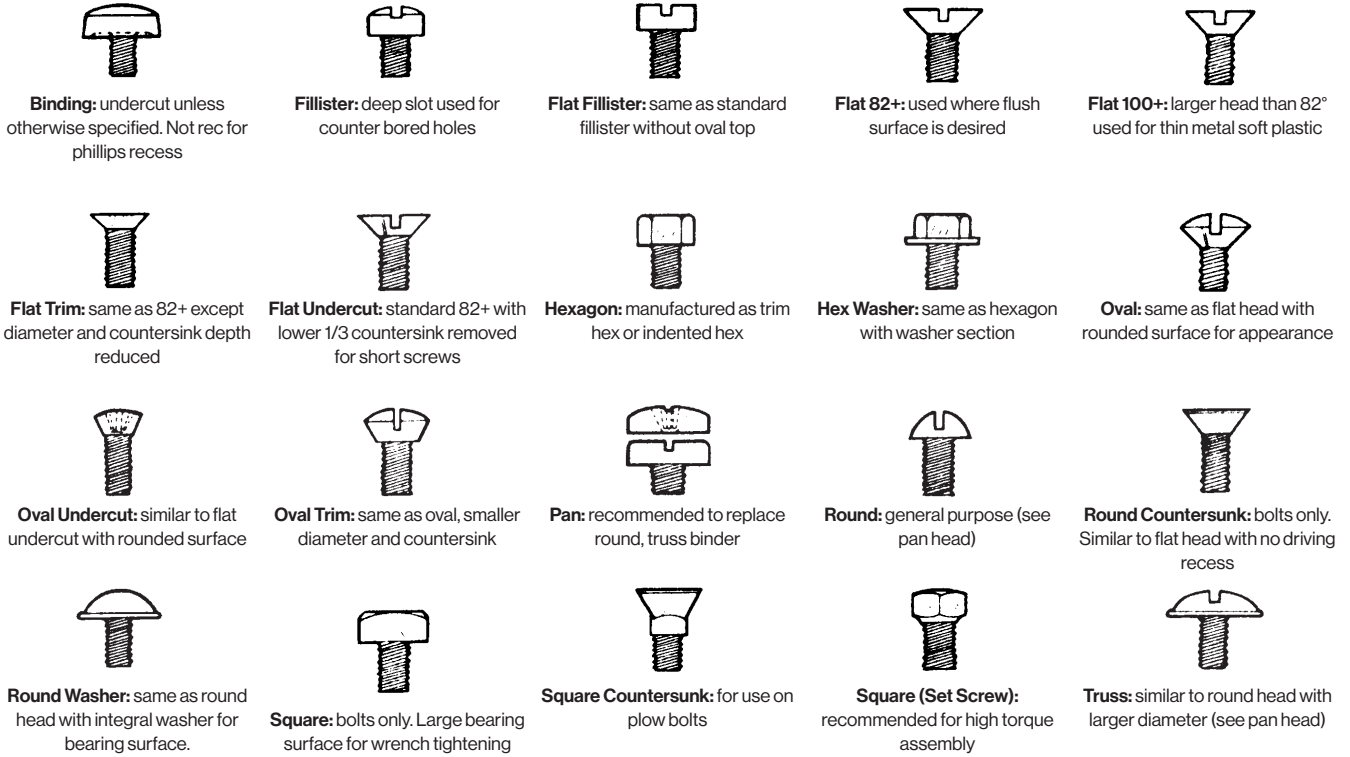
Teks®: Screw which drills its own hole and then threads in.

Thread Pitch: Distance from the crest of one thread to the crest of another.

PLATINGS AND FINISHES

Finish	Color	Anti-Corrosion Properties	Characteristics and Uses	
Black Oxide	Black	Good (Interior Only): 8 Hour Salt Spray	Most Metals	Decorative finish. Used only on interior applications.
Black Zinc	Black	Excellent: 48 Hour Salt Spray	All Metals	Rich and lustrous. With or without lacquering.
Cadmium	Bright Silver-Gray Dull or Burnished	Very Good: 24 Hour Salt Spray	Most Metals	Non-porous metallic plating. Rich appearance, good rust resistance, low cost, good electrical conductivity. Bright silver-gray dull gray or black electroplated finish.
Chromium (Chrome)	Bright Blue-White	Excellent: 24 Hour Salt Spray	All Metals	Used when a beautiful finish is desired. Bright blue-white lustrous appearance. Electroplated.
Dichromate Dip	Rainbow	Excellent	All Metals	A yellow, brown, green or iridescent colored coating. Increases rust resistance. Add to Zinc or Cadmium plating.
E-Coat	Black	Excellent: 168 Hour Salt Spray	All Metals	Added protection containing corrosion inhibitors. Excellent for exterior applications.
Iridite	Green, Blue, Olive drab, Red, Bronze or Black	Excellent	All Metals	Coloring dip which adds rust resistance. Usually applied on Zinc or Cadmium.
JS-500	Chrome like luster	Excellent: 500 Hour Salt Spray	All Metals	Outstanding corrosion resistant finish that provides economical corrosion protection without adversely affecting dimensions.
Mechanical Zinc	Gray	Very Good: 48 Hour Salt Spray	All Metals	A chemical process of rust-proofing steel.
Nickel	Silver	Very Good: 24 Hour Salt Spray	All Metals	A hard, stable, dull white or bright burnished finish. Used for appliances and hardware.
Parkerized	Black	Excellent: 72 Hour Salt Spray	Ferrous Metals	Added protection when oiled with non-drying petroleum oil containing corrosion inhibitors. Good lubricity.
Phosphating	Dull, Gray, Black, or Blue	Excellent: 24 Hour Salt Spray	Ferrous Metals	A chemical process of rust-proofing steel.
Passivating		Excellent	Stainless Steels	For stainless steels. A nitric acid dip to remove foreign material and brighten finish.
Zinc Electrogalvanized	Gray	Very Good: 24 Hour Salt Spray	All Metals	Good rust resistance, appearance & low cost.
Zinc Electroplated	Blue to Blue-White-Gray	Very Good: 24 Hour Salt Spray	All Metals	Commonly used finish.

HEAD STYLES

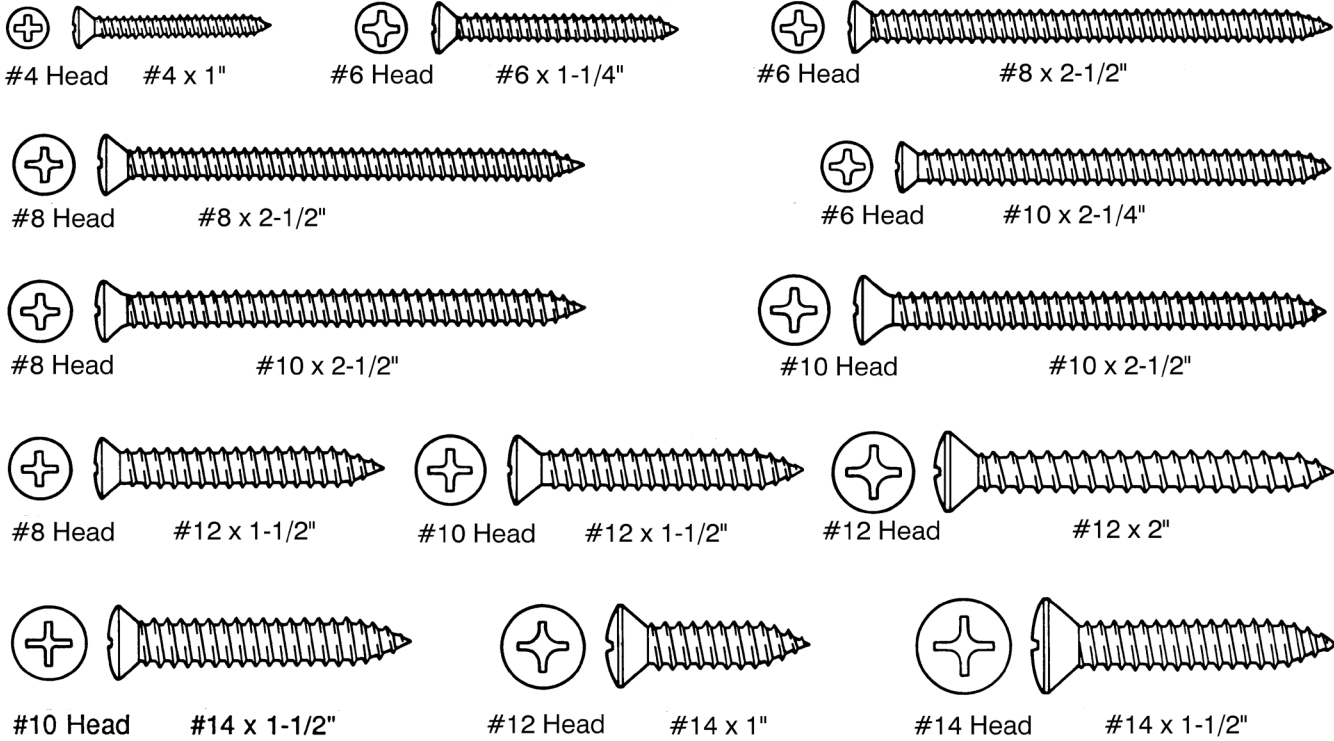


HEAD STYLES		POINT STYLES	
Cross-Recessed (Phillips)		Square Socket	
Pozi Drive		Slot & Square Socket	
Frearson		Indent Hex Washer	
Phillips & Slot		Indent Slotted Hex Washer	
Slot		Phillips Pyramid	
Cross-Slot		Clutch	
Torx®			
		Type AB	
		Type 17	
		Type BP	
		Type A	
		Type B	
		Type BT(25)	
		Type C	
		Type T(23)	
		Type D(1)	
		Type F	
		Type G	
		Type BF	
		Type U	
		Type TT	
		Type CA	
		Dog Point	

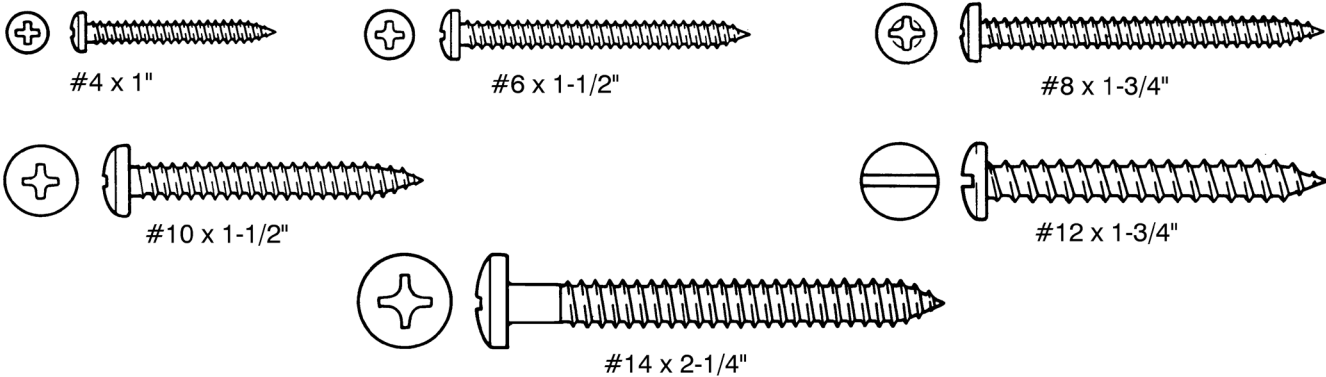
TAPPING SCREWS

Diameter, Head Size & Length Identification

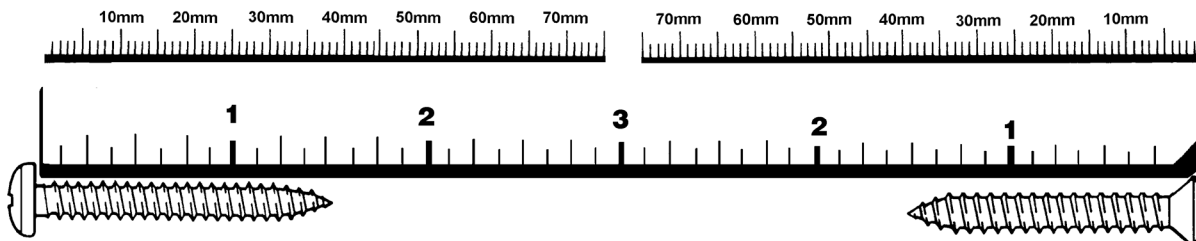
Oval Head Tapping Screws



Pan Head Tapping Screws



How to Measure Tapping Screws



Place Pan Head, Hex Head or Hex Washer Head Screws at this end to measure the length (under the head)

Place Oval Head or Flat Head Screws in the blacked area to measure the length

METRIC ITEM CONVERSION CHART

Inch Fractions and Decimals to Metric Equivalents

Inches			Inches			Inches		
Fractions	Decimals	mm	Fractions	Decimals	mm	Fractions	Decimals	mm
----	.0004	.01	31/64	.48437	12.303	----	1.1417	29
----	.004	.10	----	.492	12.5	1-5/32	1.156	29.369
----	.01	.25	1/2	.500	12.700	----	1.1811	30
1/64	.0156	.397	----	.5118	13	1-3/16	1.1875	30.163
----	.0197	.50	33/64	.5156	13.097	1-7/32	1.219	30.956
----	.0295	.75	17/32	.53125	13.494	----	1.2205	31
1/32	.03125	.794	35/64	.54687	13.891	1-1/4	1.250	31.750
----	.0394	1	----	.5512	14	----	1.2598	32
3/64	.0469	1.191	9/16	.5625	14.288	1-9/32	1.281	32.544
----	.059	1.5	----	.571	14.5	----	1.2992	33
1/16	.0625	1.588	37/64	.57812	14.684	1-5/16	1.312	33.338
5/64	.0781	1.984	----	.5906	15	----	1.3386	34
----	.0787	2	19/32	.59375	15.081	1-11/32	1.344	34.131
3/32	.094	2.381	39/64	.60937	15.478	1-3/8	1.375	34.925
----	.0984	2.5	5/8	.6250	15.875	----	1.3779	35
7/64	.1093	2.776	----	.6299	16	1-13/32	1.406	35.719
----	.1181	3	41/64	.6406	16.272	----	1.4173	36
1/8	.1250	3.175	----	.6496	16.5	1-7/16	1.438	36.513
----	.1378	3.5	21/32	.65625	16.669	----	1.4567	37
9/64	.1406	3.572	----	.6693	17	1-15/32	1.469	37.306
5/32	.15625	3.969	43/64	.67187	17.066	----	1.4961	38
----	.1575	4	11/16	.6875	17.463	1-1/2	1.500	38.100
11/64	.17187	4.366	45/64	.7031	17.859	1-17/32	1.531	38.894
----	.177	4.5	----	.7087	18	----	1.5354	39
3/16	.1875	4.763	23/32	.71875	18.256	1-9/16	1.562	39.688
----	.1969	5	----	.7283	18.5	----	1.5748	40
13/64	.2031	5.159	47/64	.73437	18.653	1-19/32	1.594	40.481
----	.2165	5.5	----	.7480	19	----	1.6142	41
7/32	.21875	5.556	3/4	.7500	19.050	1-5/8	1.625	41.275
15/64	.23437	5.953	49/64	.7656	19.447	----	1.6535	42
----	.2362	6	25/32	.78125	19.844	1-21/32	1.6562	42.069
1/4	.2500	6.350	----	.7874	20	1-11/16	1.6875	42.863
----	.2559	6.5	51/64	.79687	20.241	----	1.6929	43
17/64	.2656	6.747	13/16	.8125	20.638	1-21/32	1.719	43.656
----	.2756	7	----	.8268	21	----	1.7323	44
9/32	.28125	7.144	53/64	.8281	21.034	1-3/4	1.750	44.450
----	.2953	7.5	27/32	.84375	21.431	----	1.7717	45
19/64	.29687	7.541	55/64	.85937	21.828	1-25/32	1.781	45.244
5/16	.3125	7.938	----	.8662	22	----	1.8110	46
----	.3150	8	7/8	.8750	22.225	1-13/16	1.8125	46.038
21/64	.3281	8.334	57/64	.8906	22.622	1-27/32	1.844	46.831
----	.335	8.5	----	.9055	23	----	1.8504	47
11/32	.34375	8.731	29/32	.90625	23.019	1-7/8	1.875	47.625
----	.3543	9	59/64	.92187	23.416	----	1.8898	48
23/64	.35937	9.128	15/16	.9375	23.813	1-29/32	1.9062	48.419
----	.374	9.5	----	.9449	24	----	1.9291	49
3/8	.3750	9.525	61/64	.9531	24.209	1-15/16	1.9375	49.213
25/64	.3906	9.922	31/32	.96875	24.606	----	1.9685	50
----	.3937	10	----	.9843	25	1-31/32	1.969	50.006
13/32	.4062	10.319	1	1.000	25.4	2	2.000	50.800
----	.413	10.5	----	1.0236	26	----	2.0079	51
27/64	.42187	10.716	1-1/32	1.0312	26.194	----	2.0472	52
----	.4331	11	1-1/16	1.062	26.988	2-1/16	2.062	52.388
7/16	.4375	11.113	----	1.063	27	----	2.0866	53
29/64	.4531	11.509	1-3/32	1.094	27.781	2-1/8	2.125	53.975
15/32	.46875	11.906	----	1.1024	28	----	2.126	54
----	.4724	12	1-1/8	1.125	28.575	----	2.165	55

METRIC ITEM CONVERSION CHART

Inch Fractions and Decimals to Metric Equivalents

Inches			Inches			Inches		
Fractions	Decimals	mm	Fractions	Decimals	mm	Fractions	Decimals	mm
2-3/16	2.1875	55.563	---	3.1496	80	4-1/4	4.250	107.950
---	2.2047	56	3-3/16	3.1875	80.963	4-5/16	4.312	109.538
---	2.244	57	---	3.1890	81	---	4.3307	110
2-1/4	2.250	57.150	---	3.2283	82	4-3/8	4.375	111.125
---	2.2835	58	3-1/4	3.250	82.550	4-7/16	4.438	112.713
2/5-16	2.312	58.738	---	3.2677	83	4-1/2	4.500	114.300
---	2.3228	59	---	3.3071	84	---	4.5275	115
---	2.3622	60	3-5/16	3.312	84.1377	4-9/16	4.562	115.888
2-3/8	2.375	60.325	---	3.3464	85	4-5/8	4.625	117.475
---	2.4016	61	3-3/8	3.375	85.725	---	4.7244	120
2-7/16	2.438	61.913	---	3.3858	86	4-3/4	4.750	120.650
---	2.4409	62	---	3.4252	87	4-7/8	4.875	123.825
---	2.4803	63	3-7/16	3.438	87.313	---	4.9212	125
2-1/2	2.500	63.500	---	3.4646	88	5	5.000	127
---	2.5197	64	3-1/2	3.500	88.900	---	5.1181	130
---	2.559	65	---	3.5039	89	5-1/4	5.250	133.350
2-9/16	2.562	65.088	---	3.5433	90	5-1/2	5.500	139.700
---	2.5984	66	3-9/16	3.562	90.4877	---	5.5118	140
2-5/8	2.625	66.675	---	3.5827	91	5-3/4	5.750	146.050
---	2.638	67	---	3.622	92	---	5.9055	150
---	2.6772	68	3-5/8	3.625	92.075	6	6.00	152.400
2-11/16	2.6875	68.263	---	3.6614	93	6-1/4	6.250	158.750
---	2.7165	69	3-11/16	3.6875	93.663	---	6.2992	160
2-3/4	2.750	69.850	---	3.7008	94	6-1/2	6.500	165.100
---	2.7559	70	---	3.7401	95	---	6.6929	170
---	2.7953	71	3-3/4	3.750	95.250	6-3/4	6.750	171.450
2-13/16	2.8125	71.438	---	3.7795	96	7	7.000	177.800
---	2.8346	72	3-13/16	3.8125	96.838	---	7.0866	180
---	2.8740	73	---	3.8189	97	---	7.4803	190
2-7/8	2.875	73.025	---	3.8583	98	7-1/2	7.500	190.500
---	2.9134	74	3-7/8	3.875	98.425	---	7.8740	200
2-15/16	2.9375	74.613	---	3.8976	99	8	8.000	203.200
---	2.9527	75	---	3.9370	100	---	8.2677	210
---	2.9921	76	3-15/16	3.9375	100.013	8-1/2	8.500	215.900
3	3.000	76.200	---	3.9764	101	---	8.6614	220
---	3.0315	77	4	4.000	101.600	9	9.000	228.600
3-1/16	3.062	77.788	4-1/16	4.062	103.188	---	9.0551	230
---	3.0709	78	4-1/8	4.125	104.775	---	9.4488	240
---	3.1102	79	---	4.1338	105	9-1/2	9.500	241.300
3-1/8	3.125	79.375	4-3/16	4.1875	106.363	---	9.8425	250

U.S. STANDARD GAUGE CHART

Gauge	Decimal Size	Gauge	Decimal Size	Gauge	Decimal Size	Gauge	Decimal Size
7	.188"	14	.078"	21	.034"	28	.016"
8	.172"	15	.070"	22	.031"	29	.014"
9	.156"	16	.063"	23	.028"	30	.013"
10	.141"	17	.056"	24	.025"	31	.011"
11	.125"	18	.050"	25	.022"		
12	.109"	19	.044"	26	.019"		
13	.094"	20	.038"	27	.017"		