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Other Grades Also Available

BOLTS

IDENTIFICATION • STRENGTH • CLAMP • TORQUE • MATERIALS

GRADE 2

Diameter	Proof Load	Yield Strength	Tensile Strength
1/4–3/4"	55,000	57,000	74,000
3/4–1-1/2"	33,000	36,000	60,000

Low or medium Carbon Steel

***GRADE 5**

Diameter	Proof Load	Yield Strength	Tensile Strength
1/4–1"	85,000	92,000	120,000
3/4–1-1/2"	74,000	81,000	105,000

Medium Carbon Steel, Quenched & Tempered

GRADE 8

Proof Load: 120,000
Yield Strength: 130,000
Tensile Strength: 150,000

Carbon Alloy Steel, Quenched & Tempered

18-8 Series STAINLESS

Proof Load: None
Yield Strength: 30,000
Tensile Strength: 75,000

STAINLESS
ANSI 304 & 316

Diameter	Proof Load	Yield Strength	Tensile Strength
1/4–3/4"	None	100,000	125,000
3/4–1"	None	80,000	115,000
1–1-1/4"	None	65,000	105,000
1-1/4–1-1/2"	None	50,000	100,000

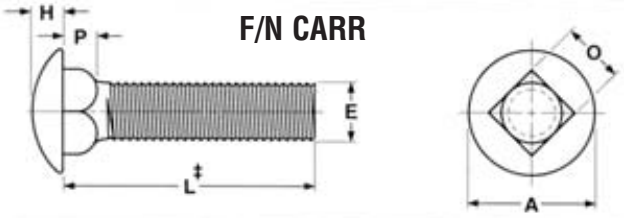
SIZE	CLAMP LOAD-Lbs.	ASSEMBLY TORQUE DRY	ASSEMBLY TORQUE LUB.	MINIMUM TENSILE Lbs.	CLAMP LOAD-Lbs.	ASSEMBLY TORQUE DRY	ASSEMBLY TORQUE LUB.	MINIMUM TENSILE Lbs.	CLAMP LOAD-Lbs.	ASSEMBLY TORQUE DRY	ASSEMBLY TORQUE LUB.	MINIMUM TENSILE Lbs.	CLAMP LOAD-Lbs.	ASSEMBLY TORQUE DRY	ASSEMBLY TORQUE LUB.	MINIMUM TENSILE Lbs.	CLAMP LOAD-Lbs.	ASSEMBLY TORQUE DRY	ASSEMBLY TORQUE LUB.	MINIMUM TENSILE Lbs.
1/4-20	1320	66 IN LBS.	50 IN LBS.	2700	2000	8 FT LBS.	75 IN LBS.	4450	2850	12 FT LBS.	9 FT LBS.	6600	1350	68 IN LBS.	51 IN LBS.	2780	2100	9 FT LBS.	7 FT LBS.	4600
1/4-28	1500	76	56	2900	2300	10	86	4840	3250	14	10	7200	1500	77	58	3020	2400	10	7	5000
5/16-18	2160	11 FT LBS.	11 FT LBS.	4400	3350	17	13 FT LBS.	7190	4700	25	18	10700	2200	12 FT LBS.	9 FT LBS.	4400	3400	18	13	7400
5/16-24	2400	12	12	4700	3700	19	14	7670	5200	25	20	11500	2400	13	10	4700	3800	20	15	7900
3/8-16	3200	20	15	6400	4950	30	23	10530	7000	45	35	15800	3200	20	15	6500	5100	32	24	10900
3/8-24	3620	23	17	8800	5600	35	25	14400	7900	50	35	21600	3700	23	17	9000	5700	36	27	15000
1/2-13	5850	50	35	11500	9000	75	55	19000	12750	110	80	28600	5900	50	37	11900	9350	78	58	19800
1/2-20	6600	55	40	12500	10500	90	65	20500	14370	120	90	30800	6700	56	42	12800	10550	88	66	21400
5/8-11	9350	100	75	18500	14400	150	110	30100	20350	220	170	45200	9500	100	75	18800	14950	156	117	31400
5/8-18	10550	110	85	20000	16370	180	130	32600	23000	240	180	49000	10800	113	84	20400	16850	176	132	34000
3/4-10	13800	175	130	27000	21300	260	200	44200	30100	380	280	66300	14100	177	132	27600	20300	276	121	42300
3/4-16	15400	200	150	29000	23800	300	220	47400	33500	420	320	71100	15700	197	148	29600	22670	308	191	45400
7/8-9	11450	170	125	30000	29405	320	320	53100	41600	600	460	91000	11700	171	128	37900	16850	246	213	58100
1-8	15000	250	190	39500	38600	640	480	69500	54500	900	680	119200	15300	256	192	49700	22900	368	290	69500
1-1/8-7	18900	350	270	50000	42300	800	600	87800	68900	1280	960	150500	19300	363	272	62700	25400	386	411	87800
1-1/4-7	24000	500	380	63000	53800	1120	840	110300	87200	1820	1360	189200	24500	512	384	78800	32200	548	480	110300
1-3/8-6	28600	670	490	75500	64100	1460	1100	132200	104000	2380	1780	226700	29200	671	503	94400	38400	629	629	125900
1-1/2-6	34800	870	650	91000	78000	1910	1460	159600	126500	3160	2360	273600	35600	891	668	114000	46700	835	835	152000

Yield Strength: is the load at which the fastener exhibits a specified elongation at a specific load.
Tensile Strength: is the minimum total load that will fail the fastener.
Clamp Load: 75% x Proof X Stress Area. Also called the fastener preload or initial load. The "Clamp" Load is the true maximum load of any fastener.

Proof Load: is the load which the fastener must withstand without a permanent set.
Torque Dry: Assumes a coefficient of friction of 0.20
Torque Lubricated: Assumes a coefficient of friction of 0.15
Minimum Tensile: Minimum load at which the fastener will fail. Minimum safe working load is 4:1
***325** is the designation for "structural" Grade 5 bolt which as larger head dimensions

Cap Screws & Bolts — Carriage Bolts, Square Neck — Low Carbon & Hot-Dip Galvanized

F/N CARR



CARRIAGE BOLTS - SQUARE NECK

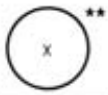
ASME B18.5-1990

Basic Bolt Diameter		E Body Diameter		A Head Diameter		H Head Height		O Square Width		P Square Depth	
		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
•8	0.1640	0.173	0.157	0.328	0.298	0.102	0.083	0.169	0.155	0.108	0.078
10	0.1900	0.199	0.182	0.469	0.436	0.114	0.094	0.199	0.185	0.125	0.094
1/4	0.2500	0.260	0.237	0.594	0.563	0.145	0.125	0.260	0.245	0.156	0.125
5/16	0.3125	0.324	0.298	0.719	0.688	0.176	0.156	0.324	0.307	0.187	0.156
3/8	0.3750	0.388	0.360	0.844	0.782	0.208	0.188	0.388	0.368	0.219	0.188
7/16	0.4375	0.452	0.421	0.969	0.907	0.239	0.219	0.452	0.431	0.250	0.219
1/2	0.5000	0.515	0.483	1.094	1.032	0.270	0.250	0.515	0.492	0.281	0.250
5/8	0.6250	0.642	0.605	1.344	1.219	0.344	0.313	0.642	0.616	0.344	0.313
3/4	0.7500	0.768	0.729	1.594	1.469	0.406	0.375	0.768	0.741	0.406	0.375

Tolerance on Length	Nominal Bolt Size	Nominal Bolt Length: Up to 1 in., incl.	Over 1 in. to 2-1/2 in., incl.	Over 2-1/2 in. to 4 in., incl.	Over 4 in. to 6 in., incl.	Over 6 in.
	No. 8 thru 3/8	+0.02 -0.03	+0.02 -0.04	+0.04 -0.06	+0.06 -0.10	+0.10 -0.18
	7/16 and 1/2	+0.02 -0.03	+0.04 -0.05	+0.06 -0.08	+0.08 -0.10	+0.12 -0.18
	9/16 thru 3/4	+0.02 -0.03	+0.06 -0.08	+0.08 -0.10	+0.10 -0.10	+0.14 -0.18

‡Length of a carriage bolt is measured from the underhead bearing surface to the extreme end of the bolt.
• ASME B18.5-1990 does not specify dimensions for the #8 diameter. Data listed for this size is independent of the ASME specification.

LOW CARBON & HOT-DIP GALVANIZED CARRIAGE BOLT

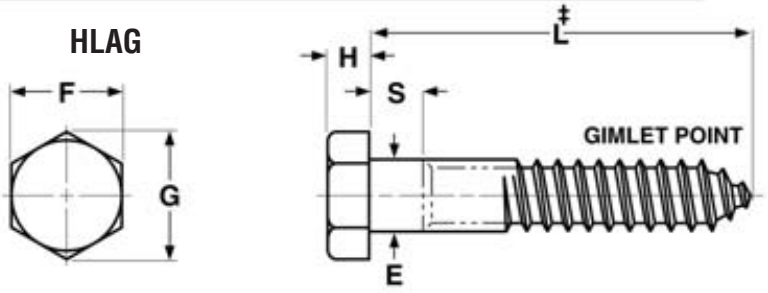


Description	**Low Carbon Steel Carriage:** Round head bolt with a square neck under the head, and a unified thread pitch. Made from low or medium carbon steel. **Hot-Dip Galvanized Steel Carriage:** Carriage bolt made from low or medium carbon steel with a galvanic zinc finish applied.
Applications/ Advantages	**Low Carbon Steel Carriage:** The square neck is designed to keep the bolt from turning as a nut is tightened. **Hot-Dip Galvanized Steel Carriage:** Same design advantages as a low carbon carriage bolt but with a thicker protective coating for outdoor use. Often used in outdoor furniture.
Material	**Low Carbon Steel & Hot-Dip Galvanized Steel Carriage:** AISI 1006 - 1050 or equivalent steel.
Core Hardness	**Low Carbon Steel & Hot-Dip Galvanized Steel Carriage:** Rockwell B70 - B100
Proof Load	**Low Carbon Steel Carriage:** 33,000 psi.
Yield Strength*	**Low Carbon Steel Carriage:** 36,000 psi. minimum
Tensile Strength	**Low Carbon Steel Carriage:** 60,000 psi. minimum
Elongation*	**Low Carbon Steel Carriage:** 18% minimum
Reduction of Area*	**Low Carbon Steel Carriage:** 35% minimum (all sizes)
Minimum Thread Length	The minimum length of thread shall be equal to twice the basic bolt diameter plus 0.25 in. for bolts 6 in. or shorter, and twice the diameter plus 0.50 in. for bolts longer than 6 in..
Plating	See Appendix-A for information on the plating of steel carriage bolts.

*These properties are tested only on machined specimens when the testing machine cannot provide for full testing of the parts.
**Product standards require the manufacturer's head marking to appear on the top of all bolts 1/4" diameter and larger. "X" represents one location such a marking may appear.

Steel, Stainless & Hot-Dip Galvanized *Lag Screws* Bolts & Cap Screws

HLAG



Hex Lag Screws

ASME B18.2.1-1996

Basic Product Diameter		Threads Per Inch	E		F			G		H			S
			Body or Shoulder Diameter		Width Across Flats			Width Across Corners		Head Height			Shoulder Length
			Max	Min	Basic	Max	Min	Max	Min	Basic	Max	Min	Min
No. 10	0.1900	11	0.199	0.178	9/32	0.281	0.271	0.323	0.309	1/8	0.140	0.110	0.094
1/4	0.2500	10	0.260	0.237	7/16	0.438	0.425	0.505	0.484	11/64	0.188	0.150	0.094
5/16	0.3125	9	0.324	0.298	1/2	0.500	0.484	0.577	0.552	7/32	0.235	0.195	0.125
3/8	0.3750	7	0.388	0.360	9/16	0.562	0.544	0.650	0.620	1/4	0.268	0.226	0.125
7/16	0.4375	7	0.452	0.421	5/8	0.625	0.603	0.722	0.687	19/64	0.316	0.272	0.156
1/2	0.5000	6	0.515	0.482	3/4	0.750	0.725	0.866	0.826	11/32	0.364	0.302	0.156
5/8	0.6250	5	0.642	0.605	15/16	0.938	0.906	1.083	1.033	27/64	0.444	0.378	0.312
3/4	0.7500	4-1/2	0.768	0.729	1-1/8	1.125	1.088	1.299	1.240	1/2	0.524	0.455	0.375
7/8	0.8750	4	0.895	0.852	1-5/16	1.312	1.269	1.516	1.447	37/64	0.604	0.531	0.375

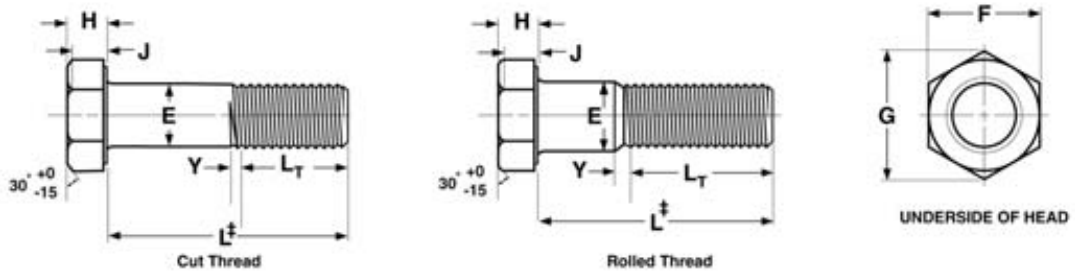
Tolerance on Length	Nominal Screw Size	Nominal Screw Length	
		Thru 6 in.	Over 6 in.
	1/2 and smaller	±0.12	±0.25
	Over 1/2	±0.25	±0.25

‡Length of a lag screw is measured from the underhead bearing surface to the extreme end of the screw.

Description	A full-bodied bolt with hex head, spaced threads and a gimlet point.
Applications/ Advantages	**Steel, Electro-plated Zinc:** For use in wood in non-corrosive environments. **Steel, Hot-Dip Galvanized:** For use in corrosive environments. **Stainless:** Has superior corrosion resistance to galvanized steel bolts.
Material	**Steel:** AISI 1006 - 1022 or equivalent steel. **Stainless:** 18-8 stainless.
Heat Treatment	**Stainless:** The austenitic alloys develop their strength through work hardening during the fastener manufacturing process, as seen from the hardness properties below. The only heat treatment normally available on austenitic stainless alloys is annealing, which is done at approximately 1900°F to a dead soft condition and is not normally thermally reversible.
Hardness	**Steel:** Rockwell B70 - B100. **Stainless:** 1/4 through 1/2 in. diameter-- Rockwell B95 - C32.
Tensile Strength	**Steel:** 60,000 psi. minimum **Stainless:** 100,000 - 125,000 psi. (approximate)
Minimum Thread Length	The minimum length of thread shall be equal to 1/2 the nominal screw length plus 0.50 in., or 5.00 in., whichever is shorter. Screws too short for this formula shall be threaded as close to the head as practicable.
Plating	See Appendix-A for information on the plating of steel lag bolts.

Cap Screws & Bolts — Head and Thread Dimensions — Hex Cap Screws

F/N HHCS F/N HHTB-Full Thread



‡Length of a cap screw is measured from the underhead bearing surface to the extreme end of the screw.

Hex Cap Screws

ASME B18.2.1-1996

Nominal or Basic Product Diameter		E		F			G		H			J	L_T		Y
		Body Diameter		Width Across Flats			Width Across Corners		Head Height			Wrenching Height	Thread Length		Transition Thread Length
													For Screw Lengths ≤6 in.	For Screw Lengths > 6 in.	
		Max	Min	Basic	Max	Min	Max	Min	Basic	Max	Min	Min	Ref	Ref	Max
1/4	0.2500	0.2500	0.2450	7/16	0.438	0.428	0.505	0.488	5/32	0.163	0.150	0.106	0.750	1.000	0.250
5/16	0.3125	0.3125	0.3065	1/2	0.500	0.489	0.577	0.557	13/64	0.211	0.195	0.140	0.875	1.125	0.278
3/8	0.3750	0.3750	0.3690	9/16	0.562	0.551	0.650	0.628	15/64	0.243	0.226	0.160	1.000	1.250	0.312
7/16	0.4375	0.4375	0.4305	5/8	0.625	0.612	0.722	0.698	9/32	0.291	0.272	0.195	1.125	1.375	0.357
1/2	0.5000	0.5000	0.4930	3/4	0.750	0.736	0.866	0.840	5/16	0.323	0.302	0.215	1.250	1.500	0.385
9/16	0.5625	0.5625	0.5545	13/16	0.812	0.798	0.938	0.910	23/64	0.371	0.348	0.250	1.375	1.625	0.417
5/8	0.6250	0.6250	0.6170	15/16	0.938	0.922	1.083	1.051	25/64	0.403	0.378	0.269	1.500	1.750	0.455
3/4	0.7500	0.7500	0.7410	1-1/8	1.125	1.100	1.299	1.254	15/32	0.483	0.455	0.324	1.750	2.000	0.500
7/8	0.8750	0.8750	0.8660	1-5/16	1.312	1.285	1.516	1.465	35/64	0.563	0.531	0.378	2.000	2.250	0.556
1	1.0000	1.0000	0.9900	1-1/2	1.500	1.469	1.732	1.675	39/64	0.627	0.591	0.416	2.250	2.500	0.625
1-1/8	1.1250	1.1250	1.1140	1-11/16	1.688	1.631	1.949	1.859	11/16	0.718	0.658	0.461	2.500	2.750	0.714
1-1/4	1.2500	1.2500	1.2390	1-7/8	1.875	1.812	2.165	2.066	25/32	0.813	0.749	0.530	2.750	3.000	0.714
1-1/2	1.5000	1.5000	1.4880	2-1/4	2.250	2.175	2.598	2.480	1-5/16	0.974	0.902	0.640	3.250	3.500	0.833

	Nominal Screw Size	Nominal Screw Length				
		Up to 1 in., incl.	Over 1 in. to 2-1/2 in., incl.	Over 2-1/2 in. to 4 in., incl.	Over 4 in. to 6 in., incl.	Longer than 6 in.
Tolerance on Length	1/4 to 3/8	-0.03	-0.04	-0.06	-0.10	-0.18
	7/16 and 1/2	-0.03	-0.06	-0.08	-0.10	-0.18
	9/16 to 3/4	-0.03	-0.08	-0.10	-0.10	-0.18
	7/8 and 1	....	-0.10	-0.14	-0.16	-0.20
	1-1/8 to 1-1/2	....	-0.12	-0.16	-0.18	-0.22

Hex Cap Screws, Gr-2, 18-8 & 316 Stainless — Mechanical & Performance Data — Bolts & Cap Screws

F/N HHCS

GRADE-2 HEX CAP SCREW

Description	A low or medium carbon steel, externally threaded mechanical device 1/4" diameter or larger, with a trimmed hex head and a washer face on the bearing surface.
Applications/ Advantages	Economical for use in non-critical applications where the fastener is not subject to extreme temperatures or stress beyond the limits listed herein.
Material	AISI 1006 - 1050 or equivalent steel.
Hardness	1/4 through 3/4 in. diameter, 6 in. and shorter in length: Rockwell B80 - B100. 1/4 through 3/4 in. diameter, over 6 in. in length: Rockwell B70 - B100. 7/8 through 1-1/2 in. diameter, all lengths: Rockwell B70 - B100.
Proof Load	1/4 through 3/4 in. diameter, 6 in. and shorter in length: 55,000 psi. 1/4 through 3/4 in. diameter, over 6 in. in length: 33,000 psi. 7/8 through 1-1/2 in. diameter, all lengths: 33,000 psi.
Yield Strength*	1/4 through 3/4 in. diameter, 6 in. and shorter in length: 57,000 psi. minimum. 1/4 through 3/4 in. diameter, over 6 in. in length: 36,000 psi. minimum. 7/8 through 1-1/2 in. diameter, all lengths: 36,000 psi. minimum.
Tensile Strength	1/4 through 3/4 in. diameter, 6 in. and shorter in length: 74,000 psi. minimum. 1/4 through 3/4 in. diameter, over 6 in. in length: 60,000 psi. minimum. 7/8 through 1-1/2 in. diameter, all lengths: 60,000 psi. minimum.
Elongation*	18% minimum (all diameters)
Reduction of Area*	35% minimum (all sizes)
Plating	See Appendix-A for plating information

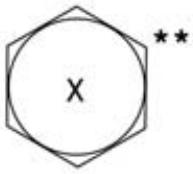
HEX CAP SCREW--STAINLESS STEEL, 18-8 & 316

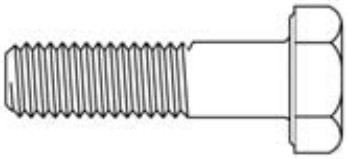
Description	18-8 and 316 stainless steel cap screws are both made from austenitic alloys as described below.
Applications/ Advantages	**18-8:** Used in products that require general atmospheric corrosion resistance, such as chemical and food-processing equipment. Some chemical environments may require special corrosion resistant materials and precautions. **316:** The molybdenum content gives this type of stainless even greater corrosion resistance than 18-8 as well as superior strength at high temperatures.
Material	**18-8:** A cap screw made from one of the following austenitic alloys: 303, 303Se, 304, XM7, all of which are characterized as having a chromium content of 17-19% and nickel content of 8-10%. **316:** A cap screw made from 316 stainless steel, an austenitic alloy which differs from 18-8 by its molybdenum content (2-3%) and a higher nickel content (10-14%).
Heat Treatment	The austenitic alloys develop their strength through work hardening during the fastener manufacturing process, as seen from the hardness properties below. The only heat treatment normally available on austenitic stainless alloys is annealing, which is done at approximately 1900°F to a dead soft condition and is not normally thermally reversible.
Hardness	1/4 through 5/8 in. diameter: Rockwell B95 - C32 3/4 through 1 in. diameter: Rockwell B80 - C32
Yield Strength*	1/4 through 5/8 in. diameter, 2.25D and longer: 65,000 psi. minimum 3/4" (2.25D & longer) & 7/8 through 1 in. diameter (3D & longer): 45,000 psi. minimum
Tensile Strength	1/4 through 5/8 in. diameter, 2.25D and longer: 100,000 - 150,000 psi. 3/4" (2.25D & longer) & 7/8 through 1 in. diameter (3D & longer): 85,000 - 140,000 psi.
Elongation in 4D*	1/4 through 5/8 in. diameter: 20% minimum; 3/4 through 1 in. diameter: 25% minimum.

D = Nominal diameter of the screw in inches
*These properties are tested only on machined specimens when the testing machine cannot provide for full testing of the parts.
**Product standards require the manufacturer's head marking to appear on the top of all cap screws 1/4" diameter and larger. "X" represents one location such a marking may appear.

Hex Machine Bolts *Hot Dip Galvanized* Bolts & Cap Screws

F/N HHCS

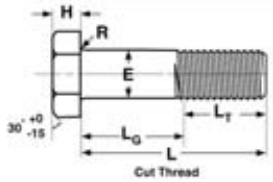


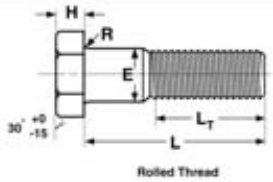


Description	A low or medium carbon steel, externally threaded mechanical device, 1/4 inch in diameter or larger, with a trimmed hex head and a hot-dip galvanized coating. A hex bolt does not have a washer face on its bearing surface as does a hex cap screw, nor does it have a machined point. Its body tolerances are not as close as those of a cap screw.
Applications/ Advantages	Designed to be used in highly corrosive environments (ie. coastal locales and heavily polluted atmospheres). May be inserted into an oversized hole and should be assembled with a nut.
Material	Machine bolts shall be manufactured from steel which conforms to the following chemical composition requirements: *Phosphorus:* 0.06% maximum; *Sulfur:* 0.15% maximum.
Hardness	Bolts of a length < 3X nominal diameter: Rockwell B69 - B100. Bolts of a length => 3X nominal diameter: Rockwell B100 maximum.
Tensile Strength	60,000 psi. minimum.
Elongation*	18% minimum (all diameters)
Plating	See Appendix-A for plating information.

*These properties are tested only on machined specimens when the testing machine cannot provide for full testing of the parts.
**Product standards require the manufacturer's head marking to appear on the top of all bolts 1/4" diameter and larger. "X" represents one location such a marking may appear.

Cap Screws & Bolts — *Heavy Hex Bolts* — Type A307 Grades A & B





F/N HHB7
HHB8

Heavy Hex Bolts

ASME B18.2.1-1996

Nominal Size or Basic Product Diameter		E		F			G		H			R		L_T	
		Body Diam		Width Across Flats			Width Across Corners		Head Height			Radius of Fillet		Thread Length for Bolt Lengths	
														6 in. and shorter	Over 6 in.
		Max	Min	Basic	Max	Min	Max	Min	Basic	Max	Min	Max	Min	Basic	Basic
1/2	0.5000	0.515	0.482	7/8	0.875	0.850	1.010	0.969	11/32	0.364	0.302	0.03	0.01	1.250	1.500
5/8	0.6250	0.642	0.605	1-1/16	1.062	1.031	1.227	1.175	27/64	0.444	0.378	0.06	0.02	1.500	1.750
3/4	0.7500	0.768	0.729	1-1/4	1.250	1.212	1.443	1.383	1/2	0.524	0.455	0.06	0.02	1.750	2.000
7/8	0.8750	0.895	0.852	1-7/16	1.438	1.394	1.660	1.589	37/64	0.604	0.531	0.06	0.02	2.000	2.250
1	1.0000	1.022	0.976	1-5/8	1.625	1.575	1.876	1.796	43/64	0.700	0.591	0.09	0.03	2.250	2.500
1 1/8	1.1250	1.149	1.098	1-13/16	1.812	1.756	2.093	2.002	3/4	0.780	0.658	0.09	0.03	2.500	2.750
1 1/4	1.2500	1.277	1.223	2	2.000	1.938	2.309	2.209	27/32	0.876	0.749	0.09	0.03	2.750	3.000
1 3/8	1.3750	1.404	1.345	2-3/16	2.188	2.119	2.526	2.416	29/32	0.940	0.810	0.09	0.03	3.000	3.250
1 1/2	1.5000	1.531	1.470	2-3/8	2.375	2.300	2.742	2.622	1	1.036	0.902	0.09	0.03	3.250	3.500
1 3/4	1.7500	1.785	1.716	2-3/4	2.750	2.662	3.175	3.035	1-5/32	1.196	1.054	0.12	0.04	3.750	4.000
2	2.0000	2.039	1.964	3-1/8	3.125	3.025	3.608	3.449	1-11/32	1.388	1.175	0.12	0.04	4.250	4.500
2 1/4	2.2500	2.305	2.214	3-1/2	3.500	3.388	4.041	3.862	1-1/2	1.548	1.327	0.19	0.06	4.750	5.000
2 1/2	2.5000	2.559	2.461	3-7/8	3.875	3.750	4.474	4.275	1-21/32	1.708	1.479	0.19	0.06	5.250	5.500
2 3/4	2.7500	2.827	2.711	4-1/4	4.250	4.112	4.907	4.688	1-13/16	1.869	1.632	0.19	0.06	5.750	6.000
3	3.0000	3.081	2.961	4-5/8	4.625	4.475	5.340	5.102	2	2.060	1.815	0.19	0.06	6.250	6.500

Tolerance on Length	Nominal Screw Size	Nominal Screw Length									
		Up to 1 in., incl.		Over 1 in. to 2 1/2 in., incl.		Over 2 1/2 in. to 4 in., incl.		Over 4 in. to 6 in., incl.		Longer than 6 in.	
	1/4 to 3/8	+0.02	-0.03	+0.02	-0.04	+0.04	-0.06	+0.06	-0.10	+0.10	-0.18
	7/16 and 1/2	+0.02	-0.03	+0.04	-0.06	+0.06	-0.08	+0.08	-0.10	+0.12	-0.18
	9/16 to 3/4	+0.02	-0.03	+0.06	-0.08	+0.08	-0.10	+0.10	-0.10	+0.14	-0.18
	7/8 and 1	....	....	+0.08	-0.10	+0.10	-0.14	+0.12	-0.16	+0.16	-0.20
	1 1/8 to 1 1/2	....	....	+0.12	-0.12	+0.16	-0.16	+0.18	-0.18	+0.22	-0.22
	Over 1-1/2	....	....	+0.18	-0.18	+0.20	-0.20	+0.22	-0.22	+0.24	-0.24

Description	A low carbon steel hex bolt with a wider head than that of a standard hex bolt.
Applications/ Advantages	Offers greater wrenching area than standard hex machine bolts for use in heavy duty industrial work.
Material	Bolts shall be made from a carbon steel which conforms to the following chemical composition requirements-- **Grade A--** *Phosphorus:* 0.06% maximum; *Sulfur:* 0.15% maximum. **Grade B--** *Phosphorus:* 0.04% maximum; *Sulfur:* 0.05% maximum
Hardness*	**Bolts less than 3 times diameter in length: Grade A:** Rockwell B69 - 100; **Grade B:** Rockwell B69 - 95; **Bolts 3 times diameter and longer: Grade A:** Rockwell B100 maximum **Grade B:** Rockwell B69 - 95
Tensile Strength	**Grade A:** 60,000 psi. minimum; **Grade B:** 60,000 - 100,000 psi.
Elongation in 2 in.	18% minimum
Plating	See Appendix-A for plating information.

Elite Line 100% RTV Silicone

DESCRIPTION—ADASEAL INTERNATIONAL, INC. Adhesive/sealant is a gel-like, one component material that cures to a tough, rubbery solid when exposed to moisture in the air. Since it will not flow under it's own weight, it can be applied on sidewall joints and surfaces or overhead without sagging, slumping or running off. It will adhere to clean metal, glass, most types of non-oily wood, vulcanized silicone rubber, silicone resins, natural and synthetic fibers, ceramic, paper, as well as many painted and plastic surfaces.

COLORS: ADASEAL INTERNATIONAL, INC. Adhesive/sealant is available in aluminum, black, bronze, blue, clear, white, Hi-Temp red, snowy white, biscuit, and light grey.

RESISTANCE TO TEMPERATURE EXTREMES—ADASEAL INTERNATIONAL, INC. Adhesive/sealant offers both extreme low and high temperature resistance properties. It remains flexible to –60 deg. C (-75 deg. F) and although modulus increases, does not become brittle. These products will also withstand high temperatures up to +232 deg. C (+400 deg. F) during continuous operation, and up to +260 deg. C (+500 deg. F) for short periods. For extreme high temperatures of +260 deg. C (+500 deg. F) continuous operation and +315 deg. C (+600 deg. F) for short periods, the RED HI-TEMP silicone adhesive/sealant is recommended.

WEATHERABILITY—ADASEAL INTERNATIONAL, INC. Adhesive/sealant remains flexible to extreme temperatures. Because this material is 100% solids and contains no extenders or plasticizers, shrinkage due to weathering is negligible. Because of the chemical makeup, resistance to ultraviolet light and ozone is excellent.

MAINTENANCE—If silicone sealant becomes damaged, replace damaged portion. Clean surfaces in damaged area, remove any residual sealant, and repair with fresh silicone sealant.

CHEMICAL RESISTANCE—ADASEAL INTERNATIONAL, INC. Adhesive/sealant offers good resistance to most solvents and oils, organic and inorganic chemicals; however, it is not recommended for continuous use with gasoline or fuel oil. Swelling and degradation may occur with these and certain other hydrocarbon materials. Chemical compatibility should be tested for each application considered.

USES—ADASEAL INTERNATIONAL, INC. Adhesive/sealant can be used for:

- Adhering auto and appliance trim, including metal, fabric and fabric-backed plastics
- Bonding gaskets in heating and refrigeration units
- Sealing of marine cabins and windows
- Filleting and caulking joints in sheet-metal stacks, duct work and equipment housing
- Formed-in-place gaskets for engines, transmissions, differentials, gear boxes, compressors, pumps and all types of equipment and machinery
- Sealing windows in oven doors and flues on gas appliances, flanged pipe joints and access doors
- Anywhere a tight leak-proof seal is required

Colors Available

Clear	Black	Aluminum	Hi-Temp Red
White	Bronze	Blue	Almond
Snowy White	Biscuit	Light Grey	Yellow

Adaseal Caulk Pro

A premium quality latex caulk with outstanding adhesion properties, excellent outdoor weathering, minimum shrinkage, long tooling time and much more.

Key Benefits

- Siliconized Acrylic Latex conforms to the performance characteristics of ASTM C-834-78 specifications.
- Exterior or interior use, paintable, easy clean up. virtually odor free!
- Mildew resistant, non-staining, non-yellowing.
- Multi-use: Caulk Pro's primerless adhesion characteristics offer excellent adhesion to aluminum, wood, concrete, glass and ceramic tile.
- Superior weatherability. Use it in areas of high moisture since it is mildew resistant and waterproof.

DRYWALL SCREWS / DECKING SCREWS

Page No.

MATERIALS AVAILABLE:

MILD STEEL, STAINLESS

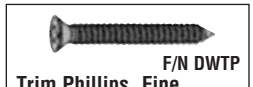
PLATINGS AVAILABLE:

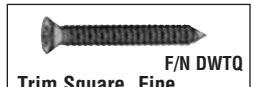
PLAIN, ZINC, GALVANIZED

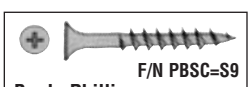

F/N DWSF
Sharp Point, Fine Drywall Screw

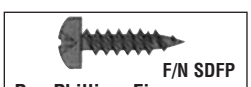

F/N DWSC
Sharp Point, Coarse Drywall Screw

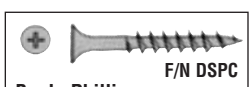

F/N DWHL
Sharp Point, High-Low Drywall Screw

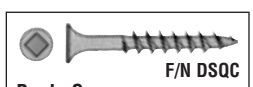

F/N DWTP
Trim Phillips, Fine Drywall Screw

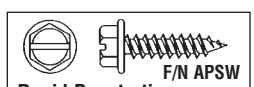

F/N DWTQ
Trim Square, Fine Drywall Screw

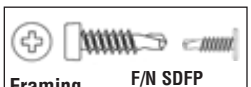

F/N PBSC=S9
Bugle Phillips Particle Board Screw


F/N SDFP
Pan Phillips, Fine Framing Screw


F/N DSPC
Bugle Phillips Deck Screw

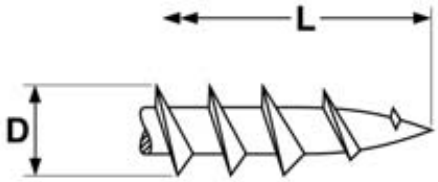

F/N DSQC
Bugle Square Deck Screw


F/N APSW
Rapid Penetrating Screw


F/N SDFP
Framing Screw

Self-Tapping Screws — Coarse Thread Drywall & Particle Board Screws — Bugle Head

F/N DWSC



Coarse Thread Drywall & Particle Board Screw

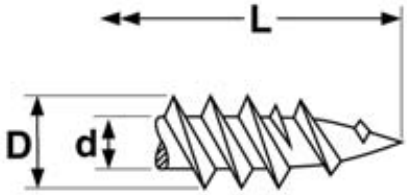
Threads for Coarse Thread Drywall and Particle Board Screws			
Screw Size	Threads per inch	D	
		Major Diameter	
		Max.	Min.
6	8	.154	.142
7	8	.172	.159
8	8	.180	.163
10	8	.210	.180
Tolerance on Length		Up to 1 in. incl.: -0, +0.060	Over 1 in.: -0, +0.100

Description	*Coarse thread Drywall--Sharp point:* A bugle head screw with spaced threads, extra sharp point and black phosphate finish.	*Particle Board Screw:* Same as a coarse thread drywall screw but available in shorter lengths than standard drywall screws.
Applications/ Advantages	*Coarse thread Drywall--Sharp point:* For attaching drywall to wood studs or to 25 gage metal studs.	*Particle Board Screw:* Designed specifically for use in dense woods, especially man-made types such as chipboard and particle board.
Material	AISI 1018 or equivalent steel	
Heat Treatment	Screws shall be quenched in liquid and then tempered by reheating to 650°F minimum.	
Case Hardness	Rockwell C 44 minimum	
Plating	See Appendix-A for information about the coatings of drywall and particle board screws.	

Bugle Head *Fine Thread Drywall Screws* Self-Tapping Screws

F/N DWSF

Fine Thread Drill Point Drywall Screw



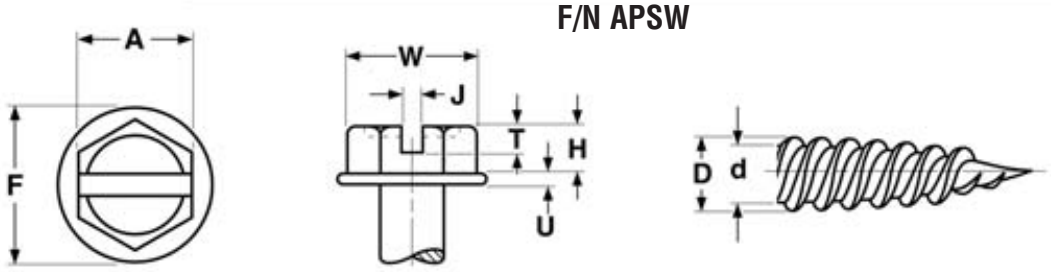
Fine Thread Sharp Point Drywall Screw

Threads for Fine Thread Drywall Screws					
Screw Size	Threads per inch	D		d	
		Major Diameter		Minor Diameter	
		Max.	Min.	Max.	Min.
6	18	.144	.135	.102	.096
7	16	.156	.147	.113	.106
8	15	.170	.161	.123	.116
10	14	.201	.193	.158	.152
Tolerance on Length		Up to 1 in. incl.: -0, +0.060		Over 1 in.: -0, +0.100	

Description	*Fine thread Drywall--Sharp point:* A bugle head screw with twinfast thread, extra sharp point and black phosphate finish. *Fine thread Drywall--Drill point:* A bugle head screw with twin lead spaced thread, self drilling point and black phosphate finish.
Applications/ Advantages	*Fine thread Drywall--Sharp point:* For attaching drywall to metal studs from 25 gage through 20 gage thick. Longer sizes are ideal for multiple layers or insulation. *Fine thread Drywall--Drill point:* Will drive easily through drywall, drill a hole in a steel stud up to 14 gage thick, and form its own mating thread. Can also be used for attaching plywood or insulation board to 14 gage metal.
Material	AISI 1018 or equivalent steel
Heat Treatment	Screws shall be quenched in liquid and then tempered by reheating to 650°F minimum.
Case Hardness	Rockwell C44 minimum
Plating	See Appendix-A for information about the coating of drywall screws.

Self-Tapping Screws — *Self-Piercing* — Slotted Hex Washer

F/N APSW



Head dimensions of self-piercing screws differ from those of standard tapping screws.

Hex Washer Head Slotted Self-Piercing Screws

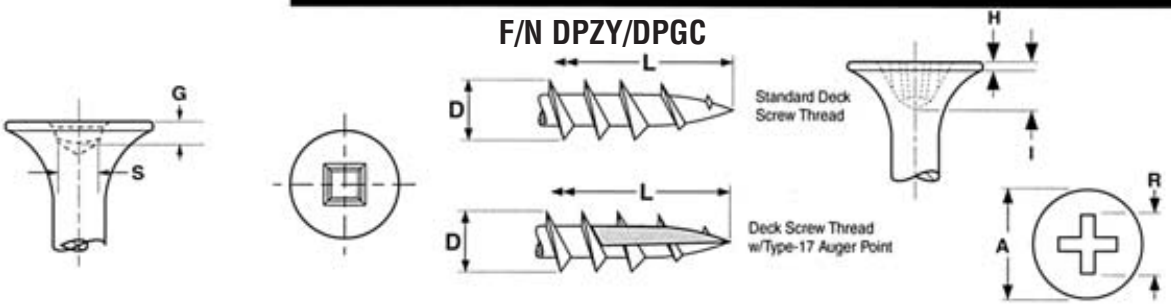
Size	A		W	H		F		U		J		T		D		d	
	Width Across Flats		Width Across Corner	Head Height		Washer Diameter		Washer Thickness		Slot Width		Slot Depth		Major Diameter		Minor Diameter	
	Max	Min	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
6-18	.250	.244	.272	.093	.080	.328	.302	.025	.015	.048	.039	.053	.033	.141	.136	.102	.096
7-16	.250	.244	.272	.093	.080	.328	.302	.029	.017	.048	.039	.062	.040	.158	.152	.114	.108
8-15	.250	.244	.272	.110	.096	.348	.322	.031	.019	.054	.045	.074	.052	.168	.162	.123	.116
10-12	.250	.244	.272	.110	.096	.414	.384	.031	.019	.054	.045	.074	.052	.194	.188	.133	.126
14-10	.375	.366	.408	.190	.171	.520	.479	.050	.029	.075	.064	.111	.082	.254	.247	.200	.178
Tolerance on Length								±0.05									

NOTE: There is no single standard for self-piercing screw dimensions. These values are offered as a guide; deviations from these specifications may occur.

Description	A slotted hex washer head thread forming tapping screw with a single lead thread rolled to the tip of an extra sharp point, and a second thread spaced 180° apart.
Applications/ Advantages	May be used in thin metal (less than .050 thick). Eliminates need for pre-drilled or pre-punched holes. Undercut area beneath the head allows greater length of thread engagement. Twin lead threads help to reduce driving torque.
Material	AISI 1018 - 1022 or equivalent steel
Heat Treatment	Screws shall be quenched in liquid and then tempered by reheating to 650°F minimum.
Surface Hardness	Rockwell C45 minimum
Case Depth	No. 6 diameter: .002 - .007 No. 7 thru 10 diameter: .004 - .009 1/4" diameter: .005 - .011
Core Hardness (after tempering)	Rockwell C28 - 38
Plating	See Appendix-A for plating information.

Self-Tapping Screws — *Deck Screws* — Phillips Recess / Square Recess

F/N DPZY/DPGC



Square Recess Coarse Thread Deck Screws								
Screw Size	Threads per inch	D		S		G		Drive Size
		Major Diameter		Recess Square		Penetration Gaging Depth		
		Max.	Min.	Max	Min	Max	Min	
6	10	.154	.142	.091	.089	.065	.056	1
8	8	.180	.163	.113	.110	.075	.064	2
10	8	.210	.180	.113	.110	.075	.064	2
Tolerance on Length		Up to 1 in. incl.: -0, +0.060				Over 1 in.: -0, +0.100		

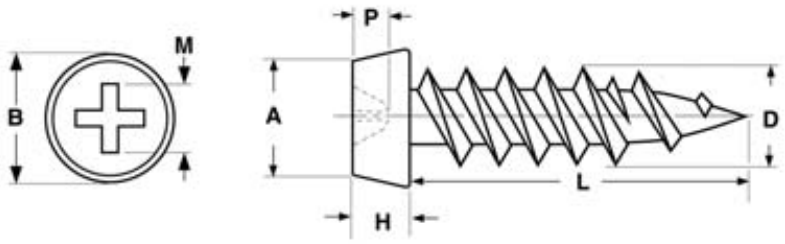
Phillips Recess Coarse Thread Deck Screws								
Screw Size	Threads per inch	D		R		I		Phillips Recess Depth
		Major Diameter		Phillips Recess Diameter		Phillips Recess Depth		
		Max.	Min.	Max.	Min.	Max.	Min.	
6	10	.154	.142	.201	.176	.116	.093	2
8	8	.180	.163	.201	.176	.116	.093	2
10	8	.210	.180	.204	.190	.125	.098	2
Tolerance on Length		Up to 1 in. incl.: -0, +0.060				Over 1 in.: -0, +0.100		

NOTE: There is no single standard for deck screw dimensions. These values are offered as a guide; deviations from these specifications may occur.

	Steel	*Stainless*
Description	A bugle head screw with spaced threads, extra sharp point and dacrotized finish. An optional design allows for a cutting edge and chip cavity to extend from the point, up the shank for a portion of the threaded length.	A bugle head screw with spaced threads and extra sharp point, manufactured of corrosion-resistant stainless steel.. An optional design allows for a cutting edge and chip cavity to extend from the point, up the shank for a portion of the threaded length.
Applications/ Advantages	Designed specifically for joining pieces of pressure treated lumber. Provides corrosion resistance superior to phosphate-coated drywall screws without discoloring the wood. The square drive recess is preferred by some for its excellent torque transmission and resistance to cam-out problems. Screws with a cutting edge and chip cavity tend to penetrate hard woods easier than those without.	Designed specifically for joining pieces of pressure treated lumber. Remains resistant to corrosion for approximately twice as long as do dacrotized steel deck screws. Screws with a cutting edge and chip cavity tend to penetrate hard woods easier than those without. This design puts less stress on the screw in the driving process.
Material	AISI 1018 or equivalent steel	18-8 passivated stainless steel
Hardness	HV 550 - 800	Rockwell B 85 - 95
Plating	Steel deck screws have a dacrotized finish.	Stainless deck screws require no additional coating.

Sharp Point *Framing Screws* Self-Tapping Screws

F/N APPM



PAN PHILLIPS FRAMING SCREW — SHARP POINT												
Nominal Size	A		B		H		D		M		P	
	Top Head Diameter		Bottom Head Diameter		Head Height		Major Diameter		Recess Diameter		Recess Depth	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
7	.263	.224	.314	.295	.114	.098	.153	.142	.197	.171	.106	.086
Tolerance on Length					+.015, -.020							

NOTE: There is no single standard for framing screw dimensions. These values are offered as a guide; deviations from these specifications may occur.

Description	A case hardened screw with a sharp point and twinfast thread. The head has a trapezodal profile with a flat top and a flat underside.
Applications/ Advantages	For framing applications in thin gauge metal studs & tracks.
Material	AISI 1018 steel
Heat Treatment	Screws shall be quenched in liquid and then tempered by reheating to 650°F minimum.
Case Hardness	HV 550 - 800
Core Hardness	HV 270 - 450
Case Depth	.004 minimum
Torsional Strength	34 kg/cm minimum
Plating	Parts are usually supplied with a black phosphate finish.


F/N DWSF
Sharp Point, Fine Drywall Screw


F/N DWSC
Sharp Point, Coarse Drywall Screw


F/N DWHL
Sharp Point, High-Low Drywall Screw


F/N DWTP
Trim Phillips, Fine Drywall Screw

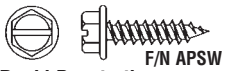

F/N DWTQ
Trim Square, Fine Drywall Screw


F/N PBSC=S9
Bugle Phillips Particle Board Screw


F/N SDFP
Pan Phillips, Fine Framing Screw


F/N DSPC
Bugle Phillips Deck Screw

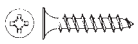

F/N DSQC
Bugle Square Deck Screw


F/N APSW
Rapid Penetrating Screw

Drywall Screws / Decking Screws

Drywall Screws

BUGLE PHILLIPS FINE THREAD, PLATED


BUGLE PHILLIPS
F/N DWSF

Part No.	Description (Inches)	Box Qty.
DWSF#060016STLPL	6 x 1	10M
DWSF#060018STLPL	6 x 1-1/8	10M
DWSF#060020STLPL	6 x 1-1/4	8M
DWSF#060024STLPL	6 x 1-1/2	6.5M
DWSF#060026STLPL	6 x 1-5/8	5M
DWSF#060032STLPL	6 x 2	3.5M
DWSF#060036STLPL	6 x 2-1/4	3M
DWSF#070040STLPL	7 x 2-1/2	2.5M
DWSF#080040STLPL	8 x 2-1/2	2.5M
DWSF#060048STLPL	8 x 3	2M
DWSF#100056STLPL	10 x 3-1/2	1M
DWSF#100060STLPL	10 x 3-3/4	1M
DWSF#100064STLPL	10 x 4	1M
DWSF#100072STLPL	10 x 4-1/2	.75M
DWSF#100080STLPL	10 x 5	.75M
DWSF#100096STLPL	10 x 6	.75M

COARSE THREAD, PLATED


COARSE THREAD
F/N DWSC

Part No.	Description (Inches)	Box Qty.
DWSC#060012STLPL	6 x 3/4	
DWSC#060016STLPL	6 x 1	10M
DWSC#060018STLPL	6 x 1-1/8	10M
DWSC#060020STLPL	6 x 1-1/4	8M
DWSC#060024STLPL	6 x 1-1/2	
DWSC#060026STLPL	6 x 1-5/8	5M
DWSC#060032STLPL	6 x 2	3.5M
DWSC#060036STLPL	6 x 2-1/4	3M
DWSC#070040STLPL	7 x 2-1/2	
DWSC#080040STLPL	8 x 2-1/2	2.5M
DWSC#080048STLPL	8 x 3	2M
DWSC#100056STLPL	10 x 3-1/2	1M
DWSC#100060STLPL	10 x 3-3/4	
DWSC#100064STLPL	10 x 4	
DWSC#100072STLPL	10 x 4-1/2	
DWSC#100080STLPL	10 x 5	
DWSC#100096STLPL	10 x 6	

PHILLIPS PAN FRAMING, PLATED


PAN FRAMING
F/N APPM

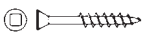
Part No.	Description (Inches)
19S	6 X 7/16
20	7 X 7/16

PHILLIPS MODIFIED THREAD, ZINC


SUPER FRAMER
F/N APPM

Part No.	Description (Inches)
140	8 X 1/2
142	8 X 3/4
144	8 X 1
146	8 X 1-1/4

PHILLIPS TRIM HEAD


TRIM HEAD
F/N DWQT/DWTP

Part No.	Description (Inches)
DWQT#060026STLPL	6 x 1-5/8 SQUARE
DWQT#060036STLPL	6 x 2-1/4 SQUARE
DWQT#080048STLPL	8 x 3 SQUARE
DWTP#060026STLPL	6 x 1-5/8
DWTP#060036STLPL	6 x 2-1/4
DWTP#080048STLPL	8 x 3

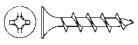
INDUSTRIAL HEX WASHER HEAD, ZINC


HEX WASHER—HEAD SLOTTED
F/N APSW

Part No.	Description (Inches)
APSW#060006STLZN	6 x 3/8
APSW#070008STLZN	7 x 1/2
APSW#080008STLCR	8 x 1/2 with creme head
APSW#080006STLIV	8 x 1/2 with ivory head
APSW#080008STLRB	8 x 1/2 with royal brown head
APSW#080008STLZN	8 x 1/2
APSW#080008STLZNB	8 x 1/2 with bronze head
APSW#080008STLZNBL	8 x 1/2 with black head
APSW#080008STLZNBR	8 x 1/2 with brown head
APSW#080008STLZNCLAY	8 x 1/2 with clay head
APSW#080008STLZNDG	8 x 1/2 with dark green head
APSW#080008STLZNIMP	8 x 1/2
APSW#080008STLZNIV	8 x 1/2 with ivory head
APSW#080008STLZNLG	8 x 1/2 with light grey head
APSW#080008STLZNW	8 x 1/2 with white head
APSW#080008STLZNWICK	8 x 1/2 with wicker head
APSW#080012STLZN	8 x 3/4 1/4" A/F
APSW#080016STLZN	8 x 1
APSW#080016STLZNW	8 x 1 with white head
APSW#080020STLZN	8 x 1/4
APSW#080024STLZN	8 x 1-1/2
APSW#080028STLZN	8 x 1-3/4
APSW#080032STLZN	8 x 2
APSW#08008STLZNBUCK	8 x 1/2
APSW#08008STLZN	10 x 1/2
APSW#100008STLZN	10 x 1/2
APSW#100012STLZN	10 x 3/4
APSW#100016STLZN	10 x 1
APSW#100020STLZN	10 x 1-1/4
APSW#100024STLZN516	10 x 1-1/2
APSW#100032STLZN	10 x 2

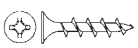
Decking Screws

COARSE THREAD, GALVANIZED


GALVANIZED
F/N DPGC

Part No.	Description (Inches)	Box Qty.
DPGC#060016STLGV	6 x 1	10M
DPGC#060020STLGV	6 x 1-1/4	8M
DPGC#060026STLGV	6 x 1-5/8	5M
DPGC#060032STLGV	6 x 2	3.5M
DPGC#080040STLGV	8 x 2-1/2	2.5M
DPGC#080048STLGV	8 x 3	2M
DPGC#100056STLGV	10 x 3-1/2	1M
DPGC#100064STLGV	10 X 4	1M
DPGC#100072STLGV	10 x 4-1/2	.75M
DPGC#100080STLGV	10 x 5	.75M

YELLOW ZINC


YELLOW ZINC
F/N DPZY

Part No.	Description (Inches)
DPZY#100096STLGV	10 x 6
DPZY#060020STLZY	6 x 1-1/4
DPZY#060026STLZY	6 x 1-5/8
DPZY#060032STLZY	6 x 2
DPZY#080040STLZY	8 x 2-1/2
DPZY#080048STLZY	8 x 3
DPZY#100056STLZY	10 x 3-1/2
DPZY#100064STLZY	10 x 4

EXPANSION ANCHORS

One-Step Anchors

This category of anchors is designed to be installed through the fixture because the anchor size is the same as the drilled hole size. Drilling time is reduced because smaller holes are required. By eliminating the need for layout or hole spotting, installation time is also reduced.

	Base Material						Head Style						Working Load			Diameter Range									Coating / Plating or Material					
Section/ Anchor Type	Concrete	Stone	Solid Brick	Hollow Brick	Solid Block	Hollow Block	Finished Head	Round Head	Countersunk	Mushroom Head	Removable	Tamper Proof	400 lbs. or less	400 to 4,000 lbs.	Above 4,000 lbs.	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1-1/4"	Coated / Plated Steel	Galvanized Steel	303 / 4 Stainless Steel	316 Stainless Steel	Zamac Alloy	Engineered Plastic
23.0 Power-Bolt™	●	○	●	○	●	○	●		●		●		●	●	●		●	●	●	●	●	●		●	●	●		●			
24.0 Power-Stud™	●	○											●	●	●		●		●	●	●	●	●	●	●	●	●	●	●		
25.0 Lok/Bolt®	●	○	●	○	●	○		●	●				●	●			●	●	●	●	●	●				●		●			
26.0 Set-Bolt	●	○	○		○								●	●			●		●	●						●					
27.0 SPIKE®	●	○	○	○	●	○	●		●	●		●	●	●		●	●		●	●						●			●		
27.0 Threaded SPIKE®	●	○	○	○	●	○							●	●		●	●		●	●						●					
28.0 Drive®	●	○	○		○	○	●	●	●			●	●	●		●	●		●	●						●					
29.0 Zamac Hammer-Screw®	●	○	○	○	●	○	●		●	●	●		●				●									●		●		●	
30.0 Zamac Nailin®	●	○	○	○	●	○	●		●	●		●	●			●	●									●		●		●	
31.0 Nylon Nailin®	●	○	○	○	●	○	●	●	●	●	●		●			●	●									●		●			●
32.0 TAPPER™	●		○	○	●	○			●		●		●			●	●		●							●		●			

● Suitable ○ May be Suitable Depending upon Application

EXPANSION ANCHORS

Hollow Wall Anchors

These anchors are used in hollow materials such as concrete plank, block, structural tile, wallboard, and plaster. Some types can also be used in solid materials. Adhesive anchors can also be used for hollow wall applications using anchor rods and screen tubes.

Section/ Anchor Type	Base Material						Working Loads			Diameter Range											Coating/ Plating or Material			
	Concrete Plank	Hollow Block	Hollow Brick	Structural Tile	Wallboard	Plywood/Paneling	400 lbs. or less	400 to 4,000 lbs.	Above 4,000 lbs.	No. 6 Sheet Metal Screw	No. 8 Sheet Metal Screw	No. 10 Sheet Metal Screw	No. 12 Sheet Metal Screw	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	Coated / Plated Steel	303 / 4 Stainless Steel	Zamac Alloy	Engineered Plastic
25.0 Lok/Bolt	●	○	○				●	●								●	●	●	●	●	●	●	●		
32.0 TAPPER™	●	○	○	○			●	●							●	●		●				●	●		
37.0 Hollow Set Drop-In	●	●	○	○			●	●								●	●	●	●	●		●	●	●	
45.0 Toggle Bolt	●	●		○	●	●	●	●						●	●	●	●	●	●			●			
46.0 Polly™		○		○	●	●	●							●	●	●						●			
47.0 Poly-Toggle		○		○	●	●	●			●	●	●	●												●
48.0 Nylon *ZiP-It*®					●		●			○	●														●
48.0 Nylon *ZiP-It*® Jr.					●		●			●	○														●
48.0 Zinc *ZiP-It*®					●		●			○	●													●	
49.0 Legs®					●		●			●	●											●			
52.0 *Power-Fast*® System	○	○	○	○			●	●	●							●		●	●	●	●	●	●		

● Suitable ○ May be Suitable Depending upon Application

Bolt Anchors

Bolt anchors are designed to be installed flush with the surface of the base material. They are used in conjunction with a threaded machine bolt or in some types, a threaded rod. For temporary applications, some types can be subset below the surface of the base material to allow patching after the fixture is removed.

	Base Material						Working Load			Diameter Range												Coating / Plating or Material				
Section/ Anchor Type	Concrete	Stone	Solid Brick	Hollow Brick	Solid Block	Hollow Block	400 lbs. or less	400 to 4,000 lbs.	Above 4,000 lbs.	6 - 32	8 - 32	10 - 24	1/4"- 20	5/16"- 18	3/8"- 16	1/2"- 13	1/2"- 6 Coil-Thread	5/8"-11	3/4"-10	3/4"- 4-1/2 Coil-Thread	7/8 "- 9	Zinc Plated Steel	303 / 4 Stainless Steel	316 Stainless Steel	Lead	Zamac Alloy
33.0 Steel Drop-In	●	○			○		●	●	●				●		●	●		●	●			●	●	●		
33.0 Coil-Thread Drop-In	●						●	●									●			●		●				
34.0 Saber Tooth	●						●	●					●	●	●	●		●	●		●	●				
34.0 External Plug Drop-In	●						●	●					●		●	●						●				
35.0 Single	●	○	●	○	●	○	●	●					●	●	●	●		●	●							●
36.0 Double	●	○	●	○	●	○	●	●					●	●	●	●		●	●							●
37.0 Hollow Set Drop-In	●	○	●	○	●	○	●	●					●	●	●	●		●				●	●			●
38.0 Calk-In	●	○	●	○	●	○	●	●		●	●	●	●	●	●	●		●	●						●	●
56.0 Internally Threaded Insert	●	○	○		○		●	●	●						●	●		●	●			●				

Screw Anchors

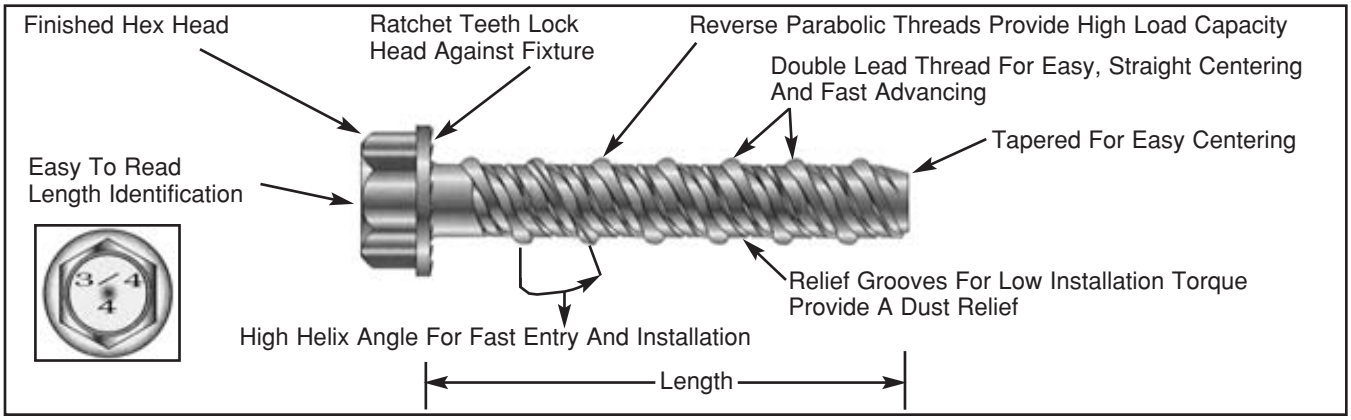
Screw anchors are designed to be installed flush with the surface of the base material. They are used in conjunction with sheet metal, wood, or lag screws depending on the anchor type.

	Base Material							Working Load			Diameter Range															Coating / Plating or Material			
Section/ Anchor Type	Concrete	Stone	Solid Brick	Hollow Brick	Solid Block	Hollow Block	Wallboard	400 lbs. or less	400 to 4,000 lbs.	Above 4,000 lbs.	No.4 Sheet / Wood	No.5 Sheet / Wood	No.6 Sheet / Wood	No.7 Sheet / Wood	No.8 Sheet / Wood	No.9 Sheet / Wood	No.10 Sheet / Wood	No.12 Sheet / Wood	No.14 Sheet / Wood	No.16 Sheet / Wood	No.18 Sheet / Wood	No.20 Sheet / Wood	1/4" Lag	5/16" Lag	3/8" Lag	1/2" Lag	5/8" Lag	3/4" Lag	Lead	Zamac Alloy	Engineered Plastic	Jute Fiber
39.0 Lag Shield	●	○	○	○	○	○		●	●														●	●	●	●	●	●		●		
40.0 Fiberplug™	●	●	●	○	●	○	○	●	●				●		●		●	●	●	●		●			●				●			●
41.0 Scru-Lead	●	○	●	○	●	○		●					●	●	●		●	●	●	●	●								●			
42.0 Bantam Plug	●	●	●	○	●	○	○	●					●	●	●	●	●	●	●	●											●	
43.0 Fluted Plastic	●	●	●	○	●	○	○	●			●	●	●	●	●	●	●	●	●												●	

● Suitable ○ May be Suitable Depending upon Application

Wedge-Bolt™

F/N WBHX



Wedge Bolt

Size	Min. Embed.	Thread Length	Std. Box	Std. Ctn.	Wt./ 100
1/4" x 1-1/4"	1"	1-1/8"	100	500	2-1/2
1/4" x 1-3/4"	1"	1-5/8"	100	500	3-1/4
1/4" x 2-1/4"	1"	2"	100	500	4-1/4
1/4" x 3"	1"	2-3/4"	100	500	5-1/2
3/8" x 1-3/4"	1-1/2"	1-1/2"	50	250	8
3/8" x 2-1/2"	1-1/2"	2-1/4"	50	250	11
3/8" x 3"	1-1/2"	2-3/4"	50	250	12
3/8" x 4"	1-1/2"	3-3/4"	50	250	15
1/2" x 2"	2"	1-3/4"	50	200	14
1/2" x 2-1/2"	2"	2-1/4"	50	200	15-1/2
1/2" x 3"	2"	2-3/4"	50	150	21
1/2" x 4"	2"	3-3/4"	50	150	25
1/2" x 5"	2"	3-3/4"	25	100	28
1/2" x 6"	2"	3-3/4"	25	75	34
5/8" x 3"	2-1/2"	2-3/4"	25	100	28
5/8" x 4"	2-1/2"	3-3/4"	25	100	30
5/8" x 5"	2-1/2"	3-3/4"	25	75	39
5/8" x 6"	2-1/2"	3-3/4"	25	75	47
3/4" x 3"	3"	2-3/4"	20	60	48
3/4" x 4"	3"	3-3/4"	20	60	56
3/4" x 5"	3"	3-3/4"	20	60	70
3/4" x 6"	3"	3-3/4"	20	60	86
3/4" x 8"	3"	3-3/4"	10	40	100

The published length is measured from below the hex washer head to the end of the anchor.

Wedge-Bit™ Sizes

For proper performance, the Wedge-Bolt anchor must be installed with a Wedge-Bit. The Wedge-Bit has a special matched tolerance range designed to provide optimum performance for the anchor. The available shank styles and sizes are listed below.

SDS-Plus Wedge-Bit

Drill Size (inches)	Usable Length (inches)	Overall Length (inches)	Std. Pouch	Wt./ Dozen
1/4	2	4	1	1
1/4	4	6	1	1-1/4
3/8	4	6	1	2-1/2
3/8	6	8	1	2
1/2	4	6	1	2-3/4
1/2	8	10	1	4-1/4
5/8	6	8	1	4-1/2
5/8	10	12	1	6-1/4
3/4	6	8	1	5
3/4	10	12	1	6-3/4

Spline Wedge-Bit

Drill Size (inches)	Usable Length (inches)	Overall Length (inches)	Std. Tube	Wt./ Dozen
1/2	8	13	1	11
5/8	8	13	1	12-1/2
3/4	8	13	1	15

SDS-Max Wedge-Bit

Drill Size (inches)	Usable Length (inches)	Overall Length (inches)	Std. Tube	Wt./ Dozen
1/2	8	13	1	12
5/8	8	13	1	13
3/4	8	13	1	15

Installation Specifications

Carbon Steel Wedge-Bolt™

Anchor Size	1/4"	3/8"	1/2"	5/8"	3/4"
Wedge-Bit Drill Bit Size*	1/4"	3/8"	1/2"	5/8"	3/4"
Fixture Clearance Hole	5/16"	7/16"	9/16"	11/16"	13/16"
Head Washer Height	7/32"	21/64"	7/16"	1/2"	19/32"
Washer O.D.	9/16"	47/64"	1"	1-3/16"	1-13/32"
Wrench Size	7/16"	9/16"	3/4"	15/16"	1-1/8"

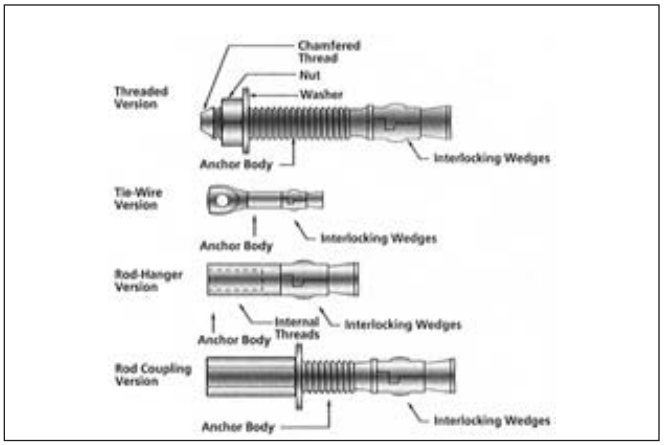
*For proper performance, a Wedge-Bit must be used.

Material Specifications

Carbon Steel Wedge-Bolt™

Anchor Component	Component Material
Anchor Body	Through Hardened Carbon Steel
Zinc Plating	ASTM B 633, SC1, Type III (Fe / Zn 5)

Wedge Anchor



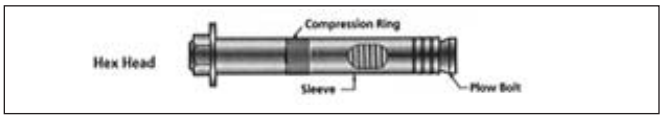
Carbon Steel Power-Stud™ F/N WAHX

Carbon Steel Power-Stud anchors are manufactured from carbon steel which is plated with commercial bright zinc and a supplementary chromate treatment in accordance with ASTM Specification B 633, SC1, Type III.

Size	Min. Embed.	Thread Length	Std. Box	Std. Ctn.	Wt./ 100
1/4" x 1-3/4"	1-1/8"	3/4"	100	500	3
1/4" x 2-1/4"	1-1/8"	1-1/4"	100	500	3-1/2
1/4" x 3-1/4"	1-1/8"	2"	100	500	4-3/4
3/8" x 2-1/4"	1-5/8"	1"	50	250	8-3/4
3/8" x 2-3/4"	1-5/8"	1-1/2"	50	250	9-1/2
3/8" x 3"	1-5/8"	1-3/4"	50	250	10-3/4
3/8" x 3-1/2"	1-5/8"	2-1/4"	50	250	12
3/8" x 3-3/4"	1-5/8"	2-1/2"	50	250	12-3/4
3/8" x 5"	1-5/8"	3-3/4"	50	250	15-1/2
3/8" x 7"	1-5/8"	5-3/4"	50	200	21
1/2" x 2-3/4"	2-1/4"	1-1/4"	50	200	18
1/2" x 3-3/4"	2-1/4"	2-1/4"	50	200	23
1/2" x 4-1/2"	2-1/4"	3"	50	200	28
1/2" x 5-1/2"	2-1/4"	4"	50	150	32
1/2" x 7"	2-1/4"	5-1/2"	25	100	44
1/2" x 8-1/2"	2-1/4"	7"	25	100	46
5/8" x 3-1/2"	2-3/4"	1-7/8"	25	100	40
5/8" x 4-1/2"	2-3/4"	2-7/8"	25	100	54
5/8" x 5"	2-3/4"	3-3/8"	25	100	57
5/8" x 6"	2-3/4"	4-3/8"	25	75	64
5/8" x 7"	2-3/4"	5-3/8"	25	75	72
5/8" x 8-1/2"	2-3/4"	1-5/8"	25	75	84
5/8" x 10"	2-3/4"	1-5/8"	25	75	100
3/4" x 4-1/4"	3-3/8"	2-1/4"	20	60	70
3/4" x 4-3/4"	3-3/8"	2-3/4"	20	60	76
3/4" x 5-1/2"	3-3/8"	3-1/2"	20	60	85
3/4" x 6-1/4"	3-3/8"	4-1/4"	20	60	95
3/4" x 7"	3-3/8"	5"	20	60	105
3/4" x 8-1/2"	3-3/8"	1-3/4"	10	40	120
3/4" x 10"	3-3/8"	1-3/4"	10	30	135
3/4" x 12"	3-3/8"	1-3/4"	10	30	155
7/8" x 6"	3-7/8"	2"	10	40	120
7/8" x 8"	3-7/8"	2"	10	40	160
7/8" x 10"	3-7/8"	2"	10	30	200
1" x 6"	4-1/2"	2-3/8"	10	30	170
1" x 9"	4-1/2"	2-3/8"	10	30	240
1" x 12"	4-1/2"	2-3/8"	5	15	300
1-1/4" x 9"	5-5/8"	3-1/4"	5	15	360
1-1/4" x 12"	5-5/8"	3-1/4"	5	15	480

The published length is the overall length of the anchor. Allow one anchor diameter for the nut and washer thickness when selecting a length.

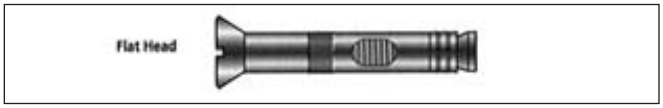
Sleeve Anchor



Hex Nut Lok/Bolt™ F/N SAHX

Size	Drill Dia.	Min. Embed.	Std. Box	Std. Ctn.	Wt./ 100
5/16" x 1-1/2"	5/16"	1-3/8"	100	1000	4-1/4
5/16" x 2-1/2"	5/16"	1-1/2"	100	500	5-3/4
3/8" x 1-7/8"	3/8"	1-5/8"	50	500	7
3/8" x 3"	3/8"	1-5/8"	50	500	10
3/8" x 4"	3/8"	1-5/8"	50	500	16
1/2" x 2-1/4"	1/2"	2-1/8"	25	250	14
1/2" x 3"	1/2"	2-1/4"	25	250	17-1/4
1/2" x 4"	1/2"	2-1/4"	25	125	22
1/2" x 5-1/4"	1/2"	2-1/4"	25	125	27
1/2" x 6"	1/2"	2-1/4"	10	100	35
5/8" x 2-1/4"	5/8"	2-1/8"	25	125	25-1/2
5/8" x 3"	5/8"	2-3/4"	25	125	34
5/8" x 4-1/4"	5/8"	2-3/4"	10	100	41
5/8" x 6"	5/8"	2-3/4"	10	100	49
3/4" x 2-1/2"	3/4"	2-1/8"	10	100	46
3/4" x 4"	3/4"	3-3/8"	10	40	70
3/4" x 5-3/4"	3/4"	3-3/8"	10	30	90
3/4" x 7-1/2"	3/4"	3-3/8"	10	30	115

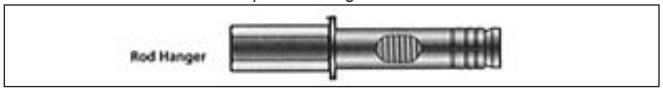
The published length is measured from below the washer to the end of the anchor.



Flat Head Lok/Bolt™ F/N SASF

Size	Drill Dia.	Min. Embed.	Std. Box	Std. Ctn.	Wt./ 100
1/4" x 1-1/8"	1/4"	1"	100	1000	2
1/4" x 2"	1/4"	1-1/8"	100	1000	2-3/4
1/4" x 3"	1/4"	1-1/8"	100	1000	3-3/4
1/4" x 4"	1/4"	1-1/8"	100	500	4-1/2
1/4" x 5-1/4"	1/4"	1-1/8"	100	500	6-1/2
5/16" x 2-1/2"	5/16"	1-1/2"	100	1000	4-1/2
5/16" x 3-1/2"	5/16"	1-1/2"	100	500	6-1/4
3/8" x 2-3/4"	3/8"	1-5/8"	50	500	7-1/2
3/8" x 4"	3/8"	1-5/8"	50	250	10-3/4
3/8" x 5"	3/8"	1-5/8"	50	250	14
3/8" x 6"	3/8"	1-5/8"	50	250	16

*This size does not have a compression ring.

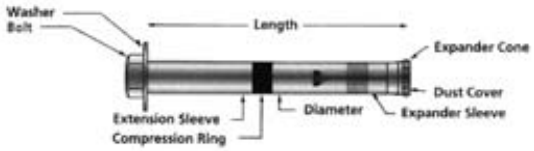


Rod Hanger Lok/Bolt™ F/N SARH

Size	Drill Dia.	Min. Depth	Std. Box	Std. Ctn.	Wt./ 100
*3/8" x 1-7/8"	3/8"	1-5/8"	50	250	9
*1/2" x 2-1/4"	1/2"	2-1/4"	25	125	21

*These sizes do not have a compression ring.

Power-Bolt™



Carbon Steel Hex Head Power-Bolt™ F/N SBHX
Carbon steel Power-Bolt Anchors are manufactured using a Grade 5 bolt. They are plated with a commercial bright zinc finish and have a supplementary chromate treatment in accordance with ASTM Specification B 633.

Size	Drill Dia.	Min. Depth	Std. Box	Std. Ctn.	Wt./ 100
1/4" x 1"	1/4"	7/8"	100	600	2
1/4" x 1-3/4"	1/4"	1-1/4"	100	600	3
1/4" x 3"	1/4"	1-1/4"	100	600	5
5/16" x 1-3/4"	5/16"	1-1/2"	100	600	5
5/16" x 2-1/2"	5/16"	1-1/2"	50	300	6
5/16" x 3-1/2"	5/16"	1-1/2"	50	300	8
3/8" x 2-1/4"	3/8"	2"	50	300	8
3/8" x 3"	3/8"	2"	50	300	11
3/8" x 3-1/2"	3/8"	2"	50	300	12
3/8" x 4"	3/8"	2"	50	300	14
1/2" x 2-3/4"	1/2"	2-1/2"	50	200	16
1/2" x 3-3/4"	1/2"	2-1/2"	25	150	21
1/2" x 4-3/4"	1/2"	2-1/2"	25	150	26
1/2" x 5-3/4"	1/2"	2-1/2"	25	150	32
5/8" x 3"	5/8"	2-3/4"	20	120	28
5/8" x 4"	5/8"	2-3/4"	15	90	40
5/8" x 5"	5/8"	2-3/4"	15	90	47
5/8" x 6"	5/8"	2-3/4"	15	90	57
5/8" x 8-1/2"	5/8"	2-3/4"	10	40	77
3/4" x 3-1/4"	3/4"	3"	15	90	47
3/4" x 4-1/4"	3/4"	3"	10	60	58
3/4" x 5-1/4"	3/4"	3"	10	60	70
3/4" x 7-1/4"	3/4"	3"	10	40	105
3/4" x 8-1/4"	3/4"	3"	10	40	110
1" x 6"	1"	4-1/4"	10	90	170
1" x 7"	1"	4-1/4"	10	90	195
1-1/4" x 7"	1-1/4"	6"	5	15	290
1-1/4" x 9"	1-1/4"	6"	5	15	360

The published length is measured from below the washer to the end of the anchor.

Steel Drop-In
F/N DIAS

33.4 Anchor Sizes and Styles
The following tables list the sizes and styles of Steel Drop-In anchors including both zinc plated carbon steel and stainless steel.

Carbon Steel–Smooth Wall F/N DIAS

Size	Drill Dia.	Min. Depth	Thread Depth	Std. Box	Std. Ctn.	Wt./ 100
1/4"	3/8"	1"	7/16"	100	1000	2
3/8"	1/2"	1-9/16"	5/8"	50	500	6
1/2"	5/8"	2"	13/16"	50	250	12
5/8"	7/8"	2-1/2"	1-3/16"	25	125	32
3/4"	1"	3-3/16"	1-3/8"	10	50	48

Carbon Steel Flanged Drop-In (Lipped) F/N DIAF

Size	Drill Dia.	Min. Depth	Thread Depth	Std. Box	Std. Ctn.	Wt./ 100
1/4"	3/8"	1"	7/16"	100	1000	2
3/8"	1/2"	1-9/16"	5/8"	50	500	6
1/2"	5/8"	2"	13/16"	50	250	12

SPIKE®

Mushroom Head Carbon Steel SPIKE® F/N SPMH

Size	Drill Dia.	Min. Embed.	Std. Box	Std. Ctn.	Wt./ 100
3/16" x 1"	3/16"	7/8"	100	1000	1-1/4
3/16" x 1-1/4"	3/16"	7/8"	100	1000	1-1/2
3/16" x 1-1/2"	3/16"	1-1/4"	100	1000	1-3/4
3/16" x 2"	3/16"	1-1/4"	100	1000	2
3/16" x 2-1/2"	3/16"	1-1/4"	100	1000	2
3/16" x 3"	3/16"	1-1/4"	100	1000	2-1/2
3/16" x 3-1/2"	3/16"	1-1/4"	100	1000	3-1/2
3/16" x 4"	3/16"	1-1/4"	100	500	4
1/4" x 1"	1/4"	7/8"	100	1000	1-1/2
1/4" x 1-1/4"	1/4"	1"	100	1000	2-1/4
1/4" x 1-1/2"	1/4"	1-1/4"	100	1000	2-1/2
1/4" x 2"	1/4"	1-1/4"	100	1000	3
1/4" x 2-1/2"	1/4"	1-1/4"	100	1000	4
1/4" x 3"	1/4"	1-1/4"	100	1000	4-1/2
1/4" x 3-1/2"	1/4"	1-1/4"	100	1000	5
1/4" x 4"	1/4"	1-1/4"	100	500	6
3/8" x 2"	3/8"	1-3/4"	25	250	7-1/2
3/8" x 2-1/2"	3/8"	1-3/4"	25	250	9
3/8" x 3"	3/8"	1-3/4"	25	250	10
3/8" x 3-1/2"	3/8"	1-3/4"	25	250	11
3/8" x 4"	3/8"	1-3/4"	25	250	12
3/8" x 5"	3/8"	1-3/4"	25	250	18
3/8" x 6"	3/8"	1-3/4"	25	250	20
1/2" x 2-3/4"	1/2"	2-1/2"	50	200	18
1/2" x 3-1/2"	1/2"	2-1/2"	50	200	22
1/2" x 4"	1/2"	2-1/2"	25	150	27
1/2" x 5"	1/2"	2-1/2"	25	150	31
1/2" x 6-1/2"	1/2"	2-1/2"	25	150	42

The published length is measured from below the head to the end of the anchor.

Threaded Carbon Steel SPIKE®

Size	Drill Dia.	Min. Embed.	Thread Length	Std. Box	Std. Ctn.	Wt./ 100
1/4" x 1-3/4"	1/4"	1-1/4"	5/8"	100	500	3-1/4
1/4" x 2-1/4"	1/4"	1-1/4"	7/8"	100	500	3-3/4
1/4" x 3"	1/4"	1-1/4"	1-1/2"	100	500	5-1/4
3/8" x 2-1/4"	3/8"	1-3/4"	3/4"	50	250	8-3/4
3/8" x 2-3/4"	3/8"	1-3/4"	1-1/8"	50	250	10-1/2
3/8" x 3"	3/8"	1-3/4"	1-1/8"	50	250	11
3/8" x 5"	3/8"	1-3/4"	2-1/2"	50	250	17-1/2
1/2" x 3-1/4"	1/2"	2-1/2"	1"	50	200	18
1/2" x 5-1/2"	1/2"	2-1/2"	2-1/4"	50	150	34
1/2" x 7"	1/2"	2-1/2"	2-3/4"	25	100	44

The published length is the overall length of the anchor. All threaded SPIKE anchors are supplied with nuts and washers.

Flat Head Carbon Steel SPIKE® F/N SPFH

Size	Drill Dia.	Min. Embed.	Std. Box	Std. Ctn.	Wt./ 100
3/16" x 2-1/2"	3/16"	1-1/4"	100	1000	2
3/16" x 3"	3/16"	1-1/4"	100	1000	2-1/2
3/16" x 4"	3/16"	1-1/4"	100	1000	4
1/4" x 1-1/2"	1/4"	1-1/4"	100	1000	2-1/2
1/4" x 2"	1/4"	1-1/4"	100	1000	3
1/4" x 2-1/2"	1/4"	1-1/4"	100	1000	3-3/4
1/4" x 3"	1/4"	1-1/4"	100	1000	4-1/2
1/4" x 3-1/2"	1/4"	1-1/4"	100	1000	5
1/4" x 4"	1/4"	1-1/4"	100	500	5-3/4

The published length is the overall length of the anchor.

Mushroom Head Type 316 Stainless Steel SPIKE® F/N SPMH

Size	Drill Dia.	Min. Embed.	Std. Box	Std. Ctn.	Wt./ 100
3/16" x 1"	3/16"	7/8"	100	1000	1-1/4
3/16" x 1-1/4"	3/16"	7/8"	100	1000	1-1/2
3/16 x 1-1/4"	3/16"	7/8"	100	1000	1-1/2
3/16" x 1-1/2"	3/16"	1-1/4"	100	1000	1-3/4
3/16" x 2"	3/16"	1-1/4"	100	1000	2
3/16" x 2-1/2"	3/16"	1-1/4"	100	1000	2-1/4
1/4" x 1"	1/4"	7/8"	100	1000	1-1/2
1/4" x 1-1/4"	1/4"	1"	100	1000	2-1/4
1/4" x 1-1/2"	1/4"	1-1/4"	100	1000	2-1/2
1/4" x 2"	1/4"	1-1/4"	100	1000	3
1/4" x 2-1/2"	1/4"	1-1/4"	100	1000	4
1/4" x 3"	1/4"	1-1/4"	100	1000	4-1/2
1/4" x 3-1/2"	1/4"	1-1/4"	100	1000	5
1/4" x 4"	1/4"	1-1/4"	100	500	6
3/8" x 2"	3/8"	1-3/4"	25	250	7-1/2
3/8" x 2-1/2"	3/8"	1-3/4"	25	250	9
3/8" x 3"	3/8"	1-3/4"	25	250	10
3/8" x 4"	3/8"	1-3/4"	25	250	12
3/8" x 5"	3/8"	1-3/4"	25	250	18
3/8" x 6"	3/8"	1-3/4"	25	250	20
1/2" x 2-3/4"	1/2"	2-1/2"	50	200	18
1/2" x 3-1/2"	1/2"	2-1/2"	50	200	22
1/2" x 4"	1/2"	2-1/2"	25	150	27
1/2" x 5"	1/2"	2-1/2"	25	150	31
1/2" x 6-1/2"	1/2"	2-1/2"	25	150	42

The published length is measured from below the head to the end of the anchor.
*Supplied with EPDM Sealing Washer

Special Application SPIKE® Anchors

Rod Hanging

Pipe SPIKE® F/N SPPS

Head Size	Shank Dia.	Min. Embed.	Std. Box	Std. Ctn.	Wt./ 100
1/4"	3/16"	1-1/4"	100	1000	4
3/8"	1/4"	1-3/4"	50	500	6

Suspended Ceilings

Tie-Wire SPIKE® F/N SPTW

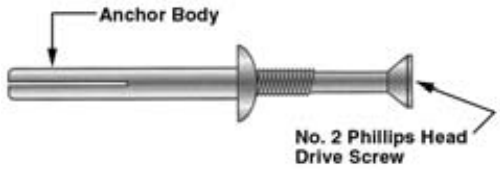
Size	Drill Dia.	Min. Embed.	Tie-Wire Hole Size	Std. Box	Std. Ctn.	Wt./ 100
3/16"	3/16"	1-1/4"	3/16"	100	500	2
1/4"	1/4"	1-1/4"	9/32"	100	500	2-1/2

Concrete Forming

Forming SPIKE® F/N SPFS

Size	Drill Dia.	Min. Embed.	Std. Box	Std. Ctn.	Wt./ 100
3/16" x 1-1/2"	3/16"	1-1/4"	100	1000	2-1/2
3/16" x 2"	3/16"	1-1/4"	100	1000	3
3/16" x 2-3/4"	3/16"	1-1/4"	100	1000	4
1/4" x 2-3/4"	1/4"	1-1/4"	100	1000	5

Zamac HAMMER-SCREW®



Zamac Hammer-Screw® Anchor
Mushroom Head with No. 2 Phillips Type Screw
F/N NIHS

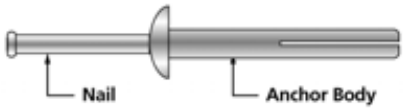
Anchor Size	Drill Dia.	Std. Box	Std. Ctn.	Wt./ 100
1/4" x 3/4"	1/4"	100	500	1-1/2
1/4" x 1"	1/4"	100	500	1-3/4
1/4" x 1-1/4"	1/4"	100	500	2-1/4
1/4" x 1-1/2"	1/4"	100	500	2-1/2
1/4" x 2"	1/4"	100	500	3
1/4" x 2-1/4"	1/4"	100	500	3-1/2
1/4" x 3"	1/4"	100	500	4-1/4

Zamac NAILIN®

Flat Head

Flat Head Zamac Nailin® — Carbon Steel Nail
F/N NIFH

Size	Drill Dia.	Std. Box	Std. Ctn.	Wt./ 100
1/4" x 1-1/2"	1/4"	100	500	2-1/2
1/4" x 2"	1/4"	100	500	3



Mushroom Head

Mushroom Head Zamac Nailin® — Carbon Steel Nail
F/N NIMH

Size	Drill Dia.	Std. Box	Std. Ctn.	Wt./ 100
3/16" x 7/8"	3/16"	100	500	3/4
1/4" x 3/4"	1/4"	100	500	1-1/2
1/4" x 1"	1/4"	100	500	1-3/4
1/4" x 1-1/4"	1/4"	100	500	2-1/4
1/4" x 1-1/2"	1/4"	100	500	2-1/2
1/4" x 2"	1/4"	100	500	3

Mushroom Head Zamac Nailin® — 304S/S Nail

Size	Drill Dia.	Std. Box	Std. Ctn.	Wt./ 100
1/4" x 1"	1/4"	100	500	1-3/4
1/4" x 1-1/4"	1/4"	100	500	2-1/4
1/4" x 1-1/2"	1/4"	100	500	2-1/2
1/4" x 2"	1/4"	100	500	3

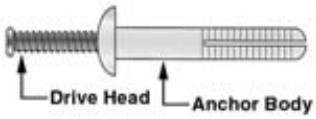
31.0 Nylon Nailin®

Round Head Nylon Nailin® — Steel Nail
F/N NIRH

Size	Drill Diameter	Std. Box	Std. Ctn.	Wt./ 100
3/16" x 1"	3/16"	100	1000	1/2
3/16" x 1-1/2"	3/16"	100	1000	3/4
1/4" x 1"	1/4"	100	1000	3/4
1/4" x 1-1/2"	1/4"	100	1000	1
1/4" x 2"	1/4"	100	1000	1

Flat Head Nylon Nailin® — Steel Nail
F/N NIFH

Size	Drill Diameter	Std. Box	Std. Ctn.	Wt./ 100
3/16" x 1"	3/16"	100	1000	1/2
3/16" x 1-1/2"	3/16"	100	1000	3/4
1/4" x 1"	1/4"	100	1000	3/4
1/4" x 1-1/2"	1/4"	100	1000	1
1/4" x 2"	1/4"	100	1000	1



Mushroom Head Nylon Nailin®
F/N NIMH

Size	Drill Diameter	Std. Box	Std. Ctn.	Wt./ 100
1/4" x 1"	1/4"	100	500	1/2
1/4" x 3/4"	1/4"	100	1000	1/2
1/4" x 1"	1/4"	100	1000	3/4
1/4" x 1-1/2"	1/4"	100	1000	1
1/4" x 2"	1/4"	100	1000	1
1/4" x 3"	1/4"	100	1000	2-1/4
1/4" x 4"	1/4"	100	1000	2-3/4
1/4" x 6"	1/4"	100	4--	4

ZiP-It®

F/N ZIPIT

Zinc *ZiP-It*®

Wall Thickness	Description	Std. Box	Std. Ctn.	Wt./ 100
3/8" x 1"	Std. box, no screws	100	1000	2
3/8" to 1"	Std. box, #8 x 1" screws	100	1000	2-1/2
3/8" to 1"	Master ctn., no screws	—	5000	1-3/4

Nylon *ZiP-It*®

Wall Thickness	Description	Std. Ctn.	Wt./ 100
3/8" x 1"	Std. box, no screws	1000	1/2
3/8" to 1"	Std. box, #8 x 1" screws	1000	1-1/4
3/8" to 1"	Master ctn., no screws	5000	1/2

Zinc *ZiP-It*® Jr.

Wall Thickness	Description	Std. Box	Std. Ctn.	Wt./ 100
3/8"–5/8"	Std. Box (No screws)	100	1000	3/4
3/8"–5/8"	Std. Box, #6 x 1" screws	100	1000	3/4

48.5 Installation Specifications

	Nylon *ZiP-It*	Nylon *ZiP-It* Jr.	Zinc *ZiP-It*
Collar Size	9/16"	15/32"	9/16"
Screw Size Range	6–8*	*6–8	6–8*
Thread Length	15/16"	47/64"	15/16"
Point Length	3/4"	37/64"	3/4"
Anchor Length	1-11/16"	1-5/16"	1-11/16"

*Recommended Size

Heli-Pin™

F/N

Facade Anchor

Base Material Concrete, Block, Brick, Stone, Clay Tile and Wood
Size Range 8mm (5/16") x 6" to 8mm (5/16") x 12"
Anchor Material Type 304 Stainless Steel

The Heli-Pin™ anchor is a one-piece, stainless steel helical wall tie system used for anchoring existing brick veneers to the back-up structural members without exposed hardware. Existing facades constructed of various masonry materials can be reattached and reinforced using the Heli-Pin. They are ideal for stabilizing areas with missing or corroded wall ties as well as retrofits to multiple width masonry wall sections. The Heli-Pin is installed in predrilled holes with a Heli-Pin setting tool and a SDS-Plus shank rotohammer drill.

Heli-Pin™

Description	Std. Box	Std. Carton
Heli-Pin Anchor 8mm (5/16") x 6"	100	1000
Heli-Pin Anchor 8mm (5/16") x 8"	100	1000
Heli-Pin Anchor 8mm (5/16") x 10"	100	1000
Heli-Pin Anchor 8mm (5/16") x 12"	50	500
Heli-Pin SDS Setting Tool	1	12

Heli-Pin SDS Setting Tool

Vertigo™

F/N RH__S = Steel **F/N RH__W = Wood**

Rod Hanger Fastening System

Base Material Steel, Wood, Concrete
Size Range 1/4" – 1/2"
Anchor Material Carbon Steel

Product Description

Vertigo is a one-piece, all steel threaded fastening system for suspending steel threaded rod and other assemblies. Vertigo can be installed in a variety of base materials including steel bar joists and beams, wood frame columns and beams, as well as concrete beams and columns. In wood and steel base materials, Vertigo is also offered in a side mount style for lateral installation of 1/4" and 3/8" diameter steel threaded rods onto joists, columns and trusses. For all steel and wood Vertigo fasteners, a red Vertigo Socket Driver is recommended to provide proper installation with a screw gun or hammer drill in "rotation only" mode. Concrete Vertigo fasteners should be installed with the appropriate size standard drive sockets and hammer drill or powered impact wrench.

Steel Vertical Hanger

Rod Size	Screw Shank Size & Length	Point Style	Box	Carton
#3 for Purlins				
1/4"	1/4-20 x 1"	#3	100	500
3/8"	1/4-20 x 2"	#3	100	500
3/8"	1/4-20 x 1" (w/nuts)	#3	100	500
3/8"	1/4-20 x 1-1/2"	#3	100	500
3/8"	1/4-20 x 1-1/2" (w/nuts)	#3	100	500
#5 for Beams				
1/4"	12-24 x 1-1/2"	#5	100	500
3/8"	12-24 x 1-1/2" (w/nuts)	#5	100	500
1/2"	12-24 x 1-1/2" (w/nuts)	#5	100	500

EXPANSION ANCHORS

Vertigo™ (cont.)

F/N RH__S = Steel
F/N RH__W = Wood

STEEL SIDE HANGER Rod Size	Screw Shank Size & Length	Point Style	Box	Ctn.
#3 FOR PURLINS				
1/4"	1/4-20 x 1"	#3	100	500
3/8"	1/4-20 x 1" (w/nuts)	#3	100	500
3/8"	1/4-20 x 1-1/2" (w/nuts)	#3	100	500
3/8"	1/4-20 x 2" (w/nuts)	#3	100	500
#5 FOR BEAMS				
1/4"	12-24 x 1-1/2"	#5	50	250
3/8"	12-24 x 1-1/2" (w/nuts)	#5	100	500

WOOD VERTICAL HANGER Rod Size	Screw Shank Size & Length	Point Style	Box	Ctn.
1/4"	1/4" x 2"	Type 17	100	500
3/8"	1/4" x 1"	Type 17	100	500
3/8"	1/4" x 2"	Type 17	100	500
3/8"	1/4" x 3"	Type 17	100	500
3/8"	1/4" x 4"	Type 17	100	500
3/8"	3/8" x 2-1/2"	Type 17	100	500
1/2"	3/8" x 2-1/2"	Type 17	100	500

WOOD SIDE HANGER Rod Size	Screw Shank Size & Length	Point Style	Box	Ctn.
1/4"	1/4 x 1"	Type 17	100	500
3/8"	1/4 x 1"	Type 17	100	500
3/8"	1/4 x 2"	Type 17	100	500
3/8"	3/8 x 2-1/2"	Type 17	100	500

CONCRETE VERTICAL HANGER Rod Size	Screw Shank Size & Length	Shank Style	Box	Ctn.
1/4"	1/4 x 1-1/4"	ANSI Wedge-Bolt OT thread	100	500
3/8"	1/4 x 1-1/2"	ANSI Wedge-Bolt OT thread	100	500
1/2"	3/8 x 2-3/4"	ANSI Wedge-Bolt OT thread	50	250

For Side Mount Concrete Applications use Cat. No. 7185 and 7170 with a 1/4" ANSI Drill Bit

Accessories

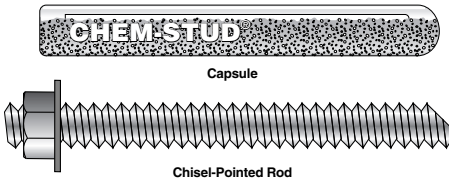
POLE TOOL	Box	Ctn.
6'-12' Pole Tool (includes three Jaw Chuck)	1	1

F/N RHSOCKET

DRIVER SOCKET Description	Color	Box	Carton
Universal Steel & Wood Socket	Red	5	25
1/4" Concrete Socket	Blue	5	25
3/8" Concrete Socket	Blue	5	25
1/2" Concrete Socket	Blue	5	25

TAPPER 3000 TOOL KIT Description	Box	Carton
Sleeve Assembly (same as cat. #5874) 1/4" and 3/8" blue concrete drive sockets and red universal drive socket	1	10
Sleeve Assembly	1	—

Description	Usable Length	Std. Tube	Wt./ 10
1/4" x 6" Hex Shank SDS Drill Bit	4"	1	1/2



F/N EPOXY

F/N RATS—CP

56.2.2 Chem-Stud Chisel Pointed Anchor Rod

The Chem-Stud System is designed to be used with chisel pointed anchor rods. The threaded anchor rods have a 45° chisel point cut on one end to properly mix the components contained in the capsule during installation. A 90° point is formed on the internally threaded inserts. The threaded rod or reinforcing bar used must have a chisel point to mix the components contained in the capsule during installation.

Capsule Size	Capsule Diam.	Capsule Length	Mortar Volume	Mortar Volume
3/8"	0.43"	3.15"	0.35 $in.^3$	0.19 fl.oz.
1/2"	0.51"	3.75"	0.55 $in.^3$	0.30 fl.oz.
5/8"	0.67"	3.75"	0.95 $in.^3$	0.52 fl.oz.
3/4"	0.87"	6.63"	2.55 $in.^3$	1.40 fl.oz.
7/8"	0.87"	6.89"	2.55 $in.^3$	1.79 fl.oz.
1"	0.95"	8.25"	4.65 $in.^3$	2.56 fl.oz.
1-1/4"	1.30"	10.50"	11.70 $in.^3$	6.44 fl.oz.

Epoxy & Adhesives

F/N Epoxy

ISC stocks a full line of epoxies & installation accessories.

The products in this category are modified constantly to keep up with industry standards.

Please call our sales desk for current technical data and part numbers.

Fabricating Equipment List

400 Ton Allsteel Press Brake

Press Brakes

400 Ton	Allsteel	10 Foot
100 Ton	Standard	10 Foot
65 Ton	Allsteel	8 Foot
45 Ton	Mercury	6 Foot
25 Ton	Dries & Krump	6 Foot
15 Ton	Wysong	4 Foot
10 Ton	Knight	3 Foot
RAS 7425	CNC Folding Machine	

Punch Presses

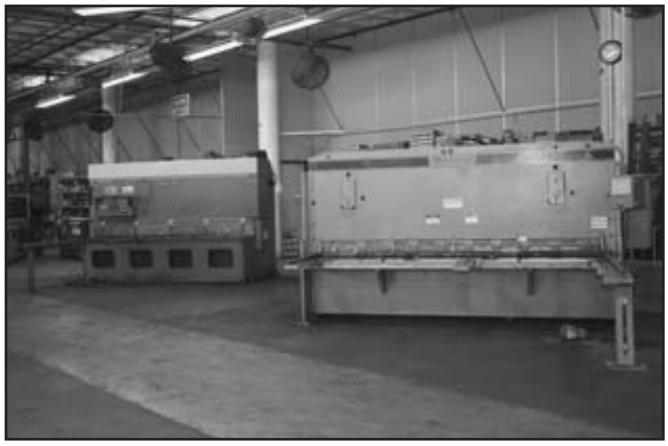
100 Ton	Clearing	
100 Ton	Bliss	Straight Side
2-90 Ton	Bliss	OBI
90 Ton	Niagara	OBI
75 Ton	Johnson	OBI
75 Ton	Bliss	Straight Side
3-60 Ton	Johnson	OBI
5-60 Ton	Bliss	OBI
2-40 Ton	L & J	OBI
3-30 Ton	Bliss	OBI

Misc Fabricating Equipment

1 - DK Notcher 8 X 8
1 - 10 Ga X 3 Foot Eagle Plate Roller
1 - Taloc Clinching Press
1 - Pullmax Nibbler

Ironworkers

120 Ton Scotchman
90 Ton Scotchman
65 Ton Mubea



Standard 3/8 x 10 Foot Shear

Shears

Standard	3/8 x 10 Foot	Hyd.
Cincinnati	1/4 x 10 Foot	Mech.
Allsteel	10 Ga. x 10 Foot	Hyd.
Niagara	1/4 x 4 Foot	Mech.

Welding Operation

Welding Machinery

2 - Miller CP300
3 - Miller Deltaweld 302
1 - Miller CP3VS-Alum.
1 - Hobart Excelarc 6045
1 - L-Tec 250 HF TIG
1 - Lincoln Idealarc TIG 300

Vicon Elite Plasma

Cutting Systems

Vicon Elite Precision
Plasma-275 AMP 60 x 120
Heath UG46 Shape Cutter
ESAB - 1125 Plasma

Stud Welding

Proweld ARC 3000
Proweld ARC 1850

Spot Welding

Taylor-Winfield 150 KVA
Taylor-Winfield 7.5 KVA
Miller LMSW-52T 2.5KVA

Threading/Tapping

2 - Waterbury Farrel 20
1 - Waterbury Farrel 40
1 - Toledo No. 1-2-4
2 - Ridgid 535
2 - Snow TA2 Auto Drill/Tap
1 - Dumore Series 2S Auto Drill/Tap
1 - Feeler S24A Drill/Tap
1 - Arboga A4008 Drill/Tap

Machining Equipment

2 - Willis 5000VS Vertical Mill
1 - Summit B244 Vertical Mill
1 - Bridgeport 2J Vertical Mill
1 - Acer 3VS Vertical Mill

Hydmech Band Saws

Cincinnati Bickford Radial Arm Drill
Profit Master 17 x 60 Lathe
Warner & Swasey No. 3 Turret Lathe
DoAll Surface Grinder
Callmeyer & Livingston No. 55 Surface Grinder
Brown & Sharp 618 Micro Master Stud Master
4 - Pines Deburring Machines

Bandsaws

4 - Hydmech 520A (Automatic)
1 - Rockwell Vertical Bandsaw
1 - Enco - 360 Vertical Bandsaw
1 - Delta Vertical Bandsaw
1 - Wellsaw Horizontal Bandsaw

Support Equipment

5 Ton Overhead Crane
2 Ton Overhead Crane
8000 Lbs.Yale Forklift
5000 Lbs. Hyster Forklift
5000 Lbs. Toyota Forklift
5000 Lbs. Allis Chalmers Forklift
4000 Lbs. Yale Forklift

FABRICATION

Hot Rolled Sheets

Low Carbon Standard Lengths 96 & 120 inches

Nominal Gauge	Widths in Inches	Lbs./Sq. Ft.
10 (.134)	48, 60, 72	5.62
11 (.119)	48, 60, 72	5.00
12 (.104)	48, 60, 72	4.38
14 (.074)	48, 60	3.12
16 (.059)	48, 60	2.50

Note: We can shear full sheets to your required dimensions.

Hot Rolled Plates

A36 & Mild Carbon C1008/1010

Std. Size in inches	Std. Widths in inches	Std. Lengths in inches.	Lbs./Sq. Ft.
3/16	48, 60	96, 120	7.66
1/4	48, 60	96, 120	10.21
5/16	48, 60	120	12.76
3/8	48, 60	96, 120	15.32
1/2	48, 60	96, 120	20.42
5/8	48, 60	96, 120	25.53
3/4	48, 60	96, 120	30.63
1	48, 60	96, 120	40.84

Galvanized Steel Sheets

Nominal Gauge	Size in Inches	Lbs./Sq. Ft.
10 (.138)	48 x 120	5.78
11 (.123)	48 x 120	5.15
12 (.108)	48 x 120	4.53
14 (.078)	48 x 96 48 x 120	3.28
16 (.063)	48 x 96 48 x 120	2.65
18 (.051)	48 x 120	2.15
20 (.039)	48 x 96 48 x 120	1.65
22 (.033)	48 x 96 48 x 120	1.40
24 (.027)	48 x 96 48 x 120	1.15
26 (.024)	48 x 96 48 x 120	.91

Bar Size Angles Standard Lengths 20 Ft. A–36

Size in Inches	Lbs./Sq. Ft.
1 x 1 x 1/8	.80
1 x 1 x 3/16	1.16
1 x 1 x 1/4	1.49
1-1/4 x 1-1/4 x 1/8	1.01
1-1/4 x 1-1/4 x 3/16	1.48
1-1/4 x 1-1/4 x 1/4	1.92
1-1/2 x 1-1/2 x 1/8	1.23
1-1/2 x 1-1/2 x 3/16	1.80
1-1/2 x 1-1/2 x 1/4	2.34
2 x 2 x 1/8	1.65
2 x 2 x 3/16	2.44
2 x 2 x 1/4	3.19
2 x 2 x 5/16	3.92
2 x 2 x 3/8	4.70
2-1/2 x 2-1/2 x 3/16	3.07
2-1/2 x 2-1/2 x 1/4	4.10
2-1/2 x 2-1/2 x 5/16	5.00
2-1/2 x 2-1/2 x 3/8	5.90
2-1/2 x 2-1/2 x 1/2	7.70

Structural Angles 20 Ft. & 40 Ft. Lengths A–36

Size in Inches	Lbs./Sq. Ft.
3 x 3 x 3/16	3.71
3 x 3 x 1/4	4.90
3 x 3 x 5/16	6.10
3 x 3 x 3/8	7.20
3 x 3 x 1/2	9.40
3-1/2 x 3-1/2 x 1/4	5.80
3-1/2 x 3-1/2 x 5/16	7.20
3-1/2 x 3-1/2 x 3/8	8.50
4 x 3 x 1/4	6.80
4 x 3 x 5/16	7.20
4 x 3 x 3/8	8.50
4 x 3 x 1/2	11.10
4 x 3-1/2 x 5/16	7.70
4 x 3-1/2 x 3/8	9.10
4 x 4 x 1/4	6.60
4 x 4 x 5/16	8.20
4 x 4 x 3/8	9.80
4 x 4 x 1/2	12.80
5 x 3 x 1/4	6.60
5 x 3 x 5/16	8.20
5 x 3 x 3/8	9.80
5 x 3 x 1/2	12.80
5 x 3-1/2 x 1/4	7.00
5 x 3-1/2 x 5/16	8.70
5 x 3-1/2 x 3/8	10.40
5 x 5 x 3/8	12.30
5 x 5 x 1/2	16.20
6 x 3-1/2 x 5/16	9.80
6 x 3-1/2 x 3/8	11.70
6 x 4 x 5/16	10.30
6 x 4 x 3/8	12.30
6 x 4 x 1/2	16.20
6 x 6 x 3/8	14.90
6 x 6 x 1/2	19.60
7 x 4 x 3/8	13.60
8 x 4 x 1/2	19.60

HOME BACK TOC NEXT

Structural Channels

Standard Lengths 20 Ft. & 40 Ft. A–36

Designation	Lbs./Ft.	Flange Width "Y"	Flange Thickness "T"	Web Thickness "Z"
C-3	*4.10	1.410	.273	.170
	5.00	1.498	.273	.258
C-4	*5.40	1.584	.296	.184
	7.25	1.721	.296	.321
C-5	6.70	1.750	.320	.190
	9.00	1.885	.320	.325
C-6	8.20	1.920	.343	.200
	10.50	2.034	.343	.314
	13.00	2.157	.343	.437
C-7	9.80	2.090	.366	.210
	12.25	2.194	.366	.314
C-8	11.50	2.260	.390	.220
	13.75	2.343	.390	.303
	18.75	2.527	.390	.487

*Galvanized Available

Hot Rolled Rounds

Standard Lengths 20 Ft. A–36

Size in inches	Lbs./Ft.	Size in inches	Lbs./Ft.
1/4	.17	1	2.67
5/16	.26	1-1/4	4.17
3/8	.38	1-1/2	6.01
7/16	.51	1-3/4	8.18
1/2	.67	2	10.68
5/8	1.04	2-1/2	16.69
3/4	1.50	3	24.03
7/8	2.04		

Galvanized Angles/Channels

Standard Lengths 20 Ft.

Size in Inches	Lbs./Ft.
1 x 1 x 1/8	.80
1-1/4 x 1-1/4 x 1/8	1.01
1-1/4 x 1-1/4 x 3/16	1.48
1-1/2 x 1-1/2 x 1/8	1.23
1-1/2 x 1-1/2 x 3/16	1.80
1-1/2 x 1-1/2 x 1/4	2.34
2 x 2 x 1/8	1.65
2 x 2 x 3/16	2.44
2 x 2 x 1/4	3.19
2-1/2 x 2-1/2 x 1/4	4.10
3 x 3 x 1/4	4.90
3-1/2 x 3-1/2 x 1/4	5.80
3" Channel	4.10
4" Channel	5.40

Stainless Steel Angles

Type 304 18/22 Ft. Random Length

Size in Inches	Lbs./Ft.
3/4 x 3/4 x 1/8	.59
1 x 1 x 1/8	.80
1 x 1 x 3/16	1.16
1 x 1 x 1/4	1.49
1-1/4 x 1-1/4 x 1/8	1.01
1-1/4 x 1-1/4 x 3/16	1.48
1-1/4 x 1-1/4 x 1/4	2.02
1-1/2 x 1-1/2 x 1/8	1.23
1-1/2 x 1-1/2 x 3/16	1.80
1-1/2 x 1-1/2 x 1/4	2.34
2 x 2 x 1/8	1.65
2 x 2 x 3/16	2.44
2 x 2 x 1/4	3.19
2-1/2 x 2-1/2 x 3/16	3.07
2-1/2 x 2-1/2 x 1/4	4.10
3 x 3 x 1/4	4.90
3 x 3 x 3/8	7.20
4 x 4 x 1/4	6.60
4 x 4 x 3/8	9.80

Stainless Steel Flats

Type 304 12 Ft. Random Length

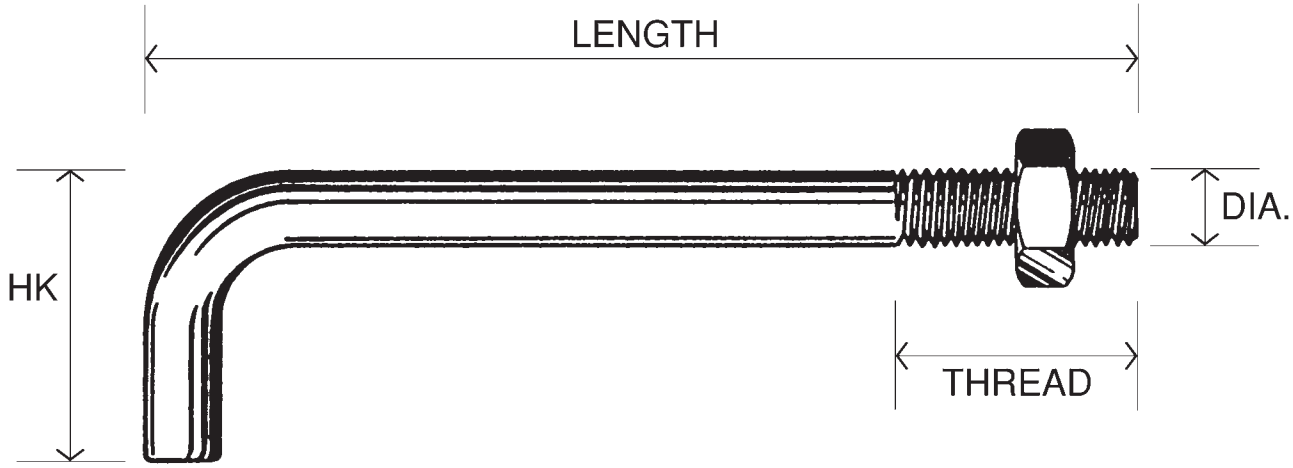
Size in inches	Lbs./Ft.	Size in inches	Lbs./Ft.
1/8 x 1/2	.21	3/8 x 3/4	.96
5/8	.27	1	1.28
3/4	.32	1-1/4	1.58
1	.43	1-1/2	1.92
1-1/4	.53	2	2.55
1-1/2	.64	2-1/2	3.19
2	.85	3	3.82
2-1/2	1.06	4	5.10
3	1.27	6	7.64
3/16 x 3/4	.48	1/2 x 3/4	1.27
1	.64	1	1.70
1-1/4	.80	1-1/4	2.14
1-1/2	.96	1-1/2	2.55
2	1.28	1-3/4	2.97
2-1/2	1.60	2	3.40
3	1.91	2-1/2	4.25
4	2.56	3	5.10
1/4 x 1/2	.43	4	6.80
3/4	.64	6	10.20
1	.85	8	13.60
1-1/4	1.07		
1-1/2	1.28		
1-3/4	1.48		
2	1.70		
2-1/2	2.13		
3	2.55		
4	3.40		
6	5.08		

Anchor Bolts

DIA. X LGTH X HK. X THD.

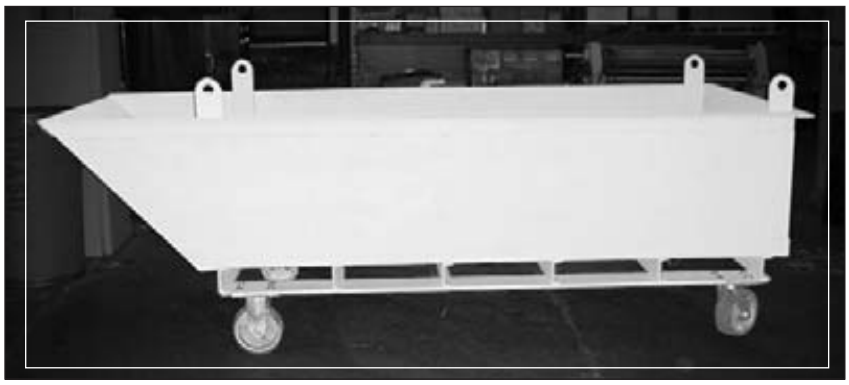
- ♦ 1/2 X 6 X 2 X 3
- ♦ 1/2 X 8 X 2 X 3
- ♦ 1/2 X 10 X 2 X 3
- ♦ 1/2 X 12 X 2 X 3
- 1/2 X 14 X 2 X 3
- 1/2 X 16 X 2 X 3
- 1/2 X 18 X 2 X 3
- 5/8 X 8 X 2-1/2 X 3
- 5/8 X 10 X 2-1/2 X 3
- ♦ 5/8 X 12 X 2-1/2 X 3
- ♦ 5/8 X 15 X 2-1/2 X 3
- 5/8 X 16 X 2-1/2 X 3
- ♦ 5/8 X 18 X 2-1/2 X 3
- 3/4 X 8 X 3 X 4
- 3/4 X 10 X 3 X 4
- ♦ 3/4 X 12 X 3 X 4
- ♦ 3/4 X 15 X 3 X 4
- ♦ 3/4 X 16 X 3 X 4
- ♦ 3/4 X 18 X 3 X 4
- ♦ 3/4 X 21 X 3 X 4
- ♦ 3/4 X 24 X 3 X 4
- 7/8 X 8 X 3-1/2 X 5
- 7/8 X 10 X 3-1/3 X 5
- 7/8 X 12 X 3-1/2 X 5
- 7/8 X 14 X 3-1/2 X 5
- 7/8 X 16 X 3-1/2 X 5
- 7/8 X 18 X 3-1/2 X 5
- 1 X 8 X 4 X 5
- 1 X 10 X 4 X 5
- 1 X 12 X 4 X 5
- ♦ 1 X 15 X 4 X 5
- 1 X 16 X 4 X 5
- ♦ 1 X 18 X 4 X 5
- ♦ 1 X 24 X 4 X 5

♦ = All sizes in stock; other sizes 3–5 day delivery.



STEEL FABRICATION

Heavy Duty Mobile Bins



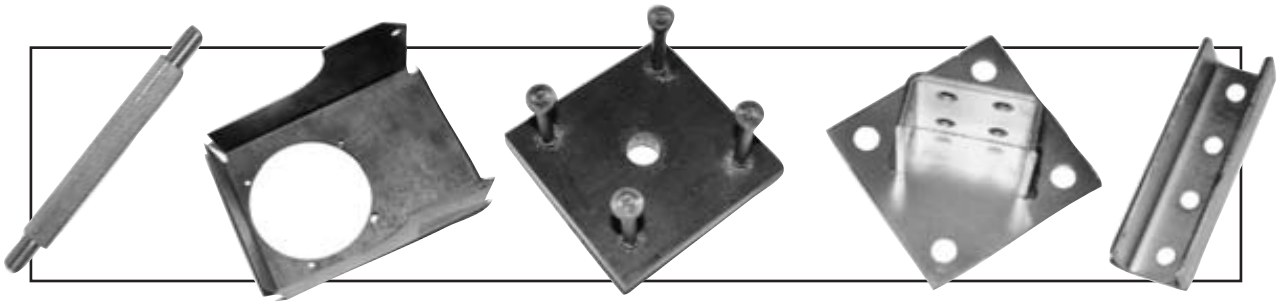
• FORK LIFT READY • LIFTING EYES • TOW LOOP

ISC Steel Fabrication

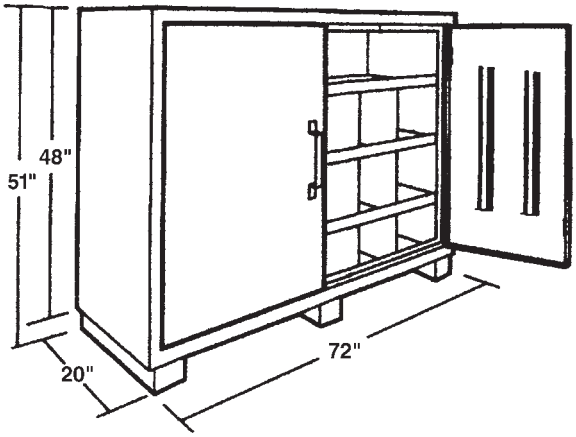
We have a 30,000 square foot Steel Fabrication Shop where we produce:

- Embedment Plates
- Stampings
- Machined Parts
- Strut Fittings and Accessories
- Holes, Slots, Bends, Shear or Saw Cuts, Cut or Roll Threads to your specifications.

NO JOB TOO LARGE OR SMALL.
COME BY FOR A TOUR AND SEE FOR YOURSELF.



CUSTOM JOBBOX

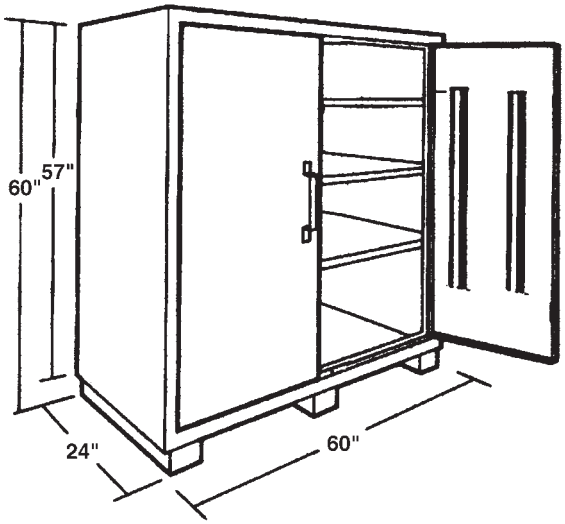


MODEL 509

Storage Capacity: 47.5 Cu. Ft.
Shelf Spacing From Top: 11.5", 12", 13", 19"
Full access double front doors.

MODEL 529

Storage Capacity: 40 Cu. Ft.
Bin sizes: 12"W x 12"H x 18"D
Full access double front doors.



FEATURES

* MAKE ANY CHANGES YOU WANT, MOST COMMON BOXES PICTURED
* HEAVY DUTY 16 GAUGE STEEL CONSTRUCTION
* FULL-LENGTH PIANO HINGES
* STEEL SKIDS FOR EASY FORK LIFTING
* LIFTING EYES FOR EASY JOB SITE PLACEMENT
* FULL ARC WELDS FOR EXTRA STRENGTH
* 6" X 2" HEAVY DUTY (2000 lb RATED) WHEELS FOR EASIER MOBILITY
* USER FRIENDLY LOCK SYSTEM

Bars & Flats Processing Services

- Production Cutting, Shearing
- Sawing
- Miter Cutting
- Bending & Forming
- Fabrication
- Welding

Structural Processing Services

- Band Sawing
- Miter Cutting
- Flame Cutting
- Bending & Forming
- Rolling
- Drilling
- Punching
- Structural Fabrication
- Beam Splitting to Make “T” Shapes

Industries and Markets Served

Aerospace
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Architectural
Construction
Conveyor
Curtainwall
Furniture
Machinery
O.E.M.
Office Equipment
Prestress Concrete
Tilt-Up Construction
Trade Show Exhibits
Transportation

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info@inventorysales.com

Global Sourcing

SERVICE:
Inventory Sales Company's qualified and experienced staff will go the extra mile to service you, our customer. ISC takes pride in offering our expertise and knowledge on quality parts quoted and supplied. ISC, as a direct importer and distributor, understands what it takes to warehouse, supply, and deliver quality parts to each customer's individualized request. ISC is where "Customer is King!"

SOURCING:
By utilizing ISC's Asian supplier network, mill programs offer the most effective cost savings. Inventory Sales Company's network of factories do include the large shipping ports, thus allowing less than container loads (LCL) to be consolidated and shipped in dedicated containers. ISC will strategically source, purchase, expedite, inspect, and receive containers in one of our warehouse facilities that would best suit you, the customer. As another option, ISC can ship from factory direct to your warehouse as well.

SHIPMENTS:
The moment that shipments are booked overseas, ISC uses an advanced, high tech on line tracking system provided by our independent freight forwarder. The freight forwarder has a dedicated team assigned to work our shipments daily. By shear volume of containers arriving daily alone, ISC utilizes advantages which include less delays with custom inspections along with faster routing throughout the entire shipping lane.

QUALITY:
Inventory Sales Company, along with our global team of qualified professionals, understands the importance of supplying and delivering only the highest quality products available. Pre-production samples and final production parts are inspected overseas by our ISO certified suppliers and again here by St. Louis Testing Laboratory; an independent testing lab accredited for both mechanical and physical testing by the American Association for Laboratory Accreditation (A2LA)..

Inventory Sales Company

www.inventorysales.com

info@inventorysales.com

Stampings

• Custom Metal Forms • Finishing • Assemblies

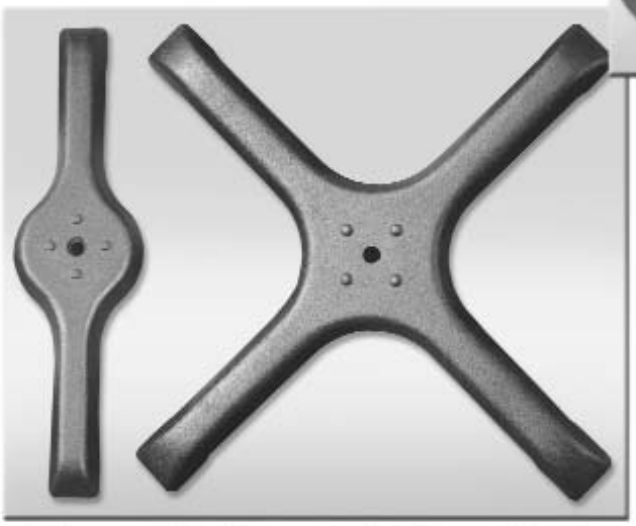
Specialty Parts

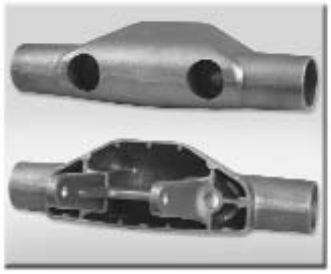
Custom parts available from all industries.

BACK HOME NEXT TOC

Castings

• Sand • Permanent Mold • Investment
• Die • Machining & Assemblies



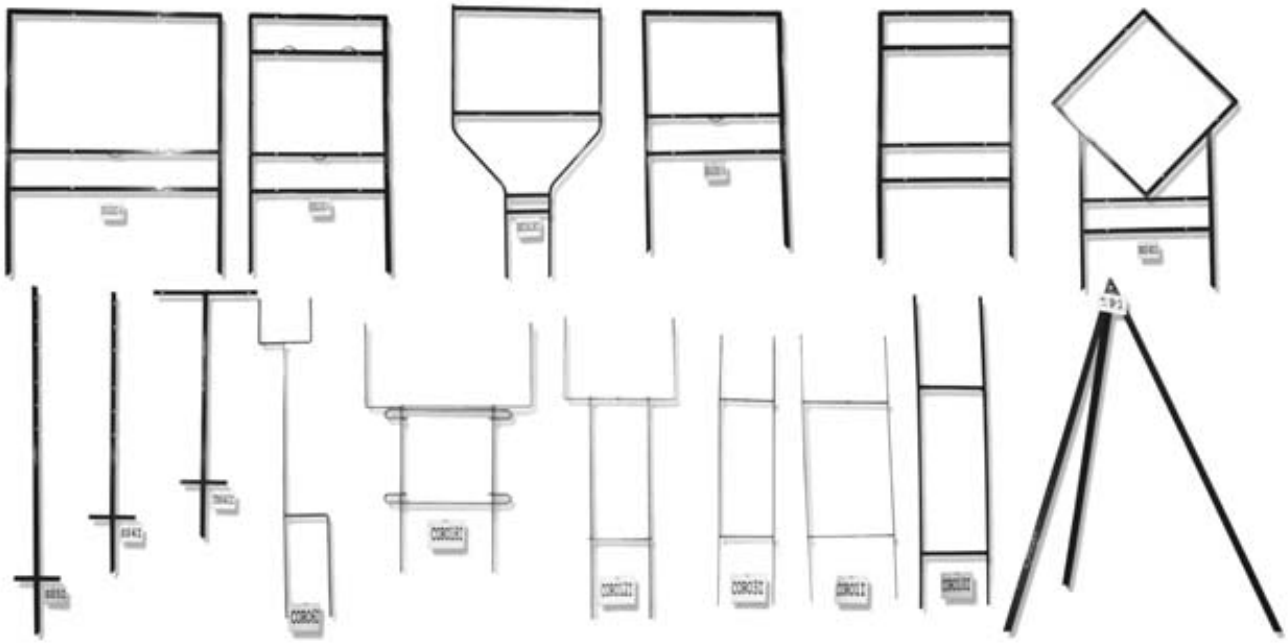


Machine Parts

• CNC Precision Parts • Turning - Tapping - Grinding
• Threading - Knurling - Milling • Slotting & Broaching

CASTINGS

- Sand • Permanent Mold Die
- Investment • Machining & Assemblies



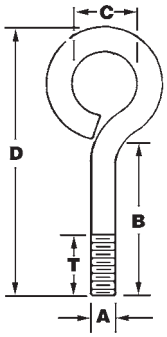

UP10
UP100
GP-6

HARDWARE

ZINC PLATED TURNED EYE BOLTS

F/N EBTR

Turned eye bolts are manufactured from low carbon cold drawn steel wire and are supplied with NC rolled machine threads with one hex nut unassembled. Zinc plated finish is standard; other rust preventive finishes or self-colored available on a special basis. When it is not feasible to utilize a standard eye bolt, we can manufacture to your specifications.



Stock No.	Part No.	Dimensions — Inches					Weight Per 100 in lbs.	Working Load Limit (lbs.)
		Thread Diameter (A)	Shank Length (B)	I.D. Eye (C)	Overall Length (D)	Thread Length (T)		
A-1	**07005 8**	1/8" (6-32)	3/4"	1/4"	1-1/4"	5/8"	.75	22
B-1	**07010 2**	5/32" (8-32)	1-1/8"	1/4"	1-11/16"	1"	1.31	36
C-1	**07015 7**	3/16" (10-24)	1"	3/8"	1-11/16"	7/8"	1.81	38
C-2	**07020 1**	3/16" (10-24)	1-3/8"	5/16"	2"	1-1/4"	1.875	38
C-3	**07025 6**	3/16" (10-24)	2"	3/8"	2-11/16"	1"	2.375	38
C-4	**07030 0**	3/16" (10-24)	3"	3/8"	3-11/16"	1-1/2"	2.94	38
D-1	**07035 5**	7/32" (12-24)	1-1/2"	3/8"	2-1/4"	1-3/8"	1.67	52
E-1	**07040 9**	1/4"-20	1"	1/2"	2"	7/8"	3.75	74
E-2	**07045 4**	1/4"-20	1-1/2"	1/2"	2-1/2"	1-1/4"	4.375	74
E-2A	**07050 8**	1/4"-20	1-7/8"	7/16"	2-3/4"	1-5/8"	5.2	74
E-3	**07055 3**	1/4"-20	2"	1/2"	3"	1-1/4"	5	74
E-4	**07060 7**	1/4"-20	2-1/2"	1/2"	3-1/2"	1-1/4"	5.6	74
E-5	**07065 2**	1/4"-20	3"	1/2"	4"	1-1/2"	6.3	74
E-6	**07070 6**	1/4"-20	3-1/2"	1/2"	4-1/2"	2"	6.9	74
E-7	**07075 1**	1/4"-20	4"	1/2"	5"	2-1/2"	7.5	74
E-8	**07080 5**	1/4"-20	5"	1/2"	6"	3"	8	74
E-9	**07085 0**	1/4"-20	6"	1/2"	7"	4"	9	74
F-1	**07090 4**	5/16"-18	1"	5/8"	2-1/8"	7/8"	7	96
F-2	**07095 9**	5/16"-18	2"	5/8"	3-1/8"	1-1/4"	9	96
F-2A	**07100 0**	5/16"-18	2-1/4"	9/16"	3-3/8"	2"	9.7	96
F-3	**07105 5**	5/16"-18	2-1/2"	5/8"	3-5/8"	1-1/4"	10	96
F-4	**07110 9**	5/16"-18	3"	5/8"	4-1/8"	1-1/2"	11	96
F-5	**07115 4**	5/16"-18	3-1/2"	5/8"	4-5/8"	2"	11	96
F-6	**07120 8**	5/16"-18	4"	5/8"	5-1/8"	2-1/2"	12	96
F-7	**07125 3**	5/16"-18	5"	5/8"	6-1/8"	3"	14	96
F-8	**07130 7**	5/16"-18	6"	5/8"	7-1/8"	4"	15	96
F-9	**07135 2**	5/16"-18	6-1/2"	7/8"	7-3/4"	4"	18	96
G-1	**07140 6**	3/8"-16	1"	3/4"	2-1/2"	7/8"	12	144
G-2	**07145 1**	3/8"-16	2"	3/4"	3-1/2"	1-1/4"	15	144
G-2A	**07150 5**	3/8"-16	2-1/2"	21/32"	3-3/4"	2-1/4"	15.7	144
G-3	**07155 0**	3/8"-16	2-1/2"	3/4"	4"	1-1/2"	15.5	144
G-4	**07160 4**	3/8"-16	3"	3/4"	4-1/2"	1-1/2"	17	144
G-5	**07165 9**	3/8"-16	3-1/2"	3/4"	5"	2"	18	144
G-6	**07170 3**	3/8"-16	4"	3/4"	5-1/2"	2-1/2"	21	144
G-7	**07175 8**	3/8"-16	5"	3/4"	6-1/2"	3"	22	144
G-8	**07180 2**	3/8"-16	6"	3/4"	7-1/2"	4"	24	144
G-9	**07185 7**	3/8"-16	8"	3/4"	9-1/2"	4"	30	144
G-10	**07190 1**	3/8"-16	10"	3/4"	11-1/2"	4"	34	144
G-11	**07195 6**	3/8"-16	12"	3/4"	13-1/2"	4"	39	144
H-1	**07200 7**	7/16"-14	6"	7/8"	7-3/4"	4"	36	216
H-2	**07205 2**	7/16"-14	8"	7/8"	9-3/4"	4"	42	216
J-1	**07210 6**	1/2"-13	2"	1"	4"	1-1/2"	33	298
J-2	**07215 1**	1/2"-13	4"	1"	6"	2-1/2"	41	298
J-3	**07220 5**	1/2"-13	6"	1"	8"	4"	50	298
J-4	**07225 0**	1/2"-13	8"	1"	10"	4"	58	298
J-5	**07230 4**	1/2"-13	10"	1"	12"	4"	68	298

STAINLESS STEEL SECTION

F/N EBTR

TURNED EYE BOLTS—MACHINE THREAD
TYPE 304 STAINLESS STEEL

Stock No.	Thread Diameter	Part No.	Shank Length	Weight Per 100
A-1SS	1/8" (6-32)	**07255 7**	3/4"	.75
B-1SS	5/32" (8-32)	**07260 1**	1-1/8"	1.31
C-1SS	3/16" (10-24)	**07265 6**	1"	1.81
C-2SS	3/16" (10-24)	**07270 0**	1-3/8"	1.875
C-3SS	3/16" (10-24)	**07275 5**	2"	2.375
C-4SS	3/16" (10-24)	**07280 9**	3"	2.94
E-1SS	1/4"-20	**07290 8**	1"	3.75
E-2SS	1/4"-20	**07295 3**	1-1/2"	4.375
E-2SS-A	1/4"-20	**07297 7**	1-7/8"	5.2
E-3SS	1/4"-20	**07305 9**	2"	5
E-4SS	1/4"-20	**07310 3**	2-1/2"	5.6
E-5SS	1/4"-20	**07315 8**	3"	6.3
E-6SS	1/4"-20	**07320 2**	3-1/2"	6.9
E-7SS	1/4"-20	**07325 7**	4"	7.5
E-8SS	1/4"-20	**07330 1**	5"	8
E-9SS	1/4"-20	**07335 6**	6"	9
F-1SS	5/16"-18	**07340 0**	1"	7
F-2SS	5/16"-18	**07345 5**	2"	9
F-2SS-A	5/16"-18	**07350 9**	2-1/4"	9.7
F-3SS	5/16"-18	**07355 4**	2-1/2"	10

Stock No.	Thread Diameter	Part No.	Shank Length	Weight Per 100
F-4SS	5/16"-18	**07360 8**	3"	11
F-5SS	5/16"-18	**07365 3**	3-1/2"	11
F-6SS	5/16"-18	**07370 7**	4"	12
F-7SS	5/16"-18	**07375 2**	5"	14
F-8SS	5/16"-18	**07380 6**	6"	15
F-9SS	5/16"-18	**07385 1**	6-1/2"	18
G-1SS	3/8"-16	**07390 5**	1"	12
G-2SS	3/8"-16	**07395 0**	2"	15
G-2SS-A	3/8"-16	**07397 4**	2-1/2"	15.7
G-3SS	3/8"-16	**07405 6**	2-1/2"	15.5
G-4SS	3/8"-16	**07410 0**	3"	17
G-5SS	3/8"-16	**07415 5**	3-1/2"	18
G-6SS	3/8"-16	**07420 9**	4"	21
G-7SS	3/8"-16	**07425 4**	5"	22
G-8SS	3/8"-16	**07430 8**	6"	24
G-9SS	3/8"-16	**07435 3**	8"	30
J-1SS	1/2"-13	**07460 5**	2"	33
J-2SS	1/2"-13	**07465 0**	4"	41
J-3SS	1/2"-13	**07470 4**	6"	50
J-4SS	1/2"-13	**07475 9**	8"	58

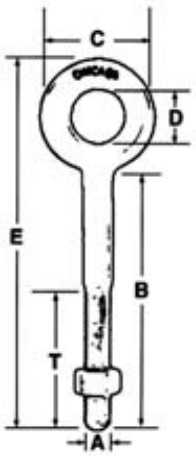
DROP FORGED EYE BOLTS

F/N EBFP

Regular, shoulder and screw thread drop forged heat treated steel eye bolts supplied as standard with hot galvanized finish. Machine thread eye bolts are threaded National Course before galvanizing and assembled with hex nuts tapped oversize. Loads are based on a safety factor of 5 to 1. When tested all eye bolts are pulled at a uniform rate of speed in a direct tension.

REGULAR—MACHINE THREAD

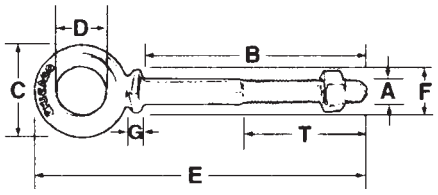
Diameter (A) & Shank Length (B)	Part No.	Dimensions — Inches Outside Eye (C)	Inside Eye (D)	Overall Length (E)	Thread Length (T)	Weight Per 100 pcs	Working Load Limit
1/4" x 2"	**08005 7**	1"	1/2"	3"	1-1/2"	6.4	500
1/4" x 3"	**08008 8**	1"	1/2"	4"	1-1/2"	8	500
1/4" x 4"	**08011 8**	1"	1/2"	5"	2"	9.3	500
1/4" x 5"	**08014 9**	1"	1/2"	6"	2-1/2"	10.4	500
1/4" x 6"	**08017 0**	1"	1/2"	7"	3"	11.8	500
5/16" x 2-1/4"	**08022 4**	1-1/4"	5/8"	3-1/2"	1-1/2"	12.7	800
5/16" x 3-1/4"	**08025 5**	1-1/4"	5/8"	4-1/2"	1-1/2"	15	800
5/16" x 4-1/4"	**08028 6**	1-1/4"	5/8"	5-1/2"	2-1/2"	16.5	800
5/16" x 5"	**08031 6**	1-1/4"	5/8"	6-1/4"	2-1/2"	18.6	800
5/16" x 6"	**08034 7**	1-1/4"	5/8"	7-1/4"	3"	24.5	800
3/8" x 2-1/2"	**08039 2**	1-1/2"	3/4"	4"	1-1/2"	19.2	1200
3/8" x 3"	**08042 2**	1-1/2"	3/4"	4-1/2"	1-1/2"	21.2	1200
3/8" x 4-1/4"	**08045 3**	1-1/2"	3/4"	6"	2"	24.4	1200
3/8" x 5"	**08048 4**	1-1/2"	3/4"	6-1/2"	2-1/2"	27.8	1200
3/8" x 6"	**08051 4**	1-1/2"	3/4"	7-1/2"	3"	30	1200
3/8" x 8"	**08054 5**	1-1/2"	3/4"	9-1/2"	4"	36	1200
1/2" x 2"	**08059 0**	2"	1"	4"	1-7/8"	38.5	2200
1/2" x 3-1/4"	**08062 0**	2"	1"	5-1/4"	1-1/2"	46	2200
1/2" x 4-1/2"	**08065 1**	2"	1"	6-1/2"	2"	53	2200
1/2" x 6"	**08068 2**	2"	1"	8"	3"	60	2200
1/2" x 8"	**08071 2**	2"	1"	10"	4"	71	2200
1/2" x 10"	**08074 3**	2"	1"	12"	4"	83	2200
1/2" x 12"	**08077 4**	2"	1"	14"	4"	96	2200
5/8" x 4-1/2"	**08082 8**	2-5/16"	1-1/4"	6-13/16"	2"	79	3500
5/8" x 6"	**08085 9**	2-5/16"	1-1/4"	8-5/16"	3"	96	3500
5/8" x 8"	**08088 0**	2-5/16"	1-1/4"	10-5/16"	4"	128	3500
5/8" x 10"	**08091 0**	2-5/16"	1-1/4"	12-5/16"	4"	129.5	3500
5/8" x 12"	**08094 1**	2-5/16"	1-1/4"	14-5/16"	4"	146	3500
5/8" x 15"	**08097 2**	2-5/16"	1-1/4"	17-5/16"	6"	168	3500
5/8" x 18"	**08100 9**	2-5/16"	1-1/4"	20-5/16"	6"	195	3500
5/8" x 24"	**08103 0**	2-5/16"	1-1/4"	26-5/16"	6"	246	3500
3/4" x 4-1/2"	**08108 5**	2-3/4"	1-1/2"	7-1/4"	2-1/2"	126	5200
3/4" x 6"	**08111 5**	2-3/4"	1-1/2"	8-3/4"	3"	160	5200
3/4" x 8"	**08114 6**	2-3/4"	1-1/2"	10-3/4"	4"	180	5200
3/4" x 10"	**08117 7**	2-3/4"	1-1/2"	12-3/4"	4"	200	5200
3/4" x 12"	**08120 7**	2-3/4"	1-1/2"	14-3/4"	4"	233	5200
3/4" x 15"	**08123 8**	2-3/4"	1-1/2"	17-3/4"	6"	254	5200
3/4" x 18"	**08126 9**	2-3/4"	1-1/2"	20-3/4"	6"	290	5200
3/4" x 24"	**08129 0**	2-3/4"	1-1/2"	26-3/4"	6"	369	5200
7/8" x 5"	**08134 4**	3-1/2"	1-3/4"	8-1/2"	2-1/2"	245	7200
7/8" x 8"	**08137 5**	3-1/2"	1-3/4"	11-1/2"	4"	296	7200
7/8" x 12"	**08140 5**	3-1/2"	1-3/4"	15-1/2"	4"	366	7200
7/8" x 18"	**08143 6**	3-1/2"	1-3/4"	21-1/2"	6"	464	7200
7/8" x 24"	**08146 7**	3-1/2"	1-3/4"	27-1/2"	6"	556	7200
1" x 6"	**08151 1**	3-3/4"	2"	9-3/4"	3"	301	10000
1" x 9"	**08154 2**	3-3/4"	2"	12-3/4"	4"	383	10000
1" x 12"	**08157 3**	3-3/4"	2"	15-3/4"	4"	450	10000
1" x 18"	**08160 3**	3-3/4"	2"	21-3/4"	6"	584	10000
1" x 24"	**08163 4**	3-3/4"	2"	27-3/4"	6"	716	10000



Special shank and thread lengths are also available.

DROP FORGED EYE BOLTS

F/N EBFS



MACHINE THREAD

Diameter (A) & Shank Length (B)	Part No.	Dimensions — Inches						Weight Per 100 pcs	Working Load Limit*
		Outside Eye (C)	Inside Eye (D)	Overall Length (E)	Outside Shoulder (F)	Thickness at Shoulder (G)	Thread Length (T)		
1/4" x 2"	**08405 5**	1"	1/2"	3-1/8"	7/16"	5/64"	1-1/2"	7.4	500
1/4" x 4"	**08411 6**	1"	1/2"	5-1/8"	7/16"	5/64"	2"	10.7	500
5/16" x 2-1/4"	**08422 2**	1-1/4"	5/8"	3-5/8"	9/16"	3/32"	1-1/2"	12.9	800
5/16" x 4-1/4"	**08428 4**	1-1/4"	5/8"	5-5/8"	9/16"	3/32"	2-1/2"	16.8	800
3/8" x 2-1/2"	**08439 0**	1-1/2"	3/4"	4-1/4"	11/16"	1/8"	1-1/2"	21	1200
3/8" x 4-1/2"	**08445 1**	1-1/2"	3/4"	6-1/4"	11/16"	1/8"	2"	29	1200
1/2" x 2"	**08459 8**	2"	1"	4-5/16"	7/8"	5/32"	1-7/8"	44	2200
1/2" x 3-1/4"	**08462 8**	2"	1"	5-1/2"	7/8"	5/32"	1-1/2"	46	2200
1/2" x 6"	**08468 0**	2"	1"	8-1/4"	7/8"	5/32"	3"	63	2200
5/8" x 4-1/2"	**08482 6**	2-5/16"	1-1/4"	7-1/4"	1-1/8"	13/64"	2"	99	3500
5/8" x 6"	**08485 7**	2-5/16"	1-1/4"	8-9/16"	1-1/8"	13/64"	3"	103	3500
3/4" x 4-1/2"	**08508 3**	2-3/4"	1-1/2"	7-3/4"	1-3/8"	1/4"	2-1/2"	152	5200
3/4" x 6"	**08511 3**	2-3/4"	1-1/2"	9-1/8"	1-3/8"	1/4"	3"	166	5200
7/8" x 5"	**08534 2**	3-1/2"	1-3/4"	9-1/4"	1-1/2"	9/32"	2-1/2"	222	7000
7/8" x 8"	**08537 3**	3-1/2"	1-3/4"	12-1/8"	1-1/2"	9/32"	4"	269	7000
1" x 6"	**08551 9**	3-3/4"	2"	10-1/2"	1-3/4"	5/16"	3"	331	10000
1" x 9"	**08554 0**	3-3/4"	2"	13-1/4"	1-3/4"	5/16"	4"	404	10000

*Loads are based on a safety factor of 5 to 1. Some sizes also available in Stainless Steel.
Special shank and thread lengths are also available.

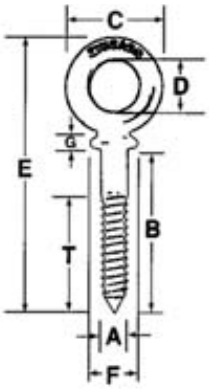
SCREW THREAD EYE BOLTS

F/N EB

REGULAR

Diameter (A) & Shank Length (B)	Part No.	Dimensions — Inches				Weight Per 100 pcs
		Outside Eye (C)	Inside Eye (D)	Overall Length (E)	Thread Length (T)	
1/4" x 2"	**08805 3**	1"	1/2"	3"	1-1/2"	5.3
5/16" x 2-1/4"	**08810 7**	1-1/4"	5/8"	3-1/2"	1-5/8"	9
3/8" x 2-1/2"	**08815 2**	1-1/2"	3/4"	4"	1-3/4"	16
1/2" x 3-1/4"	**08820 6**	2"	1"	5-1/4"	2-1/8"	39
5/8" x 4-1/2"	**08825 1**	2-5/16"	1-1/4"	6-13/16"	2-1/2"	67
3/4" x 4-1/2"	**08830 5**	2-3/4"	1-1/2"	7-1/4"	3"	108
7/8" x 5"	**08835 0**	3-1/2"	1-3/4"	8-1/4"	3-1/4"	166
1" x 6"	**08840 4**	3-3/4"	2"	9-3/4"	3-1/2"	265

Screw eye bolts supplied with cone points – lag screw thread.



SHOULDER

Diameter (A) & Shank Length (B)	Part No.	Dimensions — Inches						Weight Per 100 pcs
		Outside Eye (C)	Inside Eye (D)	Overall Length (E)	Outside Shoulder (F)	Thickness at Shoulder (G)	Thread Length (T)	
1/4" x 2"	**08905 0**	1"	1/2"	3-1/8"	7/16"	5/64"	1-1/2"	6.7
5/16" x 2-1/4"	**08910 4**	1-1/4"	5/8"	3-3/4"	9/16"	3/32"	1-5/8"	12
3/8" x 2-1/2"	**08915 9**	1-1/2"	3/4"	4-1/4"	11/16"	1/8"	1-3/4"	19
1/2" x 3-1/4"	**08920 3**	2"	1"	5-1/2"	7/8"	5/32"	2-1/8"	42
5/8" x 4-1/2"	**08925 8**	2-5/16"	1-1/4"	7-1/4"	1-1/8"	13/64"	2-1/2"	86
3/4" x 4-1/2"	**08930 2**	2-3/4"	1-1/2"	7-3/4"	1-3/8"	1/4"	3"	120
7/8" x 5"	**08935 7**	3-1/2"	1-3/4"	9"	1-1/2"	9/32"	3-1/4"	189
1" x 6"	**08940 1**	3-3/4"	2"	10-1/2"	1-3/4"	5/16"	3-1/2"	297

MACHINERY EYE BOLTS
F/N EBMP and EBMS

Maximum blank lengths, either pattern indicated in column (1). Vertical loads are based on a safety factor of 5 to 1. Variation in quantity: on special items we reserve the right to a maximum 10% variation for allowances in manufacture.

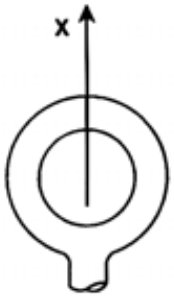
STANDARD SHANK LENGTHS—PLAIN & SHOULDER PATTERN

Stock Numbers		Dimensions — Inches						
Plain Pattern	Shoulder Pattern	Shank		Eye		Overall Length Plain	Overall Length Shoulder	Maximum Lengths (1)
		Dia. & Thread	Length	I.D.	O.D.			
1	21	1/4"-20	1"	3/4"	1-1/4"	2-1/4"	2-3/8"	3"
2	22	5/16"-18	1-1/8"	7/8"	1-1/2"	2-5/8"	2-3/4"	4"
3	23	3/8"-16	1-1/4"	1"	1-21/32"	2-29/32"	3-1/4"	4-1/2"
4	24	7/16"-14	1-3/8"	1-3/32"	1-27/32"	3-7/32"	3-5/8"	4-1/2"
5	25	1/2"-13	1-1/2"	1-3/16"	2-1/16"	3-9/16"	4"	4-1/2"
6	26	9/16"-12	1-5/8"	1-9/32"	2-9/32"	3-29/32"	4-1/2"	4-1/2"
7	27	5/8"-11	1-3/4"	1-3/8"	2-1/2"	4-1/4"	4-7/8"	4-1/2"
8	28	3/4"-10	2"	1-1/2"	2-13/16"	4-13/16"	5-1/4"	5"
9	29	7/8"-9	2-1/4"	1-11/16"	3-1/4"	5-1/2"	6"	5"
10	30	1"-8	2-1/2"	1-13/16"	3-9/16"	6-1/16"	7"	5"
11	31	1-1/8"-7	2-3/4"	2"	4"	6-3/4"	7-1/2"	2-3/4"
12	32	1-1/4"-7	3"	2-3/16"	4-7/16"	7-7/16"	8-1/2"	3"
14	34	1-1/2"-6	3-1/2"	2-1/2"	5-3/16"	8-11/16"	9-1/2"	3-1/2"

Working load limits for eye bolts are based on a straight vertical lift in a gradually increasing manner. Angular lifts will significantly lower working load limits (see Shoulder Pattern) and should be avoided whenever possible. If an angular lift is required, a properly seated Shoulder Pattern eye bolt must be used. Loads should always be applied to eye bolts in the plane of the eye, not at an angle to this plane. Angular lifts must never be more than a 45° pull.

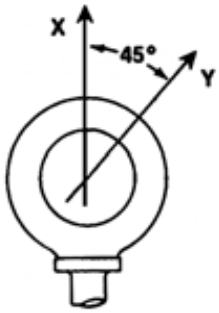
Diameter and Thread	Working Load Limit	
	Straight Pull (X)	45° Pull (Y) Shoulder Only
1/4"-20	500	125
5/16"-18	900	225
3/8"-16	1400	350
7/16"-14	2000	500
1/2"-13	2600	650
9/16"-12	3200	750
5/8"-11	4000	1000
3/4"-10	6000	1500
7/8"-9	7000	1750
1"-8	9000	2250
1-1/8"-7	12000	2500
1-1/4"-7	15000	3750
1-1/2"-6	21000	4900

F/N EBMP



Plain Pattern

F/N EBMS



Shoulder Pattern

ANGULAR LIFTS SHOULD BE AVOIDED WHENEVER POSSIBLE.

MACHINERY EYE BOLTS

Drop forged steel. Heat treated after forging. Self-colored, zinc plated, or hot galvanized. Plain or shoulder type, blank or threaded. Threaded will be supplied unless otherwise specified.

F/N EBMP

Available in Zinc Plated and Hot Galvanized.

Some sizes available in Stainless Steel.

Available in Metric

STANDARD SHANK LENGTHS
PLAIN PATTERN

Plain Pattern No.	Bolt Diameter N.C.	Standard Shank Length	Threaded		Blank	
			Part No.	Weight Per 100	Part No.	Weight Per 100
1	1/4"	1"	**11605 3**	5	**11005 1**	5.5
2	5/16"	1-1/8"	**11625 1**	10.5	**11025 9**	11.5
3	3/8"	1-1/4"	**11645 9**	15.5	**11045 7**	16.5
4	7/16"	1-3/8"	**11665 7**	20.5	**11065 5**	22
5	1/2"	1-1/2"	**11685 5**	33	**11085 3**	35
6	9/16"	1-5/8"	**11705 0**	44.5	**11105 8**	45
7	5/8"	1-3/4"	**11725 8**	64	**11125 6**	66
8	3/4"	2"	**11748 7**	90.5	**11148 5**	97
9	7/8"	2-1/4"	**11768 5**	135	**11168 3**	142
10	1"	2-1/2"	**11788 3**	190.5	**11188 1**	199
11	1-1/8"	2-3/4"	**11808 8**	299.5	**11208 6**	312
12	1-1/4"	3"	**11831 6**	399	**11231 4**	412
14	1-1/2"	3-1/2"	**11851 4**	662.5	**11251 2**	691

F/N EBMS

STANDARD SHANK LENGTHS
SHOULDER PATTERN

Shoulder Pattern No.	Bolt Diameter N.C.	Standard Shank Length	Threaded		Blank	
			Part No.	Weight Per 100	Part No.	Weight Per 100
21	1/4"	1"	**12805 6**	6	**12205 4**	6
22	5/16"	1-1/8"	**12825 4**	10	**12225 2**	10.5
23	3/8"	1-1/4"	**12845 2**	16	**12245 0**	17
24	7/16"	1-3/8"	**12865 0**	26.5	**12265 8**	28
25	1/2"	1-1/2"	**12885 8**	38	**12285 6**	39
26	9/16"	1-5/8"	**12905 3**	49	**12305 1**	52.5
27	5/8"	1-3/4"	**12925 1**	73.5	**12325 9**	76.5
28	3/4"	2"	**12948 0**	99.5	**12348 8**	104
29	7/8"	2-1/4"	**12968 8**	172.5	**12368 6**	178
30	1"	2-1/2"	**12988 6**	235	**12388 4**	242
31	1-1/8"	2-3/4"	**13008 0**	342.5	**12408 9**	347
32	1-1/4"	3"	**13031 8**	462.5	**12431 7**	485
34	1-1/2"	3-1/2"	**13051 6**	752.5	**12451 5**	780

MACHINERY EYE BOLTS

ZINC PLATED

F/N EBMP

PLAIN PATTERN—ZINC

Plain Pattern No.	Bolt Diameter N.C.	Standard Shank Length	Part No.
1	1/4"	1"	**26005 3**
2	5/16"	1-1/8"	**26008 4**
3	3/8"	1-1/4"	**26011 4**
4	7/16"	1-3/8"	**26014 5**
5	1/2"	1-1/2"	**26017 6**
6	9/16"	1-5/8"	**26020 6**
7	5/8"	1-3/4"	**26023 7**
8	3/4"	2"	**26026 8**
9	7/8"	2-1/4"	**26029 9**
10	1"	2-1/2"	**26032 9**
11	1-1/8"	2-3/4"	**26035 0**
12	1-1/4"	3"	**26038 1**
14	1-1/2"	3-1/2"	**26041 1**

F/N EBMS

SHOULDER PATTERN—ZINC

Shoulder Pattern No.	Bolt Diameter N.C.	Standard Shank Length	Part No.
21	1/4"	1"	**26050 3**
22	5/16"	1-1/8"	**26053 4**
23	3/8"	1-1/4"	**26056 5**
24	7/16"	1-3/8"	**26059 6**
25	1/2"	1-1/2"	**26062 6**
26	9/16"	1-5/8"	**26065 7**
27	5/8"	1-3/4"	**26068 8**
28	3/4"	2"	**26071 8**
29	7/8"	2-1/4"	**26074 9**
30	1"	2-1/2"	**26077 0**
31	1-1/8"	2-3/4"	**26080 0**
32	1-1/4"	3"	**26083 1**
34	1-1/2"	3-1/2"	**26086 2**

HOT GALVANIZED

F/N EBMP

PLAIN PATTERN—GALVANIZED

Plain Pattern No.	Bolt Diameter N.C.	Standard Shank Length	Part No.
1	1/4"	1"	**26105 0**
2	5/16"	1-1/8"	**26108 1**
3	3/8"	1-1/4"	**26111 1**
4	7/16"	1-3/8"	**26114 2**
5	1/2"	1-1/2"	**26117 3**
6	9/16"	1-5/8"	**26120 3**
7	5/8"	1-3/4"	**26123 4**
8	3/4"	2"	**26126 5**
9	7/8"	2-1/4"	**26129 6**
10	1"	2-1/2"	**26132 6**
11	1-1/8"	2-3/4"	**26135 7**
12	1-1/4"	3"	**26138 8**
14	1-1/2"	3-1/2"	**26141 8**

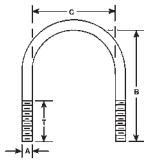
F/N EBMS

SHOULDER PATTERN—GALVANIZED

Shoulder Pattern No.	Bolt Diameter N.C.	Standard Shank Length	Part No.
21	1/4"	1"	**26155 5**
22	5/16"	1-1/8"	**26158 6**
23	3/8"	1-1/4"	**26161 6**
24	7/16"	1-3/8"	**26164 7**
25	1/2"	1-1/2"	**26167 8**
26	9/16"	1-5/8"	**26170 8**
27	5/8"	1-3/4"	**26173 9**
28	3/4"	2"	**26176 0**
29	7/8"	2-1/4"	**26179 1**
30	1"	2-1/2"	**26182 1**
31	1-1/8"	2-3/4"	**26185 2**
32	1-1/4"	3"	**26188 3**
34	1-1/2"	3-1/2"	**26191 3**

ROUND BEND U-BOLTS
F/N UBOLT

Round Bend U-Bolts for Steel or Wrought Iron pipe sizes 1/4"-18" inclusive, as listed on this and next pages, are produced from low carbon steel.

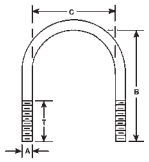


ZINC PLATED

U-Bolt Dimensions—Inches				For			
Diameter & Thread (A)	I.D. (C)	Inside Length (B)	Thread Length (T)	Pipe Size	Stock No.	Part No.	Weight Per 100
1/4"-20	9/16"	1-1/4"	3/4"	1/4"	01	**50005 0**	5
1/4"-20	3/4"	1-1/4"	5/8"	3/8"	02	**50008 1**	5
1/4"-20	3/4"	2-1/4"	1-1/2"	3/8"	03	**50011 1**	7
1/4"-20	1"	1-3/4"	1"	1/2"	04	**50014 2**	7
1/4"-20	1"	2-3/4"	1-1/4"	1/2"	04L	**50017 3**	8
1/4"-20	1-1/8"	2"	1"	3/4"	05	**50020 3**	7
1/4"-20	1-1/8"	3-1/8"	1-1/2"	3/4"	05L	**50023 4**	9
1/4"-20	1-1/4"	2-1/4"	1-1/4"	3/4"	06	**50026 5**	7.5
1/4"-20	1-1/2"	2-3/4"	1-3/8"	1"	07	**50029 6**	9
1/4"-20	1-3/4"	3"	1-3/8"	1-1/4"	08	**50032 6**	9
1/4"-20	2"	3-1/4"	1-3/8"	1-1/2"	09	**50035 7**	9.5
5/16"-18	1"	2-3/16"	1-3/8"	1/2"	010	**50038 8**	11
5/16"-18	1-1/8"	2-3/16"	1"	3/4"	0101	**50041 8**	12
5/16"-18	1-3/8"	2-3/16"	1"	1"	011	**50044 9**	12
5/16"-18	1-3/8"	3-5/8"	2"	1"	011L	**50047 0**	16
5/16"-18	1-1/2"	2-3/16"	1"	1"	012	**50050 0**	12
5/16"-18	1-3/4"	2-11/16"	1-1/8"	1-1/4"	013	**50053 1**	13
5/16"-18	1-3/4"	4-1/2"	2"	1-1/4"	013L	**50056 2**	19
5/16"-18	2"	2-11/16"	1"	1-1/2"	014	**50059 3**	14
5/16"-18	2"	4-3/4"	3"	1-1/2"	014L	**50062 3**	20
5/16"-18	2-1/2"	3-3/16"	1"	2"	015	**50065 4**	16
5/16"-18	2-1/2"	5-5/8"	3"	2"	015L	**50068 5**	23
5/16"-18	3"	3-11/16"	1"	2-1/2"	016	**50071 5**	18
3/8"-16	1"	2-1/4"	1-1/4"	1/2"	017	**50074 6**	17.5
3/8"-16	1-1/4"	2-1/4"	1-1/4"	3/4"	018	**50077 7**	18
3/8"-16	1-1/2"	2-1/2"	1-1/4"	1"	019	**50080 7**	18.5
3/8"-16	1-3/4"	2-3/4"	1-1/8"	1-1/4"	020	**50083 8**	20
3/8"-16	2"	2-5/8"	1-1/4"	1-1/2"	021	**50086 9**	20
3/8"-16	2-1/2"	3-1/8"	1-1/4"	2"	022	**50089 0**	24.5
3/8"-16	3"	3-5/8"	1-1/4"	2-1/2"	023	**50092 0**	26
3/8"-16	3"	6-5/8"	3"	2-1/2"	023L	**50095 1**	41
3/8"-16	3-1/2"	4-1/8"	1-1/4"	3"	024	**50098 2**	30
1/2"-13	3"	4-1/2"	1-5/8"	2-1/2"	025	**50101 9**	59
1/2"-13	3-1/2"	5"	1-1/2"	3"	026	**50104 0**	64
1/2"-13	3-1/2"	8-1/2"	3"	3"	026L	**50107 1**	95
1/2"-13	4"	5-1/2"	1-1/2"	3-1/2"	027	**50110 1**	70
1/2"-13	4-1/2"	6"	1-1/2"	4"	028	**50113 2**	75
1/2"-13	5-5/8"	7-1/4"	2"	5"	029	**50116 3**	90
1/2"-13	6-3/4"	8-3/8"	2"	6"	030	**50119 4**	101
1/2"-13	8-3/4"	10-3/8"	2"	8"	031	**50122 4**	120
3/4"-10	10-7/8"	13-13/16"	4"	10"	032	**50125 5**	440
7/8"-9	12-7/8"	16-1/16"	4-1/4"	12"	033	**50128 6**	710
7/8"-9	14-1/8"	17-5/16"	4-1/4"	14"	034	**50131 6**	755
7/8"-9	16-1/8"	19-5/16"	4-1/4"	16"	035	**50134 7**	850
1"-8	18-1/8"	21-11/16"	4-3/4"	18"	036	**50137 8**	1245

ROUND BEND U-BOLTS
F/N UBOLT

Zinc plated and hot galvanized finishes are standard.
Stock numbers followed by “L” denote long length u-bolts designed for use in applications requiring longer tangents.



HOT GALVANIZED

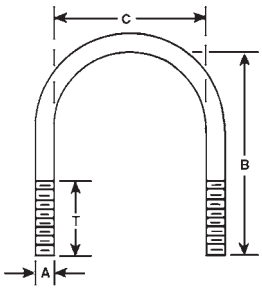
U-Bolt Dimensions—Inches				For			
Diameter & Thread (A)	I.D. (C)	Inside Length (B)	Thread Length (T)	Pipe Size	Stock No.	Part No.	Weight Per 100
1/4"-20	9/16"	1-1/4"	3/4"	1/4"	01HG	**53005 7**	5
1/4"-20	3/4"	1-1/4"	5/8"	3/8"	02HG	**53008 8**	5
1/4"-20	3/4"	2-1/4"	1-1/2"	3/8"	03HG	**53011 8**	7
1/4"-20	1"	1-3/4"	1"	1/2"	04HG	**53014 9**	7
1/4"-20	1"	2-3/4"	1-1/4"	1/2"	04LHG	**53017 0**	8
1/4"-20	1-1/8"	2"	1"	3/4"	05HG	**53020 0**	7
1/4"-20	1-1/8"	3-1/8"	1-1/2"	3/4"	05LHG	**53023 1**	9
1/4"-20	1-1/4"	2-1/4"	1-1/4"	3/4"	06HG	**53026 2**	7.5
1/4"-20	1-1/2"	2-3/4"	1-3/8"	1"	07HG	**53029 3**	9
1/4"-20	1-3/4"	3"	1-3/8"	1-1/4"	08HG	**53032 3**	9
1/4"-20	2"	3-1/4"	1-3/8"	1-1/2"	09HG	**53035 4**	9.5
5/16"-18	1"	2-3/16"	1-3/8"	1/2"	010HG	**53038 5**	11
5/16"-18	1-1/8"	2-3/16"	1"	3/4"	0101HG	**53041 5**	12
5/16"-18	1-3/8"	2-3/16"	1"	1"	011HG	**53044 6**	12
5/16"-18	1-3/8"	3-5/8"	2"	1"	011LHG	**53047 7**	16
5/16"-18	1-1/2"	2-3/16"	1"	1"	012HG	**53050 7**	12
5/16"-18	1-3/4"	2-11/16"	1-1/8"	1-1/4"	013HG	**53053 8**	13
5/16"-18	1-3/4"	4-1/2"	2"	1-1/4"	013LHG	**53056 9**	19
5/16"-18	2"	2-11/16"	1"	1-1/2"	014HG	**53059 0**	14
5/16"-18	2"	4-3/4"	3"	1-1/2"	014LHG	**53062 0**	20
5/16"-18	2-1/2"	3-3/16"	1"	2"	015HG	**53065 1**	16
5/16"-18	2-1/2"	5-5/8"	3"	2"	015LHG	**53068 2**	23
5/16"-18	3"	3-11/16"	1"	2-1/2"	016HG	**53071 2**	18
3/8"-16	1"	2-1/4"	1-1/4"	1/2"	017HG	**53074 3**	17.5
3/8"-16	1-1/4"	2-1/4"	1-1/4"	3/4"	018HG	**53077 4**	18
3/8"-16	1-1/2"	2-1/2"	1-1/4"	1"	019HG	**53080 4**	18.5
3/8"-16	1-3/4"	2-3/4"	1-1/8"	1-1/4"	020HG	**53083 5**	20
3/8"-16	2"	2-5/8"	1-1/4"	1-1/2"	021HG	**53086 6**	20
3/8"-16	2-1/2"	3-1/8"	1-1/4"	2"	022HG	**53089 7**	24.5
3/8"-16	3"	3-5/8"	1-1/4"	2-1/2"	023HG	**53092 7**	26
3/8"-16	3"	6-5/8"	3"	2-1/2"	023LHG	**53095 8**	41
3/8"-16	3-1/2"	4-1/8"	1-1/4"	3"	024HG	**53098 9**	30
1/2"-13	3"	4-1/2"	1-5/8"	2-1/2"	025HG	**53101 6**	59
1/2"-13	3-1/2"	5"	1-1/2"	3"	026HG	**53104 7**	64
1/2"-13	3-1/2"	8-1/2"	3"	3"	026LHG	**53107 8**	95
1/2"-13	4"	5-1/2"	1-1/2"	3-1/2"	027HG	**53110 8**	70
1/2"-13	4-1/2"	6"	1-1/2"	4"	028HG	**53113 9**	75
1/2"-13	5-5/8"	7-1/4"	2"	5"	029HG	**53116 0**	90
1/2"-13	6-3/4"	8-3/8"	2"	6"	030HG	**53119 1**	101
1/2"-13	8-3/4"	10-3/8"	2"	8"	031HG	**53122 1**	120
3/4"-10	10-7/8"	13-13/16"	4"	10"	032HG	**53125 2**	440
7/8"-9	12-7/8"	16-1/16"	4-1/4"	12"	033HG	**53128 3**	710
7/8"-9	14-1/8"	17-5/16"	4-1/4"	14"	034HG	**53131 3**	755
7/8"-9	16-1/8"	19-5/16"	4-1/4"	16"	035HG	**53134 4**	850
1"-8	18-1/8"	21-11/16"	4-3/4"	18"	036HG	**53137 5**	1245

STAINLESS STEEL U BOLTS

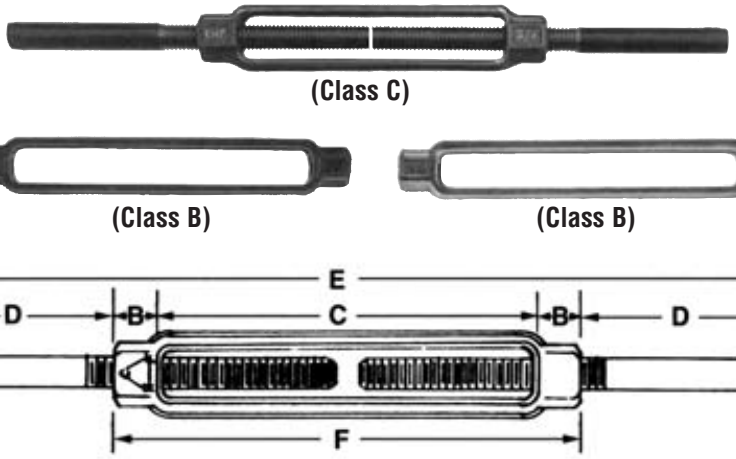
F/N UBOLT

ROUND BEND U-BOLTS—TYPE 304 STAINLESS STEEL

Dimensions U-Bolts Only (A x C x B)	Pipe Size	Stock No.	Part No.	Weight Per 100
1/4" x 9/16" x 1-1/4"	1/4"	01SS	**50405 8**	5
1/4" x 3/4" x 1-1/4"	3/8"	02SS	**50408 9**	5
1/4" x 3/4" x 2-1/4"	3/8"	03SS	**50411 9**	7
1/4" x 1" x 1-3/4"	1/2"	04SS	**50414 0**	7
1/4" x 1-1/8" x 2"	3/4"	05SS	**50420 1**	7
1/4" x 1-1/4" x 2-1/4"	3/4"	06SS	**50426 3**	7.5
1/4" x 1-1/2" x 2-3/4"	1"	07SS	**50429 4**	9
1/4" x 1-3/4" x 3"	1-1/4"	08SS	**50432 4**	9
1/4" x 2" x 3-1/4"	1-1/2"	09SS	**50435 5**	9.5
5/16" x 1" x 2-3/16"	1/2"	010SS	**50438 6**	11
5/16" x 1-3/8" x 2-3/16"	1"	011SS	**50444 7**	12
5/16" x 1-1/2" x 2-3/16"	1"	012SS	**50450 8**	12
5/16" x 1-3/4" x 2-11/16"	1-1/4"	013SS	**50453 9**	13
5/16" x 2" x 2-11/16"	1-1/2"	014SS	**50459 1**	14
5/16" x 2-1/2" x 3-3/16"	2"	015SS	**50465 2**	16
5/16" x 3" x 3-11/16"	2-1/2"	016SS	**50471 3**	18
3/8" x 1" x 2-1/4"	1/2"	017SS	**50474 4**	17.5
3/8" x 1-1/4" x 2-1/4"	3/4"	018SS	**50477 5**	18
3/8" x 1-1/2" x 2-1/2"	1"	019SS	**50480 5**	18.5
3/8" x 1-3/4" x 2-3/4"	1-1/4"	020SS	**50483 6**	20
3/8" x 2" x 2-5/8"	1-1/2"	021SS	**50486 7**	20
3/8" x 2-1/2" x 3-1/8"	2"	022SS	**50489 8**	24.5
3/8" x 3" x 3-5/8"	2-1/2"	023SS	**50492 8**	26
3/8" x 3-1/2" x 4-1/8"	3"	024SS	**50495 9**	30
1/2" x 3" x 4-1/2"	2-1/2"	025SS	**50497 3**	59
1/2" x 3-1/2" x 5"	3"	026SS	**50500 0**	64
1/2" x 4" x 5-1/2"	3-1/2"	027SS	**50503 1**	70
1/2" x 4-1/2" x 6"	4"	028SS	**50506 2**	75
1/2" x 5-5/8" x 7-1/4"	5"	029SS	**50509 3**	90
1/2" x 6-3/4" x 8-3/8"	6"	030SS	**50512 3**	101
1/2" x 8-3/4" x 10-3/8"	8"	031SS	**50515 4**	120
3/4" x 10-7/8" x 13-13/16"	10"	032SS	**50560 4**	440
7/8" x 12-7/8" x 16-1/16"	12"	033SS	**50570 3**	710
7/8" x 14-1/8" x 17-5/16"	14"	034SS	**50574 1**	755
7/8" x 16-1/8" x 19-5/16"	16"	035SS	**50578 9**	850



DROP FORGED TURNBUCKLES



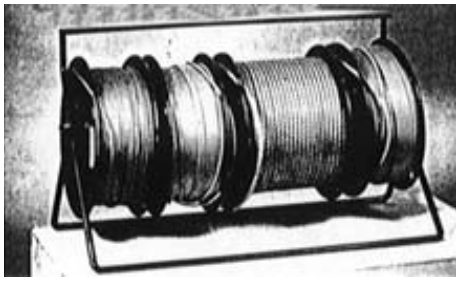
Turnbuckles Meet Performance Requirements of ASTM Specification F1145-92 Type 1 Grade 1 (Supercedes FF-T-791B)

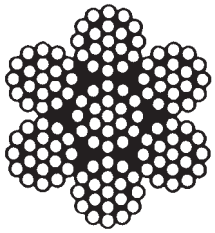
Diameter & Take-up	Body Only					
	Drilled & Tapped			Weight	Blanks	
Dimensions A x C	SC Part No.	Galv. Part No.	Overall Length (F)	per 100 D&T	SC Part Part No.	Galv. Part No.
1/4" x 4"	**03805 8**	**03955 0**	4-13/16"	14	**00105 2**	**00255 4**
5/16" x 4-1/2"	**03810 2**	**03960 4**	5-9/16"	21.5	**00110 6**	**00260 8**
3/8" x 6"	**03815 7**	**03965 9**	7-1/8"	37.5	**00115 1**	**00265 3**
1/2" x 2"	**03820 1**	**03970 3**	3-1/2"	34	**00120 5**	**00270 7**
1/2" x 6"	**03823 2**	**03973 4**	7-1/2"	66	**00123 6**	**00273 8**
1/2" x 9"	**03826 3**	**03976 5**	10-1/2"	84.5	**00126 7**	**00276 9**
1/2" x 12"	**03829 4**	**03979 6**	13-1/2"	102	**00129 8**	**00279 0**
5/8" x 6"	**03834 8**	**03984 0**	7-7/8"	90.5	**00134 2**	**00284 4**
5/8" x 9"	**03837 9**	**03987 1**	10-7/8"	131	**00137 3**	**00287 5**
5/8" x 12"	**03840 9**	**03990 1**	13-7/8"	172.5	**00140 3**	**00290 5**
5/8" x 18"	**03843 0**	**03993 2**	20-1/4"	345	**00143 4**	**00293 6**
3/4" x 6"	**03848 5**	**03998 7**	8-1/4"	129	**00148 9**	**00298 1**
3/4" x 9"	**03851 5**	**04001 3**	11-1/4"	191	**00151 9**	**00301 8**
3/4" x 12"	**03854 6**	**04004 4**	14-1/4"	243	**00154 0**	**00304 9**
3/4" x 18"	**03857 7**	**04007 5**	20-1/4"	336.5	**00157 1**	**00307 0**
7/8" x 6"	**03862 1**	**04012 9**	8-5/8"	196	**00162 5**	**00312 4**
7/8" x 12"	**03865 2**	**04015 0**	14-5/8"	309.5	**00165 6**	**00315 5**
7/8" x 18"	**03868 3**	**04018 1**	20-5/8"	583.5	**00168 7**	**00318 6**
1" x 6"	**03873 7**	**04023 5**	9"	279	**00173 1**	**00323 0**
1" x 12"	**03876 8**	**04026 6**	15"	383	**00176 2**	**00326 1**
1" x 18"	**03879 9**	**04029 7**	21"	566	**00179 3**	**00329 2**
1-1/8" x 6"	**03884 3**	**04034 1**	9"	228	**00184 7**	**00334 6**
1-1/8" x 12"	**03887 4**	**04037 2**	15"	467.5	**00187 8**	**00337 7**
1-1/4" x 6"	**03892 8**	**04042 6**	9-3/4"	449	**00192 2**	**00342 1**
1-3/8" x 6"	**03897 3**	**04047 1**	9-3/4"	430	**00197 7**	**00347 6**
1-1/2" x 6"	**03902 4**	**04052 5**	10-3/8"	684	**00202 8**	**00352 0**

Maximum load ratings are based on a straight vertical lift in a gradually increasing manner. Any deviations as angular lifts, shock loads, modification of the basic part, etc., will result in drastically reduced maximum loads.

Eye & Eye **F/N TBEE** **Eye & Stub** **F/N TBES**
Jaw & Eye **F/N TBJE** **Jaw & Jaw** **F/N TBJJ**

Galvanized Aircraft Cable, Thimbles & Clips





Aircraft Cable
- Galvanized Aircraft Cable

7 x 19
GALVANIZED CABLE F/N WRAC / WRGP

Size (in.)	Part No.	Approx. Weight per 1000 ft. (lbs.)	Work Load Limit (lbs.)
1/8	**80343**	29	400
3/16	**80543**	65	840
1/4	**80643**	110	1400
3/8	**80943**	243	2880

WIRE ROPE THIMBLES F/N CH


OPEN


CLOSED

	FOR ROPE SIZE	DIMENSIONS—INCHES					PART NUMBER
		LENGTH		WIDTH			
		OVERALL	INSIDE	INSIDE	*OPENING	INSIDE SCORE	
OPEN	*1/8	1-5/8	1-7/32	19/32	3/8	3/16	**224055**
	*3/16	1-5/8	1-7/32	19/32	3/8	7/32	**224109**
	*1/4	1-7/8	1-3/8	11/16	1/2	1/4	**224154**
	*5/16	2-1/8	1-1/2	3/4	5/8	5/16	**224208**
	*3/8	2-5/8	1-7/8	7/8	5/8	13/32	**224253**
	*7/16	2-3/4	1-7/8	1-1/16	3/4	15/32	**224307**
	*1/2	2-7/8	2	1-1/8	3/4	19/32	**224352**
	*5/8	3-3/8	2-7/32	1-5/16	7/8	23/32	**224406**
	*3/4	3-7/8	2-1/2	1-1/2	1	13/16	**224451**
	*7/8	4-9/16	3	1-11/16	1-1/8	15/16	**224505**
	*1	5	3-7/32	2	1-1/8	1-1/8	**224550**
CLOSED	1-1/8	5-3/8	3-9/16	2-1/4	N/A	1-1/4	**225601**
	1-1/4	5-3/4	3-9/16	2-7/16	N/A	1-5/16	**225656**
	1-1/2	7	4-5/16	2-7/8	N/A	1-9/16	**225700**
	1-3/4	8-1/2	5-1/4	3-5/16	N/A	1-7/8	**225755**
	2	10	6-5/8	3-1/2	N/A	2-3/32	**225809**

WIRE ROPE CLIPS F/N CH

ROPE SIZE (In.)	SELF-COLORED PART NUMBER	GALVANIZED PART NUMBER	HOT GALVANIZED PART NUMBER	ROPE SIZE (In.)	SELF-COLORED PART NUMBER	GALVANIZED PART NUMBER	HOT GALVANIZED PART NUMBER
3/32	**320056**	**231558**	N.A.	3/4	**230551**	**232050**	**233552**
1/8	**230100**	**231602**	N.A.	7/8	**230605**	**232104**	**233606**
3/16	**230155**	**231657**	N.A.	1	**230650**	**232159**	**233651**
1/4	**230209**	**231701**	**233200**	1-1/8	**230704**	**232203**	N.A.
5/16	**230254**	**231756**	**233255**	1-1/4	**230759**	**232258**	N.A.
3/8	**230308**	**231800**	**233309**	1-3/8	**230803**	**232302**	N.A.
7/16	**230353**	**231855**	**233354**	1-1/2	**230858**	**232357**	N.A.
1/2	**230407**	**231909**	**233408**	1-5/8	**230902**	**232401**	N.A.
9/16	**230452**	**231954**	**233453**	1-3/4	**230957**	**232456**	N.A.
5/8	**230506**	**232005**	**233507**	2	**231008**	**232500**	N.A.

Meets Federal Specification
FF-C-450 Type 1 Class 1


DROP FORGED STEEL

MACHINE SCREWS

MATERIALS AVAILABLE:

- MILD STEEL
- STAINLESS STEEL
- BRASS
- ALUMINUM
- PLASTIC

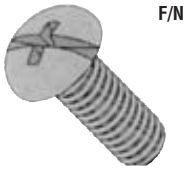
PLATINGS AVAILABLE:

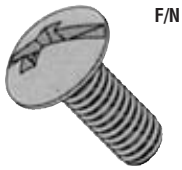
- PLAIN
- ZINC
- NICKEL
- ACG BLACK
- YELLOW ZINC

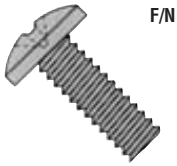
Machine Screws

F/N MMPC

Pan Combination Machine Screw

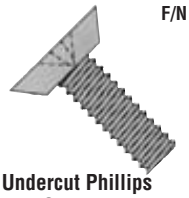
F/N MMCR

Round Combination Machine Screw

F/N MMCT

Truss Combination Machine Screw

F/N MMPB

Binding Undercut Phillips Machine Screw

F/N MMPF

Flat Phillips Machine Screw

F/N MMPU

Flat Undercut Phillips Machine Screw

F/N MMPL

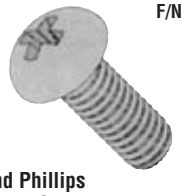
Fillister Phillips Machine Screw

F/N MMPO

Oval Phillips Machine Screw

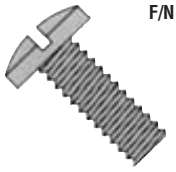
F/N MMPP

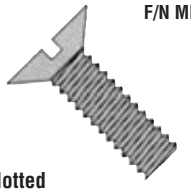
Pan Phillips Machine Screw

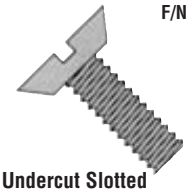
F/N MMPR

Round Phillips Machine Screw

F/N MMPT

Truss Phillips Machine Screw

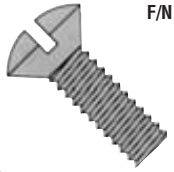
F/N MMSB

Binding Undercut Slotted Machine Screw

F/N MMSF

Flat Slotted Machine Screw

F/N MMSU

Flat Undercut Slotted Machine Screw

F/N MMSL

Fillister Slotted Machine Screw

F/N MMSO

Oval Slotted Machine Screw

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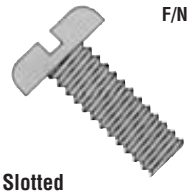
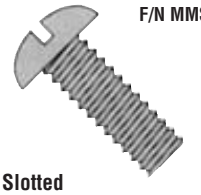
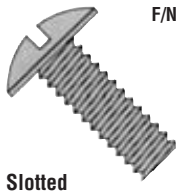
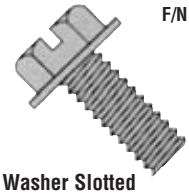
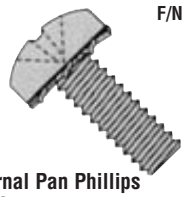
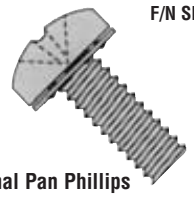

Pan Slotted Machine Screw

F/N MMSR

Round Slotted Machine Screw

F/N MMST

Truss Slotted Machine Screw

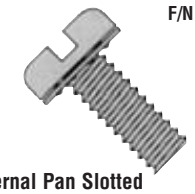
F/N MMSW

Hex Washer Slotted Machine Screw

F/N SEPP

External Pan Phillips SEMS

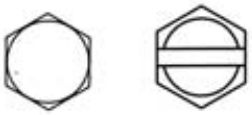
F/N SIPP

Internal Pan Phillips SEMS

F/N SISP

External Pan Slotted SEMS

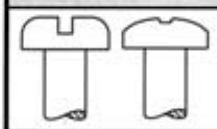
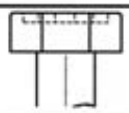
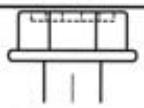
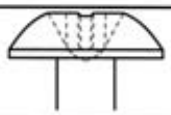
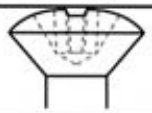
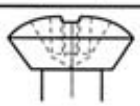
F/N SISP

Internal Pan Slotted SEMS

Drive Types Machine Screws

Drive Types for Machine Screws		
Schematic	**Drive Type**	**Uses**
	Phillips (P)	Most recommended drive type. Provides good control in driving. Always use a driver bit in good condition.
	Slotted (S)	Accepts standard blade screwdrivers. Requires less downward pressure to drive slotted parts than it does those with cross-recessed openings. Use proper fitting blade to minimize slippage.
	Combination: Phillips/Slotted (C)	Accepts phillips and standard blade screwdrivers. Often used when fastener is expected to be driven and backed-out several times.
	Hex / Slotted-Hex (S)	Accepts hex wrench. Slotted drive is added to make it easier to remove the fastener.
	Torx® (T)	Positive-engaging, fast-locating method of transmitting torque and optimizing worker efficiency.
	Pozidriv®-Alternative (Type 1A)	Design offers even greater control in driving than Phillips drive. Used in automotive and appliance manufacturing.
	Square Socket (Q)	Increases productivity with excellent torque transmission and resists cam-out. Distinctive appearance which discourages tinkering.

®Torx is a registered trademark of the Camcar Corporation, division of Textron Industries.
®Pozidriv is a registered trademark of the Phillips Screw Company. Kanebridge's fasteners with a 1A-drive are not manufactured by or connected with the producers of Pozidriv® fasteners.

Machine Screws — Head Styles

Schematic	Head Style	Description	Applications/ Advantages
	Pan P	Slotted pan heads have a flat or gently rounded top surface, cylindrical sides and a flat bearing surface. Phillips and Torx® pan heads have a rounded top, cylindrical sides and a flat bearing surface.	Has a general purpose bearing area. Can be substituted in most applications for round, truss or binding heads.
	Binding B	Has a rounded top surface and slightly tapered sides. The bearing surface is flat with the slotted variety having an annular undercut adjacent to the shank.	Preferred design for making a firm electrical connection.
	Flat 82° F	A countersunk head with a flat top surface and a cone-shaped bearing surface with a head angle of approximately 82°.	Used in applications where protrusion of the fastener above the mating surface is unacceptable. Use a protrusion gage when measuring head height.
	Flat Undercut U	Similar to an 82° flat head except that the head is undercut to 70% of its normal side height.	Standard for short lengths because it allows greater length of threads. Also avoids transition fillet and assembly interference.
	Flat 100° F	A countersunk head with a flat top surface and a cone-shaped bearing surface with a head angle of approximately 100°.	Preferred over an 82° flat head when fastening in soft materials--the 100° countersunk head distributes pressure over a larger surface area.
	Fillister L	Has a rounded top surface, cylindrical sides, and a flat bearing surface. The greater side height is what distinguishes a fillister head from a pan head.	Preferred style for use in counterbored holes.
	Indented Hex H	Has an indented top surface, six flat sides, and a flat bearing surface.	Preferred in high volume assembly where pneumatic equipment is used to drive the screw. Can transmit significantly higher tightening torque levels than other head styles.
	Indented Hex Washer SW	Has an indented top surface, six flat sides and a flat washer which projects beyond the sides and provides a flat bearing surface. The washer and hex head are formed together as one piece.	Offers greater protection to the mating surface than a standard indented hex head. Increased bearing area reduces likelihood of crushing mating surfaces.
	Truss T	Has a low rounded top surface with a flat bearing surface greater in area than a round-head screw of the same nominal size.	Weaker than pan or round heads but preferred in applications where minimal clearance exists above the head. Truss profile provides a trim, finished assembly appearance.
	Oval O	A countersunk head with a rounded top surface and a cone-shaped bearing surface of approximately 82°.	Preferred over a flat head in conical applications, or when a more decorative finished look is desired. Countersunk surface nests into mating countersunk application sites.
	Oval Undercut O	Similar to an 82° oval head except that the head is undercut to 70% of its normal side height.	Standard for short lengths because it allows greater length of threads.
	Round R	Has a semi-elliptical top surface and a flat bearing surface.	Sometimes preferred over pan head for its smooth surface and appearance.

UNIFIED INCH SCREW THREADS (UN AND UNR THREAD FORM)

Table 1 Basic Dimensions for Coarse Thread Series (UNC/UNCR)

Nominal Size	Basic Major Dia, in.	Threads Per Inch	Basic Pitch Dia, in.	Height of Fundamental Triangle in.	Basic Minor Dia Internal in.	Lead Angle at Basic Pitch Dia		Section at Minor Dia sq. in.	Tensile Stress Area sq. in.
	D	n	E	H	K	Deg	Min	A_r	A_s
No. 1	0.0730	64	0.0629	0.013532	0.0561	4	31	0.00218	0.00263
2	0.0860	56	0.0744	0.015465	0.0667	4	22	0.00310	0.00370
3	0.0990	48	0.0855	0.018042	0.0764	4	26	0.00406	0.00487
4	0.1120	40	0.0958	0.021651	0.0849	4	45	0.00496	0.00604
5	0.1250	40	0.1088	0.021651	0.0979	4	11	0.00672	0.00796
6	0.1380	32	0.1177	0.027063	0.1042	4	50	0.00745	0.00909
8	0.1640	32	0.1437	0.027063	0.1302	3	58	0.01196	0.0140
10	0.1900	24	0.1629	0.036084	0.1449	4	39	0.01450	0.0175
12	0.2160	24	0.1889	0.036084	0.1709	4	1	0.0206	0.0242
1/4	0.2500	20	0.2175	0.043301	0.1959	4	11	0.0269	0.0318
5/16	0.3125	18	0.2764	0.048113	0.2524	3	40	0.0454	0.0524
3/8	0.3750	16	0.3344	0.054127	0.3073	3	24	0.0678	0.0775
7/16	0.4375	14	0.3911	0.061859	0.3602	3	20	0.0933	0.1063
1/2	0.5000	13	0.4500	0.066617	0.4167	3	7	0.1257	0.1419
9/16	0.5625	12	0.5084	0.072169	0.4723	2	59	0.162	0.182
5/8	0.6250	11	0.5660	0.078730	0.5266	2	56	0.202	0.226
3/4	0.7500	10	0.6850	0.086603	0.6417	2	40	0.302	0.334
7/8	0.8750	9	0.8028	0.096225	0.7547	2	31	0.419	0.462
1	1.0000	8	0.9188	0.108253	0.8647	2	29	0.551	0.606
1 1/8	1.1250	7	1.0322	0.123718	0.9704	2	31	0.693	0.763
1 1/4	1.2500	7	1.1572	0.123718	1.0954	2	15	0.890	0.969
1 3/8	1.3750	6	1.2667	0.144338	1.1946	2	24	1.054	1.155
1 1/2	1.5000	6	1.3917	0.144338	1.3196	2	11	1.294	1.405
1 3/4	1.7500	5	1.6201	0.173205	1.5335	2	15	1.74	1.90
2	2.0000	4 1/2	1.8557	0.192450	1.7594	2	11	2.30	2.50
2 1/4	2.2500	4 1/2	2.1057	0.192450	2.0094	1	55	3.02	3.25
2 1/2	2.5000	4	2.3376	0.216506	2.2294	1	57	3.72	4.00
2 3/4	2.7500	4	2.5876	0.216506	2.4794	1	46	4.62	4.93
3	3.0000	4	2.8376	0.216506	2.7294	1	36	5.62	5.97
3 1/4	3.2500	4	3.0876	0.216506	2.9794	1	29	6.72	7.10
3 1/2	3.5000	4	3.3376	0.216506	3.2294	1	22	7.92	8.33
3 3/4	3.7500	4	3.5876	0.216506	3.4794	1	16	9.21	9.66
4	4.0000	4	3.8376	0.216506	3.7294	1	11	10.61	11.08
See Note								1	2

NOTES:

1. $A_r = 0.7854 \left(D - \frac{1.3}{n}\right)^2$

2. $A_s = 0.7854 \left(D - \frac{0.9743}{n}\right)^2$

UNIFIED INCH SCREW THREADS (UN AND UNR THREAD FORM)

Table 2 Basic Dimensions for Fine Thread Series (UNF/UNRF)

Nominal Size in.	Basic Major Dia, in.	Threads Per Inch	Basic Pitch Dia, in.	Height of Fundamental Triangle in.	Basic Minor Dia Internal in.	Lead Angle at Basic Pitch Dia		Section at Minor Dia sq. in.	Tensile Stress Area sq. in.
	D	n	E	H	K	Deg	Min	A_r	A_s
No. 0	0.0600	80	0.0519	0.010825	0.0465	4	23	0.00151	0.00180
1	0.0730	72	0.0640	0.012028	0.0580	3	57	0.00237	0.00278
2	0.0860	64	0.0759	0.013532	0.0691	3	45	0.00339	0.00394
3	0.0990	56	0.0874	0.015465	0.0797	3	43	0.00451	0.00523
4	0.1120	48	0.0985	0.018042	0.0894	3	51	0.00566	0.00661
5	0.1250	44	0.1102	0.021651	0.1004	3	45	0.00716	0.00830
6	0.1380	40	0.1218	0.024056	0.1109	3	44	0.00874	0.01015
8	0.1640	36	0.1460	0.027063	0.1339	3	28	0.01285	0.01474
10	0.1900	32	0.1697	0.027063	0.1562	3	21	0.0175	0.0200
12	0.2160	28	0.1928	0.030929	0.1773	3	22	0.0226	0.0258
1/4	0.2500	28	0.2268	0.030929	0.2113	2	52	0.0326	0.0364
5/16	0.3125	24	0.2854	0.036084	0.2674	2	40	0.0524	0.0580
3/8	0.3750	24	0.3479	0.036084	0.3299	2	11	0.0809	0.0878
7/16	0.4375	20	0.4050	0.043301	0.3834	2	15	0.1090	0.1187
1/2	0.5000	20	0.4675	0.043301	0.4459	1	57	0.1486	0.1599
9/16	0.5625	18	0.5264	0.048113	0.5024	1	55	0.189	0.203
5/8	0.6250	18	0.5889	0.048113	0.5649	1	43	0.240	0.256
3/4	0.7500	16	0.7094	0.054127	0.6823	1	36	0.351	0.373
7/8	0.8750	14	0.8286	0.061859	0.7977	1	34	0.480	0.509
1	1.0000	12	0.9459	0.072169	0.9098	1	36	0.625	0.663
1 1/8	1.1250	12	1.0709	0.072169	1.0348	1	25	0.812	0.856
1 1/4	1.2500	12	1.1959	0.072169	1.1598	1	16	1.024	1.073
1 3/8	1.3750	12	1.3209	0.072169	1.2848	1	9	1.260	1.315
1 1/2	1.5000	12	1.4459	0.072169	1.4098	1	3	1.521	1.581
See Note								1	2

NOTES:

1. $A_r = 0.7854 \left(D - \frac{1.3}{n}\right)^2$

2. $A_s = 0.7854 \left(D - \frac{0.9743}{n}\right)^2$

NUTS

MATERIALS AVAILABLE:

STEEL • STAINLESS • BRASS • SILICON BRONZE • NYLON

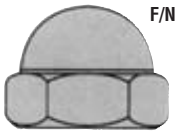
PLATINGS:

PLAIN • ZINC • YELLOW ZINC • MECHANICAL GALVANIZED • HOT DIPPED

GALVANIZED • NICKEL • ACG BLACK

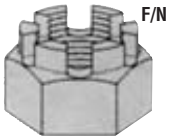
Nuts

F/N NCAP



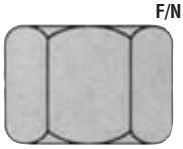
Cap, Closed End, Low Crown
Nut

F/N NFHC



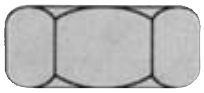
Castle
Nut

F/N NCUP



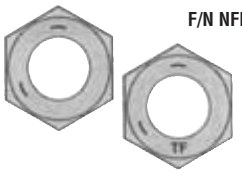
Coupling
Nut

F/N NFHX



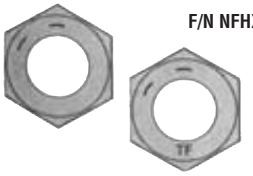
Finished Hex Grade 2
Nut

F/N NFHX



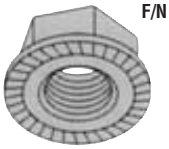
Finished Hex Grade 5
Nut

F/N NFHX



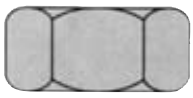
Finished Hex Grade 8
Nut

F/N NSFL



Serrated Flange
Nut

F/N NHHX



Heavy Hex
Nut

F/N NA563

A563 Grade DH Heavy Hex
Nut

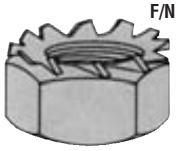
F/N NH2H

A194 Grade 2H Heavy Hex
Nut

F/N NJHX

Hex Jam
Nut

F/N NKEP



K-Lock
Nut

F/N NKEP

K-Lock-Small Pattern
Nut

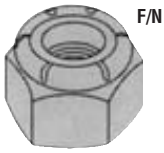
F/N NHMS

Hex Machine
Nut

F/N NHSP

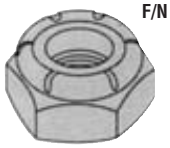
Hex Machine-Small Pattern
Nut

F/N NELN



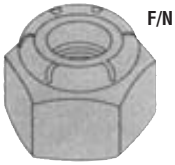
Nylon Insert (NM&NE)
Nut

F/N NETP



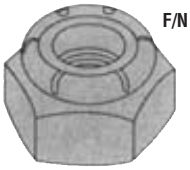
Nylon Insert Thin (NTM&NTE)
Nut

F/N NEHH



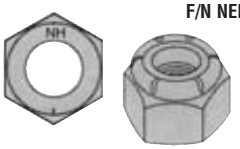
Nylon Insert Heavy Hex (NU)
Nut

F/N NEHT



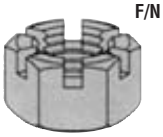
Nylon Insert Heavy Hex Thin (NU)
Nut

F/N NELN



Nylon Insert Grade 8 (N1610)
Nut

F/N NHXS



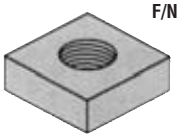
Slotted
Nut

F/N NPAN

Panel
Nut

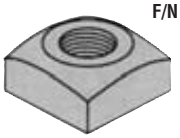
Nuts

F/N NSQM



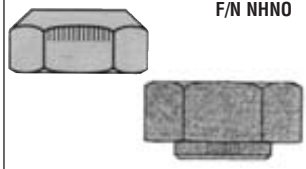
Square Machine Nut

F/N NSQR



Regular Square Nut

F/N NHNO

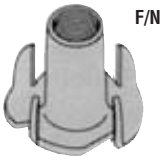


Grade C Lock Nut

F/N NHFL

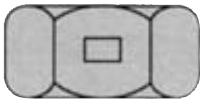
Grades GT & G Flange Nut

F/N NTE



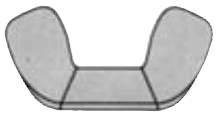
Tee Nut

F/N NREV



Two Way Reversible Lock Nut

F/N NWCF



Wing, Cold Forged Nut

F/N NWST

Wing, Stamped Nut

Fastener Markings

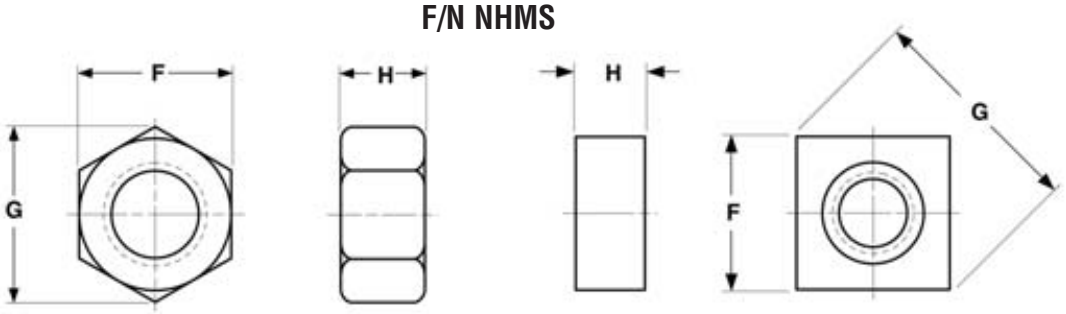
Hex Nut Grade Markings

Grade Identification Marking	Specification	Material	Nominal Size in.	Proof Load Stress ksi	Hardness Rockwell		See Note
					Min	Max	
	ASTM A563–Grade 0	Carbon Steel	1/4 thru 1 1/2	69	B55	C32	3.4
	ASTM A563–Grade A	Carbon Steel	1/4 thru 1 1/2	90	B68	C32	3.4
	ASTM A563–Grade B	Carbon Steel	1/4 thru 1	120	B69	C32	3.4
			over 1 thru 1 1/2	105			
	ASTM A563–Grade C	Carbon Steel May be Quenched and Tempered	1/4 thru 4	144	B78	C38	5
	ASTM A563–Grade C3	Atmospheric Corrosion Resistant Steel May be Quenched and Tempered	1/4 thru 4	144	B78	C38	5.9
	ASTM A563–Grade D	Carbon Steel, May be Quenched and Tempered	1/4 thru 4	150	B84	C38	6
	ASTM A563–Grade DH	Carbon Steel Quenched and Tempered	1/4 thru 4	175	C24	C38	6
	ASTM A563–Grade DH3	Atmospheric Corrosion Resistant Steel, Quenched and Tempered	1/4 thru 4	175	C24	C38	5.9
	ASTM A194–Grade 1	Carbon Steel	1/4 thru 4	130	B70	—	7

Grade Identification Marking	Specification	Material	Nominal Size in.	Proof Load Stress ksi	Hardness Rockwell		See Note
					Min	Max	
	ASTM A194–Grade 2	Medium Carbon Steel	1/4 thru 4	150	159	352	7, 8
	ASTM A194–Grade 2H	Medium Carbon Steel, Quenched and Tempered	1/4 thru 4	175	C24	C38	7
	ASTM A194–Grade 2HM	Medium Carbon Steel, Quenched and Tempered	1/4 thru 4	150	159	237	7, 8
	ASTM A194–Grade 4	Medium Carbon Alloy Steel, Quenched and Tempered	1/4 thru 4	175	C24	C38	7
	ASTM A194–Grade 7	Medium Carbon Alloy steel, Quenched and Tempered	1/4 thru 4	175	C24	C38	7
	ASTM A194–Grade 7M	Medium Carbon Alloy Steel, Quenched and Tempered	1/4 thru 4	150	159	237	7
See Note 1,2							

Nuts — Machine Screw Nuts — Hex & Square

F/N NHMS



Square and Hex Machine Screw Nuts

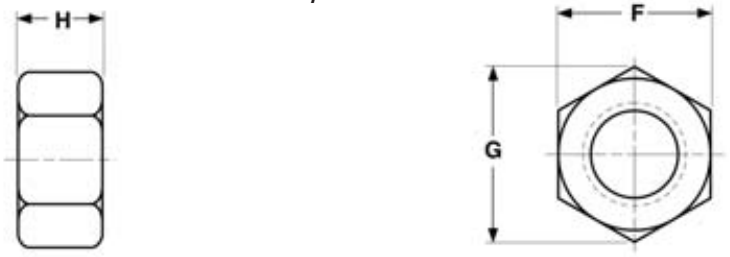
ANSI/ASME B18.6.3

Nominal Size or Basic Thread Diameter		F			G		G1		H	
		Width Across Flats			Width Across Corners				Thickness	
					Square		Hex			
		Basic	Max	Min	Max	Min	Max	Min	Max	Min
0	0.0600	5/32	0.156	0.150	0.221	0.206	0.180	0.171	0.050	0.043
1	0.0730	5/32	0.156	0.150	0.221	0.206	0.180	0.171	0.050	0.043
2	0.0860	3/16	0.188	0.180	0.265	0.247	0.217	0.205	0.066	0.057
3	0.0990	3/16	0.188	0.180	0.265	0.247	0.217	0.205	0.066	0.057
4	0.1120	1/4	0.250	0.241	0.354	0.331	0.289	0.275	0.098	0.087
5	0.1250	5/16	0.312	0.302	0.442	0.415	0.361	0.344	0.114	0.102
6	0.1380	5/16	0.312	0.302	0.442	0.415	0.361	0.344	0.114	0.102
8	0.1640	11/32	0.344	0.332	0.486	0.456	0.397	0.378	0.130	0.117
10	0.1900	3/8	0.375	0.362	0.530	0.497	0.433	0.413	0.130	0.117
12	0.2160	7/16	0.438	0.423	0.619	0.581	0.505	0.482	0.161	0.148
1/4	0.2500	7/16	0.438	0.423	0.619	0.581	0.505	0.482	0.193	0.178
5/16	0.3125	9/16	0.562	0.545	0.795	0.748	0.650	0.621	0.225	0.208
3/8	0.3750	5/8	0.625	0.607	0.884	0.833	0.722	0.692	0.257	0.239

Description	**Hex Machine Screw Nut:** A six-sided internally threaded fastener with flat tops and chamfered corners. Threads shall be Unified Standard, Class 2B. **Square Machine Screw Nut:** A four-sided, internally threaded fastener, tops and bottoms flat, without chamfer. Threads shall be Unified coarse thread, Class 2B.
Applications/ Advantages	**Hex Machine Screw Nut:** Designed to be used specifically with machine screws. Stainless nuts are used with stainless machine screws where parts are subject to corrosive conditions. **Square Machine Screw Nut:** Offers a greater bearing surface for wrenching.
Material	**Steel:** Any low carbon steel **Stainless:** 18-8 stainless steel
Plating	See Appendix-A for plating information.

Nuts — Finished Hex — Dimensional Information

F/N NFHX



Finished Hex Nuts

ANSI/ASME B18.2.2

Nominal or Basic Major Diameter of Thread		F			G		H		
		Width Across Flats			Width Across Corners		Thickness of Hex Nuts		
		Basic	Max	Min	Max	Min	Basic	Max	Min
1/4	0.2500	7/16	0.438	0.428	0.505	0.488	7/32	0.226	0.212
5/16	0.3125	1/2	0.500	0.489	0.577	0.557	17/64	0.273	0.258
3/8	0.3750	9/16	0.562	0.551	0.650	0.628	21/64	0.337	0.320
7/16	0.4375	11/16	0.688	0.675	0.794	0.768	3/8	0.385	0.365
1/2	0.5000	3/4	0.750	0.736	0.866	0.840	7/16	0.448	0.427
9/16	0.5625	7/8	0.875	0.861	1.010	0.982	31/64	0.496	0.473
5/8	0.6250	15/16	0.938	0.922	1.083	1.051	35/64	0.559	0.535
3/4	0.7500	1-1/8	1.125	1.088	1.299	1.240	41/64	0.665	0.617
7/8	0.8750	1-5/16	1.312	1.269	1.516	1.447	3/4	0.776	0.724
1	1.0000	1-1/2	1.500	1.450	1.732	1.653	55/64	0.887	0.831
1-1/8	1.1250	1-11/16	1.688	1.631	1.949	1.859	31/32	0.999	0.939
1-1/4	1.2500	1-7/8	1.875	1.812	2.165	2.066	1-1/16	1.094	1.030
1-3/8	1.3750	2-1/16	2.062	1.994	2.382	2.273	1-11/64	1.206	1.138
1-1/2	1.5000	2-1/4	2.250	2.175	2.598	2.480	1-9/32	1.317	1.245
1-5/8	1.6250	2-7/16	2.438	2.356	2.815	2.686	1-25/64	1.429	1.353
1-3/4	1.7500	2-5/8	2.625	2.538	3.031	2.893	1-1/2	1.540	1.460
2	2.0000	3	3.000	2.900	3.464	3.306	1-23/32	1.763	1.675
2-1/4	2.2500	3-3/8	3.375	3.263	3.897	3.719	1-15/16	1.986	1.890
2-1/2	2.5000	3-3/4	3.750	3.625	4.330	4.133	2-5/32	2.209	2.105
2-3/4	2.7500	4-1/8	4.125	3.988	4.763	4.546	2-3/8	2.431	2.319
3	3.0000	4-1/2	4.500	4.350	5.196	4.959	2-19/32	2.654	2.534

Grade-2, Steel Hot-Dip Galvanized & Stainless — *Finished Hex* Nuts

F/N NFHX

GRADE-2

Description	A six-sided internally threaded fastener whose thickness is .875 D where D is the nominal nut size and 1.5D is their width across the flats, made from low carbon steel.
Applications/ Advantages	The most versatile and widely used nut design. Grade-2 nuts are for use with any low carbon bolt or screw that is not heat-treated, with a specified minimum tensile strength of 74,000 psi or less.
Material	Grade-2 nuts shall be made from a low carbon steel which conforms to the following chemical composition requirements-- *Carbon:* 0.47% maximum; *Phosphorus:* 0.12% maximum; *Sulfur:* 0.23% maximum.
Hardness	Rockwell B68 - C32
Proof Load	Coarse thread: 90,000 psi.; Fine thread: 80,000 psi.
Plating	See Appendix-A for information on the plating of steel finished hex nuts.

STEEL HOT-DIP GALVANIZED

Description	A six-sided internally threaded fastener whose thickness is .875 D where D is the nominal nut size and 1.5D is their width across the flats, made from low carbon steel with a galvanic zinc coating.
Applications/ Advantages	Designed for use with low carbon bolts and screws with a specified minimum tensile strength of 74,000 psi or less, which are subjected to moisture, salt and other such corrosive conditions.
Material	Nuts shall be made from a low carbon steel which conforms to the following chemical composition requirements-- *Carbon:* 0.47% maximum; *Phosphorus:* 0.12% maximum; *Sulfur:* 0.23% maximum.
Hardness	Rockwell B68 - C32
Proof Load	Coarse thread: 68,000 psi.; Fine thread: 60,000 psi.
Plating	See Appendix-A for information on the plating of steel finished hex nuts.

STAINLESS STEEL, 18-8 & 316

Description	Six-sided internally threaded fasteners whose thickness is .875 D where D is the nominal nut size and 1.5D is their width across the flats, made from austenitic alloys as described below.
Applications/ Advantages	Designed for use with stainless steel bolts and screws with a specified minimum tensile strength equal to or less than the specified proof stress of the mating nut. Both types of stainless are corrosion resistant with 316 stainless having greater such resistance as well as superior strength at raised temperatures.
Material	**18-8:** Nuts shall be made from one of the following austenitic alloys: 303, 303Se, 304, XM7, all of which are characterized as having a chromium content of 18% and nickel content of 8-10%. **316:** Nuts shall be made from 316 stainless steel, an austenitic alloy which differs from 18-8 by its molybdenum content (2-3%) and a higher nickel content (10-14%).
Heat Treatment	The austenitic alloys develop their strength through work hardening during the fastener manufacturing process, as seen from the hardness properties below. The only heat treatment normally available on austenitic stainless alloys is annealing, which is done at approximately 1900°F to a dead soft condition and is not normally thermally reversible.
Hardness	1/4 through 5/8": Rockwell B95 - C32; 3/4 through 1": Rockwell B80 - C32
Proof Load	1/4 through 5/8": 100,000 psi.; Fine thread: 85,000 psi.

Grade-5 & Grade-8 *Finished Hex* Nuts

F/N NFHX

GRADE-5

Description	A finished hex nut made from steel with a maximum carbon content of 0.55%, a minimum manganese content of 0.30%, and a maximum sulfur content of 0.15%.
Applications/ Advantages	For use with bolts with a minimum tensile strength equal to or less than the specified proof stress of the nut.
Material	AISI 1008 - 1026 or equivalent steel
Core Hardness	Rockwell C32 maximum
Proof Load	*1/4 through 1 in.* Coarse thread: 120,000 psi.; Fine thread: 109,000 psi. *1-1/8 through 1-1/2 in.* Coarse thread: 105,000 psi.; Fine thread: 94,000 psi.
Plating	See Appendix-A for plating information.

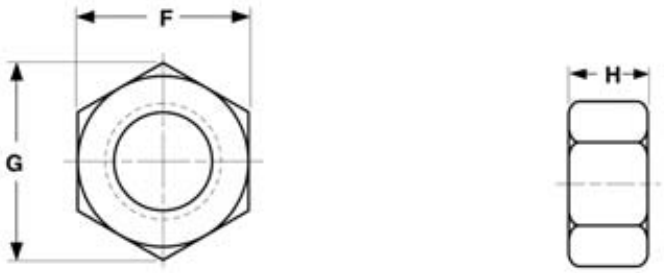
GRADE-8

Description	A finished hex nut made from steel with a maximum carbon content of 0.55%, a minimum manganese content of 0.30% and a maximum sulfur content of 0.05%. The purchaser and producer of the nuts may agree to allow a sulfur content of 0.33% maximum provided that the manganese content is at least 1.35%.
Applications/ Advantages	For use with bolts with a minimum tensile strength equal to or less than 150,000 psi..
Material	AISI 1021 - 1045 or equivalent steel
Core Hardness	1/4 through 5/8 in.: Rockwell C24 - C32 3/4 through 1 in.: Rockwell C26 - C34 Over 1 in. through 1-1/2 in.: Rockwell C26 - C36
Proof Load	1/4 through 1-1/2 in.: 150,000 psi.
Plating	See Appendix-A for plating information.

*Product standards require all grade-marked nuts 1/4" diameter and larger to have a raised or depressed insignia identifying its manufacturer. "X" represents one location such an insignia may appear.

Nuts — Heavy Hex — Dimensional Information

F/N NHHX



Heavy Hex Nuts

ANSI/ASME B18.2.2

Nominal Size or Basic Major Diameter of Thread		F Width Across Flats			G Width Across Corners		H Thickness		
		Basic	Max	Min	Max	Min	Basic	Max	Min
1/4	0.2500	1/2	0.500	0.488	0.577	0.556	15/64	0.250	0.218
5/16	0.3125	9/16	0.562	0.546	0.650	0.622	19/64	0.314	0.280
3/8	0.3750	11/16	0.688	0.669	0.794	0.763	23/64	0.377	0.341
7/16	0.4375	3/4	0.750	0.728	0.866	0.830	27/64	0.441	0.403
1/2	0.5000	7/8	0.875	0.850	1.010	0.969	31/64	0.504	0.464
9/16	0.5625	15/16	0.938	0.909	1.083	1.037	35/64	0.568	0.526
5/8	0.6250	1-1/16	1.062	1.031	1.227	1.175	39/64	0.631	0.587
3/4	0.7500	1-1/4	1.250	1.212	1.443	1.382	47/64	0.758	0.710
7/8	0.8750	1-7/16	1.438	1.394	1.660	1.589	55/64	0.885	0.833
1	1.0000	1-5/8	1.625	1.575	1.876	1.796	63/64	1.012	0.956
1-1/8	1.1250	1-13/16	1.812	1.756	2.093	2.002	1-7/64	1.139	1.079
1-1/4	1.2500	2	2.000	1.938	2.309	2.209	1-7/32	1.251	1.187
1-3/8	1.3750	2-3/16	2.188	2.119	2.526	2.416	1-11/32	1.378	1.310
1-1/2	1.5000	2-3/8	2.375	2.300	2.742	2.622	1-15/32	1.505	1.433
1-5/8	1.6250	2-9/16	2.562	2.481	2.959	2.828	1-19/32	1.632	1.556
1-3/4	1.7500	2-3/4	2.750	2.662	3.175	3.035	1-23/32	1.759	1.679
2	2.0000	3-1/8	3.125	3.025	3.608	3.449	1-31/32	2.013	1.925
2-1/4	2.2500	3-1/2	3.500	3.388	4.041	3.862	2-13/64	2.251	2.155
2-1/2	2.5000	3-7/8	3.875	3.750	4.474	4.275	2-29/64	2.505	2.401
2-3/4	2.7500	4-1/4	4.250	4.112	4.907	4.688	2-45/64	2.759	2.647
3	3.0000	4-5/8	4.625	4.475	5.340	5.102	2-61/64	3.013	2.893
3-1/4	3.2500	5	5.000	4.838	5.774	5.515	3-3/16	3.252	3.124
3-1/2	3.5000	5-3/8	5.375	5.200	6.207	5.928	3-7/16	3.506	3.370
3-3/4	3.7500	5-3/4	5.750	5.562	6.640	6.341	3-11/16	3.760	3.616
4	4.0000	6-1/8	6.125	5.925	7.073	6.755	3-15/16	4.014	3.862

Steel & Stainless — Heavy Hex Nuts

STEEL

Grade-A | Grade-C | Grade-2H | Grade-DH | Grade-DH3

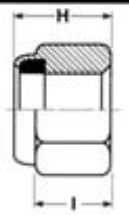
Description	A six-sided internally threaded fastener which is both thicker and wider across the flats than a same-sized finished hex nut. Nuts in sizes 7/16 & smaller shall be double chamfered. Larger sizes are either double chamfered or chamfered on top with a washer faced bearing surface.
Applications/ Advantages	This is the strongest of all comparably-graded nuts because of its greater length of thread engagement and greater resistance to dilation (widening or stretching). Grade-A nuts are used with low-carbon heavy hex bolts. Grade-C nuts are recommended for use with A-325 structural bolts. Grade-2H nuts are recommended for use with bolts in high-pressure and high-temperature service. Grade-DH nuts are recommended for use with A-490, Type-1 structural bolts and Grade-DH3 nuts for use with A-490, Type-3 structural bolts.
Material	Nuts shall be made from a steel which conforms to the following chemical composition requirements (heat analysis)-- **Grades-A & C--** *Carbon:* 0.55% maximum; *Phosphorus:* 0.12% maximum; *Sulfur:* 0.023% maximum. **Grade-2H--** *Carbon:* 0.40% minimum; *Manganese:* 1.00% maximum; *Phosphorus:* 0.04% maximum; *Sulfur:* 0.05% maximum; *Silicon:* 0.40% maximum. **Grade-DH--** *Carbon:* 0.20-0.55%; *Manganese:* 0.60% minimum; *Phosphorus:* 0.04% maximum; *Sulfur:* 0.05% maximum. **Grade-DH3--** *Carbon:* 0.20-0.53%; *Manganese:* 0.40% minimum; *Phosphorus:* 0.046% maximum; *Sulfur:* 0.050% maximum; *Copper:* 0.20% minimum; *Chromium:* 0.45% minimum; (Either *Nickel:* 0.20% minimum or *Molybdenum:* 0.15% minimum, may be used).
Heat Treatment	**Grade-2H:** These nuts shall be heat treated by quenching in a liquid medium from a temperature above the transformation temperature and tempering at a temperature of at least 850°F. **Grades-C, DH & DH3:** These nuts shall be heat treated by quenching in a liquid medium from a temperature above the transformation temperature and tempering at a temperature of at least 800°F.
Core Hardness	**Grade-A:** Rockwell B68 - C32 **Grade-C:** Rockwell B78 - C38 **Grades-2H, DH & DH3:** Rockwell C24 - C38
Proof Load	**Grade-A:** Coarse- 100,000 psi.; Fine- 90,000 psi. **Grade-C:** 144,000 psi. **Grade-2H:** 150,000 psi. **Grades-DH & DH3:** 175,000 psi.
Plating	See Appendix-A for plating information.

18-8 STAINLESS STEEL

Description	A six-sided internally threaded fastener which is both thicker and wider across the flats than a same-sized finished hex nut, made of 18-8 stainless steel. Nuts in sizes 7/16 & smaller shall be double chamfered. Larger sizes are either double chamfered or chamfered on top with a washer faced bearing surface.
Applications/ Advantages	This is the strongest of all 18-8 stainless hex nuts because of its greater length of thread engagement and greater resistance to dilation (widening or stretching).
Material	Nuts shall be made from one of the following austenitic stainless alloys: 303, 303Se, 304, XM7, all of which are characterized as having a chromium content of 18% and a nickel content of 8%.
Heat Treatment	The austenitic alloys develop their strength through work hardening during the fastener manufacturing process, as seen from the hardness properties below. The only heat treatment normally available on austenitic stainless alloys is annealing, which is done at approximately 1900°F to a dead soft condition and is not normally thermally reversible.
Hardness	1/4 through 5/8": Rockwell B95 - C32 3/4 through 1": Rockwell B80 - C32
Proof Load	1/4 through 5/8": 100,000 psi 3/4 through 1": 85,000 psi.

*Product standards require all grade-marked nuts 1/4" diameter and larger to have a raised or depressed grade-marking and insignia identifying its manufacturer. "X" represents one location a manufacturer's insignia may appear.

Nuts — Nylon Insert (Elastic) Stop Nuts — Light Hex, Standard Pattern



F/N NELN

Nylon Insert Stop Nuts — Light Hex, Standard Pattern

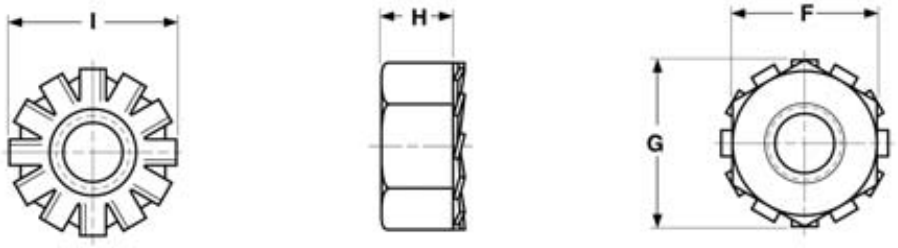
Esna®

Nominal Size or Basic Thread Diameter		Esna® Part Numbers				F			H		I	G
		Steel, Zinc-plate		Stainless		Width Across Flats			Thickness		Side Height	Width Across Corners
		Coarse	Fine	Coarse	Fine	Basic	Max	Min	Max	Min	Ref	Ref
2	0.0860	21NM-26	--	79NM-26	--	1/4	0.251	0.243	0.153	0.133	0.081	0.268
3	0.0990	21NM-38	--	79NM-38	--	1/4	0.251	0.243	0.153	0.133	0.081	0.268
4	0.1120	21NM-40	--	79NM-40	--	1/4	0.251	0.243	0.153	0.133	0.081	0.268
5	0.1250	21NM-50	--	--	--	1/4	0.251	0.243	0.153	0.133	0.081	0.268
6	0.1380	21NM-62	--	79NM-62	--	5/16	0.313	0.305	0.188	0.168	0.103	0.339
8	0.1640	21NM-82	--	79NM-82	--	11/32	0.345	0.336	0.239	0.219	0.140	0.374
10	0.1900	21NM-04	21NM-02	79NM-04	79NM-02	3/8	0.376	0.367	0.249	0.229	0.140	0.410
12	0.2160	21NM-124	21NM-128	79NM-124	--	7/16	0.439	0.430	0.328	0.298	0.225	0.482
1/4	0.2500	21NE-040	21NE-048	79NE-040	--	7/16	0.439	0.430	0.328	0.298	0.225	0.482
5/16	0.3125	21NE-058	21NE-054	79NE-058	--	1/2	0.502	0.492	0.359	0.329	0.250	0.552
3/8	0.3750	21NE-066	21NE-064	79NE-066	--	9/16	0.564	0.553	0.468	0.438	0.335	0.622
7/16	0.4375	21NE-074	21NE-070	--	--	5/8	0.627	0.616	0.468	0.438	0.324	0.698
1/2	0.5000	21NE-083	21NE-080	79NE-083	--	3/4	0.752	0.741	0.609	0.579	0.464	0.837
9/16	0.5625	21NE-092	21NE-098	--	--	7/8	0.877	0.865	0.656	0.626	0.469	0.978
5/8	0.6250	21NE-101	21NE-108	79NE-108	--	15/16	0.940	0.928	0.765	0.735	0.593	1.051
3/4	0.7500	41NE-120	41NE-126	79NE-120	--	1-1/8	1.064	1.052	0.890	0.860	0.742	1.191
7/8	0.8750	41NE-149	41NE-144	--	--	1-5/16	1.252	1.239	0.999	0.969	0.790	1.403
1	1.0000	41NE-168	41NE-164	--	--	1-1/2	1.440	1.427	1.078	1.016	0.825	1.615
1-1/8	1.1250	41NE-177	--	--	--	1-11/16	1.627	1.614	1.203	1.141	0.930	1.826
1-1/4	1.2500	41NE-197	41NE-202	--	--	1-7/8	1.815	1.801	1.422	1.360	1.125	2.038
1-1/2	1.5000	41NE-242	--	--	--	2-1/4	2.197	2.159	1.640	1.578	1.313	2.444

Description	Hex nut with a nylon-filled collar at its back end. When a screw reaches the collar, the threads and nylon form a tight, frictional fit, restricting movement of the screw when it is subjected to vibration. The nylon insert comes in various colors.	
Applications/ Advantages	Designed to be used with like-material machine screws and bolts. It is able to be reused more times than a two-way reversible nut. Steel nylon insert stop nuts are less expensive than grade-C automation lock nuts. However, nylon will begin to deteriorate at temperatures from 150°-350° F.	
Material	*Steel*	*Stainless*
	#2 through 5/8" -- AISI 1008 - 1010 or equivalent steel; 3/4 through 1-1/2"-- AISI C1117 or equivalent steel.	**18-8:** AISI 303 or equivalent stainless steel. **316:** Type 316 stainless steel.
Hardness	Rockwell C28 maximum	1/4 through 5/8"-- Rockwell B95 - C32; 3/4 through 1-1/2"-- Rockwell B80 - C32
Proof Load	90,000 psi. minimum	1/4 through 5/8"-- Rockwell B95 - C32; 3/4 through 1-1/2"-- Rockwell B80 - C32
Plating	Steel nylon insert stop nuts are usually supplied with a zinc plating.	Stainless nylon insert stop nuts are usually provided without any additional plating.

Steel & Stainless *K-Lock* Nuts

F/N NKEP



"K" Lock Nuts — Shakeproof* #501-01

Nominal Size or Basic Thread Diameter		F			G		H		I	
		Width Across Flats			Width Across Corners		Thickness		Washer Diameter	
		Basic	Max	Min	Max	Min	Max	Min	Max	Min
4	0.1120	1/4	0.250	0.241	0.289	0.275	0.098	0.087	0.286	0.277
5	0.1250	5/16	0.312	0.302	0.361	0.344	0.114	0.102	0.348	0.338
6	0.1380	5/16	0.312	0.302	0.361	0.344	0.114	0.102	0.348	0.338
6 SP	0.1380	1/4	0.250	0.241	0.289	.0275	0.098	0.087	0.287	0.277
8	0.1640	11/32	0.344	0.332	0.397	0.378	0.130	0.117	0.381	0.370
8 SP	0.1640	5/16	0.312	0.302	0.361	0.344	0.114	0.102	0.348	0.338
10	0.1900	3/8	0.375	0.362	0.433	0.413	0.130	0.117	0.406	0.395
12	0.2160	7/16	0.438	0.423	0.505	0.482	0.161	0.148	0.506	0.494
1/4	0.2500	7/16	0.438	0.423	0.505	0.482	0.193	0.178	0.506	0.494
5/16	0.3125	1/2	0.500	0.489	0.577	0.557	0.273	0.258	0.592	0.579
3/8	0.3750	9/16	0.562	0.551	0.650	0.628	0.385	0.365	0.665	0.651
1/2	0.5000	3/4	0.750	0.736	0.866	.840	0.437	0.425	0.898	0.878

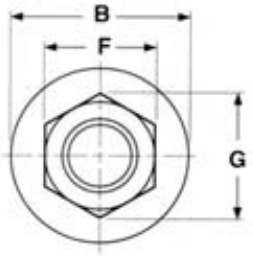
"SP" denotes a "small patton" across the flats; the #8 SP dimension are independent of the Shakeproof specification.

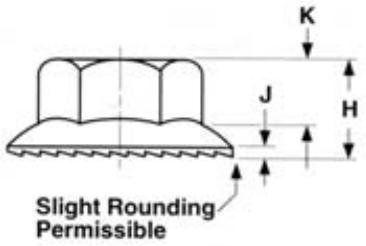
Description	A hex nut pre-assembled with a free spinning external tooth lock washer. The locking action is achieved when the nut is tightened against a bearing surface as the teeth of the lock washer dig into it.
Applications/ Advantages	This is the most popular type of locknut because of its versatility, cost and ease of installation. Doesn't gall screw threads.
Material	**Steel:** Nuts-- AISI 1008-1020 or equivalent steel; Washers-- 1050-03 or equivalent steel. **Stainless:** Nuts-- One of the following austenitic alloys: 303, 303Se, 304, XM7; Washers-- SAE 300-305 stainless.
Hardness	**Steel:** Washers-- Rockwell C38 minimum, C44 maximum **Stainless:** Washers-- Rockwell C20 - 45
Plating	See Appendix-A for information about the plating of steel nuts.

*Shakeproof is the original writer of K-lock nut specifications.

Nuts — Serrated Hex Flange — Free-spinning lock nuts

F/N NSFL





Serrated Hex Flange Lock Nuts

IFI 1986*

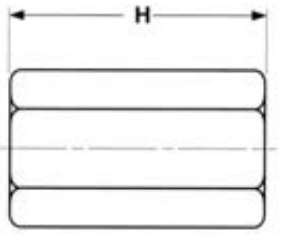
Nominal Size or Basic Major Diameter of Thread		F Width Across Flats		G Width Across Corners		B Flange Diameter		H Nut Thickness		K Wrenching Length	J Flange Thickness
		Max	Min	Max	Min	Max	Min	Max	Min	Min	Min
6	0.1380	0.312	0.302	0.361	0.342	0.422	0.406	0.171	0.156	0.10	0.02
8	0.1640	0.344	0.334	0.397	0.381	0.469	0.452	0.203	0.187	0.13	0.02
10	0.1900	0.375	0.365	0.433	0.416	0.500	0.480	0.219	0.203	0.13	0.03
12	0.2160	0.438	0.428	0.505	0.488	0.594	0.574	0.236	0.222	0.14	0.04
1/4	0.2500	0.438	0.428	0.505	0.488	0.594	0.574	0.236	0.222	0.14	0.04
5/16	0.3125	0.500	0.489	0.577	0.557	0.680	0.660	0.283	0.268	0.17	0.04
3/8	0.3750	0.562	0.551	0.650	0.628	0.750	0.728	0.347	0.330	0.23	0.04
7/16	0.4375	0.688	0.675	0.794	0.768	0.937	0.910	0.395	0.375	0.26	0.04
1/2	0.5000	0.750	0.736	0.866	0.840	1.031	1.000	0.458	0.437	0.31	0.05
9/16	0.5625	0.875	0.861	1.010	0.982	1.188	1.155	0.506	0.483	0.35	0.05
5/8	0.6250	0.938	0.922	1.083	1.051	1.281	1.248	0.569	0.545	0.40	0.05
3/4	0.7500	1.125	1.088	1.299	1.240	1.500	1.460	0.675	0.627	0.46	0.06
7/8	0.8750	1.179	1.166	1.361	1.295	1.682	-	0.786	0.742	-	0.11

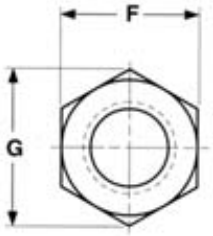
*IFI specifications apply to #6 through 3/4" diameters.

Description	Hex nut with an enlarged circular base flaring out from the bottom of the nut. The bearing surface of the flange has serrations which displace material on the mating surface when the nut is wrenched into place, forming a connection which resists loosening.	
Applications/ Advantages	Requires a greater amount of torque to loosen than to tighten the nut. Will span oversized or poorly aligned holes. Flange provides a more uniform bearing-stress to clamp-force ratio than other low carbon lock nuts. Does not gall screw threads.	
Material	*Steel*	*Stainless*
	Nuts shall be made from a carbon steel which conforms to the following chemical composition requirements--Carbon: 0.47% max.; Phosphorus: 0.12% max.; Sulfur: 0.23% max..	18-8 stainless steel
Heat Treatment	Nuts are case hardened to the proper surface hardness to ensure the serrations will have sufficient gripping strength.	-
Surface Hardness	Rockwell C40 maximum	Rockwell B95 - C32
Plating	Steel serrated flange lock nuts are usually supplied with a zinc plating.	Stainless serrated flange lock nuts are usually provided without any additional plating.

Nuts — Hex Coupling Nuts — Steel

F/N NCUP





Hex Coupling Nuts										Coupling Nut Supply
Nominal Size and Threads per Inch	Basic Major Diameter of Thread	F			G		H			
		Width Across Flats			Width Across Corners		Length			
		Basic	Max	Min	Max	Min	Basic	Max	Min	
8-32	0.1640	5/16	0.312	0.302	0.361	0.344	5/8	0.64	0.61	
10-24	0.1900	5/16	0.312	0.302	0.361	0.344	3/4	0.76	0.74	
10-32	0.1900	5/16	0.312	0.302	0.361	0.344	3/4	0.76	0.74	
1/4-20	0.2500	3/8	0.375	0.365	0.433	0.416	7/8	0.89	0.86	
1/4-28	0.2500	3/8	0.375	0.365	0.433	0.416	7/8	0.89	0.86	
5/16-18	0.3125	1/2	0.500	0.489	0.577	0.557	7/8	0.89	0.86	
5/16-18	0.3125	1/2	0.500	0.489	0.577	0.557	1-1/8	1.13	1.11	
5/16-24	0.3125	7/16	0.438	0.428	0.505	0.488	7/8	0.89	0.86	
3/8-16	0.3750	1/2	0.500	0.489	0.577	0.557	1-1/8	1.13	1.11	
3/8-16	0.3750	9/16	0.562	0.551	0.650	0.628	1-3/4	1.76	1.73	
3/8-24	0.3750	1/2	0.500	0.489	0.577	0.557	1-1/8	1.13	1.11	
1/2-13	0.5000	11/16	0.688	0.663	0.794	0.756	1-3/4	1.76	1.73	
1/2-20	0.5000	5/8	0.625	0.613	0.722	0.698	1-1/4	1.26	1.24	
5/8-11	0.6250	13/16	0.813	0.782	0.939	0.891	2-1/8	2.14	2.10	
3/4-10	0.7500	1	1.000	0.963	1.155	1.097	2-1/4	2.27	2.22	
7/8-9	0.8750	1-1/4	1.250	1.212	1.443	1.382	2-1/2	2.53	2.47	
1-8	1.0000	1-3/8	1.375	1.325	1.588	1.511	2-3/4	2.78	2.72	

Description	A double chamfered hex nut available in various widths and lengths. The length of the nut is greater than 2.5D where D equals the basic major thread diameter. Also referred to as rod couplings.
Applications/ Advantages	Used to join two externally threaded parts of equal thread diameter and pitch, often two pieces of threaded rod.
Material	1010 - 1018 or equivalent steel. 12L14 steel is commonly used in domestically manufactured coupling nuts.
Hardness	Rockwell B68 - C32
Tensile Strength	60,000 psi. minimum
Plating	See Appendix-A for plating information.

NOTE: There is no single standard for coupling nut dimensions. These values are offered as a guide; deviations from these specifications may occur.

PINS

DIAMETER CHART

Cotter Pin = PINC
Roll Pin = PINR

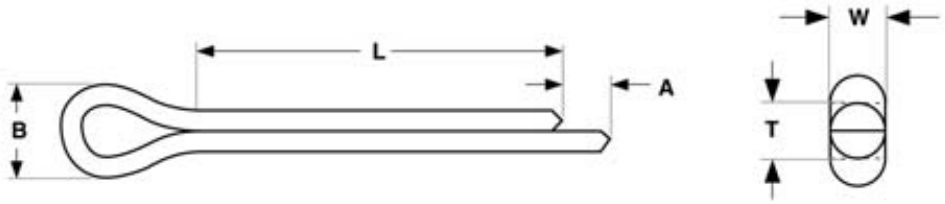
1/32	=	002
3/64	=	003
1/16	=	004
5/64	=	005
3/32	=	006
7/64	=	007
1/8	=	008
9/64	=	009
5/32	=	010
3/16	=	012
7/32	=	014
1/4	=	016
5/16	=	020
3/8	=	024
7/16	=	028
1/2	=	032

Dowel Pin = PIND

1/32	=	001
3/32	=	003
1/8	=	004
3/16	=	006
1/4	=	008
5/16	=	010
3/8	=	012
7/16	=	014
1/2	=	016
5/8	=	020
3/4	=	024
7/8	=	018
1"	=	032

Pins — Cotter Pins — Extended Prong

F/N PINC



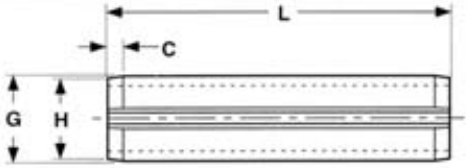
COTTER PINS - EXTENDED PRONG, CHISEL POINT								ASME B18.8.1-1994
Nominal Size	Basic Pin Diameter	T		W		B	A	Gage Hole Diameter (± 0.001)
		Total Shank Diameter		Wire Width		Head Diameter	Extended Prong Length	
		Max.	Min.	Max.	Min.	Min.	Min.	
1/16	0.062	0.060	0.056	0.060	0.044	0.12	0.03	0.078
3/32	0.094	0.090	0.086	0.090	0.069	0.19	0.04	0.109
1/8	0.125	0.120	0.116	0.120	0.093	0.25	0.06	0.141
5/32	0.156	0.150	0.146	0.150	0.116	0.31	0.07	0.172
3/16	0.188	0.176	0.172	0.176	0.137	0.38	0.09	0.203
7/32	0.219	0.207	0.202	0.207	0.161	0.44	0.10	0.234
1/4	0.250	0.225	0.220	0.225	0.176	0.50	0.11	0.266
5/16	0.312	0.280	0.275	0.280	0.220	0.62	0.14	0.312
3/8	0.375	0.335	0.329	0.335	0.263	0.75	0.16	0.375
1/2	0.500	0.473	0.467	0.473	0.373	1.00	0.23	0.500

Tolerance on Length	Nominal Pin Length	
	Up to 1 in.	1 in. and longer
	±0.03	±0.06

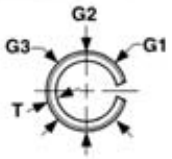
Description	A double bodied pin formed from half-round wire, a loop at one end of which provides a head. The finished part has one end of the wire extending beyond the other end, with a chiseled point.
Applications/ Advantages	Used to anchor various assemblies by insertion into a drilled hole of a shaft or pin and spreading the points to hold the assembly in position. When used with castle or slotted nuts, it becomes a safety locking device.
Material	1005 - 1010 or equivalent low carbon steel
Ductility	Each prong of the cotter pin shall be capable of withstanding being bent back upon itself once with no visible indication of fracture occurring at the point of the bend.
Plating	See Appendix-A for plating information.

Available: Steel Plain • Steel Zinc • Stainless Steel

Slotted Type *Spring Pins* Pins



F/N PINR



SPRING PINS, SLOTTED TYPE — ASME B18.8.2-2000

Nominal Size or Basic Pin Diameter		G Pin Diameter Max*	G Pin Diameter Min**	H Chamfer Diameter Max	C Chamfer Length Max	C Chamfer Length Min	T Stock Thickness Basic	Recommended Hole Size Max	Recommended Hole Size Min	Double Shear Load, Min, lbs. SAE 1070-1095 steel & 420 Stainless	Double Shear Load, Min, lbs. 300 series Stainless
1/16	.062	0.069	0.066	0.059	0.028	0.007	0.012	0.065	0.062	430	250
5/64	.078	0.086	0.083	0.075	0.032	0.008	0.018	0.081	0.078	800	460
3/32	.094	0.103	0.099	0.091	0.038	0.008	0.022	0.097	0.094	1,150	670
1/8	.125	0.135	0.131	0.122	0.044	0.008	0.028	0.129	0.125	1,875	1,090
5/32	.156	0.167	0.162	0.151	0.048	0.010	0.032	0.160	0.156	2,750	1,600
3/16	.188	0.199	0.194	0.182	0.055	0.011	0.040	0.192	0.187	4,150	2,425
7/32	.219	0.232	0.226	0.214	0.065	0.011	0.048	0.224	0.219	5,850	3,400
1/4	.250	0.264	0.258	0.245	0.065	0.012	0.048	0.256	0.250	7,050	4,100
5/16	.312	0.330	0.321	0.306	0.080	0.014	0.062	0.318	0.312	10,800	6,300
3/8	.375	0.395	0.385	0.368	0.095	0.016	0.077	0.382	0.375	16,300	9,500
7/16	.438	0.459	0.448	0.430	0.095	0.017	0.077	0.445	0.437	19,800	11,500
1/2	.500	0.524	0.513	0.485	0.110	0.025	0.094	0.510	0.500	27,100	15,800

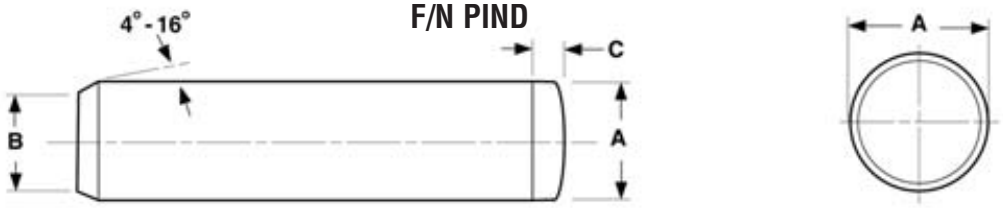
Tolerance on Length	Nominal Pin Length				
	Up to 1 in., Incl.	Over 1 to 2 in., Incl.	Over 2 to 3 in., Incl.	Over 3 to 4 in., Incl.	Over 4 in.
	±0.015	±0.020	±0.025	±0.030	±0.035

*Maximum diameter shall be checked using a "GO" ring gauge.
**Minimum diameter shall be equal to average of three diameters measured at points as illustrated above: G min = $\frac{G1 + G2 + G3}{3}$

	Steel	*Stainless*
Description	A hollow, headless pin, slit longitudinally, having controlled length with chamfered ends, formed to a diameter somewhat greater than that of the hole into which it is to be assembled.	
Applications/ Advantages	Will hold its position in an assembly by a predetermined spring tension. Spring pins are economical because they can simplify product design by replacing more expensive fasteners such as taper pins, set screws and straight pins.	Stainless spring pins are commonly used in electronics and food industries. Type 420 stainless is magnetic and is more corrosion resistant than steel spring pins, but will rust before non-magnetic type 300 stainless pins.
Material	SAE 1070 - 1095 carbon steel	Type 420 stainless steel (magnetic) Type 300 stainless steel (non-magnetic)
Hardness	*1/16 diameter:* Vickers 458 - 560 *5/64 through 3/32 diameters:* Rockwell 15N 83.5 - 86.9 *1/8 through 1/4 diameters:* Rockwell A 73.6 - 77.4 *5/16 through 1/2 diameters:* Rockwell C 46 - 53	**Type 420 Stainless:** *1/16 diameter:* Vickers 423 - 544 *5/64 through 3/32 diameters:* Rockwell 15N 82.0 - 86.4 *1/8 through 1/4 diameters:* Rockwell A 72.0 - 76.8 *5/16 through 1/2 diameters:* Rockwell C 43 - 52 **Type 300 Stainless:** (work-hardened only)
Shear Load	Spring pins shall be capable of withstanding the minimum double shear loads specified in the above table.	
Finish	Spring pins are usually supplied plain with an oil treatment.	Stainless pins are usually supplied uncoated.

Available: Steel Plain • Steel Zinc • Stainless Steel

Pins — Dowel Pins — Alloy Steel



DOWEL PINS, STANDARD SERIES											ASME B18.8.2-2000
Nominal Size or Nominal Pin Diameter		A			B		C	R	Single Shear Load - Carbon or Alloy Steel	Suggested Hole Diameter	
		Pin Diameter			Point Diameter		Crown Height	Crown Radius			
		Basic	Max	Min	Max	Min	Max	Min	lb.	Max	Min
1/8	.1250	0.1252	0.1253	0.1251	0.120	0.110	0.041	0.016	1,600	0.1250	0.1245
3/16	.1875	0.1877	0.1878	0.1876	0.180	0.170	0.062	0.023	3,600	0.1875	0.1870
1/4	.2500	0.2502	0.2503	0.2501	0.240	0.230	0.083	0.031	6,400	0.2500	0.2495
5/16	.3125	0.3127	0.3128	0.3126	0.302	0.290	0.104	0.039	10,000	0.3125	0.3120
3/8	.3750	0.3752	0.3753	0.3751	0.365	0.350	0.125	0.047	14,350	0.3750	0.3745
7/16	.4375	0.4377	0.4378	0.4376	0.424	0.409	0.146	0.055	19,550	0.4375	0.4370
1/2	.5000	0.5002	0.5003	0.5001	0.486	0.471	0.167	0.063	25,500	0.5000	0.4995
5/8	.6250	0.6252	0.6253	0.6251	0.611	0.595	0.208	0.078	39,900	0.6250	0.6245
3/4	.7500	0.7502	0.7503	0.7501	0.735	0.715	0.250	0.094	57,000	0.7500	0.7495
7/8	.8750	0.8752	0.8753	0.8751	0.860	0.840	0.293	0.109	78,000	0.8750	0.8745
1	1.0000	1.0002	1.0003	1.0001	0.980	0.960	0.333	0.125	102,000	1.0000	0.9995
Tolerance on Length		±0.010 in. (all sizes and lengths)									

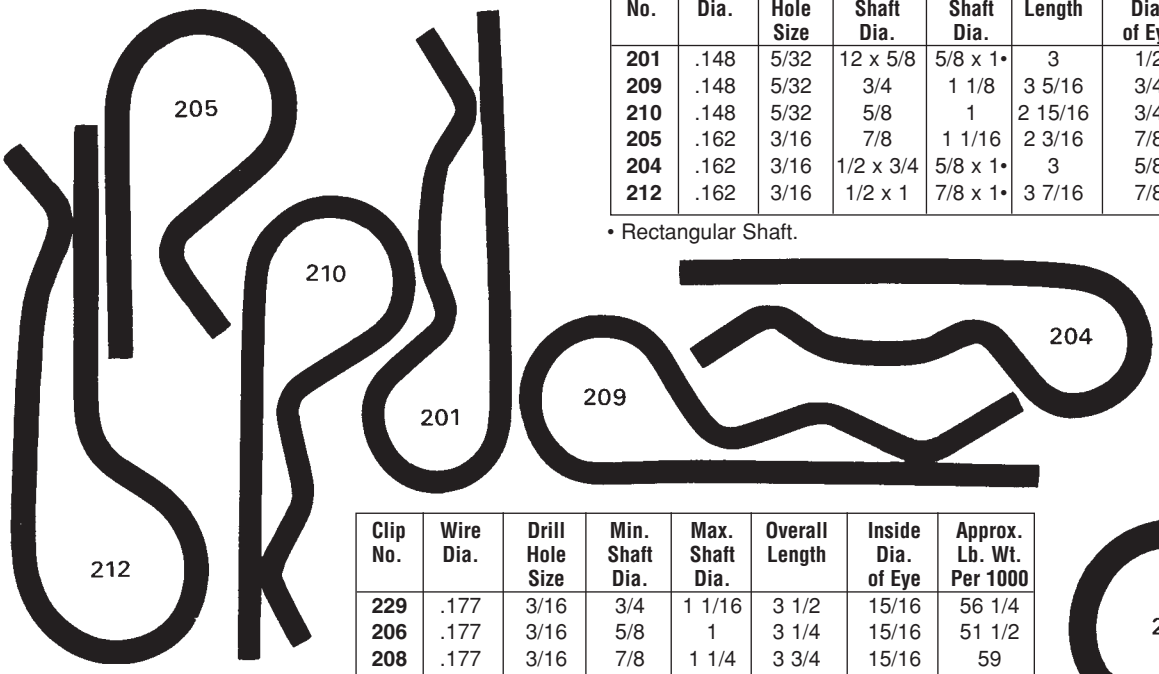
Description	A solid headless straight pin with a closely controlled diameter. One end is chamfered with the other end radiused to form a crown.
Applications/ Advantages	Wide variety of uses, including as a plug gage, hinge or shaft. Precise tolerances of dowel pins make them excellent for achieving proper alignment of parts in high-speed assemblies, or as roller bearings in bus/truck wheel housings. **Important Note:** *Dowel pins should be installed by being pressed in, **not** struck with an impact force.*
Material	Pins shall be made from any alloy steel capable of achieving the proper hardness requirements listed herein, having sulfur content of 0.05% maximum, and phosphorus content of 0.04% maximum.
Heat Treatment	Pins shall be hardened by quenching in oil from austenitizing temperature and tempering to meet the proper Rockwell hardness and case depth.
Core Hardness	Rockwell C 47 - 58
Case Hardness	Rockwell C 60 minimum
Case Depth	*5/32 diameter & smaller:* 0.010 in., minimum. *3/16 diameter and larger:* 0.015 in. minimum.
Finish	See Appendix-A for information about the various finishes for dowel pins.

Available: Steel Plain • Steel Zinc • Stainless Steel

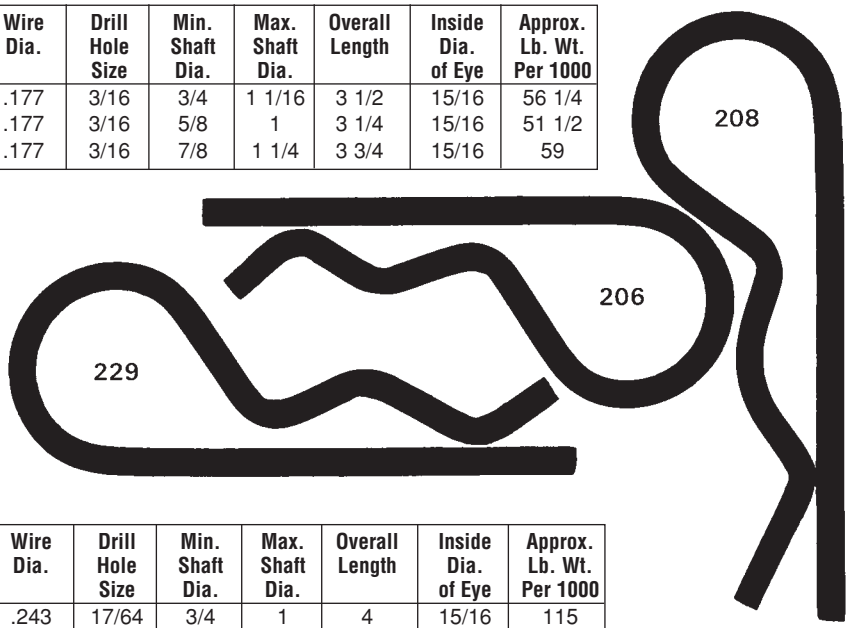
HITCH PIN (Hair Pin) CLIPS F/N PINH

Clip No.	Wire Dia.	Drill Hole Size	Min. Shaft Dia.	Max. Shaft Dia.	Overall Length	Inside Dia. of Eye	Approx. Lb. Wt. Per 1000
201	.148	5/32	12 x 5/8	5/8 x 1•	3	1/2	31 1/2
209	.148	5/32	3/4	1 1/8	3 5/16	3/4	36
210	.148	5/32	5/8	1	2 15/16	3/4	32
205	.162	3/16	7/8	1 1/16	2 3/16	7/8	31
204	.162	3/16	1/2 x 3/4	5/8 x 1•	3	5/8	37 3/4
212	.162	3/16	1/2 x 1	7/8 x 1•	3 7/16	7/8	44 3/4

• Rectangular Shaft.

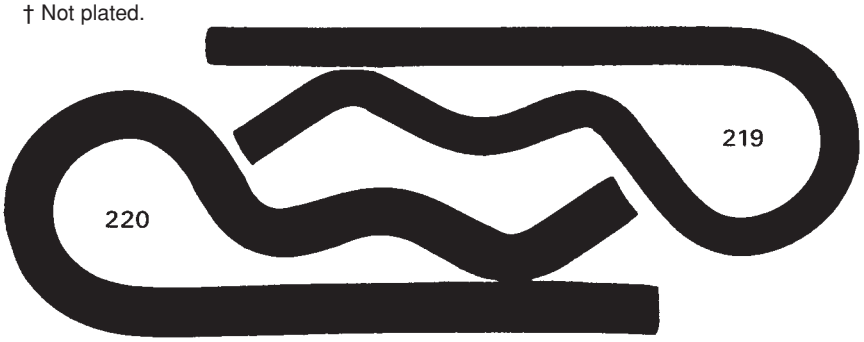


Clip No.	Wire Dia.	Drill Hole Size	Min. Shaft Dia.	Max. Shaft Dia.	Overall Length	Inside Dia. of Eye	Approx. Lb. Wt. Per 1000
229	.177	3/16	3/4	1 1/16	3 1/2	15/16	56 1/4
206	.177	3/16	5/8	1	3 1/4	15/16	51 1/2
208	.177	3/16	7/8	1 1/4	3 3/4	15/16	59



Clip No.	Wire Dia.	Drill Hole Size	Min. Shaft Dia.	Max. Shaft Dia.	Overall Length	Inside Dia. of Eye	Approx. Lb. Wt. Per 1000
219	.243	17/64	3/4	1	4	15/16	115
235	.243	17/64	1 1/4	1 1/2	5 1/8	1 1/2	165
234† (Govt.)	.250	17/64	3/4	1	3 1/4	3/4	92
220	.310	21/64	7/8	1	4 1/16	7/8	175

† Not plated.

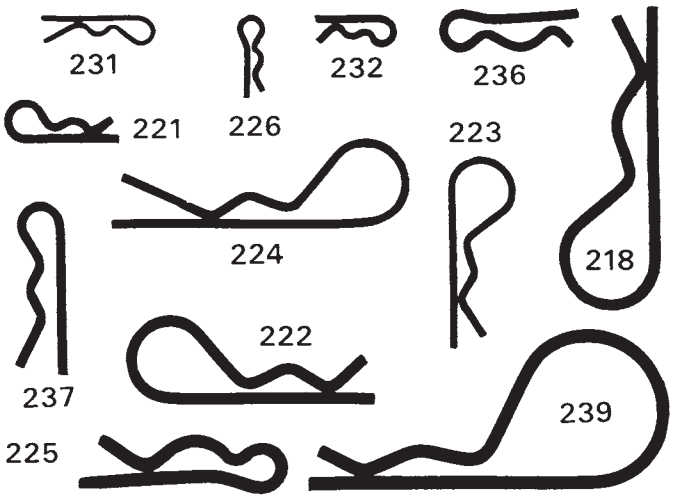


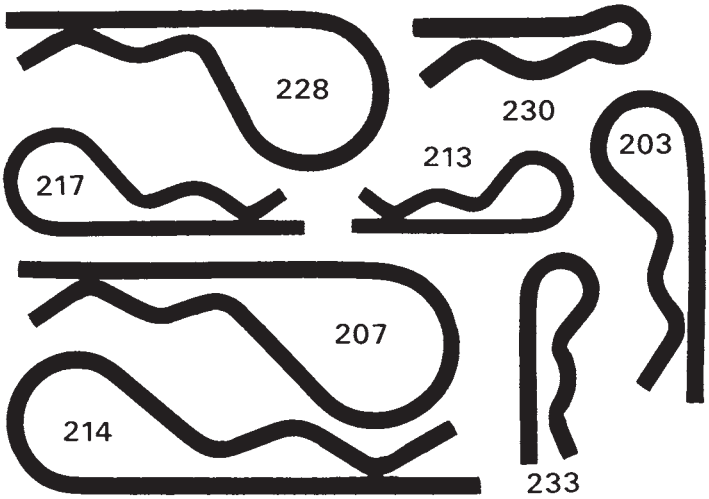
HITCH PIN (Hair Pin) CLIPS F/N PINH

(SHOWN ACTUAL SIZE)

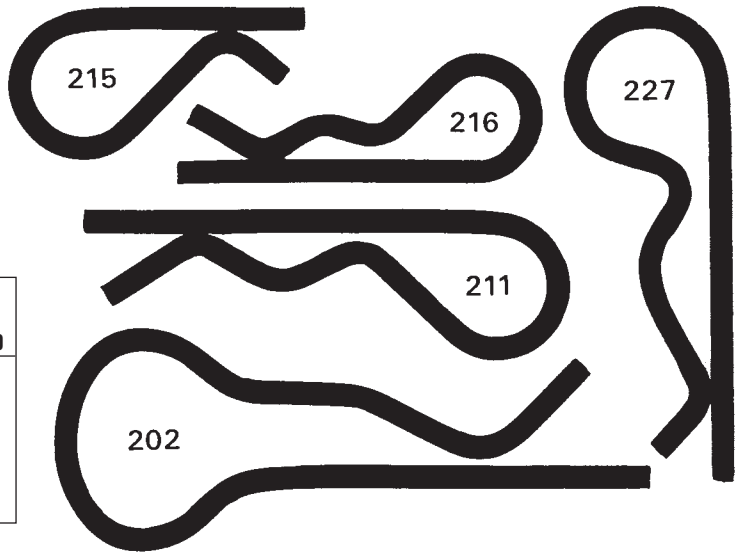
MANUFACTURED OF MB SPRING WIRE–PLATED

Clip No.	Wire Dia.	Drill Hole Size	Min. Shaft Dia.	Max. Shaft Dia.	Overall Length	Inside Dia. of Eye	Approx. Lb. Wt. Per 1000
231	.038	1/32	1/8	5/32	.600	.093	1/4
226	.032	.040	7/64	9/64	7/16	.078	1/4
232	.042	.047	1/16	1/8	7/16	.080	1/3
223	.042	3/64	3/16	1/4	1	1/4	7/8
221	.047	1/16	1/8	3/16	19/32	1/8	5/8
224	.047	1/16	1/4	3/8	1 9/16	5/16	1 3/4
236	.054	1/16	3/16	1/4	3/4	1/8	1
237	.054	1/16	1/4	3/8	7/8	9/64	1 1/4
222	.062	5/64	1/4	1/2	1 5/16	5/16	2 1/2
218	.062	5/64	3/8	1/2	1 9/16	3/8	3
225	.072	5/64	5/16	3/8	1 3/32	9/64	2 5/8
239	.072	5/64	3/8	1/2	1 7/8	5/8	5 1/2





Clip No.	Wire Dia.	Drill Hole Size	Min. Shaft Dia.	Max. Shaft Dia.	Overall Length	Inside Dia. of Eye	Approx. Lb. Wt. Per 1000
213	.080	3/32	1/4	3/8	1 3/16	1/4	3 3/4
217	.080	3/32	3/8	1/2	1 9/16	3/8	5
203	.093	7/64	1/4	1/2	1 5/8	3/8	7
207	.093	7/64	1/4	5/8	2 5/16	5/8	10
228	.093	7/64	1/4	1/2	2	5/8	9
214	.093	7/64	3/8	3/4	2 1/2	9/16	10 1/4
233	.093	7/64	1/4	1/2	1 1/8	1/4	4 5/8
230	.105	1/8	5/16	3/8	1 1/4	1/8	6



Clip No.	Wire Dia.	Drill Hole Size	Min. Shaft Dia.	Max. Shaft Dia.	Overall Length	Inside Dia. of Eye	Approx. Lb. Wt. Per 1000
215	.125	9/64	1/2	3/4	1 9/16	1/2	12
216	.125	9/64	1/2	3/4	1 15/16	7/16	14 3/4
211	.125	9/64	7/16	3/4	2 9/16	9/16	19 1/2
227	.125	9/64	5/8	7/8	2 1/2	5/8	19
238	.125	9/64	3/4	1 1/8	2 7/8	5/8	22
202	.125	9/64	3/4	1 1/8	3 1/8	1	23 3/4

Plating/Baking—Appendix-A

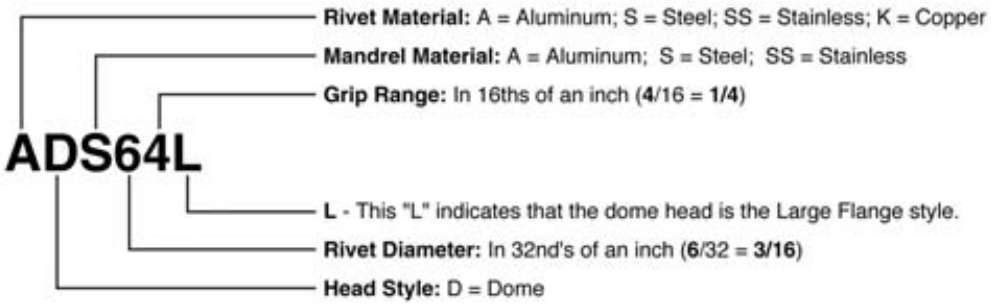
Plating	Description
Electro-Zinc & Clear F/N ZN	Zinc is relatively economical and offers good corrosion resistance in environments not subject to excessive moisture. Commercial zinc plating has a standard minimum thickness of 0.00015 inches. However, Class 2A thread allowances in sizes No. 8 and smaller may not accommodate this thickness. A clear or blueish chromate finish is applied on top of the zinc to provide additional protection against white oxidation spots which can form due to moisture. Electroplating is the most common way of applying zinc coatings to fasteners.
Electro-Zinc & Yellow F/N ZY	Commercial zinc-yellow plating has a standard minimum thickness of 0.00020 inches. However, Class 2A thread allowances in sizes No. 8 and smaller may not accommodate this thickness. Yellow chromate offers a greater degree of protection from white corrosion than does clear chromate. Electroplating is the most common way of applying zinc coatings to fasteners.
Electro-Zinc & Wax	A wax lubricant is added to the zinc coatings of certain fasteners to improve the ease of assembly. This is the standard plating for thread rolling screws including the Plastite® and Taptite® II, as well as two-way reversible center-lock nuts. Case-hardened parts are still recommended to be baked after plating (see below).
Mechanical Zinc & Clear F/N MG	Mechanically applying zinc to fasteners reduces the risk of hydrogen embrittlement forming within the parts. A clear or blueish chromate finish is applied on top of the zinc to provide additional protection against white oxidation spots which can form due to moisture. It is common for lockwashers made from spring steel to be plated this way to avoid brittleness after baking.
Mechanical Zinc & Yellow F/N MGY	This finish is identical to mechanical zinc but with a yellow chromate finish. This is the standard plating for high-alloy split lockwashers and for tooth lockwashers used with zinc yellow machine screws.
Electro-Zinc & Clear for Sockets F/N ZN	Socket cap screws can receive a zinc plating of 0.0002 inches thickness. A clear chromate finish is applied on top of the zinc to provide additional protection against white corrosion. The manufacturer must be told prior to the thread rolling process that the parts are to be plated. The plated parts are then baked at 375°F for 24 hours within 1 hour of plating, then subjected to a 72-hour stress test.
Black Phosphate F/N BP	This is the standard finish for most drywall screws, particle board screws and retaining rings. It can have either a dull or bright appearance. No additional oil treatment is added.
Black Phosphate & Oil F/N BP	The most common standard coating of black phosphate and oil is 1100 mg per sq/ft, minimum. The oil serves as a rust inhibitor and a lubricant. Some fasteners with this plating are required to pass a salt-spray test, the duration and cost of which must be agreed upon between buyer and seller prior to the sale. Floorboard screws, frame bolts, Grade-GT locknuts and spring nuts are usually supplied with a black phosphate and oil finish.
Nickel F/N NI	Nickel has more of a silver color to it than zinc and has similar corrosion resistant characteristics. It is the standard finish of cap nuts and countersunk finishing washers.
Cadmium & Wax F/N CAD	Cadmium plating results in a smoother surface and greater resistance to white oxidation spots than zinc plating. However, cadmium is a much more toxic metal than zinc, which makes the plating process more difficult and costly. The standard most commercial platers use when applying cadmium is a minimum thickness of .0002 inches. A supplemental wax coating is often added as a lubricant when cadmium is used on prevailing torque lock nuts.
Hot-Dip Galvanized F/N HDG	Hot dip galvanizing is generally the most effective way to apply a sufficient thickness of zinc to threaded fasteners for the zinc to serve as a corrosion protectant in harsh environments. During the galvanizing process, steel reacts with molten zinc, forming layers of zinc-iron alloy layers which are metallurgically bonded to the steel surface. This hard barrier has a low corrosion rate and resists mechanical damage. Bolts and nuts 3/8 inch diameter and smaller shall have a zinc coating with an average thickness of 0.0017 in. with no individual bolt having a coating of less than 0.0014 in. Bolts and nuts over 3/8 inches diameter, and all sizes if washers shall have a zinc coating with an average thickness of 0.0021 in. with no individual bolt having a coating of less than 0.0017 in.
Dacrotized F/N DAC	Dacrotizing is a pollution-free ceramic coating for fasteners used with treated lumber. The coating offers corrosion protection comparable to hot-dip galvanizing without discoloring the wood. Screws with a proper dacrotized coating can typically withstand a 500-hour salt-spray test. Dacrotizing minimizes greatly the risk of hydrogen embrittlement so baking the parts is not required after the finish is applied.
Baking of Case Hardened Parts	Electroplated screws which are case hardened should be baked for a minimum of 4 hours within the temperature range of 375-450°F no later than 4 hours after the plating operation. However, this process does not guarantee that hydrogen embrittlement will not still be present after baking or that it will not occur at a later date while in service. Specialized testing or a substitute part may be required, depending on the application. This heat treatment practice is recommended for tapping screws, drywall screws, SEMS screws, clinch nuts and clinch studs.
ACG Black F/N ACG	ACG Black is a superior thin film thermoset finish applied over zinc substrates. When crosslinked at 400°F, corrosion and chemical resistance is superior to most competitive finishes. Carbon and alloy steel, and non-ferrous parts where high levels of corrosion resistance are required. Common applications include fasteners, springs, stampings, clips and structural steel components. ACG Black is applied through standard liquid coating techniques, which include Conventional/HVLP spray and Dip-Spin.

RIVETS

Application Data

Part Number Key

Rivets



Notes on Rivet Selection

Strength- The tensile and shear strengths required for an application must be determined and a rivet selected that meets those requirements.

Materials- Choose a rivet that is made of a metal with similar mechanical and physical properties as the materials being joined. This is especially critical in assemblies where higher temperatures and/or corrosive elements are present. Metal compatability helps reduce the risks of galvanic corrosion and material fatigue.

Grip Range- Measure the total thickness of the materials being fastened. This is known as the "rivet grip". The grip ranges of the most commonly available rivets are listed in the table below. Sufficient rivet length is necessary for proper formation of the secondary head on the blind side of the assembly. Multi-grip rivets have wider grip ranges than standard break-stem blind rivets.

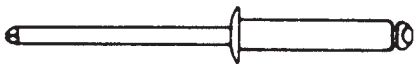
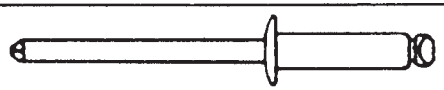
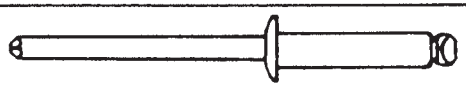
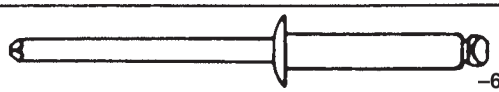
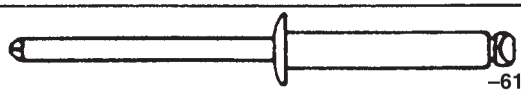
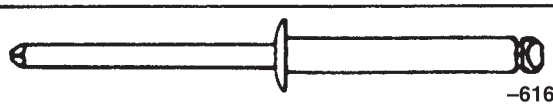
Application Data for Standard Break-Stem Blind Rivets SAE J-1200

Rivet Number	Grip Range	Barrel Length	Recommended Hole Size		Drill Size
		Max	Max	Min	
31	.020-.062	.187	0.100	0.097	#41
32	.020-.125	.250			
33	.087-.187	.312			
34	.126-.250	.375			
41	.020-.062	.212	0.133	0.129	#30
42	.063-.125	.275			
43	.126-.187	.337			
44	.188-.250	.400			
45	.251-.312	.462			
46	.313-.375	.525			
48	.376-.500	.650			
52	.020-.125	.300	0.164	0.160	#20
53	.125-.187	.362			
54	.188-.250	.425			
56	.251-.375	.550			
58	.376-.500	.675			
510	.501-.625	.800			
512	.626-.750	.925			
516	.876-1.000	1.175			

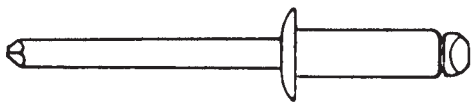
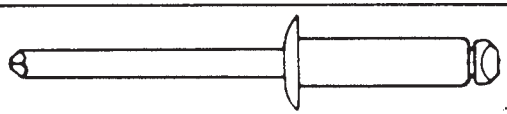
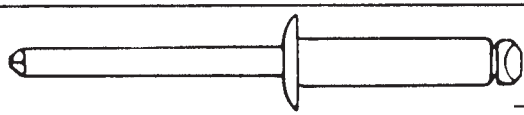
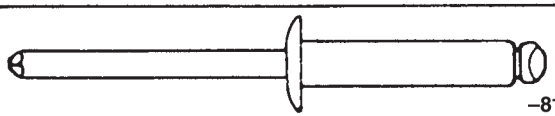
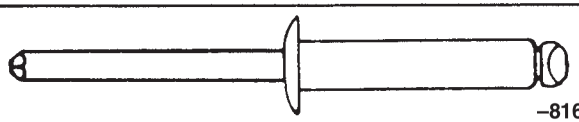
Rivet Number	Grip Range	Barrel Length	Recommended Hole Size		Drill Size
		Max	Max	Min	
62	.020-.125	.325	0.196	0.192	#11
63	.126-.187	.387			
64	.188-.250	.450			
66	.251-.375	.575			
68	.376-.500	.700			
610	.510-.625	.825			
612	.626-.750	.950			
614	.751-.875	1.075			
616	.876-1.000	1.200			
618	1.001-1.125	1.325			
620	1.126-1.250	1.450			
622	1.251-1.375	1.575			
84	.126-.250	.500	0.261	0.257	F
86	.251-.375	.625			
88	.376-.500	.750			
810	.501-.625	.875			
812	.626-.750	.990			
816	.751-1.000	1.240			

ACTUAL SIZE

3/32" RIVET DIAMETER Use in .097 - .100 hole (#41 Drill)	DIAM. and GRIP	GRIP RANGE
	–32	.063 .125
	–34	.126 .250
	–36	.251 .375
1/8" RIVET DIAMETER Use in .129 - .133 hole (#30 Drill)	**DIAM. and GRIP**	**GRIP RANGE**
	–41	Up to .062
	–42	.063 .125
	–43	.126 .187
	–44	.188 .250
	–45	.251 .312
	–46	.313 .375
	–47	.376 .437
	–48	.438 .500
	–49	.501 .562
	–410	.563 .625

5/32" RIVET DIAMETER Use in .160 - .164 hole (#20 Drill)	DIAM. and GRIP	GRIP RANGE
	–52	.063 .125
	–54	.126 .250
	–56	.251 .375
	–58	.376 .500
	–510	.501 .625
3/16" RIVET DIAMETER Use in .192 - .196 hole (#11 Drill)	**DIAM. and GRIP**	**GRIP RANGE**
	–62	.063 .125
	–64	.126 .250
	–66	.251 .375
	–68	.376 .500
	–610	.501 .625
	–612	.626 .750
	–614	.751 .875
	–616	.876 1.000

RIVET CHART

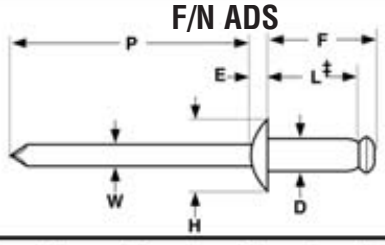
1/4" RIVET DIAMETER Use in .257 - .261 hole ("F" Drill)	DIAM. and GRIP	GRIP RANGE
	–82	.063 .125
	–84	.126 .250
	–86	.251 .375
	–88	.376 .500
	–810	.501 .625
	–812	.626 .750
	–814	.751 .875
	–816	.876 1.000

In addition to the regular dome heads shown here, many of these rivets are also available with countersunk heads for flush applications or with large heads for greater bearing surface on soft or brittle material.

The rivet bodies remain the same diameter and lengths but the large heads are as follows.

Rivets — Aluminum Rivet/Steel Mandrel — Dome Head Blind Rivet

F/N ADS



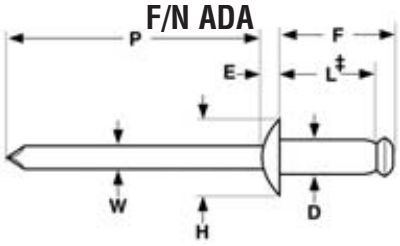
Aluminum Body/Steel Mandrel Dome Head Break-Stem Blind Rivets — SAE J-1200

Nominal Rivet Diameter	D		H		E	W	P	F	Ultimate Shear Load	Ultimate Tensile Load	Mandrel Break Load	
	Rivet Shank Diameter		Head Diameter		Head Height	Mandrel Diameter	Mandrel Protrusion	Blind Side Protrusion				
	Max	Min	Max	Min	Max	Nom	Min	Max	Min, lb.	Min, lb.	Max	Min
3/32	0.096	0.090	0.198	0.178	0.032	0.057	1.00	L + 0.100	90	120	275	175
1/8	0.128	0.122	0.262	0.238	0.040	0.076	1.00	L + 0.120	170	220	600	400
5/32	0.159	0.153	0.328	0.296	0.050	0.095	1.06	L + 0.140	260	350	850	600
3/16	0.191	0.183	0.394	0.356	0.060	0.114	1.06	L + 0.160	380	500	1050	750
1/4	0.255	0.246	0.525	0.475	0.080	0.151	1.25	L + 0.180	700	920	1850	1450

‡See page 85 for specifications on the barrel lengths of each size of rivet.

Rivets — Aluminum Rivet/Aluminum Mandrel — Dome Head Blind Rivet

F/N ADA



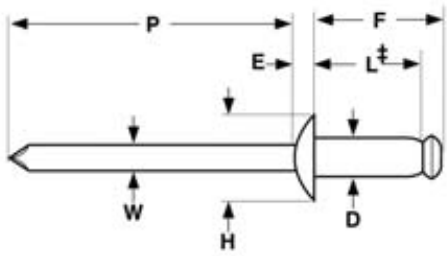
Aluminum Body/Aluminum Mandrel Dome Head Break-Stem Blind Rivets — SAE J-1200

Nominal Rivet Diameter	D		H		E	W	P	F	Ultimate Shear Load	Ultimate Tensile Load	Mandrel Break Load	
	Rivet Shank Diameter		Head Diameter		Head Height	Mandrel Diameter	Mandrel Protrusion	Blind Side Protrusion				
	Max	Min	Max	Min	Max	Nom	Min	Max	Min, lb.	Min, lb.	Max	Min
3/32	0.096	0.090	0.198	0.178	0.032	0.057	1.00	L + 0.100	70	80	240	140
1/8	0.128	0.122	0.262	0.238	0.040	0.076	1.00	L + 0.120	120	150	400	250
5/32	0.159	0.153	0.328	0.296	0.050	0.095	1.06	L + 0.140	190	230	600	425
3/16	0.191	0.183	0.394	0.356	0.060	0.114	1.06	L + 0.160	260	320	825	625
1/4	0.255	0.246	0.525	0.475	0.080	0.151	1.25	L + 0.180	460	560	1400	1100

‡See page 85 for specifications on the barrel lengths of each size of rivet.

Rivets — Steel Rivet/ Steel Mandrel — Dome Head Blind Rivet

F/N SDS

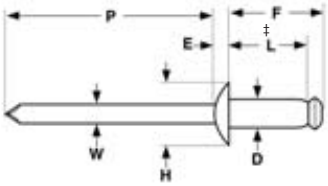


Steel Body/Steel Mandrel Dome Head Break-Stem Blind Rivets — SAE J-1200

Nominal Rivet Diameter	D		H		E	W	P	F	Ultimate Shear Load	Ultimate Tensile Load	Mandrel Break Load	
	Rivet Shank Diameter		Head Diameter		Head Height	Mandrel Diameter	Mandrel Protrusion	Blind Side Protrusion				
	Max	Min	Max	Min	Max	Nom	Min	Max	Min, lb.	Min, lb.	Max	Min
3/32	0.096	0.090	0.198	0.178	0.032	0.057	1.00	L + 0.100	130	170	360	260
1/8	0.128	0.122	0.262	0.238	0.040	0.076	1.00	L + 0.120	260	310	800	600
5/32	0.159	0.153	0.328	0.296	0.050	0.095	1.06	L + 0.140	370	470	1000	750
3/16	0.191	0.183	0.394	0.356	0.060	0.114	1.06	L + 0.160	540	680	1450	1150
1/4	0.255	0.246	0.525	0.475	0.080	0.151	1.25	L + 0.180	1000	1240	2350	1950

‡See page 85 for specifications on the barrel lengths of each size of rivet.

Rivets — Stainless Steel Rivet/ Stainless Steel Mandrel — Dome Head Blind Rivet



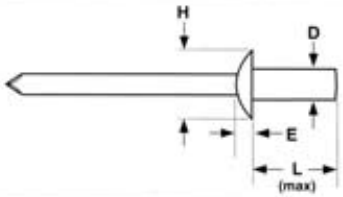
F/N SSDSS

Stainless Steel Body/Stainless Steel Mandrel Dome Head Break-Stem Blind Rivets — SAE J-1200

Nominal Rivet Diameter	D		H		E	W	P	F	Ultimate Shear Load	Ultimate Tensile Load	Mandrel Break Load, lb.	
	Rivet Shank Diameter		Head Diameter		Head Height	Mandrel Diameter	Mandrel Protrusion	Blind Side Protrusion				
	Max	Min	Max	Min	Max	Nom	Min	Max	Min, lb.	Min, lb.	Max	Min
3/32	0.096	0.090	0.198	0.178	0.032	0.057	1.00	L + 0.100	230	280	500	300
1/8	0.128	0.122	0.262	0.238	0.040	0.076	1.00	L + 0.120	420	530	950	650
5/32	0.159	0.153	0.328	0.296	0.050	0.095	1.06	L + 0.140	650	820	1450	1150
3/16	0.191	0.183	0.394	0.356	0.060	0.114	1.06	L + 0.160	950	1200	1900	1400
1/4	0.255	0.246	0.525	0.475	0.080	0.151	1.25	L + 0.180	1700	2100	3600	3000

‡See page 85 for specifications on the barrel lengths of each size of rivet.

Rivets — Closed-End Aluminum Rivet/Steel Mandrel — Dome Head Blind Rivet



F/N CE

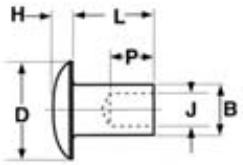
Closed-End, Dome Head Aluminum Body/Steel Mandrel Blind Rivets — Pop®*

Part Number	D Rivet Body Diameter	Hole Size	Drill Number	Grip Range	L Length Under Head	H Head Diameter	E Head Height	Ultimate Shear Load	Ultimate Tensile Load
				Inches	Max	Nominal	Nominal	Min, lb.	Min, lb.
ADSC62	.187 (3/16)	.192 - .196	#11	.063 - .125	.345	.375	.081	575	840
ADSC64				.126 - .250	.470	.375	.081	575	840
ADSC66				.251 - .375	.595	.375	.081	575	840
ADSC68				.376 - .500	.720	.375	.081	575	840

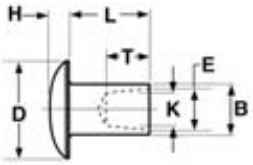
*Rivets meet same dimensions as those published by the manufacturers of the Pop® brand.

Rivets — Semi-tubular Rivets — Oval Heads

F/N RSTO



Type S



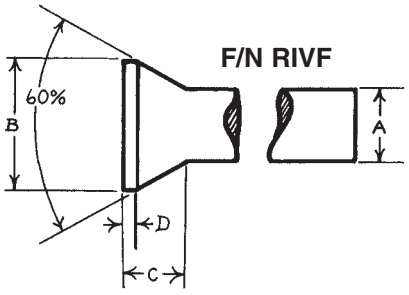
Type T

Semi-Tubular Oval Head Rivets — ANSI/ASME B18.7

Nominal Size	B Shank Diameter		D Head Diameter		H Head Thickness		E Type T Taper Hole Rivets: Hole Dia. at End of Rivet		K Type T Taper Hole Rivets: Hole Dia. at Bottom of Hole	T Type T Taper Hole Rivets: Hole Depth to Start of Apex	J Type S Straight Hole Rivets: Hole Dia. at End of Rivet		P Type S Straight Hole Rivets: Hole Depth to Start of Apex	Tolerance on Lengths: Up to and including 4 times shank dia.	Tolerance on Lengths: Over 4 times shank dia. and up to and including 8 times shank dia.	Tolerance on Lengths: Over 8 times shank dia.
	Max	Min	Max	Min	Max	Min	Max	Min	Min	Min	Max	Min	Nom			
0.061	0.061	0.058	0.114	0.104	0.019	0.015	0.046	0.042	0.032	0.042	0.044	0.039	0.046	±0.007	±0.008	±0.010
0.089	0.089	0.085	0.152	0.142	0.026	0.020	0.068	0.064	0.050	0.057	0.068	0.062	0.064	±0.007	±0.008	±0.010
0.099	0.099	0.095	0.192	0.182	0.032	0.026	0.076	0.072	0.057	0.065	0.076	0.070	0.077	±0.007	±0.008	±0.010
0.123	0.123	0.118	0.223	0.213	0.038	0.030	0.095	0.091	0.079	0.082	0.090	0.084	0.094	±0.007	±0.010	±0.015
0.146	0.146	0.141	0.239	0.229	0.045	0.035	0.112	0.106	0.085	0.104	0.107	0.100	0.126	±0.010	±0.012	±0.015
0.188	0.188	0.182	0.318	0.306	0.065	0.055	0.145	0.139	0.110	0.135	0.141	0.134	0.155	±0.010	±0.012	±0.015
0.217	0.217	0.210	0.444	0.430	0.076	0.061	0.166	0.158	0.136	0.151	0.163	0.155	0.189	±0.010	±0.015	±0.020
0.252	0.252	0.244	0.507	0.493	0.085	0.071	0.191	0.181	0.150	0.183	0.184	0.176	0.219	±0.010	±0.015	±0.020
0.310	0.310	0.302	0.570	0.554	0.100	0.086	0.235	0.225	0.190	0.214	0.219	0.211	0.243	±0.010	±0.015	±0.020

Solid Rivets and Riveters

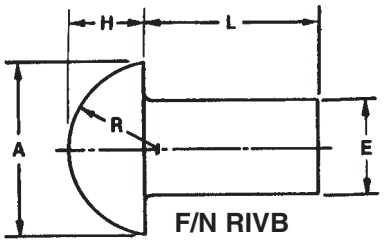
COUNTERSUNK HEAD



F/N RIVF

		5-1/2
A	SHANK DIAMETER, MAX. SHANK DIAMETER, MIN.	.212 .205
B	HEAD DIAMETER, MAX. HEAD DIAMETER, MIN.	.306 .286
C	HEAD HEIGHT, MAX. HEAD HEIGHT, MIN.	.091 .076
D	FEED THICKNESS, MAX. FEED THICKNESS, MIN.	.008 .000

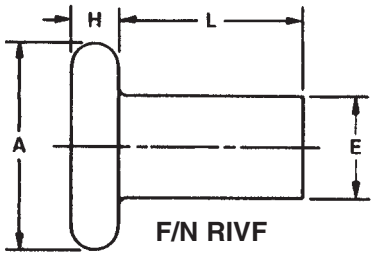
BUTTON HEAD



F/N RIVB

Nominal Size or Basic Shank Diameter		E Shank Diameter		A Head Diameter		H Head Height		R Head Radius
		Max	Min	Max	Min	Max	Min	Approx
1/8	0.125	0.127	0.121	0.235	0.215	0.100	0.088	0.111
3/16	0.188	0.191	0.182	0.348	0.322	0.147	0.133	0.166
1/4	0.250	0.253	0.244	0.460	0.430	0.196	0.180	0.221
5/16	0.312	0.316	0.304	0.572	0.538	0.243	0.225	0.276
3/8	0.375	0.380	0.365	0.684	0.646	0.291	0.271	0.332
7/16	0.438	0.443	0.428	0.798	0.754	0.339	0.317	0.387
1/2	0.500	0.520	0.478	0.938	0.844	0.406	0.375	0.433
5/8	0.625	0.655	0.600	1.157	1.063	0.500	0.469	0.553
3/4	0.750	0.780	0.725	1.390	1.281	0.593	0.562	0.664
7/8	0.875	0.905	0.850	1.609	1.500	0.687	0.656	0.775
1	1.000	1.030	0.975	1.828	1.719	0.781	0.750	0.885

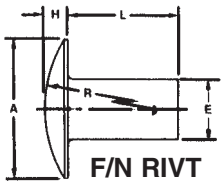
FLAT HEAD



F/N RIVF

Nominal Size or Basic Shank Diameter		E Shank Diameter		A Head Diameter		H Head Height		
		Max	Min	Max	Min	Max	Min	
1/8	0.125	0.127	0.121	0.260	0.240	0.048	0.036	
3/16	0.188	0.191	0.182	0.387	0.361	0.069	0.055	
1/4	0.250	0.253	0.244	0.515	0.485	0.091	0.075	
5/16	0.312	0.316	0.304	0.641	0.607	0.113	0.095	
3/8	0.375	0.380	0.365	0.769	0.731	0.135	0.115	
7/16	0.438	0.443	0.428	0.896	0.852	0.157	0.135	
1/2	0.500	0.520	0.478	1.023	0.973	0.179	0.155	
5/8	0.625	0.655	0.600	1.278	1.218	0.222	0.195	
3/4	0.750	0.780	0.725	1.533	1.463	0.265	0.235	

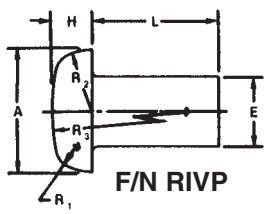
TRUSS HEAD



F/N RIVT

Nominal Size or Basic Shank Diameter		E Shank Diameter		A Head Diameter		H Head Height		R Head Radius
		Max	Min	Max	Min	Max	Min	Approx
1/8	0.125	0.127	0.121	0.297	0.277	0.048	0.036	0.314
3/16	0.188	0.191	0.182	0.442	0.422	0.069	0.055	0.470
1/4	0.250	0.253	0.244	0.590	0.560	0.091	0.075	0.628
5/16	0.312	0.316	0.304	0.732	0.702	0.113	0.095	0.784
3/8	0.375	0.380	0.365	0.878	0.848	0.135	0.115	0.942
7/16	0.438	0.443	0.428	1.020	0.990	0.157	0.135	1.098

PAN HEAD



F/N RIVP

Nominal Size or Basic Shank Diameter		E Shank Diameter		A Head Diameter		H Head Height		R_1 Head Corner Radius	R_2 Head Side Radius	R_3 Head Crown Radius
		Max	Min	Max	Min	Max	Min	Approx	Approx	Approx
1/8	0.125	0.127	0.121	0.225	0.205	0.078	0.066	0.039	0.106	0.429
3/16	0.188	0.191	0.182	0.334	0.308	0.114	0.100	0.059	0.159	0.641
1/4	0.250	0.253	0.244	0.444	0.414	0.151	0.135	0.079	0.213	0.858
5/16	0.312	0.316	0.304	0.552	0.518	0.187	0.169	0.098	0.266	1.070
3/8	0.375	0.380	0.365	0.663	0.625	0.225	0.205	0.118	0.319	1.286
7/16	0.438	0.443	0.428	0.772	0.728	0.261	0.239	0.137	0.372	1.500

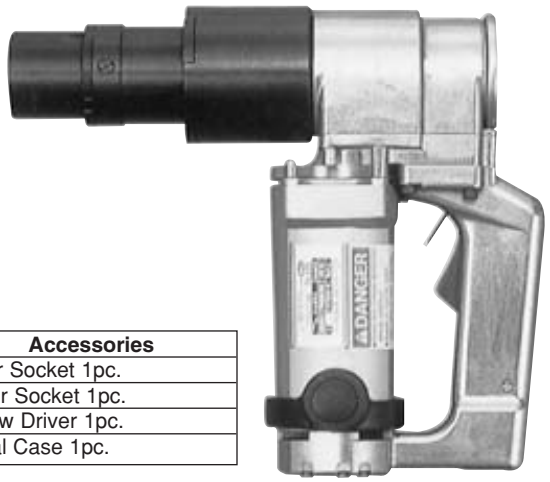
STRUCTURAL BOLT SHEAR WRENCHES

Page No.

Shear Wrenches

Medium Duty Shear Wrench
Part No. S-60EZA

Specifications		
Model	S-60EZA	
Voltage	115V	220V
Max. Current	13.5A	5.5A
Max. Power Consumption	1300W	1100W
Frequency	50 / 60Hz	
Max. Torque	588 N-m (435 lbf-ft)	
No-Load Speed	22rpm	20rpm
Weight	5.5kg (12.1lb)	



Adaptable Bolt Dia.
M16, M20
5/8", 3/4", (7/8" A325 only)

*You can choose 1 size socket

Accessories
Inner Socket 1pc.
Outer Socket 1pc.
Screw Driver 1pc.
Metal Case 1pc.

Heavy Duty Shear Wrench
Part No. S-90EZ

Specifications		
Model	S-90EZA	
Voltage	115V	220V
Max. Current	12.0A	6.5A
Max. Power Consumption	1200W	1300W
Frequency	50 / 60Hz	
Max. Torque	804 N-m (595 lbf-ft)	
No-Load Speed	15rpm	16rpm
Weight	7.6kg (16.7lb)	

Adaptable Bolt Dia.
M16, M20, M22
5/8", 3/4", 7/8", (1" A325 only)

*You can choose 1 size socket

Accessories
Inner Socket 1pc.
Outer Socket 1pc.
Screw Driver 1pc.
Metal Case 1pc.

Heavy Duty Shear Wrench
Part No. S-110EZ

Specifications		
Model	S-110EZ	
Voltage	115V	220V
Max. Current	13.5A	7.5A
Max. Power Consumption	1300W	1500W
Frequency	50 / 60Hz	
Max. Torque	1010 N-m (745 lbf-ft)	
No-Load Speed	16rpm	16rpm
Weight	10.3kg (22.7lb)	

Adaptable Bolt Dia.
M20, M22, M24
3/4", 7/8", 1", (1-1/8" A325 only)

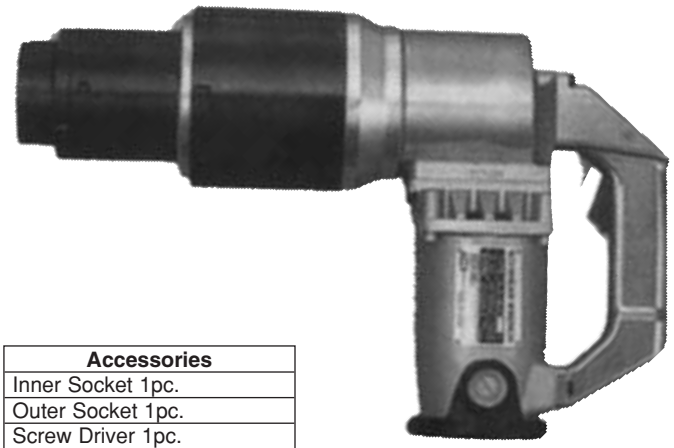
*You can choose 1 size socket

Accessories
Inner Socket 1pc.
Outer Socket 1pc.
Screw Driver 1pc.
Metal Case 1pc.

Shear Wrenches

Extra Heavy Duty Shear Wrench
Part No. S-210EZ

Specifications		
Model	S-210EZ	
Voltage	115V	220V
Max. Current	13.5A	5.5A
Max. Power Consumption	1300W	1100W
Frequency	50 / 60Hz	
Max. Torque	2059 N-m (1520 lbf-ft)	
No-Load Speed	5rpm	20rpm
Weight	16.5kg (36.3 lb)	



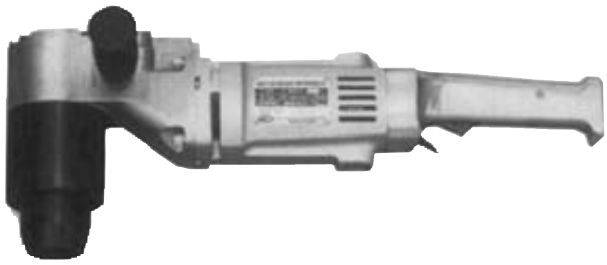
Adaptable Bolt Dia.
M27, M30
1-1/8", 1-1/4", A325 only

*You can choose 1 size socket

Accessories
Inner Socket 1pc.
Outer Socket 1pc.
Screw Driver 1pc.
Metal Case 1pc.

Corner Shear Wrench
Part No. S-80EZA

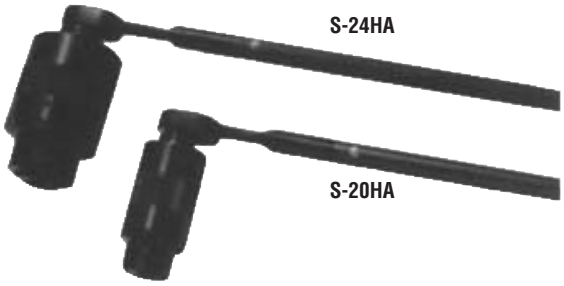
Specifications		
Model	S-80EZ	
Voltage	115V	220V
Max. Current	11.5A	5.5A
Max. Power Consumption	1100W	1100W
Frequency	50 / 60Hz	
Max. Torque	804 N-m (595 lbf-ft)	
No-Load Speed	12rpm	12rpm
Weight	8.0kg (17.6lb)	



Capacity
3/4" & 7/8" A325 & A490 TC Bolts
1" A325 TC Bolts
M20 & M22 A325 & A490 TC Bolts
M24 A325 TC Bolts

	A	B	C	D	E
3/4"	7-1/4"	1-3/4"	4-3/4"	3-1/8"	1-1/4"
7/8"	7-1/4"	2"	4-3/4"	3-1/8"	1-1/4"
1"	7-1/4"	2-1/4"	5-1/2"	3-7/8"	1-1/2"

Hand Shear Wrench
Part No. S-20HA/2-24HA



S20-HA Capacity
5/8" & 3/4" A325 & 490 TC Bolts
M16, M20: A325 & 490 TC Bolts
Weight: 9 lbs. • Handle: 24"

S24-HA Capacity
3/4", 7/8" & 1" A325 & 490 TC Bolts
M20, M22, & M24: A325 & 490 TC Bolts
Weight: 14 lbs. • Handle: 48"

SHEAR WRENCHES

Electric Torque Control Wrench

SR31E/SR32E, SR51E/SR52E, SR71E/SR72E for Hexagonal Bolts

"SIMPLE TORQUE"

- Torque control function on both directions
- Non-Impact, very smooth and high precision wrench of new era. Simple to set targeted torque and easy and comfortable operation.
- No separate control unit, as torque control device is built in main body and yet wrench is designed compact, light in weight and well balanced.
- Socket with reaction bar turns independently to a certain angle to make it easier to insert socket into the nut.
- Main body can stand still during the movement of reaction bar till it touches reaction-taker.

Electric Torque Control Wrench

SR121E/SR122E, SR211E/SR212E for Hexagonal Bolts

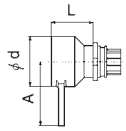
SPECIFICATIONS

Model	SR31E	SR32E	SR51E	SR52E	SR71E	SR72E
Voltage(S)	115 V	220 V	115V	220 V	115 V	220 V
Max.Current	13.5 A	6.5 A	13.5 A	6.5 A	13.5 A	6.5 A
Frequency	50/60 Hz		50/60 Hz		50/60 Hz	
Power Consumption	max 1100 W		max 1100 W		max 1100 W	
Controllable Range	150~300 N•m 110~220 lbf•ft		300~500 N•m 220~370 lbf•ft		350~700 N•m 260~520 lbf•ft	
Free Rotation	31 rpm		25 rpm		17 rpm	
Weight(Mainbody)	4.3 kg/9.5 lb		5.1 kg/11.2 lb		5.5 kg/12.1 lb	

SPECIFICATIONS

Model	SR121E	SR122E	SR211E	SR212E
Voltage(S)	115 V	220 V	115V	220 V
Max.Current	15.0 A	7.5 A	12.0 A	6.0 A
Frequency	50/60 Hz		50/60 Hz	
Power Consumption	max 1400 W		max 1100 W	
Controllable Range	600~1200 N•m 450~900 lbf•ft		1000~2100 N•m 750~1550 lbf•ft	
Free Rotation	16 rpm		4 rpm	
Weight(Mainbody)	8.8 kg/19.4 lb		17.5 kg/38.6 lb	

BAR SOCKET



SR31E/SR32E SR51E/SR52E SR71E/SR72E

Code No.	AF Size (mm)	d	A	L	*H	*N
MRU 24 T	24	54	82.5	41.5		(M16)
MRU 27 T	27	59	82.5	48.5	M16	(M18)
MRU 30 T	30	59	82.5	48.5		(M20)
MRU 32 T	32	59	82.5	48.5	M20	(M22)
MRU 36 T	36	65	82.5	51.0	M22	(M24)
MRU 41 T	41	70	90.0	58.5	M24	(M27)

Code No.	AF Size (in)	d	A	L	*H	*N
MRUB 34 Z	1 1/16	59	82.5	48.5	5/8	
MRUB 40 Z	1 1/4	59	82.5	48.5	3/4	
MRUB 46 Z	1 7/16	65	82.5	51.0	7/8	
MRUB 52 Z	1 5/8	70	90.0	58.5	1	

SR121E/SR122E

Code No.	AF Size (mm)	d	A	L	*H	*N
HRU 36 T	36	70	82.5	55.5	M22	(M24)
HRU 41 T	41	75	90.0	64.0	M24	(M27)
HRU 46 T	46	80	100.0	66.5	M27	(M30)

Code No.	AF Size (in)	d	A	L	*H	*N
HRUB 46 Z	1 7/16	70	82.5	55.5	7/8	
HRUB 52 Z	1 5/8	75	90.0	64.0	1	
HRUB 58 Z	1 13/16	80	100.0	66.5	1 7/8	

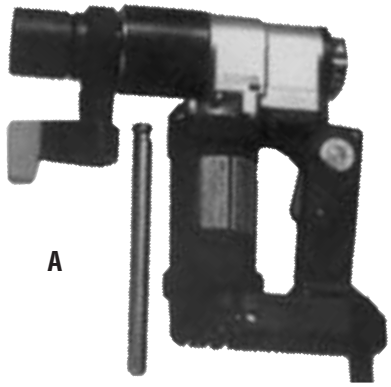
SR211E/SR212E

Code No.	AF Size (mm)	d	A	L	*H	*N
SRU 46 T	46	85	117.0	65.0	M27	(M30)
SRU 50 T	50	90	129.0	65.0	M30	(M33)

Code No.	AF Size (in)	d	A	L	*H	*N
SRUB 58 Z	1 13/16	85	117.0	65	1 1/8	
SRUB 64 Z	2	90	129.0	65	1 1/4	

*H:High tension hexagonal bolts *N:hexagonal bolts

Electric Torque Control Wrenches for Hex Head Bolts
STC 5AE, 7AE & 11AE



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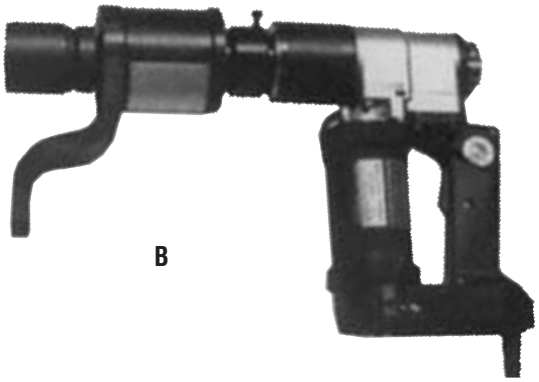

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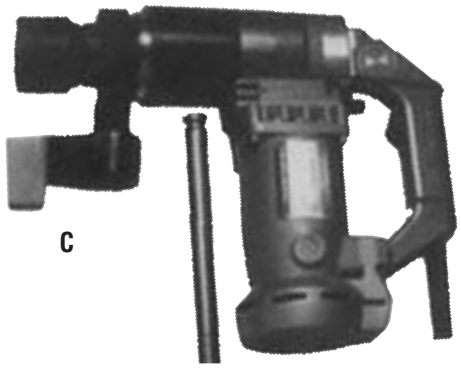

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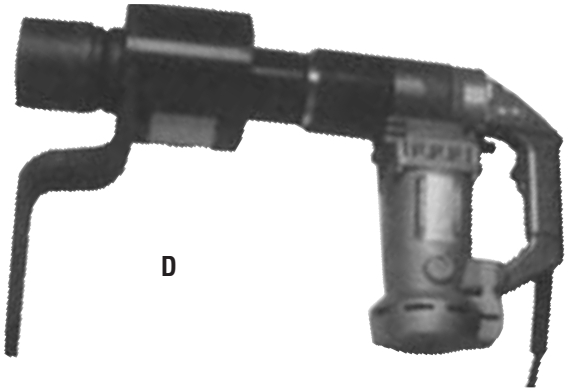


D

A. STC 5AE & STC 7AE
with extension arms “L”, “I”, “Q”

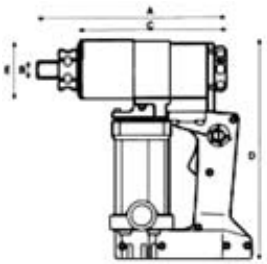
B. STC 5AE
with 8-180PX torque multiplier

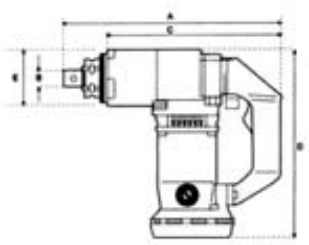
C. STC 11AE
with extension arms “L”, “I”, “Q”

D. STC 11AE
with 12-500PX torque multiplier

Specifications						
Model	SR71E	SR72E	SR121E	SR122E	SR211E	SR212E
Voltage	115V	220V	115V	220V	115V	220V
Max. Current	13.5A	6.5A	13.5A	6.5A	12.0A	7.5A
Frequency	50 / 60Hz		50 / 60Hz		50 / 60Hz	
Max. Torque	223–370 ft./lb.		260–510 ft./lb.		370–810 ft./lb.	
No-Load Speed	25rpm		17rpm		15rpm	
Weight	11.7 lbs.		13.7 lbs.		19.8 lbs.	

- Torque control function works in both directions
- Non-impact/constant speed
- One-sided installation
- Quiet
- Eliminates the need for impact wrenches
- Uses standard impact sockets





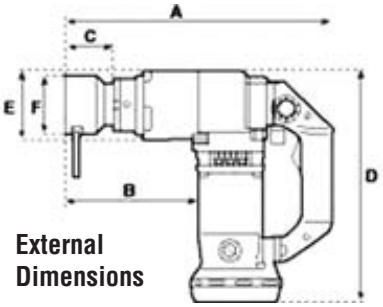
	A	B	C	D	E
5AE	8-5/8	3/4	6-7/8	10	2-11/16
7AE	9-5/8	1	7-1/2	10-1/4	2-15/16
11AE	13	1	10-7/8	11-1/4	3-3/8

Electric Torque Control Wrenches for Hex Head Bolts
SR71E/SR72E, SR121E/SR122E, SR211E/SR212E

SR71E / SR72E

SR121E / SR122E
SR211E / SR212E

- Torque control function works in both directions
- Non-impact/constant speed
- One-sided installation
- Eliminates the need for impact wrenches

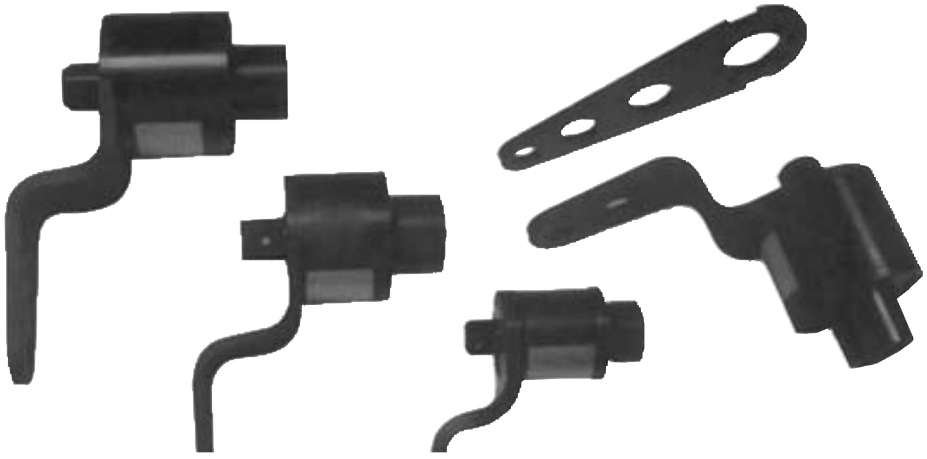


External Dimensions

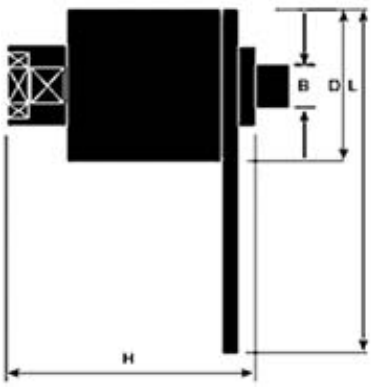
Specifications						
Model	SR71E	SR72E	SR121E	SR122E	SR211E	SR212E
Voltage	115V	220V	115V	220V	115V	220V
Max. Current	13.5A	6.5A	15.0A	7.5A	12.0A	7.5A
Frequency	50 / 60Hz		50 / 60Hz		50 / 60Hz	
Max. Torque	223–370 ft./lb.		260–510 ft./lb.		370–810 ft./lb.	
No-Load Speed	25rpm		17rpm		15rpm	
Weight	11.7 lbs.		13.7 lbs.		19.8 lbs.	

	SR71E	SR121E	SR211E
A	9-3/4–11	13-5/8–15-1/4	15-5/8–18
B	4-5/8–5-7/8	6-7/16–7-7/8	9-3/8–10-7/8
C	1-5/8–2-7/8	2–3-7/16	2–3-7/16
D	10-1/4	11-1/4	11-5/8
E	3	3-3/8	4-3/4
F	2-1/8–3-1/2	2-1/2–4-1/4	2-1/2–4-1/4

Torque Multiplier
Multiplies Torque Output from 3.6 to 4.5 times!



External Dimensions



Model No.	Max Torque Output	Max Torque Input
8–810PX	1,330 ft./lb.	320 ft./lb.
12–350PX	2,580 ft./lb.	720 ft./lb.
12–500PX	3,690 ft./lb.	820 ft./lb.

Torque Multiplier

Model No.	Max Torque Output	Max Torque Input	Torque Multiplier	D (in.)	H (in.)	B (in.)	L (in.)	Wt. (lb.)
8–810PX	1,330 ft./lb.	320 ft./lb.	320 ft./lb.	3-7/16	3-31/32	1	7-5/8	11.0
12–350PX	2,580 ft./lb.	720 ft./lb.	720 ft./lb.	4-3/4	5-3/4	1-1/2	10-7/16	19.5
12–500PX	3,690 ft./lb.	820 ft./lb.	820 ft./lb.	5-7/16	6-13/16	1-1/2	14-9/16	30.0

TMC-400 Bolt Tension Calibrator

Specifications

Measuring Range	5–400KN
Application Bolt	Dia. M16, M20, M22, M24
Accuracy	±2%
Weight (main body)	9.8 kg.

Accessories	
Attachment for loosening nut	M16, M20, M22, M24
Carrying Case	2 pcs.

SELF TAPPING SCREWS

MATERIALS AVAILABLE:

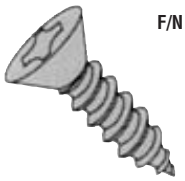
- STEEL
- STAINLESS

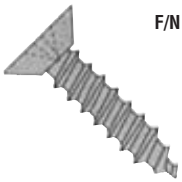
PLATINGS AVAILABLE:

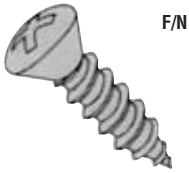
- ZINC
- YELLOW ZINC
- BLACK OXIDE
- ACG
- MECHANICAL GALVANIZED

Pictorial Table—Tapping Screws


F/N ABCP
Pan Combo Type A/AB Tapping Screw


F/N ABPF
Flat Phillips Type A/AB Tapping Screw


F/N ABPU
Flat U-Cut Phil Type A/AB Tapping Screw


F/N ABPO
Oval Phillips Type A/AB Tapping Screw

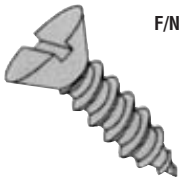

F/N ABPO
#8 Oval Phil w/#6 Head A Tapping Screw


F/N ABPP
Pan Phillips Type A/AB Tapping Screw

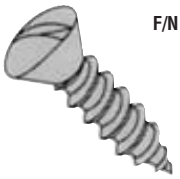

F/N ABPR
Round Phillips Type A/AB Tapping Screw

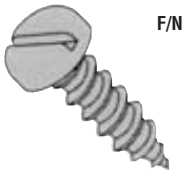

F/N ABPT
Truss Phillips Type A/AB Tapping Screw


F/N ABPT
Truss Phillips Type AB Tapping Screw

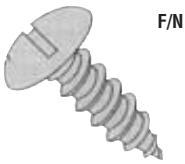

F/N ABSF
Flat Slotted Type A/AB Tapping Screw

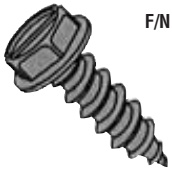

F/N ABPU
Flat U-Cut Slot Type A/AB Tapping Screw

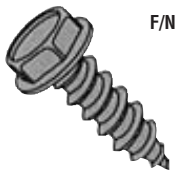

F/N ABSO
Oval Slotted Type A/AB Tapping Screw

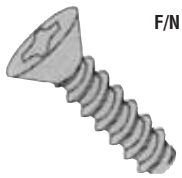

F/N ABSP
Pan Slotted Type A/AB Tapping Screw

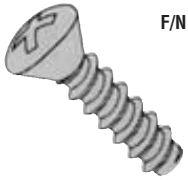

F/N ABSR
Round Slotted A/AB Tapping Screw

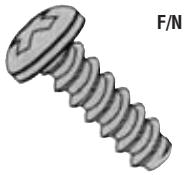

F/N ABST
Truss Slotted Type A/AB Tapping Screw

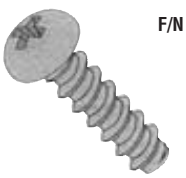

F/N ABSW
Hex Wash Slot Type A/AB Tapping Screw

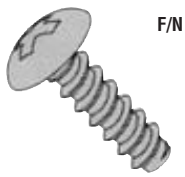

F/N ABHW
Hex Wash Unslot Type A/AB Tapping Screw

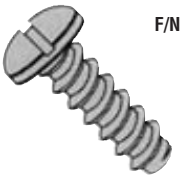

F/N BBPF
Flat 82° Phillips Type B Tapping Screw

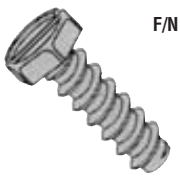

F/N BBPO
Oval Phillips Type B Tapping Screw


F/N BBPP
Pan Phillips Type B Tapping Screw

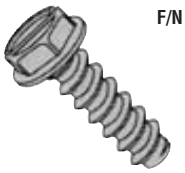

F/N BBPR
Round Phillips Type B Tapping Screw

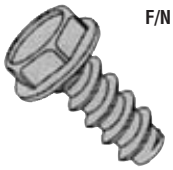

F/N BBPT
Truss Phillips Type B Tapping Screw

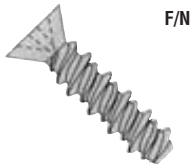

F/N BBSP
Pan Slotted Type B Tapping Screw

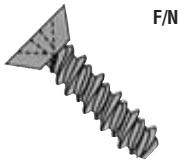

F/N BBSW
Hex Slotted Type B Tapping Screw

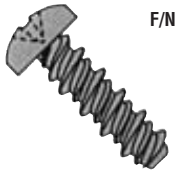
Pictorial Table—Tapping/Thread Cutting Screws

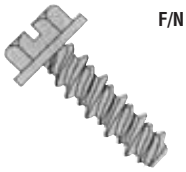
F/N BBSW

Hex Washer Slot Type B Tapping Screw

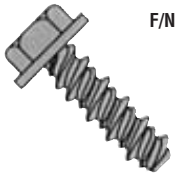
F/N BBHW

Hex Washer Unslot Type B Tapping Screw

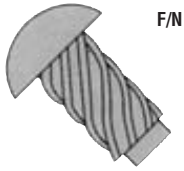
F/N BHPF

Flat Phillips High-Low Tapping Screw

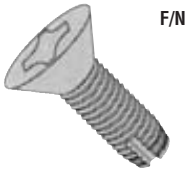
F/N BHPF

Flat U-Cut Phil High-Low Tapping Screw

F/N BHPP

Pan Phillips High-Low Tapping Screw

F/N BHSW

Hex Wash Slot High-Low Tapping Screw

F/N BHHH

Hex Wash Unslot High-Low Tapping Screw

F/N URHD

Round Type U Drive Screw

F/N TFPF

Flat Phillips Type F Thread Cutting Screw

F/N TFPU

Flat U-Cut Phillips Type F Thread Cutting Screw

F/N TFPO

Oval Phillips Type F Thread Cutting Screw

F/N TFPP

Pan Phillips Type F Thread Cutting Screw

F/N TFPT

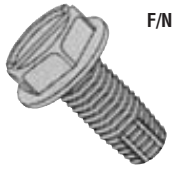
Truss Phillips Type F Thread Cutting Screw

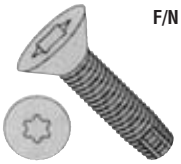
F/N TFSF

Flat Slotted Type F Thread Cutting Screw

F/N TFSP

Pan Slotted Type F Thread Cutting Screw

F/N TFSW

Hex Wash Slotted Type F Thread Cutting Screw

F/N TFTF

Flat Torx® Floorboard F Thread Cutting Screw

F/N TFPF

Flat Phillips Type F Thread Cutting Screw

F/N TFPU

Flat U-Cut Phil Type F Thread Cutting Screw

F/N TFPP

Pan Phillips Type F Thread Cutting Screw

F/N TFSW

Hex Washer Slot Type F Thread Cutting Screw

F/N T1PF

Flat Phillips Type 1 Thread Cutting Screw

F/N T1PU

Flat U-Cut Phil Type 1 Thread Cutting Screw

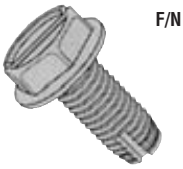
F/N T1PP

Pan Phillips Type 1 Thread Cutting Screw

Pictorial Table—Thread Cutting/Rolling Screws

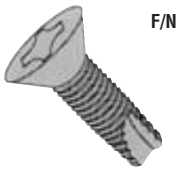
F/N T1PT
Truss Phillips Type 1
Thread Cutting Screw

F/N T1SP
Pan Slotted Type 1
Thread Cutting Screw

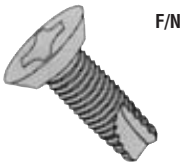


F/N T1SW
Hex Wash Slot Type 1
Thread Cutting Screw

F/N T1HW
Hex Wash Unslot Type 1
Thread Cutting Screw



F/N T3PF
Flat Phillips Type 23
Thread Cutting Screw



F/N T3PU
Flat U-Cut Phil Type 23
Thread Cutting Screw

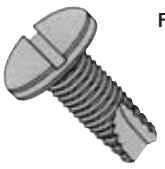
F/N T3PO
Oval Phillips Type 23
Thread Cutting Screw

F/N T3PP
Pan Phillips Type 23
Thread Cutting Screw

F/N T3PR
Round Phillips Type 23
Thread Cutting Screw

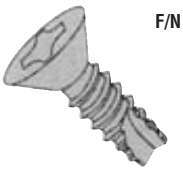
F/N T3PT
Truss Phillips Type 23
Thread Cutting Screw

F/N T3SF
Flat Slotted Type 23
Thread Cutting Screw



F/N T3SP
Pan Slotted Type 23
Thread Cutting Screw

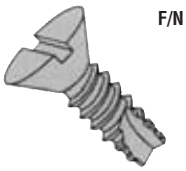
F/N T3SW
Hex Wash Slot Type 23
Thread Cutting Screw



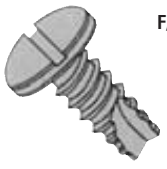
F/N T5PF
Flat Phillips Type 25
Thread Cutting Screw

F/N T5PU
Flat U-Cut Phil Type 25
Thread Cutting Screw

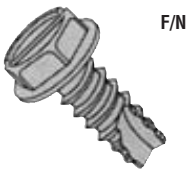
F/N T5PP
Pan Phillips Type 25
Thread Cutting Screw



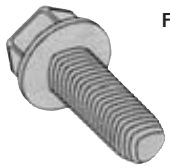
F/N T5SF
Flat Slotted Type 25
Thread Cutting Screw



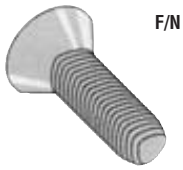
F/N T5SP
Pan Slotted Type 25
Thread Cutting Screw



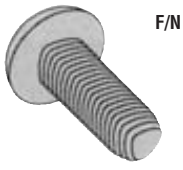
F/N T5SW
Hex Wash Slotted Type 25
Thread Cutting Screw



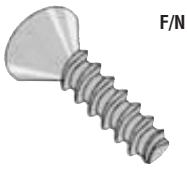
F/N TRHW
Hex Wash Unslot Taptite® II
Thread Rolling Screw



F/N TRPF
Flat Phillips Taptite® II
Thread Rolling Screw



F/N TRPP
Pan Phillips Taptite® II
Thread Rolling Screw



F/N TRPF
Flat Phillips Plastite®
Thread Rolling Screw

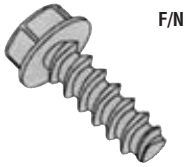
F/N TRPP
Pan Phillips Plastite®
Thread Rolling Screw

SELF-DRILLING SCREWS

Pictorial Table—Thread Rolling/Self Drilling Screws

F/N TRPT

Truss Phillips Plastite®
Thread Rolling Screw



F/N TRHW

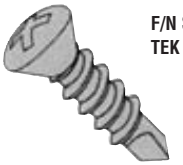
Hex Wash Unslot Plastite®
Thread Rolling Screw

F/N SDPF
TEK

Flat Phillips
Self Drilling Screw

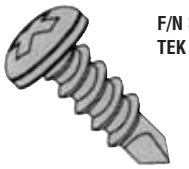
F/N SDPU
TEK

Flat Undercut Phillips
Self Drilling Screw



F/N SDPO
TEK

Oval Phillips
Self Drilling Screw



F/N SDPP
TEK

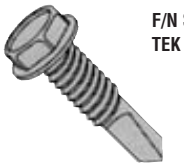
Pan Phillips
Self Drilling Screw

F/N SDPW

Wafer Phillips, Machine Thread
Self Drilling Screw

F/N SDHW
TEK

Hex Washer Unslotted
Self Drilling Screw



F/N SDHW
TEK

Hex Washer Unslot, #4 & #5 Pts
Self Drilling Screw

F/N SDHW
TEK

H/W Unslot w/Neo-EPDM Washer
Self Drilling Screw

F/N SDQP

Pan Square Recess
Self Drilling Screw

F/N SDPM
TEK

Modified Truss Phillips
Self Drilling Screw

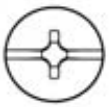
F/N SDPW
TEK

Wafer Phillips, Spade Pt
Self Drilling Screw

BACK HOME NEXT TOC

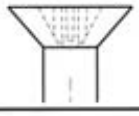
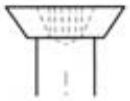
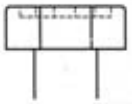
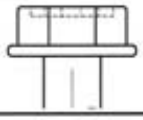
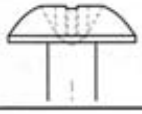
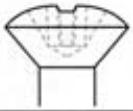
Drive Types Self-Tapping Screws

Drive Types for Self-Tapping Screws

Schematic	Drive Type	Uses
	Phillips (P)	Most recommended drive type. Provides good control in driving. Always use a driver bit of the proper size which is in good condition.
	Slotted (S)	Accepts standard blade screwdriver. Requires less downward pressure to drive parts than those with recessed openings. Use proper fitting blade to minimize slippage.
	Combination: Phillips/Slotted (C)	Accepts phillips and standard blade screwdrivers. Often used when fastener is expected to be driven and backed-out several times.
	Hex / Slotted-Hex (SW)	Accepts hex wrench. Slotted drive is added to make it easier to remove the fastener.
	Torx® (T)	Positive-engaging, fast-locating method which transmits drive torque with less required downward pressure. Good fastening appearance.
	Square (Q)	Increases productivity with excellent torque transmission and resists cam-out. Distinctive appearance which discourages tinkering.

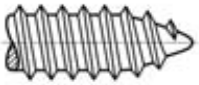
®Torx is a registered trademark of the Camcar Corporation, division of Textron Industries.
®Pozidriv is a registered trademark of the Phillips Screw Company. Kanebridge Type-1A drive fasteners are not manufactured by or connected with the producers of Pozidriv® screws.

Self-Tapping Screws — Head Styles

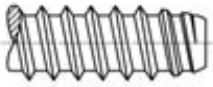
Schematic	Head Style	Description	Applications/ Advantages
	Bugle (B)	A countersunk head with a flat top surface and a concave underhead bearing surface.	Designed specifically for use in drywall. Distributes bearing stress over a wider area than flat heads.
	Pan (P)	Slotted pan heads have a flat or gently rounded top surface, cylindrical sides and a flat bearing surface. Phillips, Torx® and square pan heads have a rounded top surface, cylindrical sides and a flat bearing surface.	For general applications. Can be substituted in most applications for round, truss or binding heads.
	Flat 82° (F)	A countersunk head with a flat top surface and a cone-shaped bearing surface with a head angle of approximately 82°.	Used in applications where protrusion of the fastener above the mating surface is unacceptable. Use a protrusion gage when measuring head height.
	Flat Undercut (U)	Similar to an 82° flat head except that the head is undercut to 70% of its normal side height.	Standard for short lengths because it allows greater length of threads. Also avoids transition fillet and assembly interference.
	Indented Hex (H)	Has an indented top surface, six flat sides, and a flat bearing surface.	Preferred in high volume assembly where pneumatic equipment is used to drive the screw. Can transmit significantly higher tightening torque levels than other head styles.
	Indented Hex Washer (W)	Has an indented top surface, six flat sides with a flat washer which projects beyond the sides and provides a flat bearing surface. The washer and hex head are formed together as one piece. An undercut area where the bearing surface meets the shank is an optional design feature.	Increased bearing area reduces likelihood of crushing mating surfaces.
	Serrated Hex Washer	Same as an Indented Hex Washer head but with serrations formed into the bearing surface on the underside of the washer.	Serration geometry is oriented to resist loosening. Also slows the screw at the point of engagement with the mating piece of sheet metal so as to minimize stripping.
	Truss (T)	Has a low rounded top with a flat bearing surface greater in area than a round-head screw of the same nominal size.	Weaker than pan or round heads but preferred in applications where minimal clearance exists above the head. Truss profile provides a trim, finished appearance.
	Wafer (W)	A countersunk head with a flat top surface and a cone-shaped bearing surface. The wafer's 70° conical underhead area does not extend to the outer edge of the head, providing a bearing surface of 16° around the circumference of the underhead.	Preferred head style for Type-CSD self-drilling screws. Provides the necessary bearing surface and flush fit in wood and softer materials. The head/shank fillet contoured to strengthen the underhead area.
	Oval (O)	A countersunk head with a rounded top surface and a cone-shaped bearing surface of approximately 82°.	Preferred over a flat head in conical applications, or when a more decorative finished look is desired. The countersunk surface nests into mating countersunk application sites.
	Oval Undercut (O)	Similar to an 82° oval head except that the head is undercut to 70% of its normal side height.	Standard for short lengths because it allows greater length of threads.
	Round (U-drive) (R)	Has a semi-elliptical top surface and a flat bearing surface.	Standard head style for drive screws. Provides efficient non-torque fastening for high-speed assembly.

Self-Tapping Screws — *Hole Size Data* — Types A, AB, B, 25

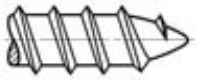
AB



B



A



25

Suggested Test Plate Thicknesses & Hole Sizes for Types AB - B - 25

Nominal Screw Size & No. of Threads per Inch	Thickness			Hole Size	
	Gage	Max	Min	Drill Size	Hole Diam.
2-32	18	.0500	.0460	48	.0760
3-28	18	.0500	.0460	46	.0810
4-24	18	.0500	.0460	44	.0860
5-20	18	.0500	.0460	36	.1065
6-20	14	.0770	.0730	32	.1160
7-19	14	.0770	.0730	30	.1285
8-18	14	.1270	.1230	29	.1360
10-16	1/8	.1270	.1230	21	.1590
12-14	1/8	.1270	.1230	3/16	.1875
1/4-14	3/16	.1905	.1845	5.5 mm	.2165
5/16-12	3/16	.1905	.1845	I	.2720
3/8-12	3/16	.1905	.1845	21/64	.3281

Suggested Hole Sizes for Type A

Nominal Screw Size	Closest Drill Size to Mean Hole Diameter	
	Drill Size	Hole Diam.
6-18	#32	0.1160
7-16	#30	0.1285
8-15	#29	0.1360
10-12	#21	0.1590
12-11	3/16	0.1875
14-10	5.5mm	0.2165
20-9	L	0.2900
24-9	11/32	0.3438

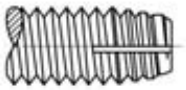
Notes Regarding Hole Preparation:

- Preformed holes can be drilled, cored, punched, pierced or extruded. If edge burrs can cause assembly difficulty, they should be removed. Wall ovality and/or taper can affect load carrying ability.

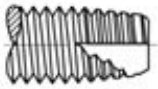
- "Minimum torsional strength" is the torque that free standing screws must accept without evidence of damage or failure.

Types 1, 23, F, U & High-Low *Hole Size Data* Self-Tapping Screws

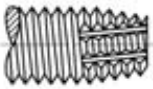
Type 1



Type 23

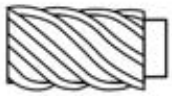


Type F



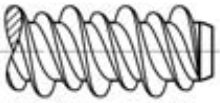
Suggested Test Plate Thicknesses & Hole Sizes for Types 1, 23 & F Thread Cutting Screws					
Nominal Screw Size & Thread Pitch	Thickness			Hole Size	
	Gage	Max	Min	Drill Size	Hole Diam.
2-56	18	.0800	.0760	49	0.0730
4-40	18	.1110	.1070	41	0.0960
5-40	18	.1110	.1070	37	0.1010
6-32	14	.1425	.1385	31	0.1200
8-32	14	.1905	.1845	26	0.1470
10-24	1/8	.1905	.1845	17	0.1730
10-32	1/8	.1905	.1845	16	0.1770
12-24	1/8	.1905	.1845	8	0.1990
1/4-20	3/16	.2530	.2470	1	0.2280
5/16-18	3/16	.3155	.3095	L	0.2900
3/8-16	3/16	.3780	.3720	T	0.3580

Type U Drive Screw



Recommended Hole Sizes--Type-U Drive Screws		
Screw Size	Drill Size No.	Hole Diameter
00	55	.052
0	51	.067
2	44	.086
4	37	.104
6	31	.120
7	29	.136
8	27	.144
10	20	.161
12	11	.191
14	2	.221

High-Low

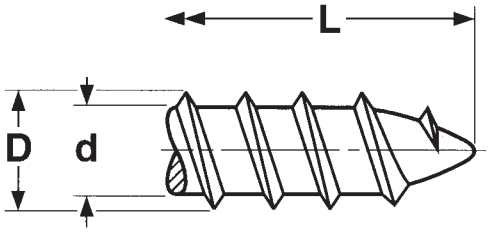


Suggested Hole Sizes -- High-Low Screws		
Nominal Screw Size & Number of Threads per Inch	Pilot Hole Diameter Flexural Modulus of Plastic	
	Up to 200,000 P.S.I.	200,000-400,000 P.S.I.
2-32	.0670	.0700
4-24	.0810	.0860
5-20	.0935	.0995
6-19	.1015	.1100
8-18	.1200	.1285
10-16	.1360	.1440
12-16	.1570	.1660
1/4-15	.1890	.2010

Type-A *Thread Forming* Self-Tapping Screws

1.3.1.4. Type A. Type A tapping screws shall have coarse spaced threads and a gimlet point. They are primarily intended for use in thin metal, resin impregnated plywood, and asbestos compositions. Type A screws are not recommended for new design and will be supplanted by Type AB screws. To expedite elimination of the necessity for perpetuating stocks of raw materials, tooling, and finished products, it is recommended that Type AB screws be used in all new designs and wherever possible substituted for Type A screws in existing designs.

F/N AA



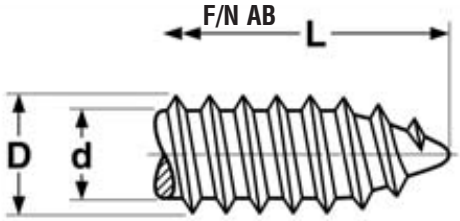
Threads For Self-Tapping Screws Type A

ASME B18.6.4-1998

Nominal Size or Basic Screw Diameter		Threads Per Inch	D		d		L		Minimum Torsional Strength, lb.-in. (STEEL SCREWS ONLY)
			Major Diameter		Minor Diameter		These Lengths or Shorter Have AB Threads		
			Max	Min	Max	Min	90° Heads	Csk Heads	
5	0.1250	20	.130	.126	.095	.090	3/16	1/4	18
6	0.1380	18	.141	.136	.102	.096	1/4	5/16	24
7	0.1510	16	.158	.152	.114	.108	5/16	3/8	30
8	0.1640	15	.168	.162	.123	.116	3/8	7/16	39
10	0.1900	12	.194	.188	.133	.126	3/8	1/2	48
12	0.2160	11	.221	.215	.162	.155	7/16	9/16	83
14	0.2420	10	.254	.248	.185	.178	1/2	5/8	125
20	0.3200	9	.333	.327	.234	.226	11/16	13/16	250
24	0.3720	9	.390	.383	.291	.282	3/4	1	492
Tolerance on Length				Up to 1" Incl.: ±0.03			Over 1": ±0.05		

Description	A thread forming tapping screw with wider spaced threads than a Type-AB and a gimlet point.
Applications/ Advantages	For self starting in thin (.015-.050 thick) metal or resin-filled plywood. 18-8 Stainless steel tapping screws may be used in applications which require general atmospheric corrosion resistance. Fastening stainless steel parts to aluminum or steel can cause a type of corrosion known as a galvanic couple in some environments.
Material	**Steel:** AISI 1016 - 1024 or equivalent steel. **Stainless:** Austenitic 18-8 stainless steel
Heat Treatment (Steel only)	Screws shall be quenched in liquid and then tempered by reheating to 650°F minimum.
Surface Hardness	**Steel:** Rockwell C45 minimum
Case Depth (Steel only)	No. 5 and 6 diameter: .002 - .007 No. 8 thru 12 diameter: .004 - .009 1/4" and larger: .005 - .011
Core Hardness (after tempering)	**Steel:** Rockwell C28 - 38
Plating	See Appendix-A for information on plating of steel screws.

Self-Tapping Screws *Thread Forming* Type-AB



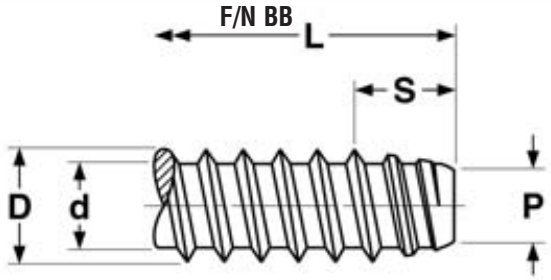
Threads For Self-Tapping Screws Type AB

ASME B18.6.4-1998

Nominal Size or Basic Screw Diameter		Threads Per Inch	D Major Diameter		d Minor Diameter		L Minimum Practical Screw Length		Minimum Torsional Strength, lb.- in. (STEEL SCREWS ONLY)
			Max	Min	Max	Min	90° Heads	Csk Heads	
2	.0860	32	.088	.082	.064	.060	3/16	7/32	4
3	.0990	28	.101	.095	.075	.071	3/16	1/4	9
4	.1120	24	.114	.108	.086	.082	7/32	9/32	13
5	.1250	20	.130	.123	.094	.090	1/4	5/16	18
6	.1380	20	.139	.132	.104	.099	9/32	11/32	24
7	.1510	19	.154	.147	.115	.109	5/16	3/8	30
8	.1640	18	.166	.159	.122	.116	5/16	3/8	39
10	.1900	16	.189	.182	.141	.135	3/8	7/16	56
12	.2160	14	.215	.208	.164	.157	7/16	21/32	88
1/4	.2500	14	.246	.237	.192	.185	1/2	19/32	142
5/16	.3125	12	.315	.306	.244	.236	5/8	3/4	290
3/8	.3750	12	.380	.371	.309	.299	3/4	29/32	590
Tolerance on Length				Up to 1" Incl.: ±0.03			Over 1": ±0.05		

Description	A thread forming tapping screw with spaced threads and a gimlet point
Applications/ Advantages	For self starting in thin metal or resin-filled plywood. Recommended over a Type-A, particularly in brittle materials.
Material	**Steel:** AISI 1016 - 1024 or equivalent steel. **Stainless:** 18-8 stainless steel.
Heat Treatment (Steel only)	Screws shall be quenched in liquid and then tempered by reheating to 650°F minimum.
Surface Hardness	**Steel:** Rockwell C45 minimum
Case Depth (Steel only)	No. 4 thru 6 diameter: .002 - .007 No. 8 thru 12 diameter: .004 - .009 1/4" and larger: .005 - .011
Core Hardness (after tempering)	**Steel:** Rockwell C28 - 38
Plating	See Appendix-A for plating information.

Self-Tapping Screws — *Thread Forming* — Type-B



THREADS FOR SELF-TAPPING SCREWS TYPE-B — ANSI B18.6.4

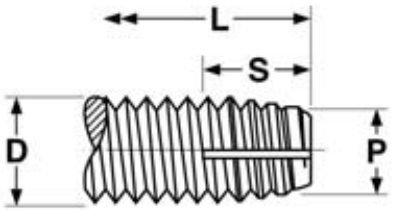
Nominal Size or Basic Screw Diameter		Threads Per Inch	D		d		P		S		L		Minimum Torsional Strength, lb.- in. (STEEL SCREWS ONLY)
			Major Diameter		Minor Diameter		Point Diameter		Point Taper Length		Minimum Practical Screw Length		
			Max	Min	Max	Min	Max	Min	Max	Min	90° Heads	Csk Heads	
2	.0860	32	.088	.082	.064	.060	.058	.054	.062	.047	5/32	3/16	4
3	.0990	28	.101	.095	.075	.071	.068	.064	.071	.054	3/16	7/32	9
4	.1120	24	.114	.108	.086	.082	.079	.074	.083	.063	3/16	1/4	13
5	.1250	20	.130	.123	.094	.090	.087	.082	.100	.075	7/32	9/32	18
6	.1380	20	.139	.132	.104	.099	.095	.089	.100	.075	1/4	9/32	24
7	.1510	19	.154	.147	.115	.109	.105	.099	.105	.079	1/4	5/16	30
8	.1640	18	.166	.159	.122	.116	.112	.106	.111	.083	9/32	11/32	39
10	.1900	16	.189	.182	.141	.135	.130	.123	.125	.094	5/16	3/8	56
12	.2160	14	.215	.208	.164	.157	.152	.145	.143	.107	11/32	7/16	88
1/4	.2500	14	.246	.237	.192	.185	.179	.171	.143	.107	3/8	1/2	142
5/16	.3125	12	.315	.306	.244	.236	.230	.222	.167	.125	15/32	19/32	290
3/8	.3750	12	.380	.371	.309	.299	.293	.285	.167	.125	17/32	11/16	590

Tolerance on Length	Up to 3/4 in., Incl.: -0.03	Over 3/4 to 1-1/2 in., Incl.: -0.05	Over 1-1/2 in.: -0.06

Description	A thread forming tapping screw with spaced threads and a blunt point with incomplete entering threads.
Applications/ Advantages	For molded or through holes in thin metal, non-ferrous castings, plastics or resin-filled plywood.
Material	**Steel**: AISI 1016 - 1024 or equivalent steel. **Stainless**: 18-8 Stainless steel
Heat Treatment (steel only)	Screws shall be quenched in liquid and then tempered by reheating to 650°F minimum.
Surface Hardness	**Steel:** Rockwell C45 minimum
Case Depth (steel only)	No. 4 thru 6 diameter: .002 - .007 No. 8 thru 12 diameter: .004 - .009 1/4" and larger: .005 - .011
Core Hardness (after tempering)	**Steel:** Rockwell C28 - 38
Plating	See Appendix-A for plating information.

Type-1 *Thread Cutting* Self-Tapping Screws

F/N T1



Threads and Points for Type 1 Thread Cutting Screws

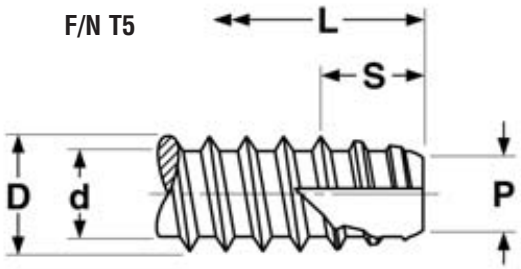
ASME B18.6.4-1998

Nominal Size or Basic Screw Diameter		Threads Per Inch	D		P	S				L				Minimum Torsional Strength, lb.-in.
			Major Diameter		Point Diameter	Point Taper Length				Determinant Length for Point Taper		Minimum Practical Nominal Screw Lengths		
						Short Screws		Long Screws						
			Max	Min	Ref	Max	Min	Max	Min	90° Heads	Csk Heads	90° Heads	Csk Heads	
2	.0860	56	.0860	.0813	.068	.062	.045	.080	.062	5/32	3/16	5/32	3/16	5
4	.1120	40	.1120	.1061	.087	.088	.062	.112	.088	7/32	1/4	3/16	1/4	13
6	.1380	32	.1380	.1312	.107	.109	.078	.141	.109	1/4	5/16	1/4	5/16	23
8	.1640	32	.1640	.1571	.132	.109	.078	.141	.109	1/4	11/32	1/4	5/16	42
10	.1900	24	.1900	.1818	.148	.146	.104	.188	.146	11/32	7/16	5/16	13/32	56
10	.1900	32	.1900	.1831	.158	.109	.078	.141	.109	1/4	11/32	1/4	5/16	74
12	.2160	24	.2160	.2078	.174	.146	.104	.188	.146	11/32	7/16	5/16	13/32	93
1/4	.2500	20	.2500	.2408	.200	.175	.125	.225	.175	13/32	17/32	3/8	1/2	140
5/16	.3125	18	.3125	.3026	.257	.194	.139	.250	.194	15/32	19/32	7/16	9/16	306
3/8	.3750	16	.3750	.3643	.312	.219	.156	.281	.219	1/2	11/16	15/32	5/8	560
Tolerance on Length			Up to 3/4 in., Incl.: -0.03			Over 3/4 to 1-1/2 in., Incl.: -0.05				Over 1-1/2 in.: -0.06				

Description	A thread cutting screw with machine screw thread pitch, blunt point, tapered entering threads and a single cutting edge.
Applications/ Advantages	May be used in steel sheets, structural shapes, special alloy steels, cast iron, brass or plastics.
Material	AISI 1016 - 1024 or equivalent steel
Heat Treatment	Screws shall be quenched in liquid and then tempered by reheating to 650°F minimum.
Surface Hardness	Rockwell C45 minimum
Case Depth	No. 4 thru 6 diameter: .002 - .007 No. 8 thru 10 diameter: .004 - .009 1/4" diameter and larger: .005 - .011
Core Hardness (after tempering)	Rockwell C28 - 38
Plating	See Appendix-A for plating information.

Type-25 *Thread Cutting* Self-Tapping Screws

F/N T5



THREADS FOR THREAD CUTTING SCREWS TYPE 25 — ASME B18.6.4-1998

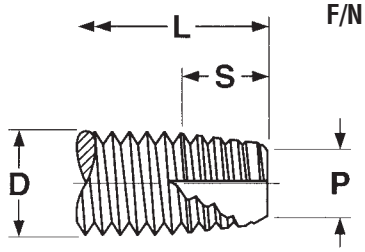
Nominal Size or Basic Screw Diameter		Threads Per Inch	D		d		P	S		L		Minimum Torsional Strength, lb.- in.
			Major Diameter		Minor Diameter		Point Diameter	Point Taper Length		Minimum Practical Screw Length		
			Max	Min	Max	Min	Ref	Max	Min	90° Heads	Csk Heads	
2	.0860	32	.088	.082	.064	.060	.058	.062	.047	5/32	3/16	4
4	.1120	24	.114	.108	.086	.082	.079	.083	.063	3/16	1/4	13
5	.1250	20	.130	.123	.094	.090	.087	.100	.075	7/32	9/32	18
6	.1380	20	.139	.132	.104	.099	.095	.100	.075	1/4	9/32	24
8	.1640	18	.166	.159	.122	.116	.112	.111	.083	9/32	11/32	39
10	.1900	16	.189	.182	.141	.135	.130	.125	.094	5/16	3/8	56
12	.2160	14	.215	.208	.164	.157	.152	.143	.107	11/32	7/16	88
14	.2500	14	.246	.237	.192	.185	.179	.143	.107	3/8	1/2	142
5/16	.3125	12	.315	.306	.244	.236	.230	.167	.125	15/32	19/32	290
3/8	.3750	12	.380	.371	.309	.299	.293	.167	.125	17/32	11/16	590

Tolerance on Length	Up to 3/4 in., Incl.: -0.03	Over 3/4 to 1-1/2 in., Incl.: -0.05

Description	A thread cutting screw with spaced threads, a blunt point, tapered entering threads, a single wide cutting edge, and a chip cavity.
Applications/ Advantages	For molded or through holes in plastics and other soft materials. Provides excellent chip clearing capability.
Material	AISI 1016 - 1024 or equivalent steel.
Heat Treatment	Screws shall be quenched in liquid and then tempered by reheating to 650°F minimum.
Surface Hardness	Rockwell C45 minimum
Case Depth	No. 4 thru 6 diameter: .002 - .007 No. 8 thru 10 diameter: .004 - .009 1/4" diameter and larger: .005 - .011
Core Hardness (after tempering)	Rockwell C28 - 38
Plating	See Appendix-A for plating information.

Self-Tapping Screws — *Thread Cutting* — Type-23

F/N T3



Threads and Points for Type 23 Thread Cutting Screws

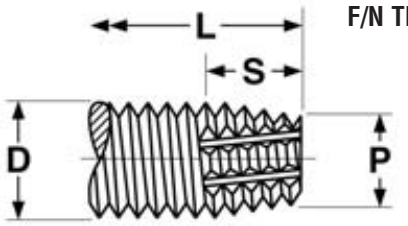
ASME B18.6.4-1998

Nominal Size or Basic Screw Diameter		Threads Per Inch	D		P	S				L				Minimum Torsional Strength, lb.-in.
			Major Diameter		Point Diameter	Point Taper Length				Determinant Length for Point Taper		Minimum Practical Nominal Screw Lengths		
						Short Screws		Long Screws						
			Max	Min	Ref	Max	Min	Max	Min	90° Heads	Csk Heads	90° Heads	Csk Heads	
2	.0860	56	.0860	.0813	.068	.062	.045	.080	.062	5/32	3/16	5/32	3/16	5
4	.1120	40	.1120	.1061	.087	.088	.062	.112	.088	7/32	1/4	3/16	1/4	13
5	.1250	40	.1250	.1191	.100	.088	.062	.112	.088	7/32	9/32	3/16	1/4	18
6	.1380	32	.1380	.1312	.107	.109	.078	.141	.109	1/4	5/16	1/4	5/16	23
8	.1640	32	.1640	.1571	.132	.109	.078	.141	.109	1/4	11/32	1/4	5/16	42
10	.1900	24	.1900	.1818	.148	.146	.104	.188	.146	11/32	7/16	5/16	13/32	56
10	.1900	32	.1900	.1831	.158	.109	.078	.141	.109	1/4	11/32	1/4	5/16	74
12	.2160	24	.2160	.2078	.174	.146	.104	.188	.146	11/32	7/16	5/16	13/32	93
1/4	.2500	20	.2500	.2408	.200	.175	.125	.225	.175	13/32	17/32	3/8	1/2	140
5/16	.3125	18	.3125	.3026	.257	.194	.139	.250	.194	15/32	19/32	7/16	9/16	306
3/8	.3750	16	.3750	.3643	.312	.219	.156	.281	.219	1/2	11/16	15/32	5/8	560

Tolerance on Length	Up to 3/4 in., Incl.: -0.03	Over 3/4 to 1-1/2 in., Incl.: -0.05	Over 1-1/2 in.: -0.06

Description	A thread cutting screw with machine screw thread pitch, a blunt point, tapered entering threads, a single wide cutting edge, and a chip cavity.
Applications/ Advantages	For cast iron and zinc, aluminum die castings, and plastics. Provides excellent chip clearing with minimum tightening torques.
Material	AISI 1016 - 1024 or equivalent steel.
Heat Treatment	Screws shall be quenched in liquid and then tempered by reheating to 650°F minimum.
Surface Hardness	Rockwell C45 minimum
Case Depth	No. 4 thru 6 diameter: .002 - .007 No. 8 thru 12 diameter: .004 - .009 1/4" diameter and larger: .005 - .011
Core Hardness (after tempering)	Rockwell C28 - 38
Plating	See Appendix-A for plating information.

Self-Tapping Screws — *Thread Cutting* — Type-F



F/N TF

Threads and Points for Type-F Thread Cutting Screws

ASME B18.6.4-1998

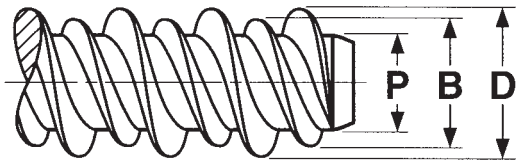
Nominal Size or Basic Screw Diameter		Threads Per Inch	D		P	S				L				Minimum Torsional Strength, lb.-in. (STEEL SCREWS ONLY)
			Major Diameter		Point Diameter	Point Taper Length				Determinant Length for Point Taper		Minimum Practical Screw Lengths		
						Short Screws		Long Screws						
			Max	Min	Ref	Max	Min	Max	Min	90° Heads	Csk Heads	90° Heads	Csk Heads	
2	.0860	56	.0860	.0813	.068	.062	.045	.080	.062	5/32	3/16	5/32	3/16	5
4	.1120	40	.1120	.1061	.087	.088	.062	.112	.088	7/32	1/4	3/16	1/4	13
5	.1250	40	.1250	.1191	.100	.088	.062	.112	.088	7/32	9/32	3/16	1/4	18
6	.1380	32	.1380	.1312	.107	.109	.078	.141	.109	1/4	5/16	1/4	5/16	23
8	.1640	32	.1640	.1571	.132	.109	.078	.141	.109	1/4	11/32	1/4	5/16	42
10	.1900	24	.1900	.1818	.148	.146	.104	.188	.146	11/32	7/16	5/16	13/32	56
10	.1900	32	.1900	.1831	.158	.109	.078	.141	.109	1/4	11/32	1/4	5/16	74
12	.2160	24	.2160	.2078	.174	.146	.104	.188	.146	11/32	7/16	5/16	13/32	93
1/4	.2500	20	.2500	.2408	.200	.175	.125	.225	.175	13/32	17/32	3/8	1/2	140
5/16	.3125	18	.3125	.3026	.257	.194	.139	.250	.194	15/32	19/32	7/16	9/16	306
3/8	.3750	16	.3750	.3643	.312	.219	.156	.281	.219	1/2	11/16	15/32	5/8	560
1/2	.5000	13	.5000	.4876	.423	.269	.192	.346	.269	5/8	25/32	19/32	3/4	1075

Tolerance on Length	Up to 3/4 in., incl.: -0.03	Over 3/4 to 1-1/2 in., incl.: -0.05	Over 1-1/2 in.: -0.06

Description	A thread cutting screw with machine screw thread pitch, blunt point, tapered entering threads and multiple cutting edges.
Applications/ Advantages	Steel thread-cutters are used in heavy gauge sheet metal, aluminum, zinc and lead die castings, cast iron, brass and plastic. Stainless screws offer additional resistance to corrosion, 18-8 moreso than 410. When using any thread-cutting screw, the material in which the threads are cut should have a lower hardness by at least 10 to 20 Rockwell hardness points.
Material	**Steel:** AISI 1016 - 1024 or equivalent steel. **Stainless:** 410 martensitic stainless steel or 18-8 stainless steel.
Heat Treatment	**Steel:** Screws shall be quenched in liquid and then tempered by reheating to 650° F minimum **Stainless:** Screws shall be annealed by heating to 1850 - 1950°F, held at least for 1/2 hour and rapid air- or oil-quenched then reheating to 525°F minimum for at least 1 hour and air cooled to provide the required tensile, yield and hardness properties.
Surface Hardness	**Steel:** Rockwell C45 minimum
Case Depth (steel)	No. 4 thru 6 diameter: .002 - .007 No. 8 thru 12 diameter: .004 - .009 1/4" diameter & larger: .005 - .011
Core Hardness	**Steel (after tempering):** Rockwell C28 - 38 **410 Stainless:** Rockwell C38 - 42; **18-8 Stainless:** Rockwell B90 - C20
Plating	See Appendix-A for information on plating of steel thread cutting screws.

Self-Tapping Screws — *Thread Forming* — High-Low Style

F/N TR



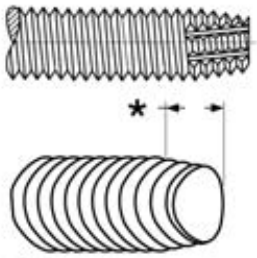
THREAD AND HOLE DIMENSIONS FOR HIGH-LOW THREAD FORMING SCREWS						Elco*, ANSI B18.6.4
Screw Size	D	B	P	Pilot Hole Diameter Flexural Modulus of Plastic		Minimum Torsional Strength, lb. in. (STEEL SCREWS ONLY)
	High Thread Diameter	Low Thread Diameter	Point Diameter	Up to 200,000 P.S.I.	200,000-400,000 P.S.I.	
2-32	.084-.090	.069	.050-.058	.0670	.0700	-
4-24	.105-.115	.086	.061-.070	.0810	.0860	4
5-20	.119-.125	.100	.073-.082	.0935	.0995	9
6-19	.135-.145	.108	.080-.090	.1015	.1100	13
8-18	.160-.170	.130	.095-.105	.1200	.1285	18
10-16	.185-.195	.145	.099-.110	.1360	.1440	30
12-16	.210-.220	.167	.125-.137	.1570	.1660	39
1/4-15	.250-.260	.200	.161-.175	.1890	.2010	56
Tolerance on Length			Up to 1 in., Incl.: +0, -3/64		Over 1 in.: +0, -1/16	

Description	A thread forming screw with a double-lead, consisting of a high and low thread. The lower thread varies in height from 1/3 to 1/2 that of the higher thread, which is sharper and flatter than a standard thread.
Applications/ Advantages	For use in plastic, nylon, wood or other low-density materials. Thread design reduces driving torques, enhances resistance to thread stripping, improves pullout strength and lessens risk of cracking the work piece.
Material	**Steel:** 1019-1022 or equivalent steel. **Stainless:** 410 martensitic stainless steel
Heat Treatment	**Steel:** Screws shall be quenched in liquid and then tempered by reheating to 650°F minimum. Stainless: Screws shall be annealed by heating to 1850-1950°F, held at least 1/2 hour and rapid air- or oil-quenched then reheating to 525°F minimum for at least 1 hour and air cooled to provide the required tensile, yield and hardness properties.
Case Hardness	**Steel:** Rockwell C45 - 50
Case Depth (steel)	No. 2 thru 6 diameter: .002 - .007 No. 8 thru 12 diameter: .004 - .009 1/4" diameter: .005 - .011
Core Hardness (after tempering)	**Steel:** Rockwell C28 - 36 Stainless: Rockwell C38 - 42
Plating	See Appendix-A

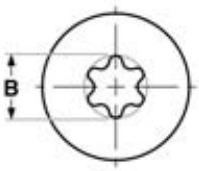
*Elco is the original writer of high-low screw dimensions.

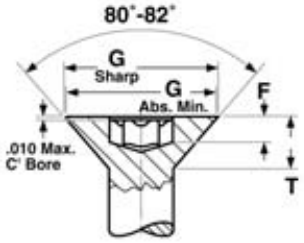
Type-F *Floorboard Screws* Self-Tapping Screws

F/N TF



*2-3 Pitch Lead Length





TORX® DRIVE FLAT HEADS (FLOORBOARD)

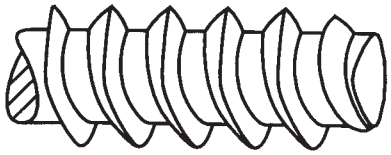
Nominal Size or Basic Screw Diameter		G		T	B	F	Drive Size
		Head Dimensions			Recess Dimensions		
		Max Sharp	Abs. Min	Ref	Ref	Gauge Penetration Min	
8	.164	.332	.292	.100	.132	.040	T15
10	.190	.385	.340	.116	.155	.050	T20
12	.216	.438	.389	.132	.178	.055	T25
1/4	.2500	.520	.452	.160	.221	.060	T30
5/16	.3125	.648	.568	.199	.266	.090	T40
3/8	.375	.762	.685	.230	.266	.115	T40
1/2**	.500	.875	.775	.223	.352	.119	T50

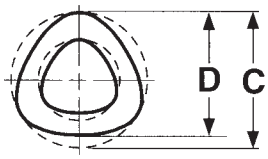
**1/2 inch diameter floorboard screws are supplied as trilobular thread rolling screws.

Description	A countersunk, torx® drive thread cutting screw with machine screw thread pitch, blunt point, tapered entering threads, and multiple cutting edges. Larger diameter sizes may also be supplied as a thread rolling screw rather than thread cutting. Floorboard screws are, by definition, available in much longer sizes than standard type-F screws.
Applications/ Advantages	Floorboard screws are specifically designed for installing wood floors into truck trailers.
Material	AISI 1016 - 1024 or equivalent steel
Heat Treatment	Screws shall be quenched in liquid and then tempered by reheating to 650°F minimum.
Surface Hardness	Rockwell C45 minimum
Case Depth	No. 8 thru 12 diameter: .004 - .009 1/4" diameter & larger: .005 - .011
Core Hardness (after tempering)	Rockwell C28 - 38
Thread Dimensions	**#8 thru 3/8" diameters:** Same as those for Type-F thread cutting screws. **1/2" diameter:** Same as those for a thread rolling screw.
Plating	See Appendix-A for information on the plating of floorboard screws.

Self-Tapping Screws — *Thread Rolling* — Plastite® 48-2

F/N TL





PLASTITE® 48-2 THREAD ROLLING SCREWS — Reminc

Nominal Screw Size and Threads Per Inch	C: Diameter of Circumscribing Circle		D: Measurements Across Center		Minimum Out-Of-Round	Recommended Pilot Hole Sizes	
	Max	Min	Max	Min		Soft Ductile Materials	Brittle Materials
2 - 28	.092	.086	.089	.083	.002	.076	.080
3 - 24	.110	.104	.106	.100	.002	.088	.094
4 - 20	.127	.121	.123	.117	.002	.100	.106
5 - 20	.136	.132	.133	.129	.002	-	-
6 - 19	.147	.141	.143	.137	.003	.122	.128
8 - 16	.185	.179	.179	.173	.004	.149	.158
10 - 14	.212	.206	.208	.202	.004	.175	.185
12 - 14	.232	.226	.226	.220	.005	.195	.205
1/4 - 10	.276	.270	.268	.262	.006	.224	.240
Tolerance on Length	Thru 3/4": ±.030"				Over 3/4": ±.050"		

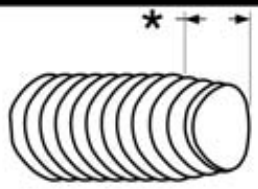
Note: The manufacturer does not offer a pilot hole size recommendation for the #5 diameter.

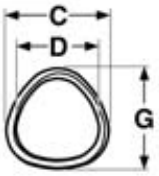
Description	Trilobular thread-rolling screw with extra wide spacing between 48° profile threads; twin lead threads with a 1-2 thread point taper.
Applications/ Advantages	Thermoplastics, engineering resins and certain thermosets. Sharper thread profile increases holding strength while reducing material displacement. Drive and strip torques are higher, reducing the need for inserts or reinforcing clips.
Material	AISI 1022 steel
Heat Treatment	Screws shall be quenched in liquid and then tempered by reheating to 650°F minimum.
Case Hardness	Rockwell C45 minimum
Case Depth	No. 2 thru 6 diameters: .002 - .007 No. 8 thru 10 diameters: .004 - .009 1/4" diameter: .005 - .011
Core Hardness (after tempering)	Rockwell C28-38
Plating	See Appendix-A for information on the plating of Plastites®.

®Plastite is a registered trademark of REMINC (Research Engineering & Manufacturing Inc.)

Taptite® II *Thread Rolling* Self-Tapping Screws

F/N TR





*2-3 Pitch Lead Length

TAPTITE® II THREAD ROLLING SCREWS

Reminc

Nominal Screw Width	C		D		G
	Screw Body Dimensions				Point
	Diameter of Circumscribing Circle		Measurement Across Center		Diameter of Circumscribing Circle
	Max	Min	Max	Min	Max
2-56	.0875	.0835	.0840	.0800	.070
3-48	.1010	.0970	.0970	.0930	.081
4-40	.1145	.1105	.1095	.1055	.090
5-40	.1275	.1235	.1225	.1185	.103
6-32	.1410	.1350	.1350	.1290	.111
8-32	.1670	.1610	.1610	.1550	.137
10-24	.1940	.1880	.1860	.1800	.153
10-32	.1930	.1870	.1870	.1810	.163
12-24	.2200	.2140	.2120	.2060	.179
1/4-20	.2550	.2490	.2450	.2390	.206
5/16-18	.3180	.3120	.307	.301	.264
3/8-16	.3810	.3750	.3685	.3625	.320
1/2-13	.5075	.5015	.4920	.4860	.432

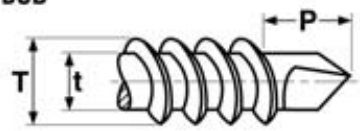
Tolerance on Length	Nominal Screw Size	Nominal Screw Length			
		To 1/2" Incl.	Over 1/2" to 1" Incl.	Over 1" to 2" Incl.	Over 2"
	#2 - #12	+0, -.020	+0, -.030	+0, -.060	+0, -.090
	1/4" - 1/2"	+0, -.030	+0, -.030	+0, -.060	+0, -.090

Description	Trilobular thread rolling screw. As each lobe of the screw moves through the pilot hole in the nut material, it forms and work-hardens the nut thread metal, producing an uninterrupted grain flow.	
Applications/ Advantages	For drilled, punched or corred holes in all ductile metals and punch extruded metals. Eliminates chips, requires low drive torque and provides excellent resistance to vibrational loosening.	
Material	*Steel*	*Stainless*
	Steel thread rolling screws shall be made from cold-heading steel conforming to the following chemical composition: *Carbon*: 0.13-0.27%; *Manganese*: 0.64-1.71%	**18-8:** 18-8 stainless steel **410:** 410 austenitic stainless steel
Heat Treatment	Screws shall be quenched in liquid and then tempered by reheating to 650°F minimum.	**410:** Screws shall be annealed by heating to 1850 - 1950°F, held at least for 1/2 hr & rapid air- or oil-quenched; then reheated to 525°F min. for at least 1 hr & air cooled to provide the required mechanical properties.
Case Hardness	Rockwell C45 minimum	
Case Depth	2-56 through 6-32 diameters: .002 - .007 8-32 through 12-24 diameters: .004 - .009 1/4-20 diameter & larger: .005 - .011	
Core Hardness (after tempering)	Rockwell C28-38	**18-8:** Rockwell B90 - C20 **410:** Rockwell C38 - 42
Plating	Steel Taptite II screws are typically supplied zinc & waxed	Stainless thread rolling screws are supplied passivated and waxed.

®Taptite II is a registered trademark of REMINC (Research Engineering & Manufacturing Inc.)

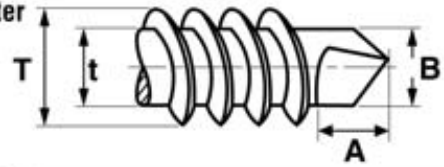
Self-Tapping (TEK) Screws — *Self-Drilling* — Type-BSD Type-CSD

Type-BSD



5/16 & 3/8 Diameter #3 Point

F/N SD



Self-Drilling Screws, Type BSD

*SAE J78-1998

Nominal Size or Basic Screw Diameter		Threads Per Inch	T Major Diameter Max	T Major Diameter Min	t Minor Diameter Max	t Minor Diameter Min	P Protrusion Allowance #2 Pt.	P Protrusion Allowance #3 Pt.	Minimum Practical Nominal Screw Lengths, Formed Points 90° Head, #2 Pt	Csk Head, #2 Pt	90° Head, #3 Pt	Csk Head, #3 Pt	Minimum Torsional Strength, lb.- in. (STEEL SCREWS ONLY)
4	.1120	24	.114	.110	.086	.082	.163	-	5/16	3/8	-	-	14
6	.1380	20	.139	.135	.104	.099	.190	.220	5/16	3/8	3/8	7/16	24
7*	.1510	19	.153	.146	.113	.109	.137	.157	5/16	3/8	3/8	7/16	-
8	.1640	18	.166	.161	.122	.116	.211	.251	3/8	7/16	7/16	1/2	42
10	.1900	16	.189	.183	.141	.135	.235	.300	7/16	1/2	1/2	9/16	61
12	.2160	14	.215	.209	.164	.157	.283	.353	1/2	5/8	1/2	5/8	92
1/4	.2500	14	.246	.240	.192	.185	.318	.393	1/2	5/8	1/2	5/8	150

*SAE J78 does not include specifications for #7 diameter drill screws.

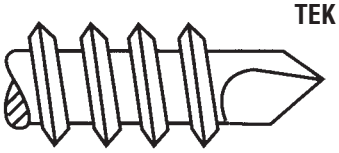
Coarse Thread Self Drilling Screws - 5/16 & 3/8 Diameters, #3 Point

Nominal Size or Basic Screw Diameter		Threads Per Inch	T Major Diameter Max	T Major Diameter Min	t Minor Diameter Max	t Minor Diameter Min	A Drill Point Length Max	A Drill Point Length Min	B Drill Point Diameter Max	B Drill Point Diameter Min
5/16	.3125	12	.315	.307	.272	.263	.421	.361	.270	.265
3/8	.3750	12	.380	.370	.308	.298	.354	.314	.338	.330

	Steel	*Stainless*
Description	*Type BSD:* A tapping screw with spaced threads and a drill point which drills its own hole. *Type CSD:* A wafer head thread forming screw with machine screw thread pitch and a drill point which drills its own hole. Both types allow the screw to form mating threads and produce a complete fastening system in a single operation.	
Applications/ Advantages	*Type BSD:* May be used to attach plywood, soft woods or composition board to metal, or attach metal to metal. *Type CSD:* The finer thread pitch reduces friction and driving torques. Type-CSD screws are normally used with thicker materials. The wafer head design allows the screw to set flush in wood and softer materials and provides a clean, finished appearance. All self-drilling screws offer economical benefits: reduces labor and tooling costs; reduces or eliminates drill bits and taps.	*Type BSD:* The 18-8 stainless drill screw offers superior corrosion resistance while the 410 stainless screw will drill through harder material than the 18-8. The hardness of the material to be drilled should be a minimum of 10-20 Rockwell hardness points. Minimum torques are the same for stainless and steel self-drill screws. Drill time is 2.5 seconds for a 1mm thick plate.
Material	AISI 1016 - 1024 or equivalent steel	410 or 18-8 stainless steel
Heat Treatment	Screws shall be quenched in liquid and then tempered by reheating to 625°F minimum.	410 stainless screws shall be hardened and tempered by heating to 1800°-1900°F sufficient for austenitization, held for at least 1/2 hour and rapid air or oil-quenched then reheating to 500°-600°F for at least 1 hour and air cooled to provide the specified hardness.
Case Hardness	Rockwell C52 -58	**410 SS:** Rockwell C55 minimum
Case Depth	No. 4 and 6 diameter: .002 - .007 No. 8 thru 12 diameter: .004 - .009 1/4" diameter and larger: .005 - .011	(not tested)
Core Hardness	Rockwell C32 - 40 (after tempering)	**410 SS**: Rockwell C38 - 42 (after tempering) **18-8 SS**: Rockwell B90 - C25 (approx.)
Plating	See Appendix-A for plating information.	Stainless drill screws are usually supplied plain.

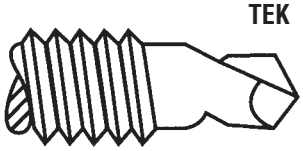
Type-BSD Type-CSD *Self-Drilling* Self-Tapping Screws

TEK



F/N SD

TEK



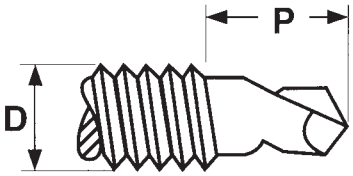
Type BSD Self-Drilling Screw Selection Chart

Nominal Screw Size	Point Number	Recommended Panel Thickness, in.	
		Min.	Max.
6	2	.035	.090
8	2	.035	.100
10	2	.035	.110
10	3	.110	.175
12	3	.110	.210
1/4	3	.110	.220
This table is only a guide and does not constitute a warranty of any type.			

Type CSD Self Drilling Screw Selection Chart

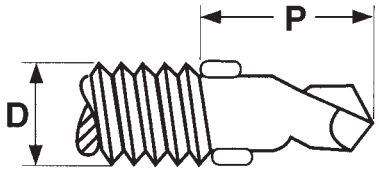
Screw Size	Maximum Drilling Capacity*
10-24 x 3/4"	1/4" Plywood to .175 Metal
10-24 x 1"	3/8" Plywood to .175 Metal
10-24 x 1-1/4"	1/2" Plywood to .175 Metal
10-24 x 1-1/2"	1/2" Plywood to .175 Metal
10-24 x 1-7/16"	5/8 & 3/4" Wood to .175 Metal
*Drilling capacity may vary with type of material & hardness.	

Type-CSD



Reamer with Wings (Type(CSD)

TEK



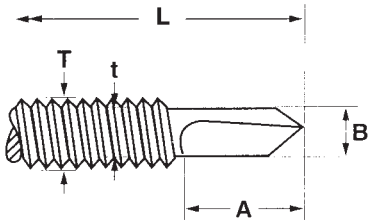
Self-Drilling Screws, Type CSD SAE J78-1998

Nominal Size or Basic Screw Diameter		Threads Per Inch	D		P		Minimum Practical Nominal Screw Lengths, Formed Points				Minimum Torsional Strength, lb.- in. (STEEL SCREWS ONLY)
			Major Diameter		Protrusion Allowance		Countersunk Heads		90° Heads		
			Max	Min	#2 Pt	#3 Pt	#2 Pt	#3 Pt	#2 Pt	#3 Pt	
10	.1900	24	.1900	.1834	.193	.258	1/2	9/16	7/16	9/16	65
12	.2160	24	.2160	.2094	.223	.293	5/8	5/8	1/2	21/32	100

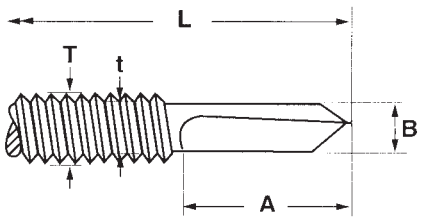
Description	*Reamer with Wings:* A Type CSD self-drilling screw with reaming wings located at opposite sides of the shank, below the threads and above the drill point.
Applications/ Advantages	May be used for drilling through wood over 1/2" thick and the metal surface behind it. The wings drill out a clearance hole in wood or other soft materials, then snap off when in contact with the metal surface to be drilled.
Mechanical & Performance Requirements	Same as other Type CSD self-drilling screws.

Self-Tapping (TEK) Screws — *Self-Drilling* — #4 &#5 Point with Unified Thread

F/N SD



#4 Point



#5 Point

#4 & #5 Point Self Drilling Screws, Unified Thread Pitch

Diameter & Thread Pitch	L	Point Size	T		t		A		B		Drilling Capacity		Performance Info		
	Length (+0, -.050)		Major Thread Diameter		Minor Thread Diameter		Drill Point Length		Drill Point Diameter				Steel Gauge	Shear Strength (lapped steel) (lbs.)	Pullout Strength (lbs.)
			Max	Min	Max	Min	Max	Min	Max	Min	Max	Min			
12-24	7/8	#4	.216	.207	.172	.168	.523	.495	.202	.190	.312	.145	12	2000	1500
12-24	1 1/4	#5	.216	.207	.172	.168	.655	.603	.202	.190	.500	.250	1/8	2700	2200
													1/4	2760	4000
Tolerance on Length			7/8" length: ± .04				1 1/4" length: ± .05								

NOTE: There is no single standard for #4 & #5 self-drilling screws. These values are offered as a guide; deviations from these specifications may occur.

Description	A tapping screw with an integrally formed hex washer head, spaced threads and a drill point significantly longer than that of a # 2 or #3 point drill screw.
Applications/ Advantages	Designed to drill through a greater thickness of steel than a standard self drilling screw. Although it can assist in attaching metal deck to structural steel, the #4 & #5 point self drilling screws are not structural bolts and should not be used as such.
Material	AISI 1022 or equivalent steel
Heat Treatment	Screws shall be quenched in liquid and then tempered by reheating to 625°F minimum.
Case Hardness	Rockwell C50 - 56
Case Depth	No. 12 diameter: .004 - .009
Core Hardness (after tempering)	Rockwell C32 - 40
Shear Strength	The average ultimate values for shear strength are listed in the above table. Safety factors should be used when designing final applications.
Pull-out Strength	The average ultimate values for pull-out strength are listed in the above table. Safety factors should be used when designing final applications.
Plating	See Appendix-A for plating information.

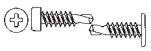
SELF-DRILLING SCREWS

BUGLE PHILLIPS (TEK)

BUGLE PHILLIPS (TEK)
F/N SDDW

Part No.	Description (Inches)
TEKD#060016STLZN	6 x 1 Drywall TEK, ZN
TEKD#060018STLZN	6 x 1-1/8 Drywall TEK, ZN
TEKD#060020STLZN	6 x 1-1/4 Drywall TEK, ZN
TEKD#060022STLZN	6 x 1-3/8 Drywall TEK, ZN
TEKD#060026STLZN	6 x 1-5/8 Drywall TEK, ZN
TEKD#060028STLZN	6 x 1-3/4 Drywll TEK, ZN
TEKD#060030STLZN	6 x 1-7/8 Drywall TEK, ZN
TEKD#070016STLZN	7 x 1 Drywall TEK, ZN
TEKD#070018STLZN	7 x 1-1/8 Drywall TEK, ZN
TEKD#070022STLZN	7 x 1-3/8 Drywall TEK, ZN
TEKD#070024STLZN	7 x 1-1/2 Drywall TEK, ZN
TEKD#070026STLZN	7 x 1-5/8 Drywall TEK, ZN
TEKD#070028STLZN	7 x 1-3/4 Drywall TEK, ZN
TEKD#070030STLZN	7 x 1-7/8 Drywall TEK, ZN
TEKD#080038STLZN	8 x 2-3/8 Drywall TEK, ZN
TEKD#080042STLZN	8 x 2-5/8 Drywall TEK, ZN
TEKD#080048STLZN	8 x 3 Drywall TEK, ZN

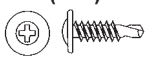
PAN FRAMING/ PANCAKE FRAMING (TEK)



PAN FRAMING/
PANCAKE FRAMING
F/N SDPC

Part No.	Description (Inches)
23Z	7 x 7/16 Pan Framing TEK Zinc
35F	10 x 5/8 Pancake Head TEK, ZN

K-LATH (TEK)



K-LATH
F/N SDPM

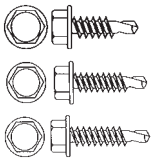
Part No.	Description (Inches)
TEKM#080008STLZN	8 x 1/2 P MOD TH TEK, ZN
TEKM#080012STLZN	8 x 3/4 P MOD TH TEK, ZN
TEKM#080016STLZN	8 x 1 P MOD TH TEK, ZN
TEKM#080020STLZN	8 x 1-1/4 P MOD TH TEK, ZN
TEKM#080026STLZN	8 x 1-5/8 P MOD TH TEK, ZN
TEKM#080030STLZN	8 x 1-7/8 P MOD TH TEK, ZN

PAN PHILLIPS (TEK)

PAN PHILLIPS (TEK)
F/N SDPP

Part No.	Description (Inches)
TEKP#060006STLZN	6 x 3/8 PPHTEK, ZN
TEKP#060008STLZN	6 x 1/2 PPHTEK, ZN
TEKP#060010STLZN	6 x 5/8 PPHTEK, ZN
TEKP#060012STLZN	6 x 3/4 PPHTEK, ZN
TEKP#060016STLZN	6 x 1 PPHTEK, ZN
TEKP#060020STLZN	6 x 1-1/4 PPHTEK, ZN
TEKP#060024STLZN	6 x 1-1/2 PPHTEK, ZN
TEKP#070008STLZN	7 x 1/2 PPHTEK, ZN
TEKP#080006STLZN	8 x 3/8 PPHTEK, ZN
TEKP#080008STLZN	8 x 1/2 PPHTEK, ZN
TEKP#080010STLZN	8 x 5/8 PPHTEK, ZN
TEKP#080012STLZN	8 x 3/4 PPHTEK, ZN
TEKP#080014STLZN	8 x 7/8 PPHTEK, ZN
TEKP#080016STLZN	8 x 1 PPHTEK, ZN
TEKP#080020STLZN	8 x 1-1/4 PPHTEK, ZN
TEKP#080024STLZN	8 x 1-1/2 PPHTEK, ZN
TEKP#080032STLZN	8 x 2 PPHTEK, ZN
TEKP#100008STLZN	10 x 1/2 PPHTEK, ZN
TEKP#100010STLZN	10 x 5/8 PPHTEK, ZN
TEKP#100012STLZN	10 x 3/4 PPHTEK, ZN
TEKP#100016STLZN	10 x 1 PPHTEK, ZN
TEKP#100020STLZN	10 x 1-1/4 PPHTEK, ZN
TEKP#100024STLZN	10 x 1-1/2 PPHTEK, ZN
TEKP#100032STLZN	10 x 2 PPHTEK, ZN
TEKP#100040STLZN	10 x 2-1/2 PPHTEK, ZN
TEKP#120016STLZN	12 x 1 PH PAN HD TEK, ZN
TEKP#140012STLZN	14 x 3/4 PPH TEK, ZN
TEKP#140016STLZN	14 x 1 PPH TEK, ZN

HEX WASHER HEAD (TEK)



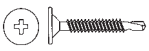
1/4" HEX A/F
F/N SDHW

5/16" HEX A/F
F/N SDHW

3/8" HEX A/F
F/N SDHW

Part No.	Description (Inches)
TEKH#060006STLZN	6 x 3/8 HX W/HD TEK, ZN
TEKH#060008STLZN	6 x 1/2 HX W/HD TEK, ZN
TEKH#060010STLZN	6 x 5/8 HX W/HD TEK, ZN
TEKH#060012STLZN	6 x 3/4 HX W/HD TEK, ZN
TEKH#060016STLZN	6 x 1 HX W/HD TEK, ZN
TEKH#060020STLZN	6 x 1-1/4 HX W/HD TEK, ZN
TEKH#060024STLZN	6 x 1-1/2 HX W/HD TEK, ZN
TEKH#080006STLZN	8 x 3/8 HX W/HD TEK, ZN
TEKH#080008STLZN	8 x 1/2 HX W/HD TEK, ZN
TEKH#080010STLZN	8 x 5/8 HX W/HD TEK, ZN
TEKH#080012STLZN	8 x 3/4 HX W/HD TEK, ZN
TEKH#080016STLZN	8 x 1 HX W/HD TEK, ZN
TEKH#080020STLZN	8 x 1-1/4 HX W/HD TEK, ZN
TEKH#080024STLZN	8 x 1-1/2 HX W/HD TEK, ZN
TEKH#080026STLZN	8 x 1-5/8 HX W/HD TEK, ZN
TEKH#080028STLZN	8 x 1-3/4 HX W/HD TEK, ZN
TEKH#080032STLZN	8 x 2 HX W/HD TEK, ZN
TEKH#100008STLZN	10 x 1/2 HX W/HD TEK, ZN
TEKH#100010STLZN	10 x 5/8 HX W/HD TEK, ZN
TEKH#100012STLZN	10 x 3/4 HX W/HD TEK, ZN
TEKH#100016STLZN	10 x 1 HX W/HD TEK, ZN
TEKH#100020STLZN	10 x 1-1/4 HX W/HD TEK, ZN
TEKH#100024STLZN	10 x 1-1/2 HX W/HD TEK, ZN
TEKH#100028STLZN	10 x 1-3/4 HX W/HD TEK, ZN
TEKH#100032STLZN	10 x 2 HX W/HD TEK, ZN
TEKH#100040STLZN	10 x 2-1/2 HX W/HD TEK, ZN
TEKH#100048STLZN	10 x 3 HX W/HD TEK, ZN
TEKH#120012STLZN	12 x 3/4 HX W/HD TEK, ZN
TEKH#120014STLZN	12-24 x 7/8 HX W/HD TEK, ZN
TEKH#120016STLZN	12 x 1 HX W/HD TEK, ZN
TEKH#120020STLZN	12 x 1-1/4 HX W/HD TEK, ZN
TEKH#120024STLZN	12 x 1-1/2 HX W/HD TEK, ZN
TEKH#120028STLZN	12 x 1-3/4 HX W/HD TEK, ZN
TEKH#120032STLZN	12 x 2 HX W/HD TEK, ZN
TEKH#120040STLZN	12 x 2-1/2 HX W/HD TEK, ZN
TEKH#120048STLZN	12 x 3 HX W/HD TEK, ZN
TEKH#120064STLZN	12 x 4 HX W/HD TEK, ZN
TEKH#140012STLZN	14 x 3/4 HX W/HD TEK, ZN
TEKH#140016STLZN	14 x 1 HX W/HD TEK, ZN
TEKH#140020STLZN	14 x 1-1/4 HX W/HD TEK, ZN
TEKH#140024STLZN	14 x 1-1/2 HX W/HD TEK, ZN
TEKH#140028STLZN	14 x 1-3/4 HX W/HD TEK, ZN
TEKH#140032STLZN	14 x 2 HX W/HD TEK, ZN
TEKH#140040STLZN	14 x 2-1/2 HX W/HD TEK, ZN
TEKH#140048STLZN	14 x 3 HX W/HD TEK, ZN
TEKH#140064STLZN	14 x 4 HX W/HD TEK, ZN
TEKH#140080STLZN	14 x 5 HX W/HD TEK, ZN
TEKH#140096STLZN	14 x 6 HX W/HD TEK, ZN

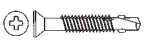
WAFER PHILLIPS (TEK)



WAFER PHILLIPS
F/N SDPW

Part No.	Description (Inches)
TEKW#10C012STLZN	10-24 x 3/4 P WAFER TEK
TEKW#10C016STLZN	10-24 X 1 P WAFER TEK
TEKW#10C020STLZN	10-24 X 1-1/4 P WAFER TEK
TEKW#10C023STLZN	10-24 X 1-7/16 P WAFER TEK
TEKW#10C024STLZN	10-24 X 1-1/2 P WAFER TEK
TEKW#10C026STLZN	10-24 X 1-5/8 P WAFER TEK

FLT. PH. "WINGED" (TEK)



FLT. PH. WINGED
F/N

Part No.	Description (Inches)
TEKG#100026STLZN	10-16 x 1-5/8 PFH Wing TEK
TEKG#120032STLZN	12-24 x 2 PFH Wing TEK
TEKG#120040STLZN	12-24 x 2-1/2 PFH Wing TEK
TEKG#140044STLZN	1/4-20 x 2-3/4 PFH Wing TEK
TEKG#140052STLZN	1/4-20 x 3-1/4 PFH Wing TEK
TEKG#140060STLZN	1/4-20 x 3-3/4 PFH Wing TEK

SOCKET PRODUCTS

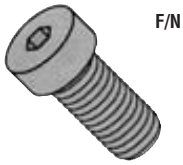
AVAILABLE: COURSE THREAD, FINE THREAD, METRIC

MATERIALS: ALLOY STEEL, STAINLESS STEEL

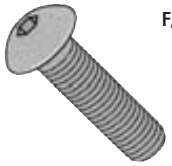
PLATING: PLAIN, ZINC

Pictorial Table—Cap/Socket Set Screws


F/N SCHX
Socket Head
Cap Screw


F/N SCLH
Low Head Socket
Cap Screw


F/N FSHX
Flat Head
Socket Cap Screw


F/N BSHX
Button Head
Socket Cap Screw


F/N SHDR
Socket
Shoulder Screw


F/N SSCU
Cup Point
Socket Set Screws


F/N SSOV
Oval Point
Socket Set Screws

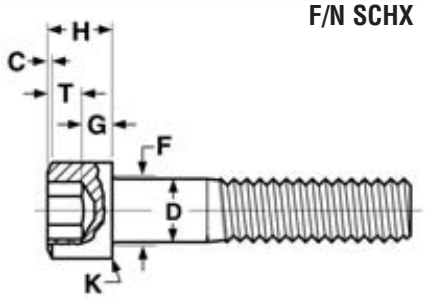

F/N SSCO
Cone Point
Socket Set Screws

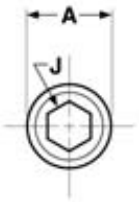

F/N SSHD
Half-Dog Point
Socket Set Screws


F/N SSFL
Flat Point
Socket Set Screws

Alloy & Stainless — Socket Cap Screws — Sockets

F/N SCHX





Socket Head Cap Screws

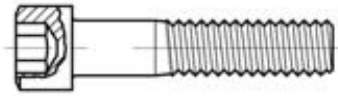
ASME B18.3-1998

Screw Diam.	D		A		H		C	J	F		T	G	K
	Body Diameter		Head Diameter		Head Height		Top Chamfer or Radius	Hex Socket Size	Fillet Transition Diameter		Key Engagement	Wall Thickness	Bottom Chamfer or Radius
	Max	Min	Max	Min	Max	Min	Max	Nom	Max	Min	Min	Min	Max
0	0.0600	0.0568	0.096	0.091	0.060	0.057	0.004	0.050	0.074	0.063	0.025	0.020	0.007
1	0.0730	0.0695	0.118	0.112	0.073	0.070	0.005	1/16	0.087	0.076	0.031	0.025	0.007
2	0.0860	0.0822	0.140	0.134	0.086	0.083	0.008	5/64	0.102	0.090	0.038	0.029	0.007
3	0.0990	0.0949	0.161	0.154	0.099	0.095	0.008	5/64	0.115	0.103	0.044	0.034	0.007
4	0.1120	0.1075	0.183	0.176	0.112	0.108	0.009	3/32	0.130	0.118	0.051	0.038	0.008
5	0.1250	0.1202	0.205	0.198	0.125	0.121	0.012	3/32	0.145	0.132	0.057	0.043	0.008
6	0.1380	0.1329	0.226	0.218	0.138	0.134	0.013	7/64	0.158	0.145	0.064	0.047	0.008
8	0.1640	0.1585	0.270	0.262	0.164	0.159	0.014	9/64	0.188	0.173	0.077	0.056	0.008
10	0.1900	0.1840	0.312	0.303	0.190	0.185	0.018	5/32	0.218	0.202	0.090	0.065	0.008
1/4	0.2500	0.2435	0.375	0.365	0.250	0.244	0.025	3/16	0.278	0.262	0.120	0.095	0.010
5/16	0.3125	0.3053	0.469	0.457	0.312	0.306	0.033	1/4	0.347	0.329	0.151	0.119	0.010
3/8	0.3750	0.3678	0.562	0.550	0.375	0.368	0.040	5/16	0.415	0.398	0.182	0.143	0.010
7/16	0.4375	0.4294	0.656	0.642	0.438	0.430	0.047	3/8	0.484	0.465	0.213	0.166	0.015
1/2	0.5000	0.4919	0.750	0.735	0.500	0.492	0.055	3/8	0.552	0.532	0.245	0.190	0.015
5/8	0.6250	0.6163	0.938	0.921	0.625	0.616	0.070	1/2	0.689	0.664	0.307	0.238	0.015
3/4	0.7500	0.7406	1.125	1.107	0.750	0.740	0.085	5/8	0.828	0.801	0.370	0.285	0.015
7/8	0.8750	0.8647	1.312	1.293	0.875	0.864	0.100	3/4	0.963	0.933	0.432	0.333	0.020
1	1.0000	0.9886	1.500	1.479	1.000	0.988	0.114	3/4	1.100	1.069	0.495	0.380	0.020
1 1/4	1.2500	1.2336	1.875	1.852	1.250	1.236	0.144	7/8	1.370	1.334	0.620	0.475	0.020
1 1/2	1.5000	1.4818	2.250	2.224	1.500	1.485	0.176	1	1.640	1.602	0.745	0.570	0.020

Tolerance on Length	Nominal Screw Size	Nominal Screw Length			
		Up to 1 in., Incl.	Over 1 in. to 2-1/2 in., Incl.	Over 2-1/2 to 6 in., Incl.	Over 6 in.
	0 thru 3/8, Incl.	-0.03	-0.04	-0.06	-0.12
	7/16 thru 3/4, Incl.	-0.03	-0.06	-0.08	-0.12
	7/8 thru 1-1/2, Incl.	-0.05	-0.10	-0.14	-0.20

Sockets — Socket Cap Screws — Alloy Steel

F/N SCHX



Mechanical Properties of Alloy Steel Socket Cap Screws — Blue Devil®							
Nominal Size	Tensile Strength (lbs., min.)		Yield Strength (lbs., min.)		Body Section	Tightening Torque (In.-Lbs.)	
	UNRC	UNRF	UNRC	UNRF	Single Shear Strength (lbs., min.)	UNRC	UNRF
0	-	320	-	290	305	-	2.6
1	475	500	425	450	450	4.5	4.8
2	665	710	600	635	625	7.5	8.0
3	875	940	790	845	830	11.0	12.0
4	1,090	1,190	975	1,070	1,060	16.0	18.0
5	1,430	1,490	1,290	1,345	1,325	24.0	24.0
6	1,640	1,825	1,470	1,645	1,615	30.0	34.0
8	2,520	2,650	2,270	2,385	2,280	55.0	58.0
10	3,150	3,600	2,835	3,240	3,060	79.0	90.0
1/4	5,725	6,550	5,150	5,900	5,295	200.0	230.0
5/16	9,430	10,440	8,490	9,395	8,285	415.0	460.0
3/8	13,950	15,805	12,555	14,225	11,910	740.0	845.0
7/16	19,135	21,365	17,220	19,230	16,200	1190.0	1305.0
1/2	25,540	28,780	22,990	25,905	21,175	1800.0	2065.0
5/8	38,400	43,500	34,550	39,150	31,300	3,400.0	3,800.0
3/4	56,750	63,400	51,100	57,050	45,050	6,000.0	6,750.0
7/8	78,500	86,500	70,700	77,850	61,350	8250.0	9,200.0
1	103,000	112,700	92,700	101,450	80,100	12,500.0	13,000.0
1 1/4	164,700	182,400	148,250	164,150	125,100	25,000.0	27,750.0
1 1/2	238,800	268,800	215,950	241,900	180,200	43,500.0	49,000.0

Description	An externally threaded fastener with unified threads, a cylindrical head with a flat chamfered top surface, knurled cylindrical sides and hexagonal recess, made from alloy steel.
Applications/ Advantages	Ideal for precision assembly work with close tolerances and applications needing a well tooled appearance. Supplies greater tensile strength than equivalent sizes of Grade-5 or Grade-8 hex head cap screws while requiring less surface area or counterbore since the fastener is internally wrenched.
Material	Cap screws shall be made from an alloy steel which conforms to the following chemical composition requirements (per product analysis)-- *Carbon:* 0.31% minimum; *Phosphorus:* 0.040% maximum; *Sulfur:* 0.045% maximum. Also, one or more of the following elements shall be present in sufficient quantity to meet the strength requirements listed below: chromium, nickel, molybdenum or vanadium.
Heat Treatment	Cap screws shall be heat treated by oil quenching from above the transformation temperature and then tempered at a temperature not lower than 650°F.
Hardness	0 through 1/2" diameters: Rockwell C39 minimum; 5/8" diameter & larger: Rockwell C37 minimum
Cap screws of a length 3D or greater, where D equals the nominal diameter of the screw, are subject to tensile strength, yield strength, elongation and reduction of area testing.	
Tensile Strength	0 through 1/2" diameters: 180,000 psi. minimum; 5/8" diameter & larger: 170,000 psi. minimum
Yield Strength	0 through 1/2" diameters: 162,000 psi. minimum; 5/8" diameter & larger: 153,000 psi. minimum
Elongation	10% minimum (applies to machined specimens of length at least 4D where D equals the nominal diameter of the screw)
Reduction of Area	33% minimum (applies to machined specimens)
Plating	See Appendix-A for information on the plating of alloy steel socket cap screws.

Sockets — Socket Cap Screws — Length Specifications

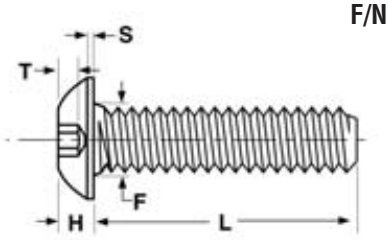
Body and Grip Lengths of Socket Head Cap Screws — ASME B18.3-1998

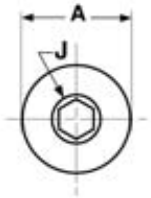
Nom. Size D	0		1		2		3		4		5		6		8		10	
Basic Thread Length L_T	0.500		0.625		0.625		0.625		0.750		0.750		0.750		0.875		0.875	
Nominal Length L	LG	LB	LG	LB	LG	LB	LG	LB	LG	LB	LG	LB	LG	LB	LG	LB	LG	LB
1.00	0.50	0.44	0.25	0.17	0.25	0.16	0.25	0.15	0.25	0.12	0.25	0.12						
1.25	0.75	0.69	0.62	0.55	0.62	0.54	0.62	0.52	0.25	0.12	0.25	0.12	0.50	0.34	0.38	0.22	0.38	0.17
1.50			0.88	0.80	0.88	0.79	0.88	0.77	0.75	0.62	0.75	0.62	0.50	0.34	0.38	0.22	0.38	0.17
1.75					1.12	1.04	1.12	1.02	0.75	0.62	0.75	0.62	1.00	0.84	0.88	0.72	0.88	0.67
2.00							1.38	1.27	1.25	1.12	1.25	1.12	1.00	0.84	0.88	0.72	0.88	0.67
2.25									1.25	1.12	1.25	1.12	1.50	1.34	1.38	1.22	1.38	1.17
2.50											1.75	1.62	1.50	1.34	1.38	1.22	1.38	1.17
2.75													2.00	1.84	1.88	1.72	1.88	1.67
3.00															1.88	1.72	1.88	1.67
3.50																	2.38	2.17

Nom. Size D	1/4		5/16		3/8		7/16		1/2		5/8		3/4		7/8		1	
Basic Thread Length L_T	1.000		1.125		1.250		1.375		1.500		1.750		2.000		2.250		2.500	
Nominal Length L	LG	LB	LG	LB	LG	LB	LG	LB	LG	LB	LG	LB	LG	LB	LG	LB	LG	LB
1.50	0.50	0.25																
1.75	0.50	0.25	0.62	0.35	0.50	0.19												
2.00	1.00	0.75	0.62	0.35	0.50	0.19	0.62	0.27										
2.25	1.00	0.75	1.12	0.85	1.00	0.69	0.62	0.27	0.75	0.36								
2.50	1.50	1.25	1.12	0.85	1.00	0.69	1.12	0.77	0.75	0.36	0.75	0.30						
2.75	1.50	1.25	1.62	1.35	1.50	1.19	1.12	0.77	0.75	0.36	0.75	0.30						
3.00	2.00	1.75	1.62	1.35	1.50	1.19	1.62	1.27	1.50	1.12	0.75	0.30	1.00	0.50				
3.25	2.00	1.75	2.12	1.85	2.00	1.69	1.62	1.27	1.50	1.12	1.50	1.04	1.00	0.50	1.00	0.44		
3.50	2.50	2.25	2.12	1.85	2.00	1.69	2.12	1.77	1.50	1.12	1.50	1.04	1.00	0.50	1.00	0.44	1.00	0.38
4.00	3.00	2.75	2.62	2.35	2.50	2.19	2.62	2.27	2.25	1.86	2.25	1.80	2.00	1.50	1.00	0.44	1.00	0.38
4.50	3.50	3.25	3.12	2.85	3.00	2.69	3.12	2.77	3.00	2.62	2.25	1.80	2.00	1.50	2.00	1.44	2.00	1.38
5.00	4.00	3.75	3.62	3.35	3.50	3.19	3.62	3.27	3.00	2.62	3.00	2.54	3.00	2.50	2.00	1.44	2.00	1.38
5.50			4.12	3.85	4.00	3.69	4.12	3.77	3.75	3.36	3.75	3.30	3.00	2.50	3.00	2.44	3.00	2.38
6.00			4.62	4.35	4.50	4.19	4.62	4.27	4.50	4.12	3.75	3.30	4.00	3.50	3.00	2.44	3.00	2.38
6.50					5.00	4.69	5.12	4.77	4.50	4.12	4.50	4.04	4.00	3.50	4.00	3.44	4.00	3.38
7.00					5.50	5.19	5.62	5.27	5.25	4.86	5.25	4.80	5.00	4.50	4.00	3.44	4.00	3.38
8.00							6.62	6.27	6.00	5.62	6.00	5.54	6.00	5.50	5.00	4.44	5.00	4.38
9.00							7.62	7.27	7.00	6.62	6.75	6.30	7.00	6.50	6.00	5.44	6.00	5.38
10.00									8.00	7.62	7.75	7.30	8.00	7.50	7.00	6.44	7.00	6.38
11.00											9.25	8.80	9.00	8.50	8.00	7.44	8.00	7.38
12.00											10.25	9.80	10.00	9.50	9.00	8.44	9.00	8.38

Alloy Steel — Button Head Socket Cap Screws — Sockets

F/N BSHX





Socket Button Head Cap Screws - Alloy Steel — ASME B18.3-1998, Blue Devil®

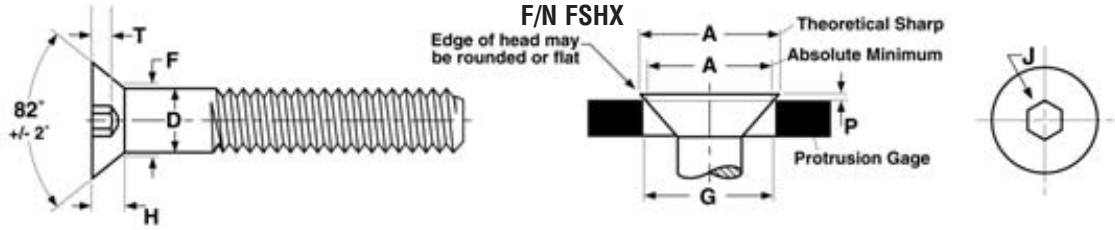
Nominal Size	A Head Diameter		H Head Height		S Head Side Height	J Hex Socket Size	T Key Engagement	F Fillet Transition Diameter		L Max Standard Length	Tensile Test Load	Single Shear Strength of Body	Seating Torques in./lbs.	
	Max	Min	Max	Min	Ref	Nom	Min	Max	Min	Nom	Lb.	Lbs., Min.	Coarse Thread	Fine Thread
4	0.213	0.201	0.059	0.051	0.015	1/16	0.035	0.132	0.122	0.50	840	950	7.0	8.
6	0.262	0.250	0.073	0.063	0.015	5/64	0.044	0.158	0.148	0.63	1,260	1,400	13.	15.
8	0.312	0.298	0.087	0.077	0.015	3/32	0.052	0.194	0.184	0.75	1,940	2,000	25.	26.
10	0.361	0.347	0.101	0.091	0.020	1/8	0.070	0.220	0.210	1.00	2,440	2,700	45.	48.
1/4	0.437	0.419	0.132	0.122	0.031	5/32	0.087	0.290	0.280	1.00	4,430	4,700	95.	110.
5/16	0.547	0.527	0.166	0.152	0.031	3/16	0.105	0.353	0.343	1.00	7,300	7,300	190.	210.
3/8	0.656	0.636	0.199	0.185	0.031	7/32	0.122	0.415	0.405	1.25	10,800	10,600	300.	300.
1/2	0.875	0.851	0.265	0.245	0.046	5/16	0.175	0.560	0.540	2.00	19,800	18,800	900.	960.
5/8	1.000	0.970	0.331	0.311	0.062	3/8	0.210	0.685	0.665	2.00	31,500	29,400	1,700.	1,900.

Tolerance on Length	Nominal Screw Size	Nominal Screw Length	
		Up to 1 in., Inclusive	Over 1 in. to 2-1/2 in., Inclusive
	0 thru 3/8, Inclusive	-0.03	-0.04
	1/2 and 5/8, Inclusive	-0.03	-0.06

Description	Has a similar thread design as a socket cap screw. The dome-shaped head is wider and has a lower profile than a socket cap screw.
Applications/ Advantages	Used when a wider bearing surface or a smoother, more finished appearance is desired. Button head cap screws do not afford the strength of socket head cap screws and are designed for light fastening applications. They are not recommended for critical, high-strength applications.
Material	Screws shall be made from an alloy steel which conforms to the following chemical composition requirements (per product analysis) - *Carbon:* 0.28 to 0.50%; *Phosphorus:* 0.045% maximum; *Sulfur:* 0.035% maximum. Also, one or more of the following elements shall be present in sufficient quantity to meet the performance requirements listed below: chromium, nickel, molybdenum or vanadium.
Heat Treatment	Screws shall be heat treated by oil quenching from above the transformation temperature and then tempered at a temperature not lower than 650°F.
Hardness	Rockwell C38 - 44
Tensile Strength	180,000 psi. minimum (material only)
Yield Strength	160,000 psi. minimum (material only)
Elongation	8% minimum (applies to machined specimens of length at least 4D where D equals the nominal diameter of the screw)
Reduction of Area	35% minimum (applies to machined specimens)
Finish	Screws are supplied with a thermal black finish.

®Blue Devil is a registered trademark of the Safety Socket Screw Corporation.

Sockets — Flat Head Socket Cap Screws — Alloy Steel



Socket Flat Head Cap Screws - Alloy Steel

ASME B18.3-1998, Blue Devil®

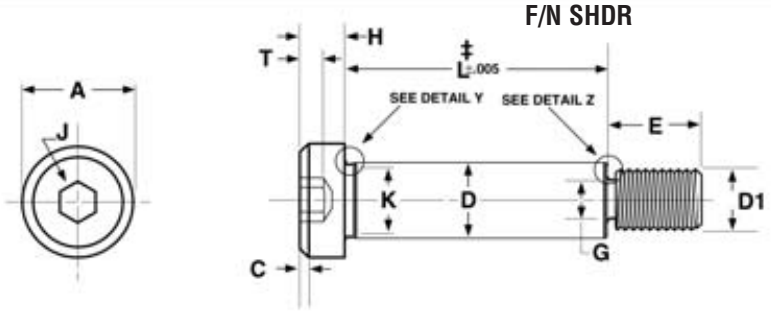
Nominal Size	D		A		H	G		P		J	T	F	Tensile Strength, Lbs. Min		Single Shear Strength of Body	Recommended Seating Torques, in./lbs.	
	Body Diameter		Head Diameter		Head Height	Protrusion Gage Diameter		Protrusion		Hex Socket Size	Key Engagement	Fillet Transition Diam.					
	Max	Min	Theoretical Sharp Max	Abs. Min	Ref	Max	Min	Max	Min	Nom	Min	Max	UNRC	UNRF	lbs., Min	Coarse Thread	Fine Thread
4	0.1120	0.1075	0.255	0.218	0.083	0.172	0.171	0.047	0.037	1/16	0.055	0.136	900	-	940	8.	-
5	0.1250	0.1202	0.281	0.240	0.090	0.196	0.195	0.048	0.037	5/64	0.061	0.153	1,185	-	1,180	12.	-
6	0.1380	0.1329	0.307	0.263	0.097	0.220	0.219	0.049	0.037	5/64	0.066	0.168	1,350	-	1,440	15.	-
8	0.1640	0.1585	0.359	0.311	0.112	0.267	0.266	0.051	0.039	3/32	0.076	0.194	2,085	-	2,030	30.	-
10	0.1900	0.1840	0.411	0.359	0.127	0.313	0.312	0.054	0.041	1/8	0.087	0.220	2,610	2,610	2,720	40.	45.
1/4	0.2500	0.2435	0.531	0.480	0.161	0.424	0.423	0.059	0.046	5/32	0.111	0.280	4,750	4,750	4,710	100.	110.
5/16	0.3125	0.3053	0.656	0.600	0.198	0.539	0.538	0.063	0.050	3/16	0.135	0.343	7,800	7,800	7,360	200.	220.
3/8	0.3750	0.3678	0.781	0.720	0.234	0.653	0.652	0.069	0.056	7/32	0.159	0.405	11,600	11,600	10,600	350.	400.
7/16	0.4375	0.4294	0.844	0.781	0.234	0.690	0.689	0.084	0.071	1/4	0.159	0.468	15,900	15,900	14,400	560.	-
1/2	0.5000	0.4919	0.938	0.872	0.251	0.739	0.738	0.110	0.096	5/16	0.172	0.530	21,200	21,200	18,850	850.	1,000.
5/8	0.6250	0.6163	1.188	1.112	0.324	0.962	0.961	0.123	0.108	3/8	0.220	0.655	33,800	33,800	29,450	1,700.	-
3/4	0.7500	0.7406	1.438	1.355	0.396	1.186	1.185	0.136	0.121	1/2	0.220	0.780	50,000	50,000	42,400	3,000	-

Tolerance on Length	Nominal Screw Size	Nominal Screw Length		
		Up to 1 in., Incl.	Over 1 in. to 2-1/2 in., Incl.	Over 2-1/2 in. to 3 in., Incl.
	0 thru 3/8, Inclusive	-0.03	-0.04	-0.06
	7/16 thru 3/4, Inclusive	-0.03	-0.06	-0.08

Description	Similar in design to a socket button head cap screw but with an 82° countersunk flat head.
Applications/ Advantages	Used when a flush mounting, high strength screw is required. Commonly used in tools and dies where moving parts pass over the fastened area.
Material	Screws shall be made from an alloy steel which conforms to the following chemical composition requirements (per product analysis)--*Carbon*: 0.28 to 0.50%; *Phosphorus*: 0.040% maximum; *Sulfur*: 0.045% maximum. Also, one or more of the following elements shall be present in sufficient quantity to meet the performance requirements listed below: chromium, nickel, molybdenum or vanadium.
Heat Treatment	Screws shall be heat treated by oil quenching from above the transformation temperature and then tempered at a temperature not lower than 650°F.
Hardness	Rockwell C38 - 44
Tensile Strength	180,000 psi. minimum (material only)
Yield Strength	160,000 psi. minimum (material only)
Elongation	8% minimum (applies to machined specimens of length at lest 4D where D equals to nominal diameter of the screw)
Reduction of Area	35% minimum (applies to machined specimens)
Finish	Screws are supplied with a thermal black finish.

Sockets — Socket Shoulder Screws — Alloy Steel

F/N SHDR



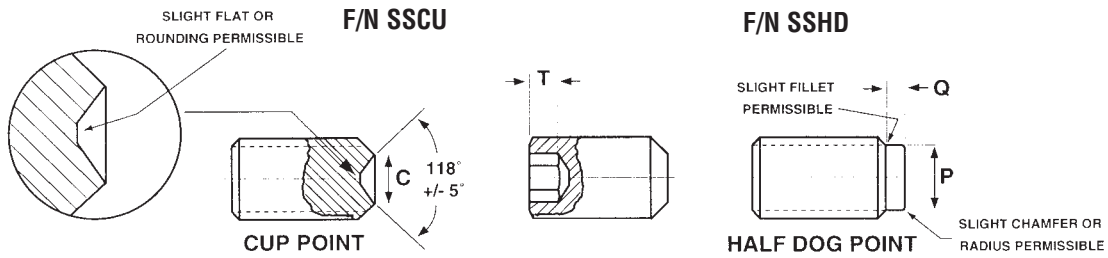
‡Length of a socket shoulder screw is measured from the underhead bearing surface to the plane of the shoulder at the threaded end.

Socket Head Shoulder Screws - Alloy Steel — ASME B18.3-1988

Nominal Size	D		A		H		C	J	T	M	R	K	F
	Shoulder Diameter		Head Diameter		Head Height		Chamfer or Radius	Hex Socket Size	Key Engagement	Fillet Transition Diameter	Head Fillet Radius	Shoulder Neck Diameter	Shoulder Neck Width
	Max	Min	Max	Min	Max	Min	Min	Nom	Min	Max	Min	Min	Max
1/4	0.2480	0.2460	0.375	0.357	0.188	0.177	0.020	1/8	0.094	0.276	0.009	0.227	0.093
5/16	0.3105	0.3085	0.438	0.419	0.219	0.209	0.026	5/32	0.117	0.345	0.012	0.289	0.093
3/8	0.3730	0.3710	0.562	0.543	0.250	0.240	0.031	3/16	0.141	0.413	0.015	0.352	0.093
1/2	0.4980	0.4960	0.750	0.729	0.312	0.302	0.040	1/4	0.188	0.550	0.020	0.477	0.093
5/8	0.6230	0.6210	0.875	0.853	0.375	0.365	0.050	5/16	0.234	0.687	0.024	0.602	0.093
3/4	0.7480	0.7460	1.000	0.977	0.500	0.490	0.069	3/8	0.281	0.826	0.030	0.727	0.093

Description	A hex socket head screw with an enlarged, unthreaded, cylindrical shoulder under the head, the diameter of which serves as the basis for the derivation of the nominal size.
Applications/ Advantages	For rotation or sliding applications, such as pulley shafts, in punch and die work, or for use as a bearing pin. Shoulder screws are also referred to as "stripper bolts".
Material	Shoulder screws shall be made fabricated from an alloy steel having one or more of the following elements: chromium, nickel, molybdenum or vanadium, in sufficient quantity to assure the hardness specified below.
Heat Treatment	Shoulder screws shall be heat-treated by oil quenching from above the transformation temperature and then tempered at a temperature not lower than 650°F.
Hardness	Rockwell C32 - 43
Tensile Strength	140,000 psi. minimum (material only)
Yield Strength	120,000 psi. minimum (material only)
Elongation	15% minimum (applies to all machined specimens of length at least 4D where D equals the nominal diameter of the screw)
Reduction of Area	45% minimum (applies to all machined specimens)
Plating	Shoulder screws are usually supplied with a plain finish.

Sockets — Socket Set Screws — Alloy Steel



Socket Set Screws - Alloy Steel

ASME B18.3-1998, Blue Devil®

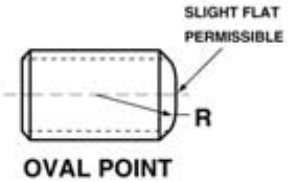
Nominal Size	Shortest Nominal Length To Which Column T Applies			J	Tightening Torque (Inch-Lbs.)
	Cup & Flat Point	Cone & Oval Point	Half Dog Point	Hex Key Size	
4	0.19	0.19	0.19	.050	5.
5	0.19	0.19	0.19	1/16	9.5
6	0.19	0.25	0.19	1/16	9.5
8	0.19	0.25	0.25	5/64	19.4
10	0.19	0.25	0.25	3/32	33.5
1/4	0.25	0.31	0.31	1/8	77.9
5/16	0.31	0.44	0.38	5/32	156
3/8	0.38	0.44	0.44	3/16	273
7/16	0.44	0.63	0.50	7/32	428
1/2	0.50	0.63	0.63	1/4	615
5/8	0.63	0.88	0.88	5/16	1315
3/4	0.75	1.00	1.00	3/8	2150
7/8	0.88	1.00	1.00	1/2	5130
1	1.00	1.25	1.25	9/16	7010

Description	**Cup point:** A headless screw threaded the entire length. It has a hexagonal drive at one end and a cup-shaped indentation at the other end. **Half-Dog point:** A set screw with a protruding tip with a flat surface at the end opposite that of the hexagonal drive. **Oval point:** A set screw with an oval-shaped point at the end opposite that of the hexagonal drive. **Flat point:** A set screw with a flat surface at the end opposite that of the hexagonal drive. **Cone point:** A set screw with a sharp conical-shaped point at the opposite end from the hexagonal drive.
Applications/ Advantages	**Cup point:** The cup point is the most used style set screw. Designed for fast, permanent and semi-permanent location of parts on shafts with hardness differential of 10-15 Rockwell C points and where cutting in of cup edge on the shaft is acceptable. **Half-Dog point:** Intended for permanent setting. The point should fit closely to the diameter of the drilled hole or against the flat. Often used instead of a dowel pin. **Oval point:** Preferred style for frequent reset on soft or hard shafts with minimum deforming. Also chosen for permanent setting on shafts spotted, splined or grooved, and for applications where point meets shaft on an angle. Sometimes substituted for the cup point style. **Flat point:** Designed for frequent resetting or relocating on hard steel shafts and where minimal damage to shafts is necessary. Ground flats on the shaft improves the contacts. **Cone point:** For permanent setting on soft or hardened shafts. The deep penetration it offers gives this style set screw the highest torsional & axial holding power. For shafts of Rockwell hardness C15 or over, spot point half its depth. Can also be used as a pivot or hanger. When two set screws are used in a set screw collar, their holding power is determined by their location with respect to each other.
Material	Screws shall be made from an alloy steel which conforms to the following chemical composition requirements (per product analysis)--*Carbon:* 0.28 to 0.50%; *Phosphorus:* 0.040% maximum; *Sulfur:* 0.045% maximum. Also, one or more of the following elements shall be present in sufficient quantity to meet the strength requirements listed below: chromium, nickel, molybdenum or vanadium.
Heat Treatment	Screws shall be heat treated by oil quenching from above the transformation temperature and then tempered at a temperature sufficient to meet the hardness requirements listed below.
Hardness	Rockwell C45 - 53
Torsional Strength	Socket set screws of a sufficient length to be tested (as listed in the above table) shall withstand application of the test torque specified in said table without evidence of the socket reaming or the screw bursting.
Finish	Screws are supplied with a thermal black finish.

®Blue Devil is a registered trademark of the Safety Socket Screw Corporation.

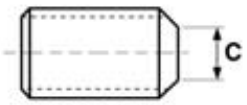
Alloy Steel Socket Set Screws Sockets

F/N SSOV



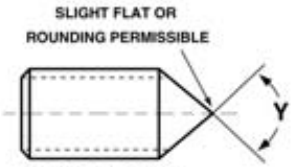
OVAL POINT

F/N SSFL



FLAT POINT

F/N SSCO



CONE POINT

Socket Set Screws - Alloy Steel

ASME B18.3-1998

Nominal Size	J	T	C		R	Y	P		Q	
	Hexagon Socket Size	Key Engage-ment	Cup & Flat Point Diameter		Oval Point Radius	Cone Pt. Ang. 90° +2° for these lengths and over; 118° ± 2° for shorter lengths	Half Dog Point			
							Diameter		Length	
	Nom	Min	Max	Min	Basic		Max	Min	Max	Min
4	0.050	0.070	0.061	0.051	0.084	0.19	0.075	0.070	0.030	0.026
5	0.062	0.080	0.067	0.057	0.094	0.19	0.083	0.078	0.033	0.027
6	0.062	0.080	0.074	0.064	0.104	0.19	0.092	0.087	0.038	0.032
8	0.078	0.090	0.087	0.076	0.123	0.25	0.109	0.103	0.043	0.037
10	0.094	0.100	0.102	0.088	0.142	0.25	0.127	0.120	0.049	0.041
1/4	0.125	0.125	0.132	0.118	0.188	0.31	0.156	0.149	0.067	0.059
5/16	0.156	0.156	0.172	0.156	0.234	0.38	0.203	0.195	0.082	0.074
3/8	0.188	0.188	0.212	0.194	0.281	0.44	0.250	0.241	0.099	0.089
7/16	0.219	0.219	0.252	0.232	0.328	0.50	0.297	0.287	0.114	0.104
1/2	0.250	0.250	0.291	0.270	0.375	0.57	0.344	0.334	0.130	0.120
5/8	0.312	0.312	0.371	0.347	0.469	0.75	0.469	0.456	0.164	0.148
3/4	0.375	0.375	0.450	0.425	0.562	0.88	0.562	0.549	0.196	0.180
7/8	0.500	0.500	0.530	0.502	0.656	1.00	0.656	0.642	0.227	0.211
1	0.562	0.562	0.609	0.579	0.750	1.13	0.750	0.734	0.260	0.240

Tolerance on Length	Nominal Screw Length		
	Up to 0.63 in., Incl.	Over 0.63 to 2.00 in., Incl.	Over 2.00 to 6.00 in., Incl.
	±0.01	±0.02	±0.03

A Note About Stainless Fasteners

Most fasteners listed on the previous pages of ISCs Catalog are also stocked in stainless. Generally, dimensions are the same for both steel and stainless steel fasteners. Please refer to the appropriate section.

The one big exception is stainless steel flat washers. The following pages list standard stainless flat washer dimensions.

The most common stainless fastener is a 300 series of stainless. Also referred to as 18.8 stainless steel. If you need any other grade other than 18.8 stainless, this must be specified at the time of quotation and order.

The final page of this section provides technical data for the various series of stainless steel.

Commercial Stainless Steel Flat Washer Dimensions

FLAT WASHERS — Industrial — Stainless Steel 18–8 and 316 Note: Washer thickness may vary ± .007 depending on production run.

Size	#12	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1	1-1/8	1-1/4	1-3/8	1-1/2	1-3/4	2
O.D.	9/16	5/8	3/4	7/8	1-1/8	1-1/4	1-3/8	1-1/2	1-7/8	2	2	2-1/2	2-3/4	3-1/4	3-1/4	3-1/2	4
I.D.	.250	.281	.343	.406	.500	.531	.625	.687	.812	.937	1.062	1.187	1.312	1.500	1.562	1.812	2.125
Nom.Thickness	.050	.050	.050	.050	.062	.062	.078	.078	.109	.109	.125	.125	.125	.140	.140	.140	.187

FENDER WASHERS AND WASHERS WITH UNUSUAL OUTSIDE DIAMETERS
Note: Washer thickness may vary ± .007 depending on production run.

	OD	ID	Thickness
#6	5/8	.149	.031
#8	3/4	.174	.040
#10	11/16	.203	.040
#10	3/4	.203	.040
#10	1	.203	.040
1/4	11/16	.281	.050
1/4	1	.281	.050
1/4	1-1/4	.281	.050
1/4	1-1/2	.281	.062
1/4	2	.281	.062
5/16	1	.343	.050
5/16	1-1/4	.343	.050
5/16	1-1/2	.343	.062
5/16	2	.343	.062
3/8	1	.406	.050
3/8	1-1/4	.406	.050
3/8	1-1/2	.406	.062
3/8	2	.406	.062
1/2	1-1/2	.531	.062
1/2	2	.531	.062
3/4	1-3/4	.812	.109
3/4	2	.812	.125

800 SERIES
Industrial and MS15795

Bolt SIze	I.D. Inches	O.D. Inches	Thickness Max.	Thickness Min.	Dash No.
0	.078	.187	.025	.016	–801
2	.093	.250	.025	.016	–802
4	.125	.250	.028	.017	–803
4	.125	.312	.040	.025	–804
6	.156	.312	.048	.027	–805
6	.156	.375	.065	.036	–806
8	.187	.375	.065	.036	–807
10	.218	.437	.065	.036	–808
10	.250	.562	.080	.051	–809
*1/4	.281	.625	.080	.051	–810
1/4	.312	.750	.080	.051	–811
*5/16	.343	.687	.080	.051	–812
5/16	.375	.875	.104	.064	–813
*3/8	.406	.812	.080	.051	–814
3/8	.437	1.000	.104	.064	–815
7/16	.468	.921	.080	.051	–816
7/16	.500	1.250	.104	.064	–817
*1/2	.531	1.062	.121	.074	–818
1/2	.562	1.375	.132	.086	–819
*5/8	.656	1.312	.121	.074	–820
5/8	.687	1.750	.160	.108	–821
*3/4	.812	1.500	.160	.108	–822
3/4	.812	2.000	.177	.122	–823
7/8	.937	1.750	.160	.108	–824
7/8	.937	2.250	.192	.136	–825
1	1.062	2.000	.160	.108	–826
1	1.062	2.500	.192	.136	–827
8	.188	.438	.065	.036	–841
*10	.219	.500	.065	.036	–842

*SAE

STAINLESS

Commercial Stainless Steel Flat Washer Dimensions

FLAT WASHERS — Industrial — Stainless Steel 18–8 and 316 Note: Washer thickness may vary ± .007 depending on production run.

900 SERIES
Industrial and AN960C

Size	OD	ID	Thickness
*C2	.250	.099	1/32
C2L	.250	.099	1/64
*C3	.250	.109	1/32
C3L	.250	.109	1/64
*C4	.312	.125	1/32
C4L	.312	.125	1/64
*C5	.438	.140	3/64
*C6	.375	.149	1/32
C6L	.375	.149	1/64
*C8	.375	.174	1/32
C8L	.375	.174	1/64
*C10	.437	.203	1/16
C10L	.437	.203	1/32
C416	.500	.265	1/16
C416L	.500	.265	1/32
C516	.562	.328	1/16
C516L	.562	.328	1/32
C616	.625	.390	1/16
C616L	.625	.390	1/32
C716	.750	.453	1/16
C716L	.750	.453	1/32
C816	.875	.516	1/16
C816L	.875	.516	1/32
C916	1.062	.578	1/16
C916L	1.062	.578	1/32
C1016	1.187	.641	1/16
C1016L	1.187	.641	1/32
C1216	1.312	.766	3/32
C1216L	1.312	.766	1/32
C1416	1.500	.890	3/32
C1616	1.750	1.016	3/32

*Star Industrial Sizes

316 FLAT WASHERS
SMALL SIZES

Size	4	6	8	10
O.D.	.312	.312	.375	.437
I.D.	.125	.156	.174	.203
Thickness	.031	.031	.031	.031

FLAT WASHERS—Brass and Silicon Bronze

Size	I.D. Brass	O.D. Brass	Thickness Brass	Approx. Pieces Per Lb-Brass	O.D. Silicon Bronze	Thickness Silicon Bronze
2S	.099	.187	.020	7,600	—	—
3	.101	.250	.020	4,100	—	—
4	.120	.281	.025	2,600	—	—
5	.133	.281	.025	2,800	—	—
6S	.147	.312	.025	2,100	—	—
6L	.147	.375	.032	1,100	.375	.032
8S	.172	.375	.032	1,200	.375	.032
8L	.172	.437	.036	725	—	—
10S	.200	.437	.036	760	.437	.036
10L	.200	.500	.040	490	—	—
12S	.228	.500	.040	525	.500	.040
12L	.228	.562	.040	400	—	—
1/4S	.260	.562	.040	420	—	—
1/4L	.260	.687	.051	200	.687	.040
16S	.281	.625	.040	340	—	—
16L	.281	.750	.062	135	—	—
18S	.310	.687	.051	220	—	—
18L	.310	.875	.062	100	—	—
5/16S	.340	.750	.062	145	.750	.062
5/16L	.340	.875	.062	100	.875	.062
3/8S	.392	.875	.062	105	.875	.062
3/8L	.392	1.000	.081	60	1.000	.062
7/16	.500	1.125	.081	50	1.125	.062
1/2S	.562	1.250	.091	37	1.250	.078
1/2L	.562	1.375	.091	30	—	—
9/16	.625	1.500	.091	24	—	—
5/8S	.687	1.500	.102	23	1.500	.091
5/8L	.687	1.750	.102	16	—	—
3/4S	.812	1.875	.114	13	1.875	.102
3/4L	.812	2.000	.114	10	—	—
7/8	.937	2.250	.128	7.5	2.250	.114
1	1.062	2.500	.144	5.5	2.500	.128
1-1/8	1.187	2.750	.156	4.5		
1-1/4	1.312	3.000	.156	3.5		
1-1/2	1.562	3.500	.156	2.5		

NAS Stainless

Size	0	2	3	3L	4	4L	5	5L	6	6L	8	8L	10	10L	416	416L
O.D.	.099	.149	.180	.180	.209	.209	.238	.238	.267	.267	.304	.304	.354	.354	.468	.468
I.D.	.063	.089	.102	.102	.115	.115	.128	.128	.143	.143	.169	.169	.195	.195	.255	.255
Thickness	.016	.016	.032	.016	.032	.016	.032	.016	.032	.016	.032	.016	.063	.032	.063	.032

	Chromium	Nickel	Max. Carbon	Max. Mangan.	Max. Phosph.	Max. Sulfur	Molybd.	Max. Silicon	Copper	Other Elements	Tensile	Yield	Approx. Hardness	Special Characteristics
300 SERIES AUSTENITIC STAINLESS: Accounts for 85%-90% of stainless fasteners; best corrosion resistance of stainless alloys; non-magnetic before cold working; low heat conductivity; good strength at higher temperatures; not hardenable by heat treatment.											**Tensile and yield will increase sharply in austenitic fasteners made by cold forming but may decrease in fasteners made by machining. Consequently, the range for tensile and yield is broad and depends largely on how fasteners are made. Grades commonly used for cold forming such as 302HQ, 304, and 316 may have much higher strength than other grades.**			
18-8 Also referred to as 300 Series or A-2	17-20% Usually 17-19%	8-13% Usually 8-10.5%	.08% Usually .03-.05%	2%	.2% Usually .045%	.03–.15% Usually .03%		1%	0–4% Usually 2%-3%		80,000–150,000 usual range. After cold work: 100,000–125,000 typical for 1/4-5/8 dia; 100,000 typical for 3/4–1" dia; 80,000–90,000 typical over 1" dia.	40,000 min. After cold work: 80,000–90,000 typical 1/4–5/8 dia.; 45,000–70,000 typical 3/4 & over dia.	B85–95	Most common designation for non-magnetic stainless fasteners; encompasses 30 to 40 various mixtures of 301, 302, 303, 304, 305 and XM7
302	17-19%	8-10%	.15%	2%	.045%	.03%		1%			90,000–125,000 Typical: 100,000	40,000 min. Typical: 50,000–70,000	B85-95	Higher carbon content than 302HQ or 304; ductile; often used in wire-typice products such as springs, screens, cables; common material for flat washers.
302HQ and XM7	17-19%	8-10%	.08%-302HQ .10%-XM7 Usually .02 or less	2%	.045%	.03%		1%	3–4%		80,000–140,000 usual range. After cold work: 100,000–120,000 typical for 1/4-5/8 dia; 100,000 typical for 3/4–1" dia; 80,000 typical over 1" dia.	40,000 min. After cold work: 80,000–90,000 typical 1/4-5/8 dia.; 45,000–65,000 typical 3/4 & over dia.	B85-95	Extra copper reduces work hardening during cold forming; commonly used for machine screws, metal screws, small nuts.
303	17-19%	8-10%	.15%	2%	.02%	.15 Min.	.6 Max.	1%			90,000–125,000	40,000 min.	B85-95	Good for machineability in products such as large nuts; not for cold forming; higher carbon and sulfur may lower corrosion resistance.
304 **304L** 304L is same as 304 with max. of .03% carbon	18-20%	8-10.5%	.08%	2%	.45%	.03%		1%			85,000–150,000 usual range. After cold work: 125,000 typical for 1/4–5/8 dia.; 100,000 typical for 3/4-1" dia.; 90,000 typical above 1"dia.	40,000 min. After cold work: 90,000 typical for 1/4–5/8 dia.; 50,000–70,000 typical for 3/4 & over dia.	B85-95	Most popular stainless for hex head cap screws; also frequently used for flat washers. Low carbon increases corrosion resistance and welding capacity.
305	17-19%	10.5-13%	.12%	2%	.045%	.03%		1%			See 302HQ			High nickel content lowers work hardening during severe cold forming and keeps parts non-magnetic.
316 **Same as A-4** 316L 316L is same as 316 with max. of .03% carbon	16-18%	10-14%	.08%	2%	.045%	.03%	2–3%	1%	May contain 1%–3%		85,000–140,000 usual range. After cold work: 120,000 typical for 1/4-5/8 dia.; 95,000 typical for 3/4-1" dia.; 80,000 typical above 1"dia.	40,000 min. After cold work: 80,000–90,000 typical for 1/4-5/8 dia.; 50,000–70,000 typical for 3/4 & over dia.	B85-95	Addition of molybdenum increases corrosion resistance to chloride and sulfides. Low carbon increases corrosion resistance and welding capacity.
309	22-24%	12-15%	.2%	2%	.045%	.03%		1%			100,000–120,000	60,000–80,000	B85–95	Higher chromium and nickel give better corrosion resistance at high temperatures (1900 deg. F)
321	17-19%	9-12%	.08%	2%	.045%	.03%		1%		Titanium—5 times carbon content	See 309			Titanium improves intergranular corrosion resistance, by avoiding carbide precipitation; good for intermittent heating applications and corrosion resistance to 1600 deg. F.
347	17-19%	9-13%	.08%	2%	.045%	.03%		1%		Columbium & Tantalum—10 times carbon.	See 309			Columbium and Tantalum give similar properties to 321.
Alloy 20	19%-21%	32.5%-35%	.06%	2.0%	.035%	.035%	2%-3%	1%	3%-4%	Columbium & Tantalum—8 times carbon; 1% max.	100,000–150,000	65,000–135,000		Excellent resistance to sulfuric acid. Columbium helps resist carbide precipitation.
FERRITIC STAINLESS: A few percent of stainless fasteners; magnetic; not hardenable by heat treatment; high chromium content helps corrosion resistance.														
430	16-18%		.12%	1%	.04%	.03%		1%			70,000–75,000	40,000–45,000	B65–B75	Most popular of ferritic stainless; higher carbon content adds strength; used for cold forming and hot forging but low machineability.

	Chromium	Nickel	Max. Carbon	Max. Mangan.	Max. Phosph.	Max. Sulfur	Molybd.	Max. Silicon	Copper	Other Elements	Tensile	Yield	Approx. Hardness	Special Characteristics
400 SERIES MARTENSITIC STAINLESS: About 10% of stainless fasteners; magnetic; no nickel and high carbon content mean the lowest corrosion resistance among the different types of stainless. Used for elevated temperatures; can go to 1,100° F.														
400 Mixture Martensitic	11.5%-14%		.30% Usually .15-.30%	1.25% Usually 1%	.06% Usually .04%	.15% Usually .03%		1%			180,000-250,000 if heat treated	150,000-200,000 if heat treated	C34-C45	Often a mixture of different 400 materials, usually with carbon content towards high end of max, giving greater strength but lowering corrosion resistance.
410	11.5-13.5%		.15%	1%	.04%	.03%		1%			180,000 heat treated	150,000 heat treated	C34	Higher carbon content gives strength; most popular of the grades with 12% chrome; used in highly stressed conditions.
416	12-14%		.15%	1.25%	.06%	.15%		1%				See 410		Higher sulfur content helps machineability but lowers corrosion resistance.
420	12-14%		.30% Nom. .15% Min.	1%	.04%	.03%		1%			250,000 heat treated	200,000 heat treated	C45	Higher carbon gives greater strength but lowers corrosion resistance.
BRASS, BRONZE, COPPER and NICKEL COPPER: All brass and bronze are defined as copper alloy, since they contain at least 40% copper, while pure copper is defined as 99.3% minimum copper. With brass, zinc is the main alloying element. Regular bronze does not have a dominant alloying element while tin is the major alloy in phosphorous bronze internal-external lockwashers. Nickel Copper combines important ingredients of austenitic stainless and brass to give superior corrosion resistance with strength and toughness over a large range of temperatures.											**Due to high copper content, brass and bronze have low strength.They have excellent thermal and electrical conductivity, good corrosion resistance, and are non-magnetic.**			
Brass Alloy 270									65%	35% Zinc	70,000	45,000	B65	Good cold forming due to high copper content; also used for milled from bar nuts.
Brass Alloy 360									61.5%	3% Lead remainder Zinc	50,000	30,000	B55	Good machineability due to added lead; good for screw machine parts.
Commercial Brass									60-65%	35-40% Zinc. .05-.15 Lead	55,000	35,000	B60	Easier to cold form as copper content increases; as copper content decreases, the metal becomes stronger and harder.
Bronze Alloy 651				.07%				2.0%	96.0% min.	.05% Lead max. 1.5%Zinc max.	70,000–80,000	35,00Q-45,000	B70-B75	Generally used for hex head cap screws.
Bronze Alloy 655		.06%		1.5%				3.8%	94.8% min.	.05% Lead max. 1.5% Zinc max.		See Bronze 651		Used for hot forged fasteners.
Commercial Bronze								2-4%	94-96%	.05-.8% Lead, .05-1.5% Zinc.		See Bronze 651		Addition of lead helps machineability.
Phosphorus Bronze					.3%				95%	5% Tin	60,000	35,000	B60	Tin increases strength; phosphorus helps against stress corrosion; excellent cold forming properties.
Naval Bronze									59-62%	.5-1% Tin, 2% Lead remainder Zinc	70,000	30,000	B65	Addition of tin gives better corrosion resistance against salt water.
Copper 110									99.9% min.		Used for flat washers, copper 110 has high electrical and thermal conductivity. Low tensile strength inhibits use for fasteners.			
Nickel Copper 400		63% min.	0.3%	2.0%		.024%		0.5%	28%-34%	2.5% Iron max.	70,000-130,000	30,000-60,000	60-RC25	Particularly high corrosion resistance with nearly 2/3 nickel and 1/3 copper. Marine and chemical industries are major users.
Nickel Copper K-500		63% min.	0.25%	1.5%		.01%		0.5%	27%-33%	2.0% Iron Max. 2.3%-3.15% Alum. .35%-.85% Titanium				Addition of aluminum and titanium adds strength and hardness.
ALUMINUM—Aluminum weighs about one-third of steel, is non-magnetic with good electrical conductivity. Its strength-to-welght ratio is high. The "T" designation stands for heat-treated. Aluminum weighs 1/3 of steel.											**Unalloyed aluminum has a tensile strength of only 13,000 psi. By alloying metals, its strength is sharply Increased. Its number identifies Ihe alloy: 2 for copper; 6 for magnesium and silicon; 7 for zinc.**			
Aluminum 2024 T-4 heat-treated	.1% Max.			.3-.9%				.5%	3.8-4.9%	.25% Zinc Max. .5% Iron Max. 1.2-1.8% Mag. .15%Titanium Max. remainder Alum.	55,000-70,000 heat treated	40,000 heat treated	B70-B85 heat treated	Most popular of aluminum alloys; uses copper as its principal alloying element; generally used for hex head cap screws and flat washers
Aluminum 6061 T-6 heat-treated	.04-.35%			.15%				.4-.8%	.15-.4%	.25% Zinc Max. .7% Iron Max. .08-1.2% Mag. .15%Titanium Max. remainder Alum.	37,000-52,000 heat treated	30,000 heat treated	B40-50 heat treated	Magnesium and silicon are the principal alloying elements; often used for hex nuts.
Aluminum 7075-T73 heat-treated a variation, 7075-T6, is used for lockwashers	.18-.35%			.3%				.4%	1.2-2%	5.1-6.1% Zinc .5% Iron Max. 2.1-2.9% Mag. .2% TItanium Max. remainder Alum.	60,000-75,000 heat treated	50,000 heat treated	B80-90 heat treated	Much higher content of zinc and magnesium than other alloys; yield and hardness also higher

STRUCTURAL BOLTS

BOLTS

IDENTIFICATION • STRENGTH • CLAMP • TORQUE • MATERIALS

GRADE 2

Diameter	Proof Load	Yield Strength	Tensile Strength
1/4–3/4"	55,000	57,000	74,000
3/4–1-1/2"	33,000	36,000	60,000

Low or medium Carbon Steel

***GRADE 5**

Diameter	Proof Load	Yield Strength	Tensile Strength
1/4–1"	85,000	92,000	120,000
3/4–1-1/2"	74,000	81,000	105,000

Medium Carbon Steel, Quenched & Tempered

GRADE 8

Proof Load: 120,000
Yield Strength: 130,000
Tensile Strength: 150,000

Carbon Alloy Steel, Quenched & Tempered

18-8 Series STAINLESS

Proof Load: None
Yield Strength: 30,000
Tensile Strength: 75,000

STAINLESS
ANSI 304 & 316

Diameter	Proof Load	Yield Strength	Tensile Strength
1/4–3/4"	None	100,000	125,000
3/4–1"	None	80,000	115,000
1–1-1/4"	None	65,000	105,000
1-1/4–1-1/2"	None	50,000	100,000

SIZE	CLAMP LOAD-Lbs.	ASSEMBLY TORQUE DRY	ASSEMBLY TORQUE LUB.	MINIMUM TENSILE Lbs.	CLAMP LOAD-Lbs.	ASSEMBLY TORQUE DRY	ASSEMBLY TORQUE LUB.	MINIMUM TENSILE Lbs.	CLAMP LOAD-Lbs.	ASSEMBLY TORQUE DRY	ASSEMBLY TORQUE LUB.	MINIMUM TENSILE Lbs.	CLAMP LOAD-Lbs.	ASSEMBLY TORQUE DRY	ASSEMBLY TORQUE LUB.	MINIMUM TENSILE Lbs.	CLAMP LOAD-Lbs.	ASSEMBLY TORQUE DRY	ASSEMBLY TORQUE LUB.	MINIMUM TENSILE Lbs.
1/4-20	1320	66 IN. LBS.	50 IN. LBS.	2700	2000	8 FT. LBS.	75 IN. LBS.	4450	2850	12 FT. LBS.	9 FT. LBS.	6600	1350	68 IN. LBS.	51 IN. LBS.	2780	2100	9 FT. LBS.	7 FT. LBS.	4600
1/4-28	1500	76	56	2900	2300	10	86	4840	3250	14	10	7200	1500	77	58	3020	2400	10	7	5000
5/16-18	2160	11 FT. LBS.	11 FT. LBS.	4400	3350	17	13 FT. LBS.	7190	4700	25	18	10700	2200	12 FT. LBS.	9 FT. LBS.	4400	3400	18	13	7400
5/16-24	2400	12	12	4700	3700	19	14	7670	5200	25	20	11500	2400	13	10	4700	3800	20	15	7900
3/8-16	3200	20	15	6400	4950	30	23	10530	7000	45	35	15800	3200	20	15	6500	5100	32	24	10900
3/8-24	3620	23	17	8800	5600	35	25	14400	7900	50	35	21600	3700	23	17	9000	5700	36	27	15000
1/2-13	5850	50	35	11500	9000	75	55	19000	12750	110	80	28600	5900	50	37	11900	9350	78	58	19800
1/2-20	6600	55	40	12500	10500	90	65	20500	14370	120	90	30800	6700	56	42	12800	10550	88	66	21400
5/8-11	9350	100	75	18500	14400	150	110	30100	20350	220	170	45200	9500	100	75	18800	14950	156	117	31400
5/8-18	10550	110	85	20000	16370	180	130	32600	23000	240	180	49000	10800	113	84	20400	16850	176	132	34000
3/4-10	13800	175	130	27000	21300	260	200	44200	30100	380	280	66300	14100	177	132	27600	20300	276	121	42300
3/4-16	15400	200	150	29000	23800	300	220	47400	33500	420	320	71100	15700	197	148	29600	22670	308	191	45400
7/8-9	11450	170	125	30000	29405	320	320	53100	41600	600	460	91000	11700	171	128	37900	16850	246	213	58100
1-8	15000	250	190	39500	38600	640	480	69500	54500	900	680	119200	15300	256	192	49700	22900	368	290	69500
1-1/8-7	18900	350	270	50000	42300	800	600	87800	68900	1280	960	150500	19300	363	272	62700	25400	386	411	87800
1-1/4-7	24000	500	380	63000	53800	1120	840	110300	87200	1820	1360	189200	24500	512	384	78800	32200	548	480	110300
1-3/8-6	28600	670	490	75500	64100	1460	1100	132200	104000	2380	1780	226700	29200	671	503	94400	38400	629	629	125900
1-1/2-6	34800	870	650	91000	78000	1910	1460	159600	126500	3160	2360	273600	35600	891	668	114000	46700	835	835	152000

Yield Strength: is the load at which the fastener exhibits a specified elongation at a specific load.
Tensile Strength: is the minimum total load that will fail the fastener.
Clamp Load: 75% x Proof X Stress Area. Also called the fastener preload or initial load. The "Clamp" Load is the true maximum load of any fastener.

Proof Load: is the load which the fastener must withstand without a permanent set.
Torque Dry: Assumes a coefficient of friction of 0.20
Torque Lubricated: Assumes a coefficient of friction of 0.15
Minimum Tensile: Minimum load at which the fastener will fail. Minimum safe working load is 4:1
***325** is the designation for "structural" Grade 5 bolt which as larger head dimensions

COMMENTARY ON HIGH STRENGTH STRUCTURAL BOLTING

Table 4 High Strength Structural Bolts

Item No.	Designation	Material Description	Surface Finish	Head Identification Marking
1	A325, Type 1	Medium carbon steel, quenched and tempered	plain	A325
2	A325, Type 2	Low carbon martensite steel, quenched and tempered	plain	A325
3	A325, Type 3	Weathering steel, quenched and tempered	plain	A325
4	A325, Type 1	Medium carbon steel, quenched and tempered	galvanized	A325
5	A325, Type 2	Low carbon martensite steel, quenched and tempered	galvanized	A325
6	A490, Type 1	Alloy steel, quenched and tempered	plain	A490
7	A490, Type 2	Low carbon martensite steel, quenched and tempered	plain	A490
8	A490, Type 3	Weathering steel, quenched and tempered	plain	A490
See Note 1	3		2, 3	4

Notes:

1. Each Item No. is a combination of a material (specification number and steel type) and a surface finish.
2. "Galvanized" includes zinc coating by either the hot-dip or mechanical deposition method.
3. In the interests of potential economies to the purchaser, ASTM A325 and A490 provide for certain substitutions of bolt types and plating methods as follows:
   a) The purchaser retains the right to specify the material type and galvanizing process.
   b) For A325 plain bolts, if the purchaser does not specify the material type, the supplier, at his option, may furnish either Type 1 or Type 2; and further, if the purchaser agrees, the supplier may furnish Type 3.
   c) For A325 galvanized bolts, if the purchaser does not specify the material type, the supplier, at his option, may furnish either Type 1 or Type 2.
   d) For A325 galvanized bolts, if the p;urchaser does not specify the plating or coating method, the supplier, at his option, may supply hot-dip galvanized bolts or bolts with mechanically deposited zinc coatings.
   e) For A490 bolts, if the purchaser does not specify the material type, the supplier, at his option, may furnish Type 1, Type 2 or Type 3.
4. In addition to the identification markings shown in the table, all bolts must be marked with the manufacturer's symbol.

COMMENTARY ON HIGH STRENGTH STRUCTURAL BOLTING

Table 5 Nuts for High Strength Structural Bolts

Item No.	Designation	Material Description	Nut Identification Marking
A	A563, Grade C	Carbon steel, may be heat treated	◯
B	A563, Grade C3	Weathering steel, may be heat treated	◯3
C	A563, Grade D	Carbon steel, may be heat treated	D
D, DG	A563, Grade DH	Carbon steel, quenched and tempered	DH
E	A563, Grade DH3	Weathering steel, quenched and tempered	DH3
F	A194/A194M, Grade 2	Carbon steel	2
G, GG	A194/A194M, Grade 2H	Carbon steel, quenched and tempered	2H
See Note 1	2		3

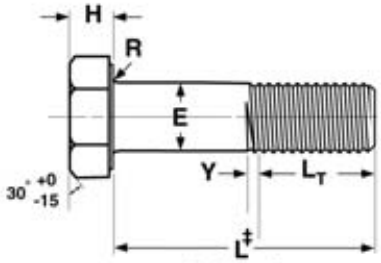
Notes:

1. Single letter Item Nos. are grades of nuts furnished plain, i.e. non-plated or non-coated. Item Nos. suffixed with the letter "G" are the same grade of nut but furnished overtapped and either hot-dip galvanized or with a mechanically deposited zinc coating.
2. In the interests of potential economies to the purchaser, ASTM permits the supplier to furnish a stronger grade of nut as a substitute for the grade ordered providing the purchaser is notified and agrees with the substitution. ASTM A563 also permits the substitution of A194/A194M Grade 2 nuts for A563 Grades C or D nuts, and A194/A194M Grade 2H nuts for A563 Grades C, D, or DH nuts.
3. In addition to the identification markings shown in the table, all nuts must be marked with the manufacturer's symbol.

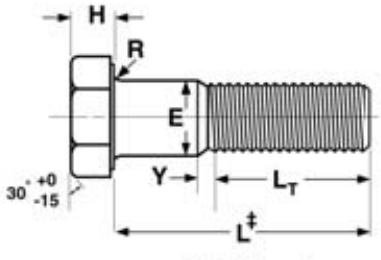
COMMENTARY ON HIGH STRENGTH STRUCTURAL BOLTING

Table 7 Grip Ranges for High Strength Structural Bolts

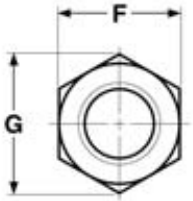
Nom Bolt Dia and Thds per Inch	1/2 - 13		5/8 - 11		3/4 - 10		7/8 - 9		1 - 8		1-1/8 - 7		1-1/4 - 7		1-3/8 - 6		1-1/2 - 6	
Nom Bolt Length in.	Grip Range, in.																	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
1.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1.50	0.55	0.79	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1.75	0.80	1.04	0.56	0.89	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2.00	1.05	1.29	0.81	1.14	0.69	0.94	—	—	—	—	—	—	—	—	—	—	—	—
2.25	1.30	1.54	1.06	1.39	0.94	1.19	0.82	1.09	—	—	—	—	—	—	—	—	—	—
2.50	1.55	1.79	1.31	1.64	1.19	1.44	1.07	1.34	—	—	—	—	—	—	—	—	—	—
2.75	1.80	2.04	1.56	1.89	1.44	1.69	1.32	1.59	1.08	1.47	—	—	—	—	—	—	—	—
3.00	2.05	2.29	1.81	2.14	1.69	1.94	1.57	1.84	1.33	1.72	1.10	1.53	1.10	1.42	—	—	—	—
3.25	2.30	2.54	2.06	2.39	1.94	2.19	1.82	2.09	1.58	1.97	1.35	1.78	1.35	1.67	1.11	1.54	1.11	1.41
3.50	2.55	2.79	2.31	2.64	2.19	2.44	2.07	2.34	1.83	2.22	1.60	2.03	1.60	1.92	1.36	1.79	1.36	1.66
3.75	2.80	3.04	2.56	2.89	2.44	2.69	2.32	2.59	2.08	2.47	1.85	2.28	1.85	2.17	1.61	2.04	1.61	1.91
4.00	3.05	3.29	2.81	3.14	2.69	2.94	2.57	2.84	2.33	2.72	2.10	2.53	2.10	2.42	1.86	2.29	1.86	2.16
4.25	3.30	3.54	3.06	3.39	2.94	3.19	2.82	3.09	2.58	2.97	2.35	2.78	2.35	2.67	2.11	2.54	2.11	2.41
4.50	3.55	3.79	3.31	3.64	3.19	3.44	3.07	3.34	2.83	3.22	2.60	3.03	2.60	2.92	2.36	2.79	2.36	2.66
4.75	3.80	4.04	3.56	3.89	3.44	3.69	3.32	3.59	3.08	3.47	2.85	3.28	2.85	3.17	2.61	3.04	2.61	2.91
5.00	4.05	4.29	3.81	4.14	3.69	3.94	3.57	3.84	3.33	3.72	3.10	3.53	3.10	3.42	2.86	3.29	2.86	3.16
5.25	4.30	4.54	4.06	4.39	3.94	4.19	3.82	4.09	3.58	3.97	3.35	3.78	3.35	3.67	3.11	3.54	3.11	3.41
5.50	4.55	4.79	4.31	4.64	4.19	4.44	4.07	4.34	3.83	4.22	3.60	4.03	3.60	3.92	3.36	3.79	3.36	3.66
5.75	4.80	5.04	4.56	4.89	4.44	4.69	4.32	4.59	4.08	4.47	3.85	4.28	3.85	4.17	3.61	4.04	3.61	3.91
6.00	5.05	5.29	4.81	5.14	4.69	4.94	4.57	4.84	4.33	4.72	4.10	4.53	4.10	4.42	3.86	4.29	3.86	4.16
6.25	—	—	—	—	4.94	5.19	4.82	5.03	4.58	4.91	4.35	4.78	4.35	4.67	4.11	4.54	4.11	4.41
6.50	—	—	—	—	5.19	5.44	5.07	5.28	4.83	5.16	4.60	5.03	4.60	4.92	4.36	4.79	4.36	4.66
6.75	—	—	—	—	5.44	5.69	5.32	5.53	5.08	5.41	4.85	5.28	4.85	5.17	4.61	5.04	4.61	4.91
7.00	—	—	—	—	5.69	5.94	5.57	5.78	5.33	5.66	5.10	5.53	5.10	5.42	4.86	5.29	4.86	5.16
7.25	—	—	—	—	5.94	6.19	5.82	6.03	5.58	5.91	5.35	5.78	5.35	5.67	5.11	5.54	5.11	5.41
7.50	—	—	—	—	6.19	6.44	6.07	6.28	5.83	6.16	5.60	6.03	5.60	5.92	5.36	5.79	5.36	5.66
7.75	—	—	—	—	6.44	6.69	6.32	6.53	6.08	6.41	5.85	6.28	5.85	6.17	5.61	6.04	5.61	5.91
8.00	—	—	—	—	6.69	6.94	6.57	6.78	6.33	6.66	6.10	6.53	6.10	6.42	5.86	6.29	5.86	6.16



Cut Thread



Rolled Thread



Domestic A325 & A490 Structural Bolts
A325B/A490B

‡Length of a structural bolt is measured from the underhead bearing surface to the extreme end of the bolt.

STRUCTURAL BOLTS, A325 & A490 — ASME 18.2.6-1996

Nominal Size or Basic Product Diameter		E		F			G		H			R		L_T	Y
		Body Diameter		Width Across Flats			Width Across Corners		Head Height			Radius of Fillet		Thread Length	Transition Thread Length
		Max	Min	Basic	Max	Min	Max	Min	Basic	Max	Min	Max	Min	Ref	Max, Ref
1/2	0.5000	0.515	0.482	7/8	0.875	0.850	1.010	0.969	5/16	0.323	0.302	0.031	0.009	1.00	0.19
5/8	0.6250	0.642	0.605	1-1/16	1.062	1.031	1.227	1.175	25/64	0.403	0.378	0.062	0.021	1.25	0.22
3/4	0.7500	0.768	0.729	1-1/4	1.250	1.212	1.443	1.383	15/32	0.483	0.455	0.062	0.021	1.38	0.25
7/8	0.8750	0.895	0.852	1-7/16	1.438	1.394	1.660	1.589	35/64	0.563	0.531	0.062	0.031	1.50	0.28
1	1.0000	1.022	0.976	1-5/8	1.625	1.575	1.876	1.796	39/64	0.627	0.591	0.093	0.062	1.75	0.31
1 1/8	1.1250	1.149	1.098	1-13/16	1.812	1.756	2.093	2.002	11/16	0.718	0.658	0.093	0.062	2.00	0.34
1 1/4	1.2500	1.277	1.223	2	2.000	1.938	2.309	2.209	25/32	0.813	0.749	0.093	0.062	2.00	0.38
1 3/8	1.3750	1.404	1.345	2-3/16	2.188	2.119	2.526	2.416	27/32	0.878	0.810	0.093	0.062	2.25	0.44
1 1/2	1.5000	1.531	1.470	2-3/8	2.375	2.300	2.742	2.622	15/16	0.974	0.902	0.093	0.062	2.25	0.44

Tolerance on Length	Nominal Screw Size	Nominal Screw Length	
		Through 6 in.	Over 6 in.
	1/2	-0.12	-0.19
	5/8	-0.12	-0.25
	3/4 through 1	-0.19	-0.25
	1 1/8 through 1 1/2	-0.25	-0.25

Domestic A325B

ASTM A325 BOLTS, Type 1

Description	A heavy hex bolt made of medium carbon steel. The bearing surface shall be flat and washer faced, and the point is chamfered.
Applications/ Advantages	Commonly used in structural steel joints in heavy construction.
Material	Type 1 bolts shall be made from a carbon steel which conforms to the following chemical composition requirements-- *Carbon:* 0.25-0.58%; *Manganese:* 0.57% minimum; *Phosphorus:* 0.048% maximum; *Sulfur:* 0.058% maximum
Heat Treatment	Type 1 bolts shall be heat treated by quenching in a liquid medium from above the austenitizing temperature and then tempering by reheating to a temperature of at least 800°F.
Hardness	**1/2" through 1" diameter, inclusive:** Rockwell C24 - 35 **1-1/8" through 1-1/2" diameter, inclusive:** Rockwell C19 - 31
Proof Load	**1/2" through 1" diameter, inclusive:** 85,000 psi. **1-1/8" through 1-1/2" diameter, inclusive:** 74,000 psi.
Yield Strength	**1/2" through 1" diameter, inclusive:** 92,000 psi. minimum **1-1/8" through 1-1/2" diameter, inclusive**: 81,000 psi. minimum
Tensile Strength	**1/2" through 1" diameter, inclusive:** 120,000 psi. minimum **1-1/8" through 1-1/2" diameter, inclusive:** 105,000 psi. minimum
Plating	See Appendix-A for plating information.

Domestic A490B

Type 1

Type 3

ASTM A490 BOLTS, Types 1 & 3

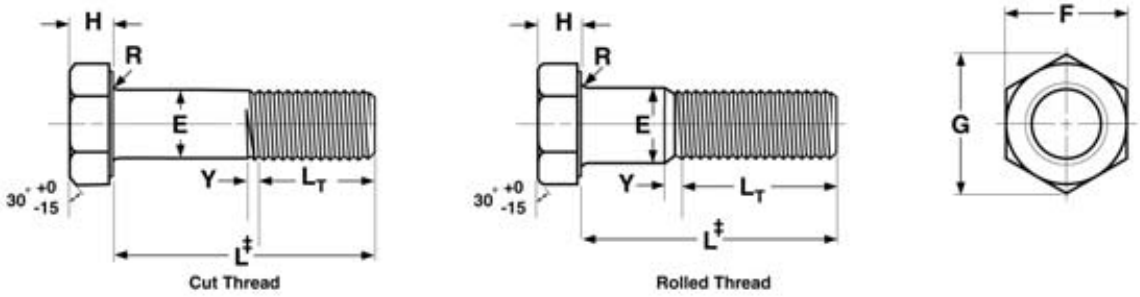
Description	A heavy hex bolt made of alloy steel. The bearing surface shall be flat and washer-faced, and the point is chamfered.
Applications/ Advantages	Used in structural steel joints in heavy construction when greater yield and tensile strengths than those of an A325 bolt are required. A Type 3 bolt is approximately twice as resistant to corrosion as a Type 1 bolt.
Material	Type 1 bolts shall be made from an alloy steel which conforms to the following chemical composition requirements-- *Carbon:* 0.28-0.50% (for 1-1/2" diameter: 0.33-0.55%); *Phosphorus:* 0.045% maximum; *Sulfur:* 0.045% maximum. Type 3 bolts shall be made from a corrosion resistant steel which conforms to the following chemical composition requirements-- *Carbon:* 0.19-0.55%; *Manganese:* 0.37% minimum; *Phosphorus:* 0.045% maximum; *Sulfur:* 0.055% maximum; *Copper:* 0.63% maximum; *Chromium:* 0.42% minimum; *Nickel:* 0.17% minimum; *Molybdenum:* 0.14% minimum.
Heat Treatment	Type 1 bolts shall be heat treated by quenching in oil from above the transformation temperature. Type 3 bolts shall be quenched in a suitable liquid from above the transformation temperature. Type 1 and Type 3 bolts shall be tempered by reheating to a temperature of at least 800°F.
Hardness	Rockwell C33 - 38
Proof Load	120,000 psi.
Yield Strength	130,000 psi. minimum
Tensile Strength	150,000 - 170,000 psi.
Plating	See Appendix-A for plating information.

**Product standards require the manufacturer's head marking to appear on the top of all cap screws 1/4" diameter and larger. "X" represents one location such a marking may appear.

A490 Bolts may now be Special Ordered with an ASTM F1136 Grade 3, Dacromet® coating!

Domestic Cap Screws & Bolts — Head and Thread Dimensions — A325 & A490 Structural Bolts

A325B/A490B



‡Length of a structural bolt is measured from the underhead bearing surface to the extreme end of the bolt.

STRUCTURAL BOLTS, A325 & A490 — ASME 18.2.6-1996

Nominal Size or Basic Product Diameter		E		F			G		H			R		L_T	Y
		Body Diameter		Width Across Flats			Width Across Corners		Head Height			Radius of Fillet		Thread Length	Transition Thread Length
		Max	Min	Basic	Max	Min	Max	Min	Basic	Max	Min	Max	Min	Ref	Max, Ref
1/2	0.5000	0.515	0.482	7/8	0.875	0.850	1.010	0.969	5/16	0.323	0.302	0.031	0.009	1.00	0.19
5/8	0.6250	0.642	0.605	1-1/16	1.062	1.031	1.227	1.175	25/64	0.403	0.378	0.062	0.021	1.25	0.22
3/4	0.7500	0.768	0.729	1-1/4	1.250	1.212	1.443	1.383	15/32	0.483	0.455	0.062	0.021	1.38	0.25
7/8	0.8750	0.895	0.852	1-7/16	1.438	1.394	1.660	1.589	35/64	0.563	0.531	0.062	0.031	1.50	0.28
1	1.0000	1.022	0.976	1-5/8	1.625	1.575	1.876	1.796	39/64	0.627	0.591	0.093	0.062	1.75	0.31
1 1/8	1.1250	1.149	1.098	1-13/16	1.812	1.756	2.093	2.002	11/16	0.718	0.658	0.093	0.062	2.00	0.34
1 1/4	1.2500	1.277	1.223	2	2.000	1.938	2.309	2.209	25/32	0.813	0.749	0.093	0.062	2.00	0.38
1 3/8	1.3750	1.404	1.345	2-3/16	2.188	2.119	2.526	2.416	27/32	0.878	0.810	0.093	0.062	2.25	0.44
1 1/2	1.5000	1.531	1.470	2-3/8	2.375	2.300	2.742	2.622	15/16	0.974	0.902	0.093	0.062	2.25	0.44

Tolerance on Length	Nominal Screw Size	Nominal Screw Length	
		Through 6 in.	Over 6 in.
	1/2	-0.12	-0.19
	5/8	-0.12	-0.25
	3/4 through 1	-0.19	-0.25
	1 1/8 through 1 1/2	-0.25	-0.25

A325 & A490 Structural Bolts — Mechanical & Performance Data — Bolts & Domestic Cap Screws

A325B

ASTM A325 BOLTS, Type 1

Description	A heavy hex bolt made of medium carbon steel. The bearing surface shall be flat and washer faced, and the point is chamfered.
Applications/ Advantages	Commonly used in structural steel joints in heavy construction.
Material	Type 1 bolts shall be made from a carbon steel which conforms to the following chemical composition requirements-- *Carbon:* 0.25-0.58%; *Manganese:* 0.57% minimum; *Phosphorus:* 0.048% maximum; *Sulfur:* 0.058% maximum
Heat Treatment	Type 1 bolts shall be heat treated by quenching in a liquid medium from above the austenitizing temperature and then tempering by reheating to a temperature of at least 800°F.
Hardness	**1/2" through 1" diameter, inclusive:** Rockwell C24 - 35 **1-1/8" through 1-1/2" diameter, inclusive:** Rockwell C19 - 31
Proof Load	**1/2" through 1" diameter, inclusive:** 85,000 psi. **1-1/8" through 1-1/2" diameter, inclusive:** 74,000 psi.
Yield Strength	**1/2" through 1" diameter, inclusive:** 92,000 psi. minimum **1-1/8" through 1-1/2" diameter, inclusive**: 81,000 psi. minimum
Tensile Strength	**1/2" through 1" diameter, inclusive:** 120,000 psi. minimum **1-1/8" through 1-1/2" diameter, inclusive:** 105,000 psi. minimum
Plating	See Appendix-A for plating information.

Type 1

A490B

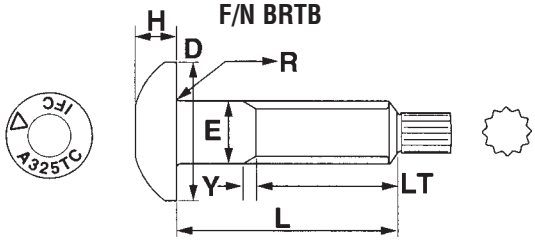
ASTM A490 BOLTS, Types 1 & 3

Type 3

Description	A heavy hex bolt made of alloy steel. The bearing surface shall be flat and washer-faced, and the point is chamfered.
Applications/ Advantages	Used in structural steel joints in heavy construction when greater yield and tensile strengths than those of an A325 bolt are required. A Type 3 bolt is approximately twice as resistant to corrosion as a Type 1 bolt.
Material	Type 1 bolts shall be made from an alloy steel which conforms to the following chemical composition requirements-- *Carbon:* 0.28-0.50% (for 1-1/2" diameter: 0.33-0.55%); *Phosphorus:* 0.045% maximum; *Sulfur:* 0.045% maximum. Type 3 bolts shall be made from a corrosion resistant steel which conforms to the following chemical composition requirements-- *Carbon:* 0.19-0.55%; *Manganese:* 0.37% minimum; *Phosphorus:* 0.045% maximum; *Sulfur:* 0.055% maximum; *Copper:* 0.63% maximum; *Chromium:* 0.42% minimum; *Nickel:* 0.17% minimum; *Molybdenum:* 0.14% minimum.
Heat Treatment	Type 1 bolts shall be heat treated by quenching in oil from above the transformation temperature. Type 3 bolts shall be quenched in a suitable liquid from above the transformation temperature. Type 1 and Type 3 bolts shall be tempered by reheating to a temperature of at least 800°F.
Hardness	Rockwell C33 - 38
Proof Load	120,000 psi.
Yield Strength	130,000 psi. minimum
Tensile Strength	150,000 - 170,000 psi.
Plating	See Appendix-A for plating information.

**Product standards require the manufacturer's head marking to appear on the top of all cap screws 1/4" diameter and larger. "X" represents one location such a marking may appear.

Domestic Cap Screws & Bolts — Tension Control Bolts — A325

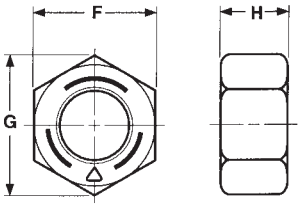


Dimensions Of High Strength Tension Control Bolts

Nominal Bolt Size	E		D		H			R		LT	Y	Tolerance on Length
	Body Diameter		Dia. of Bearing Surface		Height			Radius of Fillet		Thread Length (Ref)	Trans. Thread Length (Ref)	
	Max.	Min	Max.	Min.	Basic	Max.	Min.	Max.	Min	Basic	Max.	
5/8	0.642	0.605	1.181	1.102	25/64	0.403	0.378	0.062	0.021	1.25	0.22	+.11, -0
3/4	0.768	0.729	1.417	1.338	15/32	0.483	0.455	0.062	0.021	1.38	0.25	+.11, -0
7/8	0.895	0.852	1.654	1.535	35/64	0.563	0.531	0.062	0.031	1.50	0.28	+.11, -0
1	1.022	0.976	1.900	1.771	39/64	0.627	0.591	0.093	0.062	1.75	0.31	+.19, -0

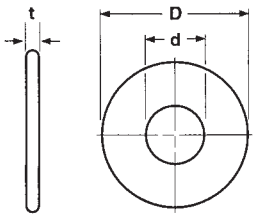
Heavy Hex Nuts Used With Tension Control Bolts

Nominal Nut Size	F			G		H		
	Width Across Flats			Width Across Corners		Height		
	Basic	Max.	Min.	Max.	Min.	Basic	Max.	Min.
5/8	1-1/16	1.062	1.031	1.227	1.175	39/64	0.631	0.587
3/4	1-1/41	1.250	1.212	1.443	1.382	47/64	0.758	0.710
7/8	1-7/16	1.438	1.394	1.660	1.589	55/64	0.885	0.833
1	1-5/8	1.625	1.575	1.876	1.796	63/64	1.012	0.956



Washers Used With Tension Control Bolts

Nominal Bolt Size	D		d		t	
	Outside Diameter		Diameter of Hole		Thickness	
	Nom.	Tolerances	Nom.	Tolerances	Max.	Min.
5/8	1-5/16	- 1/32: + 1/4	11/16	- 0: + 1/32	0.177	0.122
3/4	1-15/32	- 1/32: + 1/4	13/16	- 0: + 1/32	0.177	0.122
7/8	1-3/4	- 1/32: + 1/4	15/16	- 0: + 1/32	0.177	0.136
1	2	- 1/32: + 1/4	1-1/8	- 0: + 1/32	0.177	0.136



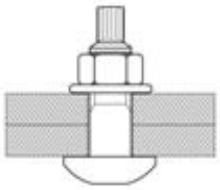
A325 Tension Control Bolts Bolts & Cap Screws

Domestic

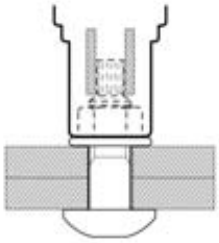
F/N BRTB

Description	A three piece fastening sustem consisting of: 1) a round-head bolt with a truncated, flat surface area at the top of the bolt, and a 24-sided tip which protrudes from the opposite end. The tip is calibrated to shear off when the proper tension is achieved; 2) a 2H heavy hex nut; and 3) a structural flat washer.		
Applications/ Advantages	Commonly used in structural steel joints in heavy construction. Has several advantages over traditional structural bolts, including: A) no operator or tool can over torque the fastening, B) the fastening can be visually inspected—when the tip is gone, the tension is correct; C) installation is faster, easier and can be done by one person; D) installation process is quiter.		
Component	*Bolt*	*Nut*	*Washer*
Material	Type 1 bolts shall be made from a carbon steel which conforms to the following chemical composition requirements-- *Carbon:* 0.25-0.58%; *Manganese:* 0.60% minimum; *Phosphorus:* 0.048% maximum; *Sulfur:* 0.058% maximum	2H nuts shall be made from a carbon steel which conforms to the following chemical composition requirements-- *Carbon:* 0.40% minimum; *Manganese:* 1.00% maximum; *Phosphorus:* 0.040% maximum; *Sulfur:* 0.050% maximum; *Silicon:* 0.040% maximum	Type 1 washers shall be made from a steel which conforms to the following chemical composition requirements: *Phosphorus:* 0.050% maximum; *Sulfur:* 0.060% maximum
Heat Treatment	Type 1 bolts shall be heat treated by quenching in a liquid medium from above the austenitizing temperature and then tempering by reheating to a temperature of at least 800°F.	2H nuts shall be heat treated to meet the required mechanical properties.	Washers shall be through hardened.
Hardness	**5/8" through 1" diameter, inclusive:** Rockwell C24 - 35	Rockwell C24 - 38	Rockwell C38 - 45
Proof Load	**5/8" through 1" diameter, inclusive:** 85,000 psi.	175,000 psi.	-
Yield Strength	**5/8" through 1" diameter, inclusive:** 92,000 psi. minimum	-	-
Tensile Strength	**5/8" through 1" diameter, inclusive:** 120,000 psi. minimum	-	-
Plating	All components are most commonly used plain, without any secondary finish other than oil.		

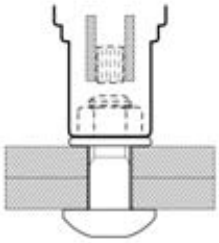
INSTALLATION PROCEDURE



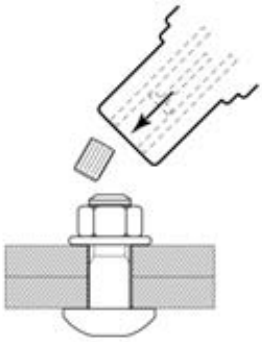
Place the bolt into the connection with the washer under the nut.



Slide the inner socket over the bolt tip and the outer socket over the nut. Press the trigger switch. The outer socket will rotate and tighten the nut until the bolt reaches the required tension.



When the proper bolt tension is reached, the tip of the bolt will shear. When the tip of the bolt shears, pull back on the wrench until the outer socket is no longer engaging the nut.

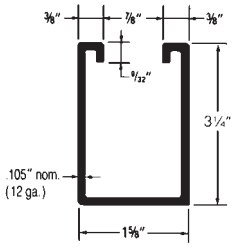


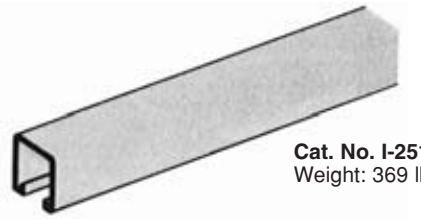
Push the ejector lever to discharge the severed bolt tip.

STRUT

Strut

I-2512 Steel Channel

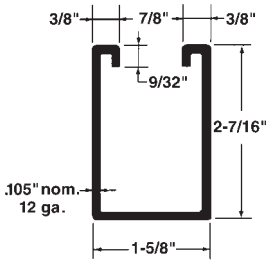




Also available in SH

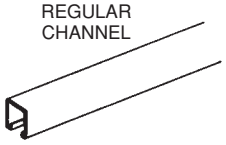
Cat. No. I-2512
Weight: 369 lb./C ft.

I-7612 Steel Channels



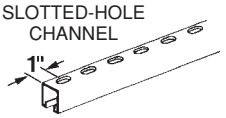
Cat. No. I-7612
Weight: 240 lb./C ft.

REGULAR CHANNEL



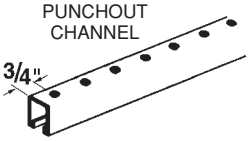
Cat. No. I-7612-SH
Slots @ 4" o.c.,
13/32" wide x 3" long.
Weight: 231 lb./C ft.

SLOTTED-HOLE CHANNEL



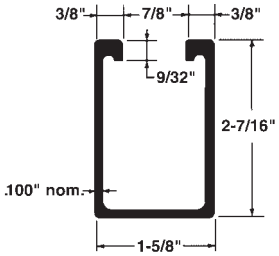
Cat. No. I-7612-PO
Holes @ 1-7/8" o.c., 9/16" diam.
Weight: 235 lb./C ft.

PUNCHOUT CHANNEL



I-7612-AL Aluminum Channels

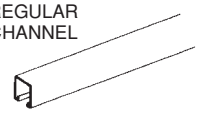
Cat. No. I-7612-AL
Weight: 90 lb./C ft.

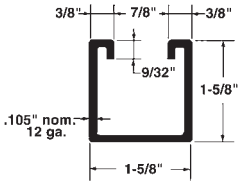


I-5812 Steel Channels

Cat. No. I-5812
Weight: 185 lb./C ft.

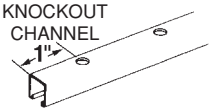
REGULAR CHANNEL





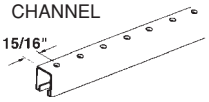
Cat. No. I-5812-KO
Knockouts @ 6" o.c., 7/8" diam.
Weight: 185 lb./C ft.

KNOCKOUT CHANNEL



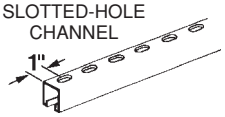
Cat. No. I-5812-PO
Holes @ 1-7/8" o.c., 9/16" diam.
Weight: 181 lb./C ft.

PUNCHOUT CHANNEL



Cat. No. I-5812-SH
Slotted holes @ 2" o.c., 9/16" wide x 7/8" long.
Weight: 181 lb./C ft.

SLOTTED-HOLE CHANNEL



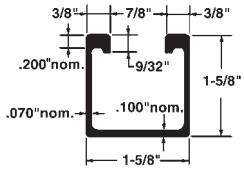
Cat. No. I-5812-SL
Slots @ 4" o.c., 13/32" wide x 3" long.
Weight: 176 lb./C ft.

SLOTTED CHANNEL

I-5812-AL Aluminum Channels

Cat. No. I-5812-AL
Weight: 62 lb./C ft.

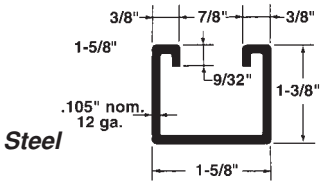
Cat. No. I-5812-PO-AL
Holes @ 1-7/8" o.c., 9/16" diam.
Weight: 60 lb./C ft.



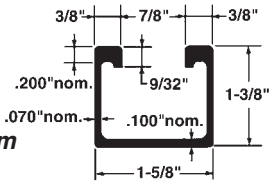
"All struts and fittings are stocked in stainless, fiberglass, galvanized, aluminum, green and gold."

Strut

I-3812



Steel



Aluminum

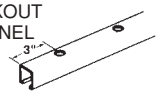
I-3812 Steel Channels

Cat. No. I-3812
Weight: 167 lb./C ft.

REGULAR CHANNEL

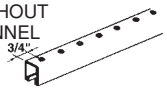
Cat. No. I-3812-KO
Knockouts @ 6" o.c., 7/8" diameter
Weight: 167 lb./C ft.

KNOCKOUT CHANNEL



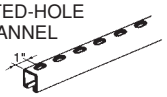
Cat. No. I-3812-PO
Holes @ 1-7/8" o.c., 9/16" diameter
Weight: 163 lb./C ft.

PUNCHOUT CHANNEL



Cat. No. I-3812-SH
Slotted holes @ 2" o.c., 9/16" wide x 7/8" long.
Weight: 163 lb./C ft.

SLOTTED-HOLE CHANNEL



Cat. No. I-3812-SL
Slots @ 4" o.c., 13/32" wide x 3" long.
Weight: 158 lb./C ft.

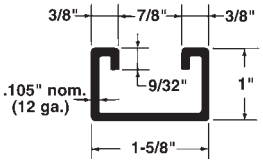
SLOTTED CHANNEL

I-3812-AL Aluminum Channels

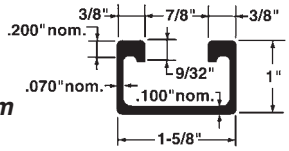
Cat. No. I-3812-AL
Weight: 58 lb./C ft.

Cat. No. I-3812-PO-AL
Holes @ 1-7/8" o.c., 9/16" diameter
Weight: 56 lb./C ft.

I-1012



Steel

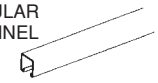


Aluminum

I-1012 Steel Channels

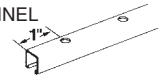
Cat. No. I-1012
Weight: 141 lb./C ft.

REGULAR CHANNEL



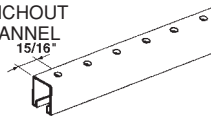
Cat. No. I-1012-KO
Knockouts @ 6" o.c., 7/8" diameter
Weight: 141 lb./C ft.

KNOCKOUT CHANNEL



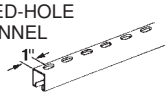
Cat. No. I-1012-PO
Holes @ 1-7/8" o.c., 9/16" diameter
Weight: 137 lb./C ft.

PUNCHOUT CHANNEL



Cat. No. I-1012-SH
Slotted holes @ 2" o.c., 9/16" wide x 7/8" long.
Weight: 137 lb./C ft.

SLOTTED-HOLE CHANNEL



Cat. No. I-1012-SL
Slots @ 4" o.c., 13/32" wide x 3" long.
Weight: 132 lb./C ft.

SLOTTED CHANNEL

I-1012-AL Aluminum Channels

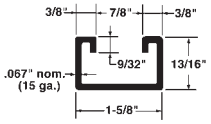
Cat. No. I-1012-AL
Weight: 53 lb./C ft.

"All struts and fittings are stocked in stainless, fiberglass, galvanized, aluminum, green and gold."

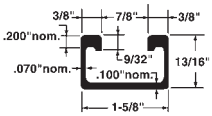
Strut

I-1315

Steel



Aluminum



I-1315 Steel Channels

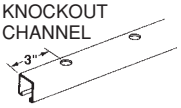
14 GAUGE

Cat. No. I-1315
Weight: 92 lb./C ft.

REGULAR CHANNEL

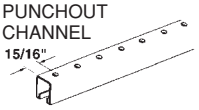
Cat. No. I-1315-KO
Knockouts @ 6" o.c., 7/8" diameter
Weight: 92 lb./C ft.

KNOCKOUT CHANNEL



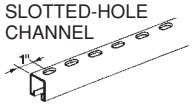
Cat. No. I-1315-PO
Holes @ 1-7/8" o.c., 9/16" diameter
Weight: 89 lb./C ft.

PUNCHOUT CHANNEL



Cat. No. I-1315-SH
Slotted holes @ 2" o.c., 9/16" wide x 7/8" long
Weight: 89 lb./C ft.

SLOTTED-HOLE CHANNEL



Cat. No. I-1315-SL
Slots @ 4" o.c., 13/32" wide x 3" long
Weight: 86 lb./C ft.

SLOTTED CHANNEL

I-1315-AL Aluminum Channels

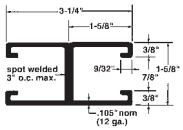
Cat. No. I-1315-AL
Weight: 47 lb./C ft.

Cat. No. I-1315-PO-AL
Holes @ 1-7/8" o.c., 9/16" diameter
Weight: 45 lb./C ft.

Cat. No. I-1315-SH-AL
Slotted holes @ 2" o.c., 9/16" wide x 7/8" long
Weight: 45 lb./C ft.

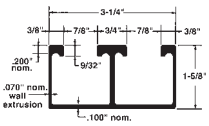
Cat. No. I-1315-SL-AL
Slots @ 4" o.c., 13/32" wide x 3" long
Weight: 40 lb./C ft.

1-5812-( ) Channel Combinations

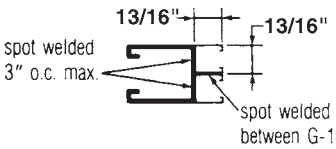


I-5812-( )
Steel

I-5812-( )-AL
Aluminum



Cat. No. I-5812-A
(shown above)
Weight: 370 lb./C ft.
Cat. No. I-5812-A-AL
Weight: 125 lb./C ft.



Cat. No. I-5812-AB
(suitable for mounting instruments)
Weight: 263 lb./C ft.

Cat. No. I-5812-B
Weight: 370 lb./C ft.
Cat. No. I-5812-B-AL
(shown above)
Weight: 121 lb./C ft.

Cat. No. I-5812-C
Weight: 370 lb./C ft.

Cat. No. I-5812-E
Weight: 555 lb./C ft.

Cat. No. I-5812-D
Weight: 370 lb./C ft.

Cat. No. I-5812-F
Weight: 555 lb./C ft.

Cat. No. I-5812-G
Weight: 555 lb./C ft.

Cat. No. I-5812-H
Weight: 555 lb./C ft.

Cat. No. I-5812-J
Weight: 555 lb./C ft.

Cat. No. I-5812-K
Weight: 555 lb./C ft.

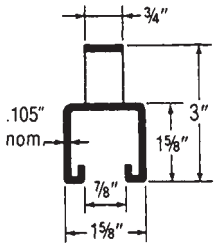
Cat. No. I-5812-L
Weight: 740 lb./C ft.

Cat. No. I-5812-M
Weight: 740 lb./C ft.

Cat. No. I-5812-N
Weight: 740 lb./C ft.

"All struts and fittings are stocked in stainless, fiberglass, galvanized, aluminum, green and gold."

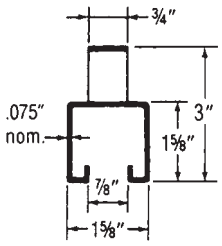
Continuous Concrete Inserts



CI-5812 Series
(allowable single-point pullout load: 2370 lb.*)

Cat. No.	Length	Wt. (lb./C)
CI-5812-8	8"	148.0
CI-5812-12	12"	187.0
CI-5812-16	16"	374.0
CI-5812-24	24"	374.0
CI-5812-32	32"	499.0
CI-5812-40	40"	624.0
CI-5812-48	48"	749.0
CI-5812-72	72"	1123.0
CI-5812-80	80"	1248.0
CI-5812-96	96"	1498.0
CI-5812-120	120"	1882.0
CI-5812-144	144"	2246.0
CI-5812-168	168"	2621.0
CI-5812-192	192"	2995.0
CI-5812-216	216"	3370.0
CI-5812-240	240"	3742.0

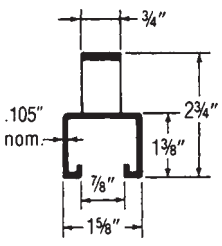
*One load applied in any 12-in length.
Safety factor = 2.0.



CI-5814 Series
(allowable single-point pullout load: 1565 lb.*)

Cat. No.	Length	Wt. (lb./C)
CI-5814-8	8"	110.0
CI-5814-12	12"	145.0
CI-5814-16	16"	198.0
CI-5814-24	24"	290.0
CI-5814-32	32"	387.0
CI-5814-40	40"	484.0
CI-5814-48	48"	581.0
CI-5814-72	72"	871.0
CI-5814-80	80"	968.0
CI-5814-96	96"	1162.0
CI-5814-120	120"	1452.0
CI-5814-144	144"	1742.0
CI-5814-168	168"	2033.0
CI-5814-192	192"	2323.0
CI-5814-216	216"	2613.0
CI-5814-240	240"	2882.0

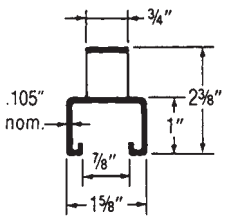
*One load applied in any 12-in length.
Safety factor = 2.0.



CI-3812 Series
(allowable single-point pullout load: 2474 lb.*)

Cat. No.	Length	Wt. (lb./C)
CI-3812-8	8"	117.0
CI-3812-12	12"	160.0
CI-3812-16	16"	227.0
CI-3812-24	24"	340.0
CI-3812-32	32"	454.0
CI-3812-40	40"	568.0
CI-3812-48	48"	681.0
CI-3812-72	72"	1022.0
CI-3812-80	80"	1136.0
CI-3812-96	96"	1363.0
CI-3812-120	120"	1702.0
CI-3812-144	144"	2045.0
CI-3812-168	168"	2385.0
CI-3812-192	192"	2726.0
CI-3812-216	216"	3067.0
CI-3812-240	240"	3382.0

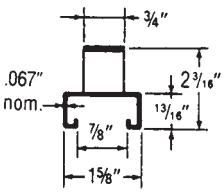
*One load applied in any 12-in length.
Safety factor = 2.0.



CI-1012 Series
(allowable single-point pullout load: 2412 lb.*)

Cat. No.	Length	Wt. (lb./C)
CI-1012-8	8"	111.0
CI-1012-12	12"	151.0
CI-1012-16	16"	209.0
CI-1012-24	24"	309.0
CI-1012-32	32"	407.0
CI-1012-40	40"	505.0
CI-1012-48	48"	605.0
CI-1012-72	72"	898.0
CI-1012-80	80"	986.0
CI-1012-96	96"	1194.0
CI-1012-120	120"	1490.0
CI-1012-144	144"	1786.0
CI-1012-168	168"	2082.0
CI-1012-192	192"	2377.0
CI-1012-216	216"	2673.0
CI-1012-240	240"	2989.0

*One load applied in any 12-in length.
Safety factor = 2.0.



CI-1315 Series
(allowable single-point pullout load: 1202 lb.*)

Cat. No.	Length	Wt. (lb./C)
CI-1315-8	8"	69.0
CI-1315-12	12"	97.0
CI-1315-16	16"	132.0
CI-1315-24	24"	194.0
CI-1315-32	32"	255.0
CI-1315-40	40"	318.0
CI-1315-48	48"	380.0
CI-1315-72	72"	568.0
CI-1315-80	80"	631.0
CI-1315-96	96"	756.0
CI-1315-120	120"	944.0
CI-1315-144	144"	1131.0
CI-1315-168	168"	1319.0
CI-1315-192	192"	1507.0
CI-1315-216	216"	1695.0
CI-1315-240	240"	1883.0

*One load applied in any 12-in length.
Safety factor = 2.0.

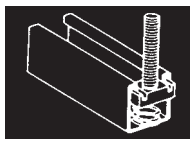
SPECIFICATIONS

MATERIALS
Channels and Closure Strips:
Steel–
ASTM A569-72 (black standard)
ASTM A570-79, Grade 33 (optional, black)
ASTM A366-72 (black, standard)
ASTM A526-80 (pre-galvanized, standard)
ASTM A446-76, Grade 33 (optional, pre-galvanized)
Aluminum–ASTM B221-74
Channel lock nuts: ASTM A575-81
Fittings: ASTM A575-81, A622-81 or A569-72
Pipe and tube clamps: ASTM A569-72
Bolts: ASTM A307-80, Grade A and
Nuts: ASTM A563-80, Grade A
Shelf Brackets: ASTM A569-72 (standard)
Electrical fixture support fittings (except threaded parts):
ASTM A569-72 (standard)

FINISHES
Mill galvanized (pre-galvanized):
ASTM A525-81, coating class G90
Hot-dip galvanized-after-fabrication (HDGAF): ASTM A123-84
Zinc electroplating:
ASTM B633-78
Electrogalvanized and Dichromate coated to conform to ASTM B201
Paint, and other non-metallic coatings:
per Metal Framing Manufacturer's Association, publication MFMA-1, 1984.

WELDS
Fillet: AWS D1.1-81
Resistance: AWS C1.1-66

Strut



Hardware

LOCK NUTS

Channel lock nuts are carbon nitrate-hardened steel with electrogalvanized standard finish.

Standard Material/Finish

Steel, conforming to ASTM A575-81 and Zinc-electroplated conforming to ASTM B-633-78.

STANDARD/UNIVERSAL CHANNEL LOCK NUTS – catalog nos. & wts.

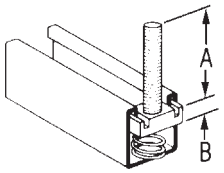
Thread Size (diameter – no./in)	Lock Nut Catalog Number/Weight (lbs./C)						
	without spring, for Channel Cat. No.			with **shank wrapped** spring, for Channel Cat. No.			
	I-7612, I-5814	I-1012, I-1315	Universal	I-7612	I-5812/14	I-1012*, I-1315	Universal
#10-24	**I-1131** 6.5	—		—	**I-1031** 7.3	**I-1231** 6.3	
1/4"-20	**I-1132** 6.5	—		**I-1432** 6.0	**I-1032** 7.3	**I-1032** 7.3	
5/16"-18	**I-1133** 6.2	—		—	**I-1033** 10.3	**I-1233** 10.3	
3/8"-16	**I-1134** 9.3	—		**I-1434** 7.6	**I-1034** 9.6	**I-1234** 9.2	
1/2"-13	**I-1135** 11.3	**I-1335** 8.0		**I-1435** 12.3	**I-1035** 11.3	**I-1235** 8.3	
5/8"-11	**I-1136** 8.7	**I-1336** 10.3		**I-1436** 14.8	**I-1036** 13.5	**I-1236** 10.3	
3/4"-10	**I-1137** 11.3	**I-1337** 9.0		**I-1437** 13.3	**I-1037** 12.6	**I-1237** 9.3	

Note: *Springs not shrink wrapped but tapered.

EASY GRIP NUTS

Cat. Number	Thread Size (diam. – no./in.)	Wt. (lb./C)
I-1032E	1/4" – 20	7.5
I-1033E	5/16" – 18	8.6
I-1034E	3/8" – 16	10.0
I-1035E	1/2" – 13	13.5

STUD NUTS – catalog nos. & wts.



Cat. No.*	Stud Size	Dimensions A	Dimensions B	Wt. (lb./C)
I-1701	3/8" – 16	3/4"	3/8"	12.7
I-1702	3/8" – 16	1"	3/8"	13.3
I-1703	3/8" – 16	1-1/4"	3/8"	13.9
I-1704	1/2" – 13	7/8"	1/2"	18.3
I-1705	1/2" – 13	1-1/8"	1/2"	21.3

*Use with channel catalog nos. I-5812, I-5814 and I-3812 only; see table for allowable loads.

MINI-CHANNEL LOCK NUTS – catalog nos. & wts.

Thread Size (diameter-no./inches)	Lock Nut Catalog No./Wt. (lb./C) with spring, for channel Cat. No.: I-1619	I-3219
#8-32	**I-1631** 2.0	**I-1531** 1.0
#10-32	**I-1632** 2.0	**I-1532** 1.0
#10-24	**I-1633** 2.0	**I-1533** 1.0
1/4"-20	**I-1634** 2.0	**I-1534** 1.0

Note: These lock nuts are not shrink wrapped.

ALLOWABLE LOADS
Standard Channel/Lock Nuts and Stud Nuts

Thread Size (diam. – no./in.)	Torque on Lock Nuts lb.-ft.)	Type of Load* (lb.)	Pullout Load* (lb.) & Slip Resistance* (lb.) when Lock Nuts are used in channel Cat. No.: I-7612	I-5812	I-5814	I-3812	I-1012	I-1315
#10-24	4	P.O.	604	606	609	606	601	602
		S.R.	204	211	142	186	237	188
1/4"-20	13	P.O.	1650	1666	1490	1676	1759	1208
		S.R.	299	447	318	405	262	466
3/8"-16	22	P.O.	2518	2883	2111	2564	2586	1980
		S.R.	1119	1373	1056	1550	1437	1164
1/2"-13	40	P.O.	2583	3437	1963	2714	2821	1939
		S.R.	1877	1638**	1919	1946	1466	1517

*With 2.0 safety factor. **Increases to 2235 lb. at 50 lb.-ft. torque.

Slip-On Lock Nut

Slip-On Lock Nut Co.

"A BETTER WAY"

Part No. I-14SlipLN — 1/4-20
Part No. I-37SlipLN — 3/8-16
Part No. I-50SlipLN — 1/2-13

Position "me" at any desired location without threading

Saves Time and Money

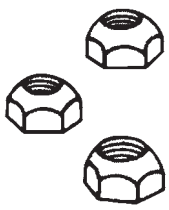
Solves Rod and Retrofit Problems

The Slip-ON® Lock Nut has been developed with the ability to be positioned on threaded rod at any point, without the time consuming nuisance of threading. Just open the Slip-ON® Lock Nut and insert where needed. Twist and tighten with a wrench. It's that simple!

- ***Electricians***
- ***Pipe Fitters***
- ***General Contractors***
- ***Anyone Using Threaded Rod!***

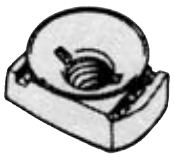
- This Product Carries Numerous Patents Worldwide

SWIVEL NUTS



Catalog Number	Use with Rod Size	Weight (lb./C)
I-6067	1/4"–20	2.0
I-6068	3/8"–16	5.0
I-6069	1/2"–13	3.0

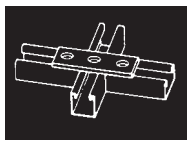
CM-100 Nylon Cone Nut



Part No. & Size	# Wt./C lbs.
CM100-1/4	8
CM100-3/8	10
CM100-1/2	12

For all 1-5/8" channel
Will not fit in 13/16" channel
Gold galv finish

Strut

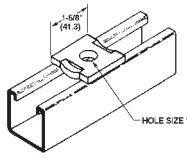


Flat Plate Fittings

General Data

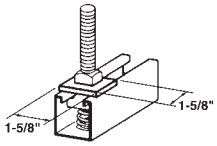
Holes – 9/16" diam. 1-7/8" o.c. spacing 13/16" center-to-end distance

Material – 1-5/8" width



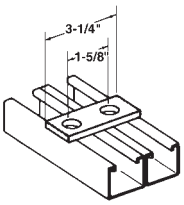
No Twist Square Washer

Part #	A	(A)	Bolt Size	
I-2003NT	3/8"	(9.5)	5/16"	(7.9)
I-02004NT	7/16"	(11.1)	3/8"	(9.5)
I-2005NT	9/16"	(14.2)	1/2"	(12.7)
I-2006NT	11/16"	(17.4)	5/8"	(15.9)
I-2007NT	13/16"	(20.6)	3/4"	(19.0)



SQUARE CHANNEL WASHERS

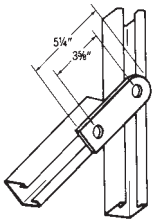
Cat. No.	Hole Diam.	Wt. (lb./C)
I-2003	11/32"	18.0
I-2004	7/16"	18.0
I-2005	9/16"	17.0
I-2006	11/16"	16.0
I-2007	13/16"	16.0



2-HOLE TIE AND SPLICE PLATE

Cat. No. I-2011

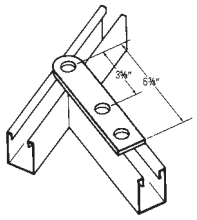
Weight: 34.0 lb./C



2-HOLE SWIVEL PLATE

Cat. No. I-2029

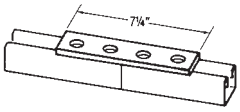
Weight: 55.0 lb./C



3-HOLE SWIVEL PLATE

Cat. No. I-2032

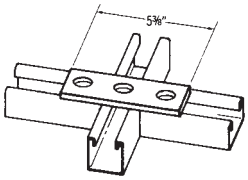
Weight: 77.0 lb./C



4-HOLE SPLICE PLATE

Cat. No. I-2023

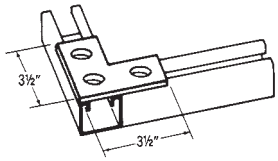
Weight: 78.0 lb./C



3-HOLE SPLICE PLATE

Cat. No. I-2017

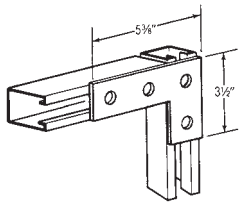
Weight: 53.0 lb./C



3-HOLE FLAT CORNER ANGLE

Cat. No. I-2037

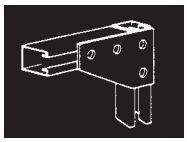
Weight: 59.0 lb./C



4-HOLE FLAT CORNER ANGLE

Cat. No. I-2038

Weight: 80.0 lb./C



Flat Plate Fittings

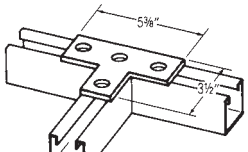
General Data

Holes – 9/16" diam. 1-7/8" o.c. spacing 13/16" center-to-end distance

Material – 1-5/8" width

Material/finish options:

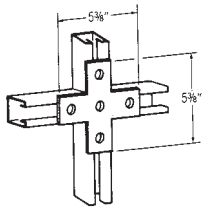
1. Steel conforming to ASTM A575-81
2. Zinc-electroplated steel, conforming to ASTM B633-78 (standard).
3. Hot-dip galvanizing-after-fabrication, conforming to ASTM A123-84 (available on request).



4-HOLE FLAT TEE

Cat. No. I-2042

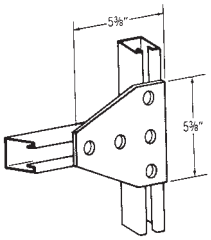
Weight: 75.0 lb./C



5-HOLE FLAT CROSS

Cat. No. I-2047

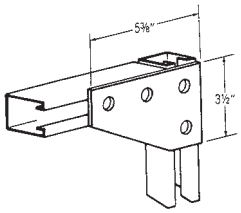
Weight: 98.0 lb./C



5-HOLE LARGE TEE GUSSET

Cat. No. I-2057

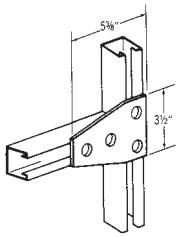
Weight: 152.0 lb./C



4-HOLE FLAT CORNER GUSSET

Cat. No. I-2063

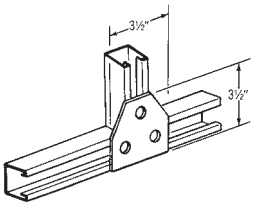
Weight: 101.0 lb./C



4-HOLE SMALL TEE GUSSET

Cat. No. I-2052

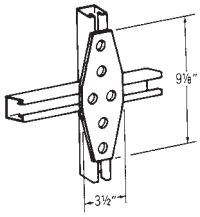
Weight: 97.0 lb./C



3-HOLE SMALL TEE GUSSET

Cat. No. I-2053

Weight: 70.0 lb./C



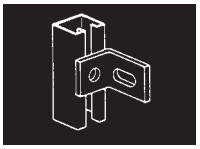
6-HOLE CROSS GUSSET

Cat. No. I-2068

Weight: 164.0 lb./C

"All struts and fittings are stocked in stainless, fiberglass, galvanized, aluminum, green and gold."

Strut



90° Angle Fittings

General Data

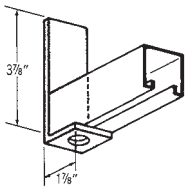
Holes – 9/16" diam. 1-7/8" o.c. spacing
13/16" center-to-end distance

Material – 1-5/8" width

Material/finish options:

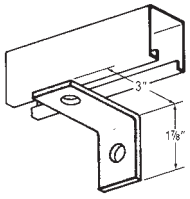
1. Steel conforming to ASTM A575-81
2. Zinc-electroplated steel, conforming to ASTM B633-78 (standard).
3. Hot-dip galvanizing-after-fabrication, conforming to ASTM A123-84 (available on request).

1-HOLE ANGLE

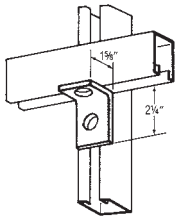


Cat. No. I-3002
Weight: 60.0 lb./C

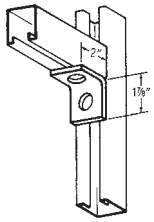
2-HOLE CORNER ANGLES



Cat. No. I-3007
Weight: 48.0 lb./C

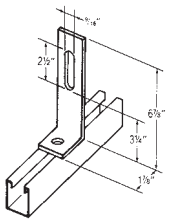


Cat. No. I-3005
Weight: 38.0 lb./C

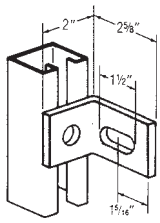


Cat. No. I-3006
Weight: 37.0 lb./C

2-HOLE ADJUSTABLE CORNER ANGLES

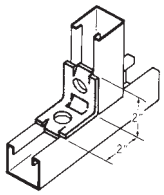


Cat. No. I-3014
Weight: 82.0 lb./C

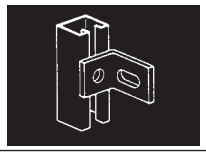


Cat. No. I-3013
Weight: 42.0 lb./C

2-HOLE CORNER ANGLE WITH INDENTIONS



Cat. No. I-3018
Weight: 39.0 lb./C



90° Angle Fittings

General Data

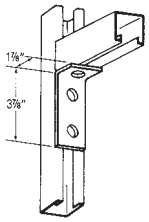
Holes – 9/16" diam. 1-7/8" o.c. spacing
13/16" center-to-end distance

Material – 1-5/8" width

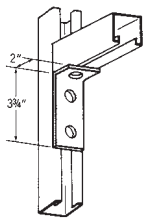
Material/finish options:

1. Steel conforming to ASTM A575-81
2. Zinc-electroplated steel, conforming to ASTM B633-78 (standard).
3. Hot-dip galvanizing-after-fabrication, conforming to ASTM A123-84 (available on request).

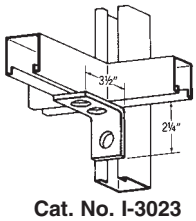
3-HOLE CORNER ANGLES



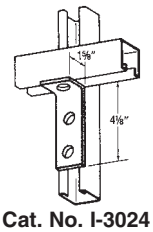
Cat. No. I-3021
Weight: 57.0 lb./C



Cat. No. I-3022
Weight: 57.0 lb./C

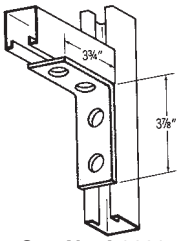


Cat. No. I-3023
Weight: 57.0 lb./C

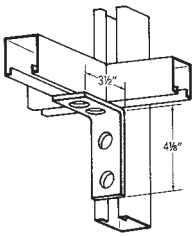


Cat. No. I-3024
Weight: 57.0 lb./C

4-HOLE CORNER ANGLES

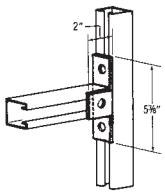


Cat. No. I-3032
Weight: 77.0 lb./C



Cat. No. I-3033
Weight: 79.0 lb./C

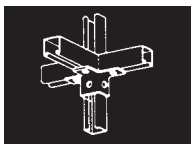
3-HOLE BENT TEE



Cat. No. I-3040
Weight: 71.0 lb./C

"All struts and fittings are stocked in stainless, fiberglass, galvanized, aluminum, green and gold."

Strut



Wing-Shaped Fittings

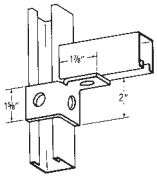
General Data

Holes – 9/16" diam. 1-7/8" o.c. spacing
13/16" center-to-end distance

Material – 1-5/8" width

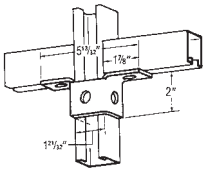
Material/finish options:
1. Steel conforming to ASTM A575-81
2. Zinc-electroplated steel, conforming to ASTM B633-78 (standard).
3. Hot-dip mill-galvanizing-after-fabrication, conforming to ASTM A153-82 or ASTM A123-84 (available on request).

3-HOLE SINGLE SIDE CONNECTORS



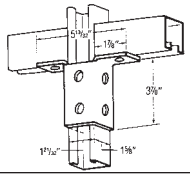
Cat. Nos.
I-3077 (shown)
I-3078 (opposite hand)
Weight: 54.0 lb./C

5-HOLE 2-SIDE CONNECTOR



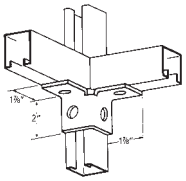
Cat. No. I-3081
Weight: 86.0 lb./C

8-HOLE 2-SIDE CONNECTOR



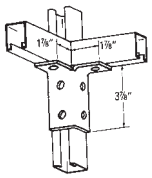
Cat. No. I-3084
Weight: 144.0 lb./C

4-HOLE FRONT AND SIDE CONNECTOR



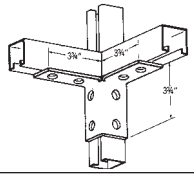
Cat. No. I-3087
Weight: 69.0 lb./C

6-HOLE FRONT AND SIDE CONNECTOR

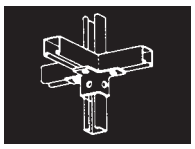


Cat. No. I-3090
Weight: 105.0 lb./C

8-HOLE FRONT AND SIDE CONNECTOR



Cat. No. I-3093
Weight: 140.0 lb./C



Wing-Shaped Fittings

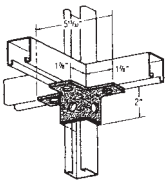
General Data

Holes – 9/16" diam. 1-7/8" o.c. spacing
13/16" center-to-end distance

Material – 1-5/8" width

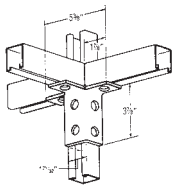
Material/finish options:
1. Steel conforming to ASTM A575-81
2. Zinc-electroplated steel, conforming to ASTM B633-78 (standard).
3. Hot-dip mill-galvanizing-after-fabrication, conforming to ASTM A153-82 or ASTM A123-84 (available on request).

6-HOLE FRONT AND 2-SIDE CONNECTOR



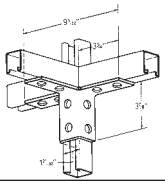
Cat. No. I-3096
Weight: 99.0 lb./C

9-HOLE FRONT AND 2-SIDE CONNECTOR



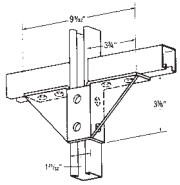
Cat. No. I-3098
Weight: 162.0 lb./C

12-HOLE FRONT AND 2-SIDE CONNECTOR



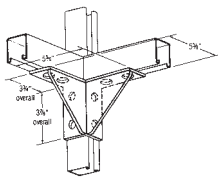
Cat. No. I-3099
Weight: 206.0 lb./C

10-HOLE WEBBED 2-SIDE CONNECTOR

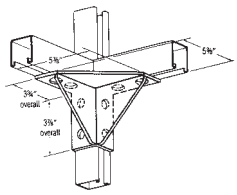


Cat. No. I-3101
Weight: 234.0 lb./C

8-HOLE WEBBED FRONT AND SIDE CONNECTORS



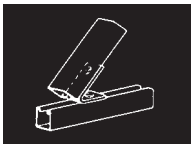
Cat. No. I-3105
Weight: 176.0 lb./C



Cat. No. I-3108
Weight: 300.0 lb./C

"All struts and fittings are stocked in stainless, fiberglass, galvanized, aluminum, green and gold."

Strut



Bent Strap Angle Fittings

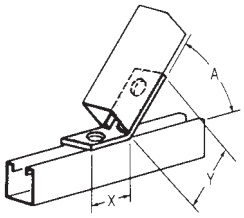
General Data

Holes – 9/16" diam. 1-7/8" o.c. spacing
13/16" center-to-end distance
Material – 1-5/8" width

Material/finish options:

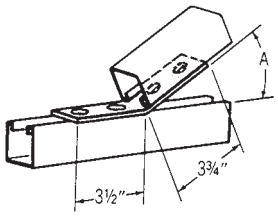
1. Steel conforming to ASTM A575-81
2. Zinc-electroplated steel, conforming to ASTM B633-78 (standard).
3. Hot-dip galvanizing-after-fabrication, conforming to ASTM A123-84 (available on request).

2-HOLE OPEN ANGLE CONNECTORS



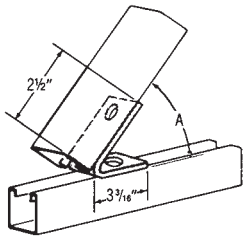
Cat. No.	Dimension A	X	Y	Wt. (lb./C)
I-3110	60°	1-7/8"	3-7/16"	58.0
I-3111	45°	2-3/8"	3"	58.0
I-3112	37°	1-3/4"	3-1/2"	58.0
I-3113	30°	2-1/16"	3-3/16"	58.0

4-HOLE OPEN ANGLE CONNECTORS



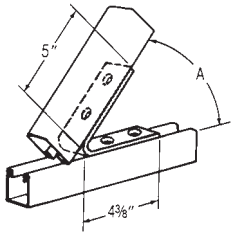
Cat. No.	Dimension A	Wt. (lb./C)
I-3127	82°	77.0
I-3128	75°	77.0
I-3129	67°	77.0
I-3130	60°	77.0
I-3131	52°	77.0
I-3132	45°	77.0
I-3133	37°	77.0
I-3134	30°	77.0

2-HOLE CLOSED ANGLE CONNECTORS

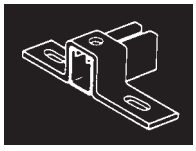


Cat. No.	Dimension A	Wt. (lb./C)
I-3116	82°	58.0
I-3117	75°	58.0
I-3118	67°	58.0
I-3119	60°	58.0
I-3120	52°	58.0
I-3121	45°	58.0
I-3122	37°	58.0

4-HOLE CLOSED ANGLE CONNECTORS



Cat. No.	Dimension A	Wt. (lb./C)
I-3138	60°	100.0
I-3139	52°	100.0
I-3140	45°	100.0



U-Shaped Fittings

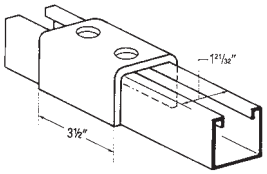
General Data

Holes – 9/16" diam. 1-7/8" o.c. spacing
13/16" center-to-end distance
Material – 1-5/8" width

Material/finish options:

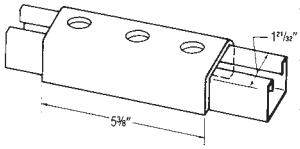
1. Steel conforming to ASTM A575-81
2. Zinc-electroplated steel, conforming to ASTM B633-78 (standard).
3. Hot-dip galvanizing-after-fabrication, conforming to ASTM A123-84 (available on request).

2-HOLE SPLICE CHANNELS



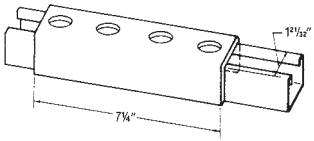
Cat. No.	Use with Channel Cat. Nos.	Wt. (lb./C)
I-4002	I-5812 & I-5814	121.0
I-4003	I-1012 & I-1315	76.0

3-HOLE SPLICE CHANNELS



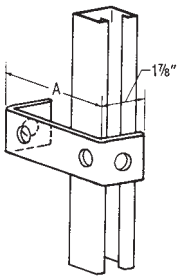
Cat. No.	Use with Channel Cat. Nos.	Wt. (lb./C)
I-4006	I-1012 & I-1315	116.0
I-4007	I-3812	174.0

4-HOLE SPLICE CHANNELS



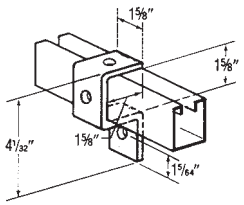
Cat. No.	Use with Channel Cat. Nos.	Wt. (lb./C)
I-4009	I-7612	344.0
I-4010	I-5812 & I-5814	233.0
I-4011	I-1315	157.0

FURRING SPACERS



Cat. No.	Dimension A	Wt. (lb./C)
I-4013	4"	76.0
I-4014	5"	86.0
I-4015	6"	102.0
I-4016	7"	149.0
I-4017	8"	161.0

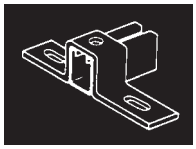
SINGLE FLANGE U-CONNECTOR FOR SINGLE CHANNEL



Cat. No. I-4020
Weight: 72.0 lb./C

"All struts and fittings are stocked in stainless, fiberglass, galvanized, aluminum, green and gold."

Strut



U-Shaped Fittings

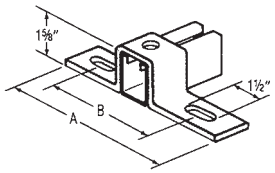
General Data

Holes – 9/16" diam. 1-7/8" o.c. spacing 13/16" center-to-end distance

Material – 1-5/8" width

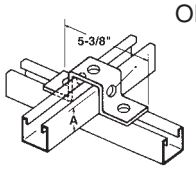
Material/finish options:
1. Steel conforming to ASTM A575-81
2. Zinc-electroplated steel, conforming to ASTM B633-78 (standard).
3. Hot-dip galvanizing-after-fabrication, conforming to ASTM A123-84 (available on request).

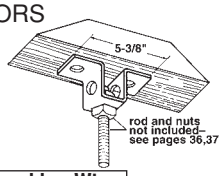
ADJUSTABLE U-CONNECTORS FOR SINGLE CHANNEL



Cat. Number	Dimension A	Dimension B	Wt. (lb./C)
I-4022	7-1/4"	4-1/8"	105.0
I-4023	8-1/4"	4-3/4"	119.0
I-4024	10-3/8"	7-1/4"	142.0

U-CONNECTORS FOR SINGLE CHANNEL OR AS CEILING ANCHORS



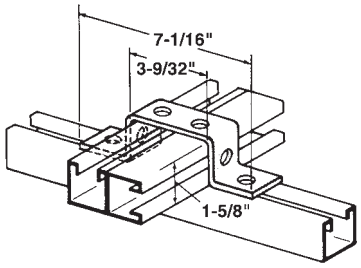


Cat. No.*	Use with Channel Cat. Nos.	Dimension A	Allowable Load** (lb.)	Wt. (lb./C)
I-4028	I-7612	2-7/16"	2820	109.0
I-4029	I-5812 & I-5814	1-5/8"	1950	87.0
I-4030	I-3812	1-3/8"	1830	83.0
I-4031	I-1012	1"	1500	74.0
I-4032	I-1315	13/16"	1360	72.0

*Side holes for I-4029 only. Suitable for ceiling anchor (see illus. above).

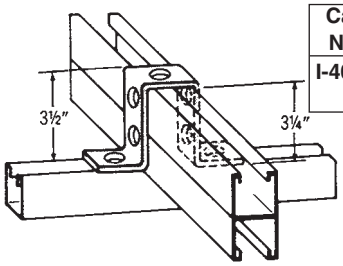
**Factor of safety = 3.0.

SHALLOW U-CONNECTOR FOR DOUBLE CHANNELS

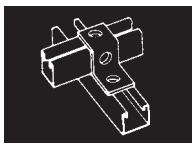


Cat. No. I-4036
Weight: 102.0 lb./C

DEEP U-CONNECTOR FOR DOUBLE CHANNELS



Cat. No.	Use with Channel Cat. Nos.	Wt. (lb./C)
I-4039	I-5812-A, B, C & D I-5814-A, B, C & D	119.0



Z-Shaped Fittings

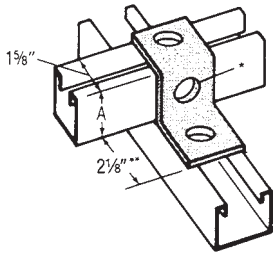
General Data

Holes – 9/16" diam. 1-7/8" o.c. spacing 13/16" center-to-end distance

Material – 1-5/8" width

Material/finish options:
1. Steel conforming to ASTM A575-81
2. Zinc-electroplated steel, conforming to ASTM B633-78 (standard).
3. Hot-dip galvanizing-after-fabrication, conforming to ASTM A123-84 (available on request).

ZEE SUPPORTS FOR SINGLE CHANNEL

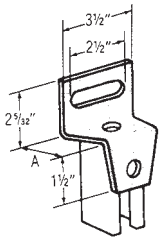


Catalog Number	Dimension A	Use with Channel Catalog Numbers	Weight (lb./C)
I-4042	2-7/16"	I-7612	66.0
I-4043**	3-1/4"	I-5812-A & I-5814-A	71.0
I-4044	1-5/8"	I-5812 & I-5814	54.0
I-4045	1-3/8"	I-3812	53.0
I-4046	1"	I-1012	50.0
I-4047	13/16"	I-1315	47.0

*Side holes for I-4043 and I-4044.

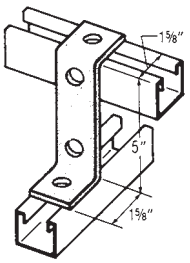
**For I-4043, 2-1/8" dimension is 1-7/8" instead.

ADJUSTABLE ZEE ANCHORS



Cat. No.	Dimension A	Use with Channel Cat. Nos.	Wt. (lb./C)
I-4053	1-5/8"	I-5812 & I-5814	99.0
I-4054	13/16"	I-1315	88.0

ZEE FURRING SPACER

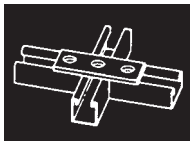


Cat. No. I-4057
Weight: 85.0 lb./C

"All struts and fittings are stocked in stainless, fiberglass, galvanized, aluminum, green and gold."

Fittings for I-1619 / I-3219

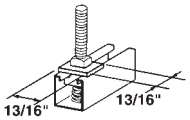
Mini-Channel Fittings



General Data
Holes – 9/32" diam.
1-1/16" o.c. spacing
13/32" center-to-end distance
Material – 3/16" width, 1/8" thickness

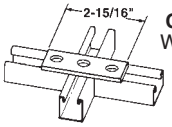
Material/finish options:
1. Steel conforming to ASTM A575-81
2. Zinc-electroplated steel, conforming to ASTM B633-78 (standard).
3. Hot-dip galvanizing-after-fabrication, conforming to ASTM A123-84 (available on request).

SQUARE MINI-CHANNEL WASHER



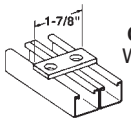
Cat. No. I-2002
Weight 3.0 lb./C

3-HOLE SPLICE PLATE



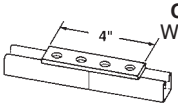
Cat. No. I-2019
Weight: 8.0 lb./C

2-HOLE TIE AND SPLICE PLATE



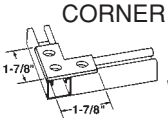
Cat. No. I-2013
Weight: 5.0 lb./C

4-HOLE SPLICE PLATE



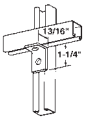
Cat. No. I-2026
Weight: 11.0 lb./C

3-HOLE FLAT CORNER ANGLE

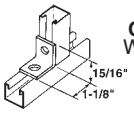


Cat. No. I-2039
Weight: 9.0 lb./C

2-HOLE CORNER ANGLES

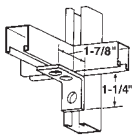


Cat. No. I-3009
Weight: 6.0 lb./C

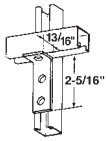


Cat. No. I-3010
Weight: 6.0 lb./C

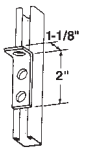
3-HOLE CORNER ANGLES



Cat. No. I-3028
Weight: 8.0 lb./C

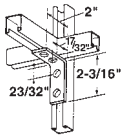


Cat. No. I-3029
Weight: 8.0 lb./C

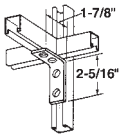


Cat. No. I-3027
Weight: 8.0 lb./C

4-HOLE CORNER ANGLES

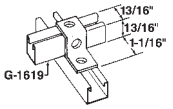


Cat. No. I-3036
Weight: 11.0 lb./C



Cat. No. I-3037
Weight: 11.0 lb./C

Z-SHAPED MINI-CHANNEL FITTING



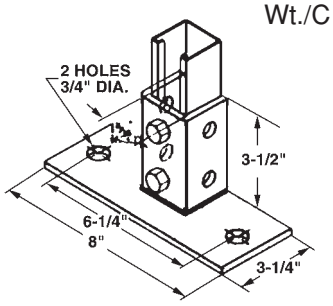
Cat. No. I-4050
Weight: 7.0 lb./C

Bracket Bases, Pipe Axle Supports & Stair Brackets

General Data
Holes – 9/16" diam.
1-7/8" o.c. spacing
13/16" center-to-end distance
Material – 1-5/8" width

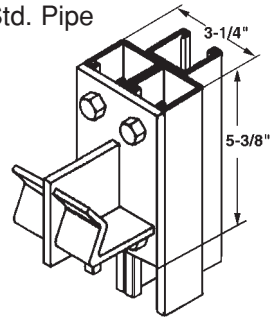
Material/finish options:
1. Steel conforming to ASTM A575-81
2. Zinc-electroplated steel, conforming to ASTM B633-78 (standard).
3. Hot-dip galvanizing-after-fabrication, conforming to ASTM A123-84 (available on request).

Wt./C = 312 lbs.



I-5305 **Flush Column Base**

For 1-1/4" Std. Pipe



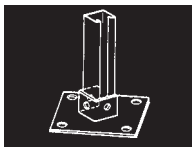
Wt./C = 257 lbs.

I-5088 **Double Pipe Axle Support**

"All struts and fittings are stocked in stainless, fiberglass, galvanized, aluminum, green and gold."

Strut

Post Bases & Diagonal Brace



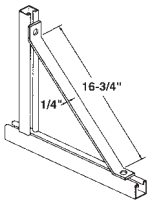
General Data

Holes – 9/16" diam.
1-7/8" o.c. spacing
13/16" center-to-end distance

Material – 1-5/8" width

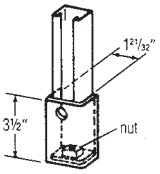
Material/finish options:
1. Steel conforming to ASTM A575-81
2. Zinc-electroplated steel, conforming to ASTM B633-78 (standard).
3. Hot-dip galvanizing-after-fabrication, conforming to ASTM A123-84 (available on request).

DIAGONAL BAR BRACE



Cat. No. I-5099
(allowable axial load: 1065 lb. (compression), 1740 lb. (tension); factor of safety = 3.0
Weight 225.0 lb./C
Also available in 12", 18" and 24".

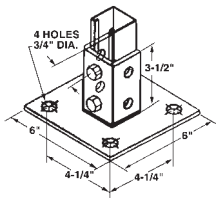
CENTER-BOLT BASES FOR SINGLE COLUMN



Cat. No.	Nut Size	Wt. (lb./C)
I-5117	3/8"-16	148.0
I-5118	1/2"-13	152.0

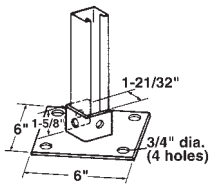
SQUARE COLUMN BASE

Cat. No. I-5205
Weight 392.0 lb./C



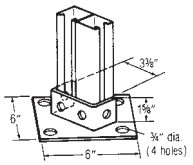
SHORT SINGLE COLUMN BASE

Cat. No. I-5101
Weight 306.0 lb./C



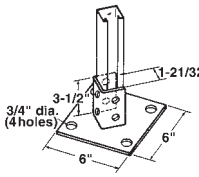
SHORT DOUBLE COLUMN BASE

Cat. No. I-5109
Weight 325.0 lb./C



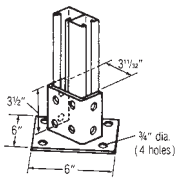
TALL SINGLE COLUMN BASE

Cat. No. I-5105
Weight 370.0 lb./C

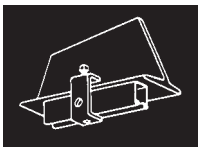


TALL DOUBLE COLUMN BASE

Cat. No. I-5113
Weight 402.0 lb./C



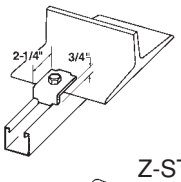
Beam Clamps



General Data
Holes – 9/16" diam.
1-7/8" o.c. spacing
13/16" center-to-end distance
Material – 1-5/8" width

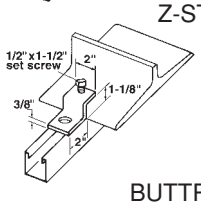
Standard Material/Finish Zinc-electroplated steel, conforming to ASTM B633-78.

HOLD-DOWN BEAM CLAMP



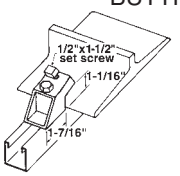
Cat. No. I-6001 Assembly
(1 beam clamp, 1–1/2x1-1/2" hex head cap screw – allowable load: 460 lb. per pair, with fctor of safety = 3.0, when screws are each orqued to 10 ft.-lb.)
Weight: 40.0 lb./C

Z-STRAP BEAM CLAMP



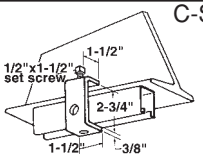
Cat. No. I-6005 Assembly
(1 beam clamp, 1–1/2x1-1/2" set screw – allowable load; 460 lb. per pair, with factor of safety = 3.0, when screws are each torqued to 10 ft.-lb.)
Weight: 68.0 lb./C

BUTTRESSED BEAM CLAMP



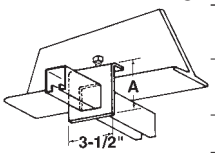
Cat. No. I-6007 Assembly
(includes 1/2x1-1/2" set screw, 1/2x2-1/4" hex head cap screw – allowable load: 660 lb. per pair, with factor of safety = 3.0, when set screws are each torqued to 10 ft.-lb.
Weight: 113.0 lb./C

C-STRAP BEAM CLAMP



Cat. No. I-6008 Assembly
(1 beam clamp, 1/2x1-1/2" set screw – allwable load; 660 lb. per pair, with factor of safety = 3.0, when screws are each torqued to 10 ft.-lb.)
Weight: 92.0 lb./C

PIERCED-ANGLE BEAM CLAMPS



Cat. No. (Assembly)*	Use with Channel Cat Nos.	Dimension A	Wt. (lb./C)
I-6011	I-5812A	5-1/8"	131.0
I-6012	I-5812 & I-5814	3-1/2"	110.0
I-6013	I-3812	3-1/4"	115.0
I-6014	I-1012	2-15/16"	101.0
I-6015	I-1315	2-11/16"	101.0

*1 beam clamp, 1 – 1/2 x 1-1/2" set screw – allowable load 740 lb per pair, with factor of safety of 3.0, when set screws are each torqued to 10 ft.-lb.

SWIVEL CONNECTORS

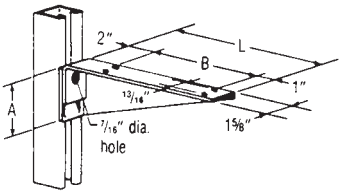
Cat. No.	Diameter A	Wt. (lb./C)
I-6019	3/8"	29.0
I-6020	1/2"	37.0

BEAM CLAMP CLEVIS

Cat. No. I-6027
Weight: 30.0 lb./C

"All struts and fittings are stocked in stainless, fiberglass, galvanized, aluminum, green and gold."

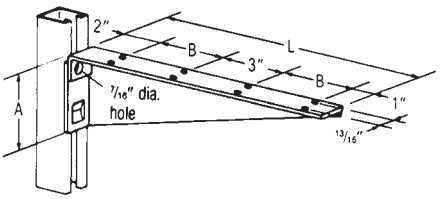
Shelf Brackets



6- TO 10-IN SHELF BRACKETS

Cat. No.	Dimension L	A	B	Allow. Unif. Load* (lb.)	Wt. (lb./C)
I-5065	6"	2"	3"	101	51.0
I-5066	8"	2 3/8"	5"	75	85.0
I-5067	10"	3"	7"	122	114.0

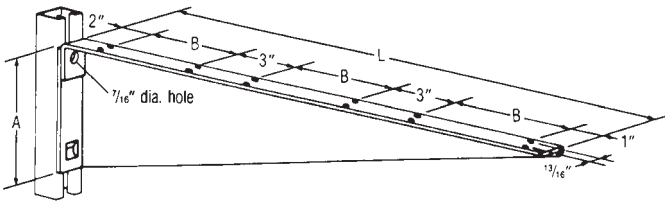
*Factor of safety = 3.0.



12- TO 20-IN SHELF BRACKETS

Cat. No.	Dimension L	A	B	Allow. Unif. Load* (lb.)	Wt. (lb./C)
I-5068	12"	3 3/4"	3"	119	135.0
I-5069	14"	3 3/4"	4"	162	172.0
I-5070	16"	4 1/2"	5"	147	195.0
I-5071	18"	4 11/16"	6"	121	246.0
I-5072	20"	5 1/4"	7"	117	268.0

*Factor of safety = 3.0.

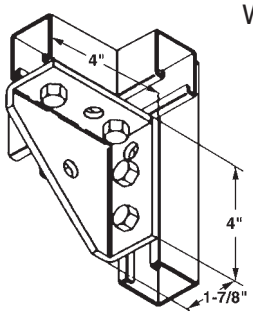


24- & 30-IN. SHELF BRACKETS

Cat. No.	Dimension L	A	B	Allow. Unif. Load* (lb.)	Wt. (lb./C)
I-5073	24"	6 3/8"	5"	97	366.0
I-5074	30"	8"	7"	78	600.0

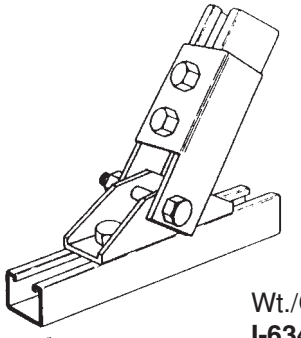
*Factor of safety = 3.0.

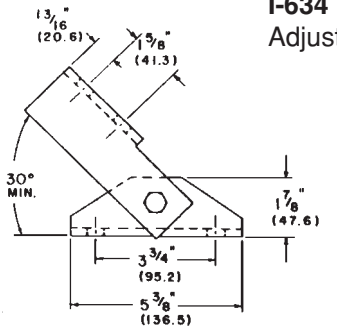
Wt./C = 312 lbs.



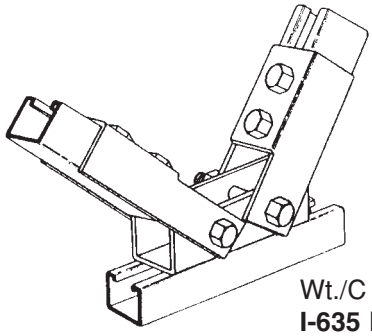
IB844 **Universal 4-Hole Webbed Corner Angle**

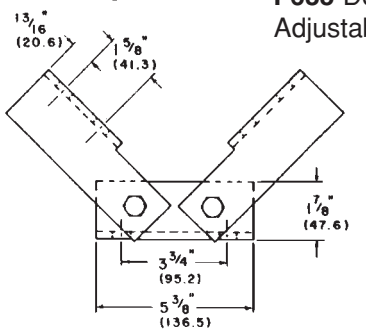
Fittings





Wt./C 306 Lbs. (138.8 kg)
I-634 Single Channel Adjustable Brace

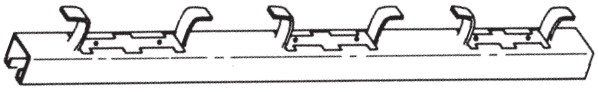




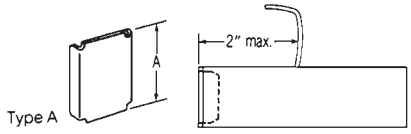
Wt./C 518 Lbs. (234.9 kg)
I-635 Double Channel Adjustable Brace

Concrete and Spot Inserts

CONTINUOUS CONCRETE INSERTS

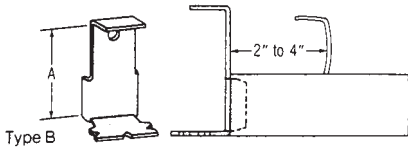


END CAPS FOR CONCRETE INSERTS AND CHANNELS



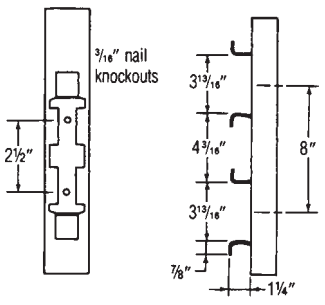
Cat. No. *	Cat. No. **	Use with Channel Cat. No.	Dimension A	Wt. (lb./C)
I-9023	**I-9028**	I-5812	1-5/8"	8.0
I-9024	**I-9029**	I-3812	1-3/8"	8.0
I-9025	**I-9030**	I-1012	1"	6.0
I-9026	**I-9031**	I-5814	1-5/8"	8.0
I-9027	**I-9032**	I-1315	13/16"	4.0

*Hot-dip mill-galvanized steel.
**Plain black steel.

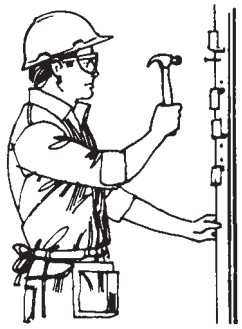


Cat. No. *	Cat. No. **	Use with Channel Cat. No.	Dimension A	Wt. (lb./C)
I-9210	**I-9215**	I-5812, 14	3-1/32"	19.0
I-9211	**I-9216**	I-3812	2-7/8"	21.0
I-9212	**I-9217**	I-1012	2-9/16"	19.0

*Hot-dip mill-galvanized steel.
**Plain black steel.



Knockouts for easy nailing

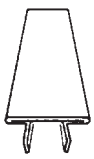


Knockouts make nailing inserts to formwork fast and positive.

RIGID PLASTIC CLOSURE

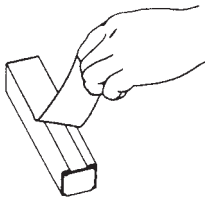
Cat. No. I-9251
(10-ft. lengths or 500-ft. bundles standard)

Wt.: 5 lb./C ft.



CLOSURE TAPE

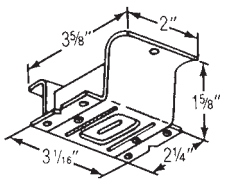
Cat. No. I-9250 (180-ft. rolls; resists concrete seepage)



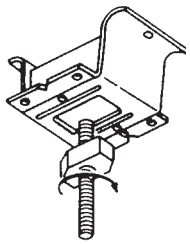
SPOT-TYPE INSERTS

economical and easily installed

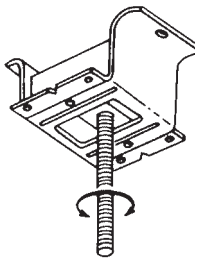
Catalog Nos.
I-9220 (plain black)
I-9221 (galvanized)
Wt.: 44.0 lb./C



Remove knockout



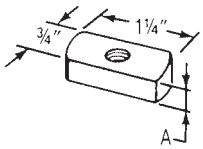
Set rectangular nut with rod



Adjust rod for depth

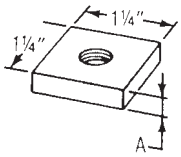
ATTACHMENT NUTS FOR SPOT INSERTS

RECTANGULAR NUTS



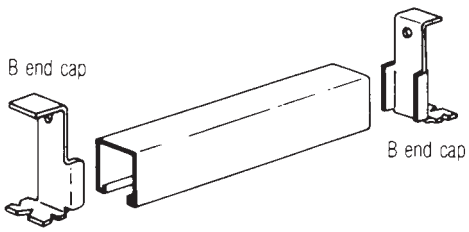
Cat. No.	Thread size	Dimension A	Wt. (lb./C)
I-9230	1/4"–20	1/4"	7.0
I-9231	3/8"–16	3/8"	10.0
I-9232	1/2"–13	1/2"	11.0

SQUARE NUTS



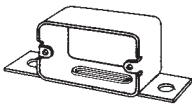
Cat. No.	Thread size	Dimension A	Wt. (lb./C)
I-9240	1/4"–20	1/4"	12.0
I-9241	3/8"–16	3/8"	15.0
I-9242	1/2"–13	1/2"	20.0
I-9243	5/8"–11	1/2"	16.0
I-9244	3/4"–10	1/2"	11.0

FIELD-FABRICATED SPOT INSERTS



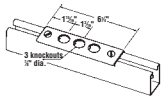
Electrical Raceway and Fixture Support Fittings

DUPLEX RECEPTACLE BOX



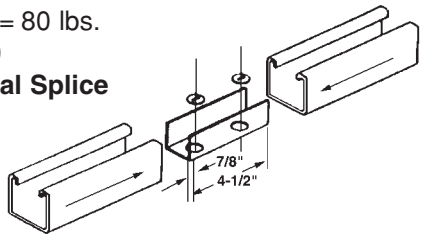
Cat. No. I-9006 Assembly
(includes electrogalvanized box, without cover, two 1/4"–20 lock nuts and two 1/4"–20 x 5/8" flat head machine screws—accepts standard duplex receptacle)

OUTLET BOX CONNECTOR



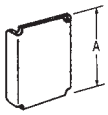
Cat. No. I-9045 Assembly
(includes two 1/4"–20 lock nuts and two 1/4"–20 x 5/8" flat head machine screws with hot-dip mill-galvanized steel connector plate)Wt.: 41.0 lb./C

Wt./C = 80 lbs.
I-4040
Internal Splice



Note: •Includes 2 cam screws.
•12 gauge material.
•Suitable for 1-5/8" x 1-5/8" G5812 and G5814 series channel.

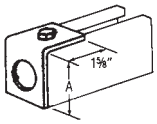
TYPE A END CAPS



Cat. No. *	Cat. No. **	Use with Channel Cat. No.	Dimension A	Wt. (lb./C)
I-9023	**I-9028**	I-5812	1-5/8"	8.0
I-9024	**I-9029**	I-3812	1-3/8"	8.0
I-9025	**I-9030**	I-1012	1"	6.0
I-9026	**I-9031**	I-5814	1-5/8"	8.0
I-9027	**I-9032**	I-1315	13/16"	4.0

*Hot-dip mill-galvanized steel. **Plain black steel.

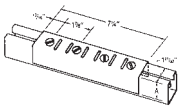
END CAPS WITH KNOCKOUT



Cat. No. (Assembly*)	Conduit Size	Use with Cat. Nos.	Dimension A	Wt. (lb./C)
I-9033	3/4"	I-5812 & I-5814	1-5/8"	20.0
I-9034	1/2"	I-5812 & I-5814	1-5/8"	20.0
I-9035	1/2"	I-3812	1-3/8"	17.0
I-9036	3/4"	I-7612	2-7/16"	20.0
I-9037	1/2"	I-7612	2-7/16"	22.0

*Includes 1/4"–20 locknut and 1/4"–20 x 5/8" hex head cap screw with hot-dip mill-galvanized end cap.

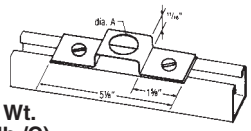
4-HOLE ELECTRICAL SPLICE PLATES



Cat. No. (Assembly*)	Use with Cat. Nos.	Dimension A	Wt. (lb./C)
I-9040	I-5812 & I-5814	1-11/16"	89.0
I-9041	I-3812	1-3/8"	88.0
I-9042	I-1012	1-1/16"	76.0
I-9043	I-1315	29/32"	72.0

*Includes four 1/4"–20 lock nuts and four 1/4"–20 x 5/8" long flat head machine screws with hot-dip mill-galvanized steel plate

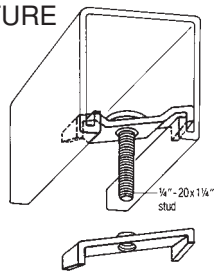
RIGID CONDUIT HANGER



Cat. No. (Assembly*)	Use with	Diameter A	Wt. (lb./C)
I-9052	1/2" conduit	7/8"	27.0
I-9053	3/4" conduit	1-1/8"	26.0

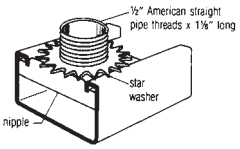
*Includes two 1/4"–20 lock nuts and two 1/4"–20 x 3/4" flat head machine screws with hot-dip mill-galvanized steel hanger.

FLUORESCENT FIXTURE STUD AND NUT



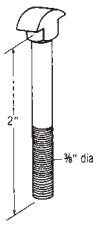
Cat. No. I-9056 (stud)
Wt.: 40.0 lb./C
Cat. No. I-9057 (nut)
Wt.: 3.0 lb./C

CAST ALUMINUM NIPPLE



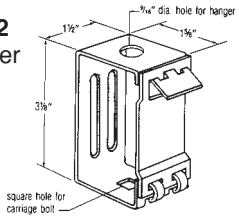
Cat. No. I-9060
(1/2" x 1-1/8" long, American Straight Pipe Threads; star washer for electrical continuity with painted channel)
Wt.: 7.0 lb./C

"T" HEAD BOLT FOR FIXTURE HANGING



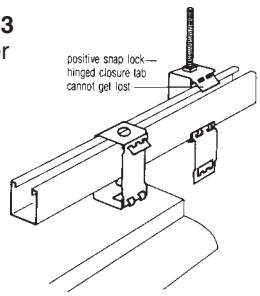
Cat. No. I-9061
(for use with "SL" slotted channels)
Wt.: 7.0 lb./C

CHANNEL AND FIXTURE HANGER

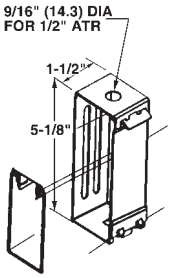


Cat. No. I-9062
Channel Hanger
Wt.: 25.0 lb./C

Cat. No. I-9063
Fixture Hanger Assembly (includes 1/4" x 1/2" carriage bolt and wing nut)
Wt.: 28.0 lb./C

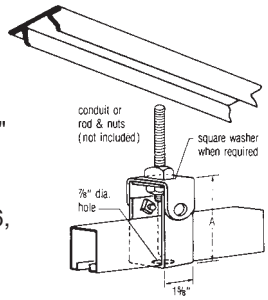


Wt./C = 44 lbs.
I-9064
Deep Channel Fixture Hanger



Electrical Raceway and Fixture Support Fittings

RACEWAY CHANNEL CLOSURE STRIP



Cat. No. I-9090
(20-ga. steel, hot-dip mill-galvanized; standard length 10'–0"
Wt.: 47 lb./C l.f.

Cat. No. I-9090-AL
(extruded aluminum alloy 6063-T6, mill finish; standard length 10'–0"
Wt.: 16 lb./C l.f.

CHANNEL HANGER

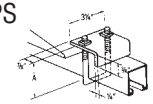
Cat. No. (Assembly*)	Use with: Channel & Conduit/Rod		Washer I.D.	Dimen. A	Wt. (lb./C)
I-9067	see note (1)	1/2" con.	not reqd.		28.0
I-9068	see note (1)	3/8" con.	23/32"	3-1/8"	30.0
I-9069	see note (1)	3/8" rod	7/16"		30.0
I-9071	see note (2)	3/8" rod	7/16"	2-1/2"	29.0
I-9073	see note (3)	3/8" con.	23/32"		39.0
I-9074	see note (3)	3/8" rod	7/16"	4-3/4"	39.0
I-9075	see note (3)	1/2" rod	not reqd.		39.0

*Use with 3/8" or 1/2" conduit, or 3/8" threaded rod and nuts, as indicated (neither included), and square washer (included if required). Hanger is hot-dip mill-galvanized steel.
(1) Channel Cat. Nos. I-5812, I-5814, or I-3812.
(2) Channel Cat. Nos. I-1012 or I-1315.
(3) Combination Channel Cat. Nos. I-5812-A or I-5814-A.

BEAM CLAMPS

General Data
Holes – 9/16" diam.
1-7/8" o.c. spacing
13/16" center-to-end distance
Material – 1-5/8" width
Standard Material/Finish
Zinc-electroplated steel, conforming to ASTM B633-78.

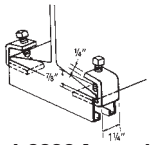
U-BOLT CLAMPS



Cat. No. (Assembly)*	Dimension A	Use with Channel	Wt. (lb./C)
I-6030	3-3/8"	up to 1-5/8" deep	77.0
I-6031	5"	up to 3-1/4" deep	92.0

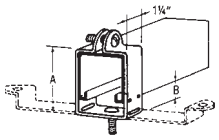
*Includes 3/8" U-bolt and 2 hex nuts.

C-STRAP BEAM CLAMP



Cat. No. I-6038 Assembly
(1 beam clamp, 3/8 x 1-1/2" set screw)
Weight: 41.0 lb./C

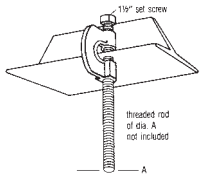
FIXTURE HANGER



Cat. No. (Assembly*)	Use with Channel Cat. Nos.	Dimension A	Clearance B	Wt. (lb./C)
I-9078	I-5812, I-5814	2-3/16"	1/2"	18.0
I-9079	I-1315	1-9/16"	1/2"	16.0
I-9080	I-5812, I-5814	1-7/8"	1/8"	18.0
I-9081	I-3812	1-5/8"	1/8"	16.0
I-9082	I-1012	1-1/4"	1/8"	15.0

*Includes 1/4"–20 x 1" round head machine bolt, 1/4"–20 x 3/4" carriage bolt and 1/4"–20 square nut for 1/8" and 1/2" clearances as shown with hot-dip mill-galvanized steel hanger.

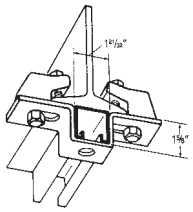
C-CLAMP ROD HANGERS



Cat. No. (Assembly)*	Dimension A	Allowable Axial Load** (lb.)	Wt. (lb./C)
I-6053	3/8"–16	665	26.0
I-6054	1/2"–13	665	27.0

*C-clamp, 1-1/2" long set screw.
**Safety factor = 3.0, when the set screw is torqued to 10 ft.-lb.

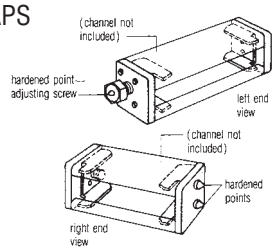
BEAM SUSPENSION CLAMPS



Cat. No. (Assembly)*	Flange Widths Accommodated	Allowable Axial Load** (lb.)	Wt. (lb./C)
I-6040	5-5/8"–7-5/8"	190	346.0
I-6041	3-3/4"–5-3/4"	190	325.0
I-6042	2-3/8"–4-3/8"	190	298.0

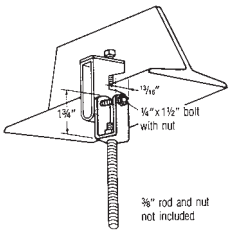
*1 of listed parts, 2 of Cat. No. I-6007, 2 – 1/2 x 1-1/2" set screws. 2 – 1/2 x 2-1/4" hex head cap screws, 2 – 1/2" hex nuts.
**With safety factor = 3.0, when all set screws are each torqued to 10 ft.-lb.

COLUMN INSERT SPREADER CAPS



Cat. No. I-6046
(for I-5812 and I-5814 Channels)
Weight: 52.0 lb./C

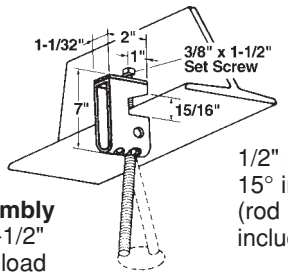
BEAM CLAMP CLEVIS



Cat. No. I-6058 Assembly
(clevis, bolt and nut – allowable load 300 lb., with factor of safety = 3.0)
Weight: 16.0 lb./C

Beam Clamps

LIGHT DUTY SWIVEL ROD HANGER

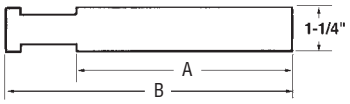


1/2" rod swivels 15° in all directions (rod and nut not included)

Cat. No. I-6061 Assembly (beam clamp, 3/8 x 1-1/2" set screw—allowable load 300 lb., with safety factor = 3.0, when set screw is torqued to 10 ft.-lb.

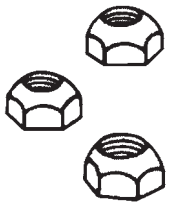
Wt.: 42.0 lb./C

ANCHOR STRAPS



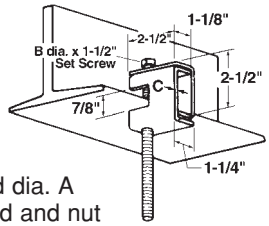
Catalog Number	Dimension		Weight (lb./C)
	A	B	
I-6064	10"	12-1/4"	37.0
I-6065	10"	14-1/4"	40.0
I-6066	14"	16-1/4"	44.0

SWIVEL NUTS



Catalog Number	Use with Rod Size	Weight (lb./C)
I-6067	1/4"–20	2.0
I-6068	3/8"–16	5.0
I-6069	1/2"–13	3.0

MEDIUM ROD CLAMPS

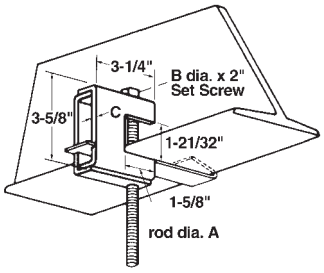


rod dia. A (rod and nut not included)

Cat. No. (Assembly)	Dimension			Allowable Load (lb.)	Wt. (lb./C)
	A	B	C		
I-6070	1/4"–20	3/8"	1/8"	580	73.0
I-6071	3/8"–16	3/8"	1/8"	580	73.0
I-6072	3/8"–16	1/2"	3/16"	1350	96.0
I-6073	1/2"–13	1/2"	3/16"	1350	96.0
I-6074	1/2"–13	1/2"	1/4"	1500	131.0

LARGE ROD CLAMPS

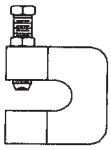
(use on beam flanges min. 3/4" thick)



Cat. No. (Assembly)	Dimension			Allow. Load (lb.)		Wt. (lb.) /C)
	A	B	C	with anch. Strap	w/o anch. Strap	
I-6078	1/2"	1/2"	1/4"	2300	2050	200.0
I-6079	5/8"	5/8"	5/16"	3400	3050	249.0
I-6080	3/4"	5/8"	5/16"	3400	3050	249.0

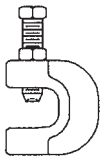
Beam Clamps

No. I-200 Steel C Clamp



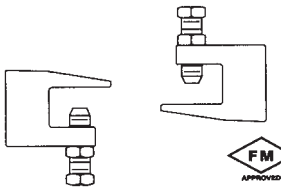
Rod Size	Standard Package	Wt. per piece (approx.)
3/8	100	.42
1/2	50	.48

No. I-255L Malleable Iron C Clamp
With Locknut



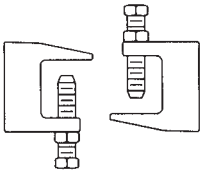
Rod Size	Standard Package	Wt. per piece (approx.)
3/8	100	.26
1/2	100	.29
5/8	50	.47

No. I-300 Universal/ Reversible Beam Clamp



Rod Size	Part No.	Standard Package	Wt. per piece (approx.)
3/8	**I-35**	100	.33
1/2	**I-36**	50	.64
5/8	**I-37**	50	.64
3/4	**I-38**	50	.78
7/8	**I-39**	50	.71

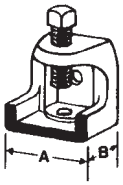
No. I-310 Universal/ Reversible Beam Clamp Wide Mouth



Rod Size	Part No.	Standard Package	Wt. per piece (approx.)
3/8	**I-35WM**	50	.38
1/2	**I-36WM**	50	.62

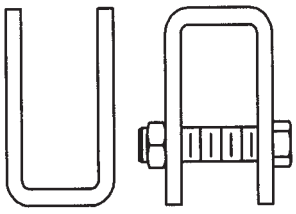
Beam Clamp *Standard Finish– Electro-Galvanized (EG)*

Also stock in 316 SS on 1/4", 3/8" and 1/2"



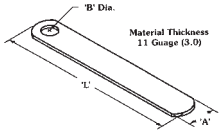
Prod. #	Tapped Holes	Base Dim. inches A	B	Jaw Opening	Wt./C lbs.	Design Load lbs.
I-444-1/4	1/4–20	1	1-1/4	15/16	18	450
I-444-3/8	3/8–16	2	2	1	92	1300
I-444-1/2	1/2–13	2-5/8	2-1/2	1	164	1300
I-508	1/2–13	2-1/2	2-3/8	2-1/8	184	1700
I-509	10–24	1	1-1/4	15/16	22	375
I-510	1/4–20	27/32	1-1/8	5/8	15	400
I-511	10–24	27/32	1-1/8	5/8	15	400

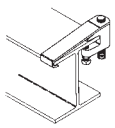
No. I-320 Welded Beam Attachment



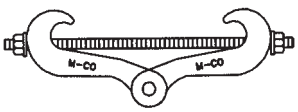
Rod Size	Weight per piece (approx.) less Bolt & Nut (L)	with Bolt & Nut (W)
3/8	.77	1.17
1/2	.96	1.24
5/8	.96	1.55
3/4	1.92	2.79
7/8	2.53	3.94
1	4.27	6.29
1-1/4	8.09	10.22
1-1/2	15.60	19.02
1-3/4	18.70	22.97
2	22.80	29.02
2-1/4	26.40	36.78
2-1/2	26.69	39.65
2-3/4	26.80	40.80
3	32.60	46.70
3-1/4	45.10	62.10
3-1/2	53.40	72.40
Standard Finish–Plain All sizes are packaged in Bulk		

Universal Retaining Strap For Beam Clamp



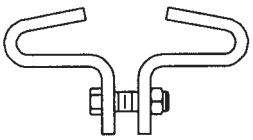


No. I-360 Adjustable Center Load Beam Clamp Malleable Iron*



Size	Standard Finish	Standard Package	Wt. per piece (approx.)
Beam Clamp Only	Plain	Black	2.23
Note: Requires extension piece, see Model #26, #35, or #37			

No. I-361 Center Load Beam Clamp*



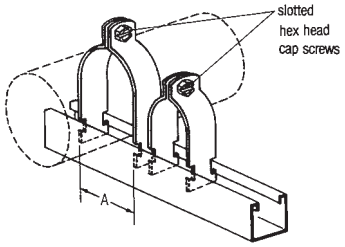
Type No.	Beam Flange Width	Standard Flange Thickness	Standard Finish	Standard Package	Wt. per piece (approx.)
2	4	1/2	Plain	Bulk	.91
	5		Plain	Bulk	1.13
	6		Plain	Bulk	1.22
	7		Plain	Bulk	1.41
	8		Plain	Bulk	1.50
5	4	1	Plain	Bulk	3.27
	5		Plain	Bulk	3.98
	6		Plain	Bulk	4.26
	7		Plain	Bulk	4.76
	8		Plain	Bulk	4.97
*Standard Flange Thickness = Maximum flange thickness recommended by MSS.					

STRUT

PIPE, TUBE AND CONDUIT CLAMPS

Standard Material/Finish
Plain steel, conforming to ASTM A569-72.
Zinc-electroplating conforming to ASTM B633-78.

CLAMPS FOR STANDARD PIPE AND RIGID CONDUIT



STEEL AND ALUMINUM CLAMPS

Cat. No. (Assembly)*		Nom. Pipe	Dimension	Wt.. (lb./C)	
Steel	Aluminum**	Size (I.D.)	A	Steel	Aluminum
I-7001	—	3/8"	675"	10.0	—
I-7002	I-7002-AL	1/2"	840"	11.0	5.0
I-7003	I-7003-AL	3/4"	1.050"	15.0	6.0
I-7004	I-7004-AL	1"	1.315"	16.0	7.0
I-7005	I-7005-AL	1-1/4"	1.660"	21.0	8.0
I-7006	I-7006-AL	1-1/2"	1.900"	32.0	12.0
I-7007	I-7007-AL	2"	2.375"	34.0	14.0
I-7008	I-7008-AL	2-1/2"	2.875"	36.0	16.0
I-7009	I-7009-AL	3"	3.500"	51.0	17.0
I-7010	I-7010-AL	3-1/2"	4.000"	57.0	19.0
I-7011	I-7011-AL	4"	4.500"	61.0	21.0
I-7012	I-7012-AL	5"	5.563"	75.0	23.0
I-7013	I-7013-AL	6"	6.625"	95.0	26.0
I-7014	—	7"	7.625"	110.0	—
I-7015	—	8"	8.625"	117.0	—

*Slotted hex head cap screw/nut included.
**Aluminum alloy 5052-H32. Hardware is aluminum.

CLAMPS FOR TRANSIT PIPE, GLASS DUCT, OR FIBER CERAMIC OR METALLIC TUBE

Cat. No.	Tube (O.D.)	Wt. (lb./C)	Cat. No.	Tube (O.D.)	Wt. (lb./C)
I-7201	1/4"	9.0	I-7222	2-7/8"	36.0
I-7202	3/8"	9.0	I-7223	3"	36.0
I-7203	1/2"	9.0	I-7224	3-1/8"	41.0
I-7204	5/8"	10.0	I-7225	3-1/4"	42.0
I-7205	3/4"	10.0	I-7226	3-3/8"	44.0
I-7206	7/8"	11.0	I-7227	3-1/2"	51.0
I-7207	1"	15.0	I-7228	3-5/8"	53.0
I-7208	1-1/8"	17.0	I-7229	3-3/4"	58.0
I-7209	1-1/4"	17.0	I-7230	3-7/8"	58.0
I-7210	1-3/8"	17.0	I-7231	4"	57.0
I-7211	1-1/2"	18.0	I-7232	4-1/8"	60.0
I-7212	1-5/8"	20.0	I-7233	4-1/4"	63.0
I-7213	1-3/4"	25.0	I-7234	4-3/8"	64.0
I-7214	1-7/8"	26.0	I-7235	4-1/2"	61.0
I-7215	2"	31.0	I-7236	4-5/8"	65.0
I-7216	2-1/8"	33.0	I-7237	4-3/4"	70.0
I-7217	2-1/4"	35.0	I-7238	4-7/8"	71.0
I-7218	2-3/8"	34.0	I-7239	5-1/4"	71.0
I-7219	2-1/2"	36.0	I-7240	5-3/8"	72.0
I-7220	2-5/8"	36.0	I-7241	5-1/2"	73.0
I-7221	2-3/4"	37.0	I-7242	6"	85.0
			I-7243	6-1/8"	87.0

CLAMPS FOR THIN WALL CONDUIT

STEEL CLAMPS

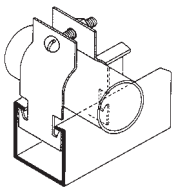
Cat. No.	Nom. Pipe Size (I.D.)	Dimension A	Wt. (lb./C)
I-7101	3/8"	.577"	11.0
I-7102	1/2"	.706"	12.0
I-7103	3/4"	.922"	12.0
I-7104	1"	1.163"	17.0
I-7105	1-1/4"	1.510"	18.0
I-7106	1-1/2"	1.740"	32.0
I-7107	2"	2.197"	33.0

PIPE, TUBE AND CONDUIT CLAMPS

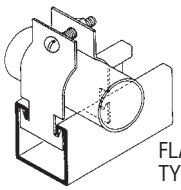
STANDARD MATERIAL/FINISH
Plain steel, conforming to ASTM A569-72.
Zinc electroplating conforming to ASTM B633-78.

Universal clamps adapt easily to a wide range of pipe/conduit sizes and most manufacturers' channel designs, either 1-1/2" or 1-5/8" wide, flanged-lip or straight-lip type

STRAIGHT-LIP TYPE CHANNEL



UNIVERSAL CLAMPS FOR RIGID OR THINWALL CONDUIT
(work with most makes 1-1/2"–1-5/8" wide channel)

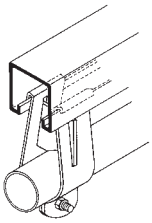


FLANGED-LIP TYPE CHANNEL

Cat. No.	Nom. Pipe/ Conduit Size	Wt. (lb./C)
I-7502	1/2"	12.0
I-7503	3/4"	15.0
I-7504	1"	17.0
I-7505	1-1/4"	19.0
I-7506	1-1/2"	26.0
I-7507	2"	32.0
I-7508	2-1/2"	39.0
I-7509	3"	43.0
I-7510	3-1/2"	56.0
I-7511	4"	62.0
I-7512	5"	71.0
I-7513	6"	98.0
I-7514	7"	110.0
I-7515	8"	135.0

*Note Hardware included

CLAMPS FOR PARALLEL PIPES



Cat. No.	Pipe Size	Wt. (lb./C)
I-7601	3/8"	27.0
I-7602	1/2"	29.0
I-7603	3/4"	30.0
I-7604	1"	31.0
I-7605	1-1/4"	38.0
I-7606	1-1/2"	46.0
I-7607	2"	47.0
I-7608	2-1/2"	66.0
I-7609	3"	78.0
I-7610	3-1/2"	87.0
I-7611	4"	90.0

*Note Hardware included

"All struts and fittings are stocked in stainless, fiberglass, galvanized, aluminum, green and gold."

PIPE, TUBE AND CONDUIT CLAMPS, cont'd

STANDARD MATERIAL/FINISH
Plain steel, conforming to ASTM A569-72.
Zinc electroplating conforming to ASTM B633-78.

CONDUIT SIZE/WEIGHT DATA

RIGID STEEL CONDUIT (heavy wall conduit)

Nom. Diam.	I.D.	O.D.	Coupling O.D.	Cond. Wt. (lb./ft.)
1/2"	0.622"	0.840"	1.063"	0.852
3/4"	0.824"	1.050"	1.313"	1.134
1"	1.049"	1.315"	1.576"	1.684
1-1/4"	1.380"	1.660"	1.900"	2.281
1-1/2"	1.610"	1.900"	2.200"	2.731
2"	2.067"	2.375"	2.750"	3.678
2-1/2"	2.469"	2.875"	3.250"	5.819
3"	3.068"	3.500"	4.000"	7.616
3-1/2"	3.548"	4.000"	4.625"	9.202
4"	4.026"	4.500"	5.000"	10.889
5"	5.047"	5.563"	6.296"	14.810
6"	6.065"	6.625"	7.390"	19.185

CONDUIT SIZE/WEIGHT DATA

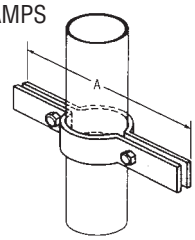
ELECTRICAL METALLIC TUBING (thin wall conduit)

Nom. Diam.	I.D.	O.D.	Coupling O.D.	Cond. Wt. (lb./ft.)
3/8"	0.577"	.040"	23.0	
1/2"	0.706"	.040"	28.5	
3/4"	0.922"	.046"	43.5	
1"	1.163"	.054"	64.0	
1-1/4"	1.510"	.061"	95.0	
1-1/2"	1.740"	.061"	110.0	
2"	2.197"	.061"	140.0	

PIPE, TUBE AND CONDUIT CLAMPS

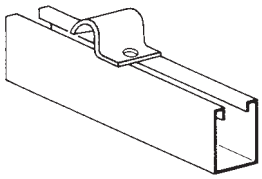
MATERIAL/FINISH OPTIONS
1. Steel conforming to ASTM A575-81
2. Zinc-electroplated steel, conforming to ASTM B633-78 (standard).
3. Hot-dip galvanizing-after-fabrication, conforming to ASTM A123-84 (available on request).

PIPE RISER CLAMPS



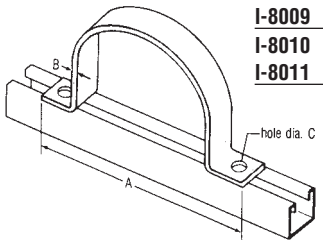
Cat. No.	Nominal Pipe Diam.	Dimension A	Strap Size	Wt. (lb./C)
I-510	3/4"	9-5/8"	3/16" x 1-1/4"	135.0
I-510	1"	9-11/16"	3/16" x 1-1/4"	144.0
I-510	1-1/4"	9-7/8"	3/16" x 1-1/4"	161.0
I-510	1-1/2"	10-3/8"	1/4" x 1-1/4"	159.0
I-510	2"	10-7/8"	1/4" x 1-1/4"	208.0
I-510	2-1/2"	11-5/16"	1/4" x 1-1/4"	229.0
I-510	3"	12"	1/4" x 1-1/4"	244.0
I-510	3-1/2"	12-9/16"	1/4" x 1-5/8"	257.0
I-510	4"	13"	1/4" x 1-5/8"	365.0
I-510	5"	14-3/16"	1/4" x 2"	445.0
I-510	6"	15"	1/4" x 2"	462.0
I-510	8"	17-1/2"	1/4" x 2"	612.0

ONE-HOLE CLAMPS FOR TUBING



Cat. No.	Tube O.D.	Wt (lb./C)
I-7901	1/4"	4.0
I-7902	5/16"	5.0
I-7903	3/8"	6.0
I-7904	1/2"	7.0
I-7905	5/8"	7.0
I-7906	3/4"	8.0
I-7907	7/8"	9.0
I-7908	1"	10.0

TWO-HOLE STRAPS FOR STANDARD PIPE



Cat. No.	Nominal Pipe Diam.	Dimensions A	B	C	Wt. (lb./C)
I-8001	1/2"	2-7/8"	1/8"	9/32"	23.0
I-8002	3/4"	3-1/16"	1/8"	9/32"	25.0
I-8003	1"	3-7/16"	1/8"	9/32"	29.0
I-8004	1-1/4"	3-3/4"	1/8"	9/32"	35.0
I-8005	1-1/2"	4-1/16"	1/8"	9/32"	37.0
I-8006	2"	5-5/8"	1/4"	13/32"	99.0
I-8007	2-1/2"	6-3/16"	1/4"	13/32"	111.0
I-8008	3"	6-3/4"	1/4"	13/32"	126.0
I-8009	3-1/2"	7-7/16"	1/4"	13/32"	156.0
I-8010	4"	7-13/16"	1/4"	13/32"	162.0
I-8011	5"	9-9/16"	1/4"	13/32"	185.0

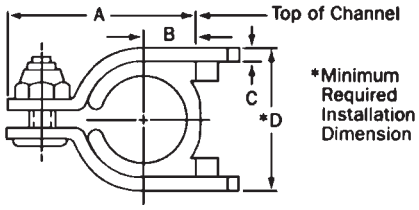
TWO-HOLE STRAP ALLOWABLE LOADS

Cat No.	Pullout Load† (lb.) (per clamp)	Slip Resistance† (lb.) (strap slip along channel)	Slip Resistance† (lb.) (pipe slip through clamp)
I-8001*	1336	463	438
I-8002*	1283	765	229
I-8003*	1177	757	117
I-8004*	1343	839	105
I-8005*	1478	947	144
I-8006**	5760	3917	489
I-8007**	5587	3000	363
I-8008**	5954	3000	513
I-8009**	5684	2500	528
I-8008**	6023	3417	494
I-8011**	4500	5160	400

*Loads shown for listed nominal diameter galvanized conduit and strap, attached to I-5812 mill-galvanized channel with I-1032 spring lock nuts and 1/4" bolts, each torqued to 6 ft.-lb.
**Loads shown for listed nominal diameter galvanized conduit and strap, attached to I-5812 mill-galvanized channel with I-1034 spring lock nuts and 3/8" bolts, each torqued to 16 ft.-lb.
†With safety factor = 2.0, based upon ulimate load.

"All struts and fittings are stocked in stainless, fiberglass, galvanized, aluminum, green and gold."

STRUT



TUBE

Tube Outside Diameter	.250	.312	.375	.470	.500	.625	.750	.875	1.000
Clamp Assembly Part Number	I-1000025	I-100031	I-100037	I-100047	I-100050	I-100062	I-100075	I-100087	I-1000100
Quantity per Box	24	24	24	24	24	24	24	24	12
ACR Tube			■	■	■	■	■	■	
Refrigeration Service	■	■	■	■	■	■	■	■	
Type “K” Copper			■	■	■	■	■	■	
Type “L” Copper			■	■	■	■	■	■	
Type “M” Copper			■	■	■	■	■	■	
Steel	■	■	■	■	■	■	■	■	■
Stainless Steel	■	■	■	■	■	■	■	■	■
Aluminum			■		■	■	■	■	■
PB			■		■	■		■	
PVC			■			■		■	
CPVC			■		■	■		■	
PE			■			■		■	
A	1.11	1.24	1.24	1.36	1.36	1.50	1.78	1.91	2.03
B	.22	.28	.28	.34	.34	.41	.53	.58	.66
C	.075	.075	.075	.075	.075	.075	.075	.075	.075
*D	.62	.75	.75	.87	.87	1.00	1.33	1.45	1.66

PIPE

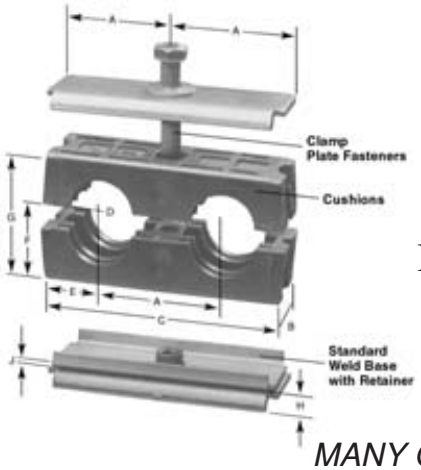
Nominal Pipe Size	1/4	3/8	1/2	3/4	1
Pipe O.D.	.54	.675	.84	1.05	1.315
Clamp Assembly Part Number	I-200025	I-200037	I-200050	I-200075	I-2000100
Quantity Per Box	24	24	24	12	12
Carbon Steel 5S,10S,40 & 80	■	■	■	■	■
Stainless 5S,10S,40 & 80	■	■	■	■	■
Red & Yellow Brass & Copper	■	■	■	■	■
Aluminum 5S,10S,40 & 80	■	■	■	■	■
PVC 48,80 & 120	■	■	■	■	■
CPVC 40 & 80	■	■	■	■	■
PE 40 & 80	■	■	■	■	■
PP 40 & 80	■	■	■	■	■
PVDF 80		■	■	■	■
PB 40		■	■	■	■
PB 40 & 80		■	■	■	■
Fiberglass			■	■	■
A	1.41	1.59	1.91	2.16	2.75
B	.63	.49	.59	.72	.91
C	.075	.075	.075	.105	.119
*D	.91	1.07	1.45	1.79	2.22

For hoses: measure hose outside diameter and select nearest o.d. size

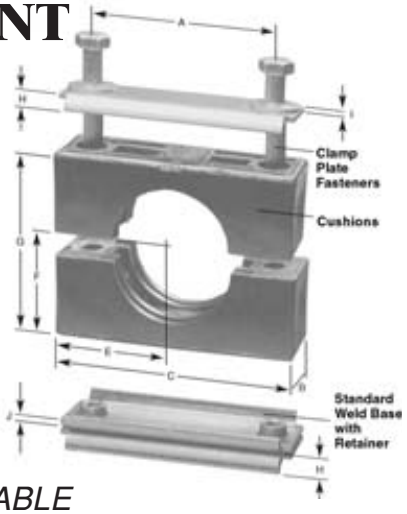
FULL LINE OF SIZES AVAILABLE. “ASK FOR A QUOTE”

MODU-STAK COMPONENT

BASE ARRANGEMENTS



DRILL AND TAP MOUNT
STANDARD WELD BASE
SPRING NUT MOUNT
HEAVY DUTY WELD BASE



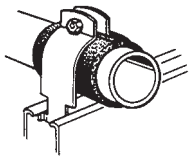
MANY OTHER CONFIGURATIONS AVAILABLE

PIPE, TUBE AND CONDUIT CLAMPS

STANDARD MATERIAL/FINISH
Plain steel, conforming to ASTM A569-7

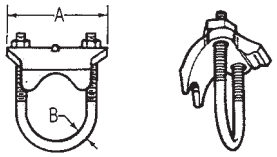
NEOPRENE ISOLATOR STRIP

FOR COPPER TUBING
Cat. No. I-7920



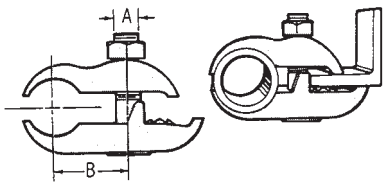
High-grade neoprene isolator strip for use with universal clamps to support copper tubing. Supplied in 25' rolls. Features no metal-to-metal contact, easy installation, helps prevent electrolysis and minimize tube damage. Universal clamp with isolator fastens copper tubing to all steel channels with 7/8" wide slot.

RIGHT ANGLE PIPE AND CONDUIT CLAMPS



Cat. No.	Pipe Size	Dimension A	Dimension B	Wt. (lb./C)
RA-1/2	1/2"	2"	5/16"	41.0
RA-3/4	3/4"	2-5/16"	5/16"	42.0
RA-1	1"	2-1/2"	5/16"	47.0
RA-1-1/4	1-1/4"	2-7/8"	5/16"	54.0
RA-1-1/2	1-1/2"	3-1/4"	5/16"	57.0
RA-2	2"	3-7/8"	3/8"	85.0
RA-2-1/2	2-1/2"	4-3/8"	3/8"	106.0
RA-3	3"	5-1/8"	3/8"	110.0
RA-3-/2	3-1/2"	5-1/2"	3/8"	128.0
RA-4	4"	6-1/8"	3/8"	140.0

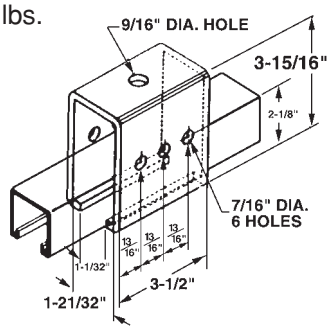
PARALLEL PIPE AND CONDUIT BEAM CLAMPS



Cat. No.	Pipe Size	Dimension A	Dimension B	Wt. (lb./C)
PA-1/2	1/2"	1/2"	7/8"	59.0
PA-3/4	3/4"	1/2"	1-1/8"	64.0
PA-1	1"	1/2"	1-3/8"	70.0
PA-1-1/4	1-1/4"	1/2"	1-1/2"	72.0
PA-1-1/2	1-1/2"	1/2"	1-5/8"	93.0
PA-2	2"	5/8"	2"	128.0
PA-2-1/2	2-1/2"	5/8"	2-1/4"	135.0
PA-3	3"	5/8"	2-1/2"	155.0
PA-3-1/2	3-1/2"	5/8"	2-3/4"	190.0

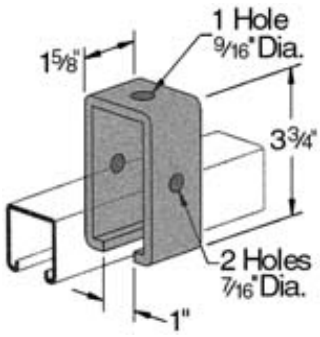
PIPE HANGARS, ROLLERS & TROLLEYS

Wt./C = 233 lbs.



I-8200 **Trolley Beam Support**

IPS 2528 — Trolley Beam Standard Stupport



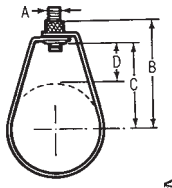
Weight/100 pcs: 102 lbs.
Use With: PS 200, PS 210
Load Rating: 600 lbs.

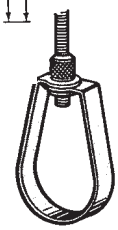
Strut

PIPE HANGERS & ROLLERS, TROLLEYS

Standard Material/Finish
Plain steel, conforming to ASTM A569-72.

PEAR-SHAPED HANGERS—ADJUSTABLE





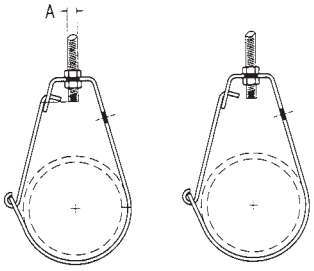
Zinc I-115
Copper I-101

Pipe Size	Dimension A	B	C	D	Wt. (lb./C)
1/2"	3/8"	2-5/16"	1-7/16"	1"	9
3/4"	3/8"	2-7/16"	1-1/2"	1"	9
1"	3/8"	2-1/2"	1-5/8"	1"	10
1-1/4"	3/8"	2-3/4"	1-7/8"	1"	11
1-1/2"	3/8"	2-7/8"	2"	1"	11
2"	3/8"	3-5/16"	2-7/16"	1-1/4"	13
2-1/2"	1/2"	3-15/16"	2-15/16"	1-1/2"	34
3"	1/2"	4-1/4"	3-1/4"	1-1/2"	36
4"	5/8"	5-3/4"	4-1/4"	2"	88
5"	5/8"	6-5/16"	4-13/16"	2-1/16"	99
6"	3/4"	6-7/8"	5-3/8"	2-1/16"	106
8"	7/8"	8-9/16"	6-15/16"	2-5/8"	129

PIPE HANGERS & ROLLERS, TROLLEYS

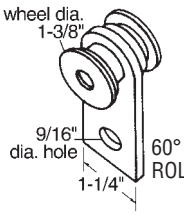
Material/Finish Options
1. Steel conforming to ASTM A575-81
2. Zinc-electroplated steel, conforming to ASTM B633-78 (standard).
3. Hot-dip galvanizing-after-fabrication, conforming to ASTM A123-84 (available on request).

PIPE SUSPENSION/ WALL-MOUNT HANGER



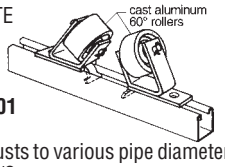
Cat. No. Assembly	Pipe Size	A Rod Diam.
I-8057	1/2"	3/8"
I-8058	3/4"	3/8"
I-8059	1"	3/8"
I-8060	1-1/4"	3/8"
I-8061	1-1/2"	3/8"
I-8062	2"	3/8"
I-8063	2-1/2"	1/2"
I-8064	3"	1/2"
I-8065	3-1/2"	1/2"
I-8066	4"	5/8"
I-8068	5"	5/8"
I-8069	6"	3/4"
I-8071	8"	7/8"

SINGLE TROLLEY



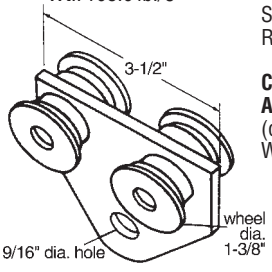
Cat. No. I-8213
(with needle bearings)
Wt.: 64.0 lb./C

60° SEPARATE ROLLERS



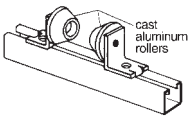
DOUBLE TROLLEY

Cat. No. I-8214
(with needle bearings)
Wt.: 108.0 lb./C

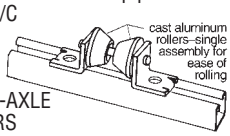


Cat. No. I-8201 Assembly
(one pair, adjusts to various pipe diameters)
Wt.: 397.0 lb./C

SEPARATE ROLLERS



Cat. No. I-8202 Assembly
(one pair, adjusts to various pipe diameters)
Wt.: 150.0 lb./C



SINGLE-AXLE ROLLERS

Cat. No. Assembly	Nominal Pipe Diam.	Wt. (lb./C)
I-8205	1", 1-1/2", 2", 2-1/2", 3"	159.0
I-8206	3", 3-1/2", 4"	166.0
I-8207	4", 5", 6"	179.0

Cat. No. Assembly	Nominal Pipe Diam.	Wt. (lb./C)
I-8208	6", 8"	182.0
I-8209	10"	190.0
I-8210	12"	193.0

ELECTRICAL RACEWAY AND JUNCTION BOXES

Material/Finish Options
1. Raceway
   a. Hot-dip mill-galvanized steel, conforming to ASTM A526-80 (standard.)
   b. Painted green (available on request).
2. Junction Boxes
   Zinc-electroplated steel, conforming to ASTM B633-78 (standard).

SURFACE METAL RACEWAY

Any steel Regular or Knockout Channel sections listed below combine with I-9090 Channel Closure Strip as surface raceway, as listed in Underwriters Laboratories Inc. Construction Materials List, Surface Metal Raceway (Section 360A19). Appropriate labels will be affixed when applicable.

When ordering "UL-listed" raceway, include the suffix "UL" and desired finish option after appropriate channel catalog no. *Example:* I-5812-KO-UL Galvanized.

Max. No. of Conductors* (per channel)

Wire Size	I-5812 I-5812-KO I-5814 I-5814-KO A	B	I-3812 I-3812-KO A	B	I-1012 I-1012-KO A	B	I-1315 I-1315-KO A	B
AWG								
14	10	10	10	10	4	6	4	6
12	10	10	10	10	3	6	3	6
10	5	8	5	6	—	—	—	—
8	4	6	4	5	—	—	—	—
6	4	5	4	5	—	—	—	—

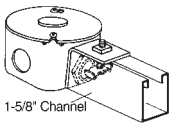
*Type AVB, FEP, FEPB, RH, RHH, RHW, RUH, RUW, T, THNN, THW, THWN, TW OR XHHW conductors, when installed for support and supply of electric discharge type lighting fixtures (snap-in cover required to complete raceway):

Column "A" shows *maximum* no. of conductors when wiring is suitable for at least 75°C, or wiring suitable for 60° if 1/2" *minimum clearance* is allowed between fixture and raceway.

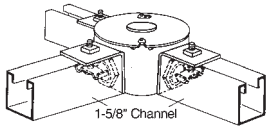
Column "B" shows *maximum* no. of conductors using wiring suitable for at least 75°C if 1/8" *maximum clearance* is allowed between fixture and raceway.

JUNCTION BOXES

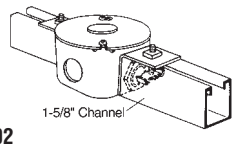
Cat. No. I-9001
Wt.: 127.0 lb./C



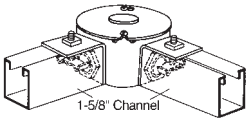
Cat. No. I-9004
Wt.: 180.0 lb./C



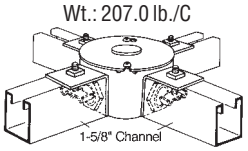
Cat. No. I-9003
Wt.: 154.0 lb./C



Cat. No. I-9002
Wt.: 154.0 lb./C



Cat. No. I-9005
Wt.: 207.0 lb./C



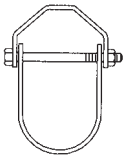
Box/Channel Arrangement	Cat. No. (Assembly*)	Assembly Item Quantities: Box (with cover attachment screws)	Cover	Conduit Nipple & Lock Nut	End Cap with Knockout	Channel Attachment Stud & Nut
Terminal	I-9001	1	1	1	1	1
90° Corner	I-9002	1	1	2	2	2
Straight Run	I-9003	1	1	2	2	2
Tee	I-9004	1	1	3	3	3
Cross	I-9005	1	1	4	4	4

*Accommodates 1-5/8" deep channels.

"All struts and fittings are stocked in stainless, fiberglass, galvanized, aluminum, green and gold."

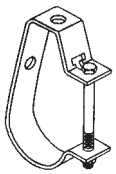
Clevis Hangers

No. I-406 Stainless Steel Clevis Hanger



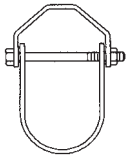
Size	Standard Finish	Standard Package	Wt. per piece (approx.)
1/2	304 S.S.	50	.31
3/4	304 S.S.	50	.34
1	304 S.S.	50	.40
1-1/4	304 S.S.	50	.44
1-1/2	304 S.S.	50	.48
2	304 S.S.	50	.55
2-1/2	304 S.S.	50	1.30
3	304 S.S.	50	1.50
4	304 S.S.	30	2.00
5	304 S.S.	25	2.50
6	304 S.S.	20	3.20
8	304 S.S.	10	5.00
10	304 S.S.	Bulk	8.50
12	304 S.S.	Bulk	12.00
14	304 S.S.	Bulk	14.50
16	304 S.S.	Bulk	21.25
18	304 S.S.	Bulk	25.60
20	304 S.S.	Bulk	42.50
24	304 S.S.	Bulk	48.00

J Hanger



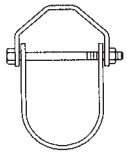
Part No.	Size	Standard Package	Wt. per piece (approx.)
I-8057	1/2	100	.25
I-8058	3/4	100	.25
I-8059	1	100	.29
I-8060	1-1/4	100	.32
I-8061	1-1/2	100	.34
I-8062	2	100	.38
I-8063	2-1/2	50	.75
I-8064	3	50	.78
I-8065	3-1/2	50	.87
I-8066	4	25	1.39
I-8068	5	25	1.49
I-8069	6	15	2.26
I-8071	8	10	2.45

No. I-400 Standard Clevis Hanger



Size	Standard Package	Wt. per piece (approx.)
1/2	50	.32
3/4	50	.34
1	50	.37
1-1/4	50	.44
1-1/2	50	.47
2	50	.49
2-1/2	50	1.21
3	50	1.35
3-1/2	50	1.47
4	30	1.87
5	25	2.12
6	20	3.20
8	10	5.05
10	Bulk	8.00
12	Bulk	10.50
14	Bulk	13.50
16	Bulk	20.50
18	Bulk	25.25
20	Bulk	42.50
24	Bulk	50.00
30	Bulk	69.50

No. I-401 Galvanized Standard Clevis Hanger



Size	Standard Finish	Standard Package	Wt. per piece (approx.)
1/2	E.G.	50	.32
3/4	E.G.	50	.34
1	E.G.	50	.37
1-1/4	E.G.	50	.44
1-1/2	E.G.	50	.47
2	E.G.	50	.49
2-1/2	E.G.	50	1.21
3	E.G.	50	1.35
3-1/2	E.G.	50	1.47
4	E.G.	30	1.87
5	E.G.	25	2.54
6	E.G.	20	3.20
8	E.G.	10	5.05
10	E.G.	Bulk	8.00
12	E.G.	Bulk	10.50
14	E.G.	Bulk	13.50
16	E.G.	Bulk	20.50
18	E.G.	Bulk	25.25
20	E.G.	Bulk	42.50
24	E.G.	Bulk	50.00
30	E.G.	Bulk	69.50

SHIELD & PIPE HANGER SELECTION GUIDE

Insulation Protection Shields

Selection Tables for:
Figure B3151 Insulation Protection Shield
Figure B3152 360° Insulation Protection Shield
Figure B3153 Insulation Protection Shield with 'Loc' Tabs
Figure B3154 Short Insulation Protection Shield
Figure B3155 Short Insulation Protection Shield with 'Loc' Tabs

Shield Size Selection Table

Nominal Pipe or Tubing Size		Insulation Thickness							
		1/2" (12.7)	3/4" (19.0)	1" (25.4)	1-1/2" (38.1)	2" (50.8)	2-1/2" (63.5)	3" (76.2)	4" (101.6)
1/2"	(15)	1X	2X	3X	5X	7X	—	—	—
3/4"	(20)	2X	3X	3X	5X	7X	—	—	—
1"	(25)	2X	3X	4X	6X	8X	—	—	—
1-1/4"	(32)	3X	4X	4X	7X	8X	—	—	—
1-1/2"	(40)	3X	4X	5X	7X	9X	—	—	—
2"	(50)	4X	5X	6X	8	9X	10X*	11X*	—
2-1/2"	(65)	5X	6X	7X	9X	10X*	11X*	11X*	13Y*
3"	(80)	6X	7X	8X	9X	10X*	11X*	12Y*	14Z
3-1/2"	(90)	7X	8X	9X	10X*	11X*	12Y*	13Y*	15Z
4"	(100)	8X	9X	9X	10X*	11X*	12Y*	13Y*	15Z
5"	(125)	—	—	10Y*	11Y*	12Y*	13Y*	14Z	16Z
6"	(150)	—	—	11Y*	12Y*	13Y*	14Z	15Z	17Z
8"	(200)	—	—	13Y*	14Z`	15Z	16Z	17Z	19Z
10"	(250)	—	—	15Z	16Z	17Z	18Z	19Z	21Z
12"	(300)	—	—	17Z	18Z	19Z	20Z	21Z	23Z
14"	(350)	—	—	18Z	19Z	20Z	21Z	22Z	24Z
16"	(400)	—	—	20Z	21Z	22Z	23Z	24Z	26Z
18"	(450)	—	—	22Z	23Z	24Z	25Z	26Z	28Z
20"	(500)	—	—	24Z	25Z	26Z	27Z	28Z	30Z
24"	(600)	—	—	28Z	29Z	30Z	31Z	32Z	33Z

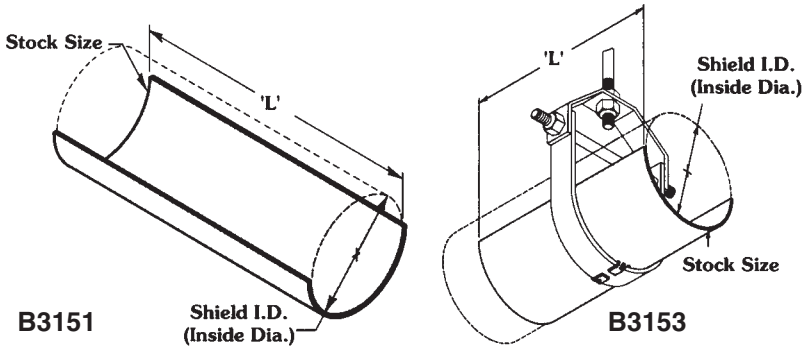
*When selecting B3154 or B3155, replace 'X' or 'Y' designation with 'Z'.

Pipe Hanger Size Selection Table

Nominal Pipe or Tubing Size		Insulation Thickness							
		1/2" (12.7)	3/4" (19.0)	1" (25.4)	1-1/2" (38.1)	2" (50.8)	2-1/2" (63.5)	3" (76.2)	4" (101.6)
1/2"	(15)	1-1/2	2	2-1/2	3-1/2	5	—	—	—
3/4"	(20)	2	2-1/2	2-1/2	3-1/2	5	—	—	—
1"	(25)	2	2-1/2	3	4	5	—	—	—
1-1/4"	(32)	2-1/2	3	3	5	5	—	—	—
1-1/2"	(40)	2-1/2	3	3-1/2	5	6	—	—	—
2"	(50)	3	3-1/2	4	5	6	8	8	—
2-1/2"	(65)	3-1/2	4	5	6	8	8	10	10
3"	(80)	4	5	5	6	8	8	10	12
3-1/2"	(90)	5	5	6	8	8	10	10	12
4"	(100)	5	6	6	8	8	10	10	12
5"	(125)	—	—	8	8	10	10	12	14
6"	(150)	—	—	8	10	10	12	12	16
8"	(200)	—	—	10	12	12	14	16	18
10"	(250)	—	—	12	14	16	16	18	20
12"	(300)	—	—	14	16	18	18	20	22
14"	(350)	—	—	16	18	18	20	20	22
16"	(400)	—	—	18	20	20	22	22	24
18"	(450)	—	—	20	22	22	24	24	26
20"	(500)	—	—	22	24	24	26	26	28
24"	(600)	—	—	26	28	28	30	30	32

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses or in shaded areas of the charts are in millimeters unless otherwise specified.

PIPE SUPPORTS, GUIDES, SHIELDS & SADDLES



B3153 same dimension as B3151, but with bottom tabs for centering and securing the shield to hanger.

Material: Steel (Stainless steel available)

Standard Finish: Pre-Galvanized

Service: Designed to protect pipe insulation when used with hangers.

Ordering: Specify part number and finish.

Approvals: Complies with Federal Specification WW-H-171E Type 41 and Manufacturers' Standardization Society SP-69 Type 40.

Figure B3151 Insulation Protection Shield
Figure B3153 Insulation Protection Shield with "Loc" Tabs

Part No.	Part No.	Stock Size		'L'		'I.D.'		Wt./C Lbs.	kg	Required Pipe Hanger Size	
B3151-1X	B3153-1X	18 Ga.	(1.2)	12"	(304.8)	1.90	(48.2)	50	(22.7)	1-1/2"	(40)
B3151-2X	B3153-2X	18 Ga.	(1.2)	12"	(304.8)	2.38	(60.4)	62	(28.1)	2"	(50)
B3151-3X	B3153-3X	18 Ga.	(1.2)	12"	(304.8)	2.88	(73.1)	75	(34.0)	2-1/2"	(65)
B3151-4X	B3153-4X	18 Ga.	(1.2)	12"	(304.8)	3.50	(88.9)	92	(41.7)	3"	(80)
B3151-5X	B3153-5X	18 Ga.	(1.2)	12"	(304.8)	4.00	(101.6)	104	(47.2)	3-1/2"	(90)
B3151-6X	B3153-6X	18 Ga.	(1.2)	12"	(304.8)	4.50	(114.3)	118	(53.5)	4"	(100)
B3151-7X	B3153-7X	18 Ga.	(1.2)	12"	(304.8)	5.00	(127.0)	129	(58.5)	5"	(125)
B3151-8X	B3153-8X	18 Ga.	(1.2)	12"	(304.8)	5.56	(141.2)	147	(66.7)	5"	(125)
B3151-9X	B3153-9X	16 Ga.	(1.5)	12"	(304.8)	6.64	(168.6)	219	(99.3)	6"	(150)
B3151-10X	B3153-10X	16 Ga.	(1.5)	12"	(304.8)	7.64	(194.0)	253	(114.7)	8"	(200)
B3151-11X	B3153-11X	16 Ga.	(1.5)	12"	(304.8)	8.64	(219.4)	286	(129.7)	8"	(200)
B3151-10Y	B3153-10Y	16 Ga.	(1.5)	18"	(457.2)	7.64	(194.0)	377	(171.0)	8"	(200)
B3151-11Y	B3153-11Y	16 Ga.	(1.5)	18"	(457.2)	8.64	(219.4)	424	(192.3)	8"	(200)
B3151-12Y	B3153-12Y	16 Ga.	(1.5)	18"	(457.2)	9.64	(244.8)	475	(215.4)	10"	(250)
B3151-13Y	B3153-13Y	16 Ga.	(1.5)	18"	(457.2)	10.76	(273.3)	529	(239.9)	10"	(250)
B3151-14Z	B3153-14Z	14 Ga.	(1.9)	24"	(609.6)	11.76	(298.7)	964	(437.3)	12"	(300)
B3151-15Z	B3153-15Z	14 Ga.	(1.9)	24"	(609.6)	12.76	(324.1)	1045	(474.0)	12"	(300)
B3151-16Z	B3153-16Z	14 Ga.	(1.9)	24"	(609.6)	14.00	(355.6)	1146	(519.8)	14"	(350)
B3151-17Z	—	14 Ga.	(1.9)	24"	(609.6)	15.00	(381.0)	1227	(556.5)	16"	(400)
B3151-18Z	—	14 Ga.	(1.9)	24"	(609.6)	16.00	(406.4)	1308	(593.3)	16"	(400)
B3151-19Z	—	14 Ga.	(1.9)	24"	(609.6)	17.00	(431.8)	1393	(631.8)	18"	(450)
B3151-20Z	—	12 Ga.	(2.6)	24"	(609.6)	18.00	(457.2)	2064	(936.2)	18"	(450)
B3151-21Z	—	12 Ga.	(2.6)	24"	(609.6)	19.00	(482.6)	2178	(987.9)	20"	(500)
B3151-22Z	—	12 Ga.	(2.6)	24"	(609.6)	20.00	(508.0)	2292	(1039.6)	20"	(500)
B3151-23Z	—	12 Ga.	(2.6)	24"	(609.6)	21.00	(533.4)	2406	(1091.3)	24"	(600)
B3151-24Z	—	12 Ga.	(2.6)	24"	(609.6)	22.00	(558.8)	2520	(1143.1)	24"	(600)
B3151-25Z	—	12 Ga.	(2.6)	24"	(609.6)	23.00	(584.2)	2634	(1194.8)	24"	(600)
B3151-26Z	—	12 Ga.	(2.6)	24"	(609.6)	24.00	(609.6)	2753	(1248.7)	24"	(600)
B3151-27Z	—	12 Ga.	(2.6)	24"	(609.6)	25.00	(635.0)	2862	(1298.2)	30"	(750)
B3151-28Z	—	12 Ga.	(2.6)	24"	(609.6)	26.00	(660.4)	2980	(1351.7)	30"	(750)
B3151-29Z	—	12 Ga.	(2.6)	24"	(609.6)	27.00	(685.8)	3094	(1403.4)	30"	(750)
B3151-30Z	—	12 Ga.	(2.6)	24"	(609.6)	28.00	(711.2)	3208	(1455.1)	30"	(750)
B3151-31Z	—	12 Ga.	(2.6)	24"	(609.6)	29.00	(736.6)	3322	(1506.8)	30"	(750)
B3151-32Z	—	12 Ga.	(2.6)	24"	(609.6)	30.00	(762.0)	3436	(1558.5)	30"	(750)
B3151-33Z	—	12 Ga.	(2.6)	24"	(609.6)	32.00	(812.8)	3664	(1662.0)	36"	(900)

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses or in shaded areas of the charts are in millimeters unless otherwise specified.

Pipe and Riser Clamps

No. I-295 Standard Double Bolt Pipe Clamp

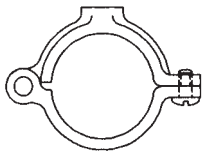
Size	Standard Package	Wt. per piece (approx.)
1/2	Bulk	.70
3/4	Bulk	.70
1	Bulk	.75
1-1/4	Bulk	.80
1-1/2	Bulk	2.30
2	Bulk	2.50
2-1/2	Bulk	2.70
3	Bulk	3.04
4	Bulk	6.60
5	Bulk	6.95
6	Bulk	11.40
8	Bulk	13.10
10	Bulk	19.75
12	Bulk	22.20
14	Bulk	37.60
16	Bulk	41.30
18	Bulk	44.80
20	Bulk	57.20
24	Bulk	65.80

No. I-510 Standard Riser Clamp

Size	Standard Package	Wt. per piece (approx.)
1/2	25	.80
3/4	25	.80
1	25	1.04
1-1/4	25	1.06
1-1/2	25	1.08
2	25	1.16
2-1/2	25	1.32
3	25	1.56
3-1/2	20	1.70
4	20	1.70
5	10	3.45
6	Bulk	3.70
8	Bulk	7.40
10	Bulk	11.00
12	Bulk	16.25
14	Bulk	17.00
16	Bulk	18.50
18	Bulk	28.00
20	Bulk	43.40
24	Bulk	53.00

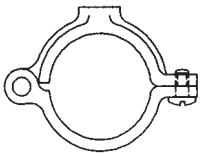
Ring & Roller Hangers

No. I-455 Malleable Iron Stand-off Split Ring Hanger



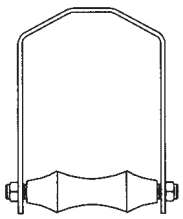
Size	Standard Package	Wt. per piece (approx.)
3/8	100	.13
1/2	100	.13
3/4	100	.15
1	100	.17
1-1/4	100	.28
1-1/2	50	.26
2	50	.20
2-1/2	50	.39
3	50	.48
4	25	1.06

No. I-456 Malleable Iron Stand-off Split Ring Hanger for Copper Tubing



Size	Standard Finish	Standard Package	Wt. per piece (approx.)
3/8	Copper Plated	100	.06
1/2	Copper Plated	100	.07
3/4	Copper Plated	100	.08
1	Copper Plated	100	.09
1-1/4	Copper Plated	100	.12
1-1/2	Copper Plated	100	.14
2	Copper Plated	50	.23
2-/12	Copper Plated	50	.23
3	Copper Plated	50	1.07

No. I-610 One Rod Roller Hanger



Size	Standard Finish	Standard Package	Wt. per piece (approx.)
2-1/2	Plain	Bulk	1.85
3	Plain	Bulk	2.00
3-1/2	Plain	Bulk	2.50
4	Plain	Bulk	3.00
5	Plain	Bulk	6.27
6	Plain	Bulk	7.80
8	Plain	Bulk	14.00
10	Plain	Bulk	18.00
12	Plain	Bulk	28.00
14	Plain	Bulk	39.00
16	Plain	Bulk	49.00
18	Plain	Bulk	57.75
20	Plain	Bulk	75.90
24	Plain	Bulk	100.00

STANDARD CONDUIT HANGERS

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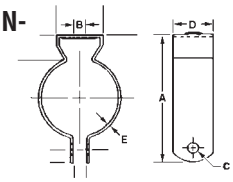

ZINC PLATED STEEL
AFTER FABRICATION

EVERDUR

COPPER PLATED
AFTER FABRICATION

STAINLESS STEEL

HOT DIPPED GALVANIZED
AFTER FABRICATION

ALUMINUM

- When used along with Split Porcelain Bushings, voltages of 550 or more can be accommodated.
- Zinc Plated and Stainless Steel available with stainless steel bolt and nut attached.

Part No. Zinc w/o bolts	Zinc w/bolts & nuts	Fits Rigid Conduit & Pipe	Fits EMT	Std. Pkg.	Rigid & IMC	EMT	A	B	C	D	E
0	**0-B**	3/8"-1/2"	1/2"	100	3/8-1/2"	1/2"	1.8113	1/4	1/4	.750	.050
1	**1-B**	3/4"	3/4"	100	3/4"	3/4"	2.062	1/4	1/4	.875	.050
2	**2-B**	1"	1"	100	1"	1"	2.473	1/4	1/4	.875	.050
2-1/2	**2-1/2-B**	-	1-1/4	100	-	1-1/4"	2.687	1/4	1/4	.875	.050
3	**3-B**	1-1/4"	1-1/2"	100	1-1/4"	1-1/2"	2.906	1/4	1/4	.875	.050
4	**4-B**	1-1/2"	-	100	1-1/2"	-	3.265	5/16	1/4	1.000	.060
5	**5-B**	2"	2"	50	2"	2"	3.750	5/16	1/4	1.250	.060
6	**6-B**	2-1/2"	2-1/2"	50	2-1/2	2-1/2	4.437	5/16	1/4	1.250	.060
7	**7-B**	3"	3"	25	3"	3"	5.000	5/16	5/16	1.250	.060
8	**8-B**	3-1/2"	3-1/2"	25	3-1/2"	3-1/2"	5.770	5/16	5/16	1.250	.060
9	**9-B**	4"	4"	10	4"	4"	7.000	1/2	1/2	1.750	.080
10	**10-B**	5"		10	5"	-	8.000	1/2	1/2	1.750	.080

Part No. Stainless w/o bolts	Stainless w/bolts	Fits Rigid Conduit & Pipe	Fits EMT	Std. Pkg.
0-S	**0-SB**	3/8"-1/2"	1/2"	100
1-S	**1-SB**	3/4"	3/4"	100
2-S	**2-SB**	1"	1"	100
2-1/2-S	**2-1/2-SB**	-	1-1/4	100
3-S	**3-SB**	1-1/4"	1-1/2"	100
4-S	**4-SB**	1-1/2"	-	100
5-S	**5-SB**	2"	2"	50
6-S	**6-SB**	2-1/2"	2-1/2"	50
7-S	**7-SB**	3"	3"	25
8-S	**8-SB**	3-1/2"	3-1/2"	25
9-S	**9-SB**	4"	4"	10

TWO-HOLE CONDUIT STRAPS

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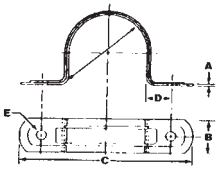

Part No.	Rigid & IMC	EMT	A	B	C	D	Bolt E	No. of Ribs
225	1/4"	-	.035	.625	1.765	.360	1/8"	1
228	3/8"	-	.035	.750	2.515	.495	3/16"	2
230	-	1/2"	.035	.750	2.558	.478	3/16"	2
240	1/2"	-	.035	.750	2.565	.450	3/16"	2
245	-	3/4"	.035	.750	2.765	.510	3/16"	2
250	3/4"	-	.035	.750	2.795	.470	3/16"	2
255	-	1"	.035	.750	3.205	.620	3/16"	2
260	1"	-	.035	.750	3.140	.520	3/16"	2
265	-	1-1/4"	.050	.875	3.875	.665	1/4"	2
270	1-1/4"	-	.050	.875	4.375	.810	1/4"	2
275	-	1-1/2"	.050	1.000	4.300	.625	1/4"	2
280	1-1/2"	-	.062	1.000	4.585	.660	1/4"	1
285	-	2"	.050	1.000	5.000	.720	1/4"	2
290	2"	-	.062	1.250	5.030	.630	5/16"	1
292	2-1/2"	-	.062	1.250	6.125	.810	3/8"	1
294	3"	-	.090	1.250	7.438	.850	3/8"	1

HEAVY DUTY TWO-HOLE STRAPS

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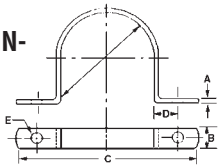

ZINC PLATED STEEL

HOT DIPPED GALVANIZED
AFTER FABRICATION

- Heavy Duty Two-Hole straps are designed for heavy loads.

Part No. Zinc	Fits Rigid Conduit & Pipe	Fits EMT	Std. Pkg.	Conduit	A	B	C	D	Bolt E	No. of Ribs
HD-260	1"	-	100	1"	.090	.750	3.092	.520	.206	0
HD-270	1-1/4"	-	100	1-1/4"	.080	.875	4.400	.720	.281	2
HD-280	1-1/2"	-	50	1-1/2"	.090	1.000	4.590	.730	.281	1
HD-290	2"	-	25	2"	.090	1.250	5.100	.725	.344	1
HD-292	2-1/2"	2-1/2"	25	2-1/2"	.090	1.250	6.188	.730	.406	1
HD-294	3"	3"	10	3"	.120	1.250	7.125	.910	.406	1
HD-295	3-1/2"	3-1/2"	10	3-1/2'	.187	1.250	8.750	1.140	.656	1
HD-296	4"	4"	10	4"	.187	1.250	9.063	1.130	.656	1
HD-297	5"	-	10	5"	.250	1.250	10.680	1.400	.656	0
HD-298	6"	-	10	6"	.250	1.250	12.140	1.500	.656	0

STANDARD JIFFY CLIPS

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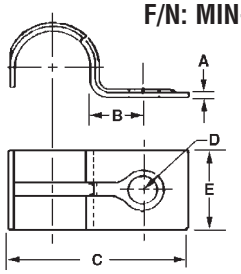


ZINC PLATED STEEL

EVERDUR

COPPER PLATED STEEL
AFTER FABRICATION

- Standard Jiffy Clips are a Minerallac original.
- These one hole pipe clamps are ideal for hanging tubing, pipe conduit and BX cable.

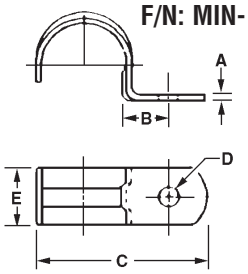
Part No. Zinc	Fits Copper Tubing Size	Marking on Clip	Std. Pkg.
102	1/8"	-	100
103	3/16"	-	100
105	1/4"	-	100
110	5/16	-	100
115	3/8"	115	100
125	1/2"	125	100
135	3/4"	750	100
150	1"	150	100
165	1-1/2"	1-1/4"	100
	Fits EMT		
130	1/2"	130	100
145	3/4"	145	100
155	1"	1"	100
165	1-1/4	1-1/4"	100
	Fits Rigid Conduit & Pipe		
120	1/8"	120	100
125	1/4"	125	100
140	1/2"	140	100
150	3/4	150	100
160	1"	1"	100
170	1-1/4"	1-1/4"	100
121	Fits BX Cable	-	100

Part No.	Tubing	Fits Rigid	EMT	A	B	C	Bolt D	E	No. of Ribs
102	1/8	-	-	.035	.300	.800	3/16	.500	1
103	3/16	-	-	.035	.360	.830	3/16	.500	1
105	1/4	-	-	.035	.340	.920	3/16	.500	1
110	5/16	-	-	.035	.320	.940	3/16	.500	1
115	3/8	-	-	.045	.380	1.180	3/16	.625	1
120	-	1/8	-	.045	.390	1.180	3/16	.625	1
***125**	1/2	1/4	BX	.045	.350	1.315	3/16	.625	1
130	-	3/8	1/2	.050	.390	1.610	1/4	.750	1
135	3/4	-	-	.050	.400	1.660	1/4	.750	1
140	-	1/2	-	.050	.490	1.910	1/4	.875	1
145	-	-	3/4	.050	.560	2.060	1/4	.875	1
150	1	3/4	-	.050	.540	2.110	1/4	.875	1
155	-	-	1	.050	.540	2.300	1/4	.875	1
160	-	1	-	.065	.530	2.660	1/4	1.000	2
165	1-1/2	-	1-1/4	.065	.610	2.990	1/4	1.000	2
170	-	1-1/4	-	.065	.800	3.325	5/16	.250	2
***121**	-	-	BX	.045	.420	1.375	3/16	.625	1

*#125 fits BC 12-3, 10-2, and 10-3. #121 fits BX 14-2, 14-3, and 12-2

MEDIUM JIFFY CLIPS, SNAP-ON

F/N: MIN-



ZINC PLATED STEEL
AFTER FABRICATION

HOT DIPPED GALVANIZED
AFTER FABRICATION

STAINLESS STEEL

- Precision made one-hole conduit and pipe straps for use where the load is too heavy for the Standard Jiffy Clip.
- Clips have an inverted rib providing more strength at the bend of the clip and holding the clip on the conduit, leaving both hands free to work.

Part No. Zinc	Stainless Steel	Std. Fits EMT	Pkg.
MED-30	**MED-30-SS**	1/2"	100
MED-45	**MED-45-SS**	3/4"	100
MED-55	-	1"	100
MED-65	-	1-1/4"	100
MED-75	-	1-1/2"	50
MED-85	-	2"	50
		Fits Rigid & IMC Conduit	
MED-40	**MED-40-SS**	1/2"	100
MED-50	**MED-50-SS**	3/4"	100
MED-60	-	1"	100
MED-70	-	1-1/4	100
MED-80	-	1-1/2	50
MED-90	-	2"	50

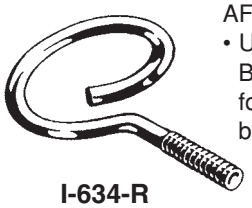
Part No.	Rigid & IMC	EMT	A	B	C	Bolt D	E
MED-30	-	1/2"	.080	.440	1.685	1/4"	.875
MED-40	1/2"	-	.080	.560	1.955	1/4"	.875
MED-45	-	3/4	.080	.435	1.860	1/4"	.875
MED-50	3/4"	-	.080	.710	2.375	1/4"	.875
MED-55	-	1"	.080	.875	2.640	1/4"	.875
MED-60	1"	-	.080	.825	2.738	1/4"	.875
MED-65	-	1-1/4"	.090	.725	2.995	5/16"	1.000
MED-70	1-1/4"	-	.090	.770	3.145	5/16"	1.000
MED-75	-	1-1/2"	.090	1.010	3.535	5/16"	1.000
MED-80	1-1/2"	-	.120	.900	3.665	3/8"	1.000
MED-85	-	2"	.090	1.150	4.338	3/8"	1.250
MED-90	2"	-	.120	1.050	4.448	3/8"	1.250

OVERHEAD HANGERS

When working overhead, labor time can be a key cost factor. With both high-tech, Spring Steel parts and traditional solutions like perforated strapping, Minerallac provides almost every item needed for efficient overhead installations.

BRIDLE RINGS

ZINC PLATED STEEL
AFTER FABRICATION
- Used with Minerallac Beam Clamps Available for use with wood beams.

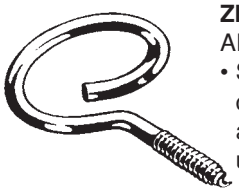


I-634-R

Part No.	Ring Size	Thread	Beam Clamp	Std. Pkg.
634-R	1" Dia.	10-24	600-10	100
646-R	1-1/2" Dia.	1/4"-20	600	100
648-R	2" Dia.	1/4"-20	600	100
646-RXL	4" Dia.	1/4"-20	600	100
645-R	4" Dia	1/4"20	600	100

BRIDLE RINGS FOR WOOD BEAMS

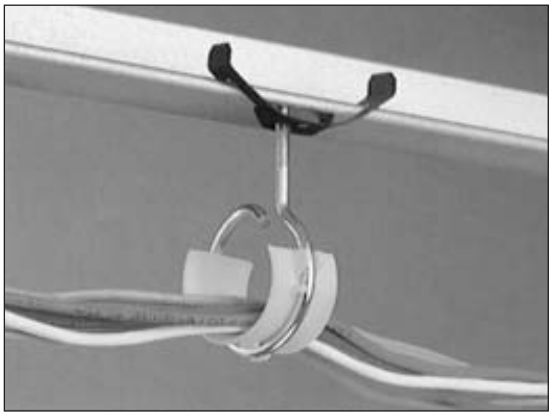
ZINC PLATED STEEL
AFTER FABRICATION
- Support communications cable and other low voltage uses from wood.

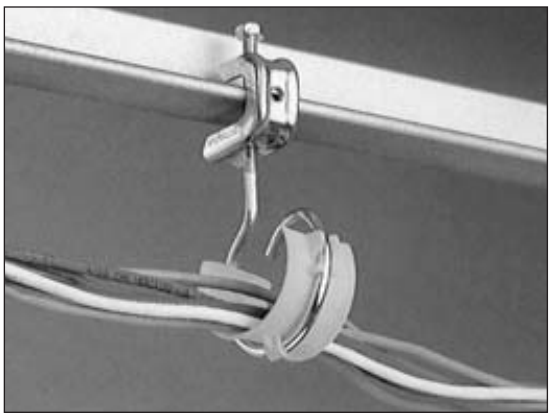


I-634-RW

Part No.	Ring Size	Dia. Thread	Std. Pkg.
634-RW	1" Dia.	3/16"	100
646RW	1-1/2" Dia.	1/4"	100
648-RW	2" Dia.	1/4"	100

UNIQUE CABLE GUARD SADDLE SYSTEM OFFERS BEST CABLE SUPPORT



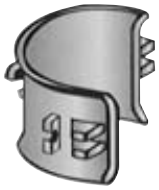


The Cable Guard saddle system can be easily mounted to beams for vertical or horizontal cable runs.

Cable Guard Saddle

- Cost effective alternative to expensive cable tray.
- Wide-surface saddle provides support without stress for Category 5, fiber-optic, and other sensitive voice/datacom cables.
- Continuous radius supports natural curve of cable.
- Available as an assembled unit (saddle and bridle ring), or as an individual component (saddle only) for retrofit on our Model 648R. Also fits 648RW for wood beam or other standard 2" bridle rings.
- Labor-saving design is more efficient than J-hook runs.
- Fluorescent yellow color for easy identification in cramped areas.
- UL and CSA listed, and rated for air handling spaces (plenum).
- Complies with National Electric Code, EIA/TIA requirements for structured cabling systems.

Catalog No. **I-648RS**



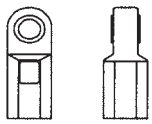
Catalog No. **I-BRS2**

Catalog No. **I-648R**

Patent Pending

Rod Hanger Accessories

No. I-26
Extension Piece



Size	Standard Finish	Standard Package	Wt. per piece (approx.)
3/8	Plain	100	.20
1/2	Plain	100	.38
5/8	Plain	50	.44
3/4	Plain	50	.65
7/8	Plain	50	.78

No. I-37
Eye Socket

Size	Standard Finish	Standard Package	Wt. per piece (approx.)
3/8	E.G.	250	.04
1/2	E.G.	100	.19

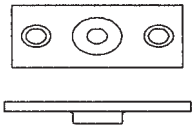
No. I-38
Offset Eye Socket

Size	Standard Finish	Standard Package	Wt. per piece (approx.)
3/8	E.G.	250	.07

No. I-47
Malleable Eye Socket

Size	Standard Finish	Standard Package	Wt. per piece (approx.)
1/4	Plain	100	.05
3/8	Plain	100	.07
1/2	Plain	100	.13
5/8	Plain	50	.19
3/4	Plain	50	.31
7/8	Plain	50	.44

No. I-365M
Malleable Iron Wall Plate

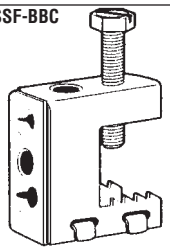


Size	Standard Package	Wt. per piece (approx.)
3/8	250	.16
1/2	100	.16

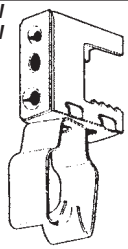
Also available in zinc.

Spring Steel Fasteners

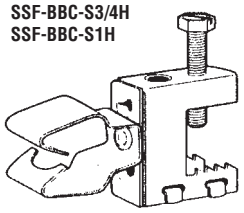
SSF-BBC



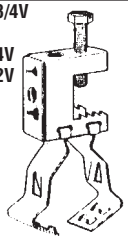
SSFBBC-S1/2V
SSFBBC-S3/4V
SSFBBC-S1V



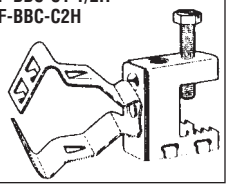
SSF-BBC-S1/2H
SSF-BBC-S3/4H
SSF-BBC-S1H



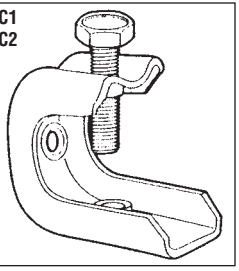
SSF-BBC-C1/2 3/4V
SSF-BBC-C1V
SSF-BBC-C1 1/4V
SSF-BBC-C1 1/2V
SSF-BBC-C2V



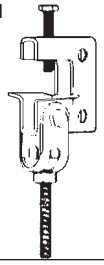
SSF-BBC-C1/2 3/4H
SSF-BBC-C1H
SSF-BBC-C1 1/4H
SSF-BBC-C1 1/2H
SSF-BBC-C2H



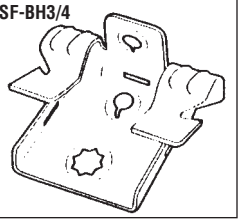
BC1
BC2



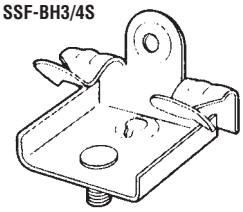
SSF-BR1



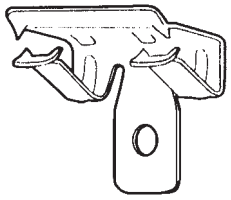
SSF-BH1/4
SSF-BH1/2
SSF-BH3/4



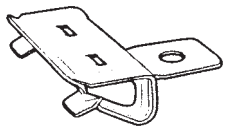
SSF-BH1/4S
SSF-BH1/2S
SSF-BH3/4S



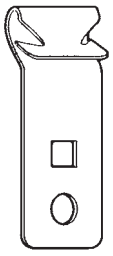
SSF-BF1/8 SSF-BF1/2
SSF-BF1/4 SSF-BF3/4



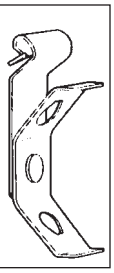
SSF-BFF1/8 SSF-BFF1/2
SSF-BFF1/4 SSF-BFF3/4



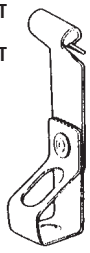
SSF-BA1/16
SSF-BA1/4



SSF-BA1/16-B8
SSF-BA1/16-B1/4
SSF-BA1/16-B3/8
SSF-BA1/4-B8
SSF-BA1/4-B1/4
SSF-BA1/4-B3/8

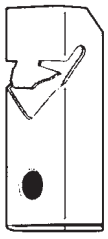


SSF-BA1/16-A1/4T
SSF-BA1/16-A3/8
SSF-BA1/16-A3/8T
SSF-BA1/4-A1/4T
SSF-BA1/4-A3/8
SSF-BA1/4-A3/8T

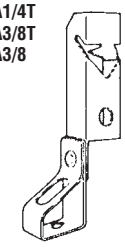


SSF-BZ1

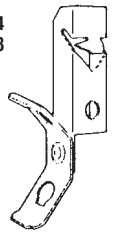
SSF-BZ2



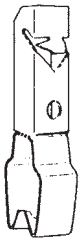
SSF-BZ1-A1/4T
SSF-BZ1-A3/8T
SSF-BZ1-A3/8



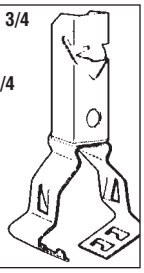
SSF-BZ1-B8
SSF-BZ1-B1/4
SSF-BZ1-B3/8



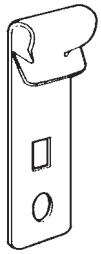
SSF-BZ2-S1/2
SSF-BZ2-S3/4
SSF-BZ2-S1



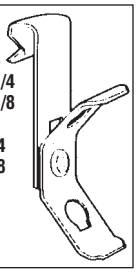
SSF-BZ2-C1/2 3/4
SSF-BZ2-C3/8
SSF-BZ2-C1
SSF-BZ2-C1 1/4



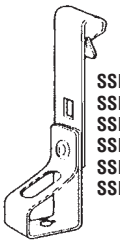
SSF-BV1/16
SSF-BV1/4



SSF-BV1/16-B8
SSF-BV1/16-B1/4
SSF-BV1/16-B3/8
SSF-BV1/4-B8
SSF-BV1/4-B1/4
SSF-BV1/4-B3/8

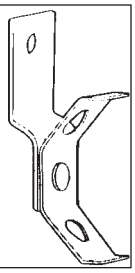


SSF-BV1/16-A1/4T
SSF-BV1/16-A3/8
SSF-BV1/16-A3/8T
SSF-BV1/4-A1/4T
SSF-BV1/4-A3/8
SSF-BV1/4-A3/8T

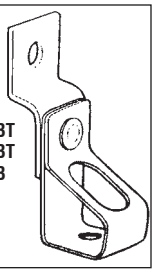


Spring Steel Fasteners

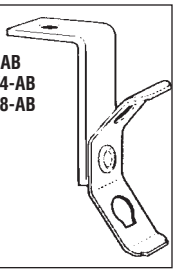
SSF-HB8-OB
SSF-HB1/4-OB
SSF-HB3/8-OB



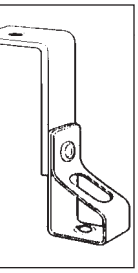
SSF-HA1/4OBT
SSF-HA3/8OBT
SSF-HA3/8OB



SSF-HB8-AB
SSF-HB1/4-AB
SSF-HB3/8-AB

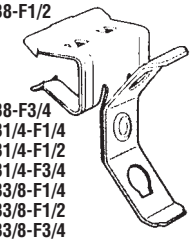


SSF-HA1/4-ABT
SSF-HA3/8-ABT
SSF-HA3/8-AB



SSF-HB8-F1/4
SSF-HB8-F1/2

SSF-HB8-F3/4
SSF-HB1/4-F1/4
SSF-HB1/4-F1/2
SSF-HB1/4-F3/4
SSF-HB3/8-F1/4
SSF-HB3/8-F1/2
SSF-HB3/8-F3/4



SSF-HA1/4-F1/4T
SSF-HA1/4-F1/2T
SSF-HA1/4-F3/4T
SSF-HA3/8-F1/4T
SSF-HA3/8-F1/2T
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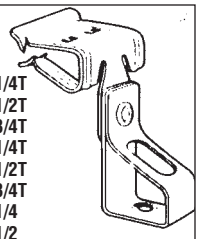
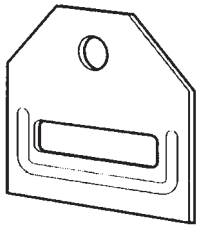
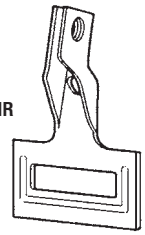
SSF-HA3/8-F3/4T



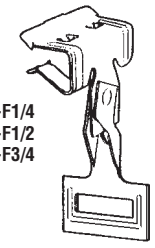
SSF-HS



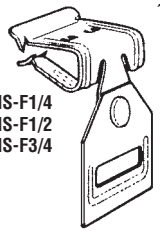
SSF-HR



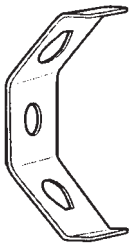
SSF-HR-F1/4
SSF-HR-F1/2
SSF-HR-F3/4



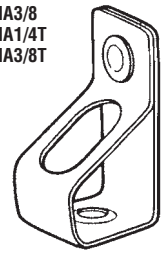
SSF-HS-F1/4
SSF-HS-F1/2
SSF-HS-F3/4

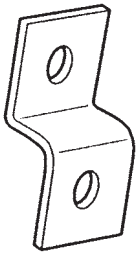


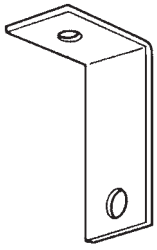
SSF-HB8
SSF-HB1/4
SSF-HB3/8

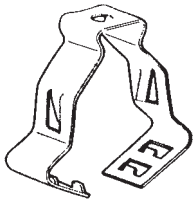


SSF-HA3/8
SSF-HA1/4T
SSF-HA3/8T

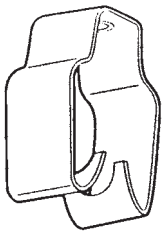




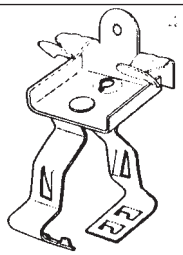




SSF-CC3/8
SSF-CC1/2 3/4
SSF-CC1
SSF-CC1 1/4
SSF-CC1 1/2
SSF-CC2
SSF-CC3/8T
SSF-CC1/2 3/4T
SSF-CC1T
SSF-CC1 1/4T
SSF-CC1 1/2T
SSF-CC2T
SSF-CS1/2
SSF-CS3/4
SSF-CS1
SSF-CS1/2T
SSF-CS3/4T
SSF-CS1T



SSF-CS1/2
SSF-CS3/4
SSF-CS1
SSF-CS1/2T
SSF-CS3/4T
SSF-CS1T



SSF-CC3/8-H1/4
SSF-CC1/2 3/4-H14
SSF-CC1-H1/4
SSF-CC1 1/4-H1/4
SSF-CC1 1/2-H1/4
SSF-CC2-H1/4
SSF-CC3/8-H1/2
SSF-CC1/2 3/4-H1/2
SSF-CC1-H1/2
SSF-CC1 1/4-H1/2
SSF-CC1 1/2-H1/2
SSF-CC2-H1/2
SSF-CC3/8-H3/4
SSF-CC1/2 3/4-H3/4
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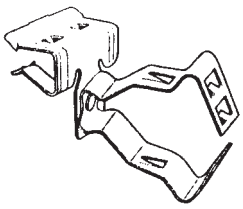
SSF-CC1 1/4-H3/4
SSF-CC1 1/2-H3/4
SSF-CC2-H3/4



SSF-CC3/8-F1/4
SSF-CC1/2 3/4-F14
SSF-CC1-F1/4
SSF-CC1 1/4-F1/4
SSF-CC1 1/2-F1/4
SSF-CC2-F1/4
SSF-CC3/8-F1/2
SSF-CC1/2 3/4-F1/2
SSF-CC1-F1/2
SSF-CC1 1/4-F1/2
SSF-CC1 1/2-F1/2
SSF-CC2-F1/2
SSF-CC3/8-F3/4
SSF-CC1/2 3/4-F3/4
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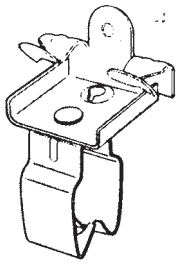
SSF-CC1 1/4-F3/4
SSF-CC1 1/2-F3/4
SSF-CC2-F3/4



SSF-CS1/2-H1/4
SSF-CS3/4-H1/4
SSF-CS1-H14
SSF-CS1/2-H1/2
SSF-CS3/4-H1/2
SSF-CS1-H1/2
SSF-CS1/2-H3/4
SSF-CS3/4-H3/4
SSF-CS1-H3/4

Spring Steel Fasteners

SSF-CS1/2-F1/4
SSF-CS3/4-F1/4
SSF-CS1-F1/4
SSF-CS1/2-F1/2
SSF-CS3/4-F1/2
SSF-CS1-F1/2
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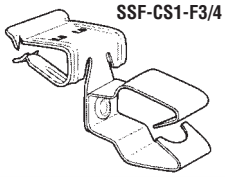
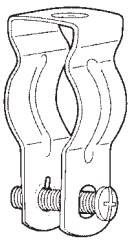
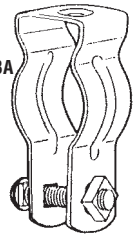
SSF-CS3/4-F3/4
SSF-CS1-F3/4



CH-0 LN
CH-1 LN
CH-2 LN
CH-2 1/2 LN
CH-3 LN
CH-4 LN
CH-5 LN

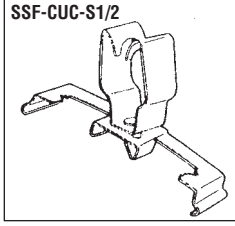


CH-0 WBA
CH-1 WBA
CH-2 WBA
CH-2 1/2 WBA
CH-3 WBA
CH-4 WBA
CH-5 WBA
CH-6 WBA
CH-7 WBA
CH-8 WBA
CH-9 WBA

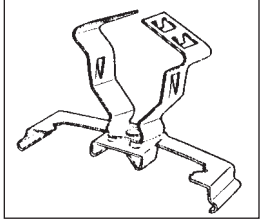


SSF-CUC

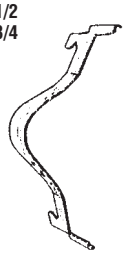
SSF-CUC-S1/2
SSF-CUC-S3/4
SSF-CUC-S1/2



SSF-CUC-C1/2 3/4
SSF-CUC-C1

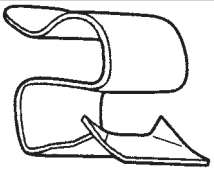


SSF-CK1/2
SSF-CK3/4



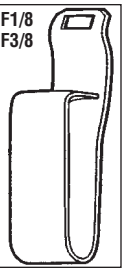
SSF-CK1

SSF-CK535

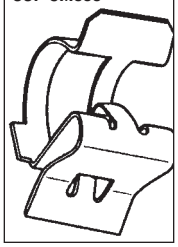


SSF-CES218
SSF-CES281
SSF-CES375
SSF-CES437
SSF-CES562
SSF-CES718
SSF-CES937
SSF-CES1250
SSF-CEM218
SSF-CEM281
SSF-CEM375
SSF-CEM437
SSF-CEM562
SSF-CEM718
SSF-CEM937
SSF-CEM1250
SSF-CEL218
SSF-CEL281
SSF-CEL375
SSF-CEL437
SSF-CEL562
SSF-CEL718
SSF-CEL937
SSF-CEL1250

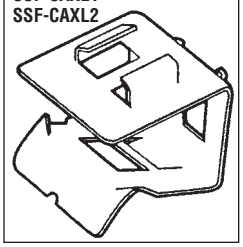
SSF-CF1/8
SSF-CF3/8



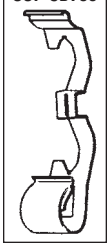
SSF-CM535



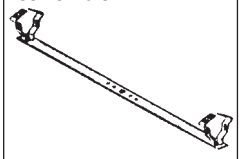
SSF-CAXL1
SSF-CAXL2



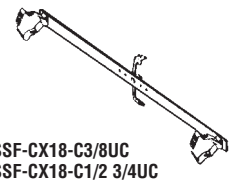
SSF-CB706



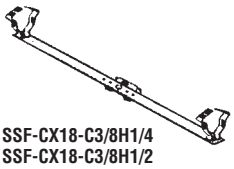
SSF-CX18-C3/8
SSF-CX18-C1/2 3/4
SSF-CX18-C1



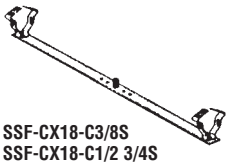
SSF-CX18-C3/8UC
SSF-CX18-C1/2 3/4UC
SSF-CX18-C1UC



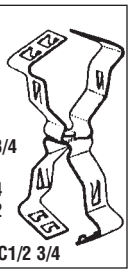
SSF-CX18-C3/8H1/4
SSF-CX18-C3/8H1/2
SSF-CX18-C1/2 3/4-H1/4
SSF-CX18-C1/2 3/4-H1/2
SSF-CX18-C1-H1/4
SSF-CX18-C1-H1/2



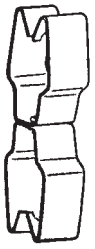
SSF-CX18-C3/8S
SSF-CX18-C1/2 3/4S
SSF-CX18-C1S



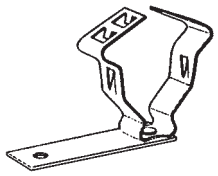
SSF-CC1-C3/8
SSF-CC1-C1/2 3/4
SSF-CC1-C1
SSF-CC1-C1 1/4
SSF-CC1-C1 1/2
SSF-CC1-C2
SSF-CC1/2 3/4-C1/2 3/4



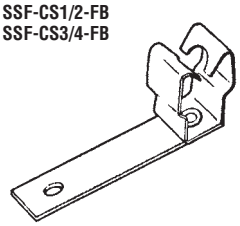
SSF-CS1/2-S1/2
SSF-CS1/2-S3/4
SSF-CS1/2-S1
SSF-CS3/4-S3/4
SSF-CS3/4-S1
SSF-CS1-S1



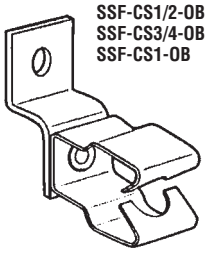
SSF-CC1/2 3/4-FB

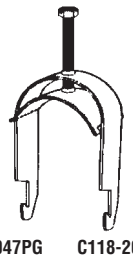


SSF-CS1/2-FB
SSF-CS3/4-FB



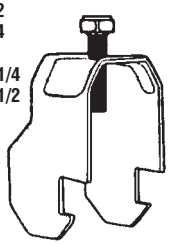
SSF-CS1/2-OB
SSF-CS3/4-OB
SSF-CS1-OB





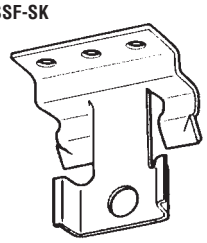
C118-047PG
C118-055PG
C118-070PG
C118-090PG
C118-110PG
C118-140PG
C118-175PG
C118-200PG
C118-250PG
C118-300PG
C118-370PG
C118-410PG
C118-460PG

C108-1/2
C108-3/4
C108-1
C108-1-1/4
C108-1-1/2
C108-2

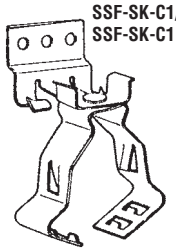


Spring Steel Fasteners

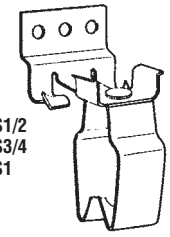
SSF-SK



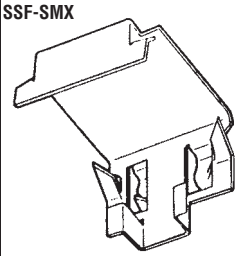
SSF-SK-C1/2 3/4
SSF-SK-C1



SSF-SK-S1/2
SSF-SK-S3/4
SSF-SK-S1

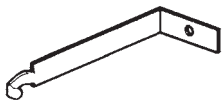


SSF-SMX

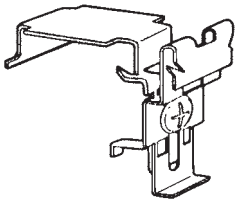


SS1-TB

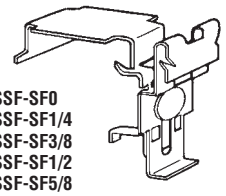
50-SC



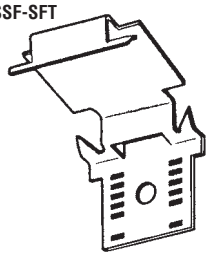
SSF-SFA



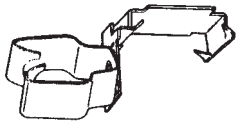
SSF-SF0
SSF-SF1/4
SSF-SF3/8
SSF-SF1/2
SSF-SF5/8
SSF-SF3/4



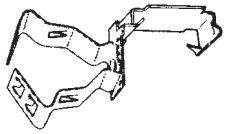
SSF-SFT



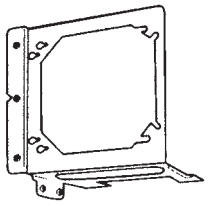
SSF-SF-S1/2
SSF-SF-S3/4
SSF-SF-S1



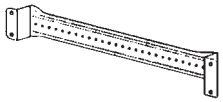
SSF-SF-C3/8
SSF-SF-C1/2 3/4
SSF-SF-C1



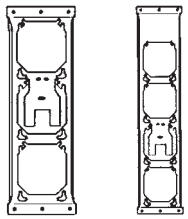
SSF-SH2346



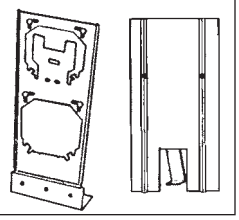
SSF-SG1-16
SSF-SG1-24
SSF-SG2-16
SSF-SG2-24



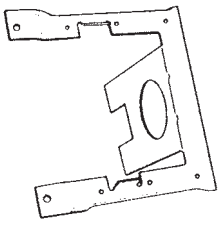
SSF-SB16 SSF-SB24



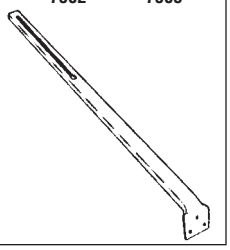
SSF-SV12 SSF-S6X
SSF-SV18



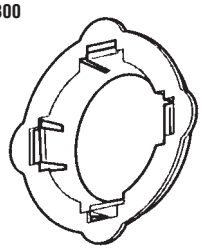
SSF-SHSB



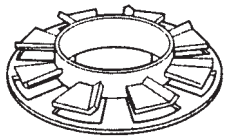
7502 7503



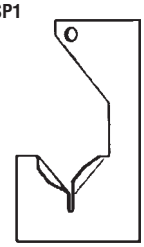
1300



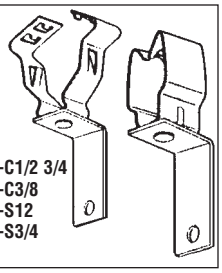
1216



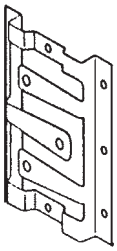
SSF-SP1



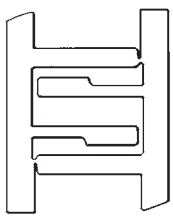
SSF-SAB-C1/2 3/4
SSF-SAB-C3/8
SSF-SAB-S12
SSF-SAB-S3/4



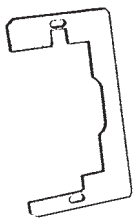
SSF-SLV



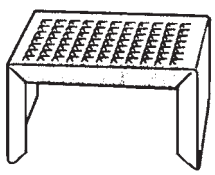
820D



SSF-SR

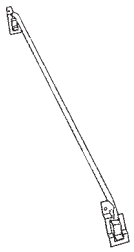


SSF-SX

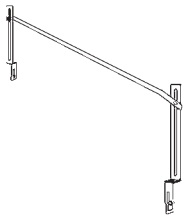


Spring Steel Fasteners

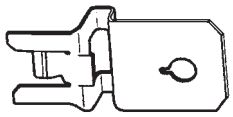
SSF-TH12
SSF-TH20
SSF-TH24
SSF-TH30



SSF-TH24A

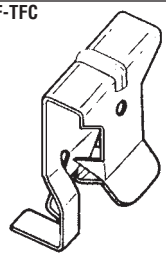


SSF-THC

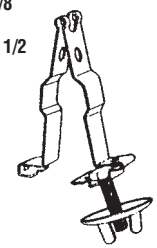


SSF-TL24

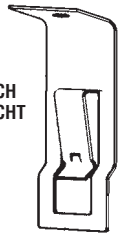
SSF-TFC



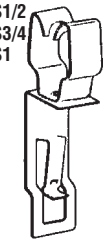
SSF-TS5/8
SSF-TS2
SSF-TS1 1/2



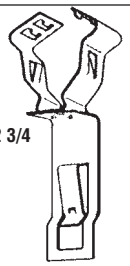
SSF-TCH
SSF-TCHT



SSF-TCH-S1/2
SSF-TCH-S3/4
SSF-TCH-S1

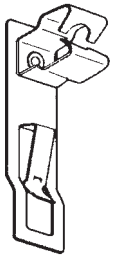


SSF-TCH-C1/2 3/4

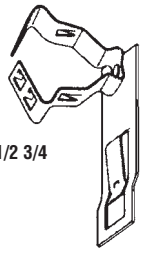


SSF-TCV
SSF-TCVT

SSF-TCV-S1/2
SSF-TCV-S3/4
SST-TCV-S1



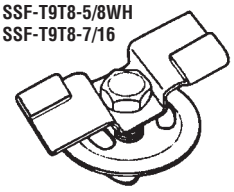
SSF-TCV-C1/2 3/4



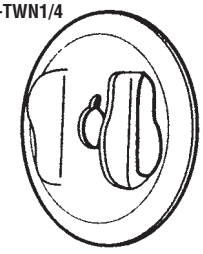
SSF-TA7

SSF-TA7-S1/2
SSF-TA7-S3/4
SSF-TA7-S1

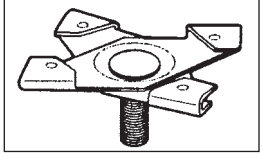
SSF-T9T5/8
SSF-T9T5/8WH
SSF-T9T8-5/8
SSF-T9T8-5/8WH
SSF-T9T8-7/16



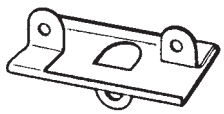
SSF-TWN1/4



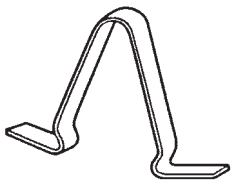
SSF-T15T5/8
SSF-T15T5/8WH
SSF-T15T1 1/2
SSF-T15T1 1/2WH
SSF-T15T2
SSF-T15T3
SSF-T15T8-5/8
SSF-T15T8-5/8WH
SSF-T15T8-7/16
SSF-T15T8-7/16WH



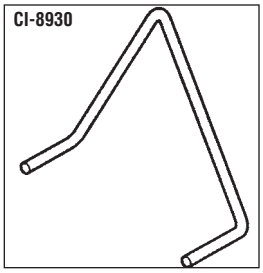
SSF-T15TSH



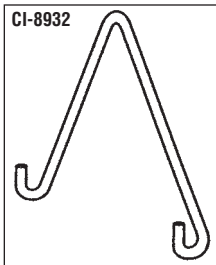
SSF-TV1



CI-8930

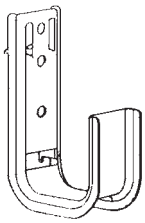


CI-8932

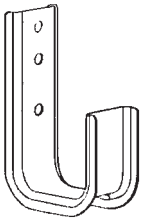


Spring Steel Fasteners

SSF-VJ1 5/16C
SSF-VJ2C

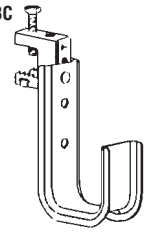


SSF-VJ1 5/16
SSF-VJ2

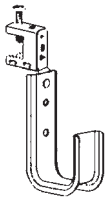


SSF-VB10

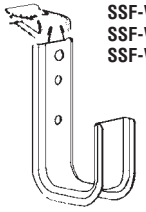
SSF-VJ1 5/16-BC
SSF-VJ2-BC



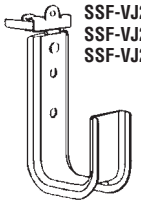
SSF-VJ1 5/16-BC-AB
SSF-VJ2-BC-AB



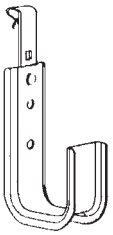
SSF-VJ1 5/16-F1/4
SSF-VJ1 5/16-F1/2
SSF-VJ1 5/16-F3/4
SSF-VJ2-F1/4
SSF-VJ2-F1/2
SSF-VJ2-F3/4



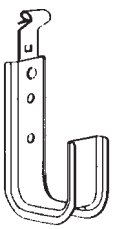
SSF-VJ1 5/16-H1/4-AB
SSF-VJ1 5/16-H1/2-AB
SSF-VJ1 5/16-H13/4-AB
SSF-VJ2-H1/4-AB
SSF-VJ2-H1/2-AB
SSF-VJ2-H13/4-AB



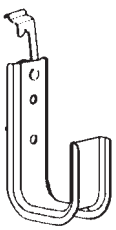
SSF-VJ1 5/16-V1/4
SSF-VJ2-V1/4



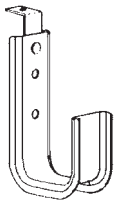
SSF-VJ1 5/16-A1/4
SSF-VJ2-A1/4



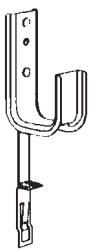
SSF-VJ1 5/16-UC
SSF-VJ2-UC



SSF-VJ1 5/16-AB
SSF-VJ2-AB

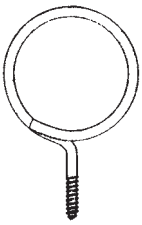


SSF-VJ1 5/16-A7
SSF-VJ2-A7



31-00820
31-00821
31-00823
31-00824
31-00825
31-00827

31-00810
31-00812
31-00816
31-00819



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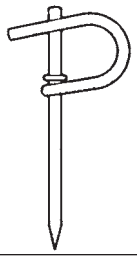
30-00804
30-00805
30-00807
30-01801
30-01804
30-01805
30-01807



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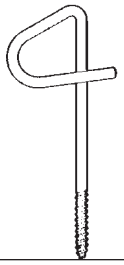
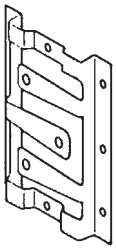
31-10809
31-00800
31-00801

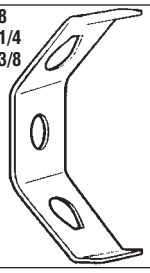


SSF-SLV

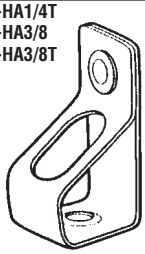


Spring Steel Fasteners

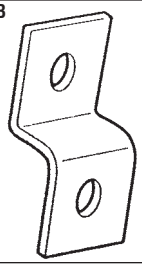
SSF-HB8
SSF-HB1/4
SSF-HB3/8



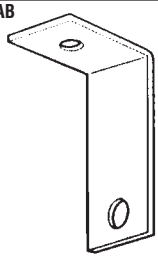
SSF-HA1/4T
SSF-HA3/8
SSF-HA3/8T



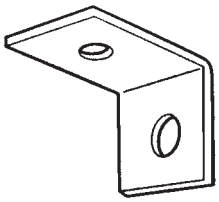
SSF-HOB



SSF-HAB

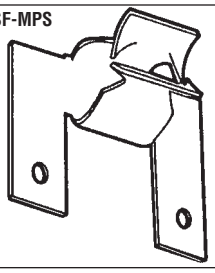


SSF-HSAB

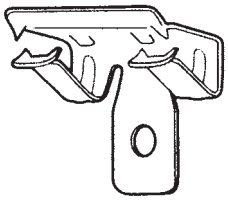


SSF-HFB

SSF-MPS



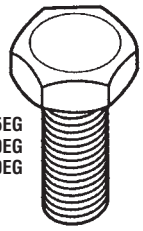
SSF-BF1/2
SSF-BF3/4



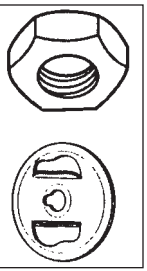
SH10

JC50
JC100-SC

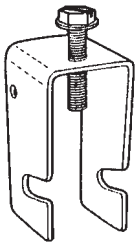
E142-1/4X075EG
E142-1/4X100EG
E142-1/4X150EG



E145-1/4EGC
SSF-TWN1/4



3900



SSF-MNH

Spring Steel Cross Reference, Alpha-Numeric Index

B-LINE	STEEL CITY
B1508	C108-1/2
B1508S	C118-070PG
B1508S	C118-090PG
B1512	C108-3/4
B1512S	C118-110PG
B1516	C108-1
B1516S	C118-140PG
B1520	C108-1 1/4
B1520S	C118-175PG
B1524S	C118-175PG
B1532S	C118-200PG
B1534S	C118-250PG
B1540S	C118-300PG
B1548S	C118-370PG
B1556S	C118-410PG
B1564S	C118-460PG
B3223-3/8	SSF-HA3/8-OBT
BA1	SSF-TS5/8
BA12	SSF-TH24
BA12-12	SSF-TH-12
BA12-20	SSF-TH-20
BA12-30	SSF-TH-30
BA1-24	SSF-TS1 1/2
BA-12-OB-24	SSF-TH24
BA-12-OB-24	SSF-TH24
BA-12-SB-24	SSF-TH24
BA13	SSF-TH24A
BA1-32	SSF-TS2
BA13-4 1/4	SSF-TH24A
BA14	SSF-TCH
BA15	SSF-TFC
BA1-T	SSF-TS5/8
BA1-TBN	SSF-TS5/8
BA20	SSF-TL24
BA-2-16	SSF-T15T8-5/8
BA2-16-BN	SSF-T15T8-7/16
BA-2-16-W	SSF-T15T8-5/8WH
BA-2-160WBN	SSF-T15T8-7/16WH
BA28	SSF-TA7
BA-28-B	SSF-MA7
BA-2-9	SSF-T9T8-5/8
BA-2-9-7	SSF-T9T8-7/16
BA-2-9-7-BN	SSF-T9T8-5/8
BA-2-9-W	SSF-T9T8-5/8WH
BA-2-9-WBN	SSF-T9T8-5/8WH
BA-4-16	SSF-T15T5/8
BA-4-16-24	SSF-T15T1 1/2
BA-4-16-32	SSF-T15T2
BA-4-16-48	SSF-T15T3
BA-4-16H	SSF-T15TSH
BA-4-16-LN	SSF-T15T5/8
BA-4-16-LS	SSF-T15T5/8
BA-4-16-W	SSF-T15T5/8WH

B-LINE	STEEL CITY
BA-4-9	SSF-T9T5/8
BA49-LN	SSF-T9T5/8
BA-4-9-LS	SSF-T9T5/8
BA-4-9-W	SSF-T9T5/8WH
BA-4-W	SSF-T15T5/8
BA-4-WN	SSF-TWN1/4
BA5-4T	SSF-TCVT
BA6-4T	SSF-TCHT
BA-8-12-A5	SSF-TCV-C1/2 3/4
BA-8-12-A6	SSF-TCH-C1/2 3/4
BB1	SSF-SK
BB10	SSF-SLV
BB15	SSF-SHSB
BB-18	7502
BB2-16	SSF-SG1 16
BB2-16D	SSF-SG2 16
BB2-24	SSF-SG 1 24
BB2-24D	SSF-SG2 24
BB25	SSF-SH2346
BB25-10	SSF-SH2346
BB27	SSF-THC
BB2-AC	SSF-SG1 16
BB2-ACD	SSF-SG2 16
BB3	SSF-SHSB
BB32	SSF-SR
BB33	820D
BB38	SSF-SK-S1/2
BB4-23	SSF-SH2346
BB4-4	SSF-SH2346
BB4-6	SSF-SH2346
BB4-XT6	SSF-S6X
BB5-0	SSF-SF0
BB5-10	SSF-SF5/8
BB5-12	SSF-SF3/4
BB5-4	SSF-SF1/4
BB5-6	SSF-SF3/8
BB5-8	SSF-SF1/2
BB6	SSF-SFT
BB60	SSF-SX
BB6-A	SSF-SFA
BB7	SS1-TB
BB8-16	SSF-SB16
BB8-24	SSF-SB24
BB9	SSF-SMX
BC1	SSF-BBC
BC442	BC1
BCH21	SSF-VJ1 5/16
BCH21-1D	SSF-VB10
BCH21-2D	SSF-VB10
BCH21-2S	SSF-VB10
BCH21-A28	SSF-VJ1 5/16-A7
BCH21-AB	SSF-VJ1 5/16-AB
BCH21-C2	SSF-VJ1 5/16-BC-AB

B-LINE	STEEL CITY
BCH21-C442	SSF-VJ1 5/16-BC-AB
BCH2 1E-2-4	SSF-VJ1 5/16-F1/4
BCH21-E-5-8	SSF-VJ1 5/16-F1/2
BCH21-3-9-12	SSF-VJ1 5/16-F3/4
BCH21-F3	SSF-VJ1 5/16-V1/4
BCH21-F4	SSF-VJ1 5/16-A1/4
BCH21H	SSF-VJ1 5/16
BCH21H-1D	SSF-VB10
BCH21H-2D	SSF-VB10
BCH21H-2S	SSF-VB10
BCH21H-SM	SSF-VJ1 5/16-A7
BCH21-L1410	SSF-VJ-1 5/16-CH1
BCH21-RB	SSF-VJ1 5/16-AB
BCH21-SM	AB288
BCH21SS4	SSF-VJ1 5/16
BCH21-U-2-4	SSF-VJ1 5/16-H1/4
BCH21U-5-8	SSF-VJ1 5/16-H1/2
BCH21-U-9-12	SSF-VJ1 5/16-H3/4
BCH21-W2	SSF-VJ1 5/16-UC
BCH32	SSF-VJ2
BCH32-1D	SSF-VB10
BCH32-2D	SSF-VB10
BCH32-2S	SSF-VB10
BCH32-A28	SSF-VJ2-A7
BCH32-AB	SSF-VJ2-AB
BCH32-C2	SSF-VJ2-BC-AB
BCH32-C442	SSF-VJ2-BC-AB
BCH32E-2-4	SSF-VJ2-F1/4
BCH32-E-5-8	SSF-VJ2-F1/2
BCH32-E-9-12	SSF-VJ2-F3/4
BCH32-F3	SSF-VJ2-V1/4
BCH32-F4	SSF-VJ2-A1/4
BCH32H	SSF-VJ2
BCH32H-1D	SSF-VB10
BCH32H-2D	SSF-VB10
BCH32H-2S	SSF-VB10
BCH32H-SM	SSF-VJ2-A7
BCH32-L1410	SSF-VJ2-CH1
BCH32-RB	SSF-VJ2-AB
BCH32-SM	AB288
BCH32SS4	SSF-VJ2
BCH32-U-2-4	SSF-VJ2-H1/4
BCH32U-5-8	SSF-VJ2-H1/2
BCH32-U-9-12	SSF-VJ2-H3/4
BCH32-W2	SSF-VJ2-UC
BCH64	SSF-VJ2
BCH64-1D	SSF-VB10
BCH64-2D	SSF-VB10
BCH64-AB	SSF-VJ2-AB
BCH64-C2	SSF-VJ2-BC-AB
BCH64-C442	SSF-VJ2-BC-AB
BCH64-F3	SSF-VJ2-V1/4
BCH64-F4	SSF-VJ2-A1/4

Spring Steel Cross Reference, Alpha-Numeric Index

B-LINE	STEEL CITY
BCH64H	SSFVJ2
BCH64-L1410	SSF-VJ2-CH1
BCH64-RB	SSF-VJ2-AB
BCH64-SM	AB288
BCH64SS4	SSF-VJ2
BCH64-U-2-4	SSF-VJ2-H1/4
BCH64U-5-8	SSF-VJ2-H1/2
BCH64-U-9-12	SSF-VJ2-H3/4
BCHK1	500SC
BCHK2	AB202
BCHK3	500SC
BCHR21	TY526M
BCHR32	TY526M
BCHR64	TY526M
BG-16-B1	SSF-SK-C1
BG-16-B1	SSF-SK-S1
BG-16-B5	SSF-SF-S1
BG-16-C1	SSF-BBC-C1H
BG-16-C2	SSF-BBC-C1V
BG-16-E-2-4	SSF-CC1-F1/4
BG-16-E-5-8	SSF-CC1-F1/2
BG-16-E-9-12	SSF-CC1-F3/4
BG-16-F1	SSF-BV1/16-C1
BG-16-F13	SSF-BZ2-C1
BG-16-F2	SSF-BV1/4-C1
BG-16-G-16	SSF-CC1-C1
BG-16-G-20	SSF-CC1-C1 1/4
BG-16-G-24	SSF-CC1-C1 1/2
BG-16-G-32	SSF-CC1-C2
BG-16-G-6	SSF-CC1-C3/8
BG-16-G-8-12	SSF-CC1-C1/2 3/4
BG-16-S18	SSF-CX18-C1
BG-16-S18-U-2-4	SSF-CX18-C1-H14
BG-16-S18-U-5-8	SSF-CX18-C1-H12
BG-16-S18-W2	SSF-CS18-C1-UC
BG-16-U-2-4	SSF-CC1-H1/4
BG-16-U-5-8	SSF-CC1-H1/2
BG-16-U-9-12	SSF-CC1-H3/4
BG-16-W2	SSF-CUC-C1
BG-20	SSF-CC1 1/4
BG-20-4T	SSF-CC1 1/4T
BG-20-B5	SSF-SF-C1 1/4
BG-20-C1	SSF-BBC-C1 1/4H
BG-20-C2	SSF-BBC-C1 1/4V
BG-20-E-2-4	SSF-CC1 1/4-F1/4
BG-20-E-5-8	SSF-CC1 1/4-F1/2
BG-20-E-9-12	SSF-CC1 1/4-F3/4
BG-20-F13	SSF-BZ2-C1 1/4
BG-20-U-2-4	SSF-CC1 1/4-H1/4
BG-20-U-5-8	SSF-CC1 1/4-H1/2
BG20-U-9-12	SSF-CC1 1/4-H3/4
BG-24	SSF-CC1 1/2
BG-24-4T	SSF-CC1 1/2T
BG-24-C1	SSF-BBC-C1 1/2H
BG-24-C2	SSF-BBC-C1 1/2V
BG-24-E-2-4	SSF-CC1 1/2-F1/4
BG-24-E-5-8	SSF-CC1 1/2-F1/2
BG-24-E-9-12	SSF-CC1 1/2-F3/4
BG-24-U-2-4	SSF-CC1 1/2-H1/4

B-LINE	STEEL CITY
BG-24-U-5-8	SSF-CC1 1/2-H1/2
BG-24-U-9-12	SSF-CC1 1/2-H3/4
BG32	820D
BG-32	SSF-CC2
BG-32-4T	SSF-CC2T
BG-32-C1	SSF-BBC-C2H
BG-32-C2	SSF-BBC-C2V
BG-32-E-2-4	SSF-CC2-F1/4
BG-32-E-5-8	SSF-CC2-F1/2
BG-32-E-9-12	SSF-CC2-F3/4
BG-32-U-2-4	SSF-CC2-H1/4
BG-32-U-5-8	SSF-CC2-H1/2
BG-32-U-9-12	SSF-CC2-H3/4
BG-6	SSF-CC3/8
BG-6	SSF-CC3/8T
BG-6-4T	SSF-CC1/2 3/4T
BG-6-A5	SSF-TCV-3/8
BG-6-A6	SSF-TCH-C3/8
BG-6-B1	SSF-SK-C3/8
BG-6-B5	SSF-SF-C3/8
BG-6-E-2-4	SSF-CC3/8-F1/4
BG-6-E-5-8	SSF-CC3/8-F1/2
BG-6-E-9-12	SSF-CC3/8-F3/4
BG-6-F1	SSF-BV1/16-C3/8
BG-6-F13	SSF-BZ2-C3/8
BG-6-F2	SSF-BV1/4-C3/8
BG-6-H7	SSF-SAB-S3/4
BG-6-S18	SSF-CX18-C1234-UC
BG-6-S18	SSF-CX18-C1-UC
BG-6-S18	SSF-CX18-C38-UC
BG-6-S18-U-2-4	SSF-CX18-C38-H14
BG-6-S18-U-5-8	SSF-CX18-C38-H12
BG-6-S18-W2	SSF-CX18-C38-UC
BG6-U-24	SSF-CC3/8-H1/4
BG-6-U-5-8	SSF-CC3/8-H1/2
BG-6-U-9-12	SSF-CC3/8-H3/4
BG-8-12	SSF-CC1/2 3/4
BG-812-4T	SSF-CC1/2 3/4T
BG-8-12-A5	SSF-TCV-C1/2 3/4
BG-8-12-A6	SSF-TCH-C12 3/4
BG-8-12-B1	SSF-SK-C1/2 3/4
BG-8-12-B5	SSF-SF-C1/2 3/4
BG-8-12-C1	SSF-BBC-C1/2 3/4H
BG-8-12-C2	SSF-BBC-C1/2 3/4V
BG-8-12-D3	SSF-CC1/2 3/4-FB
BG-8-12-D4	SSF-CC1/2 3/4-OB
BG-8-12-E-2-4	SSF-CC1/2 3/4-F1/4
BG-8-12-E-5-8	SSF-CC1/2 3/4-F1/2
BG-8-12-E-9-12	SSF-CC1/2 3/4-F3/4
BG-8-12-F1	SSF-BV1/16-C1/2 3/4
BG-8-12-F13	SSF-BZ2-C1/2 3/4
BG-8-12-F2	SSF-BV1/4-C1/2 3/4
BG-8-12-H7	SSF-SAB-C3/8
BG-8-12-S18	SSF-CX18-C1234
BG-8-12-S18-U-2-4	SSF-CX18-C1234-H1/4
BG-8-12-S18-U-5-8	SSF-CX18-C1234-H1/2
BG-8-12-S18-W2	SSF-CX18-C1234-UC
BG-8-12-U-2-4	SSF-CC1/2 3/4-H1/4
BG8-12-U-5-8	SSF-CC1/2 3/4-H1/2

B-LINE	STEEL CITY
BG-8-12-U-9-12	SSF-CC1/2 3/4-H3/4
BG-8-12-W2	SSF-CUC-C1/2 3/4
BH1	SSF-HB1/4
BH1	SSF-HBB
BH10	SH10
BH15	CI-8930
BH16	CI-8932
BH1-E-2-4	SSF-HB1/4-F1/4
BH1-E-2-4	SSF-HB8-F1/4
BH1-E-5-8	SSF-HB1/4-F1/2
BH1-E-5-8	SSF-HBB-F1/2
BH1-E-9-12	SSF-HB1/4-F3/4
BH1-E-9-12	SSF-HBB-F3/4
BH1-F1	SSF-BA1/4-B1/4
BH1-F1	SSF-BA1/4-BB
BH1-F1	SSF-BV1/16-B1/4
BH1-F1	SSF-BV1/16-BB
BH1-F12	SSF-BZ1-B1/4
BH1-F12	SSF-BZ1-BB
BH1-H7	SSF-HB1/4-AB
BH1-H7	SSF-HB8-AB
BH1-H8	SSF-HB1/4-OB
BH1-H8	SSF-HB8-OB
BH2	SSF-HB3/8
BH-2-4	SSF-HS-F1/4
BH-2-4-R	SSF-HR-F1/4
BH2-E-2-4	SSF-HB3/8-F1/4
BH2-E-5-8	SSF-HB3/8-F1/2
BH2-E-9-12	SSF-HB3/8-F3/4
BH2-F1	SSF-BV1/16-B3/8
BH2-F12	SSF-BZ1-A3/8T
BH2-F2	SSF-BV1/4-B3/8
BH2-H7	SSF-HB3/8-AB
BH2-H8	SSF-HB3/8-OB
BH4	SSF-HA1/4T
BH4-E-2-4	SSF-HA1/4-F1/4T
BH4-E-5-8	SSF-HA1/4-F1/2T
BH4-E-9-12	SSF-HA1/4-F3/4T
BH4-F1	SSF-BV1/16-A1/4T
BH4-F12	SSF-BZ1-A1/4T
BH4-F2	SSF-BV1/4-A1/4T
BH4-H7	SSF-HA1/4-ABT
BH4-H8	SSF-HA1/4-OBT
BH5	SSF-HA3/8
BH-5-8	SSF-HS-F1/2
BH-5-8-R	SSF-HR-F1/2
BH5-E-2-4	SSF-HA3/8-F1/4
BH5-E-5-8	SSF-HA3/8-F1/2
BH5-E-9-12	SSF-HA3/8-F3/4
BH5-F1	SSF-BV1/16-A3/8
BH5-F12	SSF-BZ1-A3/8
BH5-F2	SSF-BV1/4-A3/8
BH5-H7	SSF-HA3/8-AB
BH5-H8	SSF-HA3/8-OB
BH6	SSF-HA3/8T
BH6-E-2-4	SSF-HA3/8-F1/4T
BH6-E-5-8	SSF-HA3/8-F1/2T
BH6-E-9-12	SSF-HA3/8-F3/4T
BH6-F12	SSF-BZ1-A1/4T

Spring Steel Cross Reference, Alpha-Numeric Index

B-LINE	STEEL CITY
BH6-F12	SSF-BZ1-B3/8
BH6-F2	SSF-BV1/16-A3/8T
BH6-F2	SSF-BV1/4-A3/8T
BH6-H7	SSF-HA3/8-ABT
BH6-H8	SSF-HA3/8-OBT
BH7	SSF-HAB
BH7-6	SSF-HAB
BH8	SSF-HOB
BH8-6	SSF-HOB
BH9	JC100-SC
BH9-10	JC100-SC
BH-9-12	SSF-HS-F3/4
BH9-12-R	SSF-HR-F3/4
BH-F12	SSF-BZ1-HS
BH-F12-R	SSF-BZ1-HR
BL1400	CH-O LN
BL1400-C442	SSF-BBC-CHOLN
BL1410	CH-1 LN
BL1410-C442	SSF-BBC-CH1LN
BL1420	CH-2 LN
BL1420-C442	SSF-BBC-CH2LN
BL1425	CH-2 1/2 LN
BL1425-C442	SSF-BBC-CH2.5LN
BL1430	CH-3 LN
BL1430-C442	SSF-BBC-CH3LN
BL1440	CH-4 LN
BL1440-C442	SSF-BBC-CH4LN
BL1450	CH-5 LN
BL1450-C442	SSF-BBC-CH5LN
BL1460	6H6B
BL1470	6H7B
BL1480	6H8B
BL1490	6H9B
BM1	1300
BM1M	1300
BM5	3900
BP-12	SSF-CS3/4
BP-12-4T	SSF-CS3/4T
BP-12-A28	SSF-TA7-S3/4
BP-12-A5	SSF-TCV-S3/4
BP-12-A6	SSF-TCH-S3/4
BP-12-B1	SSF-SK-S3/4
SP-12-B5	SSF-SF-S3/4
BP-12-C1	SSF-BBC-S3/4H
BP-12-C2	SSF-BBC-S3/4V
BP-12-D3	SSF-CS3/4-FB
BP-12-D4	SSF-CS3/4-OB
BP-12-E-2-4	SSF-CS3/4-F1/4
BP-12-E-5-8	SSF-CS3/4-F1/2
BP-12-E-9-12	SSF-CS3/4-F3/4
BP-12-F13	SSF-BZ2-S3/4
BP-12-H7	SSF-SAB-S3/4
BP-12-P-12	SSF-CS3/4-S3/4
BP-12-P-16	SSF-CS3/4-S1
BP-12-U-2-4	SSF-CS3/4-H1/4
BP-12-U-5-8	SSF-CS3/4-H1/2
BP-12-U-9-12	SSF-CS3/4-H3/4
BP-12-W2	SSF-CUC-S3/4
BP-12-W2	SSF-CUC-S3/4
BP-16	SSF-CS1
BP-16-4T	SSF-CS1T
BP-16-A28	SSF-TA7-S1
BP-16-A5	SSF-TCV-S1
BP-16-A5	SSF-TCV-S3/4
BP-16-A6	SSF-TCH-S1
BP-16-A6	SSF-TCH-S3/4
BP-16-B1	SSF-SK-S1
BP-16-B5	SSF-SF-S1
BP-16-C1	SSF-BBC-S1H
BP-16-C2	SSF-BBC-S1V
BP-16-D4	SSF-CS1-OB
BP-16-E-2-4	SSF-CS1-F1/4
BP-16-E-5-8	SSF-CS1-F1/2
BP-16-E-9-12	SSF-CS1-F3/4
BP-16-F13	SSF-BZ2-S1
BP-16-P-16	SSF-CS1-S1
BP-16-U-2-4	SSF-CS1-H1/4
BP-16-U-5-8	SSF-CS1-H1/2
BP-16-U-9-12	SSF-CS1-F3/4
BP-16-U-9-12	SSF-CS1-H3/4
BP-16-W2	SSF-CUC-S1
BP-16-W2	SSF-CUC-S1
BP-8	SSF-CS1/2
BP-8-12-H7	SSF-SAB-C1/2 3/4
BP-8-4T	SSF-CS1/2T
BP-8-A28	SSF-TA7-S1/2
BP-8-A5	SSF-TCV-S1/2
BP-8-A6	SSF-TCH-S1/2
BP-8-B1	SSF-SK-S1/2
BP-8-B5	SSF-SF-S1/2
BP-B-C1	SSF-BBC-S1/2H
BP-8-C2	SSF-BBC-S1/2V
BP-8-D3	SSF-CS1/2-FB
BP-8-D4	SSF-CS1/2-OB
BP-8-E-2-4	SSF-CS1/2-F1/4
BP-8-E-5-8	SSF-CS1/2-F1/2
BP-8-E-9-12	SSF-CS1/2-F3/4
BP-8-F13	SSF-BZ2-S1/2
BP-8-H7	SSF-SAB-S1/2
BP-8-P-12	SSF-CS1/2-S3/4
BP-8-P-16	SSF-CS1/2-S1
BP-8-P-8	SSF-CS1/2-S1/2
BP-8-U-2-4	SSF-CS1/2-H1/4
BP-8-U-5-8	SSF-CS1/2-H1/2
BP-8-U-9-12	SSF-CS1/2-H3/4
BP-8-W2	SSF-CUC-S1/2
BP-8-W2	SSF-CUC-S1/2
BPC-12	703-3/4
BPC-16	703-1
BPC-20	703-1 1/4
BPC-24	703-2 1/2
BPC-32	703-2
BPC-40	702-2 1/2
BPC-48	702-3
BPC-56	702-3 1/2
BPC-64	702-4
BPC-8	703-1/2
BR-12	30-01805
BR-12-T	31-00821
BR-16-3W	31-00812
BR-20	30-01807
BR-20-4T	31-00825
BR-20-T	31-00823
BR-24-4W	31-00810
BR-32	30-01807
BR-32-4T	31-00825
BR-32-4T-A6	31-00825
BR-32-4T-C1	31-00825
BR-32-4T-U-2-4	31-00825
BR-32-4T-U-5-8	31-00825
BR-32-4T-U-9-12	31-00825
BR-32-4T-W2	31-00825
BR-32-4W	31-00810
BR-32-T	31-00827
BR-32-T	31-00827
BR-64-4T	31-00825
BR-8	30-01801
BR-8-T	31-00821
BU-2-4	SSF-BH1/4
BU-2-4-S	SSF-BH1/4S
BU-5-8	SSF-BH1/2
BU-5-8-S	SSF-BH1/2S
BU-9-12	SSF-BH3/4
BU-9-12-S	SSF-BH3/4S
BW-12	SSF-CK3/4
BW-16	SSF-CK1
BW2	SSF-CUC
BW-20	SSF-CK1
BW4	SSF-CK535
BW-8	SSF-CK1/2
BX-18	SSF-CUC-S3/4
BX24	30-00825
BX4	SSF-CC3/8
BX4-A6	SSF-TCH-C3/8
BX4-C1	SSF-BBC-C3/8H
BX4-C2	SSF-BBC-C3/8V
BX4-E-2-4	SSF-CC3/8-F1/4
BX4-E-5-8	SSF-CC3/8-F1/2
BX4-E-9-12	SSF-CC3/8-F3/4
BX4-F1	SSF-BV1/4-C3/8
BX4-F13	SSF-BZ2-C3/8
BX4-H7	SSF-SAB-C3/8
BX4M	SSF-CM535
BX4M-A28	SSF-TA7-C3/8
BX4M-A6	SSF-TCH-C3/8
BX4M-C1	SSF-BBC-C3/8H
BX4M-C2	SSF-BBC-C3/8V
BX4M-E-2-4	SSF-CC3/8-F1/4
BX4M-E-5-8	SSF-CC3/8-F1/2
BX4M-E-9-12	SSF-CC3/8-F3/4
BX4M-F1	SSF-BV1/4-C3/8
BX4M-F13	SSF-BZ2-C3/8
BX4M-H7	SSF-CC3/8-OB
BX4M-U-2-4	SSF-CC3/8-H1/4
BX4M-U-5-8	SSF-CC3/8-H1/2
BX4M-U-9-12	SSF-CC3/8-H3/4
BX4M-W2	SSF-CUC-C3/8

Spring Steel Cross Reference, Alpha-Numeric Index

B-LINE	STEEL CITY
BX4-U-2-4	SSF-CC3/8-H1/4
BX4-U-5-8	SSF-CC3/8-H1/2
BX4-U-9-12	SSF-CC3/8-H3/4
BX4-W2	SSF-CUC-C3/8
BX5	SSF-SF-C3/8
BX6	30-00825
BX8	SSF-CB706
BX81	SSF-SP1
BX82	SSF-SP1
BX-8-B	SSF-CB706
BX9	SSF-CM535
BXL-1011	SSF-CEL437
BXL-1214	SSF-CEL562
BXL-1519	SSF-CEL718
BXL-2024	SSF-CEL937
BXL-2530	SSF-CEL1250
BXL-67	SSF-CEL218
BXL-67	SSF-CEL281
BXL-89	SSF-CEL375
BXM-1011	SSF-CEM437
BXM-1214	SSF-CEM562
BXM-1519	SSF-CEM718
BXM-2024	SSF-CEM937
BXM-2530	SSF-CEM1250
BXM-67	SSF-CEM218
BXM-67	SSF-CEM281
BXM-89	SSF-CEM375
BXS-1011	SSF-CES437
BXS-1214	SSF-CES562
BXS-1519	SSF-CES718
BXS-2024	SSF-CES937
BXS-2530	SSF-CES1250
BXS-67	SSF-CES218
BXS-67	SSF-CES281
BXS-89	SSF-CES375
MSQN1/4	E145-1/4EG
SHHMS 1/4 x 1-2	E142-1/4x75EG
SRHMS 1/4 x 3/8	E142-1/4x75EG

CADDY	STEEL CITY
122	SSF-BZ1
1224TI	SSF-BZI-A1/4T
1226A	SSF-BZ1-B3/8
1226T	SSF-BZ1-A3/8
1226TI	SSF-BZ1-A3/8T
122708	SSF-BZ1-B1/4
122708	SSF-BZ1-B8
123	SSF-BZ2
12312P	SSF-BZ2-S3/4
12316M	SSF-BZ2-C1
12316P	SSF-BZ2-S1
12320M	SSF-BZ2-C1 1/4
1236M	SSF-BZ2-C3/8
123812M	SSF-BZ2-C1/2 3/4
1238P	SSF-BZ2-S1/2
12P	SSF-CS3/4
12P12P	SSF-CS3/4-S3/4
12P16P	SSF-CS3/4-S1
12P24	SSF-CS3/4-H1/4
12P24SM	SSF-CS3/4-F1/4
12P41	SSF-CS3/4T
12P58	SSF-CS3/4-H1/2
12P58SM	SSF-CS3/4-F1/2
12P912	SSF-CS3/4-H3/4
12P912SM	SSF-CS3/4-F3/4
12PATA	SSF-TCH-S3/4
12PATS	SSF-TCV-S3/4
12PF	SSF-SF-S3/4
1616M	SSF-CC1-C1
1620M	SSF-CC1-C1 1/4
1624M	SSF-CC1-C1 1/2
1632M	SSF-CC1-C2
166M	SSF-CC1-C3/8
16812M	SSF-CC1-C1/2 3/4
16M	SSF-CC1
16M24	SSF-CC1-H1/4
16M24SM	SSF-CC1-F1/4
16M4I	SSF-CC1T
16M58	SSF-CC1-H1/2
16M58SM	SSF-CC1-F1/2
16M912	SSF-CC1-H3/4
16M912SM	SSF-CC1-F3/4
16MATA	SSF-TCH-C1
16MATS	SSF-TCV-C1
16MB18	SSF-CX18-C1-UC
16MB1824	SSF-CX18-C1-H14
16MB1858	SSF-CX18-C1-H12
16MB186	SSF-CX18-C1-UC
16MB18A	SSF-CX18-C1
16MF	SSF-SF-C1
16P	SSF-CS1
16P16P	SSF-CS1-S1
16P24	SSF-CS1-H1/4
16P24SM	SSF-CS1-F1/4
16P41	SSF-CS1T
16P58SM	SSF-CS1-F1/2
16P912	SSF-CS1-H3/4
16P912SM	SSF-CS1-F3/4
16PATA	SSF-TCH-S1
16PATS	SSF-TCV-S1
16PF	SSF-SF-S1
20M	SSF-CC1 1/4
20M24	SSF-CC1 1/4-H1/4
20M24SM	SSF-CC1 1/4-F1/4
20M4I	SSF-CC1 1/4T
20M58	SSF-CC1 1/4-H1/2
20M58SM	SSF-CC1 1/4-F1/2
20M912	SSF-CC1 1/4-H3/4
20M912SM	SSF-CC1 1/4-F3/4
24M	SSF-CC1 1/2
24M24	SSF-CC1 1/2-H1/4
24M24SM	SSF-CC1 1/2-F1/4
24M4I	SSF-CC1 1/2T
24M58	SSF-CC1 1/2-H1/2
24M58SM	SSF-CC1 1/2-F1/2
24M912	SSF-CC1 1/2-H3/4
24M912SM	SSF-CC1 1/2-F3/4
2BR12	30-01805
2BR20	30-01807
2BR32	30-01807
2BR8	30-01801
2BRT12	31-00821
2BRT20	31-00823
2BRT32	31-00827
2BRT32	31-00827
2BRT8	31-00821
2FMP28	SSF-BBC
2FMP28	SSF-BH1/4
2G9	SSF-T9T8-7/16
2G9S10	SSF-T9T8-5/8
2G9S10WH	SSF-T9T8-5/8WH
2H4	SSF-BF1/8
32M	SSF-CC2
32M24	SSF-CC2-H1/4
32M24SM	SSF-CC2-F1/4
32M4I	SSF-CC2T
32M58	SSF-CC2-H1/2
32M58SM	SSF-CC2-F1/2
32M912	SSF-CC2-H3/4
32M912SM	SSF-CC2-F3/4
350	SSF-SK
35012P	SSF-SK-S3/4
35016M	SSF-SK-C1
35016P	SSF-SK-S1
350812M	SSF-SK-C1/2 3/4
3508P	SSF-SK-S1/2
449	SSF-CM535
4ACS	SSF-TCH
4BRT20	31-00825
4BRT20WS	31-00812
4BRT32	31-00825
4BRT32WS	31-00810
4BRT64	31-00825
4G16	SSF-T15T5/8

*Caddy is a registered trademark of Erico, Inc.

Spring Steel Cross Reference, Alpha-Numeric Index

CADDY	STEEL CITY
4G161.5	SSF-T15T1 1/2
4G162	SSF-T15T2
4G163	SSF-T15T3
4G16H	SSF-T15TSH
4G8	SSF-T15T8-5/8
4G8S7	SSF-T15T8-7/16
4G8S7WH	SSF-T15T8-7/16WH
4G8WH	SSF-T15T8-5/8WH
4G9	SSF-T9T5/8
4H24	SSF-BF1/4
4H58	SSF-BF1/2
4H912	SSF-BF34
4TGS	E147 3/8EG
4TI	SSF-HA1/4T
4TI24	SSF-HA1/4-F1/4T
4TI58	SSF-HA1/4-F1/2T
4TI912	SSF-HA1/4-F3/4T
4TIB	SSF-HA1/4-ABT
4TIO	SSF-HA1/4-OBT
4WN	SSF-TWN1/4
4Z34	SSF-CUC
4Z3412P	SSF-CUC-S3/4
4Z3416M	SSF-CUC-C1
4Z3416P	SSF-CUC-S1
4Z34812M	SSF-CUC-C1/2 3/4
4Z348P	SSF-CUC-S1/2
510HD	SSF-THC
512	SSF-TH24
51212	SSF-TH-12
51220	SSF-TH-20
51230	SSF-TH-30
512A	SSF-TH24A
512HD	SSF-TH24
512HDEEP	SSF-TH24A
512HDXT	SSF-TH24A
515	SSF-TFC
515A	SSF-TFC
520	SSF-TL24
528	SSF-TA7
52812P	SSF-TA7-S3/4
52816P	SSF-TA7-S1
5288P	SSF-TA7-S1/2
6A	SSF-HB3/8
6A24	SSF-HB3/8-F1/4
6A58	SSF-HB3/8-F1/2
6A912	SSF-HB3/8-F3/4
6AB	SSF-HB3/8-AB
6AO	SSF-HB3/8-OB
6M	SSF-CC3/8
6M24	SSF-CC3/8-H1/4
6M24SM	SSF-CC3/8-F1/4
6M41	SSF-CC3/8T
6M58	SSF-CC3/8-H1/2
6M58SM	SSF-CC3/8-F1/2
6M912	SSF-CC3/8-H3/4
6M912SM	SSF-CC3/8-F3/4
6MATA	SSF-TCH-C3/8
6MATS	SSF-TCV-3/8
6MB18	SSF-CX18-C38-UC
6MB1824	SSF-CX18-C38-H14
6MB1858	SSF-CX18-C38-H12
6MB186	SSF-CX18-C38-UC
6MB18A	SSF-CX18-C38
6MF	SSF-SF-C3/8
6T	SSF-HA3/8
6TA24	SSF-HA3/8-F1/4
6TA58	SSF-HA3/8-F1/2
6TA912	SSF-HA3/8-F3/4
6TB	SSF-HA3/8-AB
6TI	SSF-HA3/8T
6TI24	SSF-HA3/8-F1/4T
6TI58	SSF-HA3/8-F1/2T
6TI912	SSF-HA3/8-F3/4T
6TIB	SSF-HA3/8-ABT
6TIO	SSF-HA3/8-OBT
6TO	SSF-HA3/8-OB
6Z34	SSF-CUC
6Z3412P	SSF-CUC-S3/4
6Z3416M	SSF-CUC-C1
6Z3416P	SSF-CUC-S1
6Z34812M	SSF-CUC-C1/2 3/4
6Z348P	SSF-CUC-S1/2
708	SSF-HB1/4
708	SSF-HB8
70824	SSF-HB1/4-F1/4
70824	SSF-HB8-F1/4
70858	SSF-HB1/4-F1/2
70858	SSF-HB8-F1/2
708912	SSF-HB1/4-F3/4
708912	SSF-HB8-F3/4
708AB	SSF-HB1/4-AB
708AB	SSF-HB8-AB
708AO	SSF-HB1/4-OB
708AO	SSF-HB8-OB
740	SSF-MPS
760	SSF-SX
766	SS1-TB
766A	SS1-TB
770	JC100-SC
771	SH10
781	SSF-SP1
812M	SSF-CC1/2 3/4
812M24	SSF-CC1/2 3/4-H1/4
812M24SM	SSF-CC1/2 3/4-F1/4
812M4I	SSF-CC1/2 3/4T
812M58	SSF-CC1/2 3/4-H1/2
812M58SM	SSF-CC1/2 3/4-F1/2
812W912	SSF-CC1/2 3/4-H3/4
26812M912SM	SSF-CC1/2 3/4-F3/4
812MATA	SSF-TCH-C1/2 3/4
812MATS	SSF-TCV-C1/2 3/4
812MB18	SSF-CX18-C1234-UC
812MB1824	SSF-CX18-C1234-H14
812MB1858	SSF-CX18-C1234-H12
812MB186	SSF-CS18-C1234-UC
812MB18A	SSF-CX18-C1234
812MB18S	SSF-CS18-C1234-S
812MF	SSF-SF-C1/2 3/4
8P	SSF-CS1/2
8P12P	SSF-CS1/2-S3/4
8P16P	SSF-CS1/2-S1
8P24	SSF-CS1/2-H1/4
8P24SM	SSF-CS1/2-F1/4
8P4I	SSF-CS1/2T
8P58	SSF-CS1/2-H1/2
8P58SM	SSF-CS1/2-F1/2
8P8P	SSF-CS1/2-S1/2
8P912	SSF-CS1/2-H3/4
8P912SM	SSF-CS1/2-F3/4
8PATA	SSF-TCH-S1/2
8PATS	SSF-TCV-S1/2
8PF	SSF-SF-S1/2
AB	SSF-HAB
AF14	SSF-BA1/4
AF144TI	SSF-BA1/4-A1/4T
AF146A	SSF-BA1/4-B3/8
AF146T	SSF-BA1/4-A3/8
AF146TI	SSF-BA1/4-A3/8T
AF14708	SSF-BA1/4-B1/4
AF14708	SSF-BA1/4-B8
AO	SSF-HOB
AOL12P	SSF-CS3/4-OB
AOL16P	SSF-CS1-OB
AOL8P	SSF-CS1/2-OB
ATA41	SSF-TCHT
ATS41	SSF-TCVT
BC	SSF-BBC
BC12P	SSF-BBC-S3/4V
BC12PSM	SSF-BBC-S3/4H
BC16M	SSF-BBC-C1V
BC16MSM	SSF-BBC-C1H
BC16P	SSF-BBC-S1V
BC16PSM	SSF-BBC-S1H
BC200	BC1
BC200CD0B	SSF-BBC-CH0LN
BC200CD1B	SSF-BBC-CH1LN
BC200CD2.5B	SSF-BBC-CH2.5LN
BC200CD2B	SSF-BBC-CH2LN
BC200CD3B	SSF-BBC-CH3LN
BC200CD4B	SSF-BBC-CH4LN
BC200CD5B	SSF-BBC-CH5LN
BC20M	SSF-BBC-C1 1/4V
BC20MSM	SSF-BBC-C1 1/4H
BC24M	SSF-BBC-C1 1/2V
BC24MSM	SSF-BBC-C1 1/2H
BC32M	SSF-BBC-C2V
BC32MSM	SSF-BBC-C2H
BC400	BC2
BC812M	SSF-BBC-C1/2 3/4V
BC812MSM	SSF-BBC-C1/2 3/4H
BC8P	SSF-BBC-S1/2V
BC8PSM	SSF-BBC-S1/2H
BHC	SSF-THC
C2416SM	U568-2
C24812SM	U568-2
C4T124	U568-2
C4T158	U568-2

Spring Steel Cross Reference, Alpha-Numeric Index

CADDY	STEEL CITY
C4T1912	U568-2
C5816SM	U568-2
C58812SM	U568-2
C6T124	U568-2
C6T158	U568-2
C6T1912	U568-2
C91216SM	U568-2
C912812SM	U568-2
CAT KITA	SSF-VJ2C
CAT KITB	SSF-VJ1 5/16C
CAT KITC	SSF-VJ1 5/16C
CAT12	SSF-VJ1 5/16
CAT1224	SSF-VJ1 5/16-H1/4-AB
CAT1224SM	SSF-VJ1 5/16-F1/4
CAT124Z34	SSF-VJ1 5/16-UC
CAT1258	SSF-VJ1 5/16-AZ
CAT1258SM	SSF-VJ1 5/16-H1/2-AB
CAT126Z34	SSF-VJ1-5/16-F1/2
CAT12912	SSF-VJ1 5/16-UC
CAT12912SM	SSF-VJ1 5/16-H13/4-AB
CAT12AB	SSF-VJ1 5/16-F3/4
CAT12AF14	SSF-VJ1 5/16-AB
CAT12BC	SSF-VJ1 5/16-A1/4
CAT12BC200	SSF-VJ1 5/16-BC
CAT12BC200B	SSF-VJ1 5/16-BC1
CAT12BCB	SSF-VJ1 5/16-BC1-AB
CAT12CD1B	SSF-VJ1 5/16-CH1LN
CAT12TS	SSF-VJ1 5/16-BC-AB
CAT12VF14	SSF-VJ1 5/16-V1/4
CAT21	SSF-VJ1 5/16
CAT21	SSF-VJ1 5/16C
CAT2124	SSF-VJ1 5/16-H1/4-AB
CAT2124SM	SSF-VJ1 5/16-F1/4
CAT214Z34	SSF-VJ1 5/16-UC
CAT21528	SSF-VJ1 5/16-A7
CAT2158	SSF-VJ1 5/16-H1/2-AB
CAT2158SM	SSF-VJ1-5/16-F1/2
CAT216Z34	SSF-VJ1 5/16-UC
CAT21912	SSF-VJ1 5/16-H13/4-AB
CAT21912SM	SSF-VJ1 5/16-F3/4
CAT21AB	SSF-VJ1 5/16-AB
CAT21AF14	SSF-VJ1 5/16-A1/4
CAT21BC	SSF-VJ1 5/16-BC
CAT21BC200	SSF-FJ1 5/16-BC1
CAT21BC200B	SSF-VJ1 5/16-BC1-AB
CAT21BCB	SSF-VJ1 5/16-BC-AB
CAT21CD1B	SSF-VJ1 5/16-CH1LN
CAT21VF14	SSF-VJ1 5/16-V1/4
CAT32	SSF-VJ2
CAT32	SSF-VJ2C
CAT3224	SSF-VJ2-H1/4-AB
CAT3224SM	SSF-VJ2-F1/4
CAT324Z34	SSF-VJ2-UC
CAT32528	SSF-VJ2-A7
CAT3258	SSF-VJ2-H1/2-AB
CAT3258SM	SSF-VJ2-F1/2
CAT326Z34	SSF-VJ2-UC
CAT32912	SSF-VJ2-H13/4-AB
CAT32912SM	SSF-VJ2-F3/4
CAT32AB	SSF-VJ2-AB
CAT32AF14	SSF-VJ2-A1/4
CAT32BC	SSF-VJ2-BC
CAT32BC200	SSF-VJ2-BC1
CAT32BC200B	SSF-VJ2-BC1-AB
CAT32BCB	SSFVJ2-BC-AB
CAT32CD1B	SSF-VJ2-CH1LN
CAT32VF14	SSF-VJ2-V1/4
CATHBA	SSF-VB10
CATTRC	TY526M
CATTS	SSF-TA7
CCS812	SSF-CS1/2
CD0B	CH-0 LN
CD0BSS	6H0 BSS
CD1B	CH-1 LN
CD1BSS	6H1 BSS
CD2.5B	CH-2 1/2 LN
CD2.5BSS	6H2-1/2 BSS
CD2B	CH-2 LN
CD2BSS	6H2 BSS
CD3B	CH-3 LN
CD3BSS	6H3 BSS
CD4B	CH-4 LN
CD4BSS	6H4 BSS
CD5B	CH-5 LN
CD5BSS	6H5 BSS
CD6B	6H6B
CD6BSS	6H6 BSS
CD7B	6H7B
CD7BSS	6H7 BSS
CD8B	6H8B
CD8BSS	6H8BSS
CD9B	6H9B
CD9BSS	6H9BSS
CM24812M	U568-2
CM24S	U568-2
CM5816M	U568-2
CM5816M	U568-2
CM58812M	U568-2
CM58S	U568-2
CM91216M	U568-2
CM91282M	U568-2
CM912S	U568-2
CNB	SSF-HFB
CNB12P	SSF-CS3/4-FB
CNB812M	SSF-CC1/2 3/4-FB
CNB8P	SSF-CS1/2-FB
CS812	SSF-SK-S1/2
DH2	SSF-MNH
DH4TI	SSF-HA1/4-NHT
DH6A	SSF-HB3/8-NH
DH6T	SSF-HA3/8-NH
DH6TI	SSF-HA3/8-NHT
DH708	SSF-HB1/4-NH
DH708	SSF-HB8-NH
DS12A	820D
DSB	820D
DSI	820D
EC311	SSF-TCVYL
EC3114Z34	SSF-TCVYL-FB-UC
EC3116Z34	SSF-TCVYL-FB-UC
ESG1	1300
ESG1M	1300
FB12P	SSF-SAB-S3/4
FB6M	SSF-SAB-C3/8
FB812M	SSF-SAB-C1/2 3/4
FB8P	SSF-SAB-S1/2
FBS12	7502
FBS16	7502
FBS18	7502
FXC20	SSF-SF-C3/8
H23	SSF-SH2346
H4	SSF-SH2346
H46	SSF-SH2346
H6	SSF-SH2346
HGCS	7502
HS3	SSF-SHSB
IDS	SSF-TS5/8
IDS1.5	SSF-TS1 1/2
IDS2	SSF-TS2
IDS9	SSF-TS5/8
J1A25	SS1-TB
J1A35	SS1-TB
J1A4	SS1-TB
K12	SSF-CK3/4
K16	SSF-CK1
K20	SSF-CK1
K8	SSF-CK1/2
KX	SSF-CK535
LFC	CI-8930
LFC90	CI-8932
M24	SSF-BH1/4
M24S	SSF-BH1/4S
M58	SSF-BH1/2
M58S	SSF-BH1/2S
M912	SSF-BH3/4
M912S	SSF-BH3/4S
MAC2	SSF-CM535
MAC2123	SSF-BZ2-C3/8
MAC224	SSF-CC3/8-H1/4
MAC224SM	SSF-CC3/8-F1/4
MAC24Z34	SSF-CUC-C3/8
MAC258	SSF-CC3/8-H1/2
MAC258SM	SSF-CC3/8-F1/2
MAC26Z34	SSF-CUC-C3/8
MAC2912	SSF-CC3/8-H3/4
MAC2912SM	SSF-CC3/8-F3/4
MAC2AO	SSF-CC3/8-OB
MAC2ATA	SSF-TCH-C3/8
MAC2BC	SSF-BBC-C3/8V
MAC2FB	SSF-SAB-C3/8
MAC2VF14	SSF-BV1/4-C3/8
MF250	SSF-SF1/4
MF375	SSF-SF3/8
MF500	SSF-SF1/2
MF625	SSF-SF5/8
MF750	SSF-SF3/4
MFA4I	CM100-1/4

Spring Steel Cross Reference, Alpha-Numeric Index

CADDY	STEEL CITY
MFA625	A182-1/4X1
MFI	SSF-SFT
MFO	SSF-SF0
MFS	SSF-SFA
MP1	SSF-SLV
MP1S	SSF-SHSB
MP2S	SSF-SHSB
MPLS	SSF-SLV
MSF	SSF-SMX
MSG1	1216
MSG1M	1216
MSR24	SSF-HR-F1/4
MSR58	SSF-HR-F1/2
MSR912	SSF-HR-F3/4
MSS24	SSF-HS-F1/4
MSS58	SSF-HS-F1/2
MSS912	SSF-HS-F3/4
PCS1	SSF-CB706
PT16	SSF-T15T5/8
PT16FP	SSF-T15T5/8
RBS16	SSF-SB16
RBS24	SSF-SB24
RGC	3900
RLC	SSF-SR
S3575BP100	E142-1/4x75EG
S3575BP50	SSF-MH1/4-3/8
S3575DP100	E142-1/4x75EG
SC2A	SSF-CES218
SC2A	SSF-CES281
SC2B	SSF-CES375
SC2C	SSF-CES437
2C2D	SSF-CES562
SC2E	SSF-CES718
2C2F	SSF-CES937

CADDY	STEEL CITY
2C2G	SSF-CES937
SC4A	SSF-CEM218
SC4A	SSF-CEM281
SC4B	SSF-CEM375
SC4C	SSF-CEM437
SC4D	SSF-CEM562
SC4E	SSF-CEM718
SC4F	SSF-CEM937
SC4G	SSF-CEM1250
SC8A	SSF-CEL218
SC8A	SSF-CEL281
SC8B	SSF-CEL375
SC8C	SSF-CEL437
SC8D	SSF-CEL562
SC8E	SSF-CEL718
SC8F	SSF-CEL937
SC8G	SSF-CEL1250
SCH12	C108-3/4
SCH12B	C118-110PG
SCH16	C108-1
SCH16B	C118-140PG
SCH20	C108-1 1/4
SCH20B	C118-175PG
SCH24B	C118-175PG
SCH32B	C118-200PG
SCH40B	C118-250PG
SCH48B	C118-300PG
SCH56B	C118-370PG
SCH64B	C118-410PG
SCH6B	C118-047PG
SCH6B	C118-055PG
SCH72B	C118-460PG
SCH8	C108-1/2
SCH8B	C118-070PG

CADDY	STEEL CITY
SCH8B	C118-090PG
SGB16	SSF-SG1 16
SGB16D	SSF-SG2 16
SGB24	SSF-SG1 24
SGB24D	SSF-SG2 24
SK125I	703-3/4
SK165I	703-1
SK205I	703-1 1/4
SK245I	703-1 1/2
SK325I	703-2
SK405I	702-2 1/2
SK485I	702-3
SK565I	702-3 1/2
SK645I	702-4
SK85I	703-1/2
TH234	SSF-SH2346
VF14	SSF-BV1/16
VF14	SSF-BV1/4
VF144TI	SSF-BV1/16-A1/4T
VF144TI	SSF-BV1/4-A1/4T
VF146A	SSF-BV1/16-B3/8
VF146A	SSF-BV1/4-B3/8
VF146T	SSF-BV1/16-A3/8
VF146T	SSF-BV1/4-A3/8
VF146TI	SSF-BV1/16-A3/8T
VF146TI	SSF-BV1/4-A3/8T
VF14708	SSF-BV1/16-B1/4
VF14708	SSF-BV1/16-B8
VF14708	SSF-BV1/4-B1/4
VF14708	SSF-BV1/4-B8
WMX3	30-00825
WMX6	30-00825

MINERALLAC	STEEL CITY
1-KC	SSF-CC1
1KC-1KC	SSF-CC1-C1
112-KC	SSF-CC1/2
112KC-1KC	SSF-CC1-C1 1/2
114-KC	SSF-CC1 1/4
114KC-1KC	SSF-CC1-C1 1/4
12-34-KC	SSF-CC1/2 3/4
12-34-KCT	SSF-CC1/2 3/4-T
1234KC-1KC	SSF-CC1-C1/2 3/4
14-WNW	SSF-TWN1/4
2-KC	SSF-CC2
2KC-1KC	SSF-CC1-C2
38-KC	SSF-CC3/8
38KC-1KC	SSF-CC1-C3/8
500	SSF-BBC
500-100	SSF-BBC-S1-V
500-100B	SSF-BBC-S1-H
500-50	SSF-BBC-S1/2-V
500-50B	SSF-BBC-S1/2-H
500-75	SSF-BBC-S3/4-V
500-75B	SSF-BBC-S3/4-H
500KC-1	SSF-BBC-C1-V
500KC-112	SSF-BBC-C1 1/2-V

MINERALLAC	STEEL CITY
500-KC-112B	SSF-BBC-C1 1/2-H
500KC-114	SSF-BBC-C1 1/4-V
500KC-114B	SSF-BBC-C1 1/4-H
500KC-1234	SSF-BBC-C1/2 3/4-V
500KC-1234B	SSF-BBC-C1/2 3/4-H
500KC-1B	SSF-BBC-C1-H
500KC-2	SSF-BBC-C2-V
500KC-2B	SSF-BBC-C2-H
APS	SSF-CUC
APS-100	SSF-CUC-S1
APS-50	SSF-CUC-S1/2
APS-75	SSF-CUC-S3/4
APS-KC-1	SSF-CUC-C1
APS-KC-12-34	SSF-CUC-C1/2 3/4
AS-18-100	SSF-CS1-H1/4
AS-18-50	SSF-CS1/2-H1/4
AS-18-75	SSF-CS3/4-H1/4
AS-516-100	SSF-CS1-H1/2
AS-516-50	SSF-CS1/2-H1/2
AS-516-75	SSF-S-F-S-3/4
AS-916-50	SSF-CS1/2-H3/4
BA	SSF-HAB
BA-12-34-KC	SSF-SAB-C1/2 3/4

MINERALLAC	STEEL CITY
BA-38-KC	SSF-SAB-C3/8
BA-50	SSF-SAB-S1/2
BA-75	SSF-SAB-S3/4
BC-18	SSF-BH1/4
BC-18-KC-1	SSF-CC3/8-H1/4
BC-18-KC-112	SSF-CC1 1/2-H1/4
BC-18-KC114	SSF-CC1 1/4-H1/4
BC-18-KC-12-34	SSF-CC1/2 3/4-H1/4
BC-18-KC-2	SSF-CC2-H1/4
BC-18-KC-38	SSF-CC3/8-H1/4
BC-18-ST	SSF-BH1/4-S
BC-516	SSF-BH1/2
BC-516-KC-1	SSF-CC1-H1/2
BC-516-KC-112	SSF-CC1 1/2-H1/2
BC-516-KC-114	SSF-CC1 1/4-H1/2
BC-516-KC-12-34	SSF-CC1/2 3/4-H1/2
BC-516-KC-2	SSF-CC2-H1/2
BC-516-KC-38	SSF-CC3/8-H1/2
BC-516-ST	SSF-BH1/2-S
BC-916	SSF-BH3/4
BC-916-KC-1	SSF-CC1-H3/4
BC-916-KC-112	SSF-CC1 1/2-H3/4
BC-916-KC-114	SSF-CC1 1/4-H3/4

Spring Steel Cross Reference, Alpha-Numeric Index

MINERALLAC	STEEL CITY
BC-916-KC-12-34	SSF-CC1/2 3/4-H3/4
BC-916-KC-2	SSF-CC2-H3/4
BC-916-KC-38	SSF-CC3/8-H3/4
BC-916-ST	SSF-BH3/4-S
BMB-16	SSF-SG1-16
BMB-16D	SSF-SG2-16
BMB-24	SSF-SG1-24
BMB-24D	SSF-SG2-24
BO	SSF-H0B
BS	SSF-SX
BXC	SSF-CM535
DWC-1	SSF-TS5/8
F2A	SSF-CES-281
F2B	SSF-CES-375
F2C	SSF-CES-437
F2D	SSF-CES-562
F2E	SSF-CES-718
F2F	SSF-CES-937
F2G	SSF-CES-1250
F4A	SSF-CEM-281
F4B	SSF-CEM-375
F4C	SSF-CEM-437
F4D	SSF-CEM-562
F4E	SSF-CEM-718
F4F	SSF-CEM-937
F4G	SSF-CEM-1250
F8A	SSF-CEL-281
F8B	SSF-CEL-375
F8C	SSF-CEL-437
F8D	SSF-CEL-562
F8E	SSF-CEL-718
F8F	SSF-CEL-937
F8G	SSF-CEL-1250
FB0-23	SSF-SH2346
FB0-23-4	SSF-SH2346
FB0-6	SSF-SH2346
FH-116	SSF-BV1/4
FS-1	SSF-CK1/2
FS-2	SSF-CK3/4
FS-3	SSF-CK1
FS-4	SSF-CK1
FS-BX	SSF-CK535
FT	SSF-TFC
HI-C-100	SSF-CS1
HI-C-100-100	SSF-CS1-S1
HI-C-100-5	SSF-CS1-T
HI-C-50	SSF-CS1/2
HI-C-50-100	SSF-CS1/2-S1
HI-C-50-75	SSF-CS1/2-S3/4
HI-C-50-T	SSF-CS1/2T
HI-C-75	SSF-CS3/4
HI-C-75-100	SSF-CS3/4-S1
HI-C-75-75	SSF-CS3/4-S3/4
HIC-50-50	SSF-CS1/2-S1/2
LS-BAR	SSF-T-L-24
NB-1234	SSF-CC1/2 3/4-FB
NB-50	SSF-CS1/2-FB
NB-75	SSF-CS3/4-FB
OR	SSF-SR
P	SSF-B-Z2

MINERALLAC	STEEL CITY
P-50	SSF-B-Z2-S1/2
P-75	SSF-B-Z2-S3/4
PH	SSF-B-Z1
PH-14	SSF-B-Z1-B1/4
PH-1438N	SSF-B-Z1-A3/8
PH-14T	SSF-B-Z1-A1/4-T
PH-38	SSF-B-Z1-B3/8
PH-38T	SSF-B-Z1-A/8T
PKC-012-34	SSF-B-Z2-C1/2 3/4
PKC-1	SSF-B-Z2-C1
PKC-114	SSF-B-Z2-C1 1/4
PKC-38	SSF-B-Z2-C3/8
P[-100	SSF-B-Z2-S1
R-14	SSF-HB1/4
R-14-38N	SSF-HA3/8
R-14-T	SSF-HA1/4T
R-18-14	SSF-HB1/4-F1/4
R-18-14T	SSF-HA1/4-F1/4T
R-18-1438N	SSF-HA3/8-F1/4
R-18-38	SSF-HB3/8-F1/4
R-18-38T	SSF-HA3/8-F1/4-T
R-38	SSF-HB3/8
R-38T	SSF-HA3/8T
R-516-14	SSF-HB1/4-F1/2
R-516-14-T	SSF-HA1/4-F1/2T
R-516-1438N	SSF-HA3/8-F1/2
R-516-38	SSF-HB3/8-F1/2
R-516-38T	SSF-HA3/8-F1/2-T
R-916-14	SSF-HB1/4-F3/4
R-916-14-T	SSF-HA1/4-F3/4T
R-916-1438N	SSF-HA3/8-F-3/4
R-916-38	SSF-HB3/8-F3/4
R-916-38T	SSF-HA3/8-F-3/4-T
R0-38	SSF-HB3/8-OB
R0-38T	SSF-HA3/8-OB-T
RA-14	SSF-HB1/4-AB
RA-1438N	SSF-HA3/8-AB
RA-14T	SSF-HA1/4-ABT
RA-38	SSF-HB3/8-AB
RA-38T	SSF-HA3/8-AB-T
RF-116-14	SSF-BV1/4-B1/4
RF-116-1438N	SSF-BV1/4-A3/8
RF-116-14T	SSF-BV1/16
RF-116-38T	SSF-BV1/16-B3/8
RF-116-38T	SSF-BV1/4-A3/8T
RF-532-14	SSF-BV1/4-B8
RF-532-1438N	SSF-BV1/16-A3/8
RF-532-38	SSF-BV1/4-B3/8
RF-532-38T	SSF-BV1/16-A3/8T
RF116-38	SSF-BV1/16-A1/4T
RF532-14T	SSF-BV1/4-A1/4T
RO-14	SSF-HB8-OB
RO-1438N	SSF-HA3/8-OB
RO-14T	SSF-HA1/4-OBT
RS-100	SSF-CS1-OB
RS-50	SSF-CS1/2-OB
RS-75	SSF-CS3/4-OB
“S”	SSF-S-F-T
S-1900	SSF-SMX
SB-100	SSF-S-F-S-1

MINERALLAC	STEEL CITY
SB-12	SSF-S-F-1/2
SB-14	SSF-SF1/4
SB-34	SSF-S-F-3/4
SB-38	SSF-S-F-3/8
SB-50	SSF-S-F-S-1/2
SB-58	SSF-S-F-5/8
SB-75	SSF-SFS3/4
SB-KC-1	SSF-S-F-C-1
SB-KC-1234	SSF-S-F-C-1/2 3/4
SB-KC-38	SSF-S-F-C-1/2 3/4
SBC	SSF-S-F-A
SBO	SSF-S-F-O
SBS-2.5	SSF-SS1-TB
SBS-3.5	SSF-SS1-TB
SBS-4	SSF-SS1-TB
SCT-3	SSF-T15T5/8
SFC-18	SSF-BF1/4
SFC-18-100	SSF-CS1-F1/4
SFC-18-50	SSF-CS1/2-F1/4
SFC-18-75	SSF-CS1-F1/4
SFC-18-KC-1	SSF-CC1-F1/4
SFC-18-KC-112	SSF-CC1 1/2-F1/4
SFC-18-KC-114	SSF-CC1-F1/4
SFC-18-KC-12-34	SSF-CC1/2 3/4-F1/4
SFC-18-KC-2	SSF-CC2-F1/4
SFC-18-KC-38	SSF-CC3/8-F1/4
SFC-516	SSF-BF1/2
SFC-516-100	SSF-CS1-F1/2
SFC-516-50	SSF-CS1/2-F1/2
SFC-516-75	SSF-CS3/4-F1/2
SFC-516-KC-1	SSF-CC1-F1/2
SFC-516-KC-112	SSF-CC1 1/2-F1/2
SFC-516-KC-114	SSF-CC1 1/4-F1/2
SFC-516-KC-12-34	SSF-CC1/2 3/4-F1/2
SFC-516-KC-2	SSF-CC2-F1/2
SFC-516-KC-38	SSF-CC3/8-F1/2
SFC-916	SSF-BF3/4
SFC-916-50	SSF-CS1/2-F3/4
SFC-916-KC-1	SSF-CC1-F3/4
SFC-916-KC-112	SSF-CC1 1/2-F3/4
SFC-916-KC-114	SSF-CC1 1/4-F3/4
SFC-916-KC-12-34	SSF-CC1/2 3/4-F3/4
SFC-916-KC-2	SSF-CC2-F3/4
SFC-916-KC-38	SSF-CC3/8-F3/4
SH-212	SF-SH10
SS	SSF-SK
SS-100	SSF-SK-S1
SS-12-34	SSF-SK-C1/2 3/4
SS-50	SSF-SK-S1/2
SS-75	SSF-SK-S3/4
SS-KC-1	SSF-SK-C1
T-BAR	SSF-TH-20
TB-12-34-KC	SSF-TCH-C1/2 3/4
TBT Threaded	SSF-TCHT
TS-50	SSF-TCV-S1/2
TS-K	SSF-TCV-C12 3/4
TST Threaded	SSF-TCVT
WBF-1	SSF-SLV1
WBF01	SSF-SLV1

*Minerallac is a registered trademark of the Minerallac Company.

Spring Steel Cross Reference, Alpha-Numeric Index

1216
1300
30-00801
30-00804
30-00805
30-00807
30-00810
30-00812
30-00816
30-00819
30-00820
30-00821
30-00823
30-00824
30-00825
30-00827
30-01801
30-01804
30-01805
30-01807
31-00800
31-00801
31-00809
31-10809
3900
50
7502
7503
820D

BC1
BC2

C108-1
C108-1-1/2
C108-1-1/4
C108-2
C108-3/4
C109-1/2
C118-047PG
C118-055PG
C118-070PG
C118-090PG
C118-110PG
C118-140PG
C118-175PG
C118-200PG
C118-250PG
C118-300PG
C118-370PG
C118-410PG
C118-460PG
CH-0 LN
CH-0 WBA
CH-1 LN
CH-1 WBA
CH 2 1/2 LN
CH-2 1/2 WBA
CH-2 LN
CH-2 WBA
CH-3 LN
CH-3 WBA
CH-4 LN
CH-4 WBA
CH-5 LN
CH-5 WBA
CH-6 WBA
CH-7 WBA
CH-8 WBA
CH-9 WBA
CI-8930
CI-9832

E142-1/4X075EG
E142-1/4X100EG
E142-1/4X150EG
E145-1/4EG

JC100
JC50

SH10

SS1-TB

SSF-BA1/4
SSF-BA1/4-A1/4T
SSF-BA1/4-A3/8
SSF-BA1/4-A3/8T
SSF-BA1/4-B1/4
SSF-BA1/4-B3/8
SSF-BA1/4-B8
SSF-BBC
SSF-BBC-C1 1/2H
SSF-BBC-C1 1/2V
SSF-BBC-C1 1/4H
SSF-BBC-C1 1/4V
SSF-BBC-C1/2 3/4H
SSF-BBC-C1/2 3/4V
SSF-BBC-C1H
SSF-BBC-C1V
SSF-BBC-C2H
SSF-BBC-C2V
SSF-BBC-S1/2H
SSF-BBC-S1/2V
SSF-BBC-S1H
SSF-BBC-S1V
SSF-BBC-S3/4H
SSF-BBC-S3/4V
SSF-BF1/2
SSF-BF1/2
SSF-BF1/2
SSF-BF1/4
SSF-BF1/8
SSF-BF3/4
SSF-BF3/4
SSF-BFF1/2
SSF-BFF1/4
SSF-BFF1/8
SSF-BFF3/4
SSF-BH1/2
SSF-BH1/2S
SSF-BH1/4
SSF-BH1/4S
SSF-BH3/4
SSF-BH3/4S
SSF-BR1
SSF-BV-1/16-A3/8
SSF-BV1/16
SSF-BV1/16-A1/4T
SSF-BV1/16-A3/8T
SSF-BV1/16-B1/4
SSF-BV1/16-B3/8
SSF-BV1/16-B8
SSF-BV1/4
SSF-BV1/4-A1/4T
SSF-BV1/4-A3/8
SSF-BV1/4-A3/8T
SSF-BV1/4-B1/4
SSF-BV1/4-B3/8
SSF-BV1/4-B8
SSF-BZ1
SSF-BZ1-A1/4T
SSF-BZ1-A3/8
SSF-BZ1-A3/8T
SSF-BZ1-B1/4
SSF-BZ1-B3/8
SSF-BZ1-B8
SSF-BZ2
SSF-BZ2-C1 1/4
SSF-BZ2-C1
SSF-BZ2-C1/2 3/4
SSF-BZ2-C3/8
SSF-BZ2-S1
SSF-BZ2-S1/2
SSF-BZ2-S3/4

SSF-CAXL1
SSF-CAXL2
SSF-CB706
SSF-CC1 1/2
SSF-CC1 1/2-F1/2
SSF-CC1 1/2-F1/4
SSF-CC1 1/2-F3/4
SSF-CC1 1/2-H1/2
SSF-CC1 1/2-H1/4
SSF-CC1 1/2-H3/4
SSF-CC1 1/2T
SSF-CC1 1/4
SSF-CC1 1/4-F1/2
SSF-CC1 1/4-F1/4
SSF-CC1 1/4-F3/4
SSF-CC1 1/4-H1/2
SSF-CC1 1/4-H1/4
SSF-CC1 1/4-H3/4
SSF-CC1 1/4T
SSF-CC1
SSF-CC1-C1 1/2
SSF-CC1-C1 1/4
SSF-CC1-C1
SSF-CC1-C1/2 3/4
SSF-CC1-C2
SSF-CC1-C3/8
SSF-CC1-F1/2
SSF-CC1-F1/2
SSF-CC1-F1/4
SSF-CC1-F3/4
SSF-CC1-H1/2
SSF-CC1-H1/4
SSF-CC1-H3/4
SSF-CC1/2 3/4
SSF-CC1/2 3/4-C1/2 3/4
SSF-CC1/2 3/4-F1/2
SSF-CC1/2 3/4-F1/4
SSF-CC1/2 3/4-F3/4
SSF-CC1/2 3/4-FB
SSF-CC1/2 3/4-H1/2
SSF-CC1/2 3/4-H1/4
SSF-CC1/2 3/4-H3/4
SSF-CC1/2 3/4T
SSF-CC1T
SSF-CC2
SSF-CC2-F1/2
SSF-CC2-F1/4
SSF-CC2-F3/4
SSF-CC2-H1/2
SSF-CC2-H1/4
SSF-CC2-H3/4
SSF-CC2T
SSF-CC3/8
SSF-CC3/8-F1/2
SSF-CC3/8-F1/4
SSF-CC3/8-F3/4
SSF-CC3/8-H1/2
SSF-CC3/8-H1/4
SSF-CC3/8-H3/4
SSF-CC3/8T
SSF-CEL1250
SSF-CEL218
SSF-CEL281
SSF-CEL375
SSF-CEL437
SSF-CEL562
SSF-CEL718
SSF-CEL937
SSF-CEM1250
SSF-CEM218
SSF-CEM281
SSF-CEM375
SSF-CEM437
SSF-CEM562
SSF-CEM718
SSF-CEM937
SSF-CES1250
SSF-CES218
SSF-CES281
SSF-CES375
SSF-CES437
SSF-CES562
SSF-CES718
SSF-CES937
SSF-CF1/8
SSF-CF3/8
SSF-CK1
SSF-CK1/2
SSF-CK3/4
SSF-CK535
SSF-CM535
SSF-CS1
SSF-CS1-F1/4
SSF-CS1-F3/4
SSF-CS1-H1/2

STUD WELDING

ISC Sells, Rents and Repairs the following brands of stud welders. ISC also stocks a full line of guns, cables, replacement parts & accessories for these welders.

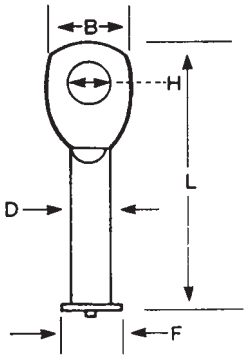
A.F.T.
AGM
BURCO
CUTLASS
DYNAMIC
ERICO JONES
HBS
I.W.T.
KSM
M.F.I.
NELSON
NOVA
PROWELD
TRUWELD

STUD WELDING

CAPACITOR DISCHARGE LAGGING STUD
ACOUSTICAL HANGER
167CDHangerSS

Material: Mild steel, stainless steel.
Plating: Copper.

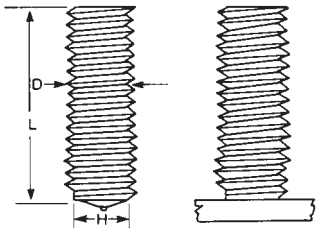
STUD				
D	H	B	L	F
.167	.185	.312	1.125	.250



167 CD Hanger

NON-FLANGED CAPACITOR DISCHARGE WELD STUD
F/N CDNF

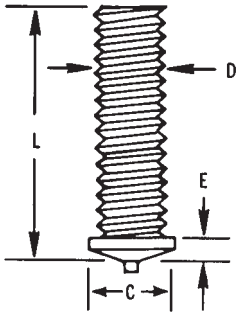
Material: Mild steel, stainless steel, aluminum, brass.
Plating: All mild steel studs are copper plated.



STUD		
D	H	MIN L
4–40	.112	.250
6–32	.137	.250
8–32	.163	.250
10–32	.187	.250
10–24	.187	.250
1/4–20	.250	.375
5/16–18	.312	.500

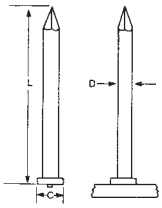
CAPACITOR DISCHARGE STUD
F/N CDFL

STUD SPECIFICATIONS		
D	C	E
4–40	3/16	1/32
6–32	7/32	1/32
8–32	1/4	1/32
10–32	1/4	1/32
10–24	1/4	1/32
1/4–20	5/16	1/32
5/16–18	3/8	1/32



STANDARD CD INSULATION PINS
F/N CDWP

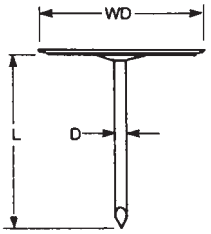
PINS			
	D	C	LENGTH
12 ga.	.106	.170	as required
10 ga.	.135	.187	as required



Material: Mild steel, stainless steel 304, aluminum.
Plating: Copper plating standard on mild steel pins.
Annealing: All pins are annealed.
Speed Clips: Self-locking speed clips are available in a variety of sizes and materials up to 2-1/2" square

CUPHEAD PIN
F/N IHMC

	PIN	SPEED CLIP
MATERIAL:	LOW CARBON STEEL C–0.23% max P–0.04% max Mn–0.60% max S–0.05% max	LOW CARBON STEEL C–0.23% max P–0.04% max Mn–0.60% max S–0.05% max
MECHANICAL PROPERTIES	Values available upon request.	Values available upon request.



Speed Clip is beveled to prevent cutting of insulation material.

Stainless Steel — not standard, but available upon request.

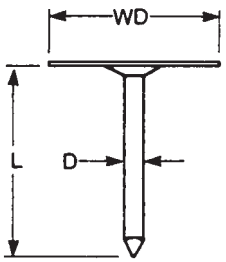
Paper Speed clips available for welding through foil faced insulation.

PINS				
TYPE	D	WD	MIN L	MAX L
CL10	.135	1.500	3/8	No Max
CL12	.105	1.500	3/8	No Max
MC12	.105	1.187	3/8	No Max
MC14	.080	1.187	3/16	2"

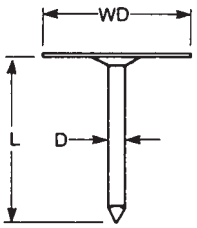
DURO-DYNE TYPE CUPHEAD PIN
F/N RP-9

PINS			
TYPE	D	WD	MIN L
RP-9	.148	1.187	3/8

	PIN	SPEED CLIP
MATERIAL:	LOW CARBON STEEL C–0.23% max P–0.04% max Mn–0.60% max S–0.05% max	LOW CARBON STEEL C–0.23% max P–0.04% max Mn–0.60% max S–0.05% max
MECHANICAL PROPERTIES	Values available upon request.	Values available upon request.



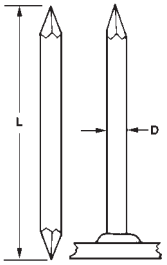
DURO-DYNE TYPE CUPHEAD PIN
F/N RP-9



PINS			
TYPE	D	WD	MIN L
RP-9	.148	1.187	3/8

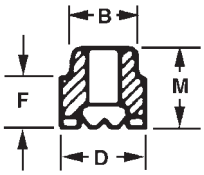
	PIN	SPEED CLIP
Material:	LOW CARBON STEEL C–0.23% max P–0.04% max Mn–0.60% max S–0.05% max	LOW CARBON STEEL C–0.23% max P–0.04% max Mn–0.60% max S–0.05% max
Mechanical Properties:	Values available upon request.	Values available upon request.

INSULATION STUD
F/N CDDP



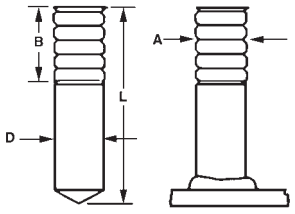
STUD SPECIFICATIONS	
D	Min. L
.134 (10 gauge)	3/4

FERRULE SPECIFICATIONS				
No.	B	D	M	F
ZFF-019	.305	.390	.390	.234



ANNULAR RING NAVY STUD
F/N ARAN

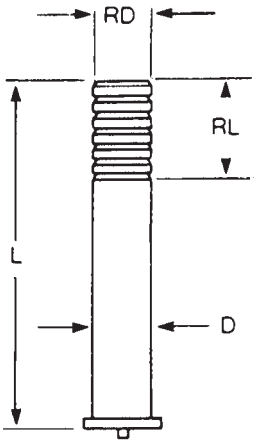
MATERIAL: Conforms to **MIL-S-24149**
PLATING: Conforms to **MIL-S-24149**



STUD				
D	A	B	MIN L	FERRULE
.125	.122	.375	.750	F125
.185	.175	.375	.750	F187

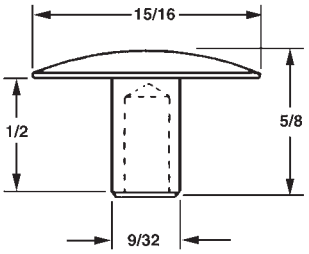
ANNULAR RING NAVY STUD — FLANGED
F/N CDAN

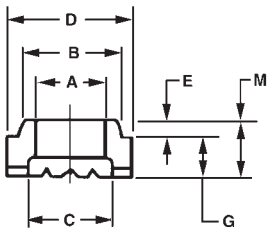
STUD			
D	MIN L	RD	RL
.125	.750	.122	.312
.185	.750	.175	.312



Material:	LOW CARBON STEEL Conforms to **MIL-S-24149**	ALUMINUM Conforms to **MIL-S-24149**
Mechanical Properties:	Tensile . . . . 75,000 psi (max) Yield . . . . . 64,000 psi (max) Elongation . . . 21 (in 2 inches)	Values for various alloys available upon request.
Plating:	Copper plating is standard.	Does not apply to aluminum.

ALUMINUM INSULATION CAP
F/N ALNC180

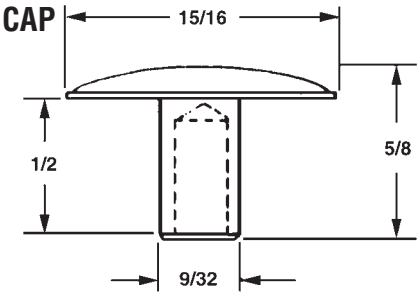




FERRULE SPECIFICATIONS							
FERRULE	A	B	C	D	E	G	M
F187	.197	.305	.262	.390	.125	.095	.250

ALUMINUM NAVY CAP
F/N ALNC180

STUD SIZE
.185



CAPACITOR DISCHARGE

DESCRIPTION

The CD-212P is a state-of-the-art solid state capacitor discharge stud/pin welder. Its lightweight design increases portability but with the power to weld 1/4" diameter flanged studs.

The extremely short weld time of the capacitor discharge process allows studs to be welded to material as thin as .015 without burn-through.

The unit is capable of welding mild steel, stainless and aluminum studs as well as cuphead pins.

SPECIFICATIONS

Dimensions:	8-1/2"H x 9"W x 11-3/4"D	Mode:	Contact Gap (optional)
Stud Range:	14 ga.–1/4"	Weld Rate:	12 Studs/Min.
Weight:	26 lbs.		
Capacitance Charge:	66,000 mfd	Input Power:	110 VAC, 60Hz, 20 AMPS
Range:	45–195 VDC		

PARTS LIST

Description	Part No.	Description	Part No.
System Complete	100-0117	Gun Only	300-0100
Power Unit Only	200-0025	Ground Cable	125-0100

CD-212P
CAPACITOR DISCHARGE STUD WELDER

FEATURES

- Designed and built in U.S.A.
- Light Weight
- Safety Fault Shut Down
- Recessed Control Panel
- Circuit Breaker Protection

DESCRIPTION

The CD-512 is a state-of-the-art solid state capacitor discharge stud welder. Its rugged design and user friendly controls make it simple to set up and use.

The extremely short weld time of the capacitor discharge process allows studs to be welded to material as thin as .015 without burn-through.

The unit is capable of welding mild steel, stainless and aluminum studs.

SPECIFICATIONS

Dimensions:	8-1/2"H x 13-1/4"W x 20"D	Mode:	Contact
		Stud Range:	#2–3/8"
Weight:	64 lbs.	Weld Rate:	24 Studs/Min.
Capacitance:	84,000 mfd Low 168,000 mfd High	Input Power:	110 VAC, 20 AMPS
Charge Range:	45–185 VDC		

PARTS LIST

Description	Part No.	Description	Part No.
System Complete	100-0110	Gun Only	300-0200
Power Unit Only	200-0013	Ground Cable	125-0101

CD-512
CAPACITOR DISCHARGE STUD WELDER

FEATURES

- Designed and built in USA
- Safety Fault Shut Down
- Recessed Control Panel
- L.E.D. Panel Meter
- Diagnostic L.E.D.'s

PRO WELD

CD-312

Features

- Designed and built in USA
- Safety Fault Shut Down
- Recessed Control Panel
- L.E.D. Panel Meter
- Diagnostic L.E.D.'s

Description

The CD-312 is a state-of-the-art solid state capacitor discharge stud/pin welder. Its rugged design and user friendly controls make it simple to set up and use.

The extremely short weld time of the capacitor discharge process allows studs to be welded to material as thin as .015 without burn-through.

The unit is capable of welding mild steel, stainless and aluminum studs.

Specifications

Dimensions:	8-1/2"H x 10"W x 16-1/2"D
Weight:	48 lbs.
Capacitance:	84,000 mfd
Charge Range:	45-185VDC
Mode:	Contact
Stud Range:	#2 - 5/16"
Weld Rate:	24 Studs/Min.
Input Power:	110 VAC, 20 AMPS

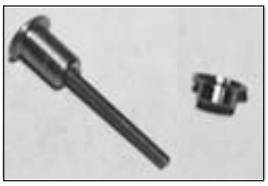
Parts List

Description	Part No.	Description	Part No.
System Complete	**100-0108**	Gun Only	**300-0200**
Power Unit Only	**200-0012**	Ground Cable	**125-0101**

Weld Pin & Cup Head Pin Accessories

Magnetic Chuck

Part No.	Description
035-301	Complete Ass'y
017-633	Magnet Only
029-615	Conductor Plate
039-609	Insul. Tube
039-610	Insul. Disc
Screw	10-32 x 7/8

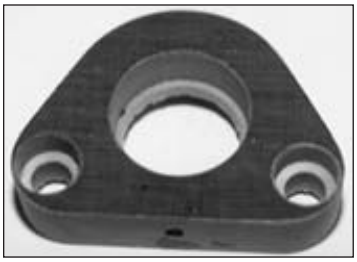


"B" Stops

Part No.	Stud Length
033-781	1/4
033-782	3/8
033-783	1/2
033-784	5/8
033-785	3/4
033-775	7/8
033-776	1"
033-777	1-1/8
033-778	1-1/4
033-779	1-3/8 (short button size)
033-780	Universal

"B" Collet Protectors

Part No.	Stud Size
028-837	14 GA. & 12 GA.
028-838	10 GA.
028-836	Body Only
028-834	12 Ga. Insert
028-835	10 Ga. Insert

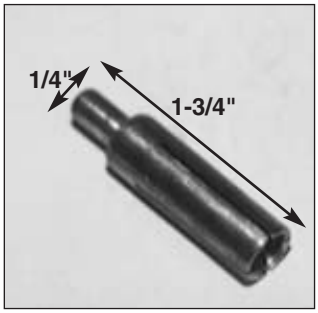


CD Foot Style F

Part No.
028-833

Capacitor Discharge Weld Collets

Collet Inserts for Weld Studs

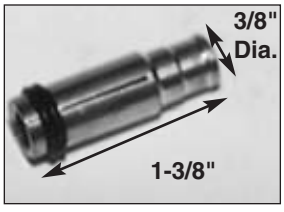


Stud Dia. x Depth	Part No.
#4x1/4	CI-010-025
#4x3/8	CI-010-037
#4x1/2	CI-010-050
#4x1"	CI-010-100
#6x1/4	CI-013-025
#6x3/8	CI-013-037
#6x1/2	CI-013-050
#6x1"	CI-013-100
#8x1/4	CI-015-025
#8x3/8	CI-015-037
#8x1/2	CI-015-050
#8x1"	CI-015-100
#10x1/4	CI-018-025
#10x3/8	CI-018-037
#10x1/2	CI-018-050
#10x3/4	CI-018-075
#10x1"	CI-018-100
1/4x1/4	CI-025-025
1/4x3/8	CI-025-037
1/4x1/2	CI-025-050
1/4x3/4	CI-025-075
1/4x1"	CI-025-100
5/16x3/8	CI-031-037
5/16x1/2	CI-031-050
5/16x5/8	CI-031-062
5/16x3/4	CI-031-075
5/16x1"	CI-031-100
3/8x1/2	CI-037-050
3/8x3/4	CI-037-075
3/8x1"	CI-037-100

Collet Inserts for Weld Pins

Stud Dia. x Depth	Part No.
12GAx1/2	CIP-010-050
12GAx3/4	CIP-010-075
12GAx1"	CIP-010-100
10GAx1/2	CIP-013-050
10GAx3/4	CIP-013-075
10GAx1"	CIP-013-100

"B" Collets



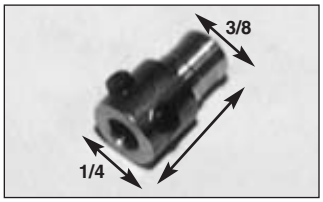
Stud Dia. x Depth	Part No.
14GA	CDB-008
12GA & #4	CDB-010
1/8	CDB-012
10GA & #6	CDB-013
#8	CDB-015
#10	CDB-018
.215	CDB-021
1/4	CDB-025
5/16	CDB-031
3/8	CDB-037

NOTE* Metric Sizes add $3.00

NOTE* AGM Collets are 1-3/16 long

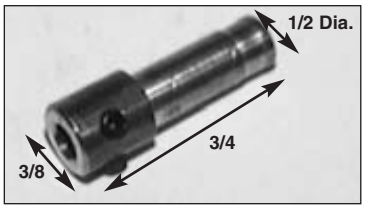
CAPACITOR DISCHARGE ADAPTORS

B-CI Adaptor



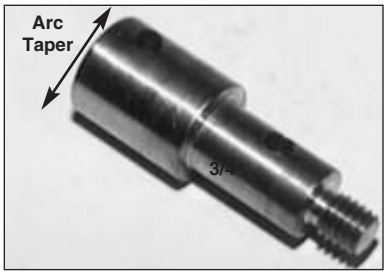
Part No.	
044-082	7/8 Long
033-746	1-9/16 Long

A-B Adaptor



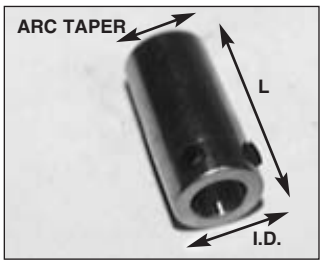
Part No.
039-467

B-N Adaptor



Part No.
039-468

Adaptors



Part No.	I.D.
044-083	(3/8 ID)
044-084	(1/4 ID)

Standard Spark Shield

Part No.	Stud Range
033-764	14 GA-#6
033-765	#8-3/8

Vented Spark Shields

Part No.	Stud Range
033-769	14 GA-10 GA
033-769L	#6-3/8

INVENTORY SALES GUNS

Arc Stud Gun

Soyer Gap Gun

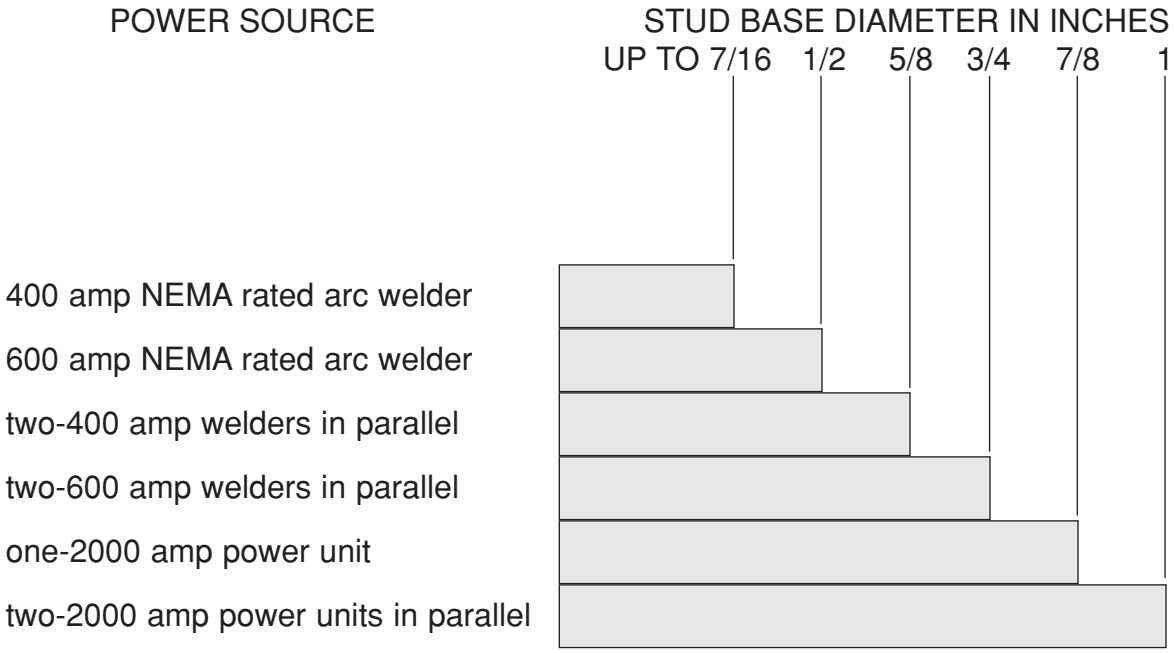
Slim Line C.D. Gun

SWS C.D. Gun

L.D. C.D. Gun w/Level cap

ARC STUDS

ELECTRIC-ARC STUD WELDING CAPACITY FOR DC POWER SOURCES



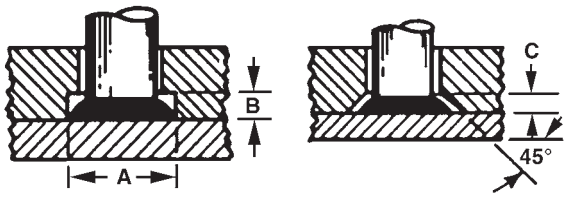
RECOMMENDED MINIMUM PLATE THICKNESS OF STEEL AND ALUMINUM FOR ELECTRIC-ARC STUD WELDING

BASE DIA. OF STUD (in.)	STEEL		ALUMINUM	
	WITHOUT BACKUP (in.)	(gage)	WITHOUT BACKUP (in.)	WITH BACKUP (in.)
0.187	0.0359	20	0.125	0.125
0.250	0.0478	18	0.125	0.125
0.312	0.0598	16	0.187	0.125
0.375	0.0747	14	0.187	0.187
0.437	0.0897	13	0.250	0.187
0.500	0.1196	11	0.250	0.250
0.625	0.148	9		
0.750	0.187			
0.875	0.250			
1.000	0.375			

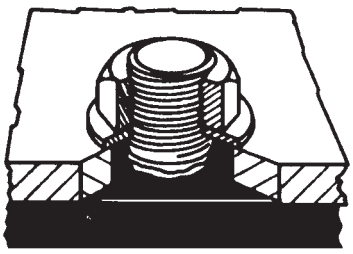
ACCOMMODATING THE FILLET

When a stud is end-welded, a fillet forms around its base with the fillet dimensions being closely controlled by the design of the ferrule used. Since the diameter of the fillet is generally larger than the diameter of the stud, some consideration is required in the design of mating parts. Counter bore and counter sink methods are commonly used. Dimensions will vary with studs and ferrules. Additional methods of accommodating fillet include over sized clearance holes, use of a gasket material around the fillet or use of a dog type construction.

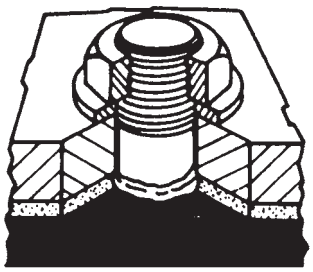
FILLET CLEARANCE FOR ELECTRIC-ARC WELDED FULL BASE STUDS



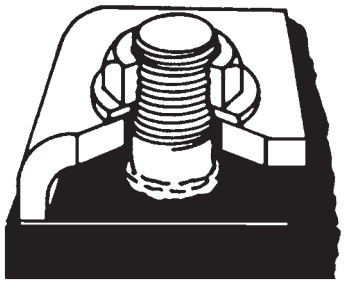
Stud Size (inches)	Counterbore (inches) A	Counterbore (inches) B	90° Countersink (inches) C
1/4	0.437	0.125	0.125
5/16	0.500	0.125	0.125
3/8	0.593	0.125	0.125
7/16	0.656	0.187	0.125
1/2	0.750	0.187	0.187
5/8	0.875	0.218	0.187
3/4	1.125	0.312	0.187



(a) Oversize clearance hole

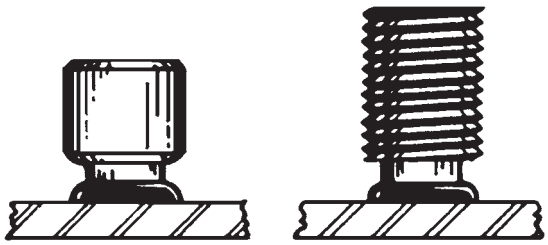


(b) Gasket material



(c) Dog clamp

Welded studs designed with reduced weld bases so that weld fillet does not exceed maximum diameter of fastener. This design is not recommended if fastener strength is important.



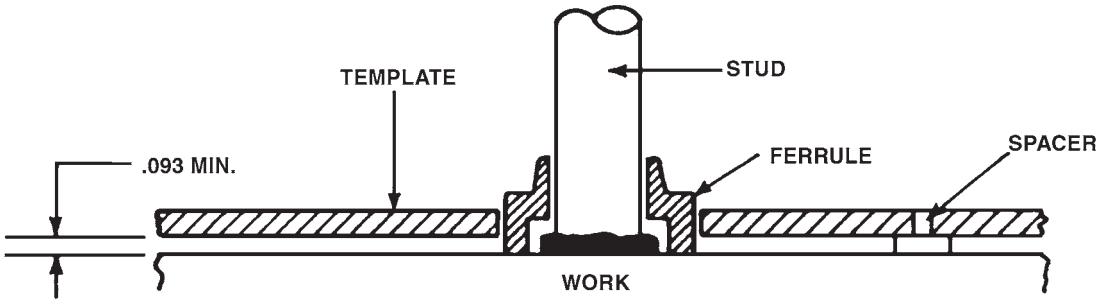
Threaded Studs

WEIGHT CHART

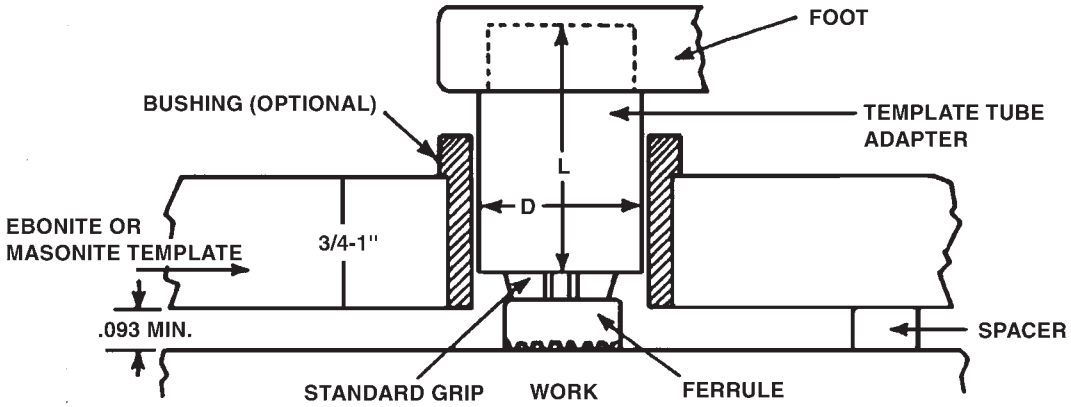
ESTIMATED WEIGHTS OF THREADED STUDS IN POUNDS PER 1000 PIECES								
LENGTH	1/4 dia.	5/16 dia.	3/8 dia.	7/16 dia.	1/2 dia.	5/8 dia.	3/4 dia.	7/8 dia.
3/4	8.3	12.8	18.8	25.5	34.5			
1	11.0	17.0	25.0	34.0	46.0	70.0		
1-1/4	13.8	21.3	31.3	42.5	57.5	87.5	133.8	
1-1/2	16.5	25.5	37.5	51.0	69.0	105.0	160.5	243.8
1-3/4	19.3	29.8	43.8	59.5	80.5	122.5	187.3	284.4
2	22.0	34.0	50.0	68.0	92.0	140.0	214.0	325.0
2-1/4	24.8	38.3	56.3	76.5	103.5	157.5	240.8	165.6
2-1/2	27.5	42.5	62.5	85.0	115.0	175.0	267.5	406.3
2-3/4	30.3	46.8	68.8	93.5	126.5	192.5	294.3	446.9
3	33.0	51.0	75.0	102.0	138.0	210.0	321.0	487.5
3-1/4	35.8	55.3	81.3	110.5	149.5	227.5	347.8	528.1
3-1/2	38.5	59.5	87.5	119.0	161.0	245.0	374.5	568.8
3-3/4	41.3	63.8	93.8	127.5	172.5	262.5	401.3	609.4
4	44.0	68.0	100.0	136.0	184.0	280.0	428.0	650.0
4-1/4	46.8	72.3	106.3	144.5	195.5	297.5	454.8	690.6
4-1/2	49.5	76.5	112.5	153.0	207.0	315.0	481.5	731.3
4-3/4	52.3	80.8	118.8	161.5	218.5	332.5	508.3	771.9
5	55.0	85.0	125.0	170.0	230.0	350.0	535.0	812.5
EACH ADD'L. INCH	11.0	17.0	25.0	34.0	46.0	70.0	107.0	162.5
FERRULE	2.0	2.5	3.0	3.5	4.0	5.0	10.0	12.0

ESTIMATED WEIGHTS OF NO-THREAD STUDS IN POUNDS PER 1000 PIECES									
LENGTH	3/16 dia.	1/4 dia.	5/16 dia.	3/8 dia.	7/16 dia.	1/2 dia.	5/8 dia.	3/4 dia.	7/8 dia.
3/4	6.0	10.5	16.4	23.5	31.9	41.7			
1	8.0	14.0	21.8	31.3	42.5	55.6	86.6		
1-1/4	10.0	17.5	27.3	39.1	53.1	69.5	108.3	156.0	
1-1/2	12.0	21.0	32.7	47.0	63.8	83.4	129.9	187.2	225.0
1-3/4	14.0	24.5	38.2	54.8	74.4	97.3	151.6	218.4	297.5
2	16.0	28.0	43.6	62.6	85.0	111.2	173.2	249.6	340.0
2-1/4	18.0	31.5	49.1	70.4	95.6	125.1	194.9	280.8	382.5
2-1/2	20.0	35.0	54.5	78.3	106.3	139.0	216.5	312.0	425.0
2-3/4	22.0	38.5	60.0	86.1	116.9	152.9	238.2	343.2	467.5
3	24.0	42.0	65.4	93.9	127.5	166.8	259.8	374.4	510.0
3-1/4	26.0	45.5	70.9	101.7	138.1	180.7	281.5	405.6	552.5
3-1/2	28.0	49.0	76.3	117.4	148.8	194.6	303.1	436.8	595.0
3-3/4	30.0	52.5	81.8	125.2	159.4	208.5	324.8	468.0	637.5
4	32.0	56.0	87.2	125.2	170.0	222.4	346.4	499.2	680.0
4-1/4	34.0	59.5	92.7	133.0	180.6	236.3	368.1	530.4	722.5
4-1/2	36.0	63.0	98.1	140.9	191.3	250.2	389.7	561.6	765.0
4-3/4	38.0	66.5	103.6	148.7	201.9	264.1	411.4	592.8	807.5
5	40.0	70.0	109.0	156.5	212.5	278.0	433.0	624.0	850.0
EACH ADD'L. INCH	8.0	14.0	21.8	31.3	42.5	55.6	86.6	124.8	170.0
FERRULE	3.0	3.5	4.0	5.0	6.0	7.5	9.0	27.0	37.0

TEMPLATE DESIGN FOR STUD LOCATING



This method of templating is recommended for use with ZFF ferrules. The template is usually a steel plate 3/32" to 3/16" thick. Spacers are required to allow the gases to escape during the welding cycle. The ferrule can be held by a standard ferrule grip or where clearance is prohibitive a tube type set-up can be used. The recommended hole sizes on the template to locate the ferrules should equal the maximum outside diameter of the ferrule plus 1/32". Holes may be drilled or bored at required locations. See stud specifications sheets for ferrule detail.



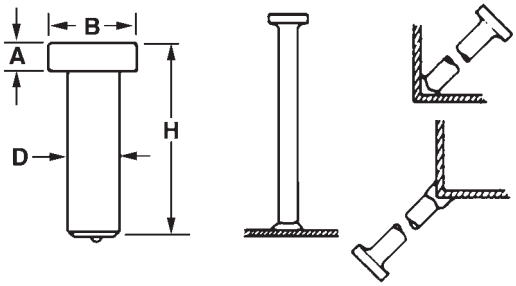
Stud Size	D	L
1/2" and under	1.250	2.000
5/8" and 3/4"	1.562	2.500
7/8" and larger	2.125	2.500

This method of templating is recommended for use with all stud styles. The design makes it possible to accurately hold angular alignment of the studs as well as stud location. The template should be made of ebonite or masonite of a thickness sufficient to afford good alignment. Bushings may be used to insure greater accuracy and extend the life of the template. Standard copper ferrule grips are used with the tube adaptor. This permits standardization of templates since it is only necessary to change the copper ferrule grip to weld studs of different diameters. The hole diameter of the bushing or template should be approximately .010 larger than the maximum outside diameter of the template tube adaptor.

STUD WELDING

SC SHEAR CONNECTOR STUD

F/N SCON — Beam
F/N SCTD — Thru Deck



For welding to fillet or heel of angle consult representative for ferrule part number.

3/4" DIAMETER SHEAR CONNECTORS								
Stud Specifications			Ferrule Specifications					
D	H	A	Type	No.	D	B	F	M
3/4	1-1/4	3/8	Flat Surface	ZFF-075	1.215	1.030	.469	.656
			Weld Through Deck	ZFW-075				

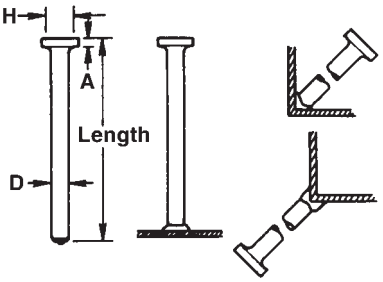
7/8" DIAMETER SHEAR CONNECTORS								
Stud Specifications			Ferrule Specifications					
D	H	A	Type	No.	D	B	F	M
7/8	1-3/8	3/8	Flat Surface	ZFF-087	1.408	1.210	.545	.732

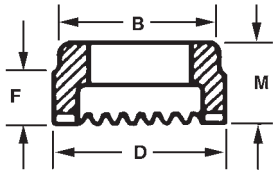
Standard Length	WEIGHTS AND PACKAGING		
	Pounds M Pieces	Pieces Box	Pounds Box
3-3/16	486	CALL FOR INFORMATION	
3-3/8	509		
3-11/16	548		
3-7/8	572		
4-3/16	611		
4-7/8	707		
5-3/16	736		
6-3/16	861		
7-3/16	987		
8-3/16	1112		

Standard Length	WEIGHTS AND PACKAGING		
	Pounds M Pieces	Pieces Box	Pounds Box
3-11/16	726	CALL FOR INFORMATION	
4-3/16	811		
4-11/16	896		
5-3/16	981		
6-3/16	1153		
7-3/16	1322		
8-3/16	1473		

HA HEADED ANCHOR

F/N HCA





For welding to fillet or heel of angle consult representative for ferrule part number.

STUD SPECIFICATIONS			FERRULE SPECIFICATIONS				
D	A	H	No.	D	B	F	M
1/4	.187	.500	ZFF-025	.454	.380	.234	.390
3/8	.281	.750	ZFF-037	.640	.505	.234	.390
1/2	.312	1.000	ZFF-050	.795	.650	.250	.438
5/8	.312	1.250	ZFF-062	1.030	.785	.328	.516

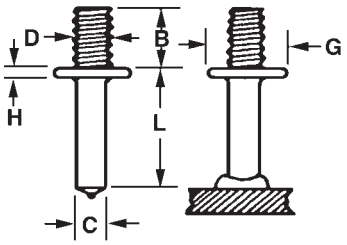
WEIGHTS AND PACKAGING FOR STANDARD LENGTHS

Description	Pounds M Pieces	Pieces Box	Pounds Box
1/4 x 2-9/16	43	1100	50
1/4 x 4-1/8	65	1100	72
3/8 x 2-1/8	93	1100	102
3/8 x 2-5/8	108	1000	108
3/8 x 3-1/8	126	550	69
3/8 x 3-5/8	145	550	80
3/8 x 4-1/8	155	550	86
3/8 x 6-1/8	218	300	66

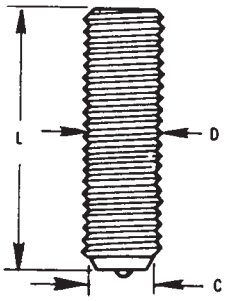
Description	Pounds M Pieces	Pieces Box	Pounds Box
1/2 x 2-1/8	170	CALL FOR INFORMATION	
1/2 x 3-1/8	226		
1/2 x 4-1/8	292		
1/2 x 5-5/16	341		
1/2 x 6-1/8	393		
1/2 x 8-1/8	504		
5/8 x 2-11/16	315		
5/8 x 4-1/8	450		
5/8 x 6-9/16	652		
5/8 x 8-3/16	793		

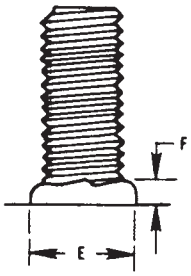
CK ALUMINUM COLLAR STUD
CK3716C3710

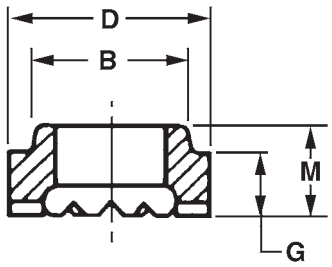
STUD SPECIFICATIONS					
D	C	Min. L	Max. B	G	H
1/4–20	.215	.687	3/4	1/2	3/32
5/16–18	.275	.750	3/4	5/8	3/32
3/8–16	.330	.750	3/4	5/8	3/32
1/2–13	.448	.750	3/4	3/4	3/32



FT FULL THREADED STUD
F/N ARFT



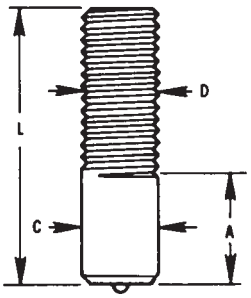


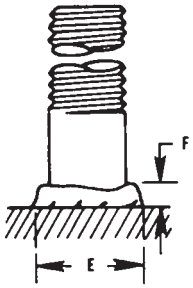


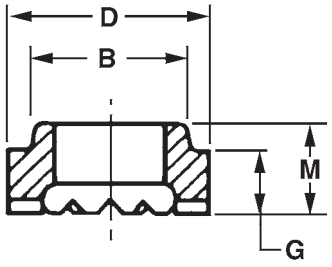
STUD SPECIFICATIONS				
			Fillet Dimension	
D	Min. L.	C	E	F
10–24	25/32	.187	9/32	3/32
1/4–20	25/32	.187	23/64	7/64
5/16–18	25/32	.187	25/64	7/64
3/8–16	25/32	.187	7/16	1/8
7/16–14	25/32	.187	27/64	9/64
1/2–13	13/16	.187	19/32	5/32
5/8–11	31/32	.187	51/64	3/16
3/4–10	1-15/64	.187	15/16	1/4
7/8–9	1-1/2	.375	1-3/32	5/16
1–8	1-17/32	.375	1-15/64	3/8

FERRULE SPECIFICATIONS				
No.	D	B	G	M
ZFF-019	.390	.305	.234	.390
ZFF-025	.454	.380	.234	.390
ZFF-031-X	.578	.445	.281	.437
ZFF-037-X	.637	.505	.281	.437
ZFF-043	.703	.585	.234	.422
ZFF-050-X	.795	.650	.281	.469
ZFF-062	1.030	.785	.328	.516
ZFF-075	1.215	1.030	.469	.656
ZFF-087	1.408	1.210	.545	.732
ZFF-100	1.615	1.406	.633	.820

FB FULL BASE THREADED STUD
F/N ARFB





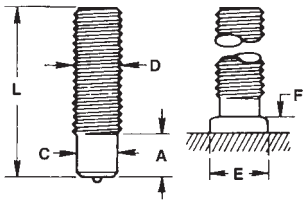


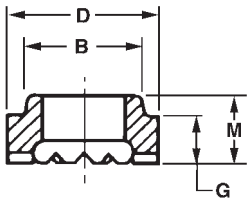
STUD SPECIFICATIONS					
				Fillet Dimension	
D	Min. L.	C	A	E	F
10–24	25/32	3/16	.187	9/32	3/32
1/4–20	25/32	1/4	.187	23/64	7/64
5/16–18	25/32	5/16	.250	7/16	7/64
3/8–16	25/32	3/8	.265	1/2	1/8
7/16–14	25/32	7/16	.281	19/32	9/64
1/2–13	13/16	1/2	.296	11/16	5/32
5/8–11	31/32	5/8	.359	7/8	3/16
3/4–10	1-15/64	3/4	.500	1-1/16	1/4
7/8–9	1-1/2	7/8	.625	1-1/8	5/16
1–8	1-41/64	1	.750	1-3/8	3/8

FERRULE SPECIFICATIONS				
No.	D	B	G	M
ZFF-019	.390	.305	.234	.390
ZFF-025	.455	.380	.234	.390
ZFF-031	.578	.445	.234	.390
ZFF-037	.640	.505	.234	.390
ZFF-043	.703	.585	.234	.422
ZFF-050	.795	.650	.250	.438
ZFF-062	1.030	.785	.328	.516
ZFF-075	1.215	1.030	.469	.656
ZFF-087	1.408	1.210	.545	.732
ZFF-100	1.610	1.406	.633	.820

STUD WELDING

PD PITCH DIAMETER BASE STUD
F/N ARPD

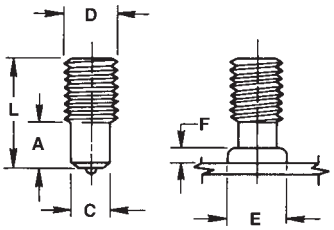


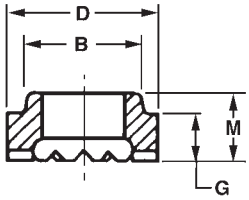


STUD SPECIFICATIONS					
				Fillet Dimension	
D	Min. L.	C	A	E	F
1/4–20	5/8	.215	3/8	5/16	3/32
5/16–18	43/64	.275	3/8	13/32	7/64
3/8–16	27/32	.330	3/8	15/32	7/64
7/16–14	15/16	.387	7/16	17/32	1/8
1/2–13	1-1/32	.448	1/2	19/32	5/32
5/8–11	1-13/64	.562	5/8	3/4	3/16
3/4–10	1-7/16	.680	51/64	59/64	1/4
7/8–9	1-39/64	.798	55/64	1-3/64	5/16
1–8	1-51/64	.915	59/64	1-3/16	11/32

FERRULE SPECIFICATIONS				
No.	D	B	G	M
ZFP-025	.455	.385	.125	.250
ZFP-031	.535	.445	.125	.250
ZFP-037	.590	.505	.139	.264
ZFP-043	.675	.585	.173	.329
ZFP-050	.740	.650	.206	.362
ZFP-062	.910	.785	.277	.433
ZFP-075	1.150	1.030	.339	.526
ZFP-087	1.330	1.210	.406	.593
ZFP-100	1.526	1.406	.474	.661

RB REDUCED BASE STUD
F/N ARRB

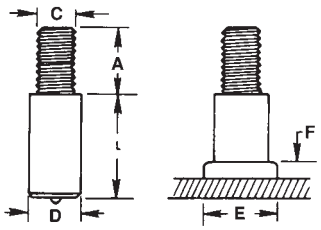


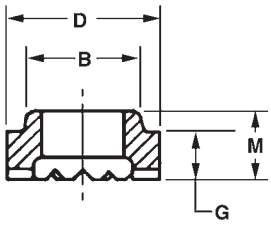


STUD SPECIFICATIONS					
				Fillet Dimension	
D	Min. L.	C	A	E	F
1/4–20	3/4	.187	.187	17/64	1/8
5/16–18	3/4	.272	.187	3/8	1/8
3/8–16	3/4	.312	.375	27/64	1/8
1/2–13	1	.437	.437	9/16	5/32
5/8–11	1-1/4	.500	.547	39/64	11/64
3/4–10	1-1/2	.620	.797	49/64	9/32
7/8–9	1-1/2	.745	.922	29/32	21/64
1–8	1-3/4	.875	1.078	1-1/16	11/32

FERRULE SPECIFICATIONS				
No.	D	B	G	M
ZFM-025	.455	.380	.265	.390
ZFF-031-X	.578	.445	.281	.437
ZFM-037	.590	.505	.125	.250
ZFM-050	.740	.650	.125	.281
ZFM-062	.875	.785	.174	.328
ZFF-062	1.030	.785	.328	.516
ZFF-075	1.215	1.030	.469	.656
ZFF-087	1.408	1.210	.545	.732

SH SHOULDER STUDS
F/N ARSH



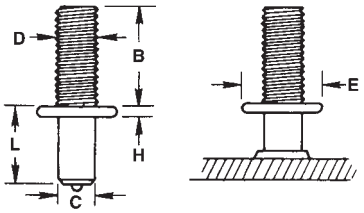


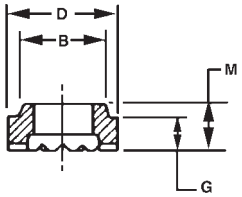
STUD SPECIFICATIONS					
				Fillet Dimension	
D	Min. L.	C	A	E	F
1/4	5/16	8–32	13/32	23/64	7/64
5/16	11/32	10–24	15/32	7/16	7/64
3/8	3/8	1/4–20	5/8	1/2	1/8
7/16	7/16	5/16–18	25/32	19/32	9/64
1/2	1/2	3/8–16	15/16	11/16	5/32
5/8	5/8	1/2–13	1-1/4	7/8	3/16
3/4	5/8	5/8–11	1-9/16	1-1/16	1/4
7/8	3/4	3/4–10	1-7/8	1-7/8	5/16

FERRULE SPECIFICATIONS				
No.	D	B	G	M
ZFF-025	.455	.380	.234	.390
ZFF-031	.578	.445	.234	.390
ZFF-037	.640	.505	.234	.390
ZFF-043	.703	.585	.234	.422
ZFF-050	.795	.650	.250	.438
ZFF-062	1.030	.785	.328	.516
ZFF-075	1.215	1.030	.469	.656
ZFF-087	1.408	1.210	.545	.732

CK COLLAR STUDS

CK3716C3710

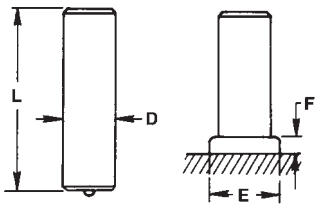


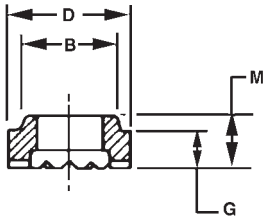


STUD SPECIFICATIONS						FERRULE SPECIFICATIONS				
D	Std. B	Min. L	C	E	H	No.	D	B	G	M
1/4–20	5/8	3/8	.214	1/2	3/32	ZFK-025	.875	.785	.110	.235
5/16–18	5/8	3/8	.273	5/8	3/32	ZFK-031	.875	.785	.095	.235
3/8–16	5/8	3/8	.332	5/8	3/32	ZFK-037	.875	.785	.095	.235
1/2–13	3/4	1/2	.446	3/4	3/32	ZFK-050	1.030	.921	.125	.250

NT NO THREAD STUD

F/N ARNT

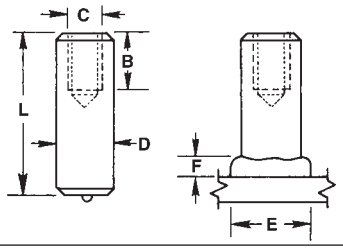


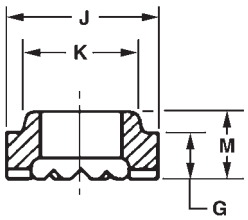


STUD SPECIFICATIONS				FERRULE SPECIFICATIONS				
		Fillet Dimension						
D	Min. L.	E	F	No.	D	B	G	M
3/16	25/32	9/32	3/32	ZFF-019	.390	.305	.234	.390
1/4	25/32	23/64	7/64	ZFF-025	.455	.380	.234	.390
5/16	25/32	7/16	7/64	ZFF-031	.578	.445	.234	.390
3/8	25/32	1/2	1/8	ZFF-037	.640	.505	.234	.390
7/16	25/32	19/32	9/64	ZFF-043	.703	.585	.234	.422
1/2	13/16	11/16	5/32	ZFF-050	.795	.650	.250	.438
5/8	31/32	7/8	3/16	ZFF-062	1.030	.785	.328	.516
3/4	1-15/64	1-1/16	1/4	ZFF-075	1.215	1.030	.469	.656
7/8	1-1/2	1-1/8	5/16	ZFF-087	1.408	1.210	.545	.732
1	1-41/64	1-3/8	3/8	ZFF-100	1.610	1.406	.633	.820

TF TAPPED STUD

F/N ARTF



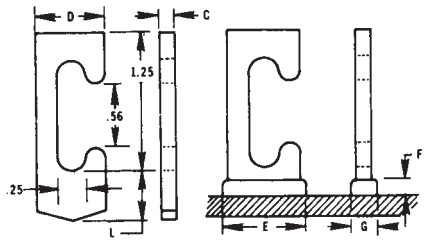


STUD SPECIFICATIONS							
TAP		MINIMUN LENGTH					STUD DIA.
					Fillet Dimension		
C	B	D=1/2 Max.	D= 5/8 to 3/4	D=7/8 Over	E	F	D
8–32	1/4	9/16	5/8	11/16	23/64	7/64	1/4
10–24	9/32	21/32	23/32	25/32	7/16	7/64	5/16
1/4–20	3/8	13/16	7/8	15/16	1/2	1/8	3/8
5/16–18	15/32	29/32	31/32	1-1/32	19/32	9/64	7/16
3/8–16	9/16	1-1/32	1-7/64	1-5/32	11/16	5/32	1/2
7/16–14	21/32		1-9/32	1-11/32	7/8	3/16	5/8
1/2–13	3/4		1-3/8	1-7/16	1-1/16	1/4	3/4
5/8–11	15/16		1-5/8	1-11/16	1-1/8	5/16	7/8
3/4–10	1.125			2	1-3/8	3/8	1

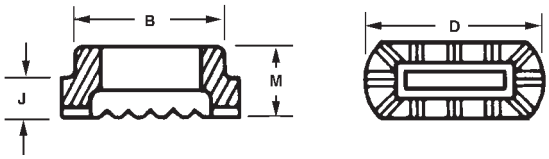
FERRULE SPECIFICATIONS				
No.	J	K	G	M
ZFF-025	.455	.380	.234	.390
ZFF-031	.578	.445	.234	.390
ZFF-037	.640	.505	.234	.390
ZFF-043	.703	.585	.234	.422
ZFF-050	.795	.650	.250	.438
ZFF-062	1.030	.785	.328	.516
ZFF-075	1.215	1.030	.469	.656
ZFF-087	1.408	1.210	.545	.732
ZFF-100	1.610	1.406	.633	.820

STUD WELDING

1/8 x 5/8 R6P RECTANGULAR STUD
R6-126216

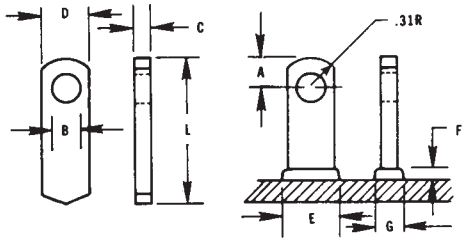


STUD SPECIFICATIONS					
			Fillet Dimension		
D	Min. L	C	E	F	G
5/8	5/16	1/8	11/16	5/32	7/32

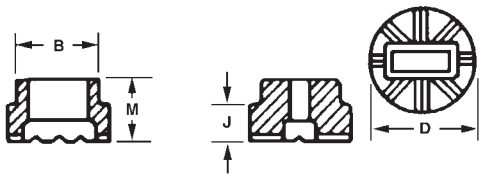


FERRULE SPECIFICATIONS				
No.	B	D	J	M
ZFR-CC	.916	1.093	.234	.436

1/8 x 3/8 R7 RECTANGULAR STUD
R7-123716

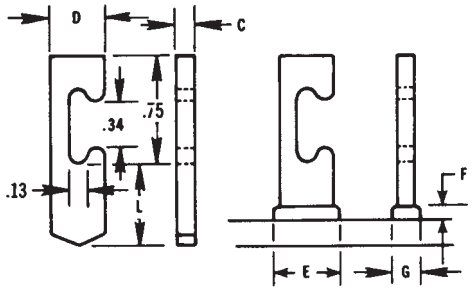


STUD SPECIFICATIONS							
					Fillet Dimension		
D	Min. L	C	B	A	E	F	G
3/8	57/64	1/8	13/64	5/16	7/16	3/32	7/32

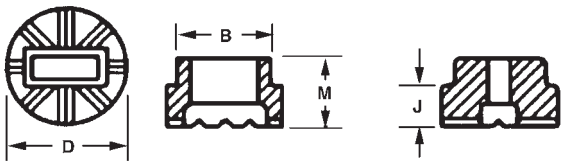


FERRULE SPECIFICATIONS				
No.	B	D	J	M
ZFR-CB	.515	.640	.125	.390

1/8 x 3/8 R6P RECTANGULAR STUD
R6-123718

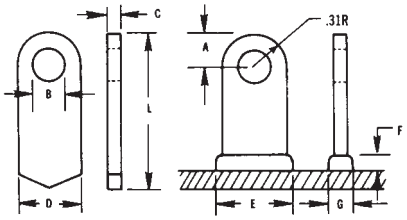


STUD SPECIFICATIONS					
			Fillet Dimension		
D	Min. L	C	E	F	G
3/8	1/4	1/8	7/16	3/32	7/32

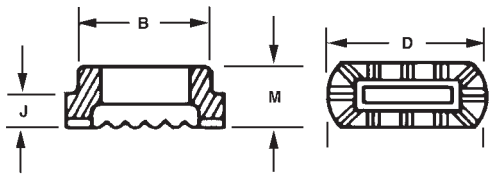


FERRULE SPECIFICATIONS				
No.	B	D	J	M
ZFR-CB	.505	.640	.234	.390

1/8 x 5/8 R7 RECTANGULAR STUD

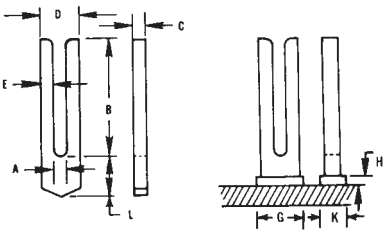


STUD SPECIFICATIONS							
					Fillet Dimension		
D	Min. L	C	B	A	E	F	G
5/8	1	1/8	5/16	5/16	11/16	5/32	7/32

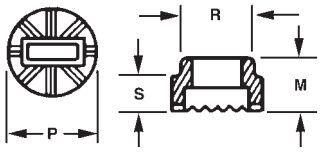


FERRULE SPECIFICATIONS				
No.	B	D	J	M
ZFR-CC	.916	1.093	.234	.436

1/8 x 3/8 R2 RECTANGULAR SPLIT STUD F/N R2

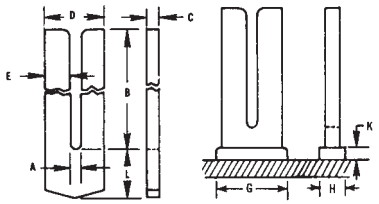


STUD SPECIFICATIONS								
						Fillet Dimension		
D	Min. L	C	A	B	E	G	H	K
3/8	1/4	1/8	1/8	1-1/4	1/8	7/16	3/32	7/32

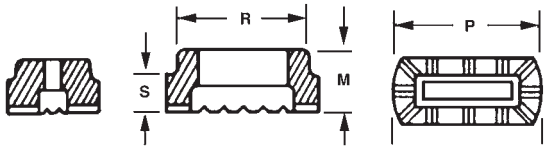


FERRULE SPECIFICATIONS				
No.	P	S	M	R
ZFR-CB	.640	.234	.390	.505

1/8 x 5/8 R7 RECTANGULAR SPLIT STUD F/N R7

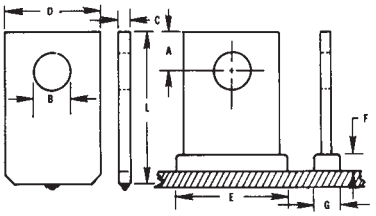


STUD SPECIFICATIONS								
						Fillet Dimension		
D	Min. L	C	A	B	E	G	H	K
5/8	5/16	1/8	1/8	2	1/4	11/16	7/32	5/32

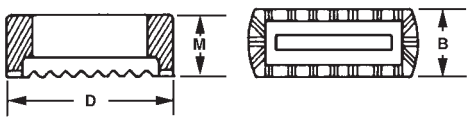


FERRULE SPECIFICATIONS				
No.	P	R	S	M
ZFR-CC	1.093	.916	.234	.436

1/4 x 1-1/4 R7 RECTANGULAR STUD F/N R2

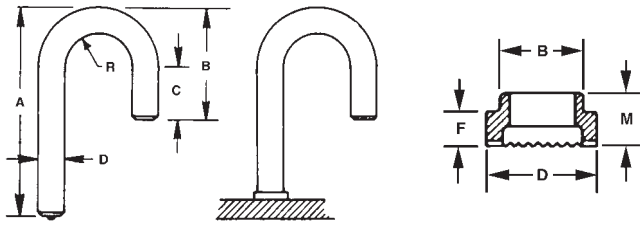


STUD SPECIFICATIONS							
					Fillet Dimension		
D	Min. L	C	B	A	E	F	G
1-1/4	1-1/4	1/4	7/16	1/2	1-15/32	7/32	15/32



FERRULE SPECIFICATIONS			
No.	B	D	M
ZFR-EF	.762	1.812	.672

J2 "J" BOLT STUD F/N J2

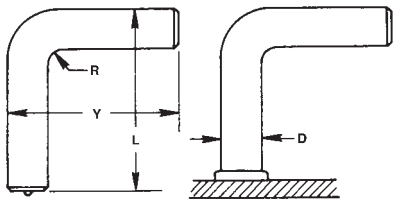


STUD SPECIFICATIONS				
D	Min. A	Min. B	Min. R	Min. C
3/16	1-1/16	15/16	1/4	1/2
1/4	1-3/16	1-1/16	5/16	1/2
5/16	1-7/16	1-3/16	3/8	1/2
3/8	1-9/16	1-5/16	7/16	1/2
7/16	1-3/4	1-7/16	1/2	1/2
1/2	1-15/16	1-1/2	1/2	1/2
5/8	2-7/16	1-7/8	3/4	1/2

FERRULE SPECIFICATIONS				
No.	B	D	M	F
ZFF-019	.305	.390	.390	.234
ZFF-025	.380	.455	.390	.234
ZFF-031	.445	.578	.390	.234
ZFF-037	.505	.640	.390	.234
ZFF-043	.585	.703	.422	.234
ZFF-050	.650	.795	.438	.250
ZFF-062	.785	1.030	.516	.328

STUD WELDING

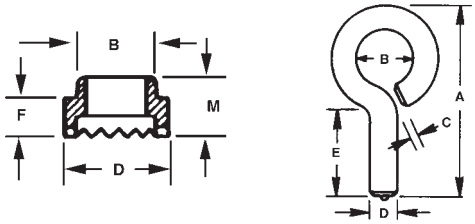
BF BENT STUD



STUD SPECIFICATIONS			
D	Min. L	Min. Y	Min. R
1/4	1-1/8	1-5/16	.125
5/16	1-1/4	1-1/2	.218
3/8	1-1/2	1-17/32	.218
7/16	1-5/8	1-5/8	.250
1/2	1-3/4	1-11/16	.250
5/8	1-7/8	2	.312
3/4	2-3/4	2-13/16	.500

FERRULE SPECIFICATIONS				
No.	B	D	M	F
ZFF-025	.380	.455	.390	.234
ZFF-031	.445	.578	.390	.234
ZFF-037	.505	.640	.390	.234
ZFF-043	.585	.703	.422	.234
ZFF-050	.650	.795	.438	.250
ZFF-062	.785	1.030	.516	.328
ZFF-075	1.030	1.215	.656	.469

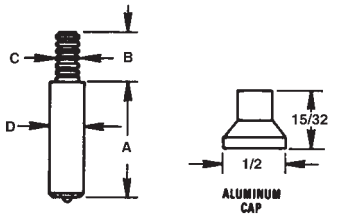
EB EYE BOLT STUDS



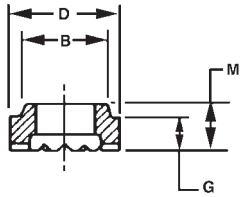
STUD SPECIFICATIONS				
D	Min. A	Min. B	Min. E	Min. C
3/16	1-7/8	3/4	3/4	3/16
1/4	1-3/4	1/2	3/4	1/4
5/16	1-13/16	7/16	3/4	5/16
3/8	2-9/16	7/8	15/16	3/8
7/16	3	1	1-1/8	7/16
1/2	3-9/16	1-1/4	1-5/16	1/2

FERRULE SPECIFICATIONS				
No.	B	D	M	F
ZFF-019	.305	.390	.390	.234
ZFF-025	.380	.455	.390	.234
ZFF-031	.445	.578	.390	.234
ZFF-037	.505	.640	.390	.234
ZFF-043	.585	.703	.422	.234
ZFF-050	.650	.795	.438	.250

AR ANNULAR RING SHOULDER STUD

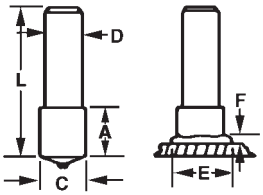


STUD SPECIFICATIONS			
D	Min. A	C	Std. B
5/16	11/16	3/16	3/8

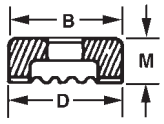


FERRULE SPECIFICATIONS				
No.	D	G	M	B
ZFF-031	.578	.234	.390	.445

NH ALUMINUM STUD

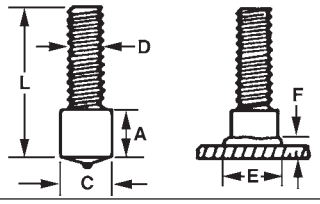


STUD SPECIFICATIONS					
				Fillet Dimension	
D	C	A	Min. L	E	F
1/8	.250	5/16	15/16	.406	1/8
3/16	.312	11/32	15/16	.468	5/32
1/4	.375	25/64	15/16	.603	3/16
5/16	.437	15/32	15/16	.656	7/32
3/8	.500	1/2	15/16	.750	1/4

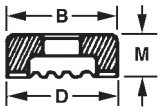


FERRULE SPECIFICATIONS			
No.	B	D	M
ZAF-025	.750	.750	.250
ZAF-031	.750	.750	.250
ZAF-037	1.000	1.000	.375
ZAF-042	1.000	1.000	.375
ZAF-050	1.000	1.000	.375

HH ALUMINUM THREADED STUDS

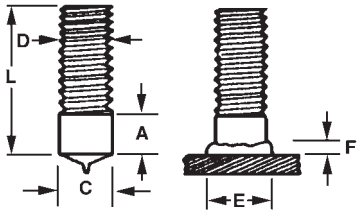


STUD SPECIFICATIONS					
				Fillet Dimension	
D	C	A	Min. L	E	F
10–24	.250	5/16	15/16	.406	1/8
1/4–20	.312	11/32	15/16	.468	5/32
5/16–18	.375	25/64	15/16	.603	3/16
3/8–16	.437	15/32	15/16	.656	7/32
7/16–14	.500	1/2	15/16	.750	1/4

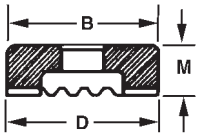


FERRULE SPECIFICATIONS			
No.	B	D	M
ZAF-019	.750	.750	.250
ZAF-025	.750	.750	.250
ZAF-031	1.000	1.000	.375
ZAF-037	1.000	1.000	.375
ZAF-043	1.000	1.000	.375

LA ALUMINUM FULL BASE THREADED STUD

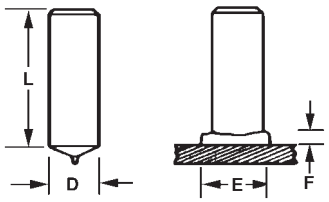


STUD SPECIFICATIONS					
				Fillet Dimension	
D	Min. L	C	Min. A	E	F
10–24	.812	3/16	.312	.330	.125
1/4–20	.937	1/4	.312	.406	.125
5/16–18	.937	5/16	.343	.468	.156
3/8–16	.937	3/8	.390	.603	.187
7/16–14	.937	7/16	.468	.656	.218
1/2–13	.937	1/2	.515	.750	.250

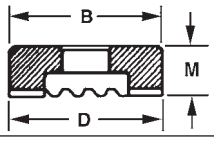


FERRULE SPECIFICATIONS			
No.	B	D	M
ZAF-019	.750	.750	.250
ZAF-025	.750	.750	.250
ZAF-031	.750	.750	.250
ZAF-037	1.000	1.000	.375
ZAF-043	1.000	1.000	.375
ZAF-050	1.000	1.000	.375

NA ALUMINUM NO THREAD STUD



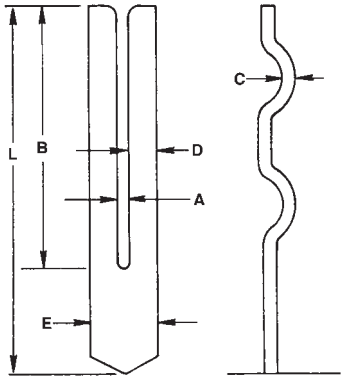
STUD SPECIFICATIONS			
		Fillet Dimension	
D	Min. L	E	F
3/16	.812	.330	.125
1/4	.937	.406	.125
5/16	.937	.468	.156
3/8	.937	.603	.187
7/16	.937	.656	.218
1/2	.937	.750	.250



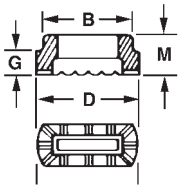
FERRULE SPECIFICATIONS			
No.	B	D	M
ZAF-019	.750	.750	.250
ZAF-025	.750	.750	.250
ZAF-031	.750	.750	.250
ZAF-037	1.000	1.000	.375
ZAF-043	1.000	1.000	.375
ZAF-050	1.000	1.000	.375

STUD WELDING

R3 RECTANGULAR TWO TINE STUD WITH LOOPS

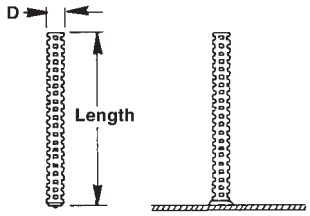


STUD SPECIFICATIONS						
D	C	A	E	Lengths	B	No. Loops
				2-1/8 thru 3	1-5/8	1
.250	.125	.125	.625	3-1/8 thru 4	2-5/8	2
				4-1/8 thru 13-1/8	3-5/8	3



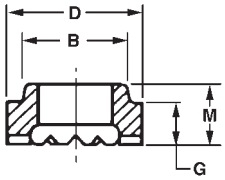
FERRULE SPECIFICATIONS				
No.	B	D	G	M
ZFR-CC	.916	1.093	.234	.436

DBA DEFORMED ANCHOR



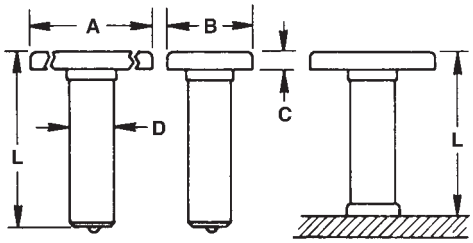
STUD SPECIFICATIONS			
Description	Weight Per 1000	Pieces Per Standard Box	D
1/4 x 6-1/8	88	CALL FOR INFORMATION	1/4
1/4 x 12-1/8	175		
3/8 x 10-1/8	288		3/8
3/8 x 12-1/8	344		
3/8 x 18-1/8	515		
3/8 x 24-1/8	685		
1/2 x 12-1/8	680		1/2
1/2 x 18-1/8	972		
1/2 x 24-1/8	1292		
5/8 x 18-3/16	1633		5/8
5/8 x 24-3/16	2136		
5/8 x 30-3/16	2666		
5/8 x 36-1/16	3196		

3/4" Diameter Also Available

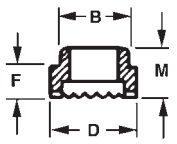


FERRULE SPECIFICATIONS				
No.	B	D	G	M
ZFF-025	.380	.455	.234	.390
ZFF-037	.505	.640	.234	.390
ZFF-050	.650	.795	.250	.438
ZFF-062	.785	1.030	.328	.516

WP STUD WELDED TO PLATE

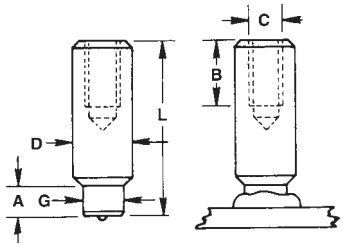


STUD SPECIFICATIONS				
D	Min. L	A	B	C
3/8	1-1/8	2-1/2 or 3	7/8	1/4
1/2	1-1/8	2-1/2 or 3	7/8	1/4

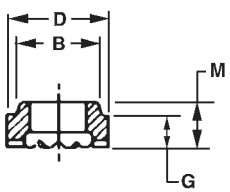


FERRULE SPECIFICATIONS				
No.	B	D	M	F
ZFF-037	.505	.640	.390	.234
ZFF-050	.650	.795	.438	.250

ARTF TAPPED REDUCED BASE STUD

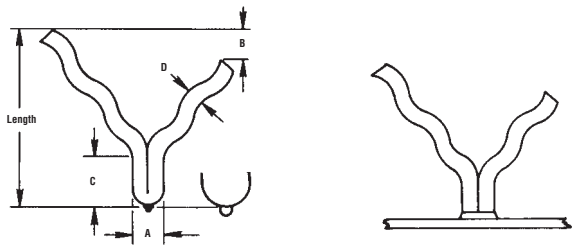


STUD SPECIFICATIONS					
				Tap	
D	G	A	Min. L	C	B
1/2	.375	.437	2	3/8–16	9/16
5/8	.437	.500	2	1/2–13	3/4
3/4	.500	.687	2	5/8–11	15/16
7/8	.500	.687	2-1/2	3/4–10	1-1/8

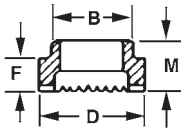


FERRULE SPECIFICATIONS				
No.	D	B	G	M
ZFM-043	.675	.585	.125	.250
ZFM-050	.740	.650	.125	.281
ZFM-062	.875	.785	.174	.328
ZFB-050	1.030	.921	.125	.312

ARS4 "Y" REFRACTORY ANCHOR
F/N ARS4

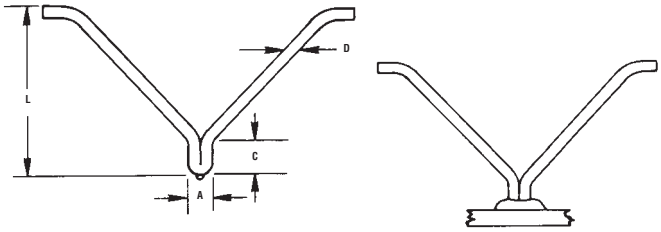


STUD SPECIFICATIONS				
D	Max. A	B	C	Min. L
.250	.562	.500	.750	2

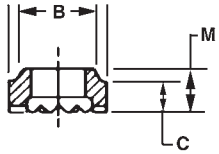


FERRULE SPECIFICATIONS				
No.	D	B	F	M
ZFY-025	1.030	.785	.218	.468

ARST STEER HORN REFRACTORY ANCHOR
F/N ARST

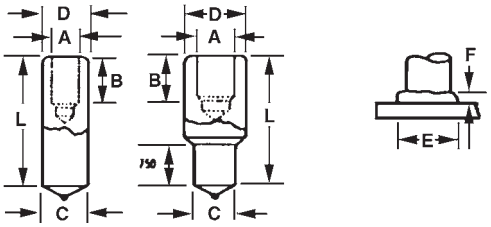


STUD SPECIFICATIONS			
D	A	C	Min. L
.187	.515	.625	1-1/8

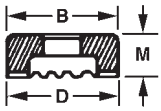


FERRULE SPECIFICATIONS				
No.	D	B	G	M
ZFE-018	1.030	.785	.171	.359

ARTF ALUMINUM TAPPED STUD
F/N ARTF

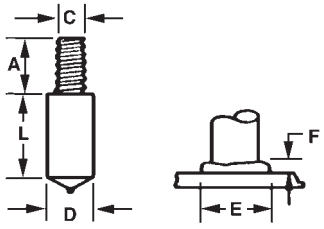


STUD SPECIFICATIONS						
					Fillet Dimension	
D	C	A	Max. B	Min. L.	E	F
1/2	1/2	10–24	9/32	.937	.750	.250
1/2	1/2	1/4–20	3/8	1.062	.750	.250
1/2	1/2	5/16–18	15/32	1.187	.750	.250
3/4	1/2	3/8–16	9/16	1.875	.750	.250
3/4	1/2	7/16–14	21/32	2.000	.750	.250

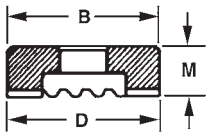


FERRULE SPECIFICATIONS			
No.	B	D	M
ZAF-050	1.000	1.000	.375
ZAF-050	1.000	1.000	.375
ZAF-050	1.000	1.000	.375
ZAF-050	1.000	1.000	.375
ZAF-050	1.000	1.000	.375

ARSH ALUMINUM SHOULDER STUD
F/N ARSH



STUD SPECIFICATIONS					
				Fillet Dimension	
D	C	Max. A	Min. L.	E	F
7/16	10–24	15/32	.750	.656	.218
7/16	1/4–20	5/8	.750	.656	.218
7/16	5/16–18	25/32	.750	.656	.218
1/2	3/8–16	15/16	.750	.750	.250



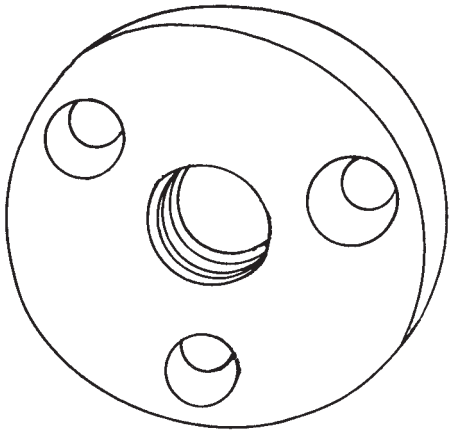
FERRULE SPECIFICATIONS			
No.	B	D	M
ZAF-043	1.000	1.000	.375
ZAF-043	1.000	1.000	.375
ZAF-043	1.000	1.000	.375
ZAF-050	1.000	1.000	.375

Spanner Nuts

⅜-16 x 1⅛ Rd x ³⁄₁₆ thick

In Stock
Call For Sample
"Ask For Stud Division"

50SPN
50SPNSS
37SPN
37SPNSS
37SPNZ

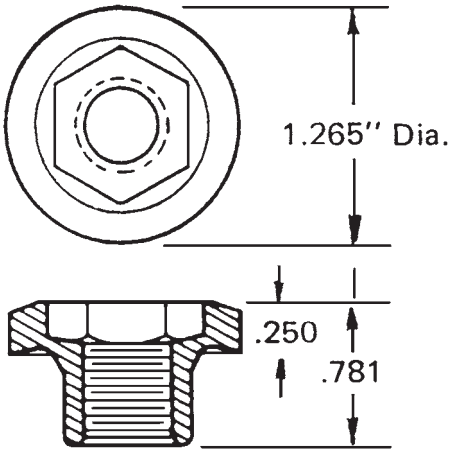


Mild Steel or Stainless

Stud Accessories

Deck Nuts,

1/2–13



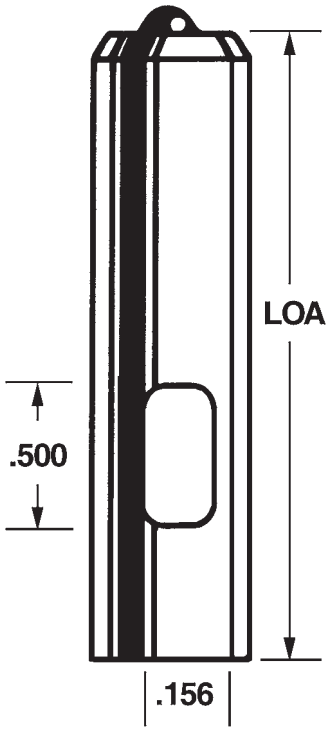
DECKNUT
5ØDN
5ØDNHEX

Lagging Studs 3/8" Dia.

1-1/2" LOA Stock, Carbon Steel

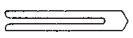
Large
or
Small
Quantities

Always Low Prices



F/N LAGG

Refractory and Insulation Anchor Guide

MSM-1  Surelok, RWP, AR-736, RA-6, S1 with wriggled legs.

MSM-11  RA-11, Positgrip, AR-741, S-11.

MSM-13  R6P, RPT, RA-18, AS-263, RTS, Rectangular G Slotted Pin, T Slotted Pin.

MSM-16  P-2, P2P, AS-265, PPN, DPF, Double Pointed Pin; Washer not included.

MSM-23  YSP, S4X, S-4, RA-7, AR-805-F, S-23.

MSM-30 RA-1, Kao-Lok, AS-267, Insultwist, Fiberlock, S-30, RT; Washer not included.

MSM-31  D Arc Stud, PDB Arc Stud, CPL Arc Stud.

MSM-32  FT Arc Stud, PD Arc Stud, CFL Arc Stud, AS-352.

MSM-34  TA-3; no ferrules needed; patent held by ISC.

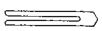
MSM-36  Bent Stud, BF, LCA, B-4, B4L, BCA.

MSM-37  Rectangular Welding Pin, RP.

MSM-38  Korr Pin, KPG, SL, Set Lok, AR, Annular Groove Shoulder Stud Annular Ring Shoulder Stud; Comes with or without Caps.

MSM-41  Ball Stud; Welded with Automatic Equipment.

MSM-42  Three Tine Rectangular Pin, RWP, R3P.

MSM-50  Two Tine Stud R2P, R-2, RPS.

MSM-51  W3L, WP, TP Welding Pin, Welded Plate T Pin.

MSM-52  S4P, Split Pin Stud, SP.

MSM-53  VXCD; Two Part Component.

MSM-55  Concave Stud; Welded with Automatic Equipment

MSM-150  Bow Tie.

MSM-67  Straight Boiler Tube Pin, BTP, SWP, NBL; Welded with Automatic Equipment.

MSM-68 Power Base Pins, Power Point Insulpins; Welded with Capacitor Discharge Equipment.

MSM-70  Cupped Head Pins, C3P, Cuphead Pin; Welded with Capacitor Discharge Equipment.

MSM-71  R7P, RPP, R-7.

MSM-72  R7L.

MSM-73  R4L.

MSM-75  J Bolt, J2F, J-2, FBJ, J Welding Pin.

MSM-79  Flanged Collar Stud, F3F, CK.

MSM-87  RTH.

MSM-88  Knock-off Stud, KO, NBL.

MSM-90  Steerhorn, Bullhorn, Y, S7X, St.

MSM-92  CD Pins; Welded with Capacitor Discharge Equipment.

MSM-93  CD Stud; Welded with Capacitor Discharge Equipment.

MSM-2  RA-10, VS, SS AR-740, S-2, NHW-4.

MSM-3  RA-8, AR-738, S-3.

MSM-4  RA-5, AR-735, S-4.

MSM-5  RA-2, AR-732, S-5.

MSM-6  RA-3, AR-733.

MSM-7  RA-4, AR-734, S-7, NHW-1.

MSM-8  AR-737, Y Anchor, S-8.

MSM-9  RA-9, AR-739, S-9.

MSM-10  RA-13, AR-731, S-10, NHW-3.

MSM-12  RA-12, AR-744, S-12.

MSM-24  RA-17, S-24.

MSM-59  AR-745.

MSM-95  Grid Anchor.

MSM-15  Soaking Pit Anchor, AS-269, AS-268, S-15, S-14.

MSM-17  AS-270, S-17, MS; for use with Brick Refractory.

MSM-18  AS-271, MH, KAC; for use with Brick Refractory.

MSM-21  RA-15, AR-803-TB, S-21; used in conjunction with Bolt or Stud.

MSM-22  RA-16, AR-804-TB, S-22, used in conjunction with Bolt or Stud.

MSM-25  RA-19, AR-611, S-25.

MSM-26  RA-20, AR-612, S-26.

MSM-28  AR-614, S-28.

MSM-29  RA-22, AB-615, S-29.

MSM-33 S-33, AS-353, Double Ended Stud; comes with special nut.

MSM-35  APG-33; used in conjunction with MSM-49.

MSM-43  APG-19, for use with Brick Refractory.

MSM-45  XL Clip; for use with Brick Refractory.

MSM-49  AC Clip; used in conjunction with MSM-35.

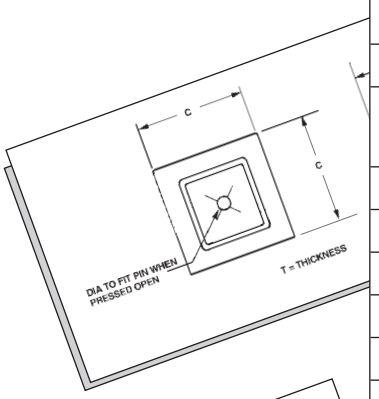
MSM-61  AR-802-TB; used in conjunction with Stud or Bolt.

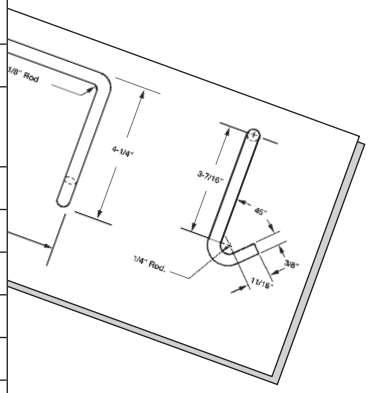
MSM-63  AS-262.

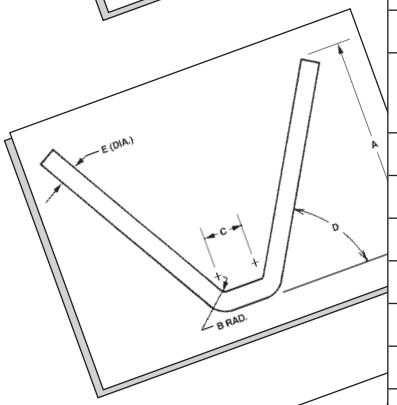
MSM-65  AS-273, for use with Brick Refractory.

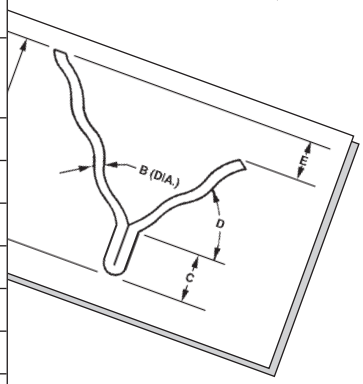
MSM-91  Brick Hanger.

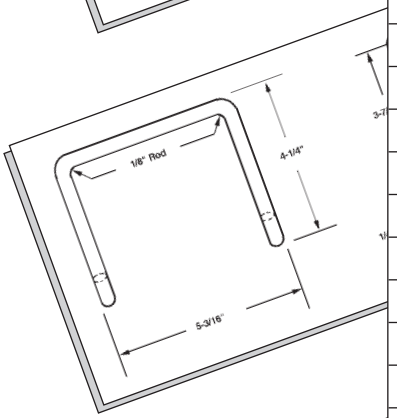
REFRACTORY AND INSULATION ANCHORS
CROSS REFERENCE GUIDE

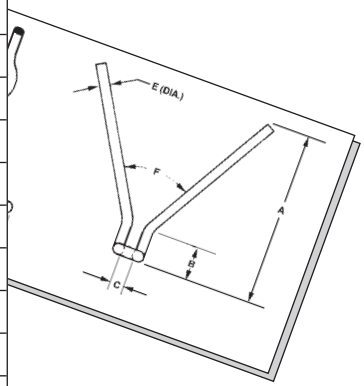


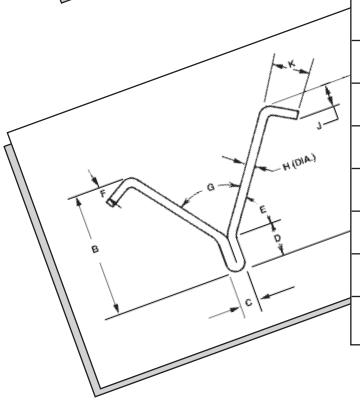


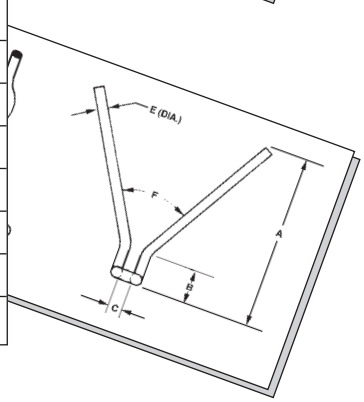








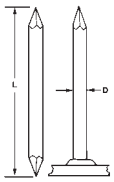


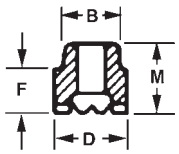


REFRACTORY AND INSULATION ANCHORS CROSS REFERENCE	
MSM-1	ANC-CO AR-736
MSM-2	ANC-CO AR-740 A.P. Green VS Series 40, 50, 60, 70, 80
MSM-3	ANC-CO AR 738
MSM-4	ANC-CO AR-735
MSM-5	ANC-CO AR-732
MSM-6	ANC-CO AR-733 (also called “L” Jagger)
MSM-7	ANC-CO AR-734
MSM-8	ANC-CO AR-737
MSM-9	ANC-CO AR-739 A.P. Green VS Series 20, 25, 30, 35
MSM-10	ANC-CO AR-731
MSM-11	ANC-CO AR-741
MSM-12	ANC-CO AR-744
MSM-13	ANC-CO AS-263
MSM-15	ANC-CO AS-269
MSM-16	ANC-CO AS-265
MSM-17	ANC-CO AS-270
MSM-18	ANC-CO AS-271
MSM-19	ANC-CO AS-272
MSM-20	ANC-CO AR-801-TB
MSM-21	ANC-CO AR-803-TB
MSM-22	ANC-CO AR-804-TB
MSM-23	ANC-CO AR-805-F
MSM-24	ANC-CO AR-746
MSM-25	ANC-CO AB-611
MSM-26	ANC-CO AB-612
MSM-27	ANC-CO AB-613
MSM-28	AMC-CP AB-614
MSM-29	ANC-CO AB-615
MSM-30	ANC-CO AS-267
MSM-31	ANC-CO AS-351
MSM-32	ANC-CO AS-352
MSM-33	ANC-CO AS-353

STUD WELDING

P2 INSULATION STUD
F/N CDDP





STUD SPECIFICATIONS	
D	Min. L
.134 (10 gauge)	3/4

FERRULE SPECIFICATIONS				
No.	B	D	M	F
ZFF-019	.305	.390	.390	.234

INSULATION HANGERS

SELF-STICK INSULATION HANGERS F/N IHSA

PLATE	SPINDLE	SPEED CLIPS	LENGTHS	TEMPERATURE RANGE
2" x 2" galvanized mild steel	12 gauge (.106" dia.)	Different sizes & types available.	1", 1-5/8", 2", 2-1/2", 3-1/2", 4-1/2", 5-1/2", 6-1/2", 8".	Best results are obtained when ambient temperature is above 40° at time of application. Foam tape range from –20° to +180°F. Do not use when foam is directly exposed to sunlight.

SPINDLE INSULATION HANGER F/N IHPB

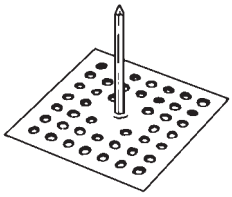
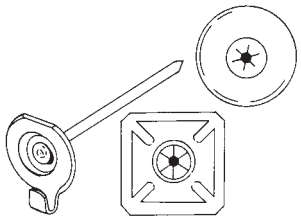


PLATE	SPINDLE	SPEED CLIPS	LENGTHS
Perforated, cold-rolled carbon steel, .030 thick 2" x 2".	12 gauge (.106" dia.), annealed	Different sizes & types available.	1", 1-5/8", 2" 2-1/2", 3-1/2" 4-1/2", 5-1/2" 6-1/2", 8"

INSULATION LACING ANCHOR F/N IHLA

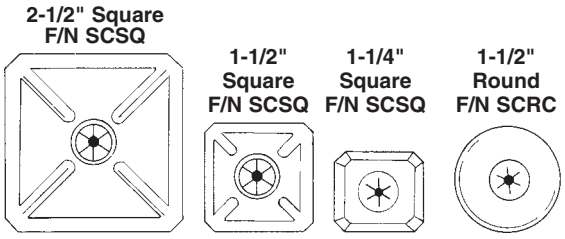
Cadmium Plated Steel		Stainless Steel	
Length	Weight/M	Length	Weight/M
2-1/2	19 lbs.	2-1/2	19 lbs.
4-1/2	24 lbs.	4-1/2	24 lbs.

MATERIAL	SPINDLE	SPEED CLIPS	LENGTHS
Zinc plated steel & stainless steel	12 gauge (.106" diameter)	Different sizes & types available.	2-1/2 and 4-1/2



Special configuration pin designed for resistance welding, is used with duro-dyne welding systems.

INSULATION SPEED CLIPS

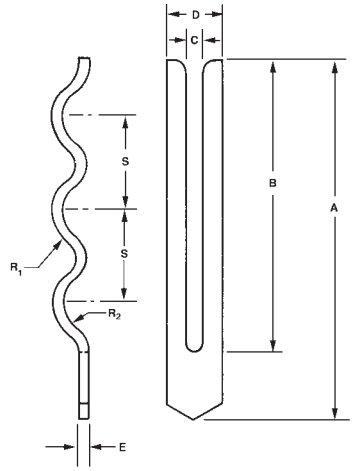


INSULATION SPEED CLIPS				
SPEED CLIP	2-1/2" SQUARE	1-1/2" SQUARE	1-1/4" SQUARE	1-1/2" ROUND
SIZE / INCHES	2-1/2" x 2-1/2"	1-1/2" x 1-1/2"	1-1/4" x 1-1/8"	1-1/2" DIAMETER
MATERIAL THICKNESS	.018	.015	.015	.015
MATERIAL FINISH/PLATING	GALV.	GALV.	GALV.	GALV.
EDGES / FLAT OR BEVEL	BEVEL	BEVEL	BEVEL	FLAT
OTHER MATERIALS AVAIL.	ALUM., SS	ALUM., SS	ALUM., SS	ALUM., SS
PACKED PER CARTON	1,000	3,000	1,000, 5,000	1,000, 5,000
SHIPPING WEIGHT / 1,000	35 lbs.	12-1/2 lbs.	6 lbs.	8 lbs.

Speed Clips for use with weld pins, insulation and lacing anchors. Multi-lanced hole design provides superior self-locking feature. All standard hole sizes available. Speed Clips meet GSA, military specifications and other federal specifications. All self-locking speed clips are made from tempered carbon steel and plated under closely controlled conditions for maximum corrosion resistance. Special hole sizes and materials available upon request.

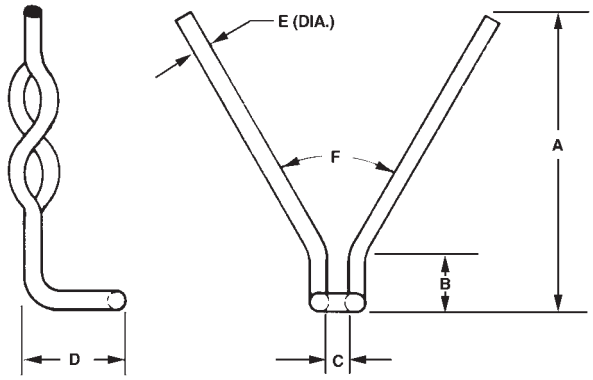
REFRACTORY AND INSULATION ANCHORS

MSM-1



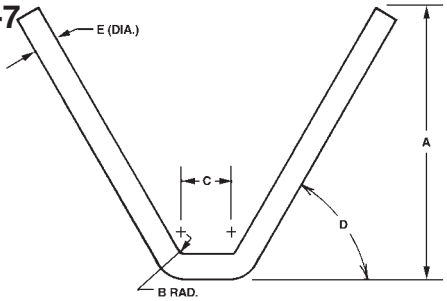
No.	A	B	C	D	E	R1	R2	S
-1	4-1/8	3-1/4	5/32	5/8	1/8	3/16	9/32	1-1/32
-2	6-1/8	3-1/4	5/32	5/8	1/8	3/16	9/32	1-1/32
-3	7-1/8	3-1/4	5/32	5/8	1/8	3/16	9/32	1-1/32
-4	5-1/2	4-5/8	5/32	5/8	1/8	3/16	9/32	1-1/32
-5	7-1/2	4-5/8	5/32	5/8	1/8	3/16	9/32	1-1/32
-6	8-1/2	4-5/8	5/32	5/8	1/8	3/16	9/32	1-1/32
-7	6-7/8	6	5/32	5/8	1/8	3/16	9/32	1-1/32
-8	8-7/8	6	5/32	5/8	1/8	3/16	9/32	1-1/32
-9	9-7/8	6	5/32	5/8	1/8	3/16	9/32	1-1/32

MSM-2



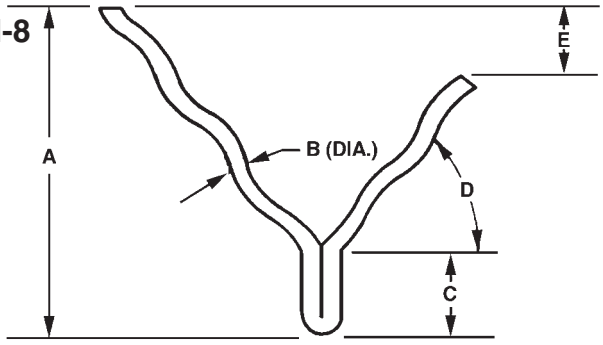
No.	A	B	C	D	E	F
-1	5-1/8	1	.406	1-1/4	1/4	60°
-2	7-1/8	3-1/8	.406	1-1/4	1/4	60°
-3	4-1/4	3/4	.406	1-1/4	5/16	60°
-4	5	1	.406	1-1/4	5/16	60°
-5	6	2	.406	1-1/4	5/16	60°
-6	6	1	.406	1-1/4	5/16	60°
-7	7	3	.406	1-1/4	5/16	60°
-8	8	3	.406	1-1/4	5/16	60°
-9	8	4	.406	1-1/4	5/16	60°
-10	9	4	.406	1-1/4	5/16	60°
-11	10	5	.406	1-1/4	5/16	60°
-12	10	6	.406	1-1/4	5/16	60°
-13	11	6	.406	1-1/4	5/16	60°
-14	12	7	.406	1-1/4	5/16	60°

MSM-7



No.	A	B	C	D	E
-1	2	3/4	3/4	60°	1/8
-2	3	3/4	3/4	60°	1/8
-3	6-1/2	3/4	3/4	60°	1/8
-4	1-1/2	3/4	3/4	60°	3/16
-5	2	3/4	3/4	60°	3/16
-6	2-1/4	3/4	3/4	60°	3/16
-7	2-3/4	3/4	3/4	60°	3/16
-8	3-3/4	3/4	3/4	60°	3/16
-9	4-1/2	3/4	3/4	60°	3/16
-10	5-1/2	3/4	3/4	60°	3/16
-11	6-1/2	3/4	3/4	60°	3/16
-12	1-1/2	3/4	3/4	60°	1/4
-13	2-1/4	3/4	3/4	60°	1/4
-14	2-3/4	3/4	3/4	60°	1/4
-15	3-3/4	3/4	3/4	60°	1/4
-16	4-1/2	3/4	3/4	60°	1/4
-17	5-1/2	3/4	3/4	60°	1/4
-18	6-1/2	3/4	3/4	60°	1/4

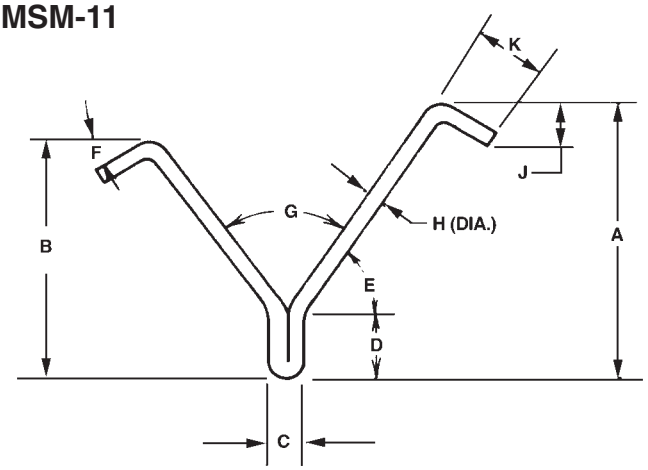
MSM-8



No.	A	B	C	D	E
-1	2	1/4	3/4	50°	1/2
-2	2-5/8	1/4	3/4	50°	1/2
-3	3-1/8	1/4	3/5	50°	1/2
-4	3-5/8	1/4	3/4	50°	1/2
-5	4-1/8	1/4	3/4	50°	1/2
-6	5	1/4	3/4	50°	1/2
-7	5-1/8	1/4	3/4	50°	1/2
-8	7-1/8	1/4	3/4	50°	1/2
-9	2-5/8	1/4	3/4	50°	1/2
-10	3-1/8	1/4	3/4	50°	1/2
-11	3-5/8	1/4	3/4	50°	1/2
-12	4-1/8	1/4	3/4	50°	1/2
-13	4-5/8	1/4	3/4	50°	1/2
-14	5-1/8	1/4	3/4	50°	1/2
-15	7-1/8	1/4	3/4	50°	1/2

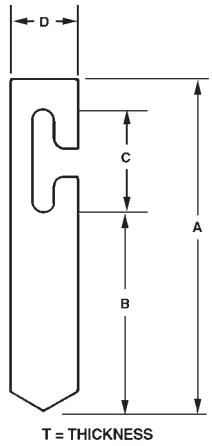
REFRACTORY AND INSULATION ANCHORS

MSM-11



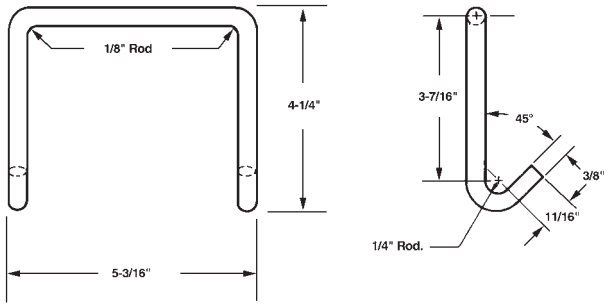
No.	A	B	C	D	E	F	G	H	J	K
-1	1-5/8	1-3/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-2	2-1/8	1-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-3	2-5/8	2-3/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-4	3-1/8	2-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-5	3-5/8	3-3/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-6	4-1/8	3-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-7	4-5/8	4-3/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-8	5-1/8	4-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-9	7-1/8	6-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-10	9-1/8	8-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16

MSM-13



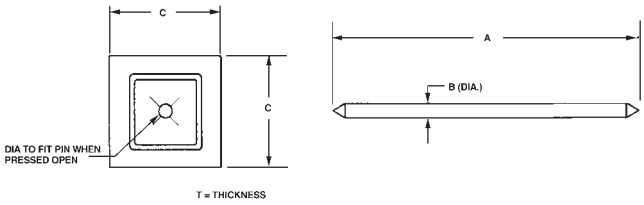
No.	A	B	C	D	E
-1	1-7/8	5/8	1	5/8	1/8
-2	2-1/8	7/8	1	5/8	1/8
-3	2-5/8	1-3/8	1	5/8	1/8
-4	3-1/8	1-7/8	1	5/8	1/8
-5	1-3/8	5/8	1/2	3/8	1/8
-6	1-5/8	7/8	1/2	3/8	1/8
-7	2-1/8	1-3/8	1/2	3/8	1/8

MSM-15



No.	Type Material	Temp. Use Limit (F°)	Color Code	Special Conditions
RH-304	304 S.S.	1500°	Green	
RH-316	316 S.S.	1500°	Red	Sulfur Atmos.
RH-CS	C.S.	900°		

MSM-16

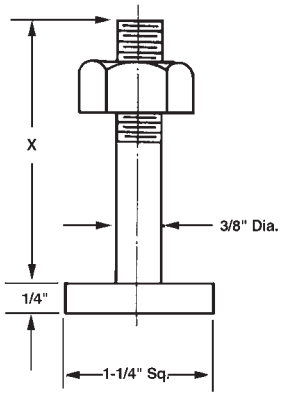


No.	A	B	C	T
-1	2-1/8	1/8	1-1/2	20 GA.
-2	4-1/8	1/8	1-1/2	20 GA.
-3	2-1/8	3/16	1-1/2	20 GA.
-4	4-1/8	3/16	1-1/2	20 GA.
-5	2-1/8	1/4	2	20 GA.
-6	4-1/8	1/4	2	20 GA.

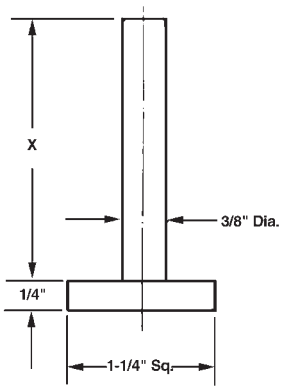
REFRACTORY AND INSULATION ANCHORS

MSM-17

No.	X	No.	X	No.	X
1	2	12	4-3/4	23	7-1/2
2	2-1/4	13	5	24	7-3/4
3	2-1/2	14	5-1/4	25	8
4	2-3/4	15	5-1/2	26	8-1/4
5	3	16	5-3/4	27	8-1/2
6	3-1/4	17	6	28	8-3/4
7	3-1/2	18	6-1/4	29	9
8	3-3/4	19	6-1/2	30	9-1/4
9	4	20	6-3/4	31	9-1/2
10	4-1/4	21	7	32	9-3/4
11	4-1/2	22	7-1/4	33	10



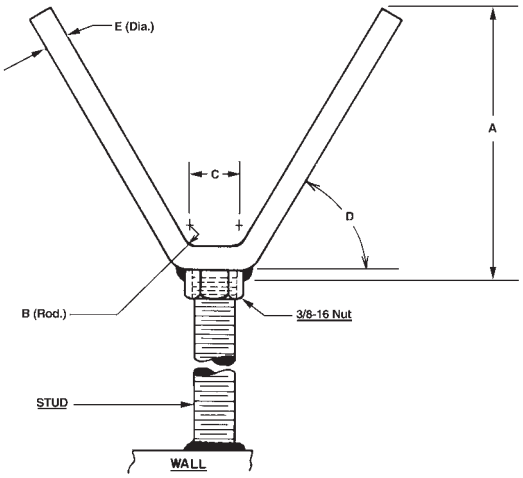
TB Anchor (Through Type)
(Carbon Steel Nut Included)



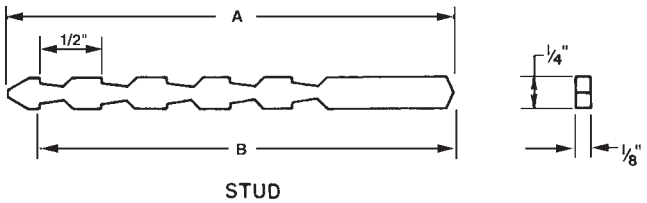
WB Anchor (Welded by
Conventional Means)

MSM-21

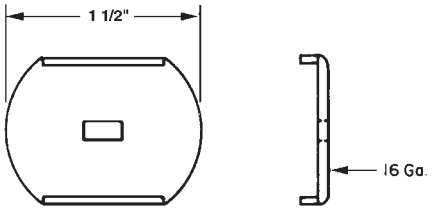
No.	A	B	C	D	E
-1	2	3/4	3/4	60°	1/8
-2	3	3/4	3/4	60°	1/8
-3	6-1/2	3/4	3/4	60°	1/8
-4	1-1/2	3/4	3/4	60°	3/16
-5	2	3/4	3/4	60°	3/16
-6	2-1/4	3/4	3/4	60°	3/16
-7	2-3/4	3/4	3/4	60°	3/16
-8	3-3/4	3/4	3/4	60°	3/16
-9	4-1/2	3/4	3/4	60°	3/16
-10	5-1/2	3/4	3/4	60°	3/16
-11	6-1/2	3/4	3/4	60°	3/16
-12	1-1/2	3/4	3/4	60°	1/4
-13	2-1/4	3/4	3/4	60°	1/4
-14	2-3/4	3/4	3/4	60°	1/4
-15	3-3/4	3/4	3/4	60°	1/4
-16	4-1/2	3/4	3/4	60°	1/4
-17	3-1/2	3/4	3/4	60°	1/4
-18	6-1/2	3/4	3/4	60°	1/4



MSM-30



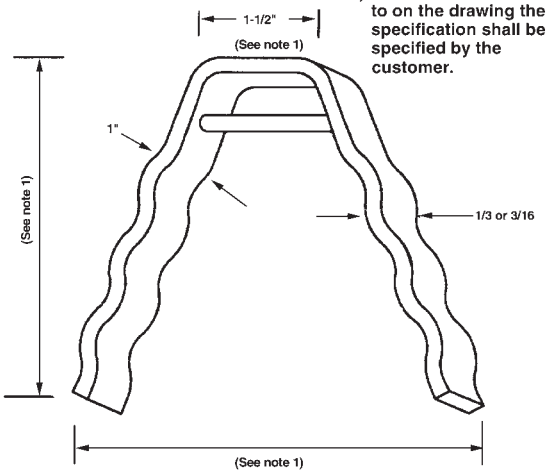
STUD



ANCHOR WASHER

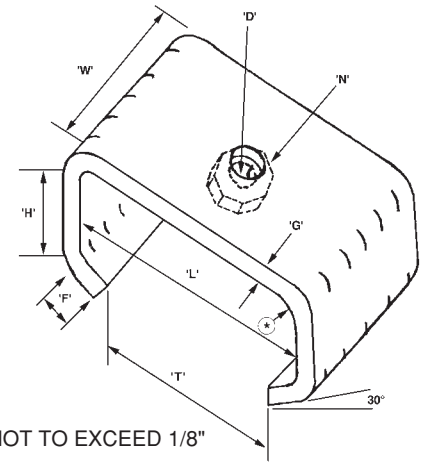
MSM-35

NOTES:
1.) Where this note is referred to on the drawing the specification shall be specified by the customer.



REFRACTORY AND INSULATION ANCHORS

MSM-65

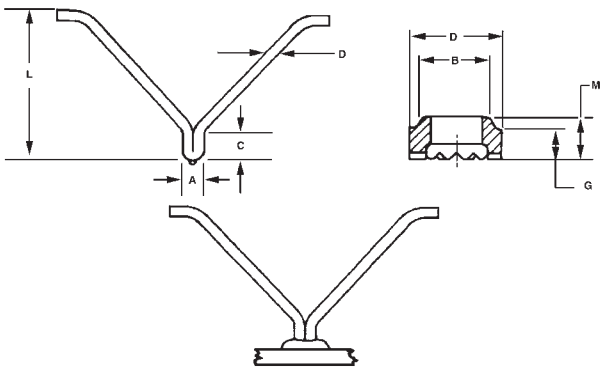


*BENDING RADIUS NOT TO EXCEED 1/8"

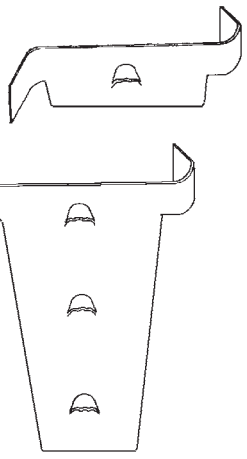
"Q" – QUANTITY
"W" – WIDTH
"G" – GAUGE/THICKNESS
"H" – HEIGHT (INSIDE)
"L" – LENGTH (INSIDE)
"F" – FLANGE (INSIDE)
"T" – THROAT (INSIDE)
"D" – " DIA. HOLE ON CENTER LINE
"N" – " STD. HEX NUT (WELDED FAR SIDE)

MSM-90
ST Steer Horn Refractory Anchor

STUD SPECIFICATIONS				FERRULE SPECIFICATIONS				
D	A	C	Min. L	No.	D	B	G	M
.187	.515	.625	1-1/8	ZFE-018	1.030	.785	.171	.359



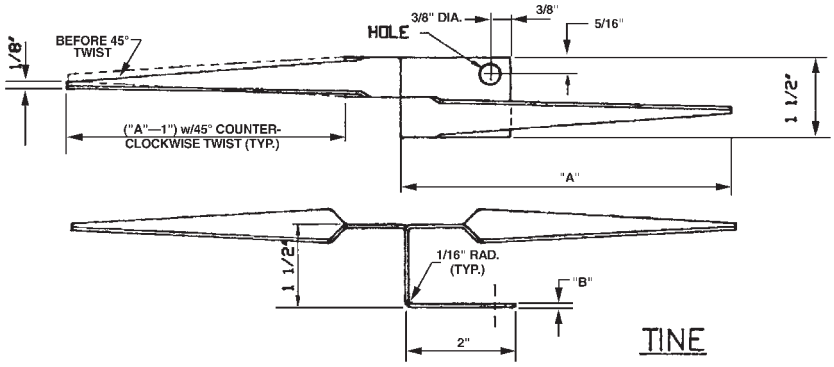
MSM-95 "S" Bar
"GRID ANCHOR"



–1"
–2"
–3"
–4"
–5"

Shipped from Stock Same Day
All Stainless Alloys Available

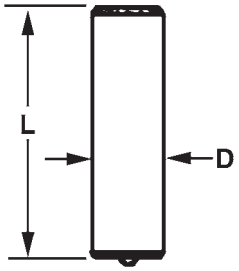
MSM-110
"SPEARLOCK"



No.	A	B
1	6"	16 GA.
2	6"	13 GA.
3	–	–
4	–	–
5	STUD	–

REFRACTORY AND INSULATION ANCHORS

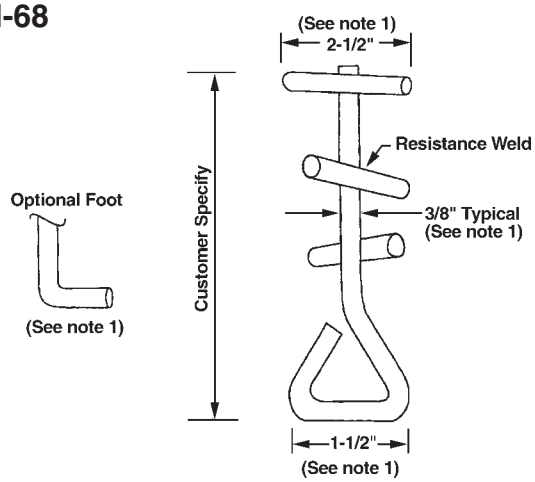
MSM-67
BTP Boiler Tube Pin



D	L
3/8	3/4
3/8	1-1/4

Auto feed quality boiler tube available in 430 S/S.
*Pins provided for use with Bow Ties at customer request.

MSM-68



Notes:
1.) Where this note is referred to on the drawing the specification shall be specified by the customer.

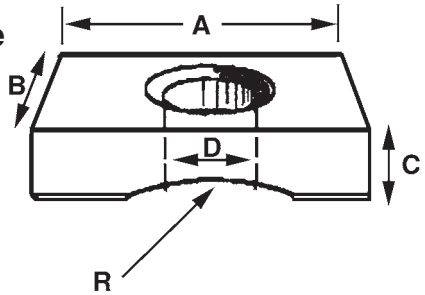
Cyclone Users:

ISC parts are fabricated from roller steel—Not Cast.

This means: Easier to weld; Ability to remove parts quickly; Ability to change dimensions to your specifications

Send ISC samples of your hard-to-obtain cast parts and let us offer a fabricated solution.

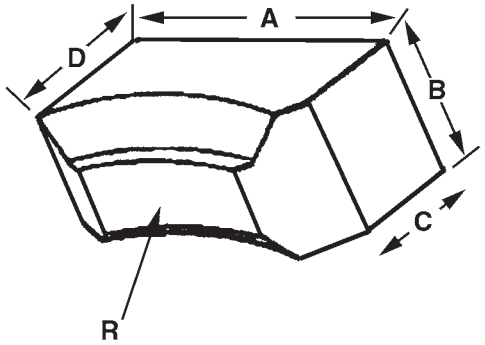
MSM-150
BT Bow Tie



	A	B	C	D	R
BT-1	1	3/4	3/8	7/15	3/4
BT-2	1-7/16	3/4	3/8	7/16	3/4

Standard Bow Tie sizes are in stock in 304 stainless steel. Parts may also be provided in 309 stainless steel. Any dimension may be altered to your specification. Samples provided upon request.

MSM-151
SS Stagger Studs



	A	B	C	D	R
SS1	1	3/4	1/4	1/2	3/4
SS2	1-1/2	3/4	5/8	3/4	3/4

Standard Stagger Studs are fabricated from 304 or 309 stainless steel. Material and/or dimensions may be vered to your specifications. Samples provided upon request.

ARC-656

Description

The ARC-656 is a compact lightweight stud welding power supply capable of welding studs thru 1/2" diameter reduced weld base. The power supply which operates on three phase power produces a smooth, stable welding arc. The front panel digital display indicates the weld time which is infinitely adjustable for preciseness and repeatability.

The expanded time range provides fine adjustment of weld time for special short cycle applications such as welding to thin materials.

A specially designed electronic gun control circuit has been incorporated to increase overall reliability. If a fault condition occurs due to a shorted gun solenoid or a faulty control cable, the circuit will prevent gun retriggering and eliminate damage to printed circuit boards.

Features

- Designed and built in U.S.A.
- Precise weld time adjustments
- Lightweight Aluminum cabinet
- Short cycle capabilities
- Diagnostic L.E.D.'s
- State of the art gun control circuitry
- Portable
- 3 Year warranty on Printed Circuit Board
- Powder Coated

Specifications

Dimensions:	8-1/4"H x 11-1/4"W x 17"D
Output:	650 Amps @ 36 VDC
Weight:	77 lbs.
Duty Cycle:	3/8" 8/min.
Input:	230/460/575 VAC 3 PHASE 60 HZ
Fusing:	60/30/30 Delay Type
Time Control:	.015—1.00 SEC

Parts List

Description	Part No.
System Complete	**100-0215**
w/Dampner	**100-0216**
Ground Cable 15 ft. x #2	**125-0101**
Power Supply	**200-0027**
Weld Gun 25' Cable Length	**300-0802**
w/Dampner	**300-0803**

Stud Welding

POWER SUPPLY

DESCRIPTION

The ARC-3000 is a fully regulated stud welding power supply that is available in a single or dual gun version. Both versions have the constant output feature that allows the unit to be used as a power source that can operate external stud welding control units. An added feature in the ARC-3000 is the ability to dial in the desired weld time and weld current before even making a weld. By selecting the setup mode, the weld time and current can be adjusted and displayed on the front panel digital meters.

A specially designed electronic gun control circuit has been incorporated in this system. If a fault condition occurs due to a shorted gun solenoid or a faulty control cable, the circuit will prevent gun retriggering and eliminate damage to printed circuit boards. The ARC-3000 system is capable of welding studs from 1/4" diameter to 1-1/4" diameter with preciseness and repeatability.

SPECIFICATIONS

Dimensions:	36"H x 28"W x 40"D	Output:	3000 amps @ 44VDC
Weight:	950 lbs.	Duty Cycle:	
Input:	230/460/575VAC	1/4–3/8	Unlimited
	3 Phase	1/2	60/Min.
Fusing:	400/200/180	5/8	30/Min.
	Delay Type	3/4	20/Min.
Hz	60	7/8	15/Min.
		1"	10/Min.

Time Control:
Stepless adjustable .1–1.8 sec.
Current Control:
Stepless adjustable 400–3000 amp.

COMPONENTS

DESCRIPTION	PART NO.	DESCRIPTION	PART NO.
System	100-0207	Ground Cable 25 ft. x 4/0	125-0104
Power Supply			
Single	200-0012		
Dual	200-0013	Combo Cable	
Weld Gun	300-0600	50 ft. x 4/0	125-1002

ARC-3000
STUD WELDING POWER SUPPLY

FEATURES

- Designed and built in U.S.A.
- Constant current output
- Single or dual gun systems
- Independent gun controls
- Precise weld time and weld current adjustments
- Digital display of actual weld time and weld current
- Diagnostic L.E.D.'s
- State of the art gun control circuitry
- Built in chuck saver
- Auto safety shutdown

DESCRIPTION

The ARC-1200 is a compact and portable stud welding power supply capable of welding studs thru 5/8" diameter weld base. The fully regulated power supply which operates on three phase power produces a smooth, stable welding arc. Both the weld time and weld current are infinitely adjustable for preciseness and repeatability.

For maximum flexibility the weld time can be switched between two ranges. The expanded short time range provides fine adjustment of weld time for special short cycle applications such as welding to thin materials.

A specially designed electronic gun control circuit has been incorporated to increase overall reliability. If a fault condition occurs due to a shorted gun solenoid or a faulty control cable, the circuit will prevent gun retriggering and eliminate damage to printed circuit boards.

SPECIFICATIONS

Dimensions:	27-1/2"H x 17"W x 22"D	Output:	1300 amps
Weight:	194 lbs.	Duty Cycle:	
Input:	230/460/575VAC	1/4	20/Min.
	3 Phase 60 Hz	5/16	15/Min.
Fusing:	100/60/50	3/8	13/Min.
	Delay Type	1/2	8/Min.
		5/8	4/Min.

Time Control:
Stepless adjustable
Range A: .06–.3 sec.
Range B: .1–1.0 sec.
Current Control:
Stepless adjustable
200–1300 amps

COMPONENTS

DESCRIPTION	PART NO.	DESCRIPTION	PART NO.
System	100-0208	25 ft. x 1/0 Ground Cable	125-0102
Power Supply	200-0018	50 ft. x 1/0 Combo Cable	125-1000
Weld Gun	300-0500		

ARC-1200
STUD WELDING POWER SUPPLY

FEATURES

- Designed and built in U.S.A.
- Regulated output current
- Precise weld time and weld current adjustments
- Dual time range
- Short cycle capabilities
- Diagnostic LED
- State-of-the-art gun control circuitry
- Thermally protected
- Built -in chuck saver
- Portable

Stud Welding

ARC-1850 MULTI-PURPOSE WELDING POWER SUPPLY

DESCRIPTION

The ARC-1850 is a state-of-the-art constant current stud welding power supply, capable of stick welding and arc air gouging. Mig welding feature is available.

Both weld time and weld current are infinitely adjustable for maximum versatility in today's high-tech world.

SPECIFICATIONS

Dimensions:	27-1/4"H x 22-3/4"W x 37"D	Output:	1800 Amps @ 44 VDC
Weight:	500 lbs.	Duty Cycle:	12 Ga. thru 5/8" Unlimited
Input:	230/460/575 VAC		3/4" Dia. 10/min.
Fusing:	175/90/80 VAC		7/8" Dia. 4/min.
Hz:	60		

COMPONENTS

Description	Part No.	Description	Part No.
System Complete	100-0204	25 ft x 4/0 Ground Cable	124-0104
Power Supply	200-0006	50 ft x 4/0 Combo Cable	125-1002
Weld Gun	300-0600		

FEATURES

- American Made
- Constant Current Output
- Demand Fan
- Auto Safety Shutdown
- Recessed Control Panel
- 25 ft 4/0 Ground Cable
- 50 ft. 4/0 Combo Cable
- Heavy Duty Weld Gun

ARC-800 STUD WELDING POWER SUPPLY

DESCRIPTION

The ARC-800 is a compact and portable stud welding power supply capable of welding studs through 1/2" diameter weld base. The power supply which operates on single phase power has the added feature of weld current regulation that improves stud welding consistency. Both the weld time and weld current are infinitely adjustable for preciseness and repeatability. A specially designed electronic gun control circuit has been incorporated to increase overall reliablility. If a fault condition occurs due to a shorted gun solenoid or a faulty control cable, the circuit will prevent gun retriggering and eliminate damage to printed circuit boards

SPECIFICATIONS

Dimensions:	36-1/2"H x 16"W x 14"D
Output:	900 AMPS
Weight:	150 LBS.
Duty Cycle:	1/4 14/Min, 5/16 12/Min 3/8 10/Min, 1/2 5/Min
Input:	208/230/460 VAC Single Phase 60HZ
Fusing:	100/100/50 Amps
Timer Control:	Stepless Adjustable .05 - .6 Sec
Current Control:	Stepless Adjustable 100 - 900 Amps

FEATURES

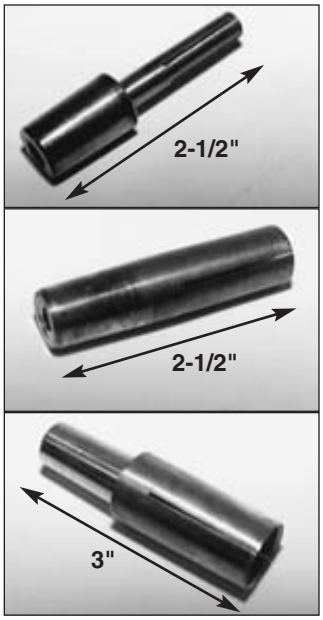
- ✻ Designed and built in U.S.A.
- ✻ Regulated output current
- ✻ Precise weld time and weld current adjustments
- ✻ Storage Compartment
- ✻ Diagnostic L.E.D.'s
- ✻ State of the art gun control circuitry
- ✻ Thermally Protected
- ✻ Portable
- ✻ Easy access to control circuitry

COMPONENTS

DESCRIPTION:	PART NO.	DESCRIPTION	PART NO.
System:	100-0211	Ground Cable 1/0 X 25'	125-0102
Power Supply:	200-0026		
Weld Gun	300-0500	Combo Cable 1/0 X 50'	125-1000

STUD WELDING

Standard Adjustable Chucks



Stud Dia.	Part No.
12 GA.	CN-010
1/8	CN-012
10 GA.	CN-013
#6	CN-013
#8	CN-015
#10	CN-018
1/4	CN-025
5/16	CN-031
3/8	CN-037
7/16	CN-043
1/2	CN-050
9/16	CN-056
5/8	CN-062
680	CN-068
3/4	CN-075
7/8	CN-087
1"	CN-100

NOTE* BERYLLIUM CHUCKS ADD.

Rectangular Chucks

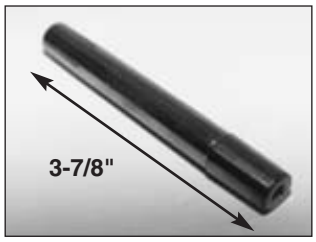
Stud Dia.	Part No.
1/8 x 1/4	CR-CA
1/8 x 3/8	CR-CB
1/8 x 5/8	CR-CC
1/8 x 7/8	CR-CH
1/8 x 1"	CR-CE

Metric Adjustable Chucks

Stud Dia.	Part No.
2MM	CNM-002
4MM	CNM-004
6MM	CNM-006
8MM	CNM-008
10MM	CNM-010

NOTE* BERYLLIUM CHUCKS ADD.

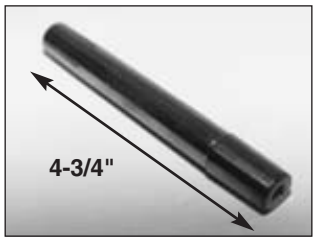
Long Adjustable Chucks



Stud Dia.	Part No.
#6	CM-013
#8	CM-015
#10	CM-018
1/4	CM-025
5/16	CM-031
3/8	CM-037
7/16	CM-043
1/2	CM-050
5/8	CM-062
3/4	CM-075

NOTE* METRIC SIZES ADD.
NOTE* BERYLLIUM CHUCKS ADD.

Extra Long Adjustable Chucks



Stud Dia.	Part No.
#6	CL-013
#8	CL-015
#10	CL-018
1/4	CL-025
5/16	CL-031
3/8	CL-037
7/16	CL-043
1/2	CL-050
5/8	CL-062
3/4	CL-075

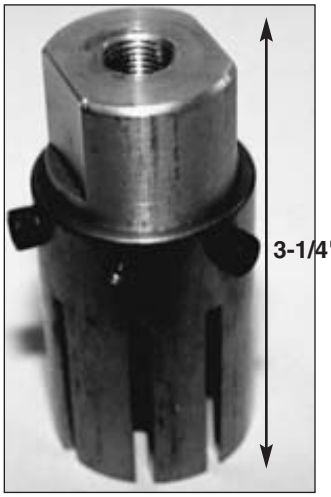
NOTE* METRIC SIZES ADD.
NOTE* BERYLLIUM CHUCKS ADD.

3/8" Dia. Headed Anchor Chucks

Part No.	Description
CH-037	Complete Ass'y
CH-037-1	Sleeve Only
CH-037-2	Base Only
CH-037-3	Stop Screw
Screws	10-32 x 3/8

1/2" Dia. Headed Anchor Chucks

Part No.	Description
CH-050	Complete Ass'y
CH-050-1	Sleeve Only
CH-050-2	Base Only
CH-050-3	Stop Screw
Screws	10-32 x 1/2



5/8 & 3/4" Dia. Headed Anchor Chucks

Part No.	Description
CH-075	Complete Ass'y
CH-075-1	Sleeve Only
CH-075-2	Base Only
CH-075-3	Stop Screw
Screws	10-32 x 1/2

7/8" Dia. Shear Connector Chucks

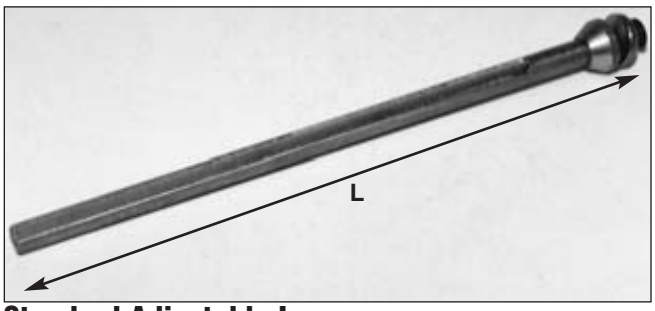
Part No.	Description
CH-087	Complete Ass'y
CH-087-1	Sleeve Only
CH-087-2	Base Only
CH-087-3	Stop Screw
Screws	10-32 x 1/2

Male Chucks

Hole Size	Part No.	Hole Size	Part No.
8-32	CX-015	5/8-11	CX-062
10-32	CX-018	3/4-10	CX-075
1/4-20	CX-025	1/4	CX-025-1
5/16-18	CX-031	3/8	CX-037-1
3/8-16	CX-037	1/2	CX-050-1
1/2-13	CX-050	5/8	CX-062-1

Bent Stud Chucks

Stud Dia.	Bend	Part No.	Stud Dia.	Bend	Part No.
3/8	90°	CB-037	5/8	90°	CB-062
3/8	45°	CB-037-1	5/8	45°	CB-062-1
1/2	90°	CB-050	3/4	90°	CB-075
1/2	45·	CB-050-1	3/4	45·	CB-075-1

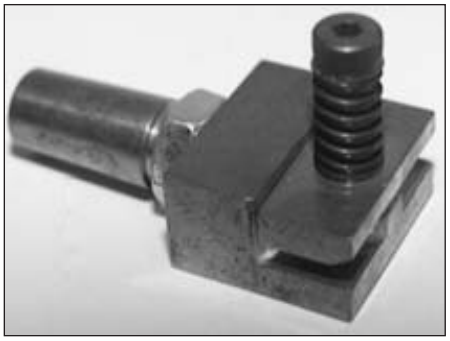


Standard Adjustable Legs

Length	Dia.	Part No.
7"	5/16	L-03107
9"	5/16	L-03109
14"	5/16	L-03114
7"	3/8	L-03707
9"	3/8	L-03709
14"	3/8	L-03714
18"	3/8	L-03718
24"	3/8	L-03724
27"	3/8	L-03727
32"	3/8	L-03732
36"	3/8	L-03736

5/16 Leg Washer or Screw

3/8 Leg Washer or Screw



Y Anchor Chucks

Size	Part No.
3/16	CY-018
1/4	CY-025
5/16	CY-031

Ferrule Grips

Standard Ferrule Grips (1" Long)

Stud Size	Foot Size	Grip Dia. (D)	Part No.
3/16	Small	.305	GN-019
1/4	Small	.380	GN-025
5/16	Small	.445	GN-031
3/8	Small	.505	GN-037
7/16	Small	.585	GN-043
1/2	Small	.650	GN-050
5/8	Medium	.785	GN-062
3/4	Medium	1.030	GN-075
7/8	Large	1.203	GN-087
1"	Large	1.406	GN-100

Split Ferrule Grips (1" Long)

Stud Size	Foot Size	Grip Dia. (D)	Part No.
3/16	Small	.305	GC-019
1/4	Small	.380	GC-025
5/16	Small	.445	GC-031
3/8	Small	.505	GC-037
7/16	Small	.585	GC-043
1/2	Small	.605	GC-050
5/8	Medium	.785	GC-062
3/4	Medium	1.030	GC-075
7/8	Large	1.203	GC-087
1"	Large	1.406	GC-100

Long Split Ferrule Grips (2" Long)

Stud Size	Foot Size	Grip Dia. (D)	Part No.
1/4	Small	.380	GD-025
5/16	Small	.445	GD-031
3/8	Small	.505	GD-037
7/16	Small	.585	GD-043
1/2	Small	.650	GD-050
5/8	Medium	.785	GD-062
3/4	Medium	1.030	GD-075

Weld Thru Deck Ferrule Holder

Part No.	Description
B-0060-1	3/4 WTD
B-0060-2	3/4 Flat
B-0060-1	7/8 Flat
Screws	10-32x1/2

Heavy Duty Ferrule Grip

Part No.	Stud Dia.
GH-050	1/2
GH-062	5/8
GH-075	3/4
GH-087	7/8
GH-100	1

Bi-Pod Feet

Stud Size	Part No. Split	Part No. Closed
1/8-1/2	BP-1C	BP-1N
5/8-3/4	BP-2C	BP-2N
7/8-1"	BP-3C	BP-3N

NOTE* Specify Gun Type

Twin Leg Ferrule Foot Plate

Stud Size	Part No.
1/4	QN-025
5/16	QN-031
3/8	QN-037
1/2	QN-050
5/8	QN-062
3/4	QN-075
7/8	QN-087
1"	QN-100

Note* Specify Gun Type

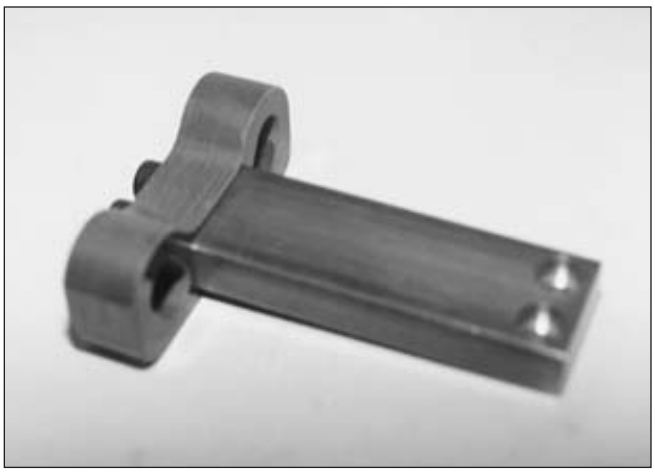
Single Leg Ferrule Foot Plate

Stud Size	Part No.
1/4	QM-025
3/8	QM-037
1/2	QM-050
5/8	QM-062
3/4	QM-075
7/8	QM-087

Refractory Ferrule Foot Plate

Part No.	Stud Dia.
QY-025-1	.810
QY-025-2	.930
QY-025-3	1.030

Weld Thru Deck Foot Assembly



Part No.	Description
B-0021	Foot Ass'y
B-0021-1	Foot Only
B-0021-2	Ext. Bar
Screws	1/4-20x1"

Feet


Small Style A


Medium Style B


Large Style C


Nelson NS-30 Style D


Bantam A58 Style E


CD Foot Style F

Standard Closed Feet

Gun Type	Stud Size	Style	Part No.
Pro-Weld Int.	1/8-1/2	A	B-1N
Nelson NS-20	1/8-1/2	A	B-1N
Nelson NS-30	1/8-1/2	D	B-6N
Pro-Weld Int.	5/8-3/4	B	B-2N
Nelson NS-20	5/8-3/4	B	B-2N
Nelson NS-30	5/8-3/4	D	B-7N
Pro-Weld Int.	7/8-1"	C	B-3N
Nelson NS-20	7/8-1"	C	B-3N
Bantam A-58	1/8-1/2	E	B-4N
Bantam A-58	5/8-3/4	E	B-5N
Pro-Weld Int.	1/8-3/8	F	028-833


Small Style A


Medium Style B


Large Style C


Nelson NS-30 Style D


Bantam A58 Style E

Standard Split Feet

Gun Type	Stud Size	Style	Part No.
Pro-Weld	1/8-1/2	A	B-1C
Nelson NS-20	1/8-1/2	A	B-1C
Nelson NS-30	1/8-1/2	D	B-6C
Pro-Weld	5/8-3/4	B	B-2C
Nelson NS-20	5/8-3/4	B	B-2C
Nelson NS-30	5/8-3/4	D	B-7C
Pro-Weld	7/8-1"	C	B-3C
Nelson NS-20	7/8-1"	C	B-3C
Bantam A58	1/8-1/2	E	B-4C
Bantam A58	5/8-3/4	E	B-5C

GAS ADAPTOR FEET FOR ALUMINUM WELDING

GAS FOOT PIECE USE WITHOUT FERRULE

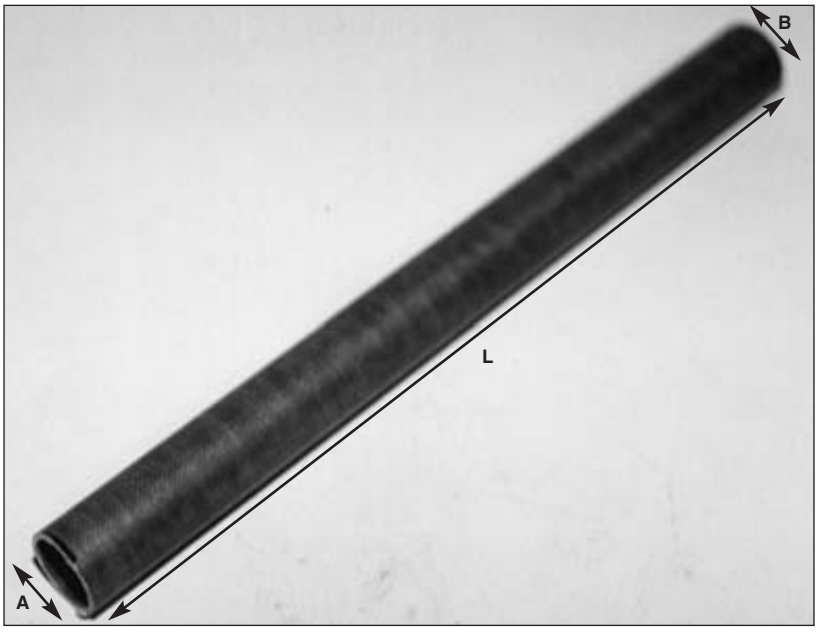
Part No. BG-2

GAS SPARK SHIELD

Part No. BG-2-2

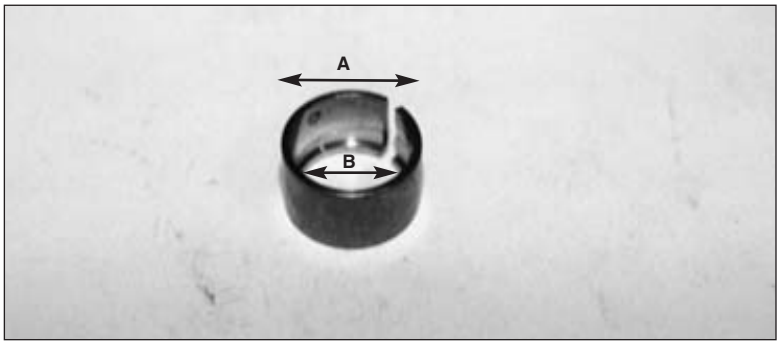
Ferrule Tubing

Stud Size	Part No.	A	B	L
#8	MP-015	.291	.360	36"
#10	MP-018	.305	.375	36"
1/4	MP-025	.380	.500	36"
5/16	MP-031	.445	.562	36"
3/8	MP-037	.505	.625	36"
7/16	MP-043	.585	.687	36"
1/2	MP-050	.650	.750	36"
5/8	MP-062	.785	.906	36"
3/4	MP-075	1.030	1.156	36"



Ferrule Tube Bushing

Stud Size	Part No.	A	B
#8	MB-015	.360	.875
#10	MB-018	.375	.875
1/4	MB-025	.500	.875
5/16	MB-031	.562	.875
3/8	MB-037	.625	.875
1/2	MB-050	.750	.875
5/8	MB-062	.906	1.156



Standard Duty Camlok Connector

Part No.	Description
107-0004	4/0 Male Rubber Shell
107-0005	4/0 Female Rubber Shell
107-0008	1/0 Male Rubber Shell
107-0009	1/0 Female Rubber Shell

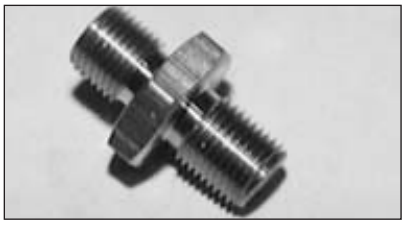
Heavy Duty Hi Temp Camlok

Part No.	Description
107-0006	4/0 Male Hi Temp
107-0007	4/0 Female Hi Temp

Light Duty Camlok Connector

Part No.	Description
107-0010	1/0 Male Fiber Shell
107-0011	1/0 Female Fiber Shell
107-0012	#4 Male Fiber Shell
107-0013	#4 Female Fiber Shell

Connector Stud

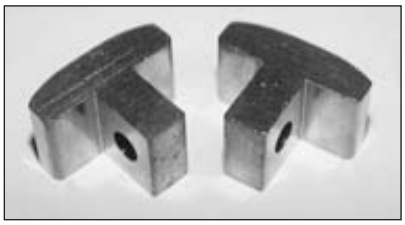


Part No.
033-506

Chuck Adaptor

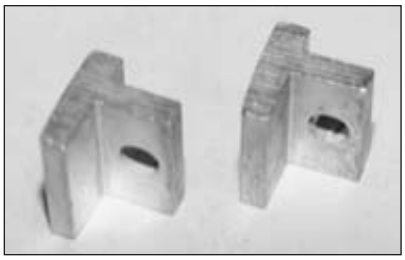
Part No.
033-505

H.D. Contact Tips



Part No.
113-0008-1

L.D. Contact Tips



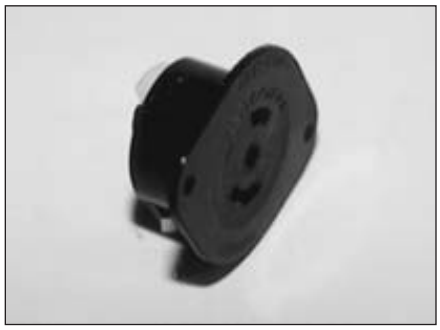
Part No.
113-0002-6

KSM Style Foot

Part No.
003-240

Control Cable Connector

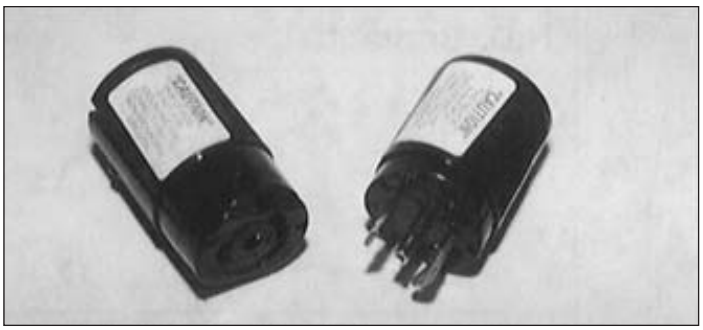
Male & Female



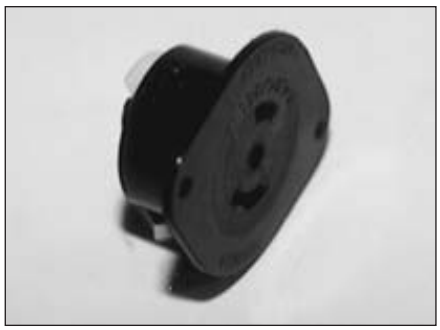
Panel Mount

Part No.	Description
107-0014	Male 4 Pole Connector
107-0015	Female 4 Pole Connector
107-0001	Panel Mount Connector

Nelson Style 2 Wire Connector



Female & Male



Panel Mount

Female Cover

Male Cover

Part No.	Description
107-0016	2 Wire Male Connector
107-0017	2 Wire Female Connector
107-0018	2 Wire Panel Mount Connector
107-0016C	Male Rubber Cover
107-0017C	Female Rubber Cover

Panel Mount Camlok Connectors

FEMALE

Part No.	Description
107-0003	Male Panel Mount
107-0002	Female Panel Mount

MALE

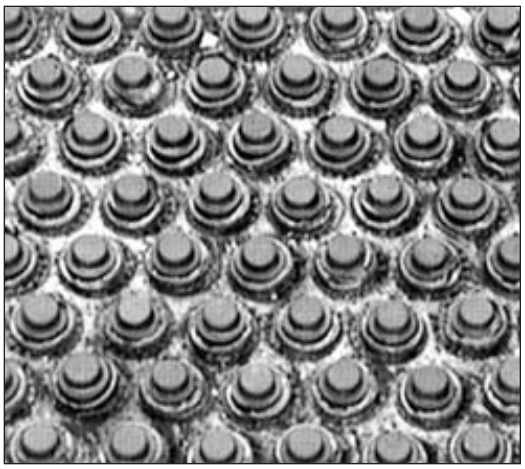
Weld Cable Lugs

Part No.	Description
123-0003	#4 w/ #10 Hole
123-0001	#1 w/ #10 Hole
123-0006	#1 w/ 1/4 Hole
123-0002	#1 w/ 3/8 Hole
123-0008	1/0 w/ 3/8 Hole
123-0009	1/0 w/ 1/2 Hole
123-0010	4/0 w/ 1/2 Hole

Wear Studs

A Series Alloy (HCA-58)

	Specifications
Welded Size	5/8" Dia. x 3/8" high (16mm Dia. x 9.5mm High)
Material	Chromium carbide in an alloyed iron matrix, molybdenum modified.
Hardness	Rockwell C 50-55
Ductility	13% to 15% (in compression)
Features	Very good abrasion resistance combined with very good impact resistance. Knock-off design for low profile when applied.



Spot Weld Nuts & Screws

 STEEL METRIC STAINLESS **SN**	 STEEL METRIC **XN**	 STEEL METRIC **ND**	 STEEL **TP**	 STEEL METRIC STAINLESS **PN**
 STEEL METRIC STAINLESS STAINLESS **RN**	 STEEL METRIC **QN**	 STEEL METRIC **RD**	 STEEL AND STAINLES METRIC STEEL AND STAINLESS **BFWN**	 STEEL METRIC **WS**
 STEEL METRIC **WP**	 STEEL METRIC **SQUARE WELD NUT**	 STEEL METRIC LOCKING **HEX 3 PROJ**	 STEEL METRIC **HEX 6 PROJ**	 STEEL METRIC STAINLESS **RH**
 STEEL METRIC STAINLESS **WF**	 STEEL **SF**	 STEEL STAINLESS **WT**	 STEEL METRIC STAINLESS **WW**	 STEEL METRIC **BT**
 STEEL **BFR**	 STEEL **BFS**	 STEEL THROUGH HOLE **BFR 3O**	 STEEL FLUSH MOUNT **BFR 3D**	 STEEL METRIC STAINLESS **SS**
 STEEL **DW**	 STEEL STAINLESS **PD**	 STEEL METRIC STAINLESS **GW**	 STEEL METRIC STAINLESS **HW**	 STEEL METRIC STAINLESS **RW**

RODS

Page No.

ITEMS AVAILABLE:

DOUBLE END STUDS — DES

ACME THREADED ROD — RATA

GRADE 2 ALL THREAD ROD STANDARD LENGTH — RATR

RATS — ALL THREAD STUD

RSES — SINGLE END STUD

RSMO — SMOOTH ROD

SR — SAG ROD

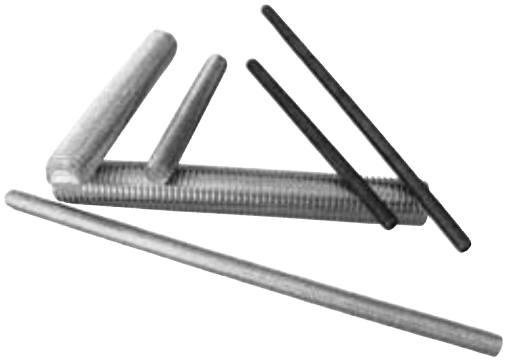
ISC can cut all thread rod to any desired length in our fabrication shop.

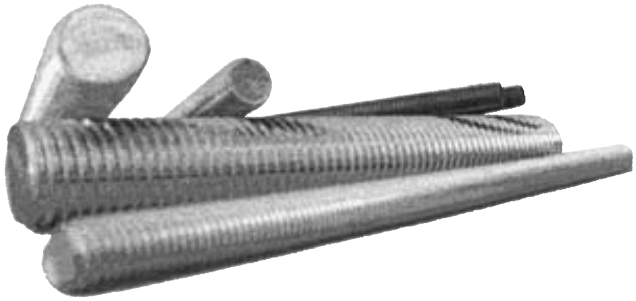
THREADED ROD

Capacities:
- Stock Lengths 3', 6', 12'
- Special Lengths Available
- SAE & NF
- Left Hand Thread

Material Available:
- A-449
- A-193-B7
- Low Carbon
- 304-Stainless
- 316-Stainless

Finishes Available:
- Plain Finish
- Zinc — Clear
- Zinc — Yellow
- Hot Dip Galvanizing





NUMBER OF PIECES AND WEIGHT PER TUBE						
	PCS PER TUBE 2', 3', and 6'	WEIGHT PER TUBE			PCS PER TUBE 12'	WEIGHT PER TUBE 12'
		2'	3'	6'		
6-32 & 8-32	150	—	13	26	—	—
10-24 & 10-32	100	—	22	44	—	—
1/4–20	90	22	32	65	50	72
5/16–18	35	14	21	42	35	84
3/8–16	38	22	33	66	25	87
7/16–14	17	14	20	41	17	82
1/2–13	21	23	34	68	13	84
9/16–12	10	14	20	41	10	82
5/8–11	12	20	30	60	8	80
3/4–10	8	20	30	60	5	75
7/8–9	6	20	30	59	4	79
1–8	4	18	27	54	3	81
1-1/8–7	3	17	25	50	3	101
1-1/4–7	2	14	21	43	2	85
1-3/8–6	1	8	13	25	1	49
1-1/2–6	1	10	15	31	1	61
1-3/4–5	1	14	21	42	1	84
2–4-1/2	1	18	26	53	1	105

HEAT TREATED ALLOY STUDS AND THREADED BARS

CONTINUOUS THREAD STUDS

FERRITIC STEELS ASTM A193 GRADE. B5-B6-B7-B7M-B-16. ASTM A320 GRADE. L7-L7M

AUSTENITIC STEELS ASTM A193 GRADE. BBC-B6M-B8T. ASTM A320 GRADE. B8-B8M-B8C-B8T-B8F

ASTM Designation	Grade	Service Temperature Range	Strength and Ductility				Alloy Type	AISI	Suitable Nuts (ASTM/Grade)
			Tensile Min. PSI	Yield	Reduction of Area R/A	Elongation EL			
ASTM A-193	B7	High Temp. from 0–480°C	125000	100000	50	16	Cr-Mo	(4140)	A194 Gr. 2H
ASTM A-193	B16	High Temp. 0–550°C	125000	105000	50	18	Cr-Mo-V	(4140M)	A194 Gr. 4
ASTM A-193	B7M	High Temp. 0–450°C	100000	80000	50	18	Cr-Mo	(4140)	A194 Gr. 2HM
ASTM A-320	L7	Low Temp. -100°C	125000	105000	50	16	Cr-Mo	(4140)	A194 Gr. 4 or A194 Gr. 7
ASTM A-193	B5	Up to 815°C	100000	80000	50	16	5% Cr	(501)	A194 Gr. 3
ASTM A-193	B6	Up to 450°C	110000	85000	50	16	13% Cr	(410)	A194 Gr. 6
ASTM A-193	B8	Low Temp. -200°C–650°C	75000	30000	50	30	18% Cr – 8% Ni	(304)	A194 B8
ASTM A-193	B8M	Low Temp. -200°C–750°C	75000	30000	50	30	16% Cr – 10% Ni	(316)	A194 B8M
ASTM A-320	B8	Low Temp. -200°C–650°C	75000	30000	50	30	18% Cr – 8% Ni	(304)	A194 B8
ASTM A-320	B8M	Low Temp. -200°C–750°C	75000	30000	50	30	16% Cr – 10% Ni	(316)	A194 B8M
ASTM A-320	B8T	Low Temp. -200°C–650°C	75000	30000	50	30	17% Cr – 9% Ni	(321)	A194 B8T
ASTM A-320	B8C	Low Temp. -200°C–650°C	75000	30000	50	30	17% Cr – 9% Ni	(347)	A194 B8C
ASTM A-193	B8 Class 2	Low Temp. -200°C–650°C	125000	100000	35	12	18% Cr – 8% Ni	(304)	A194 B8
ASTM A-453	660	High Temp. to 750°C	130000	85000	18	15	High Iron Superalloy	660 (A286)	A453 660
ASTM A-564 (cond. 900) (cond. 1100)	630	Med. Temp. up to 316°C	190000 140000	170000 115000	40 45	10 14	Precipitation Hardening STST	630 (17-4)	A564 630
ASTM B-408	800-800H	High Temp. 540°C–815°C	80000	35000		25	Incoloy		ASTM B408
ASTM B-164	405	High Temp. to 815°C	85000	50000		15	Monel		
ASTM B-164	K500	High Temp. 650°C-815°C Low Temp. 650°C-253°C	100000	70000		35	Monel		
600, 625 718, x750 B, C, X		High Temp. Range from 815°C-1090°C High Temp. to 850°C	100000 170000	80000 115000		30 30	Nickel Superalloy (Inconel) Nickel Superalloy (Hastalloy)		

Temperature Conversions

°C	°F
-423	-729
-200	-328
-100	-148
316	601
450	842
480	896
540	1004
550	1022
650	1202
750	1382
815	1499
850	1562

TOOLS

Our TOOL ROOM is Fully Stocked with ALL of Your Tool Needs

Cordless Tools

Hammer Drills

Impact Drivers

Compact Drivers

Compact Reciprocating Saw

Rotary Hammers / Drills

SDS / Spline Rotary Hammers

Corded Drills

Accessories

Batteries

Carbide / Concrete Bits

Core Bits

High Speed Drill Bits

We Carry a Full Line of Professional Grade Power Tools

Metal Working

Metal Cutting Saws

Portable Band Saws

Magnetic Drill Press

Sawzalls

Angle Grinders

Metal Working Accessories

Circular Saw Blades

Abrasive Grinding Discs

Sawzall Blades

Annular Cutters

Drill Bits

DECIMAL EQUIVALENTS

FOR FRACTIONAL, WIRE GAUGE, LETTER & METRIC (MM) SIZE DRILLS

Drill Size	Decimal Inches	Drill Size	Decimal Inches	Drill Size	Decimal Inches	Drill Size	Decimal Inches	Drill Size	Decimal Inches
0.25	.0098	2.00	.0787	#14	.1820	21/64"	.3281	35/64"	.5469
0.30	.0118	2.05	.0807	4.70	.1850	8.40	.3307	14.00	.5512
#80	.0135	#46	.0810	#13	.1850	Q	.3320	14.25	.5610
0.35	.0138	#45	.0820	3/16"	.1875	8.50	.3346	9/16"	.5625
#79	.0145	2.10	.0827	4.80	.1890	8.60	.3386	14.50	.5709
1/64"	.0156	2.15	.0846	#12	.1890	R	.3390	37/64"	.5781
0.40	.0157	#44	.0860	#11	.1910	8.70	.3425	14.75	.5807
#78	.0160	2.20	.0866	4.90	.1929	11/32"	.3437	15.00	.5906
0.45	.0177	2.25	.0886	#10	.1935	8.80	.3465	19/32"	.5937
#77	.0180	#43	.0890	#9	.1960	S	.3480	15.25	.6004
0.50	.0197	2.30	.0905	5.00	.1968	8.90	.3504	39/64"	.6094
#76	.0200	2.35	.0925	#8	.1990	9.00	.3543	15.50	.6102
#75	.0210	#42	.0935	5.10	.2008	T	.3580	15.75	.6201
0.55	.0217	3/32"	.0937	#7	.2010	9.10	.3583	5/8"	.6250
#74	.0225	2.40	.0945	13/64"	.2031	23/64"	.3594	16.00	.6299
0.60	.0236	#41	.0960	#6	.2040	9.20	.3622	16.25	.6398
#73	.0240	2.45	.0965	5.20	.2047	9.30	.3661	41/64"	.6406
#72	.0250	#40	.0980	#5	.2055	U	.3680	16.50	.6496
0.65	.0256	2.50	.0984	5.30	.2087	9.40	.3701	21/32"	.6562
#71	.0260	#39	.0995	#4	.2090	9.50	.3740	16.75	.6594
0.70	.0276	2.55	.1004	5.40	.2126	3/8"	.3750	17.00	.6693
#70	.0280	#38	.1015	#3	.2130	V	.3770	43/64"	.6719
#69	.0292	2.60	.1024	5.50	.2165	9.60	.3780	17.25	.6791
0.75	.0295	#37	.1040	7/32"	.2187	9.70	.3819	11/16"	.6875
#68	.0310	2.65	.1043	5.60	.2205	9.80	.3858	17.50	.6890
1/32"	.0313	2.70	.1063	#2	.2210	W	.3860	17.75	.6988
0.80	.0315	#36	.1065	5.70	.2244	9.90	.3898	45/64"	.7031
#67	.0320	2.75	.1083	#1	.2280	25/64"	.3906	18.00	.7087
#66	.0330	7/64"	.1093	5.80	.2283	10.00	.3937	18.25	.7185
0.85	.0335	#35	.1100	5.90	.2323	X	.3970	23/32"	.7187
#65	.0350	2.80	.1102	A	.2340	10.10	.3976	18.50	.7283
0.90	.0354	#34	.1110	15/64"	.2344	10.20	.4016	47/64"	.7344
#64	.0360	2.85	.1122	6.00	.2362	Y	.4040	18.75	.7382
#63	.0370	#33	.1130	B	.2380	10.30	.4055	19.00	.7480
0.95	.0374	2.90	.1142	6.10	.2401	13/32"	.4062	3/4"	.7500
#62	.0380	#32	.1160	C	.2420	10.40	.4094	19.25	.7579
#61	.0390	2.95	.1161	6.20	.2441	Z	.4130	49/64"	.7656
1.00	.0394	3.00	.1181	D	.2460	10.50	.4134	19.50	.7677
#60	.0400	#31	.1200	6.30	.2480	10.60	.4173	19.75	.7776
#59	.0410	3.10	.1220	E-1/4"	.2500	10.70	.4213	25/32"	.7812
1.05	.0413	1/8"	.1250	6.40	.2520	27/64"	.4219	20.00	.7874
#58	.0420	3.20	.1260	6.50	.2559	10.80	.4252	51/64"	.7969
#57	.0430	#30	.1285	F	.2570	10.90	.4291	20.25	.7972
1.10	.0433	3.30	.1299	6.60	.2598	11.00	.4330	20.50	.8071
1.15	.0453	3.40	.1339	G	.2610	11.10	.4370	13/16"	.8125
#56	.0465	#29	.1360	6.70	.2638	7/16"	.4375	20.75	.8169
3/64"	.0469	3.50	.1378	17/64"	.2656	11.20	.4409	21.00	.8268
1.20	.0472	#28-9/64"	.1405	H	.2660	11.30	.4449	53/64"	.8281
1.25	.0492	3.60	.1417	6.80	.2677	11.40	.4488	21.25	.8366
1.30	.0512	#27	.1440	6.90	.2716	11.50	.4528	27/32"	.8437
#55	.0520	3.70	.1457	I	.2720	29/64"	.4531	21.50	.8465
1.35	.0531	#26	.1470	7.00	.2756	11.60	.4567	21.75	.8563
1.40	.0550	#25	.1495	J	.2770	11.70	.4606	55/64"	.8594
#54	.0550	3.80	.1496	7.10	.2795	11.80	.4646	22.00	.8661
1.45	.0571	#24	.1520	K-9/32"	.2811	11.90	.4685	7/8"	.8750
1.50	.0591	3.90	.1535	7.20	.2835	15/32"	.4687	22.25	.8760
#53	.0595	#23	.1540	7.30	.2874	12.00	.4724	22.50	.8858
1.55	.0610	5/32"	.1562	L	.2900	12.10	.4764	57/64"	.8906
1/16"	.0625	#22	.1570	7.40	.2913	12.20	.4803	22.75	.8957
1.60	.0629	4.00	.1575	M	.2950	12.30	.4843	23.00	.9055
#52	.0635	#21	.1590	7.50	.2953	31/64"	.4843	29/32"	.9062
1.65	.0650	#20	.1610	19/64"	.2968	12.40	.4882	23.25	.9154
1.70	.0669	4.10	.1614	7.60	.2992	12.50	.4921	59/64"	.9219
#51	.0670	4.20	.1654	N	.3020	12.60	.4961	23.50	.9252
1.75	.0689	#19	.1660	7.70	.3031	12.70	.5000	23.75	.9350
#50	.0700	4.30	.1693	7.80	.3071	1/2"	.5000	15/16"	.9375
1.80	.0709	#18	.1695	7.90	.3110	12.80	.5039	24.00	.9449
1.85	.0730	11/64"	.1719	5/16"	.3125	12.90	.5079	61/64"	.9531
#49	.0730	#17	.1730	8.00	.3150	13.00	.5118	24.25	.9547
1.90	.0748	4.40	.1732	O	.3160	33/64"	.5156	24.50	.9646
#48	.0760	#16	.1770	8.10	.3189	13.20	.5197	31/32"	.9688
1.95	.0768	4.50	.1771	8.20	.3228	17/32"	.5313	24.75	.9744
5/64"	.0781	#15	.1800	P	.3230	13.50	.5315	25.00	.9843
#47	.0785	4.60	.1811	8.30	.3268	13.80	.5433	63/64"	.9844
								1"	1.0000

Jobber—135° F/N HSJB

Aircraft Bit—6" & 12" Length F/N HSAB

Stubby—135° F/N HSSB

Reduced Shank—1/4", 3/8", 1/2", 118° F/N HSSR

Drill Bit Sets in 135°

Also available in Cobalt 135°

Available in 13, 21, 29 piece sets

Part No.	Range
SP50190	1/16"–1/2" by 64ths
SP50192	1/16"–3/8" by 32nds
SP50193	1/16"–1/2" by 32nds
SP501945	1/16"–1/4" by 64ths

Taps & Dies

Tap Drill Sizes

(Drill Sizes Based on Approximately 72%-77% Full Thread)

Tap Size	Pitch Form	Tap Drill Size	Alt. Tap Drill	Tap Size	Pitch Form	Tap Drill Size	Alt. Tap Drill
Unified Taps				**Unified Taps (cont.)**			
0	80 (U)NF	3/64"	1.25	1"	8 (U)NC	7/8"	22.25
1	64 (U)NC	53	1.55	1"	12 (U)NF	59/64"	23.25
	72 (U)NF	53	1.55		14 (U)NS	15/16'	23.50
2	56 (U)NC	50	1.85	1-1/8"	7 (U)NC	63/64"	25.00
	64 (U)NF	50	1.90		12 (U)NF	1-3/64"	26.50
3	48 (U)NC	47	2.10	1-1/4"	7 (U)NC	1-7/64"	28.00
	56 (U)NF	45	2.15		12 (U)NF	1-11/64"	29.50
4	40 (U)NC	43	2.35	1-3/8"	6 (U)NC	1-7/32"	30.75
	48 (U)NF	42	2.40		12 (U)NF	1-19/64"	32.75
5	40 (U)NC	38	2.65	1-1/2"	6 (U)NC	1-11/32"	34.00
	44 (U)NF	37	2.70		12 (U)NF	1-27/64"	36.00
6	32 (U)NC	36	2.85	1-3/4"	5 (U)NC	1-9/16"	39.50
	40 (U)NF	33	2.95	2"	4-1/2 (U)NC	1-25/32"	45.00
8	32 (U)NC	29	3.50	**Taper Pipe Taps NPT**			
	36 (U)NF	29	3.50	1/16"	27 NPT	D	6.30
10	24 (U)NC	25	3.90	1/8"	27 NPT	R	8.70
	32 (U)NF	21	4.10	1/4"	18 NPT	7/16"	11.10
12	24 (U)NC	16	4.50	3/8"	18 NPT	37/64"	14.50
	28 (U)NF	14	4.70	1/2"	14 NPT	23/32"	18.00
1/4"	20 (U)NC	7	5.10	3/4"	14 NPT	59/64"	23.25
	28 (U)NF	3	5.50	1"	11-1/2 NPT	1-5/32"	29.00
5/16"	18 (U)NC	F	6.60	1-1/4"	11-1/2 NPT	1-1/2"	38.00
	24 (U)NF	I	6.90	1-1/2"	11-1/2 NPT	1-47/64"	44.00
3/8"	16 (U)NC	5/16"	8.00	2"	11-1/2 NPT	2-7/32"	56.00
	24 (U)NF	Q	8.50	2-1/2"	8 NPT	2-5/8"	67.00
7/16"	14 (U)NC	U	9.40	3"	8 NPT	3-1/4"	82.50
	20 (U)NF	25/64"	9.90	**Straight Pipe Taps NPS**			
1/2"	13 (U)NC	27/64"	10.80	1/8"	27 NPS	S	8.80
	20 (U)NF	29/64"	11.50	1/4"	18 NPS	29/64"	11.50
9/16"	12 (U)NC	31/64"	12.20	3/8"	18 NPS	19/32"	15.00
	18 (U)NF	33/64"	12.90	1/2"	14 NPS	47/64"	18.50
5/8"	11 (U)NC	17/32"	13.50	3/4"	14 NPS	15/16"	23.75
	18 (U)NF	37/64"	14.50	1"	11-1/2 NPS	1-3/16"	30.25
3/4"	10 U)NC	21/32"	16.50	1-1/4"	11-1/2 NPS	1-33/64"	38.50
	16 (U)NF	11/16"	17.50	1-1/2"	11-1/2 NPS	1-3/4"	44.50
7/8"	9 (U)NC	49/64"	19.50	2"	11-1/2 NPS	2-7/32"	56.00
	14 (U)NF	13/16"	20.40				

Hand Taps (HT)

F/N TAPST

Spiral Point Taps (SP)

F/N TAPSP

Pipe Taps (List No. 304)

F/N TAPPT

Hex Dies

F/N DIEH

F/N ANNC

ROTOBRUTE
RB32 RB65

Specifications	MiniBrute RB32	MegaBrute RB65
Weight	28 lbs	61 lbs
Cutter Capacity	1-1/4"	4"
Motor Speed RPM	550	220,260,350,420
Magnet Strength	2200 lbs	4400 lbs
Drill Capacity	3/4"	1-1/4"
Depth of Cut	6"	11-1/2"
Height	12"	18-7/8"
Width	3-1/2"	4-1/2"
Length	9-1/2"	9-5/8"
Motor	Hitachi D13	Atlas Copco B4/32

Fractional RotoBrute™ Cutters

F/N XL100 F/N XL200 F/N XL300



Fractional Size	Decimal Equiv.	RotoBrute 1" Depth of Cut List No./Size	RotoBrute 2" Depth of Cut List No./Size	RotoBrute 3" Depth of Cut List No./Size
7/16	0.4375	XL100-7/16	XL200-7/16	—
1/2	0.5000	XL100-1/2	XL200-1/2	—
9/16	0.5625	XL100-9/16	XL200-9/16	—
5/8	0.6250	XL100-5/8	XL200-5/8	—
11/16	0.6875	XL100-11/16	XL200-11/16	—
3/4	0.7500	XL100-3/4	XL200-3/4	XL300-3/4
13/16	0.8125	XL100-13/16	XL200-13/16	XL300-13/16
7/8	0.8750	XL100-7/8	XL200-7/8	XXL300-7/8
15/16	0.9375	XL100-15/16	XL200-15/16	XL300-15/16
1 inch	1.0000	XL100-1	XL200-1	XL300-1
1-1/16	1.0625	XL100-1-1/16	XL200-1-1/16	XL300-1-1/16
1-1/8	1.1250	XL100-1-1/8	XL200-1-1/8	XL300-1-1/8
1-3/16	1.1875	XL100-1-3/16	XL200-1-3/16	XL300-1-3/16
1-1/4	1.2500	XL100-1-1/4	XL200-1-1/4	XL300-1-1/4
1-5/16	1.3125	XL100-1-5/16	XL200-1-5/16	XL300-1-5/16
1-3/8	1.3750	XL100-1-3/8	XL200-1-3/8	XL300-1-3/8
1-7/16	1.4375	XL100-1-7/16	XL200-1-7/16	XL300-1-7/16
1-1/2	1.5000	XL100-1-1/2	XL200-1-1/2	XL300-1-1/2
1-9/16	1.5625	XL100-1-9/16	XL200-1-9/16	XL300-1-9/16
1-5/8	1.6250	XL100-1-5/8	XL200-1-5/8	XL300-1-5/8
1-11/16	1.6875	XL100-1-11/16	XL200-1-11/16	XL300-1-11/16
1-3/4	1.7500	XL100-1-3/4	XL200-1-3/4	XL300-1-3/4
1-13/16	1.8125	XL100-1-13/16	XL200-1-13/16	XL300-1-13/16
1-7/8	1.8750	XL100-1-7/8	XL200-1-7/8	XL300-1-7/8
1-15/16	1.9375	XL100-1-15/16	XL200-1-15/16	XL300-1-15/16
2 inch	2.0000	XL100-2	XL200-2	XL300-2
2-1/16	2.0625	XL100-2-1/16	XL200-2-1/16	XL300-2-1/16
2-1/8	2.1250	XL100-2-1/8	XL200-2-1/8	XL300-2-1/8
2-3/16	2.1875	XL100-2-3/16	XL200-2-3/16	XL300-2-3/16
2-1/4	2.2500	XL100-2-1/4	XL200-2-1/4	XL300-2-1/4
2-5/16	2.3125	XL100-2-5/16	XL200-2-5/16	XL300-2-5/16
2-3/8	2.3750	XL100-2-3/8	XL200-2-3/8	XL300-2-3/8
2-7/16	2.4375	XL100-2-7/16	XL200-2-7/16	XL300-2-7/16
2-1/2	2.5000	XL100-2-1/2	XL200-2-1/2	XL300-2-1/2
2-9/16	2.5625	XL100-2-9/16	XL200-2-9/16	XL300-2-9/16
2-5/8	2.6250	XL100-2-5/8	XL200-2-5/8	XL300-2-5/8
2-11/16	2.6875	XL100-2-11/16	XL200-2-11/16	XL300-2-11/16
2-3/4	2.7500	XL100-2-3/4	XL200-2-3/4	XL300-2-3/4
2-13/16	2.8125	XL100-2-13/16	XL200-2-13/16	XL300-2-13/16
2-7/8	2.8750	XL100-2-7/8	XL200-2-7/8	XL300-2-7/8
2-15/16	2.9375	XL100-2-15/16	XL200-2-15/16	XL300-2-15/16
3 inch	3.0000	XL100-3	XL200-3	XL300-3
3-1/16	3.0625	XL100-3-1/16	XL200-3-1/16	XL3000-3-1/16
3-1/8	3.1250	XL100-3-1/8	XL200-3-1/8	XL300-3-1/8
3-3/16	3.1875	XL100-3-3/16	XL200-3-3/16	XL300-3-3/16
3-1/4	3.2500	XL100-3-1/4	XL200-3-1/4	XL300-3-1/4
3-5/16	3.3125	XL100-3-5/16	XL200-3-5/16	XL300-3-5/16
3-3/8	3.3750	XL100-3-3/8	XL200-3-3/8	XL300-3-3/8
3-7/16	3.4375	XL100-3-7/16	XL200-3-7/16	XL300-3-7/16
3-1/2	3.5000	XL100-3-1/2	XL200-3-1/2	XL300-3-1/2
3-9/16	3.5625	XL10-3-9/16	XL200-3-9/16	XL300-3-9/16
3-5/8	3.6250	XL100-3-5/8	XL200-3-5/8	XL300-3-5/8
3-11/16	3.6875	XL100-3-11/16	XL200-3-11/16	XL300-3-11/16
3-3/4	3.7500	XL100-3-3/4	XL200-3-3/4	XL300-3-3/4
3-13/16	3.8125	XL100-3-13/16	XL200-3-13/16	XL300-3-13/16
3-7/8	3.8750	XL100-3-7/8	XL200-3-7/8	XL300-3-7/8
3-15/16	3.9375	XL100-3-15/16	XL200-3-15/16	XL300-3-15/16
4 inch	4.0000	XL100-4	XL200-4	XL300-4

Shank Dimensions: 7/16" thru 2-1/4" cutters have 3/4" shanks;
2-5/16" thru 4" cutters have 1-1/4" shanks.

METAL-CUTTING FLUIDS

F/N Rapid Tap

NEW Rapid Tap®

All-Metal Cutting Fluid and Paste

- Greatly extended tool life
- Super-fine machined finish in operation after operation
- Anti-mist protection for a healthier work environment
- No special labeling or reporting
- Excels in tough materials
- Contains no 1,1,1- trichloroethane or other ozone-depleting chemicals

NEW RAPID TAP

PART NO.	DESCRIPTION	CASE QTY	CASE/DRUM WEIGHT† (LBS.)
04Z-NRT	4 Ounce Cans	24	10
PNT-NRT	Pint Cans	12	17
01G-NRT	1 Gallon Cans	4	40
05G-NRT	5 Gallon Pail	1	49
55G-NRT	55 Gallon Drum		522

NEW RAPID TAP PASTE

PART NO.	DESCRIPTION	CASE QTY	CASE/DRUM WEIGHT† (LBS.)
08Z-NRTP	8 Ounce Jar	12	9

A-9®

Aluminum-Cutting Fluid

- Eases all operations on aluminum: milling, broaching, drilling, threading, tapping, reaming, sawing, etc.
- Contains anti-mist component for a healthier work environment
- Contains a scientific blend of chemicals that attach themselves to aluminum surfaces, forming an extreme-pressure boundary lubricant between tool and work surface

PART NO.	DESCRIPTION	CASE QTY	CASE/DRUM WEIGHT† (LBS.)
04Z-A9	4 Ounce Cans	24	9
PNT-A9	Pint Cans	12	15
01G-A9	1 Gallon Bottles	4	34
05G-A9	5 Gallon Pail	1	43
55G-A9	55 Gallon Drum		460

† Shipping weights are approximate and rounded to the nearest pound.

LUBRICATING STICK WAX

STICK-KUT™
LUBRICATING STICK WAX

- Safe and effective lubricant for grinding wheels, sanding belts and saw blades
- Eliminates heat build up and belt loading
- Extends wheel life
- Provides smooth, cool cutting
- Reduces loading, stops binding, and prevents burring

PART NO.	DESCRIPTION	CASE QTY	CASE/DRUM WEIGHT† (LBS.)
15-SK	15 oz Stick	12	12

CUTTING OILS

TCO-14®
Dark

- Ready to cut clean, smooth threads on all pipe materials
- Extreme-pressure additive for anti-weld characteristics
- Excellent protection of tools and machined parts against corrosion
- Contains anti-mist component for a healthier work environment

THREAD-CUTTING OIL

PART NO.	DESCRIPTION	CASE QTY	CASE/DRUM WEIGHT† (LBS.)
01G-TCO14	1 Gallon Bottles	4	35
05G-TCO14	5 Gallon Pail	1	40
55G-TCO14	55 Gallon Drum		463

TCO-16®
Light

- Operationally interchangeable with TCO-14 (Dark)

THREAD-CUTTING OIL

PART NO.	DESCRIPTION	CASE QTY	CASE/DRUM WEIGHT† (LBS.)
01G-TCO16	1 Gallon Bottles	4	35
05G-TCO16	5 Gallon Pail	1	40
55G-TCO16	55 Gallon Drum		463

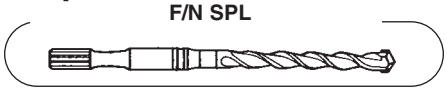
† Shipping weights are approximate and rounded to the nearest pound.

Masonry Drill Bits

Carbide Drills
F/N SDS

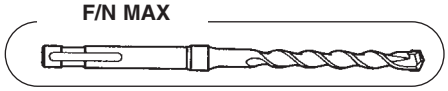
Size	Usable Length
5/32" x 6"	4"
3/16" x 4" 3/16" x 5" 3/16" x 6"	2" 3" 4"
3/16" x 8" 3/16" x 10" 3/16" x 12" 3/16" x 14"	6" 8" 10" 12"
7/32" x 6" 7/32" x 8" 7/32" x 11" 7/32" x 14" 7/32" x 16"	4" 6" 9" 12" 14"
1/4" x 4" 1/4" x 6" 1/4" x 8"	2" 4" 6"
1/4" x 11" 1/4" x 14" 1/4" x 16" 1/4" x 20"	9" 12" 14" 18"
9/32" x 8"	6"
5/16" x 6" 5/16" x 12"	4" 10"
3/8" x 6" 3/8" x 8" 3/8" x 12" 3/8" x 18" 3/8" x 24"	4" 6" 10" 16" 22"
7/16" x 6" 7/16" x 12"	4" 10"
1/2" x 6" 1/2" x 10" 1/2" x 12" 1/2" x 18" 1/2" x 24"	4" 8" 10" 16" 22"
9/16" x 6" 9/16" x 10"	4" 8"
5/8" x 8" 5/8" x 12" 5/8" x 18"	6" 10" 16"
11/16" x 8" 11/16" x 12" 11/16" x 18"	6" 10" 16"
3/4" x 8" 3/4" x 12" 3/4" x 18"	6" 10" 16"
27/32" x 8"	6"
7/8" x 8 7/8" x 12" 7/8" x 16"	6" 10" 16"
1" x 8" 1" x 10 1" x 12" 1" x 18"	6" 8"" 10" 16"

Spline Carbide Drills
F/N SPL



Size	Usable Length
3/8" x 10" 3/8" x 13" 3/8" x 16"	5" 8" 11"
7/16" x 13"	8"
1/2" x 10" 1/2" x 13" 1/2" x 16" 1/2" x 22" 1/2" x 29" 1/2" x 36"	5" 8" 11" 17" 24" 31"
9/16" x 10" 9/16" x 13" 5/8" x 10" 5/8" x 13" 5/8" x 16" 5/8" x 22 5/8" x 29" 5/8" x 36"	5" 8" 5" 8" 11" 17" 24" 31"
11/16" x 13" 3/4" x 10" 3/4" x 13" 3/4" x 16" 3/4" x 22" 3/4" x 29" 3/4" x 36"	8" 5" 8" 11" 17" 24" 31"
7/8" x 16" 7/8" x 22" 7/8" x 36"	11" 17" 31"
1" x 13" 1" x 16" 1" x 22" 1" x 29" 1" x 36"	8" 11" 17" 24" 31"
1-1/8" x 16" 1-1/8" x 22"	11" 17"
1-1/4" x 16" 1-1/4" x 22"	11" 17"
1-3/8" x 16" 1-3/8" x 22"	11" 17"
1-1/2" x 22 1-5/8" x 22" 1-3/4" x 22"	17" 17" 17"
2" x 22"	17"

SDS MAX
F/N MAX



Size	Usable Length
1/2" x 13" 1/2" x 21"	8" 16"
9/16" x 13" 9/16" x 21"	8" 16"
5/8" x 13" 5/8" x 21 5/8" x 36"	8" 16" 31"
3/4" x 13" 3/4" x 21" 3/4" x 36"	8" 16" 31"
7/8" x 13 7/8" x 21" 7/8" x 36"	8" 16" 31"
1" x 13" 1" x 21" 1" x 36"	8" 16" 31"
1-1/8" x 13" 1-1/8" x 21"	8" 16"
1-1/4" x 15" 1-1/4" x 23" 1-1/4" x 36"	10" 18" 31"
1-3/8" x 15" 1-3/8" x 23"	10" 18"
1-1/2" x 15" 1-1/2" x 23"	10" 18"

Masonry Drill Bits

A Taper Drills
F/N ATAPER

Size	Usable Length
3/16" x 4"	2"
3/16" x 6"	4"
7/32" x 6"	4"
1/4" x 4"	2"
1/4" x 6"	4"
1/4" x 10"	8"
5/16" x 4-1/2"	2-1/2"
5/16" x 6"	4"
3/8" x 4-1/2"	2-1/2"
3/8" x 6"	4"
3/8" x 9"	7"
1/2" x 6"	4"
1/2" x 12"	10"
5/8" x 9"	7"
5/8" x 12"	10"
3/4" x 9"	7"
3/4" x 12"	10"

Heavy Duty Chisels
F/N CHISEL

Shank Type	Chisel Type	Blade Width	Overall Length
Spline	Bull Point	–	12
Spline	Bull Point	–	18
Spline	Flat	1"	12
Spline	Flat	1"	18
Spline	Scaling	2"	12
Spline	Scaling	2"	18
TE	Bull Point	–	12
TE	Bull Point	–	18
TE	Flat	1"	12
TE	Flat	1"	18
TE	Scaling	2"	12
TE	Scaling	2"	18
–	Bushing	1-1/2" x 1-1/2"	1-3/4
Spline	Bushing Driver	–	12
TE	Bushing Driver	–	12

HD Straight Shank Carbide Drills
F/N SSHANK

Size	Usable Length
1/8" x 3"	2-1/4"
5/32" x 6"	4"
3/16" x 4	2-3/4"
3/16" x 6"	4"
3/16" x 13"	11"
7/32" x 4"	2-1/4"
7/32" x 6"	4"
1/4" x 4"	2-3/4"
1/4" x 6"	4"
1/4" x 13"	11"
1/4" x 18"	16"
1/4" x 24"	22"
5/16" x 5"	3"
5/16" x 6"	4"
5/16" x 13"	11"
3/8" x 4"	2"
3/8" x 6"	4"
3/8" x 13"	11"
3/8" x 24"	22"
7/16" x 6"	4"
7/16" x 13"	11"
1/2" x 6"	4"
1/2" x 13"	11"
1/2" x 24"	22"
9/16" x 6"	4"
9/16" x 13"	11"
5/8" x 6"	4"
5/8" x 13"	11"
5/8" x 24"	22"
11/16" x 6"	4"
11/16" x 13"	11"
3/4" x 6"	4"
3/4" x 13"	11"
3/4" x 24"	22"
7/8" x 13"	11"
7/8" x 24"	22"
1" x 13"	11"
1" x 24"	22"

Core & Tunnel Bits
F/N CBIT48-20 / MIL48-20-

Description	Dia. (in.)	Ref. (mm)	Length (in.)
Core Cutters 	1-1/8	30	4
	1-1/2	40	4
	2	50	4
	2-1/2	65	4
	3	80	4
	3-1/2	90	4
Core Cutter Accessories 	Starter Bit 7/16" x 3/4"		
	Spline Shaft 8" length		
	Spline Shaft 17" length		
	SDS Max Shaft 7" length		
	SDS Max Shaft 18" length		
	Ejector Key for core cutters		

F/N MIL48-20-

Unit Section Description	Dimensions–Inches Dia.	Lng.	ID#
Drive Spline Shank	—	7	015 572
Drive Hilti® Shank	—	7	015 573

Unit Section Description	Dimensions–Inches Dia.	Lng.	ID#
Fluted Extension	1-3/16	11	015 571
Replacement Threaded Stud	Rope Thread	2-1/2	015 593

Unit Section Description	Dimensions–Inches Dia.	Lng.	ID#
Drilling Head	1-1/2	6	015 567
Drilling Head	2-1/8	6	015 568
Drilling Head	2-1/2	6	015 569
Drilling Head	3-1/4	6	015 570

Phillips Insert Bits

1/4" Hex Shank Insert Bits
• Reduced diameter bit

Part No.	Length
QT250PBR1	1"
QT250PBR2	1"

1/4" Hex Shank Insert Bits
• Standard style

Part No.	Length
QT250PB1	1"
QT250PB2	1"
QT250PB3	1"
QT250PB2-15	1-1/2"
QT250PB2-2	2"

1/4" Hex Shank Power Bits
• 1-15/16"

Part No.	Diameter
QT30-1P	3/16"
QT30-2P	1/4"
QT30-3P	1/4"

1/4" Hex Shank Power Bits
• 2-3/4"

Part No.	Diameter
QT32-2P	1/4"
QT32-3P	1/4"

1/4" Hex Shank Power Bits
• 6" length

Part No.	Diameter
QT36-2P	1/4"

1/4" Hex Shank Power Bits
• 3-1/2" length

Part No.	Diameter
QT34-1P	3/16"
QT34-2P	1/4"

Bit Holders

1/4" Hex Drive No Ring Retainer
• Magnetic

Part No.	Length
QTMBHE 1/4	1-7/8"

1/4" Hex Drive with Ring Retainer
• Magnetic • 3/8" Body

Part No.	Length
QTMBHR 1/4	2-7/8"

1/4" Hex Drive with Ring Retainer
• Magnetic

Part No.	Length
QTMBH 1/4	3"

Nutsetters

1/4" Hex Drive Power Nutsetter – Short
• Magnetic

Part No.	Length
QTMSH 1/4	1-5/8"
QTMSH 5/16	1-5/8"
QTMSH 3/8	1-3/4"

1/4" Hex Drive Power Nutsetter – Long
• Magnetic

Part No.	Length
QTMSHL 1/4	2-9/16"
QTMSHL 5/16	2-9/16"
QTMSHL 3/8	2-9/16"
QTMSHL 7/16	2-9/16"

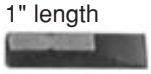
Pozidriv® Insert Bits

1/4" Hex Shank Insert Bits
• 1" Length

Part No.	Diameter
QT250PZ2	1/4"
QT250PZ3	1/4"

Slotted Insert Bits

1/4" Hex Shank (Short Length)
1" length



Part No.	Screw Size
QT250SS4	No. 4
QT250SS5	No. 5
QT250SS6	No. 6
QT250SS8	No. 8
QT250SS10	No. 10

Slotted Power Bits

1/4" Hex Drive Shank
• 1-15/16" length

Part No.	Diameter
QT20-3S	.154
QT20-6S	.250
QT20-7S	.250
QT20-8S	.275
QT20-9S	.312
QT20-10S	.360

Square Insert

1/4" Hex Shank—Insert Bits

• 1" length

Part No.	Point Size
QT250R1	1
QT250R2	2
QT250R3	3

1/4" Hex Shank—Power Bit

• 1-15/16" length

Part No.	Point Size
QT80-1R	1
QT80-2R	2
QT80-3R	3

1/4" Hex Drive—Shank Extension

• Fits all 3/8" square drive sockets

Part No.	Length
QT250SH 3/8-2	2"

1/4" Hex Drive—Shank Extension

• Fits all 1/4" square drive sockets

Part No.	Length
QT250SH 1/4-2	2"
QT250SH 1/4-4	4"
QT250SH 1/4-6	6"

Star Insert Bits

1/4" Hex Shank—Insert Bits

• 1" length

Part No.	Point Size
QT60-T10	10
QT60-T15	15
QT60-T20	20
QT60-T25	25
QT60-T30	30

5/16" Hex Shank—Insert Bits

• 1-1/4" length

Part No.	Point Size
QT61-T30	30
QT61-T40	40
QT61-T45	45

Non Magnetic Hand Driver 4 in 1 Quick Change Screwdriver

Part No.	Includes
QT700	#1 & #2 Phillips 3/16, 5/16 slotted

Bit Kits

Masonry "Drill & Drive" Tool Kit

- Drive Tube
- 1/4" & 5/16" Drive Nutsetter
- Holder for Phillips Bits
- Drill Holder
- L-Hex Key
- Heavy Duty Plastic Case
- #2 & #3 Phillips Bit

Part No. QT625

The Bit Kit 31 Piece Set

Also available in tamper proof - Part No. QT2100

- Phillips, Slotted, Hex Socket, Square, Star, Pozidriv® and Clutch Bits
- Socket Adapter
- Magnetic Bit Holder
- Magnetic Hand Driver

Part No. QT2000

Power Bits with Finders

1/4" Hex Drive Shank—Standard Length

• Complete assembly

Part No.	Diameter
QT40-3BF	.241
QT40-4BF	.290
QT40-5BF	.350
QT40-6BF	.395

Saw Blades

Tungsten Carbide Tipped Blade F/N RSB M-Metal W = Wood

Blade Shape	Recommended Use	Inches Length x Width x Thickness	Teeth Per Inch	Part # Carded 1/Card
	Plaster over lath, fiberglass, wood, and non-ferrous metal.	6 x 3/4 x .050	3	MORRTCT603C
		6 x 3/4 x .050	6	MORRTCT606SC
		9 x 3/4 x .050	3	MORRTCT903C
		9 x 3/4 x .050	6	MORRTCT906C
		12 x 3/4 x .050	3	MORRTCT1203C
		12 x 3/4 x .050	6	MORRTCT1206C

Reciprocating Saw Blades F/N RSB M-Metal W = Wood

Bi-Metal (1/2" Shank)				
Blade Shape	Recommended Use	Inches Length x Width x Thickness	Teeth Per Inch	Part # Vinyl Pouch 5/Pouch
	Wood, nail-embedded wood, all composition material.	6 x 3/4 x .035	6	MORRB6068TP
	General rough-in, all woods, nail-embedded woods.	6 x 3/4 x .035	6	MORRB63506P
		9 x 3/4 x .035	6	MORRB93506P
		12 x 3/4 x .035	6	MORRB123506P
		6 x 3/4 x .050	6	MORRB65006P
		9 x 3/4 x .050	6	MORRB95006P
		12 x 3/4 x .050	6	MORRB125006P
	Heavy gauge metal, rubber & fiber, nail-embedded wood.	4 x 3/4 x .035	10/14	MORRB41014P
	General purpose, metal cutting, nail-embedded woods.	12 x 3/4 x .035	10/14	MORRB121014P
	Wood, nail-embedded wood, compositions, plastic, cast aluminum and non-ferrous metals.	6 x 3/4 x .035	10	MORR8610P
		12 x 3/4 x .035	10	MORRB1210P
	All woods, composition materials, plastic, nail-embedded wood, cast aluminum, light-gauge metals.	8 x 3/4 x .035	10	MORRB810P
		10 x 3/4 x .035	10	MORRB1010P
	Wood, nail-embedded wood, compositions, plastic, metals 1/8" and above.	6 x 3/4 x .035	10/14	MORRB61014P
	Wood/metal.	6 x 3/4 x .050	10/14	MORRB6501014P
	General purpose, metal cutting, nail-embedded woods.	8 x 3/4 x .035	10/14	MORRB81014P
	Heavy gauge metals 1/8" thick and above.. Barstock and angles.	4 x 3/4 x .035	14	MORRB414P
		6 x 3/4 x .035	14	MORRB614P
		12 x 3/4 x .035	14	MORRB1214P
	Heavy gauge metals 1/8" thick and above. Barstock and angles.	8 x 3/4 x .035	14	MORRB814P
	Heavy gauge metals of 18 gauge of 1/8" thick conduit, pipe, channels, and tubing.	4 x 3/4 x .035	18	MORRB418P
		6 x 3/4 x .035	18	MORRB618P
		12 x 3/4 x .035	18	MORRB1218P
	Heavy gauge metals, conduit & tubing 18 gauge to 1/8" thick.	8 x 3/4 x .035	18	MORRB818P
	Metal cutting 18 gauge and under. Trim and tubing.	4 x 3/4 x .035	24	MORRB424P
	Galvanized pipe under 18 gauge.	6 x 3/4 x .035	24	MORRB624P
	Plaster with metal lath, plasterboard, sheet rock, plaster walls. Tooth design cuts both forward and on back stroke.	6 x 3/4 x .035	6	MORRB606PP
	General rough-in scroll cuts, all woods, nail-embedded woods.	6 x 7/16 x .050	6	MORRB65006CP
	Scroll cuts in wood and cast aluminum, non-ferrous metals.	3 x 5/16 x .035	18	MORRB318SP
	For soil pipe.	8 x 3/4 x .050	10/14	MORRB8501014P
	General rough-in, all woods, nail-embedded woods.	12 x 3/4 x .050	10/14	MORRB2501014P

Saw Blades

Bi-Metal Hand Hack Saw Blades F/N HSB

Applications

- Pipe, tubing and solids.
- Cuts wood, plastic or any machinable metal; including conduit, stainless steel tubing, angle iron, copper tubing, structural materials, etc.

Specifications

Description		TPI	Product Number		
Inches	mm		Boxed	Pouched	Carded
12 x 1/2 x .025	300 x 12.7 x 0.6	14	MORHHB1214	MORHHB1214P	MORHHCB1214
12 x 1/2 x .025	300 x 12.7 x 0.6	18	MORHHB1218	MORHHB1218P	MORHHCB1218
12 x 1/2 x .025	300 x 12.7 x 0.6	24	MORHHB1224	MORHHB1224P	MORHHCB1224
12 x 1/2 x .025	300 x 12.7 x 0.6	32	MORHHB1232	MORHHB1232P	MORHHCB1232

Bi-Metal Blades F/N JSB M-Metal W = Wood

Jig Saw				
Blade Shape	Recommended Use	Inches Length x Width x Thickness	Teeth Per Inch	Part # Vinyl Pouch 5/Pouch
	Wood, Fiber Board, Asbestos, Roughing Work.	4 x 5/16 x .040	6	MORSB0406P
	General Purpose—Wood Cutting, Compositions, Plastic.	4 x 5/16 x .035	8	MORSB0408P
	All Woods, Composition Material, Plastics, Plywood.	4 x 5/16 x .035	10	MORSB0410P
	Softwood, Hardwood, Plywood, Chipboard, Plastic Up to 1" Thick. Very Clean Cutting—Long Life Blade.	4 x 5/16 x .050	10	MORSB410CCP
	Softwood, Aluminum, Non-Ferrous Metal up to 3/8", Plastic Sandwich Material up to 3-3/4". Extra Long Blade.	5-1/4 x 5/16 x .042	12	MORSB0512LP
	Steel and Non-Ferrous Metal 1/8" Thick and Up.	3 x 3/8 x .035	14	MORSB0314P
	Metals Over 18 Gauge, Tubing, Conduit.	3 x 3/8 x .035	18	MORSB0318P
	Soft Steel, Aluminum, Non-Ferrous Metal up to 1/8", Sandwich Material up to 3-3/4". Extra Long Blade.	5-1/4 x 5/16 x .042	21	MORSB0521LP
	Thin Metals, Plastic, Fine Cuts Under 18 Gauge.	3 x 3/8 x .035	24	MORSB0324P

High Speed Steel Blades F/N JSB M-Metal W = Wood

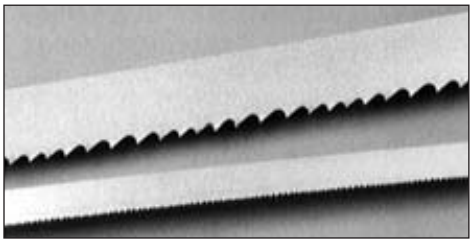
Blade Shape	Recommended Use	Inches Length x Width x Thickness	Teeth Per Inch	Part # Vinyl Pouch 5/Pouch
	Hard Plastic, Non-Ferrous Metal, Wood with Nails, Very Hard Wood. Very Clean Cuts.	4 x 5/16 x .050	8	MORSH0408P

Carbon Blades F/N JSB M-Metal W = Wood

Blade Shape	Recommended Use	Inches Length x Width x Thickness	Teeth Per Inch	Part # Vinyl Pouch 5/Pouch
	Softwood, Hardwood, Plywood, Clipboard, Plastic Up to 2" Thick. Clean/Fast Cutting.	4 x 5/16 x .050	6	MORSC0406P
	Softwood, Hardwood Up to 2" Thick. Fast Cutting.	4 x 5/16 x .050	6	MORSC0416P
	Softwood, Hardwood, Plywood, Chipboard, Plastic Up to 4" Thick. Special Long Blade—Clean Cuts.	5-1/4 x 5/16 x .050	6	MORSC0506P
	Softwood, Hardwood Up to 4" Thick. Fast Cutting. Special Long Blade.	5-1/4 x 5/16 x .050	6	MORSC0516P
	Rough Cuts in Wood Up to 4" Thick. Special Long Blade.	5-1/4 x 5/16 x .050	8	MORSC0508P
	Softwood, Hardwood, Plywood, Chipboard, Plastic Up to 1" Thick. Very Clean Cuts.	4 x 5/16 x .050	10	MORSC0410P
	Plywood, Chipboard, Insulation, Plastic Up to 4" Thick. Special Long Blade.	5-1/4 x 5/16 x .050	12	MORSC0512P
	Reverse Tooth—Non-Splitting Cuts of Laminates, and Chipboard. Very Clean Cutting.	4 x 5/16 x .050	10	MORSC0410P
	Scroll—Curved Cutting in Hard and Softwood Up to 4" Thick. Very Clean Cuts—Special Long Blade.	5-1/4 x 5/16 x .050	10	MORSC0510SP
	Scroll—Curved Cutting, Chipboard, Plastic Up to 1" Thick. Special Blade. Very Clean Cuts.	4 x 1/4 x .050	10/24	MORSC041024SP
	Curved Cuts/Scroll in Softwood and Hardwood Up to 2" Thick. Fast Cutting	4 x 1/4 x .050	6	MORSC0416SP

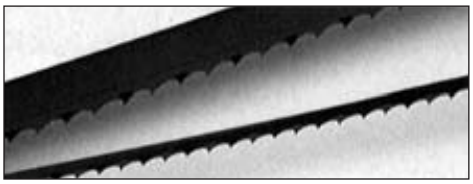
Bandsaw Blades
F/N BSB

Bi-Metal — Matrix II — (BIM-MTX) — Band Saw



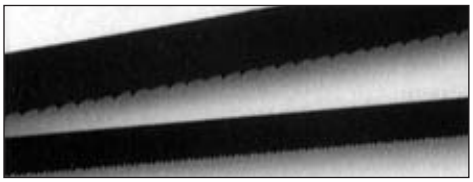
FEATURES	ADVANTAGES	BENEFITS
• Matrix II High Speed Steel Edge • Tooth Hardness Rc 66-68 • 8% Cobalt • Alloy Steel Backer • Positive Rake	• High Heat Resistance • High Wear Resistance • Prevents Tooth Damage • Fatigue Resistant • Increased Tooth Penetration	• Longer Life than Carbon Blades • Higher Production • Faster Cutting

Carbon — Hard Edge — Flexible Back (HEF) — Band Saw



FEATURES	ADVANTAGES	BENEFITS
• One Piece Construction • Tooth Hardness Rc 64-67 • Back Hardness Rc 28-35	• Fatigue Resistant even at High Speeds	• Low Cost • Good Wear Resistance in Select Applications

Carbon — Hard Edge — Hard Back (HB) — Band Saw



FEATURES	ADVANTAGES	BENEFITS
• One Piece Construction • Tooth Hardness Rc 64-67 • Back Hardness Rc 42-48	• Accepts Heavier Feed Pressure and Blade Tension than HEF	• Faster Cutting Rate • Straighter Cuts

Bi-Metal Blades — Portable Band Saw

FEATURES	ADVANTAGES	BENEFITS
• Bi-Metal Construction • Rc 65-67 Matrix II Cutting Edge • Variable or Standard Pitch	• High Resistance to Heat & Wear • High Shock Resistance • Variable Pitch Reduces Vibration	• Long Life • Reduced Breakage • Faster Cutting and Longer Life

Applications

- Fit all standard portable band saw machines.
- For pipe, tubing and solids.
- Cut any machinable metal, including conduit, angle iron, structurals, rebar, stainless steel tubing etc.

Specifications — Variable Pitch

Length			Product Number		
Inches	mm	TPI	Boxed 3 Per Box	Bulk	Set
44-7/8 x 1/2 x .020	1140 x 12.7 x .50	10/14	MORZWEP441014MC	MORZWEP441014MCB	Wavy
44-7/8 x 1/2 x .020	1140 x 12.7 x .50	14/18	MORZWEP441418MC	MORZWEP441418MCB	Wavy
44-7/8 x 1/2 x .020	1140 x 12.7 x .50	20/24	MORZWEP442024MC	MORZWEP442024MCB	Wavy
53-3/4 x 1/2 x .020	1365 x 12.7 x .50	10/14	MORZWEP531014	MORZWEP531014B	Wavy
Standard Pitch					
44-7/8 x 1/2 x .020	1140 x 12.7 x .50	10	MORZWEP4410R	MORZWEP4410RB	Raker
44-7/8 x 1/2 x .020	1140 x 12.7 x .50	14	MORZWEP4414W	MORZWEP4414WB	Wavy
44-7/8 x 1/2 x .020	1140 x 12.7 x .50	18	MORZWEP4418W	MORZWEP4418WB	Wavy
44-7/8 x 1/2 x .020	1140 x 12.7 x .50	24	MORZWEP4424W	MORZWEP4424WB	Wavy
53-3/4 x 1/2 x .020	1365 x 12.7 x .50	10	MORZWEP5310R	MORZWEP5310R	Raker
53-3/4 x 1/2 x .020	1365 x 12.7 x .50	14	MORZWEP5314W	MORZWEP5314WB	Wavy
53-3/4 x 1/2 x .020	1365 x 12.7 x .50	18	MORZWEP5318W	MORZWEP5318WB	Wavy
53-3/4 x 1/2 x .020	1365 x 12.7 x .50	24	MORZWEP5324W	MORZWEP5324WB	Wavy

Hole Saws

F/N HSAW

"AV" Bi-Metal — Hole Saws

Applications

- Cut holes in wood, plastic, or any machinable metal, including: nail-embedded wood, plywood, pipe, stainless steel, etc.

Arbors

M34

M45P

Specifications

Arbors Complete with Pilot Drills							
Product No.	Shank Size	Thread Size	Drill No.	Chuck Size	Arbor Ext.	Fits Saws	Follow Thru
*M34	3/8 Hex	1/2 - 20	MPD4S	3/8	—	AV09-AV244	AV12-AV96

Specifications

Diameter*		Product Number		Pipe Tap Size	Pipe Ent. Size
Inches	mm	Boxed	Carded	Inches	Inches
9/16	14	AV09	AVC09		
5/8	16	AV10	AVC10		
*	16	AV105	—		
11/16	17	AV11	AVC11		
3/4	19	AV12	AVC12		3/8
*	20	AV125	—		
13/16	21	AV13	AVC13		
7/8	22	AV14	AVC14	3/4	1/2
15/16	24	AV15	AVC15		
*	25	AV155	—		
1	25	AV16	AVC16		
1-1/16	27	AV17	AVC17		
1-1/8	29	AV18	AVC18	1	3/4
*	30	AV185	—		
1-3/16	30	AV19	AVC19		
1-1/4	32	AV204	AVC204		
1-3/8	35	AV224	AVC224		
1-1/2	38	AV244	AVC244		
1-1/4	32	AV20	AVC20		
*	32	AV205	—		
1-5/16	33	AV21	AVC21		
1-3/8	35	AV22	AVC22		1
*	35	AV225	—		
1-7/16	37	AV23	AVC23		
1-1/2	38	AV24	AVC24	1-1/4	
1-9/16	40	AV25	AVC25		
*	40	AV255	—		
1-5/8	41	AV26	AVC26		
1-11/16	43	AV27	AVC27		
1-3/4	44	AV28	AVC28	1-1/2	1-1/4
*	45	AV285	—		
1-13/16	46	AV29	AVC29		
1-7/8	48	AV30	AVC30		
*	50	AV315	—		

Diameter*		Product Number		Pipe Tap Size	Pipe Ent. Size
Inches	mm	Boxed	Carded	Inches	Inches
2	51	AV32	AVC32		1-1/2
2-1/16	52	AV33	AVC33		
2-1/8	54	AV34	AVC34		
*	55	AV345	—		
2-1/4	57	AV36	AVC36	2	
2-5/16	59	AV37	AVC37		
2-3/8	60	AV38	AVC38		
2-1/2	64	AV40	AVC40		2
2-9/16	65	AV41	AVC41		
2-5/8	67	AV42	AVC42	2-1/2	
*	68	AV425	—		
*	68.5	AV435	—		
2-3/4	70	AV44	AVC44		
2-7/8	73	AV46	AVC46		
*	75	AV475	—		
3	76	AV48	AVC48		2-1/2
3-1/8	79	AV50	AVC50		
3-1/4	83	AV52	AVC52	3	
3-3/8	86	AV54	AVC54		
3-1/2	89	AV56	AVC56		
3-5/8	92	AV58	AVC58		3
3-3/4	95	AV60	AVC60	3-1/2	
3-7/8	98	AV62	AVC62		
*	100	AV63	—		
4	102	AV64	AVC64		
4-1/8	105	AV66	—		3-1/2
4-1/4	108	AV68	—		
4-3/8	111	AV70	—		
4-1/2	114	AV72	—		4
4-3/4	121	AV76	—	4-1/2	
5	127	AV80	—		
5-1/2	140	AV88	—		
5-3/4	146	AV92	—		
6	152	AV96	—		

*Exact metric sizes. Other metric sizes are approximate metric equivalents of exact inch sizes.

Bi-Metal Variable Pitch Hole Saw Kits

AV06I Industrial Kit

Designed for a broad range of industrial applications, this kit contains 15 plumbing and electrical sizes for pipe and conduit through 4". Contains (1 each): 3/4", 7/8", 1-1/8", 1-3/8", 1-1/2", 1-3/4" 2", 2-1/4", 2-1/2", 3", 3-1/4", 3-5/8", 3-3/4", 4-1/4", 4-1/2". Kit also includes 1 each: M24K, M44, and M45P arbors and 12" extension.

AV08E Master Electricians Kit

Pipe entrance sizes for pipe and conduit through 4". Contains (1 each): 7/8", 1-1/8", 1-3/8", 1-3/4", 2", 2-1/2", 3", 3-5/8", 4-1/8", 4-1/2". Kit also includes 1 each: M24K, M44, and M45P arbors.

AV09E Special Electricians Kit

Pipe entrance sizes for 2-1/2", 3", 3-1/2", 4" pipe. Contains (1 each): 3", 3-5/8", 4-1/8", 4-1/2". Kit also includes 1 M45P arbor.

1 Piece Hole Saws

F/N HSAW

The Real McCoy™ Bi-Metal with Built-in Arbor — Hole Saws

Applications

- Cut holes in wood, plastic, or any machinable metal, including: nail-embedded wood, plywood, pipe, stainless steel, etc.

FEATURES

- Attached Arbor
- Bi-Metal Construction
- M3 Cutting Edge
- 4/6 Variable Pitch
- Positive Rake
- 1-1/2" Cutting Depth

BENEFITS

- Saves Time
- Teeth Stay Sharp
- Long Life
- Smoother Cuts
- Fast Cutting
- Cuts Through 2" x 4"s

ADVANTAGES

- Convenience
- Shock Resistant Teeth
- Higher Wear Resistance
- Reduces Vibration
- Better Chip Clearance

Specifications

Diameter*		Product Number		Pipe Tap Size	Pipe Ent. Size
Inches	mm	Boxed	Carded	Inches	Inches
9/16	14	MORTA09	MORTAC09		
5/8	16	MORTA10	MORTAC10		
—	16	MORTA105	—		
11/16	17	MORTA11	MORTAC11		
3/4	19	MORTA12	MORTAC12		3/8
—	20	MORTA125	—		
13/16	21	MORTA13	MORTAC13		
7/8	22	MORTA14	MORTAC14	3/4	1/2
15/16	24	MORTA15	MORTAC15		
—	25	MORTA155	—		
1	25	MORTA16	MORTAC16		
1-1/16	27	MORTA17	MORTAC17		
1-1/8	29	MORTA18	MORTAC18	1	3/4
—	30	MORTA185	—		
1-3/16	30	MORTA19	MORTAC19		
1-1/4	32	MORTA20	MORTAC20		
—	32	MORTA205	—		
1-5/16	33	MORTA21	MORTAC21		
1-3/8	35	MORTA22	MORTAC22		1
—	35	MORTA225	—		
1-7/16	37	MORTA23	MORTAC23	1-1/4	
1-1/2	38	MORTA24	MORTAC24		
1-9/16	40	MORTA25	MORTAC25		
—	40	MORTA255	—		
1-5/8	41	MORTA26	MORTAC26		
1-11/16	43	MORTA27	MORTAC27		
1-3/4	44	MORTA28	MORTAC28	1-1/2	1-1/4
—	45	MORTA285	—		
1-13/16	46	MORTA29	MORTAC29		
1-7/8	48	MORTA30	MORTAC30		
—	50	MORTA315			
2	51	MORTA32	MORTAC32		1-1/2
2-1/16	52	MORTA33	MORTAC33		
2-1/8	54	MORTA34	MORTAC34		
—	55	MORTA345	—		
2-1/4	57	MORTA36	MORTAC36	2	
2-5/16	59	MORTA37	MORTAC37		
2-3/8	60	MORTA38	MORTAC38		
2-1/2	64	MORTA40	MORTAC40		2
2-9/16	65	MORTA41	MORTAC41		
2-5/8	67	MORTA42	MORTAC42	2-1/2	
—	68	MORTA425	—		
—	68.5	MORTA435	—		
2-3/4	70	MORTA44	MORTAC44		
2-7/8	73	MORTA46	MORTAC46		
—	75	MORTA475	—		
3	76	MORTA48	MORTAC48		2-1/2
3-1/8	79	MORTA50	MORTAC50		
3-1/4	83	MORTA52	MORTAC52	3	
3-3/8	86	MORTA54	MORTAC54		
3-1/2	89	MORTA56	MORTAC56		
3-5/8	92	MORTA58	MORTAC58		3
3-3/4	95	MORTA60	MORTAC60	3-1/2	
3-7/8	98	MORTA62	MORTAC62		
—	100	MORTA63	—		
4	102	MORTA64	MORTAC64		
4-1/8	105	MORTA66	—		3-1/2
4-1/4	108	MORTA68	—		
4-3/8	111	MORTA70	—		
4-1/2	114	MORTA72	—		4
4-3/4	121	MORTA76	—	4-1/2	
5	127	MORTA80	—		
5-1/2	140	MORTA88	—		
5-3/4	146	MORTA92	—		
6	152	MORTA96	—		

*Metric sizes shown in red are exact millimeter sizes. Metric sizes in black are approximate metric equivalents of exact inch sizes.

Bi-Metal Variable Pitch Hole Saw Kits

AV100 Maintenance Kit
Designed for plumbers, electricians, industrial and general purpose maintenance, this kit contains 9 plumbing and electrical sizes for pipe and conduit through 2". Contains (1 each): 3/4", 7/8", 1-1/8", 1-3/8", 1-1/2", 1-3/4", 2", 2-1/4", 2-1/2". Kit also includes 1 each: M24K, M44, M45P arbors and 12" extension.

AV02E Electricians Kit
Designed for electricians, this kit contains pipe entrance sizes for pipe and conduit through 2". Contains (1 each): 7/8", 1-1/8", 1-3/8", 1-3/4", 2", 2-1/2". Kit also includes 1 each: M44 and M45P arbors.

AV04P Plumbers Kit
Designed for plumbers, this kit contains pipe tap sizes for pipe through 2".Contains (1 each): 3/4", 7/8", 1-1/8", 1-1/2", 1-3/4", 2-1/4". Kit also includes 1 each: M44 and M45P arbors.

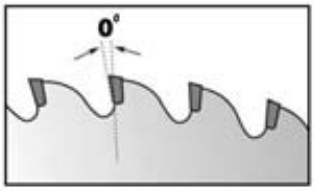
THE ANATOMY OF THE Metal Devil®

The secret to the Morse Metal Devil's ability to quickly and smoothly cut through tough metals lies in it's unique combination of manufacturing quality, metallurgy and blade configuration. Teeth are arranged in varying numbers around a hardened steel inner plate. Each tooth is tipped with a unique combination of tungsten carbide and titanium carbide. These tips are brazed to the plate and arranged in a manner to assure longer life and smoother cutting action.

Teeth Per Blade

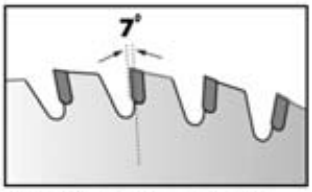
The number of teeth on a blade depends on the diameter of the blade, the thickness and type of material being cut. Generally speaking, blades for cutting thinner and harder materials require more teeth with smaller gullets between teeth.

Tooth Geometry



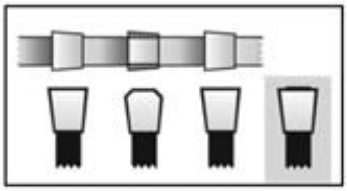
Blades for cutting steel have teeth with 0° rake

A line drawn along the front of the tooth would cross the center point of the blade. This configuration creates a stronger tooth with more metal backing the tooth.



Blades for cutting softer material such as aluminum have teeth with a 7° rake

This creates a more forward cutting action. The machinability of aluminum allows use of this more aggressive tooth configuration.

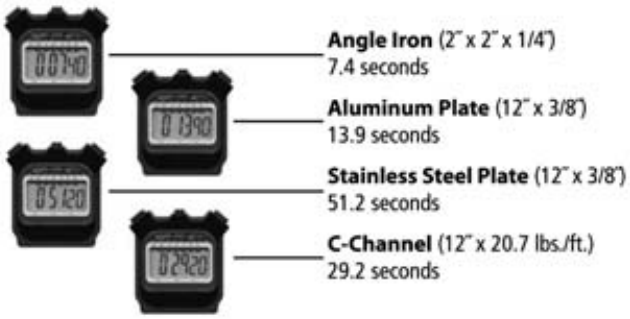


TCG (Triple Chip Grind)

This configuration, used on various steel, stainless steel and aluminum cutting blades, maximizes life by sharing chip load between the teeth. It also provides maximum strength at each of the tip points.

A FASTER WAY TO CUT

The Morse Metal Devil® cuts through steel, iron and aluminum with hardly any frictional drag. Consequently, the time savings are dramatic and important to anyone trying to get more done in less time.



Angle Iron (2" x 2" x 1/4")
7.4 seconds

Aluminum Plate (12" x 3/8")
13.9 seconds

Stainless Steel Plate (12" x 3/8")
51.2 seconds

C-Channel (12" x 20.7 lbs./ft.)
29.2 seconds

Cut Through Solid Steel Plate In Less Than 12 Seconds!

In laboratory tests the Morse Metal Devil® cut through 6" x 1/4" thick steel plate in less than 12 seconds. This Devil is a speed demon!

A LONGER LASTING WAY TO CUT

The unique metallurgy of the carbide tips and hardened steel inner plate combined with the configuration of the teeth and manufacturing quality create a circular saw blade that makes more cuts per blade than any other blade you can attach to a power tool.

Here are some sample durability results from tests on different materials:

Angle Iron (2" x 2" x 1/4")
400 cuts/375 sq. in.

C-Channel (12" x 20.7 lbs./ft.)
40 cuts/270 sq. in.

Steel Plate (6" x 3/8")
58 cuts/87 sq. in.

Stainless Steel Plate (12" x 3/8")
13 cuts/58.5 sq. in.

Blade Diameter	Part Number	Number of Teeth	Arbor	Applications	Computer Number	MAX RPM	Machine
5 3/8" 137mm	CSM53830SC	30	20-10mm-5/8	Steel	100007	4200	Makita Panasonic Dewalt
	CSM53850AC	50	20-10mm-5/8	Aluminum	100014	4200	
	CSM53850TSC	50	20-10mm-5/8	Thin Steel	100021	4200	
6 1/4" 159mm	CSM62548SC	48	5/8	Steel	100038	4200	Makita
	CSM62560AC	60	5/8	Aluminum	100052	4200	
	CSM62548SIC	**48**	**20-16mm**	**Steel**	**100434**	**4200**	**Standard Circular Saws**
	CSM62556TSIC	**56**	**20-16mm**	**Thin Steel**	**100441**	**4200**	
6 1/2" 165mm	CSM65040SC	40	5/8	Steel	100069	4200	Dewalt Miwaulkee
	CSM65048TSC	48	5/8	Thin Steel	100076	4200	
	CSM6504020SC	**40**	**20mm**	**Steel**	**100632**	**4200**	**Standard Circular Saws**
	CSM6504820TSC	**48**	**20mm**	**Thin Steel**	**100649**	**4200**	
6 3/4" 171mm	CSM67540SC	40	20mm	Steel	100090	4200	Dewalt
	CSM67560AC	60	20mm	Aluminum	100113	4200	
	CSM6754030SIC	**40**	**30mm**	**Steel**	**100458**	**5800**	**Standard Circular Saws**
	CSM6754830TSIC	**48**	**30mm**	**Thin Steel**	**100472**	**5800**	
7" 178mm	CSM736SC	36	20mm	Steel	100137	5800	Morse Hitech Jancy
	CSM748SSC	48	20mm	Stainless Steel	100144	5800	
	CSM754AC	54	20mm	Aluminum	100151	5800	
	CSM768TSC	68	20mm	Thin Steel	100168	5800	
	CSM736SIC	**36**	**30-20mm**	**Steel**	**100502**	**5800**	**Standard Circular Saws**
	CSM768TSIC	**68**	**30-20mm**	**Thin Steel**	**100496**	**5800**	
7 1/4" 184mm	CSM72540SC	40	5/8 KO*	Steel	100175	5800	Standard Circular Saws
	CSM72550SC	50	5/8 KO*	Steel	100182	5800	
	CSM72560AC	60	5/8 KO*	Aluminum	100199	5800	
	CSM72568TSC	68	5/8 KO*	Thin Steel	100397	5800	
	CSM7254020SC	**40**	**20mm**	**Steel**	**100656**	**5800**	**Standard Circular Saws**
	CSM72550SIC	**50**	**20-16mm**	**Steel**	**100519**	**5800**	
	CSM7256020AC	**60**	**20mm**	**Aluminum**	**100663**	**5800**	
	CSM72568TSIC	**68**	**20-16mm**	**Thin Steel**	**100526**	**5800**	
7 1/2" 191mm	CSM75060AC	60	20mm	Aluminum	100229	5800	Jepson
	CSM75068TSC	68	20mm	Thin Steel	100236	5800	
	CSM7505030SIC	**50**	**30mm**	**Steel**	**100557**	**5800**	**Standard Circular Saws**
	CSM7506830TSIC	**68**	**30mm**	**Thin Steel**	**100533**	**5800**	
8" 203mm	CSM840SC	40	5/8	Steel	100243	5800	Milwaukee
	CSM850SC	50	5/8	Steel	100250	5800	
	CSM860AC	60	5/8	Aluminum	100267	5800	
	CSM868TSC	68	5/8	Thin Steel	100274	5800	
	CSM850SIC	**50**	**30mm**	**Steel**	**100588**	**5800**	**Standard Circular Saws**
	CSM868TSIC	**68**	**30mm**	**Thin Steel**	**100571**	**5800**	
8 1/4" 210mm	CSM82550SC	50	5/8 KO*	Steel	100281	5800	Standard Circular Saws
9" 229mm	CSM940WC	40	1	Wood	100298	3200	Morse Hitech
	CSM948SC	48	1	Steel	100304	3200	
	CSM980AC	80	1	Aluminum	100328	3200	
	CSM968TSC	68	1	Thin Steel	100311	3200	
	CSM960SSC	60	1	Stainless Steel	100403	3200	
	CSM948SIC	**48**	**30-20mm**	**Steel**	**100595**	**3200**	**Standard Circular Saws**
	CSM968TSIC	**68**	**30-20mm**	**Thin Steel**	**100601**	**3200**	
10" 254mm	CSM1052TSC	52	5/8 KO*	Thin Steel	100410	5200	Portable Circular Saws
	CSM1080AC	80	5/8 KO*	Aluminum	100427	5500	
12" 305mm	CSM1260SC	60	1	Steel	100335	2000	Jepson Makita Ridge Ryobi
	CSM1280AC	80	1	Aluminum	100359	3800	
	CSM1280TSC	80	1	Thin Steel	100342	2000	
14" 356mm	CSM1472SC	72	1	Steel	100336	1800	Morse Dewalt Jepson Hitachi Porter Cable
	CSM1480AC	80	1	Aluminum	100373	3800	
	CSM1481STC	81	1	Steel Studs	100670	1800	
	CSM1490TSC	90	1	Thin Steel	100380	1800	
	CSM1490SSC	90	1	Stainless Steel	100694	1800	
	CSM1472SIC	**72**	**30mm**	**Steel**	**100618**	**1800**	**Standard Circular Saws**
	CSM1490TSIC	**90**	**30mm**	**Thin Steel**	**100625**	**1800**	

5-3/8" blades include special bushings allowing them to fit 20mm, 10mm and 5/8" arbor holes

* 5/8 KO fits both diamond and circular arbors. **Blades in bold indicate international machine arbor sizes.**

Grinding Wheels

F/N FLEX or CAM or SAIT

Type 27 Depressed Center Grinding Wheels For Grinding Only

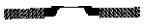
METAL, STAINLESS

A30S - Fast Grind The A30S performs well on a broad range of metals, including stainless and other hard alloys.

A24/30T - Heavy Duty Your best choice for tough applications such as beveling and edge or flame cut grinding.

CONCRETE

C24/30P - Heavy Duty Made with silicon carbide grain, C24/30P is designed for all concrete and masonry applications. Also offers fast grinding action on nonferrous metals.


Type 27


Type 27 Spin-On


Use On Angle Grinders

ALUMINUM

A24ALU - Load Resistant A non-loading wheel for grinding on aluminum and other nonferrous materials.

STAINLESS

A30Q - Free Grind Specially formulated for grinding stainless steels and other alloy metals. A30Q wheels deliver smooth and fast grinding.

IRON

CA24R - Foundry A special blend of silicon carbide and aluminum oxide. Perfect for removing burned-in sand from castings, as well as ductile, malleable and cast iron.

FLEXON®

• *Zirconia Abrasive*

METAL, STAINLESS, ALLOYS

ZA24P - Fastest Grind Fastest stock removal rate of any zirconia wheel.

ZA20Q - Fast Grind Excellent for grinding on flat or broad surfaces.

ZA24S - Heavy Duty Maximum life. Best choice for beveling and edge grinding.

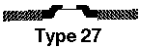
ZA16U - Foundry Snag Fast stock removal in rough foundry applications.

DIMENSIONS Dia.xThk.xArbor	MAX RPM	METAL, STAINLESS Fast Grind	METAL, STAINLESS Heavy Duty	CONCRETE Heavy Duty	ALUMINUM Load Resistant	STAINLESS Free Grind	IRON Foundry	METAL, STAINLESS, ALLOYS Fastest Grind	METAL, STAINLESS, ALLOYS Heavy Duty
		A30S	A24/30T	C24/30P	A24ALU	A30Q	CA24R	ZA24P	ZA24S
3"x1/4"x3/8"	20,000	A0054							A0034
4"x1/4"x3/8"	15,000	A0390							A0334
			A0395						
4"x1/4"x5/8"	15,000	A0414			A0403				A0434
			A0406			A0391			
				A0396					
4-1/2"x1/4"x7/8"	13,300	A1236			A1203			A1224	
			A1226			A1231			A1234
				A1257					
4-1/2"x1/4"x5/8"-11	13,300	A1236H			A1203H			A1224H	
			A1226H			A1231H			A1234H
				A1257H					
5"x1/4"x7/8"	12,000	A2236			A2220			A2224	
			A2226			A2231			A2234
				A2239					
5"x1/4"x5/8"-11	12,000	A2236H			A2220H			A2224H	
			A2226H			A2231H			A2234H
				A2239H					
6"x1/4"x7/8"	10,000	A3236							A3434
6"x1/4"x5/8"-11	10,000	A3236H							A3434H
7"x1/4"x7/8"	8,600	A5356			A5237			A5224	A5434
			A5301			A5331			
				A5446			A5435		
7"x1/4"x5/8"-11	8,600	A5356H			A5237H			A5224H	A5434H
			A5301H			A5331H			
				A5446H			A5435H		
7"x5/16"x7/8"	8,600		A5551						
9"x1/4"x7/8"	6,800	A8353			A8241			A8224	A8434
			A8301			A8331			
				A8446			A8435		
9"x1/4"x5/8"-11	6,800	A8353H			A8241H			A8224H	A8434H
			A8301H			A8331H			
				A8446H			A8435H		
9"x5/16"x7/8"	6,800		A8619						

Cutoff Wheels
F/N FLEX

Type 27 Depressed Center Cutoff Wheels For Cutting Only

Razorblade 27®



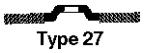
METAL, STAINLESS
A60SST-27-Ex Fast Cut
The razor thin .045" (3/64") profile makes this the fastest cutting choice for metal, stainless and alloys. Unmatched wheel life for any product in its class. Available for 4-1/2" and 5" angle grinders.

A24/30T-Heavy Duty
For exceptionally long life in any cutting application, and for tough jobs such as sheet metal, this 3/32" thick wheel is ideal.

STAINLESS
A30Q-Extra Fast Cut
For stainless steel jobs where the thicker 3/32" wheel is preferred, A30Q offers a fast, free cutting action.

DIMENSIONS Dia.xThk.xArbor	MAX RPM	METAL, STAINLESS Extra Fast Cut	METAL, STAINLESS Heavy Duty	STAINLESS Extra Fast Cut
		A60SST-27	A24/30T	A30Q
4"x3/32"x5/8"	15,000			A0221
			A0265	
4-1/2"x.045"x7/8"	13,300	A0481		
4-1/2"x3/32"x7/8"	13,300		A0575	
				A0711
4-1/2"x3/32"x5/8"-11	13,300		A0575H	
				A0711H
5"x.045"x7/8"	12,000	A1581		
5"x3/32"x7/8"	12,000		A1765	
				A1711
5"x3/32"x5/8"-11	12,000		A1765H	
				A1711H
6"x3/32"x7/8"	10,000			A2711
			A3175	
6"x3/32"x5/8"-11	10,000		A3175H	
7"x3/32"x7/8"	8,600			A4111
			A4175	
7"x3/32"x5/8"-11	8,600			A4111H
			A4175H	

HIGH PERFORMANCE



METAL, STAINLESS
A30S-Fast Cut, Grind
Fast cutting with good life. Performs well on a broad range of materials, including stainless and other hard alloys. An excellent 'all purpose' spec.

A24/30T-Heavy Duty
Often copied, but never equaled, A24/30T is the most rugged wheel in the industry. Flexovit's A24/30T delivers the longest life of any aluminum oxide wheel without sacrificing aggressive cutting action.

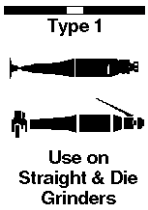
CONCRETE
C24/30P-Heavy Duty
Made with silicon carbide grain, C24/30P is designed for all concrete and masonry applications. Also offers fast cutting on nonferrous metals.

DIMENSIONS Dia.xThk.xArbor	MAX RPM	METAL, STAINLESS Fast Cut	METAL, STAINLESS Heavy Duty	CONCRETE Heavy Duty
		A30S	A24/30T	C24/30P
3"x1/8"x3/8"	20,000	A0017		
4"x1/8"x3/8"	15,000	A0273		
4"x1/8"x5/8"	15,000	A0261		
				A0290
4-1/2"x1/8"x7/8"	13,300	A0735		
			A0721	
				A0761
4-1/2"x1/8"x5/8"-11	13,300	A0735H		
			A0721H	
				A0761H
5"x1/8"x7/8"	12,000	A1736		
				A1741
			A1721	
5"x1/8"x5/8"-11	12,000	A1736H		A1741H
			A1721H	
6"x1/8"x7/8"	10,000	A2751		
6"x1/8"x5/8"-11	10,000	A2751H		
7"x1/8"x7/8"	8,600	A4086		
			A3928	
7"x1/8"x5/8"-11	8,600	A4086H		
			A3928H	
9"x1/8"x7/8"	6,800	A7086		
			A6930	
9"x1/8"x5/8"-11	6,800	A7086H		
			A6930H	

F/N FLEX

Type 1 Small Diameter Abrasive Wheels For Cutting & Grinding

Select .035", 1/16", or 1/8" thickness for cutting and notching applications. The 3/16", 1/4", 3/8", and 1/2" thickness are designed for grinding using the periphery of the wheel as the grinding face.



FLEXON®

- *Zirconia Abrasive*
- *Aggressive Action*
- *Premium Performance*

METAL, STAINLESS, ALLOYS

A60T, A46T, A36R These reinforced wheels are designed for fast, burr-free cutting and notching, and work especially well on thin walled tube and pipe. The thinner the wheel, the faster the cut.

A36R, A36Q For a variety of surface preparation jobs including weld grinding, burr removal and smoothing of steel and alloys.

DIMENSIONS Dia.xThk.xArbor	MAX RPM	METAL, STAINLESS, ALLOYS			
		A60T	A46T	A36R	A36Q
1"x.035"x1/8"	61,115	F0010			
2"x.035"x3/8"*	30,558	F0110*			
2"x1/16"x3/8"*	30,558		F0120*		
2"x1/8"x3/8"*	30,558			F0140*	
2"x3/16"x3/8"	30,558			F0149	
2"x1/4"x3/8"*	30,558				F0159*
2"x3/8"x3/8"	27,120				F0169
2"x1/2"x3/8"*	27,120				F0179*
2-1/2"x.035"x3/8"	24,446	F0210			
2-1/2"x1/16"x3/8"*	24,446		F0220*		
2-1/2"x3/32"x3/8"	24,446		F0230		
2-1/2"x1/8"x3/8"*	24,446			F0240*	
2-1/2"x3/16"x3/8"	24,446			F0249	
2-1/2"x1/4"x3/8"	24,446				F0259
2-1/2"x3/8"x3/8"	21,696				F0269
2-1/2"x1/2"x3/8"	21,696				F0279
3"x.035"x3/8"*	25,000	F0310*			
3"x1/16"x3/8"*	25,000		F0320*		
3"x1/8"x3/8"*	25,000			F0340*	
3"x3/16"x3/8"	20,372			F0349	
3"x1/4"x3/8"*	20,372				F0359*
3"x3/8"x3/8"*	18,080				F0369*
3"x1/2"x3/8"	18,080				F0379
4"x.035"x3/8"*	19,000	F0410*			
4"x1/16"x3/8"*	19,000		F0420*		
4"x3/32"x3/8"	19,000		F0430		
4"x1/8"x3/8"*	19,000			F0440*	
4"x3/16"x3/8"	15,278			F0449	
4"x1/4"x3/8"*	15,278				F0459*
4"x3/8"x3/8"	13,560				F0469
4"x1/2"x3/8"	13,560				F0479

*Also available with a 1/4" arbor

METAL, STAINLESS, ALLOYS

ZA60T, ZA46T, ZA36R Developed with zirconia grain for premium performance, Flexon small diameter wheels deliver fast cutting and exceptional wheel life.

DIMENSIONS Dia.xThk.xArbor	MAX RPM	METAL, STAINLESS, ALLOYS		
		ZA60T	ZA46T	ZA36R
3"x.035"x1/4"	25,000	F0309S		
3"x.035"x3/8"	25,000	F0314S		
3"x1/16"x1/4"	25,000		F0319S	
3"x1/16"x3/8"	25,000		F0324S	
3"x1/8"x1/4"	25,000			F0339S
3"x1/8"x3/8"	25,000			F0344S
4"x.035"x1/4"	19,000	F0409S		
4"x.035"x3/8"	19,000	F0414S		
4"x1/16"x1/4"	19,000		F0418S	
4"x1/16"x3/8"	19,000		F0424S	
4"x1/8"x1/4"	19,000			F0439S
4"x1/8"x3/8"	19,000			F0444S

MANDREL ADAPTERS FOR SMALL DIAMETER TYPE 1 WHEELS

FITS WHEEL SIZE OF: Diameter	Thickness	Arbor	SHANK SIZE	PRODUCT CODE
2 – 4"	.035" – 1/2"	3/8"	1/4"	Z0201
2 – 4"	.035" – 1/2"	1/4"	1/4"	Z0251
2 – 4"	.035" – 3/16"	3/8" or 1/4"	1/4"	Z0202

F/N FLEX

Type 1 Thin Angle Grinder Cutoff Wheels For Cutting Only

METAL, STAINLESS
A60SST, A60TB, A46RB50-Extra Fast Cut
Razor thin profiles make these the fastest cutting specs for metal, stainless and alloys.

A36TB38-Heavy Duty
For heavy duty metal and stainless applications, this 3/32" thick product delivers exceptionally long life and cool, free cutting action.

SHEET METAL
A30VB39-Heavy Duty
This specification is tough enough to resist the sharp edges of sheet metal products. Extremely long life in any metal application.

CONCRETE, MASONRY
C30UB64-Heavy Duty
Excellent performance in all concrete and masonry applications.

Razorblade®

Type 1

Use on Angle Grinders

DIMENSIONS Dia.xThk.xArbor	MAX RPM	METAL, STAINLESS Extra Fast Cut			Heavy Duty	SHEET MTL Heavy Duty	CONCRETE Heavy Duty
		A60SST	A60TB	A46RB50	A36TB38	A30VB39	C30VB64
4"x.040"x5/8"	19,000		F1005				
4"x1/16"x5/8"	19,000		F1010				
4"x3/32"x5/8"	19,000				F1041		
4-1/2"x.045"x7/8"	13,300	F1207					
4-1/2"x3/32"x7/8"	13,300				F1243		
5"x.045"x7/8"	12,000	F1407					
5"x3/32"x7/8"	12,000				F1445		
6"x.040"x7/8"	10,186		F1705				
6"x1/16"x7/8"	10,186		F1710				
7"x1/16"x7/8"	8,600			F2012			
7"x3/32"x7/8"	8,600				F2170		
7"x1/8"x7/8"	8,600					F2311	L2312
9"x3/32"x7/8"	6,800				F3165		
9"x1/8"x7/8"	6,800					F3300	L3318

Type 1 Circular Saw Wheels For Cutting Only

METAL, STAINLESS
A36TB38-Fast Cut
A general purpose wheel, ideal on carbon or stainless steel shapes or profiles. Provides fast cutting action.

CONCRETE
C30UB64-Heavy Duty
A general purpose concrete wheel, C30UB64 gives quick cuts on concrete, brick, block and other masonry products.

HIGH PERFORMANCE

Use on Circular Saws

Type 1

DIMENSIONS Dia.xThk.xArbor	MAX RPM	METAL, STAINLESS Fast Cut	CONCRETE Heavy Duty
		A36TB38	C30UB64
6"x3/32"x5/8"	10,000	F1751	
6"x1/8"x5/8"	10,000		L1845
6-1/2"x3/32"x5/8" (DIA)	8,600	F1952	
6-1/2"x1/8"x5/8" (DIA)	8,600		L1950
7"x3/32"x5/8"	8,600	F2155	
7"x3/32"x5/8" (DIA)	8,600	F2171	
7"x1/8"x5/8"	8,600		L2307
7"x1/8"x5/8" (DIA)	8,600		L2311
8"x3/32"x5/8"	7,500	F2670	
8"x3/32"x5/8" (DIA)	7,500	F2672	
8"x1/8"x5/8"	7,500		L2822
8"x1/8"x5/8" (DIA)	7,500		L2826

F/N FLEX

Type 1 High Speed Gas & Electric Saw Wheels For Cutting Only

HIGH PERFORMANCE

- *Maximum Productivity*
- *Exceptional Value*
- *State-of-the-Art Engineering*

STEEL

A24/30SB-Heavy Duty A durable, hard working blade for a variety of metal cutting applications on the job site. Excellent for rebar, steel pipe, sheet metal and structural steel or stainless.

CONCRETE

C30UB-Heavy Duty The contractors' choice for all-around performance when cutting concrete and masonry products, including brick, block and pipe. Also cuts PVC and ductile iron pipe (for best results on ductile, see Specialist AC24SB-Ductile, Cast Iron, listed below).

Type 1

DIMENSIONS Dia.xThk.xArbor	MAX RPM	STEEL	CONCRETE
		Heavy Duty	
		A24/30SB	C30UB
12"x1/8"x20mm	6,300	F5078	L5315
12"x1/8"x7/8"	6,300	F5286	L5316
12"x1/8"x1"	6,300	F5292	L5317
14"x1/8"x20mm	5,460	F5653	L5703
14"x1/8"x7/8"	5,400	F5650	L5708
14"x1/8"x1"	5,400	F5687	L5727

Use on High Speed Saws

SHEET METAL, DECKING

A24TB-Long Life Built to withstand the wear of sharp metal edges, this blade stands up to sheet metal, roof decking and auto dismantling jobs.

RAILTRACK

A30PB-Extra Fast Cut Designed for rail cropping. Straight, fast cuts on all sizes and weights of rail.

DUCTILE, CAST IRON

AC24SB-Heavy Duty For sewer and water construction and maintenance. Cuts ductile iron, cast iron and concrete lined pipe.

ASPHALT, GREEN CONCRETE

C16UB-Long Life Made of extra coarse silicon carbide, C16UB provides aggressive free cutting action, in a wide range of aggregates.

PRESTRESSED CONCRETE

C30SB-Heavy Duty Designed for extra fast cutting in prestressed concrete.

SPECIALIST®

- *Job Focused*
- *Peak Performance*

DIMENSIONS Dia.xThk.xArbor	MAX RPM	SHEET METAL DECKING Long Life	RAIL TRACK Extra Fast Cut	DUCTILE CAST IRON Heavy Duty	ASPHALT GR. CONCRETE Long Life	PRESTRESSED CONCRETE Heavy Duty
		A24TB	A30PB	AC24SB	C16UB	C30SB
12"x1/8"x20mm	6,300			L5017		
						L5310
12"x1/8"x7/8"	6,300			L5018		
12"x1/8"x1"	6,300		F5098			L5312
				L5019		
12"x5/32"x20mm	6,300	F5293				
					L5330	
12"x5/32"x7/8"	6,300	F5299				
					L5332	
12"x5/32"x1"	6,300	F5314				
					L5334	
14"x1/8"x20mm	5,460			L5617		
14"x1/8"x7/8"	5,400			L5618		
14"x1/8"x1"	5,400		F5681			
				L5619		
14"x5/32"x20mm	5,460	F5693				
					L5710	
14"x5/32"x1"	5,400	F5614				
					L5712	
16"x1/8"x1"	4,500		F6681			

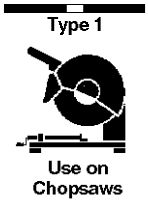
F/N FLEX

Type 1
Chopsaw/Miter Saw Wheels
For Cutting Only

METAL, STAINLESS
A30RB-Fast Cut
An optimum mix of cutting speed and wheel life make this an excellent 'general purpose' wheel for profiles and solids in carbon or alloy steels.

A30SB-Long Life
Extended wheel life, particularly for lighter gauge cutting in steel and alloys.

C30UB-Heavy Duty
Excellent for cutting tiles, concrete blocks and brick.



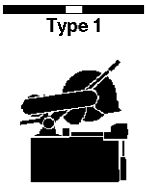
DIMENSIONS Dia.xThk.xArbor	MAX RPM	METAL, STAINLESS Fast Cut	METAL, STAINLESS Long Life	CONCRETE Heavy Duty
		A30RB	A30SB	C30UB
10"x3/32"x5/8"	6,112		F3579	
10"x1/8"x5/8"	6,112	F3941		L3818
12"x3/32"x1"	5,092		F4808	
12"x3/32"x1"	5,092	F4818		
14"x3/32"x1"	4,365	F5521		
14"x3/32"x1"	4,365		F5527	
16"x3/32"x1"	3,820	F6521		

STAINLESS
A30QB-Free Cut
When cutting stainless or other hard alloys, or for getting through large solids without bogging down in the cut, use this exceptionally fast cutting specification.

DRYWALL STUD
A30TB-Clean Cut
Stands up to the wearing action of sharp metal edges. This wheel cuts more drywall bundles per dollar than any other product.

DIMENSIONS Dia.xThk.xArbor	MAX RPM	STAINLESS Fast Cut	DRYWALL STUD Clean Cut, Max Life
		A30QB	A30TB
12"x3/32"x1"	5,092	F4819	
14"x3/32"x1"	4,365	F5523	
14"x3/32"x1"	4,366		F5528
16"x5/32"x1"	3,820		F6579

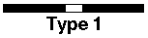
Type 1
Stationary Saw Wheels
For Cutting Only



METAL, STAINLESS
A30RB-Multi Purpose
This fast cutting wheel is ideal on solids, structural steel, bar stock and other profiles in steel, stainless steel or other alloys.

A30SB-Long Life
For higher horsepower machines, this wheel is the best choice for cutting lighter solids and profiles in carbon, stainless steel or other alloys.

DIMENSIONS Dia.xThk.xArbor	MAX RPM	METAL, STAINLESS Multi Purpose	METAL, STAINLESS Long Life
		A30RB	A30SB
10"x3/32"x5/8"	6,112		F3579
10"x3/32"x1"	6,112		F3583
10"x1/8"x5/8"	6,112	F3941	
10"x1/8"x1"	6,112	F3966	
12"x1/8"x1"	5,092	F5231	F5241
14"x1/8"x1"	4,365	F5836	
16"x5/32"x1"	3,820		F6873
16"x5/32"x1"	3,820	F6861	
18"x3/16"x1"	3,396	F8371	
20"x1/8"x1"	3,066	F9241	
20"x3/16"x1"	3,066		F9232
20"x3/16"x1"	3,066	F9242	
20"x7/32"x1"	3,066	F9010	
20"x7/32"x40mm	3,066	F9011	
22"x3/16"x1"	2,460		F9300
24"x1/4"x1"	2,260		F9791
26"x1/4"x1-1/2"	2,080		F9911



METAL, STAINLESS TUBE
A24TB-Long Life
Best choice on thin walled metals and tubing.

IRON, NONFERROUS
AC24PB
This load resistant cutting wheel gives superior performance on nonferrous metals such as bronze, brass and aluminum. Free and easy cutting.

DIMENSIONS Dia.xThk.xArbor	MAX RPM	METAL, STAINLESS TUBE Long Life	IRON, NONFERROUS
		A24TB	AC24PB
16"x3/16"x1"	3,820		F6501
16"x5/32"x1"	3,820	F6579	
20"x7/32"x1"	3,066		F9255

F/N FLEX

Resin Fiber Sanding Discs For Grinding & Finishing

METAL, STAINLESS-Aluminum Oxide
Special blends of premium aluminum oxide, combined with a size coat of grinding aids, provide cool cutting and extended life to these high performance discs. Use for grinding mild steel or stainless, on weld preparation, or for blending and finishing.

DIMENSIONS: 4"x5/8", 4-1/2"x7/8", 5"x7/8", 7"x7/8" and 9"x7/8"

GRITS: 16, 24, 36, 50, 60, 80, 100, 120


Use On Angle Grinders

CONCRETE, MASONRY-Silicon Carbide
Manufactured with silicon carbide grain, this disc is designed for use on concrete, masonry, glass and fiberglass.

DIMENSIONS: 7"x7/8" GRITS: 16–120.

STAINLESS STEEL-Aluminum Oxide
Specifically designed for stainless, this unique spec employs a special cooling agent to dissipate heat build-up. This improves stock removal rate, disc life and quality of finish.

DIMENSIONS: 4-1/2"x7/8", 5"x7/8", 7"x7/8"

GRITS: 36SS, 50SS, 60SS, 80SS, 100SS


Use On Angle Grinders

METAL, STAINLESS-Zirconia Alumina
Manufactured using premium zirconia alumina, Flexon ZA resin fiber discs provide cool cutting and longest life on all types of metals. Controlled grain fracture and grinding aids combine to provide the most cost-effective fiber disc choice.

DIMENSIONS: 4"x5/8", 4-1/2"x7/8", 5"x7/8", 7"x7/8" and 9"x7/8"

GRITS: 16, 24, 36, 50, 60, 80


Use On Angle Grinders

Quick-Change Sanding Discs For Grinding & Finishing

DIMENSIONS Diameter	GRIT A36	A50	A60	A80	A100	A120
2" ROLON 	S0220R					
		S0230R				
			S0240R			
				S0250R		
					S0260R	S0270R
2" SPIN-ON 	S0220S					
		S0230S				
			S0240S			
				S0250S		
					S0260S	S0270S
3" ROLON 	S0320R					
		S0330R				
			S0340R			
				S0350R		
					S0360R	S0370R
3" SPIN-ON 	S0320S					
		S0330S				
			S0340S			
				S0350S		
					S0360S	S0370S


Use on Vertical Shaft Grinders

F/N FLEX

Type 27 & 29 Super Flap Discs For Grinding & Finishing

Use On Angle Grinders

PREMIUM
Zirconia Alumina
Our most productive and efficient super flap disc. Ideal for high production grinding, blending, deburring and finishing. Performs well on a variety of materials, including carbon, stainless steel, aluminum and fiberglass. Resists loading and outlasts aluminum oxide grain by 2:1.

ZIRCOMAX® PREMIUM

ZIRCONIA ALUMINA with FIBERGLASS BACKING PLATE

Type 27
Available in grit 40–80

DIMENSIONS Dia.xArbor
4-1/2"x7/8"

ZIRCOTEX® PREMIUM

ZIRCONIA ALUMINA with FIBERGLASS BACKING PLATE

Type 29
Available in grit 24–120

DIMENSIONS Dia.xArbor
4"x5/8"
4-1/2"x7/8"
4-1/2"x5/8"-11
5"x7/8"
7"x7/8"
7"x5/8"-11

ZIRCONIA ALUMINA with FIBERGLASS BACKING PLATE

Type 27
Available in grit 24–120

DIMENSIONS Dia.xArbor
4"x5/8"
4-1/2"x7/8"
4-1/2"x5/8"-11
5"x7/8"
7"x7/8"
7"x5/8"-11

ZIRCONIA ALUMINA with ALUMINUM BACKING PLATE

Type 29
Available in grit 24–120

DIMENSIONS Dia.xArbor
4-1/2"x7/8"
4-1/2"x5/8"-11
7"x7/8"
7"x5/8"-11

HIGH PERFORMANCE
Zirconia Alumina
Recommended for medium to high production applications. Works very well on both ferrous and nonferrous metals. Provides aggressive stock removal rates.

Aluminum Oxide
Good for finishing and jobs that do not require extensive material removal.

ZIRCOTEX® HIGH PERFORMANCE

ZIRCONIA ALUMINA with FIBERGLASS BACKING PLATE

Type 29
Available in grit 24–120

DIMENSIONS Dia.xArbor
4"x5/8"
4-1/2"x7/8"
4-1/2"x5/8"-11
5"x7/8"
7"x7/8"
7"x5/8"-11

ZIRCONIA ALUMINA with FIBERGLASS BACKING PLATE

Type 27
Available in grit 24–120

DIMENSIONS Dia.xArbor
4"x5/8"
4-1/2"x7/8"
4-1/2"x5/8"-11
5"x7/8"
7"x7/8"
7"x5/8"-11

ALUMINUM OXIDE with FIBERGLASS BACKING PLATE

Type 29
Available in grit 24–120

DIMENSIONS Dia.xArbor
4"x5/8"
4-1/2"x7/8"
4-1/2"x5/8"-11
5"x7/8"
7"x7/8"
7"x5/8"-11

ALUMINUM OXIDE with FIBERGLASS BACKING PLATE

Type 27
Available in grit 24–120

DIMENSIONS Dia.xArbor
4"x5/8"
4-1/2"x7/8"
4-1/2"x5/8"-11
5"x7/8"
7"x7/8"
7"x5/8"-11

ZIRCOTEX® STANDARD

ZIRCONIA ALUMINA with FIBERGLASS BACKING PLATE

Type 29
Available in grit 24–120

DIMENSIONS Dia.xArbor
4-1/2"x7/8"
4-1/2"x5/8"-11
7"x7/8"
7"x5/8"-11

STANDARD
Zirconia Alumina
An economically priced product, Zircotex Standard is ideal for all ferrous and nonferrous grinding/finishing applications.

F/N FLEX

Wire Wheel Brushes

For Cleaning & Conditioning

Stringer Bead Wire Wheels

For weld and bead cleaning on pipes and vessels where a narrow work face is required.

Use on Angle Grinders

CARBON WIRE-.014, .020, .023, .025
For general purpose cleaning and deburring.

STAINLESS WIRE-.020
Ideal on aluminum, stainless steel, high strength alloys and on applications where contamination of the workpiece is a concern. All flexovit stainless steel brushes are made with 302 stainless.

DIMENSIONS Dia.xFace WidthxThread	MAX RPM	CARBON .020	STAINLESS .020	Box Qty.
4"x1/4"x5/8-11	20,000	C1130		1/6
			C1180	1/6
4"x1/4"xM14-2.0	20,000	C1140		1/6
			C1190	1/6
4"x1/4"xM10-1.25	20,000	C1150		1/6
			C1200	1/6
4"x1/4"xM10-1.5	20,000	C1160		1/6
			C1210	1/6
4"x1/4"x1/2-13	20,000	C1170		1/6
			C1220	1/6
5"x1/4"x5/8-11	12,000	C1270		1/6
			C1275	1/6
6-1/2"x1/4"x5/8-11	9,000	C1110		1/6
			C1120	1/6

Wire Cup Brushes

For Cleaning & Conditioning

Use on Angle Grinders & Circular Saws

Knotted Wire Cups

For high impact, heavy duty cleaning or rough scale removal. Knock-off bridles on select sizes restrain the knots from flaring out and preventing premature wire breakage. The bridle can be removed as the brush wears down, exposing new wire.

Tuck Pointing Blades

For Mortar Grinding

Segmented, Dry Cutting, Laser Weld

TPS18 Standard segmented.
TPH18 Heavy duty segmented.

Use on Angle Grinders & Circular Saws

Small Diameter Diamond Blades

Segmented, Dry Cutting, Laser Weld

SDS13 Standard segmented.
SDH13 Heavy duty segmented.
SDP13 Premium segmented.

Use on Angle Grinders & Circular Saws

Diamond Walk-Behind Concrete Saw Blades

Segmented, Wet Cutting Cured Concrete

CC65S Standard segmented.
CC65H Heavy duty segmented.
CC65P Premium segmented.

Use on Walk-Behind Concrete Saws

Segmented, Wet Cutting Asphalt & Green Concrete

AG82H Heavy duty segmented.
AG82P Premium segmented.

Segmented, Dry Cutting Concrete & Asphalt, Laser Weld

DAH Heavy duty asphalt.
DAP Premium asphalt.
DCH Heavy duty cured concrete.
DCP Premium cured concrete.

F/N FLEX

High Speed Diamond Blades

For Cutting

Ideal for cutting concrete, concrete curbing, brick or block walls, expansion joints, precast and prestressed materials, Flexovit high speed diamond blades are the most competitively priced blades on the market. They may be used wet or dry.

Segmented, Dry Cutting, Laser Weld

HS18S Standard concrete.
HS18H Heavy duty concrete.
HS20H Heavy duty asphalt.
HS18P Premium concrete.

Use on High Speed Gas & Electric Saws

F/N FLEX

Diamond Masonry Saw Blades

For Cutting

Used wet or dry, Flexovit masonry saw blades provide smooth cutting on a wide range of brick, concrete pavers, marble and stone.

Segmented, Dry or Wet Cutting, Laser Weld

MD95S	Standard, general purpose, brick and block.
MD90H	Heavy duty, hard materials.
MD95H	Heavy duty, general purpose, brick and block.
MD97H	Heavy duty, long life, brick and block.

Use on Masonry Saws

F/N FLEX

Diamond Core Bits

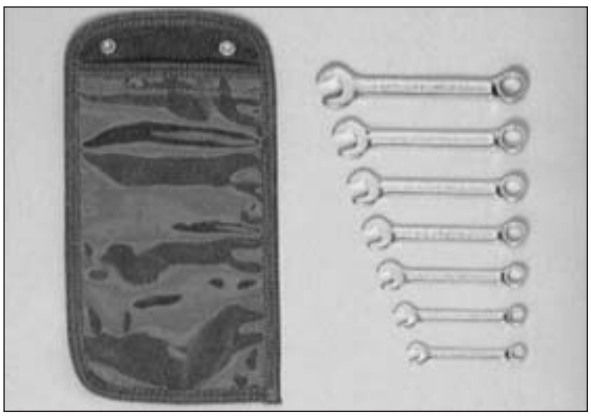
For Drilling

Diamond core bits are designed for all types of wet drilling. On light to moderate steel reinforcing use the heavy duty spec, and for moderate to high steel reinforcing select the premium grade. All core bits drill a depth of 13".

Segmented, Wet Cutting, Laser Weld

Use on Core Drilling Machines

Wrenches
F/N WT



7 Pieces—Full Polish Short Combination Wrenches 12 Pt.
Set No. WT723

Part No.	Description	Part No.	Description
WT1512	3/8"	WT1520	5/8"
WT1514	7/16"	WT1522	11/16"
WT1516	1/2"	WT1524	3/4"
WT1518	9/16"	WTA724-Pouch	Denim Tool Pouch

11 Pieces—Full Polish Short Combination Wrenches 12 Pt.
Set No. WT724

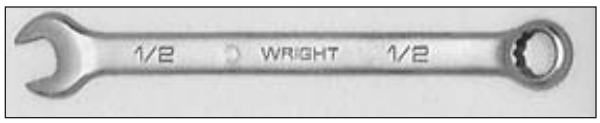
Part No.	Description	Part No.	Description
WT1512	3/8"	WT1524	3/4"
WT1514	7/16"	WT1526	13/16"
WT1516	1/2"	WT1528	7/8"
WT1518	9/16"	WT1530	15/16"
WT1520	5/8"	WT1532	1"
WT1522	11/16"	WTA724-Pouch	Denim Tool Pouch

11 Pieces—Combination Wrenches 12 Pt.
Set No. WT711

Part No.	Description	Part No.	Description
WT1112	3/8"	WT1124	3/4"
WT1114	7/16"	WT1126	13/16"
WT1116	1/2"	WT1128	7/8"
WT1118	9/16"	WT1130	15/16"
WT1120	5/8"	WT1132	1"
WT1122	11/16"	WT714-ROLL	Denim Tool Roll

14 Pieces—Combination Wrenches 12 Pt.
Set No. WT714

Part No.	Description	Part No.	Description
WT1112	3/8"	WT1128	7/8"
WT1114	7/16"	WT1130	15/16"
WT1116	1/2"	WT1132	1"
WT1118	9/16"	WT1134	1-1/16"
WT1120	5/8"	WT1136	1-1/8"
WT1122	11/16"	WT1140	1-1/4"
WT1124	3/4"	WT714-ROLL	Denim Tool Pouch
WT1126	13/16"		



Combination Wrenches—Satin Finish

12 Pt. Flat Stem		12 Pt. Heavy-Duty Round Stem	
Part No.	A Nom. Size	Part No.	A Nom. Size
WT1108	1/4"	WT1142	1-5/16"
WT1110	5/16"	WT1144	1-3/8"
WT1112	3/8"	WT1146	1-7/16"
WT1114	7/16"	WT1148	1-1/2"
WT1116	1/2"	WT1152	1-5/8"
WT1118	9/16"	WT1154	1-11/16"
WT1120	5/8"	WT1156	1-3/4"
WT1122	11/16"	WT1158	1-13/16"
WT1124	3/4"	WT1160	1-7/8"
WT1126	13/16"	WT1164	2"
WT1128	7/8"	WT1166	2-1/16"
WT1130	15/16"	WT1168	2-1/8"
WT1132	1"	WT1170	2-3/16"
WT1134	1-1/16"	WT1172	2-1/4"
WT1136	1-1/8"	WT1176	2-3/8"
WT1138	1-3/16"	WT1180	2-1/2"
WT1140	1-1/4"	WT1182	2-9/16"
WT1242	1-5/16"	WT1184	2-5/8"
WT1244	1-3/8"	WT1188	2-3/4"
WT1246	1-7/18"		
WT1248	1-1/2"		
WT1252	1-5/8"		

Metric Combination Wrenches
12 Pt. Flat Stem

Part No.	A Nom. Size	Part No.	A Nom. Size
WT11-06mm	6mm	WT11-13mm	13mm
WT11-07mm	7mm	WT11-14mm	14mm
WT11-08mm	8mm	WT11-15mm	15mm
WT11-09mm	9mm	WT11-16mm	16mm
WT11-10mm	10mm	WT11-17mm	17mm
WT11-11mm	11mm	WT11-18mm	18mm
WT11-12mm	12mm	WT11-19mm	19mm

Combination Wrenches—Satin Finish

Ratcheting Box Wrenches – 12 Pt.		Offset Ratcheting Box Wrenches – 12 Pt. Reversible	
Part No.	A Nom. Size	Part No.	A Nom. Size
WT9384	5/8 x 11/16"	WT9424	1/4 x 5/16"
WT9385	5/8 x 3/4"	WT9425	3/8 x 7/16"
WT9386	3/4 x 7/8"	WT9426	1/2 x 9/16"
WT9387	13/16 x 15/16"	WT9427	5/8 x 11/16"
WT9390	1 x 1-1/16"	WT9428	3/4 x 7/8"
WT9388	1-1/16 x 1-1/4"		
WT9389	1-1/8 x 1-1/4"		

1/4" Drive Sockets Sets
F/N WT

1/4" Cougar Set A21 13 Pieces

Size (in.)	6 Pt. Std.	Size (in.)	6 Pt. Std.
3/16"	E2006	11/32"	E2011
7/32"	E2007	3/8"	E2012
1/4"	E2008	7/16"	E2014
9/32"	E2009	1/2"	E2016
5/16"	E2010		

1/4" DRIVE RATCHETS, HANDLES & ATTACHMENTS

Description	Part No.
Ratchet, Quick Release, Oval Head	E2426
Extension, 3"	E2403
Extension, 6"	E2406
Spinner, w/female end	E2442

1/2" Drive Sockets Sets
F/N WT

1/2" Cougar Set A41 16 Pieces

Size (in.)	12 Pt. Std.	Size (in.)	12 Pt. Std.
7/16"	E4114	7/8"	E4128
1/2"	E4116	15/16"	E4130
9/16"	E4118	1"	E4132
5/8"	E4120	1-1/16"	E4134
11/16"	E4122	1-1/8"	E4136
3/4"	E4124	1-1/4"	E4140
13/16"	E4126		

1/2" DRIVE RATCHETS, HANDLES & ATTACHMENTS

Description	Part No.
Ratchet, Quick Release, Oval Head	E4426
Extension, 6"	E4406
Extension, 10"	E4410

3/8" Drive Socket Sets F/N WT

3/8" Cougar Set A31 13 Pieces

Size (in.)	12 Pt. Std.	Size (in.)	12 Pt. Std.
3/8"	E3112	11/16"	E3122
7/16"	E3114	3/4"	E3124
1/2"	E3116	13/16"	E3126
9/16"	E3118	7/8"	E3128
5/8"	E3120		

3/8" DRIVE RATCHETS, HANDLES & ATTACHMENTS

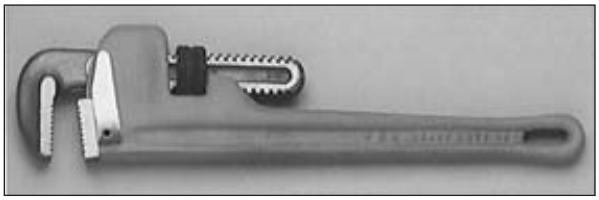
Description	Part No.
Ratchet, Quick Release, Oval Head	E3426
Extension, 3"	E3403
Extension, 5"	E3405
Sparkplug Socket, 5/8"	E3590

3/8" Cougar Set A34 21 Pieces

Size (in.)	12 Pt. Std.	12 Pt. Deep	Size (in.)	12 Pt. Std.	12 Pt. Deep
3/8"	E3112	E3612	11/16"	E3122	E3622
7/16"	E3114	E3614	3/4"	E3124	E3624
1/2"	E3116	E3616	13/16"	E3126	E3626
9/16"	E3118	E3618	7/8"	E3128	—
5/8"	E3120	E3620			

1/2" DRIVE RATCHETS, HANDLES & ATTACHMENTS

Description	Part No.
Ratchet, Quick Release, Oval Head	E3426
Extension, 3"	E3403
Extension, 6"	E3405
Sparkplug Socket, 5/8"	E3590



Pipe Wrenches—Heavy Duty

F/N WT

Design – Aluminum

No. Part	Length	Max. Pipe Dia.
WT9449A	10"	1-1/2"
WT9450A	14"	2"
WT9451A	18"	2-1/2"
WT9452A	24"	3"
WT9453A	36"	5"
WT9454A	48"	6"

Design – Steel

No. Part	Length	Max. Pipe Dia.
WT9448	8"	1"
WT9449	10"	1-1/2"
WT9447	12"	2"
WT9450	14"	2"
WT9451	18"	2-1/2"
WT9452	24"	3"
WT9453	36"	5"
WT9454	48"	6"

Adjustable Wrenches

F/N WT

Cobalt Finish

No. Part	Length	Max. Pipe Dia.
WT9AC04	4"	1/2"
WT9AC06	6"	13/16"
WT9AC08	8"	1"
WT9AC10	10"	1-3/16"
WT9AC12	12"	1-11/32"
WT9AC15	15"	1-3/4"
WT9AC18	18"	2-9/64"
WT9AC24	24"	2-17/32"

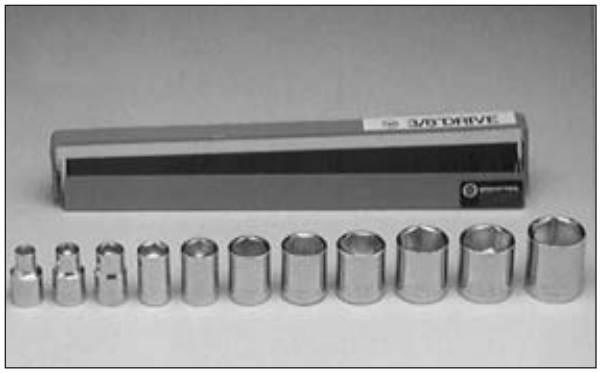
Black Industrial Finish

No. Part	Length	Max. Pipe Dia.
WT9AB04	4"	1/2"
WT9AB06	6"	13/16"
WT9AB08	8"	1"
WT9AB10	10"	1-3/16"
WT9AB12	12"	1-11/32"
WT9AB15	15"	1-3/4"
WT9AB18	18"	2-1/8"
WT9AB24	24"	2-17/32"

Hammers

NUPLA WITH FIBERGLASS HANDLES
FROM 8 oz. THROUGH 12 lb. IN ALL STYLES

3/8" Drive Set



9 Pieces – 6 Pt. Deep Socket Set

F/N WT

Set No. WT304

Part No.	Description	Part No.	Description
WT3512	3/8"	WT3522	11/16"
WT3514	7/16"	WT3524	3/4"
WT3516	1/2"	WT3526	13/16"
WT3518	9/16"	WT3528	7/8"
WT3520	5/8"	WT27	Metal Tray

11 Pieces – 6 Pt. Standard Socket Set

F/N WT

Set No. WT312

Part No.	Description	Part No.	Description
WT3008	1/4"	WT3020	5/8"
WT3010	5/16"	WT3022	11/16"
WT3012	3/8"	WT3024	3/4"
WT3014	7/16"	WT3026	13/16"
WT3016	1/2"	WT3028	7/8"
WT3018	9/16"	WT91	Metal Tray

1/2" Drive Set

8 Pieces – 12 Pt. Deep Socket Set

F/N WT

Set No. WT409

Part No.	Description	Part No.	Description
WT4616	1/2"	WT4626	13/16"
WT4618	9/16"	WT4628	7/8"
WT4620	5/8"	WT4630	15/16"
WT4622	11/16"	WT80	Metal Tray
WT4624	3/4"		

8 Pieces – 6 Pt. Deep Socket Set

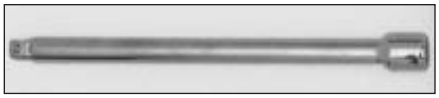
F/N WT

Set No. WT410

Part No.	Description	Part No.	Description
WT4516	1/2"	WT4526	13/16"
WT4518	9/16"	WT4528	7/8"
WT4520	5/8"	WT4530	15/16"
WT4522	11/16"	WT57	Metal Tray
WT4524	3/4"		

1/4" Drive Attachments

F/N WT



Extensions

Part No.	Description
WT2402	2" Extension
WT2404	4" Extension
WT2406	6" Extension
WT2410	10" Extension
WT2414	14" Extension

Adaptor

Part No.	Description
WT2453	1/4" F x 3/8" M

Universal

Part No.	Description
WT2475	Universal 1-5/16" long

3/8" Drive Attachments

Extensions

Part No.	Description
WT3402	1-1/2"
WT3403	3"
WT3405	5"
WT3406	8"
WT3412	12"
WT3424	24"
WT3422	34" Extra Long

3/8" Drive Hex Sockets & Bits

Hex Bit Sockets

Part No.	Nom. Size
WT3204	1/8""
WT3205	5/32"
WT3206	3/16"
WT3207	7/32"
WT3208	1/4"
WT3210	5/16"
WT3212	3/8"

3/8" Drive Impact Sockets

6 Pt. Standard		6 Pt. Deep	
Part No.	Nom. Size	Part No.	Nom. Size
WT3810	5/16"	WT3910	5/16"
WT3812	3/8"	WT3912	3/8"
WT3814	7/16"	WT3914	7/16"
WT3816	1/2"	WT3916	1/2"
WT3818	9/16"	WT3918	9/16"
WT3820	5/8"	WT3920	5/8"
WT3822	11/16"	WT3922	11/16"
WT3824	3/4"	WT3924	3/4"

1/2" Drive Attachments

Extensions

Part No.	Description
WT4402	1-1/2"
WT4405	5"
WT4410	10"
WT4420	20"

1/2" Drive Hex Sockets

Hex Bit Sockets

Part No.	Nom. Size	Metric Part No.	Nom. Size
WT4208	1/4"	WT42-06mm	6mm
WT4210	5/16"	WT42-08mm	8mm
WT4212	3/8"	WT42-10mm	10mm
WT4214	7/16"	WT42-12mm	12mm
WT4216	1/2"	WT42-14mm	14mm
WT4218	9/16"	WT42-17mm	17mm
WT4220	5/8"		

1/2" Drive Impact Sockets

6 Pt. Standard		6 Pt. Deep	
Part No.	Nom. Size	Part No.	Nom. Size
WT4812	3/8"	WT4912	3/8"
WT4814	7/16"	WT4914	7/16"
WT4816	1/2"	WT4916	1/2"
WT4818	9/16"	WT4918	9/16"
WT4820	5/8"	WT4920	5/8"
WT4822	11/16"	WT4922	11/16"
WT4824	3/4"	WT4924	3/4"
WT4826	13/16"	WT4926	13/16"
WT4828	7/8"	WT4928	7/8"
WT4830	15/16"	WT4930	15/16"
WT4832	1"	WT4932	1"
WT4834	1-1/16"	WT4934	1-1/16"
WT4836	1-1/8"	WT4936	1-1/8"
WT4838	1-3/16"	WT4940	1-1/4"
WT4840	1-1/4"	WT4942	5-1/16"
WT4842	1-5/16"	WT4944	1-3/8"
WT4844	1-3/8"	WT4946	1-7/16"
WT4846	1-7/16"	WT4948	1-1/2"
WT4848	1-1/2"		

ISC HAS A FULL LINE OF WRIGHT TOOLS AVAILABLE

Impact Sockets

3/4" Drive Impact Sockets F/N WT

6 Pt. Standard

Part No.	Nom. Size	Ret-Ring	Part No.	Nom. Size	Ret-Ring
WT6818	9/16"	6581	WT6842	1-5/16"	6582A
WT6820	5/8"	6581	WT6844	1-3/8"	6582A
WT6822	11/16"	6581	WT6846	1-7/16"	6582A
WT6824	3/4"	6581	WT6848	1-1/2"	6582A
WT6826	13/16"	6581	WT6850	1-9/16"	6582A
WT6828	7/8"	6581	WT6852	1-5/8"	6582A
WT6830	15/16"	6581	WT6854	1-11/16"	6582A
WT6832	1"	6581	WT6856	1-3/4"	6582A
WT6834	1-1/16"	6582	WT6858	1-13/16"	6582A
WT6836	1-1/8"	6582	WT6860	1-7/8"	6582A
WT6838	1-3/16"	6582A	WT6862	1-15/16"	6582A
WT6840	1-1/4"	6582A	WT6864	2"	6582A

6 Pt. Deep

Part No.	Nom. Size	Ret-Ring	Part No.	Nom. Size	Ret-Ring
WT6918	9/16"	6581	WT6944	1-3/8"	6582A
WT6920	5/8"	6581	WT6946	1-7/16"	6582A
WT6922	11/16"	6581	WT6948	1-1/2"	6582A
WT6924	3/4"	6581	WT6950	1-9/16"	6582A
WT6926	13/16"	6581	WT6952	1-5/8"	6582A
WT6928	7/8"	6581	WT6954	1-11/16"	6582A
WT6930	15/16"	6581	WT6956	1-3/4"	6582A
WT6932	1"	6581	WT6958	1-13/16"	6582A
WT6934	1-1/16"	6581	WT6960	1-7/8"	6582A
WT6936	1-1/8"	6582	WT6962	1-15/16"	6582A
WT6938	1-3/16"	6582	WT6964	2"	6582A
WT6940	1-1/4"	6582A	WT6968	2-1/8"	6582A
WT6942	1-5/16"	6582A			

1" Drive Impact Sockets F/N WT

6 Pt. Standard

Part No.	Nom. Size	Ret-Ring	Part No.	Nom. Size	Ret-Ring
WT8824	3/4"	6583	WT8846	1-7/16"	6581A
WT8826	13/16"	6583	WT8848	1-1/28"	6581A
WT8828	7/8"	6583	WT8850	1-9/16"	6581A
WT8830	15/16"	6583	WT8852	1-5/8"	6581A
WT8832	1"	6583	WT8854	1-11/16"	6581A
WT8834	1-1/16"	6583	WT8856	1-3/4"	6581A
WT8836	1-1/8"	6583	WT8858	1-13/16"	6585
WT8838	1-3/16"	6581A	WT8860	1-7/8"	6585
WT8840	1-1/4"	6581A	WT8862	1-15/16"	6585
WT8842	1-5/16"	6581A	WT8864	2"	6585
WT8844	1-3/8"	6581A			

Part No.	Nom. Size	Ret-Ring	Part No.	Nom. Size	Ret-Ring
WT8866	2-1/16"	6585	WT8886	2-11/16"	6587
WT8868	2-1/8"	6585	WT8888	2-3/4"	6587
WT8870	2-3/16"	6585	WT8890	2-13/16"	6587
WT8872	2-1/4"	6585	WT8892	2-7/8"	6587
WT8874	2-5/16"	6585	WT8894	2-15/16"	6587
WT8876	2-3/8"	6585	WT8896	3"	6587
WT8878	2-7/16"	6585	WT8897	3-1/8"	6587
WT8880	2-1/2"	6585	WT8897A	3-1/4"	6587
WT8882	2-9/16"	6585	WT8898	3-3/8"	6587
WT8884	2-5/8"	6587	WT8899	3-1/2"	6587

1-1/2" Drive Impact Sockets F/N WT

6 Pt. Standard

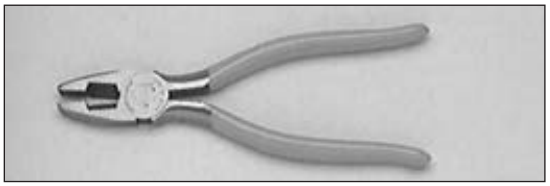
Part No.	Nom. Size	Ret-Ring	Part No.	Nom. Size	Ret-Ring
WT84822	1-3/8"	84575	WT84836	2-1/4"	84575
WT84823	1-7/16"	84575	WT84837	2-5/16"	84575
WT84824	1-1/2"	84575	WT84838	2-3/8"	84575
WT84825	1-9/16"	84575	WT84839	2-7/16"	84575
WT84826	1-5/8"	84575	WT84840	2-1/2"	84575
WT84827	1-11/16"	84575	WT84841	2-9/16"	84575
WT84828	1-3/4"	84575	WT84842	2-5/8"	84575
WT84829	1-13/16"	84575	WT84843	2-11/16"	84575
WT84830	1-7/8"	84575	WT84844	2-3/4"	84575
WT84831	1-15/16"	84575	WT84845	2-13/16"	84575
WT84832	2"	84575	WT84846	2-7/8"	84575
WT84833	2-1/16"	84575	WT84847	2-15/16"	84575
WT84834	2-1/8"	84575	WT84848	3"	84575
WT84835	2-3/16"	84575			

Part No.	Nom. Size	Ret-Ring	Part No.	Nom. Size	Ret-Ring
WT84849	3-1/16"	84575	WT84862	3-7/8"	84575
WT84850	3-1/8"	84575	WT84863	3-15/16"	84575
WT84851	3-3/16"	84575	WT84864	4"	84575
WT84852	3-1/4"	84575	WT84865	4-1/16"	84575
WT84853	3-5/16"	84575	WT84866	4-1/8"	84575
WT84854	3-3/8"	84575	WT84867	4-3/16"	84575
WT84855	3-7/16"	84575	WT84868	4-1/4"	84575
WT84856	3-1/2"	84575	WT84869	4-5/16"	84575
WT84857	3-9/16"	84575	WT84870	4-3/8"	84575
WT84858	3-5/8"	84575	WT84871	4-7/16"	84575
WT84859	3-11/16"	84575	WT84872	4-1/2"	84575
WT84860	3-3/4"	84575	WT84874	4-5/8"	84575
WT84861	3-13/16"	84575	WT84876	4-3/4"	84575

Pliers
F/N WT

Long Nose Pliers

Part No.	Description
WT9C317	Long Nose Plier w/Side Cutter – 7-1/2"
WT9C318	Long Nose Plier w/Side Cutter – 8"
WT9C386	Curved Long Nose Plier w/Serrated Jaws – 6"
WT9C326	Long Nose Plier w/Side Cutter – 6"
WT9C718	Long Reach Flat Nose Duck Bill
WT9C3036	Chain Nose Plier – 6"



Linesman Pliers

Part No.	Description
WT9C347	Round Nose Linesman & Elec. Plier – (Round Nose) - 7"
WT9C348	Round Nose Linesman & Elec. Plier – (Round Nose) - 8"
WT9C350S	Ironworkers Plier – 9"
WT9C349	Linesman Plier, Wiremaster, 9"
WT9C369	Linesman Plier, High Leverage, 9"
WT9C3248	Linesman Plier, 8-1/2"

VICE-GRIP® Locking Clamps

C-Clamps

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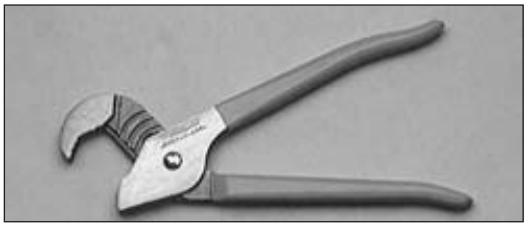
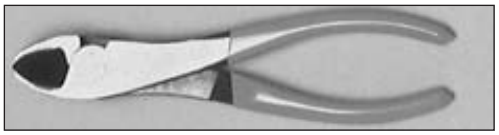


Tongue & Groove Pliers

Part No.	Description
WT9C410	9-1/2" Pipe Jaw
WT9C414	14"
WT9C420	9-1/2"
WT9C421	9-1/2"
WT9C422	9-1/2"
WT9C424	4-1/2"
WT9C426	6-1/2"
WT9C430	10"

Part No.	Description
WT9C440	12"
WT9C442	12" Curved Jaw
WT9C460	16"
WT9C480	20"
WT9CGL6	6" Griplock
WT9CGL10	10" Griplock
WT9CGL12	12" Griplock



Cutting Pliers

Part No.	Description
WT9C447	Curved Diagonal, Box Joint, 7-3/4"
WT9C436	Box Joint 6"
WT9C437	Box Joint 7"
WT9C337	Lap Joint 7"
WT9C338	Cutter Plier 8" Lap Joint
WT9C911	Cable Cutter 9-1/2"
WT9C357	Nipper 7"

Cutting Pliers

Part No.	Description
WT9V4SP	With Swivel Pads 4"
WT9V11SP	With Swivel Pads 11"
WT9V6SP	With Swivel Pads 6"
WT9V18SP	With Swivel Pads 18"
WT9V24SP	With Swivel Pads 24"
WT9V6R	With Swivel Pads 6"
WT9V11R	With Swivel Pads 11"
WT9V18R	Regular Tips With Swivel Pads 18"
WT9V24R	Regular Tips With Swivel Pads 24"

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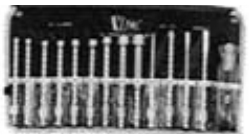
- Fish Tapes
  F/N TMES 
- Tool Sets and Tool Cases 
- Tool and Parts Storage 
- Tool Pouches and Holders 
- Guards, Tool Belts and Suspenders 
- Tool Bags 
- Lineman's Accessories and Canvas Buckets 
- Block and Tackle 
- Safety Eyewear 
- Personal Protective Equipment 
- Barricade Tapes
  F/N TAPE 

- Grips 
- Heavy Construction Tools 
- Hand Cleaners 
- Aerosols, Sealants and Pulling Lubricants 
- Cord Reels and Drop Lites
  F/N XCORD 
- Duct Tape
  F/N TAPE 
- Terminals and Connectors
  F/N EC 

Cable Ties F/N WTIE

MINIATURE/INTERMEDIATE CABLE TIES — 18 to 40 LB. TENSILE F/N WTIE

Bundle Diameter Range Inch (mm)	Length Inch (mm)	Width Inch (mm)	Minimum Loop Tensile Strength Mil-S-23190 D Lb. (Kg)	Military Standards	Std. Pkg.	Bulk Pkg.	
					Per Bag	Per Bag	Per Case
1/16–7/8 (2-16)	4.0 (102)	0.100 (3)	18 (8.2)	MS-3367-4	100	1000	25,000
1/16–2 (2-51)	8.0 (202)	0.100 (3)	18 (8.2)	N/A	100	1000	20,000
1/16–1-1/4 (2-32)	5.6 (145)	0.130 (3)	30 (13.6)	MS-3367-5	100	1000	20,000
1/16–2 (2-51)	8.5 (215)	0.130 (3)	40 (18.2)	N/A	100	1000	10,000

STANDARD CABLE TIES—50 LB. TENSILE F/N WTIE

Bundle Diameter Range Inch (mm)	Length Inch (mm)	Width Inch (mm)	Minimum Loop Tensile Strength Mil-S-23190 D Lb. (Kg)	Military Standards	Std. Pkg.	Bulk Pkg.	
					Per Bag	Per Bag	Per Case
1/16–1-3/4 (2-44)	7.5 (193)	0.187 (5)	50 (22.7)	MS-3367-1	100	1000	10,000
1/16–3 (2-76)	11.1 (282)	0.187 (5)	50 (22.7)	MS-3367-7	100	500	5.000
1/16–4 (2-102)	14.1 (358)	0.187 (5)	50 (22.7)	MS-3367-2	100	500	5,000

HEAVY DUTY CABLE TIES—120 LB. TENSILE F/N WTIE

Bundle Diameter Range Inch (mm)	Length Inch (mm)	Width Inch (mm)	Minimum Loop Tensile Strength Mil-S-23190 D Lb. (Kg)	Military Standards	Std. Pkg.	Bulk Pkg.	
					Per Bag	Per Bag	Per Case
3/16–2 (5-51)	8.0 (202)	0.300 (8)	120 (54.4)	N/A	–	100	5,000
3/16–4 (5-102)	14.25 (363)	0.300 (8)	120 (54.4)	MS-3367-3	–	100	3,000
3/16–9 (5-230)	32.0 (816)	0.300 (8)	120 (54.4)	MS-3367-6	–	50	500

Camie

F/N CAMIE

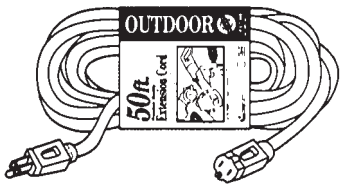
Product	Description	Fluid Oz.
888	Silicone Release Agent & Lubricant (1)	20 oz.
22/80	Natural Citrus Cleaner	20 oz.
22/40	Contact Cleaner	16 oz.
20/20	Glass Cleaner	20 oz.
3000	4 in 1 Rust Penetrant	16 oz.
343	Construction Adhesive Glue	24 oz.
363	High Strength Fast Tack Spray Adhesive	20 oz.
300	General Purpose Spray Adhesive	24 oz.

Web Slings

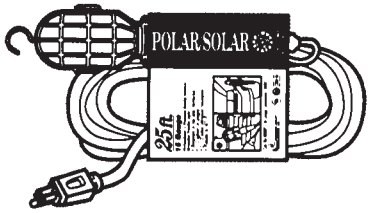
Features:
- A versatile sling for general use
- Use in choker, basket or vertical hitches

End Type: Eye & Eye, **Ply:** 2
Material: Nylon, **Brand:** ProEdge™

Part No.	Width	Length
EE2-92-2x12	2 in	12 ft
EE2-92-2x6	2 in	6 ft
EE2-92-2x8	2 in	8 ft
EE2-93-3x10	3 in	10 ft
EE2-93-3x12	3 in	12 ft
EE2-93-3x6	3 in	6 ft

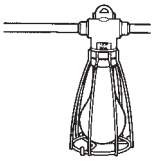


Power Extension Cords
F/N X-Cord



Three Conductor Round Orange Cord—300 Volt

WIRE GA/COND	LENGTH	PART NO.	DESCRIPTION
14/3	50'	USW0626	X-CORD RD ORANGE MOLDED PLUGS
14/3	6'	USW50015	DBL OUTLET BOX W/COVER GFCI
14/3	2'	USW50020	WATERPROOF 3 OUTLET IN-LINE GFCI
12/3	25'	USW65025	ORANGE EXTENSION CORD
12/3	50'	USW65050	X-CORD RD ORANGE MOLDED PLUGS
12/3	100'	USW65100	ORANGE X-CORD MOLDED PLUGS



Cord-O-Lite (Metal Guard)
Standard 15 amp molded connectors

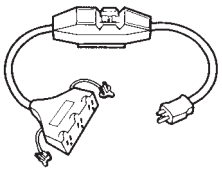
WIRE GA/COND	LENGTH	PART NO.	DESCRIPTION
12/3 SJTWA	50'	07538	METAL GUARD

Tap—Plastic

PART NO.	DESCRIPTION
USW7000	TRI-TAP ADAPTER

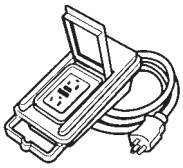
Trouble Light

WIRE GA/COND	LENGTH	PART NO.	DESCRIPTION
16/3	25'	USWTL525	ORANGE TROUBLE LIGHT W/OUTLET
16/3	50'	USWTL550	ORANGE TROUBLE LIGHT W/OUTLET



Tri-Source® In-Line Heavy Duty GFCI
120 Volts/1800 Watts

WIRE GA/COND	WIRE TYPE	LENGTH	125V RATING	PART NO.	STD PKG	PKG WT
12/3	SJEOW-A	2'	15A	02841	6	9
14/3		2'		USW50020		



Duplex Box GFCI
120 Volts/1800 Watts

WIRE GA/COND	WIRE TYPE	LENGTH	125V RATING	PART NO.	STD PKG	PKG WT
12/3	SJEOW-A	6'	15A	02822	6	13
14/3		6'		USW50015		

Tape and Tape Measures

DUCT TAPE
2"x60 yd.
F/N TAPE

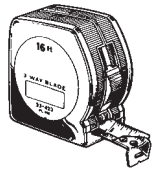
PART NO. ET60
BLACK ECONO.
ELECTRICAL TAPE
3/4"x60'.

Masking Tape

PART NO.	DESCRIPTION
112N	MASKING TAPE 2" x 60 YARDS
115N	MASKING TAPE 1" x 60 YARDS

Tape Measures — F/N TMES

PART NO.	DESCRIPTION
UST56605	1/2" x 10' POWER TAPE (BLACK)
UST56807	3/4" x 12' POWER TAPE (BLACK)
UST56809	3/4" x 16' POWER TAPE(BLACK)
UST57613	1" x 25' POWER TAPE (ORANGE)
UST57615	1" x 30' POWER TAPE (ORANGE)
UST57645	1" x 30-9M ORANGE POWER TAPE
UST58610	3/8" x 50' LONG STEEL TAPE (ORANGE)
UST58615	3/8" x 100' LONG STEEL TAPE (ORANGE)



ISC carries a full line of Duct and Electrical Tapes in various colors.

We also stock Caution Tape, Masking Tape and Blue Painters' Tape.

GLOVES

99PLUS-BLK
- Reinforced palm and fingers
- Titan2™ synthetic leather palm
- Snug spandex fit
- Sizes S-2XL

99PLUS-BLUE
- Reinforced palm and fingers
- Titan2™ synthetic leather palm
- Snug spandex fit
- Sizes S-XL

99PRO-BLK
- Single palm dexterity
- Titan2™ synthetic leather palm
- Sweat wipe
- Snug spandex fit
- Sizes S-XL

99PRO-CAMO
- Single palm dexterity
- Titan2™ synthetic leather palm
- Sweat wipe
- Snug spandex fit
- Sizes S-XL

99X3
- Reinforced padded palm
- Sure grip reinforced fingers
- Titan2™ synthetic leather palm
- Snug spandex fit
- Sizes S-XL

Cotton Jersey Gloves
F/N 1566P

Features:
- Jersey gloves are for general purpose work

Material: Jersey
Style: Clute-Straight Thumb
Cuff Style: Knit-Wrist
Color: Brown

Part No.	Size Group
7100	Large

99G-BLUE
- Single palm dexterity
- Grain goatskin palm
- Snug spandex fit
- Sizes S-XL

99BLUE
- Single palm dexterity
- Reversed brushed grain goatskin palm
- Snug spandex fit
- Sizes S-XL

99ACE-G
- Sure grip reinforcements
- Grain goatskin palm
- Sweat wipe
- Snug spandex/neoprene fit
- Sizes S-XL

99ACE-P
- Sure grip reinforcements
- Grain pigskin palm
- Sweat wipe
- Snug spandex/neoprene fit
- Sizes S-XL

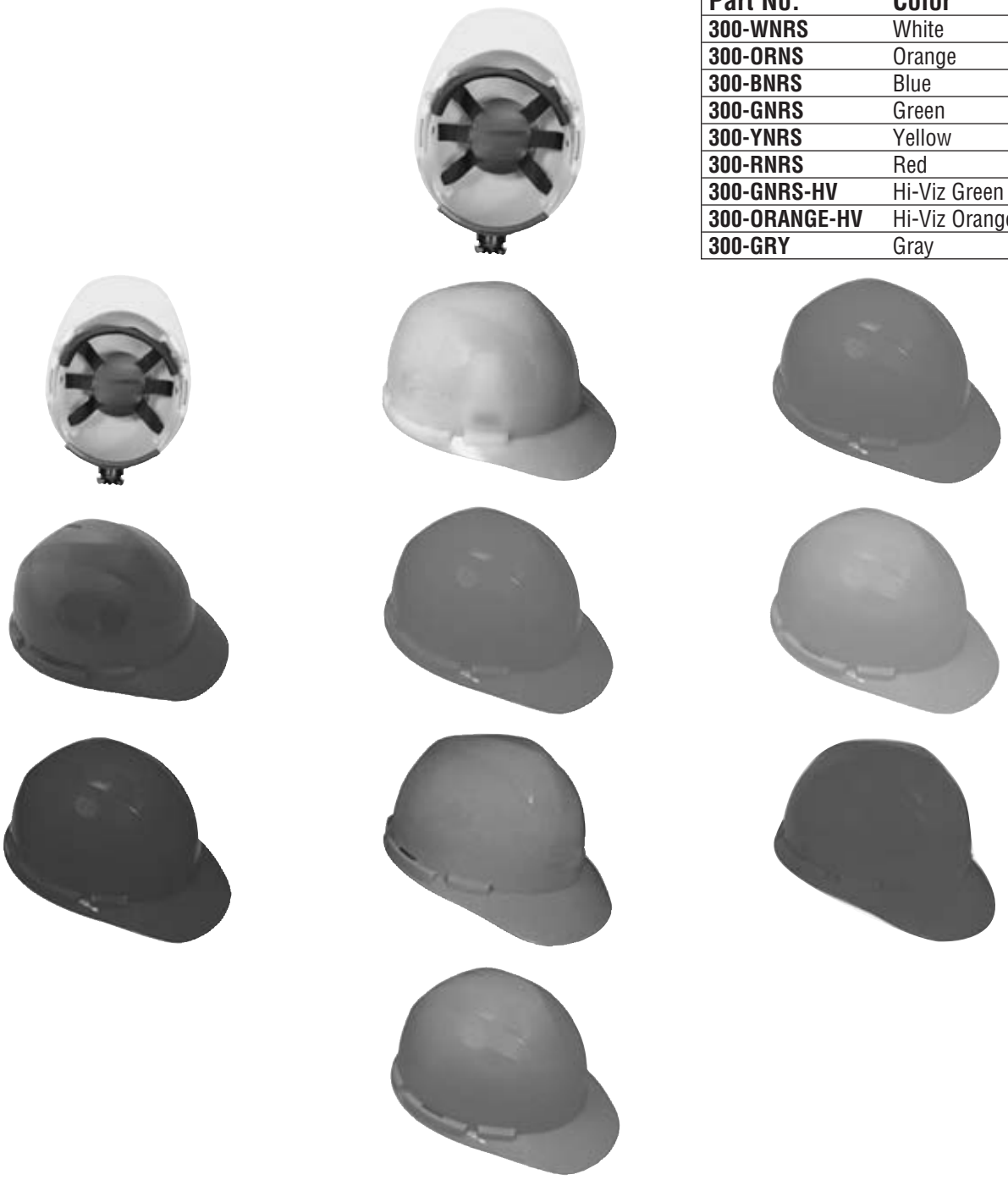
99DEER
- Single palm dexterity
- Grain deerskin palm
- Sweat wipe
- Snug spandex/neoprene fit
- Sizes S-XL

TITANIUM HARD HATS

6-point Ratchet Nylon Suspension

- Ratchet nylon suspension is easy to adjust allowing wearer to modify fit while wearing the hard hat
- Lightweight polyethylene with impact-absorbing ridges
- Universal accessory slots fit most cap mounted ear muffs
- Soft brow band is washable and reusable
- Meets ANSI Z89.1-2003 Standard, Type 1, Class G & E

Part No.	Color
300-WNRS	White
300-ORNS	Orange
300-BNRS	Blue
300-GNRS	Green
300-YNRS	Yellow
300-RNRS	Red
300-GNRS-HV	Hi-Viz Green
300-ORANGE-HV	Hi-Viz Orange
300-GRY	Gray



SAFETY VESTS

F/N RADSV

Non Rated Vests

Standard Class 2 Vests

Economy Class 2 Vests

Surveyor Class 2 Vests

Surveyor Class 2 Vests
w/contrast trim

LADDERS
F/N GB

SERIES 2022 FIBERGLASS STEP LADDER
TYPE IA EXTRA HEAVY DUTY
300 LB. DUTY RATING

Yellow

Molded Top with Recessed Tool Tray
Non-conductive material resists denting or bending. Includes tool holes and a built-in paint can hook.

Catalog Number	Size (Ft)	Step Size (In.)	Bottom Width (In.)	Approx. Spread (In.)	Approx. Weight (Lbs.)
202204	4	3	19-1/32	28-5/16	17
202205	5	3	20-17/32	34-9/32	21
202206	6	3	22-1/32	40-1/8	23
202208	8	3	25-1/32	51-15/16	32
202210	10	3	28-1/32	63-3/4	41
202212	12	3	31-1/32	75-9/16	51

SERIES 2032 FIBERGLASS STEP LADDER
TYPE IA EXTRA HEAVY DUTY
375 LB. DUTY RATING

Orange

Catalog Number	Size (Ft)	Step Size (In.)	Bottom Width (In.)	Approx. Spread (In.)	Approx. Weight (Lbs.)
203203	3	3	7-1/2	23	15
203204	4	3	19	38-3/4	18
203205	5	3	20-1/2	34-1/2	22
203206	6	3	22	40-1/4	25
203207	7	3	23-1/2	46	31
203208	8	3	25	51-3/4	35
203210	10	3	28	63-1/4	44
203212	12	3	31	74-3/4	54

SERIES 300 WOOD STEP LADDER
TYPE IA EXTRA HEAVY DUTY
300 LB. DUTY RATING

Catalog Number	Size (Ft)	Step Size (In.)	Bottom Width (In.)	Approx. Spread (In.)	Approx. Weight (Lbs.)
300-04	4	3-5/16	18-3/4	31	24
300-05	5	3-5/16	20-1/4	37	30
300-06	6	3-5/16	21-3/4	43	36
300-08	8	3-5/16	24-3/4	53	48
300-10	10	3-5/16	27-3/4	64	60
300-12	12	3-5/16	30-3/4	76	72
300-14*	14	3-3/4	33-3/4	88	94
300-16*	16	3-3/4	36-3/4	100	109

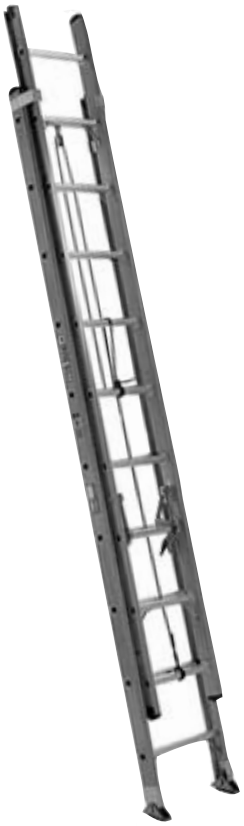
Front Rail: 1" x 3-1/4" Back Rail: 1" x 2-1/2"
*Front Rail: 3-1/2" Back Rail: 2-3/4"

Meets or exceeds requirements of American National Standards Institute

MEETS OSHA REQUIREMENTS

LADDERS
F/N GB

SERIES 6062
FIBERGLASS EXTENSION LADDER
TYPE IA EXTRA HEAVY DUTY
300 LB. DUTY RATING



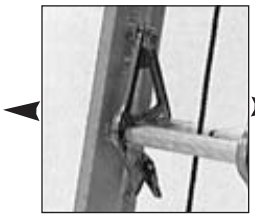
Outside Slide Guides
Two heavy duty slide guides are secured to the top of the base section with 4 rivets per guide for added strength.

Heavy Cast Aluminum Shoe Assembly
Thick rubber treads and convenient flip-down spikes provide a strong foundation.

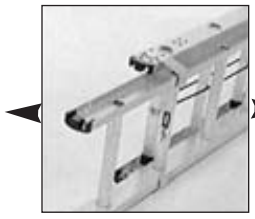
Outside Width:		Base: 17"	Fly: 15-3/8"
Inside Width:		Base: 16-7/8"	Fly: 13-5/8"
Catalog Number	Size (Feet)	Rung Size (Inches)	Approximately Weight (Pounds)
606216	16	1-5/8	37
606220	20	1-5/8	45
606224	24	1-5/8	52
606228	28	1-5/8	59
606232	32	1-5/8	70
606236*	36	1-5/8	79
606240*	40	1-5/8	86

Available as single section: Series 6052
*Type I, 250 lb. Duty Rating

SERIES 6102
FIBERGLASS EXTENSION LADDER
TYPE IA EXTRA HEAVY DUTY
300 LB. DUTY RATING



Cast Aluminum Rung Lock
Spring-assisted locking mechanism has polycarbonate flippers for longer life and quiet sliding action over the rings.



Full-Length Interlocking Rails
Provides smooth sliding action and an extra margin of security.

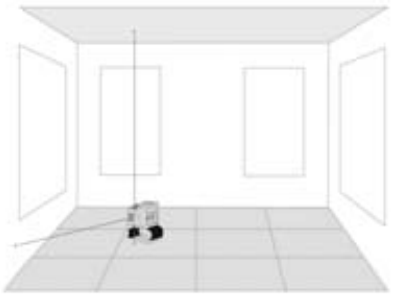
Outside Width:		Base: 17-3/4"	Fly: 16"
Inside Width:		Base: 15-3/8"	Fly: 13-5/8"
Catalog Number	Size (Feet)	Rung Size (Inches)	Approximately Weight (Pounds)
608216	16	1-5/8	39
608220	20	1-5/8	47
608224	24	1-5/8	55
608228	28	1-5/8	63
608232	32	1-5/8	69
608236	36	1-5/8	104
608240	40	1-5/8	112

Meets or exceeds requirements of American National Standards Institute

MEETS OSHA REQUIREMENTS

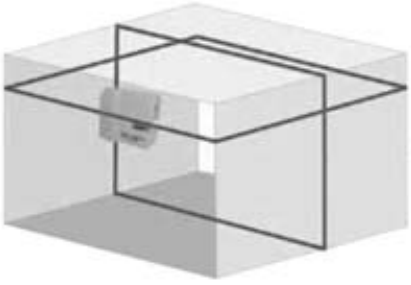
The Ultimate In Layout Tools For the Professional Electrician

PLS self leveling hand held lasers are durable and accurate while offering point-to-point plumb, level and square reference.

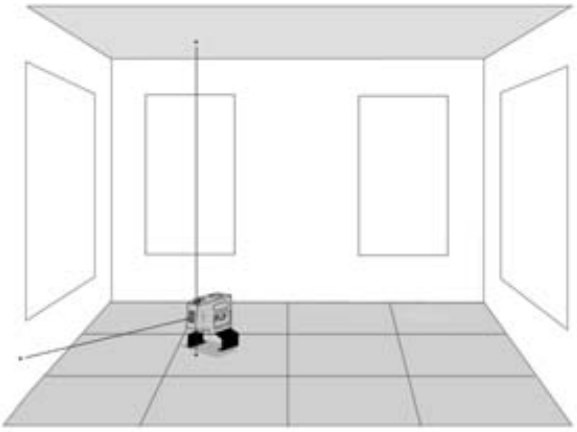


PLS3

- **Check** existing conditions before you submit your bid.
- **Lay out** all alignment tasks with PLS in the palm of your hand.
- **Stop** wrestling with your bubble vial level.



PLS180



PLS3

PROVIDES POINT-TO-POINT ALIGNMENT INFORMATION

Lay out reference points faster than traditional, labor intensive methods. No more swinging plumb bobs. Plumb instantly from floor to ceiling or from 50 feet off the ground! Use PLS as your partner on the jobsite. Self-leveling: no time wasted with bubble vials. Turn it on and go to work. Take clear, stable reference points indoors and outdoors.

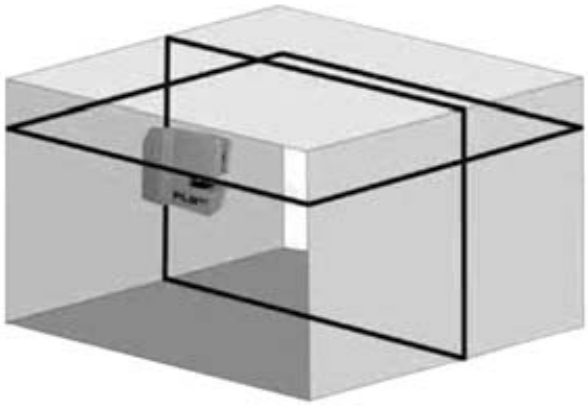
PLS3 SPECIFICATIONS

• Working Range:	100'
• Accuracy: (all beams)	< 1/4" @ 100' (<6mm @30 meters)
• Leveling:	Automatic
• Leveling Range:	+/- 6°
• Power Supply:	3 AA batteries
• Operating Time:	+30 Hrs. continuous
• Dimensions:	1 1/2" x 4 1/4" x 3 1/8"
• Weight: (with batteries)	12 oz. (.33 kg.)

THE PLS3 LASER TOOL INCLUDES:

• Carrying Pouch • Operating Manual
• Floor Stand • Wall Bracket • PLS3 Unit

• Lights • Receptacles • Raceways • Hangers • Chases



PLS180

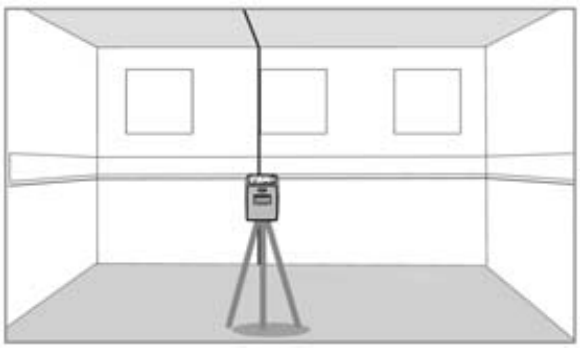
PROFESSIONAL HAND HELD LASER LINE TOOL

Fast, accurate and portable, the PLS180 Palm Laser saves you time and money when your bubble vial level or rotary laser is too limited or too cumbersome to do the job.

PLS180 SPECIFICATIONS

• Range:	100+'
• Accuracy:	1/8" @ 30 '
• Power Supply:	3 AA batteries
• Weight:	1.7 lbs (.77 kg.)
• Dimensions:	2" x 2.76" x 3 3/8"
• Fan Angle:	180°
• Leveling Range:	6°
• Operating Time:	+30 Hrs. continuous

Class II Laser Product



THE PLS180 LASER TOOL INCLUDES:

• Carrying Pouch • Operating Manual
• Wall Bracket • PLS180 Unit

Levels
F/N JL

600 SERIES • "Professional's Choice®" Flat Brass Mahogany Levels

Part No.	Length	Total Vial Count	Level Vial Count	Plumb Vial Count
618	18"	6	2	4
624	24"	6	2	4
636	36"	6	2	4
642	42"	6	2	4
648	48"	6	2	4

9600 SERIES • Professional Aluminum Box Levels

Part No.	Length	Total Vial Count	Level Vial Count	Plumb Vial Count
9624	24"	3	1	2
9648	48"	3	1	2
9672	72"	3	1	2

CAST SERIES • Heavy Duty Cast Aluminum Levels

Part No.	Length	Total Vial Count	Level Vial Count	Plumb Vial Count
1800	18"	6	2	4
2400	24"	6	2	4
2400–45	24"	6	2	2
2800	28"	6	2	4
3000	30"	6	2	4
4800	48"	6	2	4
				*2400-45 also has 2 - 45° vials

STANDARD SERIES • Extruded Aluminum Levels

Part No.	Length	Total Vial Count	Level Vial Count	Plumb Vial Count	45° Vial Count
122	12"	2	1	1	—
182	18"	2	1	1	—
183	18"	3	1	1	1
242	24"	2	1	1	—
243	24"	3	1	1	1
363	36"	3	1	1	1
483	48"	3	1	1	1

TORPEDO LEVELS

Part No.	Length	Total Vial Count	Level Vial Count	Plumb Vial Count	45° Vial Count
7500	9"	3	1	1	1
7500M	9"	3	1	1	1
6500	9"	3	1	1	1
6500M	9"	3	1	1	1

SPECIALTY LEVELS

Part No.	Description	Size
700	Magnetic Angle Locator	4" Diameter

CARPENTER AND RAFTER SQUARES

Part No.	Size	Material	Type
CS1	16" x 24"	Steel	Carpenter
CS2	16" x 24"	Steel	Rafter
CS3	16" x 24"	Steel	Metric Carpenter
CS4	16" x 24"	Aluminum	Carpenter
CS5	16" x 24"	Aluminum	Rafter
CS7	16" x 24"	Aluminum	Rafter
430	8" x 12"	Steel	Carpenter
405	—	Brass	Stair Gauges

RAFTER ANGLE SQUARES

Part No.	Size	Material
RAS1	7"	Aluminum
RAS120	12"	Aluminum
RAS70	7"	ABS Plastic

COMBINATION SQUARES

Part No.	Size	Head Material	Blade Material	Graduations
400	12"	Zinc	Steel	1/8", 1/16", 1/32"
400EM	12"	Zinc	Steel	1/8", 1/16", 1/32"/mm
415	12"	ABS Plastic	Steel	1/8", 1/16", 1/32"
415EM	12"	ABS Plastic	Steel	1/8", 1/16", 1/32"/mm
420EM	16"	Zinc	Stainless Steel	1/8", 1/16", 1/32", 1/64"/ .5mm, mm, cm
440	12"	Cast Iron	Steel	1/8", 1/16", 1/32"
440EM	12"	Cast Iron	Steel	1/8", 1/16", 1/32"/mm

DRYWALL AND T-SQUARES

Part No.	Blade Length	Blade Width	Blade Thickness	Head Length	Head Width	Head Thickness
ADS48	48"	2"	1/4"	22"	2"	1/4"
JTS48	47-7/8"	2"	1/8"	22"	1-1/2"	3/8"
JTS481	47-7/8"	2"	1/8"	22"	1-1/2"	3/8"
JTS48HD	47-7/8"	2"	3/16"	22"	1-1/2"	3/8"
JTS481HD	47-7/8"	2"	3/16"	22"	1-1/2"	3/8"
TS18	18"	2"	.080"	12"	2"	1/4"
TS24	24"	2"	.080"	12"	2"	1/4"
TS30	30"	2"	.080"	12"	2"	1/4"
TS36	36"	2"	.080"	12"	2"	1/4"
TS48	48"	2"	.080"	12"	2"	1/4"

Utility Knives

F/N KNIFE

Classic 99® Retractable Utility Knives

Features:

- Multi-position blade slide
- Blade storage in handle
- Top and bottom overlap nose holds blade securely

Blade Material: Steel
Handle Type: Straight
Handle Material: Die-Cast metal
Includes: (3) 11-921 Blades
Kit Parts

Part No.	Blade Shape	Handle Length	Quantity
10-099	Straight-Edged	6 in.	6 per box

Dynagrip™ Snap-Off Cartridge Knives

Features:

- Features a blade cartridge which rapidly and automatically slides a new blade into position after old blade is removed
- Cartridge dispenser is made from stainless steel to resist rust
- Ergonomically designed for comfort and cutting power
- The smooth slider mechanism features an audible "click stop" and is self locking for security
- Featuring soft-grip panels for secure grip
- Blade capacity of six heavy duty or five extra heavy duty blades

Blade Material: Steel
Handle Type: Straight
Handle Material: Stainless Steel
Includes: (4) 11-301 Blades

Part No.	Blade Width	Blade Shape	Handle Length	Quantity
10-480	18 mm	Straight-Edged	6-3/4 in.	6 per box

Fatmax® Locking Retractable Utility Knives

Features:

- Adjustable thumb dial locking wheel helps keep blade in place and helps reduce blade shifting in aggressive cutting situations
- One-piece design allows blade change without disassembling knife
- Quick blade change — no tools required
- Knife swivels open
- Blade presents itself for easy access
- Convenient rear blade storage houses seven heavy duty blades
- Lightweight design helps reduce fatigue during prolonged use
- Ergonomically designed rubber grip fits easily in your hand

No. of Blades: 3

Part No.	Overall Length
10-777	7 in

FatMax® Swivel-Lock® Fixed Blade Utility Knives

Features:

- Swivels open for quick blade change — no tools required
- Bi-material soft panels for better grip
- Curved handle design for comfort control and balance
- Thumb dial locks blade in place
- Magnet in nose holds blade while changing blades
- Secure blade storage in handle

Blade Material: Steel
Handle Type: Curved
Handle Material: Metal
Includes: (3) 11-921 Blades

Part No.	Overall Length	Blade Shape	Handle Length	Quantity
10-799	7 in	Straight-Edged	7 in	6 per box

Homeowner's Retractable Utility Knives

Features:

- Lightweight, economical utility knife with three position retractable blade
- Interlocking overlap nose secures blade safely between knife halves
- Perfect for the do-it-yourselfer

Blade Material: Steel
Handle Type: Straight
Includes: (1) 11-921 Blade

Part No.	Blade Shape	Handle Length	Quantity
10-175	Straight-Edged	6-1/8 in.	6 per box

Instant Change™ Utility Knives

Features:

- Push button, quick blade change — no tools required
- Strong and durable construction with a cast metal core and bi-material soft panels for better grip
- Curved handle design for better comfort, control and balance
- Swing out blade storage for easy blade access
- Integrated string cutting feature

Blade Material: Steel
No. of Blades: 3
Handle Type: Curved
Handle Material: Cast metal
Includes: (3) 11-921 Blades

Part No.	Overall Length	Blade Shape	Quantity
10-788	6-1/2 in	Straight-Edged	6 per box

WASHERS

PLATINGS:

PLAIN • ZINC • YELLOW ZINC • MECHANICAL GALVANIZED

HOT DIPPED GALVANIZED • ACGBLACK

MATERIALS:

STEEL

NYLON

STAINLESS

BRASS

ALUMINUM

PLEASE NOTE:
The USS Flat Washer is the industry "standard". If you do not specify otherwise, ISC will assume you are requesting a USS Flat Washer.
The washers on the following pages are a few of the "standards" ISC stocks. Please phone for a quote on any specialty washer requirements.

PICTORIAL TABLE


External Tooth Lock Washer
F/N WEXT

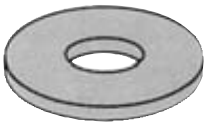

Internal Tooth Lock Washer
F/N WINT

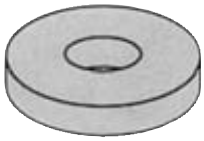

Ext-Int Combination Lock Washer
F/N WIET

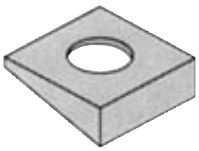

Countersunk Finishing Washer
F/N WFIN


Split Lock (Various Finishes)
F/N WSLM

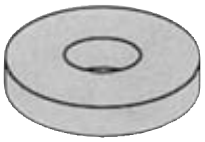

Machine Screw Washer
F/N WWMZ

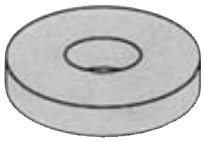

Fender Washer
F/N WFEN


S.A.E.*/U.S.S.*/Structural Washer
F/N WF436


Beveled Washer
F/N WBEV


Medium Split Lock Washer
F/N WSLM

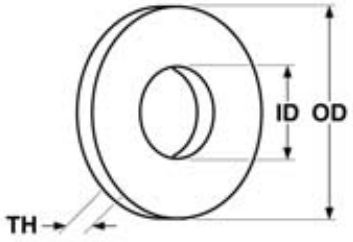

Standard Flat Washer
F/N WUSS


Standard SAE Flat Washer
F/N WSAE

Specialty Sizes & Material Available. Please Call With Your Specifications For A Quote.

Steel & Stainless *Machine Screw* Washers

F/N WWMZ



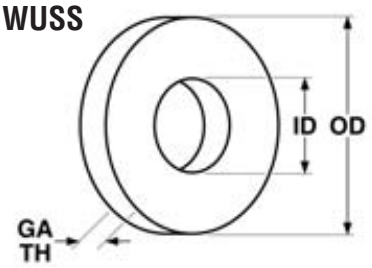
Machine Screw Washers

Washer Size	Inside Diameter		Outside Diameter		Thickness	
	Max	Min	Max	Min	Max	Min
2	0.097	0.087	0.224	0.214	0.022	0.014
3	0.114	0.104	0.255	0.245	0.023	0.018
4	0.130	0.120	0.286	0.276	0.030	0.022
5	0.145	0.135	0.286	0.276	0.030	0.022
6	0.155	0.145	0.380	0.370	0.036	0.028
8	0.175	0.165	0.380	0.370	0.036	0.028
10	0.209	0.199	0.443	0.433	0.036	0.028
12	0.232	0.222	0.505	0.495	0.052	0.044
14	0.270	0.260	0.567	0.557	0.052	0.044
5/16	0.335	0.325	0.630	0.620	0.054	0.046
3/8	0.397	0.387	0.693	0.683	0.054	0.046

Description	The smallest type of flat washer with an outside diameter equal to slightly twice the size of the inside diameter.	
Applications/ Advantages	Designed for use with machine screws in general industrial applications.	
Material	*Steel*	*Stainless*
	Washers are punched from cold-rolled steel.	18-8 Stainless steel
Plating	See Appendix-A for plating information.	Stainless machine screw washers are usually furnished without any additional coating.

Washers — USS Flat — Low Carbon Steel

F/N WUSS



USS Low Carbon Washers

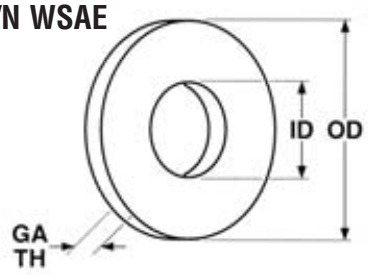
ANSI B18.22.1

Bolt Size	Outside Diameter			Inside Diameter			Thickness			Approximate Number per 50 Pounds
	Nominal	Max	Min	Nominal	Max	Min	American Standard (Gauge)	Max	Min	
3/16	9/16	0.577	0.557	1/4	0.265	0.245	18 (3/64)	.065	.036	18050
1/4	3/4	0.749	0.727	5/16	0.327	0.307	16 (1/16)	.080	.051	7450
5/16	7/8	0.905	0.868	3/8	0.390	0.370	14 (5/64)	.104	.064	4350
3/8	1	1.030	0.993	7/16	0.453	0.433	14 (5/64)	.104	.064	3350
7/16	1-1/4	1.280	1.243	1/2	0.515	0.495	14 (5/64)	.104	.064	2050
1/2	1-3/8	1.405	1.368	9/16	0.577	0.557	12 (7/64)	.132	.086	1300
9/16	1-1/2	1.499	1.462	5/8	0.640	0.620	21 (7/64)	.132	.086	1100
5/8	1-3/4	1.780	1.743	11/16	0.718	0.681	10 (9/64)	.160	.108	650
3/4	2	2.030	1.993	13/16	0.842	0.805	9 (5/32)	.177	.122	455
7/8	2-1/4	2.280	2.243	15/16	0.968	0.931	8 (11/64)	.192	.136	325
1	2-1/2	2.530	2.493	1-1/16	1.092	1.055	8 (11/64)	.192	.136	265
1-1/8	2-3/4	2.780	2.743	1-1/4	1.280	1.243	8 (11/64)	.192	.136	225
1-1/4	3	3.030	2.993	1-3/8	1.405	1.368	8 (11/64)	.192	.136	190
1-3/8	3-1/4	3.295	3.240	1-1/2	1.545	1.490	7 (3/16)	.213	.153	150
1-1/2	3-1/2	3.545	3.490	1-5/8	1.670	1.615	7 (3/16)	.213	.153	130
1-5/8	3-3/4	3.795	3.740	1-3/4	1.795	1.740	7 (3/16)	.213	.153	115
1-3/4	4	4.045	3.990	1-7/8	1.920	1.865	7 (3/16)	.213	.153	100
1-7/8	4-1/4	4.295	4.240	2	2.045	1.990	7 (3/16)	.213	.153	90
2	4-1/2	4.545	4.490	2-1/8	2.170	2.115	7 (3/16)	.213	.153	79
2-1/4	4-3/4	4.795	4.740	2-3/8	2.420	2.365	5 (7/32)	.248	.193	60
2-1/2	5	5.045	4.990	2-5/8	2.670	2.615	4 (15/64)	.280	.210	52
2-3/4	5-1/4	5.315	5.240	2-7/8	2.940	2.865	3 (1/4)	.310	.228	45
3	5-1/2	5.565	5.490	3-1/8	3.190	3.115	2 (5/32)	.327	.249	43

Description	A thin, flat, circular steel part with a centrally located hole.
Applications/ Advantages	Washers are designed for assembly around a bolt or screw, between the bearing surface of the fastener and the part to which it is attached. Flat washers are used to improve stress distribution, and to span large clearance holes. USS washers are designed to meet the majority of industrial applications in manufacturing, maintenance and repair.
Material	Plain washers shall be punched from hot-rolled, hot-rolled and pickled, or cold-rolled steel, or shall be machined from bar stock or tubing, or may be forged at the manufacturer's option.
Plating	See Appendix-A for information about the plating of low carbon flat washers.

Low Carbon Steel *SAE Flat* Washers

F/N WSAE



SAE Low Carbon Washers

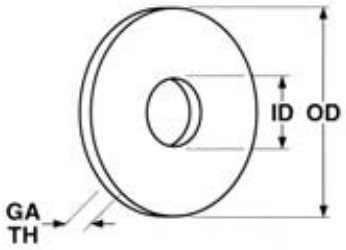
ANSI B18.22.1

Bolt Size	Outside Diameter			Inside Diameter			Thickness			Approximate Number per 50 Pounds
	Nominal	Max	Min	Nominal	Max	Min	American Standard (Gauge)	Max	Min	
4	5/16	0.320	0.307	1/8	0.133	0.120	(1/32)	.040	.025	83300
6	3/8	0.390	0.370	5/32	0.164	0.151	18 (3/64)	.065	.036	39500
8	7/16	0.453	0.433	3/16	0.196	0.183	18 (3/64)	.065	.036	29500
10	1/2	0.515	0.495	7/32	0.227	0.214	18 (3/64)	.065	.036	22750
12	9/16	0.577	0.557	1/4	0.265	0.245	16 (1/16)	.080	.051	14700
1/4	5/8	0.640	0.620	9/32	0.296	0.276	16 (1/16)	.080	.051	11100
5/16	11/16	0.703	0.681	11/32	0.359	0.339	16 (1/16)	.080	.051	9750
3/8	13/16	0.827	0.805	13/32	0.419	0.401	16 (1/16)	.080	.051	7000
7/16	59/64	0.937	0.915	15/32	0.484	0.464	16 (1/16)	.080	.051	5500
1/2	1-1/16	1.092	1.055	17/32	0.546	0.526	13 (3/32)	.121	.074	2800
9/16	1-3/16	1.186	1.149	19/32	0.609	0.589	13 (3/32)	.121	.074	2250
5/8	1-5/16	1.342	1.305	21/32	0.686	0.649	13 (3/32)	.121	.074	1850
3/4	1-1/2	1.499	1.462	13/16	0.842	0.805	10 (9/64)	.160	.108	1050
7/8	1-3/4	1.780	1.743	15/16	0.968	0.931	10 (9/64)	.160	.108	775
1	2	2.030	1.993	1-1/16	1.092	1.055	10 (9/64)	.160	.108	585
1-1/8	2-1/4	2.280	2.243	1-1/4	1.280	1.243	10 (9/64)	.160	.108	460
1-1/4	2-1/2	2.530	2.493	1-3/8	1.405	1.368	9 (5/32)	.192	.136	335
1-3/8	2-3/4	2.780	2.743	1-1/2	1.530	1.493	9 (5/32)	.213	.136	275
1-1/2	3	3.030	2.993	1-5/8	1.655	1.618	9 (5/32)	.213	.136	230

Description	Similar to a USS washer, but with slightly smaller inside and outside diameters. Also, most but not all SAE washers are made from thinner materials than USS washers.
Applications/ Advantages	SAE washers were designed to serve similar purposes as the USS washers, but specifically to meet the requirements in the field of automotive engineering.
Material	Plain washers shall be punched from hot-rolled, hot-rolled and pickled, or cold-rolled steel, or shall be machined from bar stock or tubing, or may be forged at the manufacturer's option.
Plating	See Appendix-A for information about the plating of steel flat washers.

Washers — *Fender* — Steel & Stainless

F/N WFEN



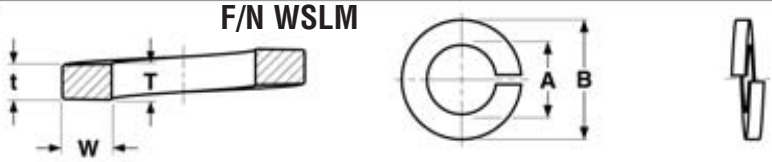
Fender Washers

Bolt Size	Inside Diameter (+0, -.010)	Outside Diameter (+0, -.010)	Thickness		Approximate Number in 50 Pounds (Steel)
			Max	Min	
10	7/32	11/16	.080	.051	
10	7/32	3/4	.080	.051	
10	7/32	7/8	.080	.051	5000
10	7/32	1	.080	.051	3500
10	7/32	1-1/4	.080	.051	3000
1/4	9/32	1	.080	.051	3750
1/4	9/32	1-1/4	.080	.051	2300
1/4	9/32	1-1/2	.080	.051	1550
5/16	11/32	1-1/4	.080	.051	2400
5/16	11/32	1-1/2	.080	.051	1600
3/8	13/32	1-1/4	.080	.051	2350
3/8	13/32	1-1/2	.080	.051	1650
3/8	13/32	2	.08.	.051	1000
1/2	17/32	1-1/4	.080	.051	3000
1/2	17/32	1-1/2	.080	.051	2000
1/2	17/32	2	.080	.051	950

Description	A flat washer with significantly more surface area than a USS or SAE washer. They are also made from a thinner gauge metal than most flat washers.	
Applications/ Advantages	Used where an extra wide bearing surface is required. Originally designed for auto body repair work, they are also used in sheet metal, plumbing, and electrical work. Also used to attach signs to posts, to install drywall and wood paneling.	
Material	Steel	Stainless
	Washers shall be punched from hot-rolled, hot-rolled and pickled or cold-rolled steel, or shall be machined from bar stock or tubing, or may be forged at the manufacturer's option.	18-8 Stainless steel
Plating	Fender washers are usually provided zinc plated or with no finish.	Parts are usually supplied with no additional finish.

Washers — Regular & High-Alloy Split — Steel & Stainless Lockwashers

F/N WSLM



Regular & High Alloy Helical Spring Lockwashers

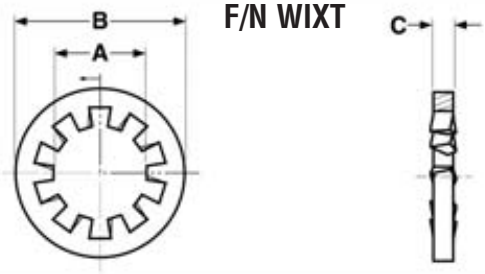
ASME B18.21.1-1999

Nominal Washer Size		A Inside Diameter Max	A Inside Diameter Min	B Outside Diameter Max	(T+t)/2 Mean Section Thickness Min	W Section Width Min
#2	0.086	0.094	0.088	0.172	0.020	0.035
#3	0.099	0.107	0.101	0.195	0.025	0.040
#4	0.112	0.120	0.114	0.209	0.025	0.040
#5	0.125	0.133	0.127	0.236	0.031	0.047
#6	0.138	0.148	0.141	0.250	0.031	0.047
#8	0.164	0.174	0.167	0.293	0.040	0.055
#10	0.190	0.200	0.193	0.334	0.047	0.062
#12	0.216	0.227	0.220	0.377	0.056	0.070
1/4	0.250	0.260	0.252	0.487	0.062	0.109
5/16	0.312	0.322	0.314	0.583	0.078	0.125
3/8	0.375	0.385	0.377	0.680	0.094	0.141
7/16	0.438	0.450	0.440	0.776	0.109	0.156
1/2	0.500	0.512	0.502	0.869	0.125	0.171
9/16	0.562	0.574	0.564	0.965	0.141	0.188
5/8	0.625	0.641	0.628	1.073	0.156	0.203
3/4	0.750	0.766	0.753	1.265	0.188	0.234
7/8	0.875	0.894	0.878	1.459	0.219	0.266
1	1.000	1.024	1.003	1.656	0.250	0.297
1-1/8	1.125	1.153	1.129	1.847	0.281	0.328
1-1/4	1.250	1.280	1.254	2.036	0.312	0.359
1-3/8	1.375	1.408	1.379	2.219	0.344	0.391
1-1/2	1.500	1.534	1.504	2.419	0.375	0.422
1-3/4	1.750	1.789	1.758	2.679	0.389	0.424
2	2.000	2.039	2.008	2.936	0.422	0.427

Description	**Regular:** A coiled, hardened, split circular washer with a slightly trapezoidal wire section. **High-Alloy:** Dimensionally identical to a regular split lock washer but made from 4037 alloy steel (sizes over 1" are equivalent to heavy split lockwashers in size and material). **Stainless:** A regular split lock washer made from austenitic stainless steel.
Applications/ Advantages	**Regular:** (A) Applies greater bolt tension per unit of applied torque; (B) Provides a hardened bearing surface, creating more uniform torque control; (C) Provides more uniform load distribution; (D) Resists loosening caused by vibration and corrosion; (E) Is preferred lockwasher for use with hardened bearing surfaces. **High-Alloy:** Designed for use with Grade-5 & Grade-8 bolts and nuts. **Stainless:** For use with stainless nuts and screws of a similar stainless alloy in corrosive environments.
Material	**Carbon Steel:** SAE J403 1055 - 1065 carbon steel. **High-Alloy Steel:** 1/4 thru 1": SAE J404 4037 alloy steel; 1-1/8 thru 1-1/2": SAE J403 1055 - 1065 carbon steel **18-8 Stainless:** SAE J405 302 - 305 stainless steel. **316 Stainless:** SAE J405 316 stainless steel.
Hardness	**Carbon & High-Alloy Steel:** Rockwell C38 - 46 **Stainless:** Thru 5/8": Rockwell C35 - 43; Sizes over 5/8": Rockwell C32 - 43
Twist Test	With the washer in a vice with the split ends free and straight above the vice jaws, a 90° segment of the free end is gripped with a wrench and bent. Washers are to withstand being twisted through a 90° angle without signs of fracture. When the washer ultimately fractures beyond the prescribed 90° limit, the structure at the breaking point shall show a fine grain.
Plating	See Appendix-A for information about the plating of carbon steel and alloy steel lock washers.

Steel & Stainless Lockwashers — *Internal Tooth* Washers

F/N WIXT



Internal Tooth Lock Washers

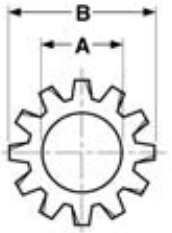
ASME B18.21.1-1999

Nominal Washer Size		A Inside Diameter		B Outside Diameter		C Thickness	
		Max	Min	Max	Min	Max	Min
#2	0.086	0.095	0.089	0.200	0.175	0.016	0.010
#3	0.099	0.109	0.102	0.232	0.215	0.016	0.010
#4	0.112	0.123	0.115	0.270	0.245	0.018	0.012
#5	0.125	0.136	0.129	0.280	0.255	0.020	0.014
#6	0.138	0.150	0.141	0.295	0.275	0.022	0.016
#8	0.164	0.176	0.168	0.340	0.325	0.023	0.018
#10	0.190	0.204	0.195	0.381	0.365	0.024	0.018
#12	0.216	0.231	0.221	0.410	0.394	0.027	0.020
1/4	0.250	0.267	0.256	0.478	0.460	0.028	0.023
5/16	0.312	0.332	0.320	0.610	0.594	0.034	0.028
3/8	0.375	0.398	0.384	0.692	0.670	0.040	0.032
7/16	0.438	0.464	0.448	0.789	0.740	0.040	0.032
1/2	0.500	0.530	0.512	0.900	0.867	0.045	0.037
9/16	0.5625	0.596	0.576	0.985	0.957	0.045	0.037
5/8	0.625	0.663	0.640	1.071	1.045	0.050	0.042
3/4	0.750	0.795	0.769	1.245	1.220	0.055	0.047
7/8	0.875	0.927	0.894	1.410	1.364	0.060	0.052
1	1.000	1.060	1.019	1.637	1.590	0.067	0.059
1/8	Pipe	0.425	0.410	0.615	0.595	0.022	0.017

Description	A hardened circular washer with twisted prongs or "teeth" which extend inward from the inside edge of the washer.
Applications/ Advantages	This is preferred when finished appearance is crucial and the teeth must be hidden under the head of the screw; also recommended for use with small heads such as fillisters.
Material	**Steel:** SAE 1050 - 1065 spring steel. **18-8 Stainless:** SAE 301 - 305 stainless steel. **316 Stainless:** SAE 316 stainless steel. **410 Stainless:** SAE 410 stainless steel.
Hardness	**Steel:** Rockwell C40 - 50 **18-8 Stainless:** Rockwell C20 - 45 **410 Stainless:** Rockwell C40 - 50
Plating	See Appendix-A for information on the plating of steel lock washers.

Washers — External Tooth — Steel & Stainless Lockwashers

F/N WEXT



External Tooth Lock Washers

ASME B18.21.1-1999

Nominal Washer Size		A Inside Diameter		B Outside Diameter		C Thickness	
		Max	Min	Max	Min	Max	Min
#2	0.086	0.095	0.086	0.189	0.177	0.013	0.010
#3	0.099	0.109	0.102	0.235	0.220	0.016	0.010
#4	0.112	0.123	0.115	0.260	0.245	0.018	0.012
#5	0.125	0.136	0.129	0.285	0.270	0.020	0.014
#6	0.138	0.150	0.141	0.320	0.305	0.022	0.016
#8	0.164	0.176	0.168	0.381	0.365	0.023	0.018
#10	0.190	0.204	0.195	0.410	0.395	0.024	0.018
#12	0.216	0.231	0.221	0.475	0.460	0.027	0.020
1/4	0.250	0.267	0.256	0.510	0.494	0.028	0.023
5/16	0.3125	0.332	0.320	0.610	0.588	0.034	0.028
3/8	0.375	0.398	0.384	0.694	0.670	0.040	0.032
7/16	0.438	0.464	0.448	0.760	0.740	0.040	0.032
1/2	0.500	0.530	0.513	0.900	0.880	0.045	0.037
9/16	0.5625	0.596	0.576	0.985	0.960	0.045	0.037
5/8	0.625	0.663	0.641	1.070	1.045	0.050	0.042
3/4	0.750	0.795	0.768	1.260	1.220	0.055	0.047
7/8	0.875	0.927	0.897	1.410	1.380	0.060	0.052
1	1.000	1.060	1.025	1.620	1.590	0.067	0.059

Description	A hardened circular washer with twisted prongs or "teeth" which extend out from the outer edge of the washer.
Applications/ Advantages	This is the most preferable of all tooth-lock washers. It offers the greatest locking efficiency since the teeth are on the largest radius and provide greater torsional resistance.
Material	**Steel:** SAE 1050 - 1065 spring steel. **18-8 Stainless:** SAE 301 - 305 stainless steel. **316 Stainless:** SAE 316 stainless steel. **410 Stainless:** SAE 410 stainless steel.
Hardness	**Steel:** Rockwell C40 - 50 **18-8 Stainless:** Rockwell C20 - 45 **410 Stainless:** Rockwell C40 - 50
Plating	See Appendix-A for information on the plating of steel lock washers.