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About the Company

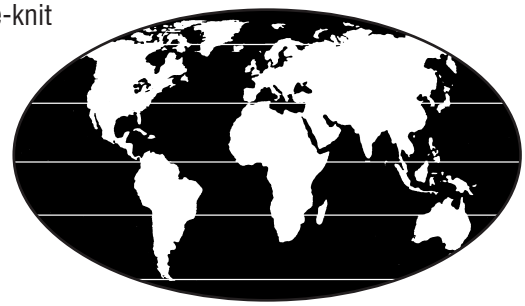
Since 1974, Captive Fastener Corporation has been solely dedicated to manufacturing the finest quality self-clinching fasteners for a variety of industrial and electronics equipment produced by major OEM's. Typical applications include the manufacture of computers, business machines, communication equipment, industrial controls, vending machines, automotive and other precision fabricated metal products.

Quality manufacturing…

The Corporate Headquarters complex in Oakland, New Jersey, along with the facility in Peabody, Massachusetts, contain a total of 260,000 square feet of manufacturing space. At these sites, Captive produces a wide range of self-clinching fasteners under a strict quality control program, which ensures compliance to product specifications and performance criteria. Final inspection includes laser or vision system sorting to assure all critical dimensions are met. Also, Captive's Engineering Department is available to evaluate new applications and develop special designs tailored to meet your specific needs.

Personal service…

As Captive Fastener has steadily grown over the years, we have maintained a close-knit organization. Most important is our commitment to customer service, which is the key to our success. Care, special attention and on-time deliveries, supported by a network of sales representatives and distributors situated around the world, provide customers with the quality and response time required in today's business environment. Contact Captive for a quote on your next requirement. Visit our Website at www.captive-fastener.com. You'll be glad you did!



Approved supplier for major OEM's (partial listing)…

ATT	Data General	ITT	Compaq
Cisco	Motorola	BMW	Nokia
Pitney Bowes	Westinghouse	Xerox	Ericsson
GE	Nortel	Hewlett Packard	Alcatel
Philips	Raytheon	IBM	Marconi

Product Description

Captive Fasteners are available in three basic groups:
1. Self-clinching fasteners for ductile materials.
2. Broaching fasteners for non-ductile materials
3. Weld nuts for sheet metal.

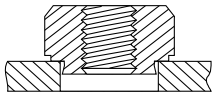
Advantages:

All Captive self-clinching fasteners install into a round hole which may be punched or drilled into ductile materials. All Captive broaching fasteners install into a round hole, which may be drilled into non-ductile materials. Captive weld nuts are designed for attachment to carbon steel and stainless steel sheet material. All three fastener types provide a permanently attached fastener which becomes an integral part of the panel or frame and eliminates the problems associated with loose hardware. Captive fasteners provide added value by speeding initial assembly as well as servicing in the field, keeping costs to a minimum.

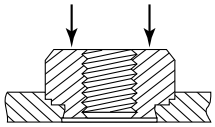
Installation Principles:

Captive self-clinching fasteners are pressed into holes in sheet metal by applying a steady squeezing force. This results in the cold-flow of sheet material, which is displaced by the knurl, into the undercut area on the shank of the fastener. Once fully embedded, the knurled area prevents torque-out during tightening of mating part. Captive broaching fasteners are pressed into printed circuit boards and non-ductile materials and held permanently in place by an interference fit. Both self-clinching and broaching types withstand high push-out and torque-out forces. Captive weld nuts are self piloting into holes and are round, eliminating the need for indexing. Pilot shanks protect threads from weld spatter.

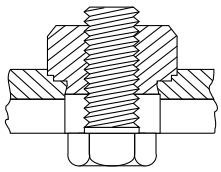
Typical Self-Clinching Nut Installation



Fastener Must Be Installed Squarely In Hole



Squeezing Force Is Applied To Head Of Fastener



Install Bolt Or Screw From Opposite Side Of Head Of Fastener

Typical applications for Captive self-clinching fasteners:

- ATM's
- Agriculture Equipment
- Air bags
- Alarm Systems
- Appliances
- Arcade Games
- Automotive
- Avionics
- Black Boxes
- CATV
- Computers
- Control Panels
- Copiers
- Fabricated Metal
- Facsimile
- Food Processing
- Gaming Machines
- Gas Pumps
- Hospital Beds
- Laser Equipment
- Medical Equipment
- Microwave Equipment
- Modems
- Office Furniture
- Power Supplies
- Stereo Equipment
- Telecommunication
- Telephone Systems
- Televisions
- Test Equipment
- Truck Roll-up Doors
- Vending Equipment
- VCR's

Available finishes for fasteners from Captive:

Common finishes available for Captive self-clinching fasteners are listed below:

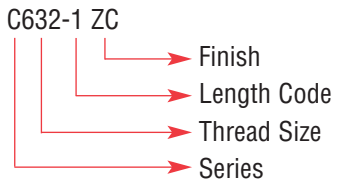
Plating	Chromate	Suffix
Black Oxide	-------	BO
Bright Acid Tin	-------	BT
Cadmium	Black	CB
Cadmium	Yellow	CC
Cadmium	Clear	CI
Cadmium	Dry Film Lube	EF
Copper Flash	------	CF
Copper, Nickel, Tin	------	CT
Nickel over Copper Flash	------	NC
Nickel Plate	------	NI
Nylon Locking Patch	------	NP
Zinc	Blue	BZ
Zinc	Black	ZB
Zinc	Yellow	ZC
Zinc	Green	ZG
Zinc	Clear	ZI
None	------	X

Notes:

1. Unless otherwise specified, self-clinching fasteners will be provided with zinc/clear chromate (ZI).

2. Other finishes available upon request.

3. P/N structure example:



Inch – Metric Conversion Table

Characteristic	When You Know	Multiply By	To Find	When You Know	Multiply By	To Find
Length	Inches	25.4	Millimeters (mm)	Millimeters (mm)	0.03937	Inches
Area	Square Inches	645.16	Square Millimeters	Square Millimeters	0.00155	Square inches
Plating Thickness	Inches	25400	µm	µm	3.937×10^{-5}	Inches
Force	Pounds	4.448	Newtons (N)	Newtons (N)	0.2248	Pounds
Torque	Inch-pounds	0.113	Newton-meters (N•m)	Newton-meters (N•m)	8.851	Inch-pounds
Stress	PSI	0.006895	MPa	MPa	145.04	PSI
Stress	KSI	6.895	MPa	MPa	0.14504	KSI

Locking Patches

Locking Patches

Captive self-clinching studs and nuts are available with a Nylon patch applied to the thread area, which provides prevailing torque for matching fasteners.

The size and position of the locking element may be tailored to meet specific torque requirements, ranging from 3 to 30 inch lbs. Various colors are also available for identification.

The compressed patch exerts a spring-like wedging pressure on one side of the thread, between the mating fastener threads. This creates a tight metal-to-metal contact on the opposite side of the mating thread area, providing a strong, yet fully adjustable locking action.

Captive self-locking patches save time and money while assuring performance in the following ways:

- Fasteners can be fed through all standard automatic insertion equipment.
- Eliminates the need for separate lock washers.
- Resists loosening from vibration or temperature extremes (maximum temperature 250˚ Fahrenheit).
- Allows repeated removal and replacement of mating fasteners.

Locking patches are unaffected by alcohol, gasoline, jet fuels, hydraulic fluids or other solvents. The nylon patch is ideal for adjustment points, since it locks in place due to resiliency of material, and will not loosen even if the fastener is not seated.

Applications include autos, trucks, rail, appliances, lawn & garden power equipment and other high vibration environments.

Captive Trademark Legend:

To assure you receive genuine Captive parts, look for the following trademarks:

△ - STUDS

⬡ - FLOATING NUTS

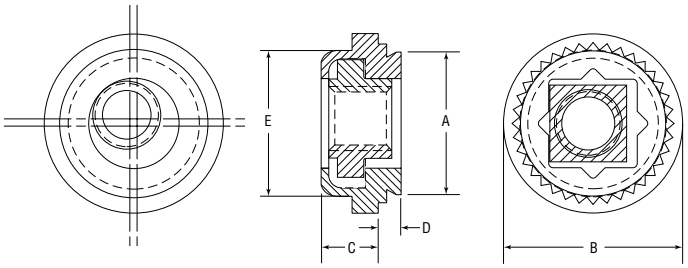
||||| - CFSP NUTS

CF - STEEL NUTS

Floating Clinch Nuts

Series CFAS & CFAC

CFAS & CFAC floating clinch nuts provide a self-clinching fastener with a floating nut that compensates for mating misalignments to 0.030 inches (.8 mm).



STARBURST® design indicates genuine Captive self-clinching Floating Nut.

Series	Material	Finish
CFAS	Heat-treated Carbon Steel	Zinc* Clear
CFAC	300 Series Stainless Steel	Passivated ASTM A380

*Spec. ASTM B633-85

Thread: Non Locking: Class 2B, MIL-S-7742; (6H ISO metric). Self Locking: Class 3B, ANSI B1-1; (6H ISO metric).

Float: .015 in. (.4mm) minimum in all directions from center, 0.030 in. (.8mm) total.

Use in: Materials with Rockwell Hardness of B-70 or less.

Dimensions & Specifications

	Thread Size	Part Number Carbon Steel	Part Number Stainless Steel	D Max.	Min.	+.003 in. (.08mm) -.000	A Max.	E Max.	B ± .015 in. (.381mm)	C Max.	Min.
INCH (in.)	#4-40	CFAS440-1	CFAC440-1	.038	.040	.290	.289	.290	.36	.13	.30
		CFAS440-2	CFAC440-2	.054	.056						
	#6-32	CFAS632-1	CFAC632-1	.038	.040	.328	.327	.335	.39	.13	.32
		CFAS632-2	CFAC632-2	.054	.056						
	#8-32	CFAS832-1	CFAC832-1	.038	.040	.368	.367	.365	.44	.13	.34
		CFAS832-2	CFAC832-2	.054	.056						
	#10-24	CFAS1024-1	CFAC1024-1	.038	.040	.406	.405	.405	.47	.16	.36
		CFAS1024-2	CFAC1024-2	.054	.056						
	#10-32	CFAS1032-1	CFAC1032-1	.038	.040						
		CFAS1032-2	CFAC1032-2	.054	.056						
	1/4-20	CFAS420-2†	CFAC420-2†	.054	.056	.515	.514	.510	.60	.20	.42
	1/4-28	CFAS428-2†	CFAC428-2†	.054	.056						
METRIC (mm)	M3 x 0.5	CFASM3-1	CFACM3-1	0.97	1.0	7.4	7.34	7.4	9.1	3.3	7.6
		CFASM3-2	CFACM3-2	1.37	1.4						
	M4 x 0.7	CFASM4-1	CFACM4-1	0.97	1.0	9.4	9.32	9.3	11.2	3.3	8.6
		CFASM4-2	CFACM4-2	1.37	1.4						
	M5 x 0.8	CFASM5-1	CFACM5-1	0.97	1.0	10.3	10.29	10.3	11.9	4.3	9.0
		CFASM5-2	CFACM5-2	1.37	1.4						
	M6 x 1.0	CFASM6-2†	CFACM6-2†	1.37	1.4	13.1	13.06	13.0	15.3	5.3	11.0

†Not stocked, available on special order.

Continued on next page.

Floating Clinch Nuts

Series CFAS & CFAC

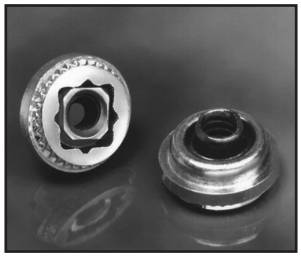
Continued from previous page

Installation & Performance Data

	Thread Size	Shank	Cold-rolled Steel			2024-T3 Aluminum			5052-H34 Aluminum		
			Installation Force (tons)	Pushout (lbs.)	Torque-out (in.-lbs.)	Installation Force (tons)	Pushout (lbs.)	Torque-out (in.-lbs.)	Installation Force (tons)	Pushout (lbs.)	Torque-out (in.-lbs.)
INCH (in.)	#4-40	-1	1 – 2	300	85	1 – 2	220	65	.5 – .75	215	65
		-2	1 – 2	300	150	1 – 2	225	150	1	225	80
	#6-32	-1	1 – 2	300	150	1 – 2	235	110	1	240	140
		-2	1 – 2	300	175	1 – 2	275	150	1	250	150
	#8-32	-1	1 – 2	300	150	1 – 2	240	110	1	250	140
		-2	1 – 2	400	200	1 – 2	300	150	1	265	150
	#10-24	-1	1	400	150	1 – 2	300	150	1	300	150
		-2	2	450	200	1 – 2	300	200	1	350	175
	#10-32	-1	2	400	150	1 – 2	300	150	1	300	150
		-2	2	450	200	1 – 2	300	200	1	350	175
	1/4-20 1/4-28	-2	2 – 3	500	325	2 – 3	300	325	1 – 2	400	325
	Thread Size	Shank	Installation Force (kN)	Pushout (N)	Torque-out (N•m)	Installation Force (kN)	Pushout (N)	Torque-out (N•m)	Installation Force (kN)	Pushout (N)	Torque-out (N•m)
METRIC (mm)	M3	1	13	1330	9	13	970	7	7	950	9
		2	14	1330	17	14	1000	17	9	1000	17
	M4	1	14	1330	17	14	1050	12	9	1100	17
		2	15	1780	22	15	1330	17	10	1178	22
	M5	1	15	1780	17	15	1330	17	10	1330	17
		2	16	2000	22	16	1550	22	11	1550	22
	M6	2	23	2220	36	23	1330	36	14	1780	36

Floating Locking Clinch Nuts

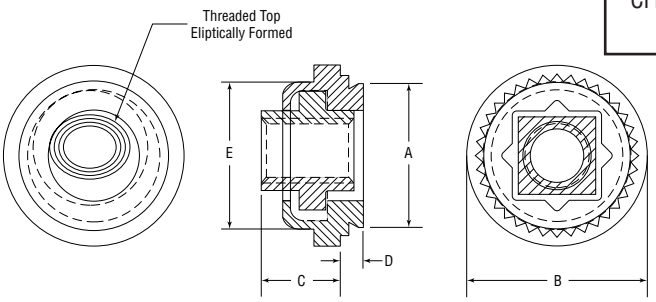
Series CFFS & CFFC



CFFS & CFFC floating clinch nuts provide a self-clinching fastener with a floating nut that compensates for mating misalignments to 0.030 inches (.8 mm) and provides prevailing torque for the mating screw equivalent to MIL-N-250-27 specifications.

Series	Material		Finish	
	Body	Nut	Body	Nut
CFFS	Heat-treated Carbon Steel	300 Series Stainless Steel	Zinc* Clear	Black Dry Film Lubricant** over Cadmium Chromate
CFFC	300 Series Stainless Steel	300 Series Stainless Steel	Passivated ASTM A380	Black Dry Film Lubricant** over Cadmium Chromate

*Spec. ASTM B633-85
** Spec. MIL-L-46010



STARBURST™ design indicates genuine Captive self-clinching Floating Nut.

Thread: Self Locking Internal: ANSI B1.1, 3B / ANSI / ASME B1.13M; (6H ISO metric).

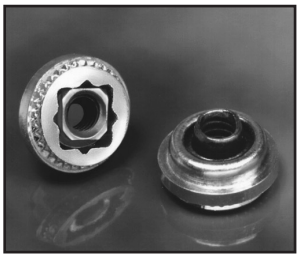
Float: .015 in. (.4mm) minimum in all directions from center, 0.030 in. (.8mm) total.

Use in: Materials with Rockwell Hardness of B-70 or less.

Dimensions & Specifications

	Thread Size	Part Number: Carbon Steel	Part Number: Stainless Steel	D Max.	Min.	+.003 in. (.08mm) -.000	A Max.	E Max.	B ± .015 in. (.381mm)	C Max.	Min.
INCH (in.)	#4-40	CFFS440-1	CFFC440-1	.038	.040	.290	.289	.290	.36	.19	.30
		CFFS440-2	CFFC440-2	.054	.056						
	#6-32	CFFS632-1	CFFC632-1	.038	.040	.328	.327	.335	.39	.20	.32
		CFFS632-2	CFFC632-2	.054	.056						
	#8-32	CFFS832-1	CFFC832-1	.038	.040	.368	.367	.365	.44	.21	.34
		CFFS832-2	CFFC832-2	.054	.056						
	#10-24	CFFS1024-1	CFFC1024-1	.038	.040	.406	.405	.405	.47	.27	.36
		CFFS1024-2	CFFC1024-2	.054	.056						
	#10-32	CFFS1032-1	CFFC1032-1	.038	.040						
		CFFS1032-2	CFFC1032-2	.054	.056						
	1/4-20	CFFS420-2†	CFFC420-2†	.054	.056	.515	.514	.510	.60	.31	.42
	1/4-28	CFFS428-2†	CFFC428-2†	.054	.056						
METRIC (mm)	M3 x 0.5	CFFSM3-1	CFFCM3-1	0.97	1.0	7.4	7.34	7.4	9.1	4.8	7.6
		CFFSM3-2	CFFCM3-2	1.37	1.4						
	M4 x 0.7	CFFSM4-1	CFFCM4-1	0.97	1.0	9.4	9.32	9.3	11.2	5.3	8.6
		CFFSM4-2	CFFCM4-2	1.37	1.4						
	M5 x 0.8	CFFSM5-1	CFFCM5-1	0.97	1.0	10.3	10.29	10.3	11.9	6.8	9.0
		CFFSM5-2	CFFCM5-2	1.37	1.4						
	M6 x 1.0	CFFSM6-2†	CFFCM6-2†	1.37	1.4	13.1	13.06	13.0	15.3	7.9	11.0

All items subject to minimum order requirements.
†Not stocked, available on special order.



Floating Locking Clinch Nuts

Series CFFS & CFFC

Continued from previous page

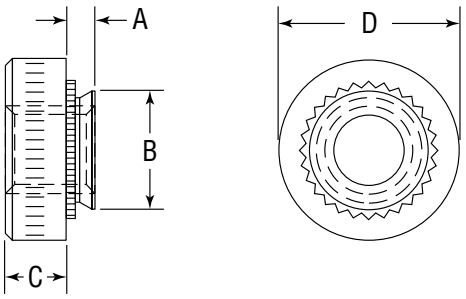
Installation & Performance Data

	Thread Size	Shank	Cold-rolled Steel			2024-T3 Aluminum			5052-H34 Aluminum		
			Installation Force (tons)	Pushout (lbs.)	Torque-out (in.-lbs.)	Installation Force (tons)	Pushout (lbs.)	Torque-out (in.-lbs.)	Installation Force (tons)	Pushout (lbs.)	Torque-out (in.-lbs.)
INCH (in.)	#4-40	-1	1 – 2	300	85	1 – 2	220	65	.5 – .75	215	65
		-2	1 – 2	300	150	1 – 2	225	150	1	225	80
	#6-32	-1	1 – 2	300	150	1 – 2	235	110	1	240	140
		-2	1 – 2	300	175	1 – 2	275	150	1	250	150
	#8-32	-1	1 – 2	300	150	1 – 2	240	110	1	250	140
		-2	1 – 2	400	200	1 – 2	300	150	1	265	150
	#10-24	-1	1	400	150	1 – 2	300	150	1	300	150
		-2	2	450	200	1 – 2	300	200	1	350	175
	#10-32	-1	2	400	150	1 – 2	300	150	1	300	150
		-2	2	450	200	1 – 2	300	200	1	350	175
	1/4-20 1/4-28	-2	2 – 3	500	325	2 – 3	300	325	1 – 2	400	325
	Thread Size	Shank	Installation Force (kN)	Pushout (N)	Torque-out (N•m)	Installation Force (kN)	Pushout (N)	Torque-out (N•m)	Installation Force (kN)	Pushout (N)	Torque-out (N•m)
METRIC (mm)	M3	1	13	1330	9	13	970	7	7	950	9
		2	14	1330	17	14	1000	17	9	1000	17
	M4	1	14	1330	17	14	1050	12	9	1100	17
		2	15	1780	22	15	1330	17	10	1178	22
	M5	1	15	1780	17	15	1330	17	10	1330	17
		2	16	2000	22	16	1550	22	11	1550	19
	M6	2	23	2220	36	23	1330	36	14	1780	36

Self-Clinching Nuts for Stainless Steel

Series CFSP

CFSP self-clinching nuts provide strong load-bearing threads in stainless sheet metal as thin as .030 inches (0.8mm).



Material: Precipitation Hardening Grade Stainless Steel.
Finish: Passivated ASTM A380.
Thread: Class 2B, MIL-S-7742; (6H ISO metric).
Use in: Materials with Rockwell Hardness of B-88 or less.

Dimensions & Specifications

	Thread Size	Part Number	A Max.	Min.	+.003 in. (0.08 mm) –.000	B Max.	C ± .01 in. (±.25mm)	D ± .01 in. (±.25mm)	Min.
INCH (in.)	#4-40	CFSP440-0	.030	.030-.039	.166	.165	.07	.25	.19
		CFSP440-1	.038	.040					
		CFSP440-2	.054	.056					
	#6-32	CFSP632-0	.030	.030-.039	.1875	.187	.07	.28	.22
		CFSP632-1	.038	.040					
		CFSP632-2	.054	.056					
	#8-32	CFSP832-0	.030	.030-.039	.213	.212	.09	.31	.27
		CFSP832-1	.038	.040					
		CFSP832-2	.054	.056					
	#10-32	CFSP1032-0	.030	.030-.039	.250	.249	.09	.34	.28
		CFSP1032-1	.038	.040					
		CFSP1032-2	.054	.056					
	1/4-20	CFSP420-1	.054	.056	.344	.343	.17	.44	.34
		CFSP420-2	.087	.091					
METRIC (mm)	M3 x 0.5	CFSPM3-0	0.76	0.8-1	4.25	4.22	1.5	6.3	4.8
		CFSPM3-1	0.97	1.0					
		CFSPM3-2	1.37	1.4					
	M4 x 0.7	CFSPM4-0	0.76	0.8-1	5.4	5.38	2	7.9	6.9
		CFSPM4-1	0.97	1.0					
		CFSPM4-2	1.37	1.4					
	M5 x 0.8	CFSPM5-0	0.76	0.8-1	6.4	6.38	2	8.7	7.1
		CFSPM5-1	0.97	1.0					
		CFSPM5-2	1.37	1.4					
	M6 x 1.0	CFSPM6-1	1.37	1.4	8.75	8.72	4.1	11.1	8.6

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Self-Clinching Nuts for Stainless Steel

Series CFSP

Continued from previous page.

Installation & Performance Data

	Thread Size	Shank Code	Installation Force (tons)	Pushout (lbs.)	Torque-out (in.-lbs.)
INCH (in.)	#4-40	-0 -1 -2	1.5 – 2.5	100 120 225	13 15 18
	#6-32	-0 -1 -2	2 – 3.5	105 125 270	16 20 28
	#8-32	-0 -1 -2	2 – 3.5	105 140 280	26 35 45
	#10-32	-0 -1 -2	3 – 4.5	115 175 315	32 40 60
	1/4-20	-1	4.5 – 5.5	395	150
	Thread Size	**Shank**	**Installation Force (kN)**	**Pushout (N)**	**Torque-out (N•m)**
METRIC (mm)	M3	-0 -1 -2	13 – 22	465 545 1000	1.46 1.7 2.03
	M4	-0 -1 -2	22 – 31	485 640 1245	2.9 4.0 5.1
	M5	-0 -1 -2	26 – 40	525 795 1400	3.6 4.5 6.8
	M6	-1	40 – 48	1755	17

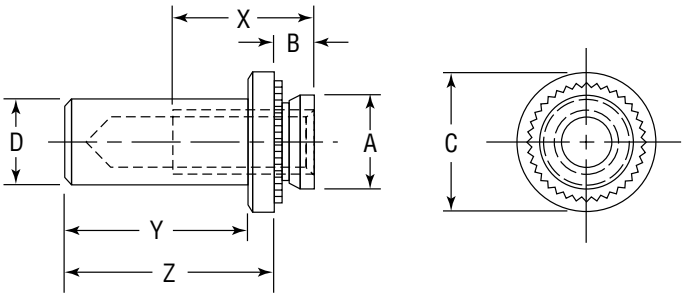
Blind Press Nuts

Series CFB & CFBS

CFB & CFBS blind, sealed-thread, press nuts are designed to provide extended thread lengths in thin sheet metal. Press nuts provide a seal against the entrance of dirts, oils, moisture, and corrosive atmospheres. They are usually more economical to use than nut and screw-type hardware that require elaborate seals and special assembly procedures.

Series	Material	Finish
CFB	Heat-treated Carbon Steel	Zinc* Clear
CFBS	300 Series Stainless Steel	Passivated ASTM A380

*Spec. ASTM B633-85



These fasteners are identical to industry standards in all respects. Identical dimensions and hole sizes permit them to be fed through automatic insertion equipment. Captive blind press nuts are available in sizes from 4-40 to 1/4-20 (M3 to M6) in both carbon and stainless steel.

Use In: CFB – Materials with HRB-80 or less.
CFBS – Materials with HRB-70 or less.

Dimensions & Specifications

	Thread Size	Part Number Carbon Steel	Part Number Stainless Steel	Barrel Dia. D Max.	Min.	+.003 in. +.08 mm –.000	Shank Dia. A Max.	Y Max.	B Max.	C ±.01 in. (±.25 mm)	Z ±.01 in. (±.25 mm)	Min.	X Depth Full Thread Min.
INCH (in.)	#4-40	CFB440-1	CFBS440-1	.149	.040	.166	.165	.335	.038	.25	.38	.19	.21
		CFB440-2	CFBS440-2		.056				.054				
	#6-32	CFB632-1	CFBS632-1	.169	.040	.187	.186	.335	.038	.28	.38	.22	.23
		CFB632-2	CFBS632-2		.056				.054				
	#8-32	CFB832-1	CFBS832-1	.204	.040	.213	.212	.385	.038	.31	.44	.27	.28
		CFB832-2	CFBS832-2		.056				.054				
	#10-32	CFB1032-1	CFBS1032-1	.235	.040	.250	.249	.385	.038	.34	.44	.28	.28
		CFB1032-2	CFBS1032-2		.056				.054				
	1/4-20	CFB420-1	CFBS420-1	.305	.056	.344	.343	.500	.054	.43	.56	.34	.31
		CFB420-2	CFBS420-2		.090				.087				
METRIC (mm)	M3 x 0.5	CFBM3-1	CFBSM3-1	3.8	1.0	4.25	4.22	8.5	0.97	6.35	9.6	4.8	5.3
		CFBM3-2	CFBSM3-2		1.4				1.37				
	M4 x 0.7	CFBM4-1	CFBSM4-1	5.2	1.0	5.4	5.38	9.8	0.97	7.95	11.2	6.9	7.1
		CFBM4-2	CFBSM4-2		1.4				1.37				
	M5 x 0.8	CFBM5-1	CFBSM5-1	6.0	1.0	6.4	6.38	9.8	0.97	8.75	11.2	7.1	7.1
		CFBM5-2	CFBSM5-2		1.4				1.37				
	M6 x 1.0	CFBM6-1	CFBSM6-1	7.8	1.4	8.75	8.72	12.7	1.37	11.10	14.3	8.6	7.8
		CFBM6-2	CFBSM6-2		2.3				2.21				

Continued on next page.

Blind Press Nuts

Series CFB & CFBS

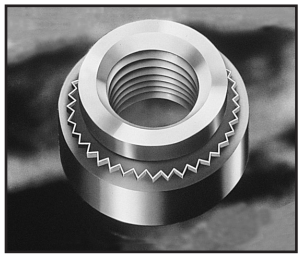
Continued from previous page.

Installation & Performance Data

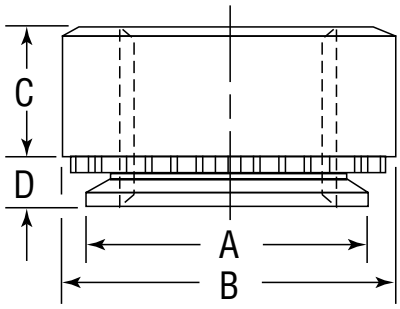
	Thread Size	Min.	Cold-rolled Steel: Installation Force (lbs.)	Cold-rolled Steel: Pushout (lbs.)	Cold-rolled Steel: Torque-out (in.-lbs.)	5052-H34 Aluminum: Installation Force (lbs.)	5052-H34 Aluminum: Pushout (lbs.)	5052-H34 Aluminum: Torque-out (in.-lbs.)
INCH (in.)	#4-40	.040	2500-2700	125	13	1500-1600	100	12
	#6-32	.040	3000-3100	130	18	1850	105	17
	#8-32	.040	3400-3600	135	30	2000	110	25
	#10-32	.040	4000	140	35	2100	110	34
	1/4-20	.062	6000	400	105	4000	315	100
			Cold-rolled Steel			5052-H34 Aluminum		
METRIC (mm)	Thread Size	Min.	Installation Force (kN)	Pushout (N)	Torque-out (N•m)	Installation Force (kN)	Pushout (N)	Torque-out (N•m)
	M3	1.0	11	560	1.5	7	440	1.4
	M4	1.0	15	600	3.4	9	490	2.8
	M5	1.0	17	620	4.0	10	490	3.8
	M6	1.6	25	1780	11.9	18	1400	11.3

Self-Clinching Nuts

Series C & CS



C & CS nuts provide strong load-bearing threads in sheet metal and other thin section assemblies. C & CS nuts meet spec. features of MIL-N-45938/1.



Series	Material	Finish
C	Heat-treated Carbon Steel	Zinc* Clear
CS	Series 300 Stainless Steel	Passivated ASTM A380

*Spec. ASTM B633-85

Thread: Class 2B, MIL-S-7742; (6H ISO metric).

Use In: C – Materials with HRB-80 or less.
CS – Materials with HRB-70 or less.

Dimensions & Specifications

	Thread Size	Part Number: Carbon Steel	Part Number: Stainless Steel	D Max.	Min.	+.003 in. –.000	A Max.	B ± .01 in.	C ± .01 in.	Min.
INCH (in.)	#2-56	C256-0	CS256-0	.030	.030	.166	.165	.250	.070	.19
		C256-1	CS256-1	.038	.040					
		C256-2	CS256-2	.054	.056					
		C256-3	CS256-3	.087	.091					
	#3-48	C348-0	CS348-0	.030	.030	.166	.165	.250	.070	.19
		C348-1	CS348-1	.038	.040					
		C348-2	CS348-2	.054	.056					
		C348-3	CS348-3	.087	.091					
	#4-40	C440-0	CS440-0	.030	.030	.166	.165	.250	.070	.19
		C440-1	CS440-1	.038	.040					
		C440-2	CS440-2	.054	.056					
		C440-3	CS440-3	.087	.091					
	#6-32	C632-0	CS632-0	.030	.030	.1875	.187	.281	.070	.22
		C632-1	CS632-1	.038	.040					
		C632-2	CS632-2	.054	.056					
		C632-3	CS632-3	.087	.091					
	#8-32	C832-0	CS832-0	.030	.030	.213	.212	.312	.090	.27
		C832-1	CS832-1	.038	.040					
		C832-2	CS832-2	.054	.056					
		C832-3	CS832-3	.087	.091					

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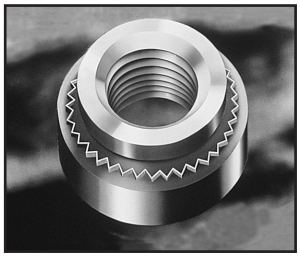

Self-Clinching Nuts

Series C & CS

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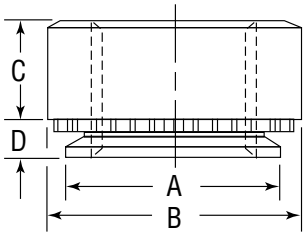

Dimensions & Specifications

	Thread Size	Part Number: Carbon Steel	Part Number: Stainless Steel	D Max.	Min.	+.003 in. –.000	A Max.	B ± .01 in.	C ± .01 in.	Min.
INCH (in.)	#10-24	C1024-0	CS1024-0	.030	.030	.250	.249	.344	.090	.28
		C1024-1	CS1024-1	.038	.040					
		C1024-2	CS1024-2	.054	.056					
		C1024-3	CS1024-3	.087	.091					
	#10-32	C1032-0	CS1032-0	.030	.030	.250	.249	.344	.090	.28
		C1032-1	CS1032-1	.038	.040					
		C1032-2	CS1032-2	.054	.056					
		C1032-3	CS1032-3	.087	.091					
	#12-24	C1224-1	CS1224-1	.038	.040	.277	.276	.380	.130	.31
		C1224-2	CS1224-2	.054	.056					
		C1224-3	CS1224-3	.087	.091					
	1/4-20	C420-1	CS420-1	.054	.056	.344	.343	.437	.170	.34
		C420-2	CS420-2	.087	.091					
		C420-3	CS420-3	.120	.125					
	1/4-28	C428-1	CS428-1	.054	.056	.344	.343	.437	.170	.34
		C428-2	CS428-2	.087	.091					
		C428-3	CS428-3	.120	.125					
	5/16-18	C518-1	CS518-1	.054	.056	.413	.412	.500	.230	.38
		C518-2	CS518-2	.087	.091					
		C518-3	CS518-3	.120	.125					
	5/16-24	C524-1	CS524-1	.054	.056	.413	.412	.500	.230	.38
		C524-2	CS524-2	.087	.091					
		C524-3	CS524-3	.120	.125					
	3/8-16	C616-1	CS616-1	.087	.091	.500	.499	.562	.270	.44
		C616-2	CS616-2	.120	.125					
		C616-3	CS616-3	.235	.250					
	3/8-24	C624-1	CS624-1	.087	.091	.500	.499	.562	.270	.44
		C624-2	CS624-2	.120	.125					
		C624-3	CS624-3	.235	.250					

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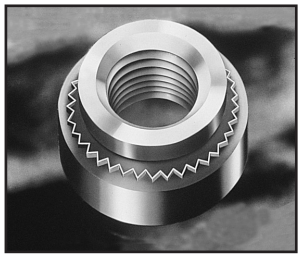
Self-Clinching Nuts

Series C & CS



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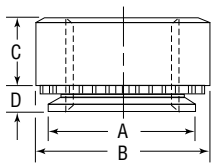

Dimensions & Specifications

	Thread Size	Part Number: Carbon Steel	Part Number: Stainless Steel	D Max.	Min.	+.08 mm −.000	A Max.	B ± 0.25 mm	C ± 0.25 mm	Min.
METRIC (mm)	M2 x 0.4	CM2-0	CSM2-0	0.76	0.8	4.25	4.22	6.3	1.5	4.8
		CM2-1	CSM2-1	0.97	1.0					
		CM2-2	CSM2-2	1.37	1.4					
		CM2-3	CSM2-3	2.21	2.3					
	M2.5 x 0.45	CM2.5-0	CSM2.5-0	0.76	0.8	4.25	4.22	6.3	1.5	4.8
		CM2.5-1	CSM2.5-1	0.97	1.0					
		CM2.5-2	CSM2.5-2	1.37	1.4					
		CM2.5-3	CSM2.5-3	2.21	2.3					
	M3 x 0.5	CM3-0	CSM3-0	0.76	0.8	4.25	4.22	6.3	1.5	4.8
		CM3-1	CSM3-1	0.97	1.0					
		CM3-2	CSM3-2	1.37	1.4					
		CM3-3	CSM3-3	2.21	2.3					
	M3.5 x 0.6	CM3.5-0	CSM3.5-0	0.76	0.8	4.75	4.73	7.1	1.5	5.6
		CM3.5-1	CSM3.5-1	0.97	1.0					
		CM3.5-2	CSM3.5-2	1.37	1.4					
		CM3.5-3	CSM3.5-3	2.21	2.3					
	M4 x 0.7	CM4-0	CSM4-0	0.76	0.8	5.4	5.38	7.9	2.0	6.9
		CM4-1	CSM4-1	0.97	1.0					
		CM4-2	CSM4-2	1.37	1.4					
		CM4-3	CSM4-3	2.21	2.3					
	M5 x 0.8	CM5-0	CSM5-0	0.76	0.8	6.4	6.38	8.7	2.0	7.1
		CM5-1	CSM5-1	0.97	1.0					
		CM5-2	CSM5-2	1.37	1.4					
		CM5-3	CSM5-3	2.21	2.3					
	M6 x 1.0	CM6-1	CSM6-1	1.37	1.4	8.75	8.72	11.05	4.08	8.6
		CM6-2	CSM6-2	2.21	2.3					
		CM6-3†	CSM6-3	3.05	3.2					
	M8 x 1.25	CM8-1	CSM8-1	1.37	1.4	10.5	10.44	12.65	5.47	9.7
		CM8-2	CSM8-2	2.21	2.3					
		CM8-3†	CSM8-3	3.05	3.2					
	M10 x 1.5	CM10-1	CSM10-1	2.21	2.3	14.0	13.94	17.35	7.48	13.5
		CM10-2	CSM10-2	3.05	3.2					
		CM10-3†	CSM10-3†	6.00	6.4					

†Not stocked, available upon special order.

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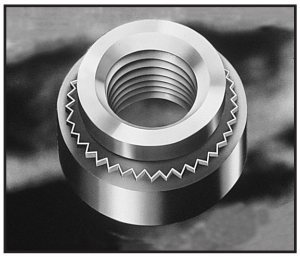

Self-Clinching Nuts

Series C & CS

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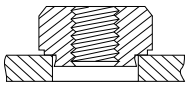
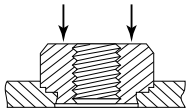
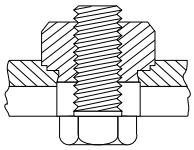


Fastener Must Be Installed Squarely In Hole



Squeezing Force Is Applied To Head Of Fastener



Install Bolt Or Screw From Opposite Side Of Head Of Fastener

Installation & Performance Data

			Cold-rolled Steel			5052-H34 Aluminum		
	Thread Size	Shank Code	Installation Force (tons)	Pushout (lbs.)	Torque-out (in.-lbs.)	Installation Force (tons)	Pushout (lbs.)	Torque-out (in.-lbs.)
INCH (in.)	#2-56 #3-48 #4-40	-0 -1 -2 -3	1 – 2	100 120 225 225	13 14 17 18	0.5 – 1	60 89 169 169	8 9.5 12 12
	#6-32	-0 -1 -2 -3	1.5 – 3	105 125 270 270	15 19 27 27	1 – 2	60 90 185 185	16 17 21 21
	#8-32	-0 -1 -2 -3	2 – 3	105 140 280 280	25 34 44 44	1 – 2	65 100 215 215	21 23 32 32
	#10-24 #10-32	-0 -1 -2 -3	2 – 4.5	115 175 315 315	31 39 59 59	1 – 2	65 105 245 245	25 31 49 49
	#12-24	-1 -2 -3	3 – 4	195 345 345	73 79 79	2 – 3.25	115 280 280	62 69 69
	1/4-20 1/4-28	-1 -2-3	3 – 4	395 395	145 145	2 – 3.5	355 355	85 120
	5/16-18 5/16-24	-1 -2-3	3 – 4	420 420	160 175	2 – 3.5	375 375	115 155
	3/8-16 3/8-24	-1-2-3	3.5 – 5.5	455	315	2.5 – 4	395	265

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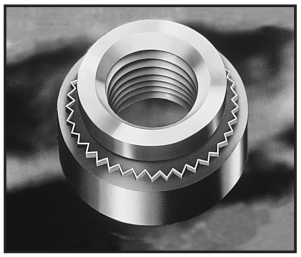
Self-Clinching Nuts

Series C & CS



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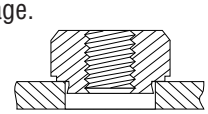
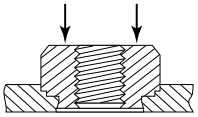
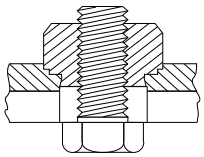


Fastener Must Be Installed Squarely In Hole



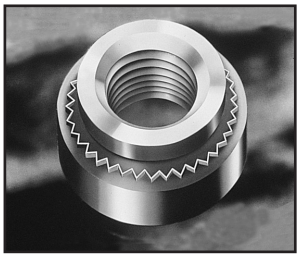
Squeezing Force Is Applied To Head Of Fastener



Install Bolt Or Screw From Opposite Side Of Head Of Fastener

Installation & Performance Data

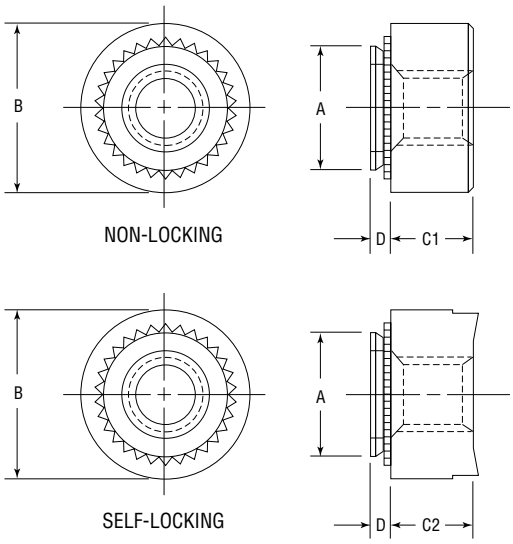
	Thread Size	Shank Code	Cold-rolled Steel: Installation Force (kN)	Cold-rolled Steel: Pushout (N)	Cold-rolled Steel: Torque-out (N•m)	5052-H34 Aluminum: Installation Force (kN)	5052-H34 Aluminum: Pushout (N)	5052-H34 Aluminum: Torque-out (N•m)
METRIC (mm)	M2 M2.5 M3	-0 -1 -2 -3	11.2-15.6	465 545 1010 1100	2.1	6.7-8.9	275 390 745 850	0.9 1.1 1.4 1.4
	M3.5	-0 -1 -2 -3	13.4-26.7	475 565 1200 1300	1.8 1.8 2.3 2.5	11.2-13.4	290 465 965 1050	1.8 1.9 2.5 2.8
	M4	-0 -1 -2 -3	18-27	485 640 1245 1300	2.9 2.95 4.2 4.2	11.2-13.4	290 465 965 1100	2.3 2.6 4.0 4.0
	M5	-0 -1 -2 -3	18-38	525 790 1400 1500	3.6 3.6 6.0 6.0	11.2-15.6	290 475 1180 1225	3.0 3.6 4.7 5.7
	M6	-1 -2 -3	27-36	1755	11.8	18-32	1570	11.8
	M8	-1 -2 -3	27-36	1860	26.0	18-32	1560	23.7
	M10	-1 -2 -3	32-50	2000	36.2	22-36	1750	32.7



Self-Clinching Nuts

Series CFH, CFHN & CFHNL

CFH nut fasteners are available in both locking and non-locking, heat treated and non-heat treated, offering an opportunity to up-grade fastening quality with appreciable cost reduction over weld nuts.



Series	Material	Finish
CFH-X	Heat-treated Carbon Steel	None
CFH-ZI		Zinc* Clear
CFHN-X	Non-Heat Treated Carbon Steel	None
CFHN-ZI		Zinc* Clear
CFHNL-X		None
CFHNL-ZI		Zinc* Clear

*Spec. ASTM B633-85

Thread: Class 2B, MIL-S-7742; (6H ISO metric).

Locking Performance: Prevailing torque complies with the requirements of IFI-100/107 for Grade B (inch) and ANSI B18.161M Class 9 (metric) locknuts.

Use in: CFH-materials with Rockwell Hardness of B-80 or less.

CFHN & CFHNL-materials with Rockwell Hardness of B-60 or less.

Dimensions & Specifications

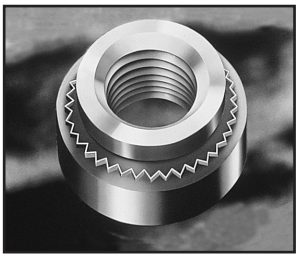
	Thread Size	Part Number Non-locking	Part Number Self-locking	D Max.	D Min.	+ .005 – .000	A Max.	B ±.01 in. (.25 mm)	C1 Non-Locking ±.005 in. (.12 mm)	C2 Self Locking ±.01 in. (.25 mm)	Min.
INCH	1/4-20	CFH420		.058	.058	.344	.343	.500	.189	.189	.34
		CFHN420	CFHNL420								
METRIC	M6 x 1.0	CFHM6		1.48	1.48	8.75	8.72	12.8	5.0	5.0	10.0
		CFHNM6	CFHNLM6								

Installation & Performance Data

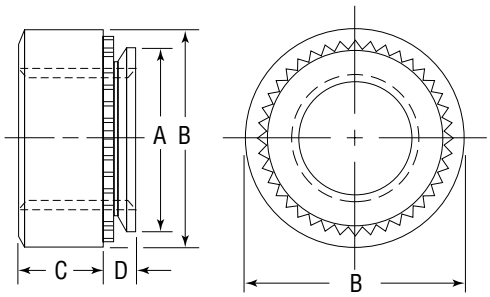
		Material	Panel Thickness	Installation Force	Pushout	Torque-out
INCH	1/4-20	Cold-rolled Steel	.060 in.	4800 lbs.	450 lbs.	120 in.-lbs.
		Aluminum	.062 in.	3500 lbs.	370 lbs.	110 in.-lbs.
METRIC	M6	Cold-rolled Steel	2.24 mm	33 kN	2020 N	23.5 N•m
		Aluminum	2.29 mm	22 kN	1760 N	21.5 N•m

Self-Clinching Nuts

Series CA-Aluminum



CA-aluminum self-clinching nuts provide strong load-bearing threads. All Captive Fastener self-clinching nuts fit standard hole sizes and are dimensionally identical to industry standards.



Material: 2024-T4 Aluminum.
Finish: None.
Thread: Class 2B, MIL-S-7742; (6H ISO metric).
Use in: Materials with Rockwell Hardness of B-50 or less.

Dimensions & Specifications

	Thread Size	Part Number	D Max.	Min.	+.003 in. –.000	A Max.	B ± 0.01 in.	C ± 0.01 in.	Min.
INCH (in.)	#2-56	CA256-1	.038	.040	.166	.165	.25	.07	.19
		CA256-2	.054	.056					
	#4-40	CA440-1	.038	.040	.1875	.187	.25	.09	.22
		CA440-2	.054	.056					
	#6-32	CA632-1	.038	.040	.213	.212	.28	.09	.27
		CA632-2	.054	.056					
	#8-32	CA832-1	.038	.040	.234	.233	.31	.13	.28
		CA832-2	.054	.056					
	#10-24	CA1024-1	.038	.040	.296	.295	.38	.16	.31
		CA1024-2	.054	.056					
	#10-32	CA1032-1	.038	.040					
		CA1032-2	.054	.056					
	1/4-20	CA420-1	.054	.056	.344	.343	.44	.17	.34
		CA420-2	.087	.091					
		CA420-3	.120	.125					

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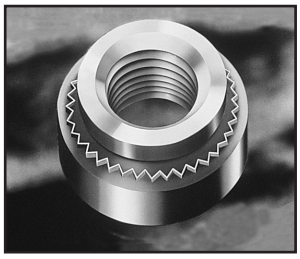

Self-Clinching Nuts

Series CA-Aluminum

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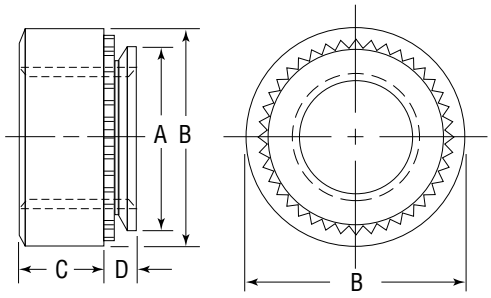
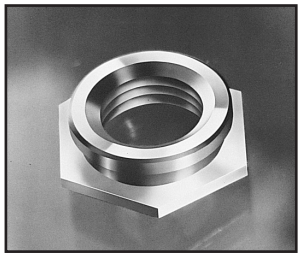


Dimensions & Specifications

	Thread Size	Part Number	D Max.	Min.	+ .08 mm –.00	A Max.	B ± 0.25 mm	C ± 0.25 mm	Min.
METRIC (mm)	M2 x 0.4	CAM2-1	0.97	1.0	4.25	4.22	6.3	1.5	4.8
		CAM2-2	1.37	1.4					
	M3 x 0.5	CAM3-1	0.97	1.0	4.75	4.73	6.3	2.0	5.6
		CAM3-2	1.37	1.4					
	M3.5 x 0.6	CAM3.5-1	0.97	1.0	5.4	5.38	7.1	2.0	6.9
		CAM3.5-2	1.37	1.4					
	M4 x 0.7	CAM4-1	0.97	1.0	6.0	5.97	7.9	3.0	7.1
		CAM4-2	1.37	1.4					
	M5 x 0.8	CAM5-1	0.97	1.0	7.5	7.47	9.5	3.8	7.9
		CAM5-2	1.37	1.4					
	M6 x 1.0	CAM6-1	1.37	1.4	8.75	8.72	11.1	4.1	8.6
		CAM6-2	2.21	2.3					

Self-Clinching Flush Nuts

Series CFL



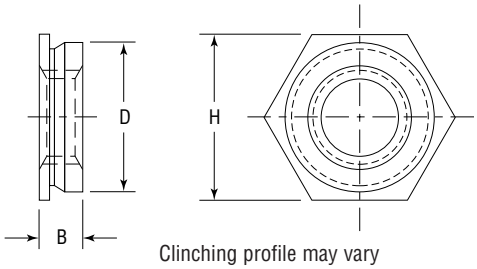
CFL flush nuts offer the advantage of being completely flush within the sheet while providing load-bearing threads in materials too ductile to tap. Captive Fastener flush nuts fit standard sizes and are otherwise dimensionally identical to industry standards.

Material: 300 Series Stainless Steel.

Finish: Passivated ASTM A380.

Thread: Class 2B, MIL-S-7742; (6H ISO metric).

Use in: Materials with Rockwell Hardness of B-70 or less.



Clinching profile may vary

Dimensions & Specifications

	Thread Size	Part Number	D Max.	Min.	+.003 in. (.08 mm) −.000	H Nom.	B Max.	Min.
INCH (in.)	#2-56	CFL256-1	.171	.061	.172	.1875	.060	.23
		CFL256-2		.091			.090	
	#4-40	CFL440-1	.171	.061	.172	.1875	.060	.23
		CFL440-2		.091			.090	
	#6-32	CFL632-1	.212	.061	.213	.25	.060	.27
		CFL632-2		.091			.090	
	#8-32	CFL832-1	.289	.061	.290	.3125	.060	.28
		CFL832-2		.091			.090	
	#10-24	CFL1024-1	.311	.061	.312	.3438	.060	.31
		CFL1024-2		.091			.090	
	#10-32	CFL1032-1	.311	.061	.312	.3438	.060	.31
		CFL1032-2		.091			.090	
	1/4-20	CFL420-3	.343	.126	.344	.375	.120	.34
		CFL420-4		.156			.151	
		CFL420-5		.187			.182	
	1/4-28	CFL428-3	.343	.126	.344	.375	.120	.34
		CFL428-4		.156			.151	
		CFL428-5		.187			.182	
METRIC (mm)	M2 x 0.5	CFLM2-1	4.34	1.5	4.4	4.8	1.5	6.0
		CFLM2-2		2.3			2.3	
	M2.5 x 0.5	CFLM2.5-1	4.34	1.5	4.4	4.8	1.5	6.0
		CFLM2.5-2		2.3			2.3	
	M3 x 0.5	CFLM3-1	4.34	1.5	4.4	4.8	1.5	6.0
		CFLM3-2		2.3			2.3	
	M3.5 x 0.5	CFLM3.5-1	5.35	1.5	5.4	6.4	1.5	6.5
		CFLM3.5-2		2.3			2.3	
	M4 x 0.7	CFLM4-1	7.34	1.5	7.4	7.94	1.5	7.2
		CFLM4-2		2.3			2.3	
	M5 x 0.8	CFLM5-1	7.87	1.5	7.9	8.73	1.5	8.0
		CFLM5-2		2.3			2.3	
	M6 x 1.0	CFLM6-3	8.71	3.2	8.75	9.53	3.1	8.8
		CFLM6-4		4.0			3.9	
		CFLM6-5		4.75			4.7	

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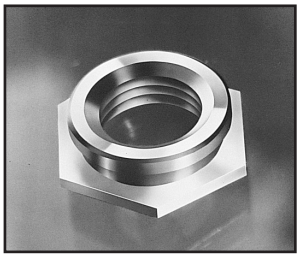

Self-Clinching Flush Nuts

Series CFL

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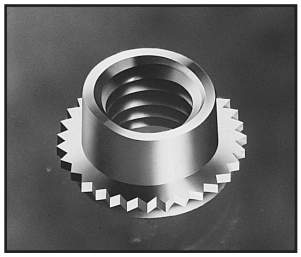
Installation & Performance Data

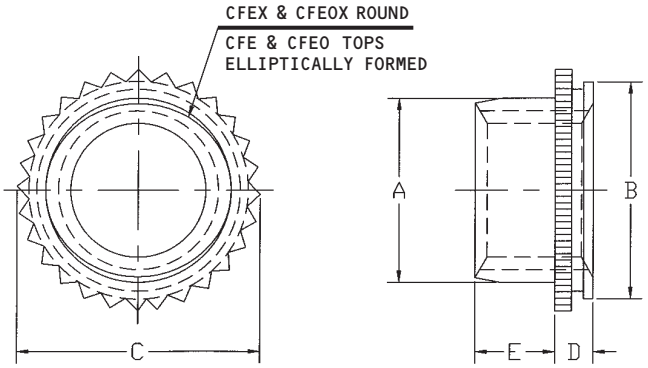
	Part Number	Max. Screw torque (in.-lbs.)	Cold-rolled Steel		5052-H34 Aluminum	
			Installation Force (tons)	Pushout (lbs.)	Installation Force (tons)	Pushout (lbs.)
INCH (in.)	CFL256-1	1.5	1.5	200	1	200
	CFL256-2	1.5	1.5	200	1	200
	CFL440-1	2.5	1.5	200	1	200
	CFL440-2	2.5	1.5	200	1	200
	CFL632-1	3.5	1.5	200	1	200
	CFL632-2	3.5	1.5	200	1	200
	CFL832-1	5.25	2	240	1	240
	CFL832-2	5.25	2	240	1	240
	CFL1024-1	7.5	2	240	1.5	240
	CFL1024-2	7.5	2	240	1.5	240
	CFL1032-1	7.5	2	240	1.5	240
	CFL1032-2	7.5	2	240	1.5	240
	CFL420-3	33	2.5	840	2	640
	CFL420-4	33	2.5	840	2	640
	CFL420-5	33	2.5	840	2	640
	CFL428-3	33	2.5	840	2	640
	CFL428-4	33	2.5	840	2	640
	CFL428-5	33	2.5	840	2	640
	Part Number	Max. Screw Torque (N•m)	Installation Force (kN)	Pushout (kN)	Installation Force (kN)	Pushout (kN)
METRIC (mm)	CFLM2-1	0.16	13.3	0.9	8.9	0.9
	CFLM2-2	0.16	13.3	0.9	8.9	0.9
	CFLM2.5-1	0.23	13.3	0.9	8.9	0.9
	CFLM2.5-2	0.23	13.3	0.9	8.9	0.9
	CFLM3-1,2	0.3	10	0.9	8	0.9
	CFLM3.5-1,2	0.4	12	1.0	9	0.9
	CFLM4-1,2	0.5	15	1.1	10	1.0
	CFLM5-1,2	0.8	18	1.1	12	1.1
	CFLM6-3,4,5	3.7	20.0	3.7	15	2.8

Self-Clinching Fasteners



Series CFE & CFEO
Self-Locking Threads
CFEX & CFEOX
Non-Locking Threads

CFE self-clinching fasteners are designed to provide strong threads in a minimum of space. They are available with locking and non-locking threads and are directly interchangeable with industry standards.



Series	Finish	Thread
CFE, CFEO	Black dry-film lubricant per MIL-46010 Type I over Cadmium	Self-Locking Class 3B MIL-S-7742 6H ISO Metric
CFEX, CFEOX	Passivated ASTM A380	Non-Locking Class 2B, MIL-S-7742; 6H ISO Metric

Material: 303 Stainless Steel.

Use in: Materials with Rockwell Hardness of B-70 or less.

Dimensions & Specifications

	Thread Size	Part Number: Self-Locking	Part Number: Non-Locking	D Max.	Min.	+.003 in. (0.08 mm) –.000	A Max.	E +.015 in. (0.4 mm) –.000	B Max.	C ± .005 in. (0.13 mm)	Min.
INCH (in.)	#4-40	CFE440	CFEX440	.060	.060	.172	.145	.065	.171	.192	.14
		CFEO440	CFEOX440	.040	.040						
	#6-32	CFE632	CFEX632	.060	.060	.213	.180	.075	.212	.244	.17
		CFEO632	CFEOX632	.040	.040						
	#8-32	CFE832	CFEX832	.060	.060	.290	.215	.090	.289	.322	.20
		CFEO832	CFEOX832	.040	.040						
	#10-32	CFE1032	CFEX1032	.060	.060	.290	.245	.110	.289	.322	.20
		CFEO1032	CFEOX1032	.040	.040						
	1/4-20	CFE420	CFEX420†	.060	.060	.344	.318	.120	.343	.384	.28
	1/4-28	CFE428	CFEX428†	.060	.060						
METRIC (mm)	M3 x 0.5	CFEOM3	CFEOXM3	1.02	1.02	4.4	3.96	1.90	4.34	4.88	3.6
		CFEM3	CFEXM3	1.53	1.53						
	M4 x 0.7	CFEOM4	CFEOXM4	1.02	1.02	7.4	5.23	2.55	7.34	8.17	5.2
		CFEM4	CFEXM4	1.53	1.53						
	M5 x 0.8	CFEOM5	CFEOXM5	1.02	1.02	7.4	6.48	3.05	7.34	8.17	5.2
		CFEM5	CFEXM5	1.53	1.53						
	M6 x 1.0	CFEM6	CFEXM6	1.53	1.53	8.75	7.72	3.30	8.71	9.74	7.1

†Not Stocked, available on special order.

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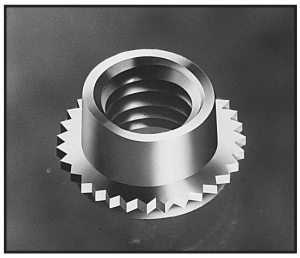

Self-Clinching Fasteners

Series CFE & CFEO
Self-Locking Threads
CFEX & CFEOX
Non-Locking Threads

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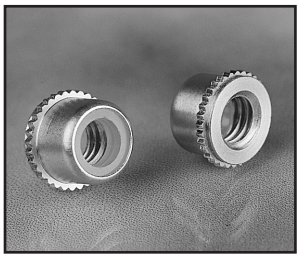
Installation & Performance Data

	Thread Size	Series	Sheet Thickness (in.)	Cold-rolled Steel: Installation Force (lbs.)	Cold-rolled Steel: Pushout (lbs.)	Cold-rolled Steel: Torque-out (in.-lbs.)	5052-H34 Aluminum: Installation Force (lbs.)	5052-H34 Aluminum: Pushout (lbs.)	5052-H34 Aluminum: Torque-out (in.-lbs.)
INCH (in.)	#4-40	CFEO, CFEOX	.040	1500	135	14	800-900	85	10
		CFE, CFEX	.060	1500	200	16	800-900	130	10
	#6-32	CFEO, CFEOX	.040	2100	180	20	1100-1200	100	20
		CFE, CFEX	.060	2100	250	20	1300	170	20
	#8-32	CFEO, CFEOX	.040	2500	250	47	1500	150	40
		CFE, CFEX	.060	2500	350	60	1500	250	40
	#10-32	CFEO, CFEOX	.040	2500	250	47	1500	150	40
		CFE, CFEX	.060	2500	350	60	1600	250	40
	1/4-20 1/4-28	CFE, CFEX	.060	3500	400	125	2000	300	100

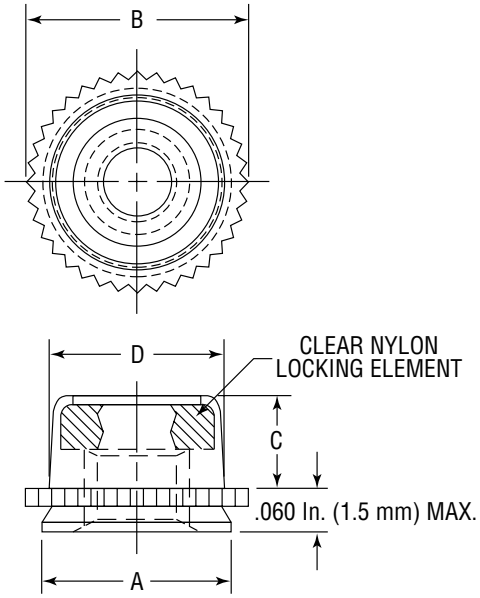
	Thread Size	Series	Sheet Thickness (mm.)	Cold-rolled Steel: Installation Force (kN)	Cold-rolled Steel: Pushout (N)	Cold-rolled Steel: Torque-out (N•m)	5052-H34 Aluminum: Installation Force (kN)	5052-H34 Aluminum: Pushout (N)	5052-H34 Aluminum: Torque-out (N•m)
METRIC (mm)	M3	CFEO, CFEOX	1.0	6.7	600	2.0	4.0	380	2.0
		CFE, CFEX	1.5	6.7	900	2.4	4.0	590	2.4
	M4	CFEO, CFEOX	1.0	11.1	1100	6.0	7.0	675	5.3
		CFE, CFEX	1.5	11.1	1600	8.0	7.0	1100	5.3
	M5	CFEO, CFEOX	1.0	12	1200	6.0	7.0	675	5.3
		CFE, CFEX	1.5	12	1600	8.0	7.0	1100	5.3
	M6	CFE, CFEX	1.5	15.6	1800	16.0	9.0	1400	11.3

Self-Clinching Top Collar Lock Nuts

Series CPL & CPLC



CPL top collar lock nuts combine reliable self-clinching mounting with a reusable non-metallic thread locking element.



Series	Material	Finish	Locking Element
CPL	Heat-treated Carbon Steel	Zinc* Clear	Clear Nylon
CPLC	300 Series Stainless Steel	Passivated ASTM A380	Clear Nylon

*Spec. ASTM B633-85

Thread: Class 2B, MIL-S-7742; (6H ISO Metric).

Use in: Material with Rockwell Hardness of B-70 or less.

Note 1 — Installation Tips

Thin Sheets — May be installed in panel thickness of .040 to .059 (1mm to 1.5mm) if fastener is partially installed in sheet. The knurled collar must be raised above sheet by the difference in thickness from .059 (1.5mm).

Thick Sheets — If fastener is installed in sheet greater than .070 (1.7mm), knurled collar may crack if mating screw is tightened above maximum torque limit.

Dimensions & Specifications

	Thread Size	Part Number		See Note 1 Thickness Range	+.003 in. (0.08mm) –.000	A Max.	B Max.	C Max.	D Max.	Min.
		Carbon Steel	Stainless Steel							
INCH (in.)	#4-40	CPL440	CPLC440	.059-.070	.234	.233	.28	.130	.216	.132
	#6-32	CPL632	CPLC632	.059-.070	.265	.264	.31	.130	.246	.158
	#8-32	CPL832	CPLC832	.059-.070	.297	.296	.34	.155	.278	.184
	#10-32	CPL1032	CPLC1032	.059-.070	.312	.311	.35	.165	.292	.210
METRIC (mm)	M3 x 0.5	CPLM3	CPLCM3	1.5-1.78	6.0	5.97	7.1	3.6	5.5	4.3
	M4 x 0.7	CPLM4	CPLCM4	1.5-1.78	7.5	7.47	8.6	4.2	7.0	5.6
	M5 x 0.8	CPLM5	CPLCM5	1.5-1.78	8.0	7.97	8.9	4.5	7.5	6.4

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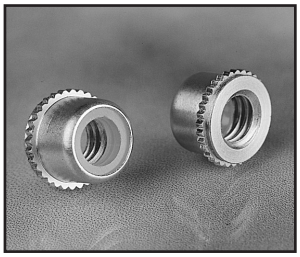

Self-Clinching Top Collar Lock Nuts

Series CPL & CPLC

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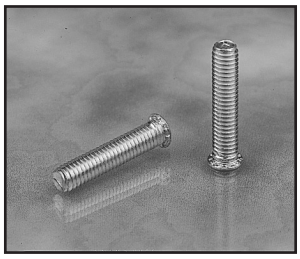
Installation & Performance Data

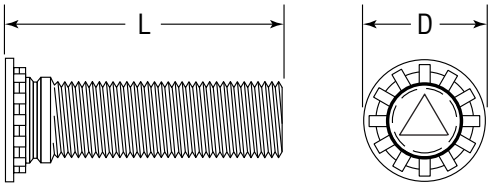
		.048 in. Cold-rolled Steel				.060 in. Cold-rolled Steel		
	Thread Size	Max. Tightening Torque (in.-lbs.)	Installation Force (tons)	Pushout (lbs.)	Torque-out (in.-lbs.)	Installation Force (tons)	Pushout (lbs.)	Torque-out (in.-lbs.)
INCH (in.)	#4-40	9	1-2	230	20	2	260	20
	#6-32	12	1-2	270	30	2	290	30
	#8-32	19	1-2	270	60	2	290	60
	#10-32	26	1-2	300	70	2	350	70
		.060 in. 5052H34 Aluminum				.040 in. 5052H34 Aluminum		
	Thread Size	Max. Tightening Torque (in.-lbs.)	Installation Force (tons)	Pushout (lbs.)	Torque-out (in.-lbs.)	Installation Force (tons)	Pushout (lbs.)	Torque-out (in.-lbs.)
	#4-40	9	1	225	20	1	150	20
	#6-32	12	1	285	30	1	180	25
	#8-32	19	1	290	60	1	180	28
	#10-32	26	1	300	70	1	180	40
		1.5mm Cold-rolled Steel				1.2mm Cold-rolled Steel		
	Thread Size	Max. Tightening Torque (N•m)	Installation Force (kN)	Pushout (N)	Torque-out (N•m)	Installation Force (kN)	Pushout (N)	Torque-out (N•m)
METRIC (mm)	M3	1.1	13.34	1156	2.2	13.34	1000	2.2
	M4	2.2	13.34	1290	6.7	13.34	1200	6.7
	M5	3.1	13.34	1557	7.9	13.34	1380	7.9
		1.5mm 5052H34 Aluminum				1.0mm 5052H34 Aluminum		
	Thread Size	Max. Tightening Torque (N•m)	Installation Force (kN)	Pushout (N)	Torque-out (N•m)	Installation Force (kN)	Pushout (N)	Torque-out (N•m)
	M3	1.1	8.90	1000	2.2	6.67	710	2.2
	M4	2.2	8.90	1290	6.7	6.67	800	3.1
	M5	3.1	8.90	1330	7.9	6.67	800	4.5

Self-Clinching Studs

Series CH, CHS & CHA



CH studs provide a strong flush-head assembly in material as thin as .040 in. (1.0 mm) with high torque-out and pushout performance.



Part Number Structure:

CH 256-4

- Length Code
- Thread Code
- Series

Series	Material	Finish
CH	Heat-treated Carbon Steel	Zinc* Clear
CHS	300 Series Stainless Steel	Passivated ASTM A380
CHA	2024-T4 Aluminum	None

*Spec. ASTM B633-85

Thread: Class 2A, MIL-S-7742; (6g ISO Metric).

Use in: CH- Materials with HRB-80 or less.
CHS- Materials with HRB-70 or less.
CHA- Materials with HRB-50 or less.

Dimensions & Specifications

	Thread Size	Thread Code	L Length ±.015 in. .250	.3125	.375	.500	.625	.750	.875	1.00	1.25	1.50	D ± .015	+.003 –.000	Max.* Rec. Nut Tight. Torque in.-lbs	Min.	Min.
INCH (in.)	#2-56	256	-4	-5	-6	-8	-10	-12†					.144	.085	2.5	.187	.040
	#4-40	440	-4	-5	-6	-8	-10	-12	-14	-16†			.176	.111	5	.219	.040
	#6-32	632	-4	-5	-6	-8	-10	-12	-14	-16	-20	-24†	.206	.137	10	.250	.040
	#8-32	832	-4	-5	-6	-8	-10	-12	-14	-16	-20	-24†	.237	.163	15	.281	.040
	#10-24	1024		-5*	-6	-8	-10	-12	-14	-16	-20	-24†	.256	.189	25	.281	.040
	#10-32	1032		-5*	-6	-8	-10	-12	-14	-16	-20	-24	.256	.189	30	.281	.040
	1/4-20	420			-6*	-8	-10	-12	-14	-16	-20	-24	.337	.249	55	.312	.062
	5/16-18	518				-8*	-10	-12	-14	-16	-20	-24	.376	.311	115	.375	.093

† Not stocked, available on special order.

* For aluminum studs, values are 60% of those listed.

Dimensions & Specifications

	Thread Size	Thread Code	L Length ± 0.4 mm 6	8	10	12	15	18	20	22	25	28	30	35	38	D ± 0.4	+0.08 –0.00	Max.* Rec. Nut Tight. Torque N.m	Min.	Min.
METRIC (mm)	M2.5X0.45	M2.5	-6†	-8†	-10†	-12†	-15†	-18†								4.1	2.5	.40	5.4	1.0
	M3X0.5	M3	-6†	-8	-10	-12	-15	-18	-20	-22	-25					4.6	3.0	.72	5.6	1.0
	M3.5X0.6	M3.5	-6	-8	-10	-12	-15	-18	-20	-22	-25	-28	-30			5.3	3.5	1.10	6.4	1.0
	M4X0.7	M4	-6†	-8	-10	-12	-15	-18	-20	-22	-25	-28	-30	-35	-38	5.9	4.0	1.6	7.2	1.0
	M5X0.8	M5		-8†	-10	-12	-15	-18	-20	-22	-25	-28	-30	-35	-38	6.5	5.0	3.4	7.2	1.0
	M6X1.0	M6			-10	-12	-15	-18	-20	-22	-25	-28	-30	-35	-38	8.2	6.0	5.7	7.9	1.6
	M8X1.25	M8				-12*	-15	-18	-20	-22	-25	-28	-30	-35	-38	9.6	8.0	14.0	9.6	2.4

Note: Studs are available in lengths up to 3 in. (76.2 mm) upon special order for 1/4-20/M6 and larger.

Continued on next page.

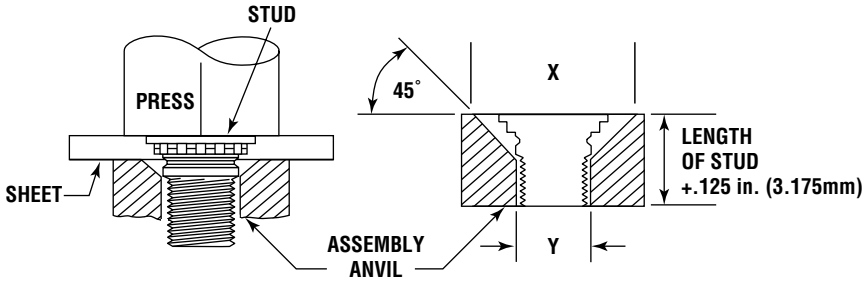
Self-Clinching Studs

Series CH, CHS & CHA

Continued from previous page.

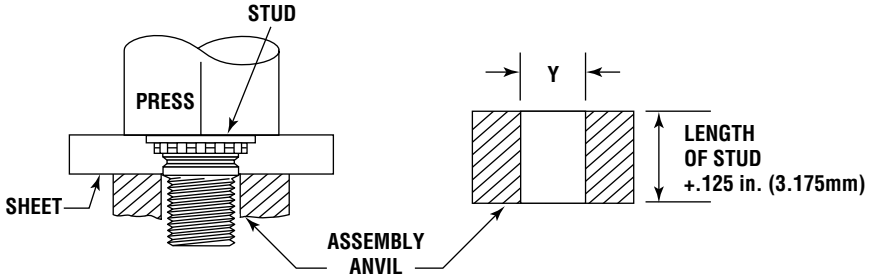
TOOLING

Note 1.
For material thickness of .059 in. or less, a countersunk hole is needed in the anvil.



Tooling for sheet thickness .059 in. (1.51mm) and less with #2 (M2.5) thru #10 (M5) thread sizes and less than .093 in. (2.3mm) for 1/4 in. (M6) threads.

Note 2.
For material thickness of .060 in. or more, a through-hole is needed in the anvil.



Tooling for sheet thickness .060 in. (1.51mm) minimum and greater with #2 (M2.5) thru #10 (M5) thread sizes and .092 in. (2.3mm) minimum and greater for 1/4 in. (M6) and 5/16 in. (M8) threads.

	Thread Code	Anvil Dimensions (in.) X +.004	Y +.003
INCH (in.)	256	.110	.087
		.114	.090
	440	.136	.113
		.140	.116
	632	.162	.139
		.166	.142
	832	.188	.165
		.192	.168
	1024	.216	.191
		.220	.194
	1032	.216	.191
		.220	.194
	420	.295	.250
		.300	.253
	518	—	.3125
		—	.3155

	Thread Code	Anvil Dimensions (mm) X +0.1	Y +0.08
METRIC (mm)	M2.5	3.1	2.50
	M3	3.6	3.00
	M3.5	4.1	3.50
	M4	4.6	4.00
	M5	5.6	5.00
	M6	6.6	6.00
	M8	—	8.00

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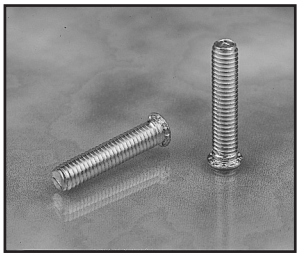
Self-Clinching Studs

Series CH, CHS & CHA



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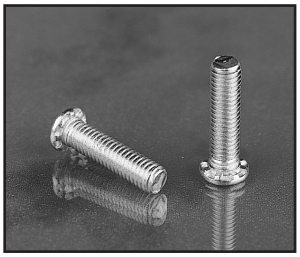
Note: Values based on stainless steel studs (steel stud values may be higher).

Installation & Performance Data

	Thread Code	Sheet Material & Thickness	Installation Force (lbs.)	Pushout (lbs.)	Torque-out (in.-lbs.)
INCH (in.)	256	.062 Aluminum	2000	145	5
		.060 Steel	2500	250	5
	440	.064 Aluminum	3200	200	10
		.060 Steel	4700	280	10
	632	.064 Aluminum	3500	220	19
		.060 Steel	5000	350	19
	832	.064 Aluminum	4500	290	30
		.060 Steel	5500	400	35
	1024 1032	.064 Aluminum	5500	330	38
		.060 Steel	6800	500	50
	420	.093 Aluminum	6500	450	90
		.088 Steel	9500	770	120
	518	.093 Aluminum	6700	550	110
		.093 Steel	11000	850	200
	Thread Code	**Sheet Material & Thickness**	**Installation Force (kN)**	**Pushout (N)**	**Torque-out (N•m)**
METRIC (mm)	M2.5	1.6 Aluminum	11.6	625	0.9
		1.5 Steel	13.0	1025	0.9
	M3	1.6 Aluminum	12.9	890	1.2
		1.5 Steel	14.7	1240	1.2
	M3.5	1.6 Aluminum	15.6	980	2.0
		1.5 Steel	22.3	1550	2.0
	M4	1.6 Aluminum	22.3	1290	3.4
		1.5 Steel	26.7	1780	3.9
	M5	1.6 Aluminum	24.5	1470	4.5
		1.5 Steel	32.5	2440	7.3
	M6	2.4 Aluminum	28.9	2000	8.4
		2.2 Steel	44.5	3110	12.4
	M8	2.4 Aluminum	29	2440	15.8
		2.2 Steel	49.8	3780	21.5

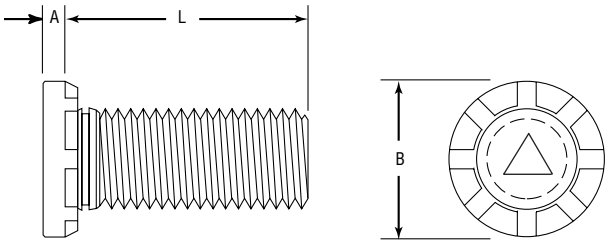


Self-Clinching Studs

Series HCH, HCHS & HCHB (High-Torque)

HCH high-torque studs offer advantages over weld studs and other fasteners. The heavy head configuration provides greater torque-out and improved pull-through resistance.

Phosphor Bronze studs provide excellent electrical conductivity and mechanical attachment in copper.



Part Number Structure:

HCH 1024-8

- Length Code
- Thread Code
- Series

Series	Material	Finish
HCH	Heat-treated Medium Carbon Steel	Zinc* Clear
HCHS	300 Series Stainless Steel	Passivated ASTM A380
HCHB	Phosphor Bronze CDA-510	None

*Spec. ASTM B633-85

Thread: Class 2A, MIL-S-7742; (6g ISO Metric).

Use in: Cold-rolled Steel or 5052-H34 Aluminum with Rockwell Hardness as follows:

HCH- Materials with HRB-85 or less.
HCHS- Materials with HRB-70 or less.
HCHB- Materials with HRB-55 or less.

Dimensions & Specifications

INCH (in.)

Thread Size	Thread Code	L Length ± .015 in. .500	.750	1.00	1.25	1.50	1.75	Min.	+.005 –.000	Max. Hole in Attach. Parts	A Max.	B ± .01	Min.
#10-24	1024	-8	-12	-16	-20	-24	-28	.05	.190	.250	.040	.300	.415
#10-32	1032	-8	-12	-16	-20	-24	-28†	.05	.190	.250	.040	.300	.415
1/4-20	420	-8	-12	-16	-20	-24	-28†	.06	.250	.312	.050	.380	.460
5/16-18	518	-8†	-12	-16	-20	-24	-28†	.075	.312	.375	.070	.480	.500
3/8-16	616		-12	-16	-20	-24	-28†	.090	.375	.437	.085	.580	.530

† Not stocked, available on special order.

Dimensions & Specifications

METRIC (mm)

Thread Size	Thread Code	L Length ± 0.4 mm 20	25	30	35	40	50	Min.	+0.13 –0.00	Max. Hole In Attach. Parts	A Max.	B ± 0.25	Min.
M5X0.8	M5	-20	-25	-30				1.3	5.0	6.5	1.14	7.8	10.7
M6X1.0	M6	-20	-25	-30	-35			1.5	6.0	7.5	1.27	9.4	11.5
M8X1.25	M8	-20	-25	-30	-35	-40	-50	2.0	8.0	9.5	1.78	12.5	12.7
M10X1.5	M10	-20	-25	-30	-35	-40	-50	2.3	10	11.5	2.29	15.7	13.7

Note: Studs are available in lengths up to 3 in. (76.2 mm) upon special order for 1/4-20/M6 and larger.

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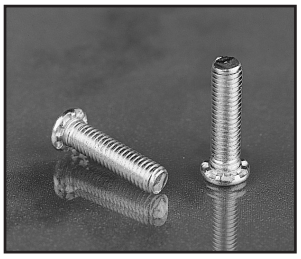
Self-Clinching Studs

Series HCH & HCHS (High-Torque)



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Installation & Performance Data

	Thread Code	Sheet Material & Thickness	Sheet Hardness HRB	Installation Force (lbs.)	Pushout (lbs.)	Torque-out (ft.-lbs.)	Torque-thru (ft.-lbs.)
INCH (in.)	1024	.060 Aluminum	15	3000	175	4	5
	1032	.060 Steel	65	6000	350	6	5
	420	.065 Aluminum	43	5500	340	12	11
		.059 Steel	59	7000	600	12	13
	518	.091 Aluminum	39	8000	400	23	32
		.090 Steel	58	10000	650	27	32
	616	.091 Aluminum	39	90000	550	28	44
		.090 Steel	58	12000	900	36	48

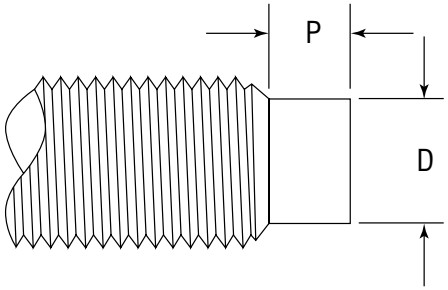
	Thread Code	Sheet Material & Thickness	Sheet Hardness HRB	Installation Force (kN)	Pushout (N)	Torque-out (N•m)	Torque-thru (N•m)
METRIC (mm)	M5	1.5 Aluminum	15	13	778	5.4	6.8
		1.5 Steel	65	26	1556	8.1	6.8
	M6	1.5 Aluminum	43	29	1620	16.3	17.9
		1.5 Steel	59	33	2020	16.4	23.7
	M8	2.3 Aluminum	39	35.6	1780	31.2	43.4
		2.3 Steel	58	44.5	2890	36.6	43.4
	M10	2.3 Aluminum	39	40	2445	38	59.7
		2.3 Steel	58	54	4000	48.8	65.1

CAPTIVE® Dog-Point Studs

CAPTIVE studs are available with a dog-point end to assist the attachment of mating nuts, which is especially useful in high-speed production assembly, using motorized nut drivers. Dog-points may be specified on all CH, TCH and HCH style studs as a special order, using the following Part Number Structure:

Example: HCHS 1032-8 DP

- Dog-Point
- Length Code
- Thread Code
- Series



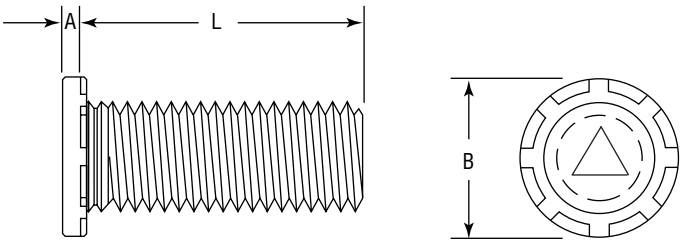
INCH (in.)	D ±.005	P ±.010	METRIC (mm)	D ±0.13	P ±0.25
6-32	.086	.050	M3.5 x 0.6	2.4	1.27
8-32	.111	.055	M4 x 0.7	2.79	1.4
10-24	.124	.065	M5 x 0.8	3.66	1.78
10-32	.138	.065	M6 x 1	4.37	2.03
1/4 x 20	.173	.085	M8 x 1.25	6.05	2.67
1/4 x 28	.192	.085			
5/16 x 18	.228	.105			

Note: Maximum dog-point diameter is .003 in. (0.08 mm) less than the minimum minor diameter of 2B or 6g mating nut threads.

Self-Clinching Studs

Series TCH & TCHS
Non-Flush Studs

TCH non-flush studs are manufactured for use in sheets as thin as .020 inches (.5 mm) thick. The pushout and torque-out values are excellent for most applications. The head of the stud will project above the panel surface when installed properly. Do not over squeeze!



Series	Material	Finish
TCH	Heat-treated Carbon Steel	Zinc* Clear
TCHS	300 Series Stainless Steel	Passivated ASTM A380

*Spec. ASTM B633-85

Thread: Class 2A, MIL-S-7742; (6g ISO Metric).

Use in: Cold-rolled Steel or 5052-H34 Aluminum with Rockwell Hardness as follows:

TCH - Materials with HRB 80 or less

TCHS - Materials with HRB 70 or less

Dimensions & Specifications

	Thread Size	Thread Code	L Length ± .015 in. .250	.3125	.375	.500	.625	.750	.875	1.00	1.25	1.50	Min.	+.003 –.000	A Max.	B ± .015	Min.
INCH (in.)	#4-40	440	-4	-5	-6	-8	-10	-12					.020	.111	.025	.176	.219
	#6-32	632	-4	-5	-6	-8	-10	-12	-14	-16	-20	-24†	.020	.137	.025	.203	.250
	#8-32	832	-4	-5	-6	-8	-10	-12	-14	-16	-20	-24†	.020	.163	.025	.234	.281
	#10-24	1024		-5†	-6	-8	-10	-12	-14	-16	-20	-24†	.020	.189	.025	.250	.281
	#10-32	1032		-5†	-6	-8	-10	-12	-14	-16	-20	-24†	.020	.189	.025	.250	.281

†Not stocked, available on special order.

Dimensions & Specifications

	Thread Size	Thread Code	L Length ± 0.4 mm 6	8	10	12	15	18	20	22	25	28	30	35	38	Min.	+0.08 -0.00	A Max.	B ± 0.4	Min.
METRIC (mm)	M3X0.5	M3	-6	-8	-10	-12	-15	-18								0.51	3.0	0.64	4.5	5.6
	M4X0.7	M4			-10	-12	-15	-18	-20	-22	-25	-28	-30	-35	-38	0.51	4.0	0.64	5.8	7.2
	M5X0.8	M5			-10	-12	-15	-18	-20	-22	-25	-28	-30	-35	-38	0.51	5.0	0.64	6.4	7.2

Continued on next page.

Self-Clinching Studs

Series TCH & TCHS
Non-Flush Studs

Continued from previous page.

Note: Values based on stainless steel studs (steel stud values may be higher).

Installation & Performance Data

	Thread Code	Max. Nut Tight. Torque (in-lbs.)	Sheet Material & Thickness	Sheet Hardness HRB	Installation Force (lbs.)	Pushout (lbs.)	Torque-out (in-lbs.)
INCH (in.)	440	5	.020 Aluminum	28	1200	60	8
			.025 Steel	52	1490	125	8
	632	9	.020 Aluminum	28	1500	60	9
			.025 Steel	52	2500	130	17
	832	17	.020 Aluminum	28	2200	70	12
			.025 Steel	52	2700	150	27
	024 032	24 27	.020 Aluminum	28	2500	80	15
			.025 Steel	52	3000	160	30

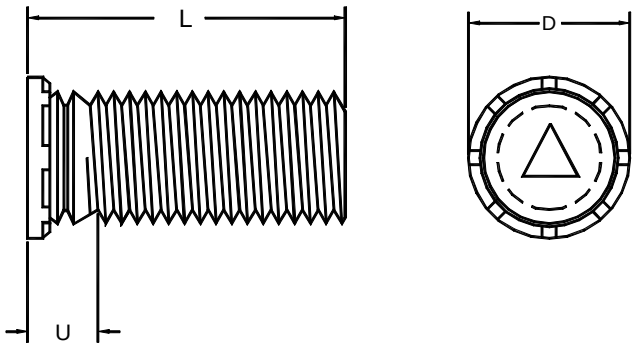
	Thread Code	Max. Nut Tight. Torque (N•m)	Sheet Material & Thickness	Sheet Hardness HRB	Installation Force (kN)	Pushout (N)	Torque-out (N•m)
METRIC (mm)	M3	0.74	.5 Aluminum	28	5.3	245	.8
			.6 Steel	52	6.7	490	1.0
	M4	1.70	.5 Aluminum	28	9.8	310	1.3
			.6 Steel	52	13.4	670	3.0
	M5	3.50	.5 Aluminum	28	13.4	350	1.7
			.6 Steel	52	17.8	710	3.4

Close Edge Studs

Series CHE & CHES

CHE studs allow installation closer to material edge than standard studs without distortion of sheet edge. Provides flush-head assembly in material thickness of .040 in. (1.0mm) or more.

Series	Material	Finish
CHE	Heat-treated Carbon Steel	Zinc* Clear
CHES	300 Series Stainless Steel	Passivate per ASTM A380



*Spec. ASTM B633-85

Thread: Class 2A, MIL-S-7742; (6g ISO Metric).

Use in: CHE – Materials with HRB-80 or less.
CHES – Materials with HRB-70 or less.

Part Number Structure:

CHE 256 -4

- Length Code
- Thread Code
- Series

Dimensions & Specifications

*MIN SHEET THICKNESS.040

INCH (in.) THREAD SIZE	SERIES STEEL	SERIES SS	THREAD CODE	L LENGTH ±.015 in. .250	.312	.375	.500	.625	.750	.875	1.00	1.25	1.50	HOLE SIZE IN SHEET +.003 -.000	D ±.015	U MAX	MIN.
#2-56	CHE	CHES	256	-4	-5	-6	-8	-10	-12					.085	.112	.080	.098
#4-40	CHE	CHES	440	-4	-5	-6	-8	-10	-12	-14	-16			.111	.138	.085	.124
#6-32	CHE	CHES	632	-4	-5	-6	-8	-10	-12	-14	-16	-20	-24	.137	.164	.090	.150
#8-32	CHE	CHES	832	-4	-5	-6	-8	-10	-12	-14	-16	-20	-24	.163	.190	.090	.176
#10-32	CHE	CHES	1032		-5	-6	-8	-10	-12	-14	-16	-20	-24	.189	.225	.100	.210

Dimensions & Specifications

*MIN SHEET THICKNESS 1 MM

METRIC (mm) THREAD SIZE	SERIES STEEL	SERIES SS	THREAD CODE	L LENGTH ±0.4 mm 6	8	10	12	15	18	20	25	30	35	HOLE SIZE IN SHEET +.08 -.00	D ±0.4	U MAX	MIN.
M2.5X0.45	CHE	CHES	M2.5	-6	-8	-10	-12	-15	-18					2.5	3.15	2.1	2.8
M3X0.5	CHE	CHES	M3	-6	-8	-10	-12	-15	-18	-20	-25			3	3.65	2.1	3.3
M3.5X0.6	CHE	CHES	M3.5	-6	-8	-10	-12	-15	-18	-20	-25	-30		3.5	4.15	2.3	3.8
M4X0.7	CHE	CHES	M4	-6	-8	-10	-12	-15	-18	-20	-25	-30	-35	4	4.65	2.4	4.3
M5X0.8	CHE	CHES	M5		-8	-10	-12	-15	-18	-20	-25	-30	-35	5	5.9	2.7	5.6

Close Edge Studs

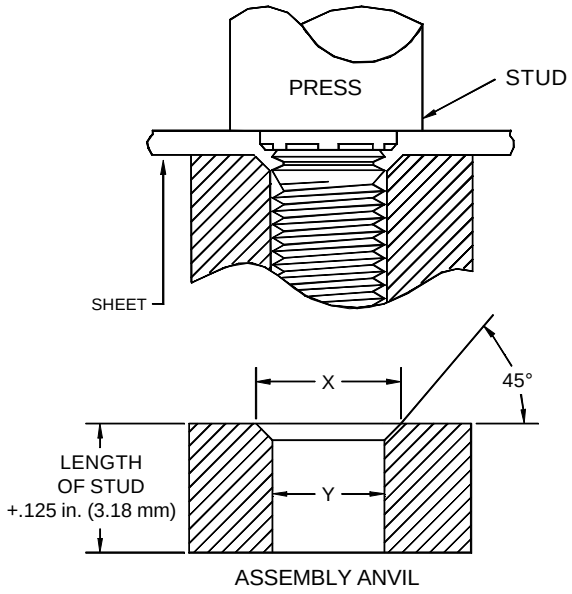
Series CHE & CHES

Continued from previous page.

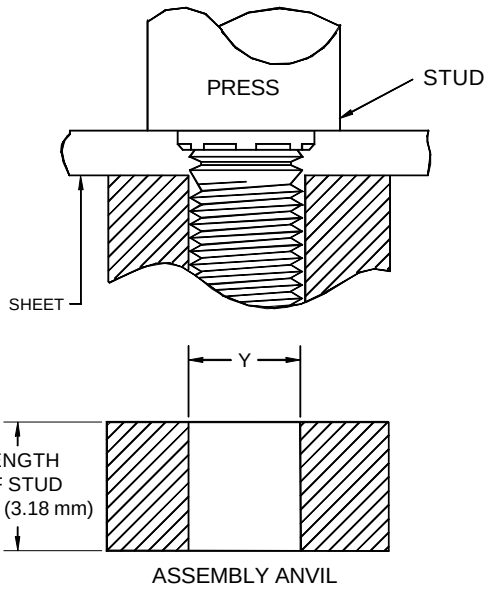
INSTALLATION DESCRIPTION

1) Prepare the correct size hole in the base material by punching or drilling. Do not deburr hole.
2) Place the stud through the hole in the base material and insert into the support anvil.
3) Apply sufficient squeezing force with a shop press until the head of the fastener is flush with the sheet material.

Tooling for panel thickness .059 (1.5 mm) and less.



Tooling for panel thickness .060 (1.51 mm) and greater.



	SERIES	Anvil Dimensions (in)	
		X +.004	Y + .003
INCH (in.)	256	.110	.087
	440	.136	.113
	632	.162	.139
	832	.188	.165
	1032	.216	.191

	SERIES	Anvil Dimensions (mm)	
		X +.01	Y + 0.08
METRIC (mm)	M2.5	3.1	2.53
	M3	3.6	3.03
	M3.5	4.1	3.53
	M4	4.6	4.03
	M5	5.6	5.03

Close Edge Studs

Series CHE & CHES

Continued from previous page.

Installation & Performance Data

	Thread Code	Max. Nut Tightening Torque (in. lbs.)	Sheet Thickness And Material	Sheet Hardness HRB	Installation (lbs.)	Pushout (lbs.)	Torque Out (in. lbs.)	Pull Thru (lbs.)	Test Bushing Hole Size
INCH (in.)	256	2.3	.047 Aluminum	33	700	55	4	230	.106
		2.3	.045 Cold Rolled Steel	54	1200	85	8	425	.106
	440	4.0	.047 Aluminum	33	1000	60	5	300	.132
		5.0	045 Cold Rolled Steel	54	1200	105	11	580	.132
	632	5.4	.047 Aluminum	33	1000	65	6.5	325	.158
		9.0	045 Cold Rolled Steel	54	1500	110	15	650	.158
	832	6.9	.047 Aluminum	33	1200	80	9	350	.184
		15.2	045 Cold Rolled Steel	54	1500	125	18	740	.184
	1032	9.7	.047 Aluminum	33	2500	115	18	395	.210
		19.4	045 Cold Rolled Steel	54	4500	210	38	800	.210

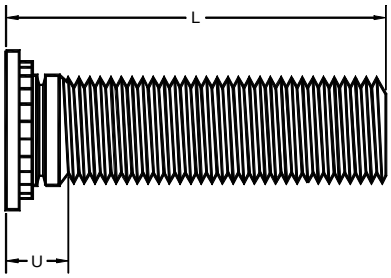
	Thread Code	Max. Nut Tightening Torque (N.m)	Sheet Thickness And Material	Sheet Hardness HRB	Installation (kN)	Pushout (N)	Torque Out (Nm)	Pull Thru (N)	Test Bushing Hole Size
METRIC (mm)	M2.5	.041	1.2mm Aluminum	33	3.1	285	0.55	1200	3
		.041	1.1 mm Cold Rolled Steel	54	5.3	450	1.1	2250	3
	M3	.046	1.2mm Aluminum	33	4.4	285	0.65	1300	3.5
		.074	1.1 mm Cold Rolled Steel	54	5.3	475	1.25	2500	3.5
	M3.5	.058	1.2mm Aluminum	33	4.4	290	0.76	1400	4
		1.15	1.1 mm Cold Rolled Steel	54	6.6	500	1.75	2800	4
	M4	.075	1.2mm Aluminum	33	5.3	365	1.1	1550	4.5
		1.7	1.1 mm Cold Rolled Steel	54	6.6	550	2.1	3300	4.5
	M5	1.11	1.2mm Aluminum	33	11.1	530	2.2	1850	5.5
		2.25	1.1 mm Cold Rolled Steel	54	20	1000	4.4	3750	5.5

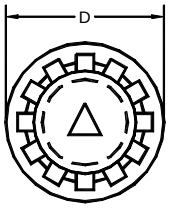
Studs For Stainless Steel Sheets

Series CHTS

CHTS studs are made of heat treated stainless steel providing a strong, flush-head assembly in stainless steel material as thin as .040 in. (1.0mm) with high torque-out and pushout performance.

Series	Material	Finish
CHTS	400 Series Stainless Steel	Passivate per ASTM A380





Thread: Class 2A, MIL-S-7742; (6g ISO Metric).
Use in: CHTS – Materials with HRB-92 or less.

Part Number Structure:

CHTS 440 -4

- Length Code
- Thread Code
- Series

Dimensions & Specifications

INCH (in.)	THREAD SIZE	SERIES	THREAD CODE	L Length ±.015 in. .250	.312	.375	.500	.625	.750	.875	1.00	1.25	1.50	SHEET THICKNESS	HOLE SIZE IN SHEET +.003 -.000	D ±.015	U Max
	#4-40	CHTS	440	-4	-5	-6	-8	-10	-12	-14	-16			.040-.095	.111	.176	.085
	#6-32	CHTS	632	-4	-5	-6	-8	-10	-12	-14	-16	-20	-24	.040-.095	.137	.206	.090
	#8-32	CHTS	832	-4	-5	-6	-8	-10	-12	-14	-16	-20	-24	.040-.095	.163	.237	.090
	#10-32	CHTS	1032		-5	-6	-8	-10	-12	-14	-16	-20	-24	.040-.095	.189	.256	.100

Dimensions & Specifications

METRIC (mm)	THREAD SIZE	SERIES	THREAD CODE	L Length ±0.4 mm 6	8	10	12	15	18	20	25	30	35	SHEET THICKNESS	HOLE SIZE IN SHEET +0.08	D ±0.4	U Max
	M3 X 0.5	CHTS	M3	-6	-8	-10	-12	-15	-18	-20	-25			1-2.4	3	4.6	2.1
	M4 X 0.7	CHTS	M4	-6	-8	-10	-12	-15	-18	-20	-25	-30	-35	1-2.4	4	5.9	2.4
	M5 X 0.8	CHTS	M5		-8	-10	-12	-15	-18	-20	-25	-30	-35	1-2.4	5	6.5	2.7

NOTE: ALL ITEMS SUBJECT TO MINIMUM ORDER

Studs For Stainless Steel Sheets

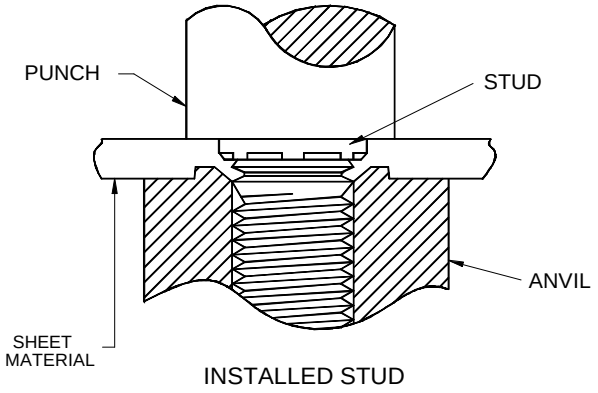
Series CHTS

Continued from previous page

INSTALLATION DESCRIPTION

Drill or punch the proper size hole in the parent material and apply the recommended force with a standard shop press, to fully seat the fastener. For best results, a flat punch with a minimum hardness of Rockwell C55 should be used along with a special anvil that has a raised ring. This will assure full displacement of the stainless sheet material into the clinch ring ofthe stud.

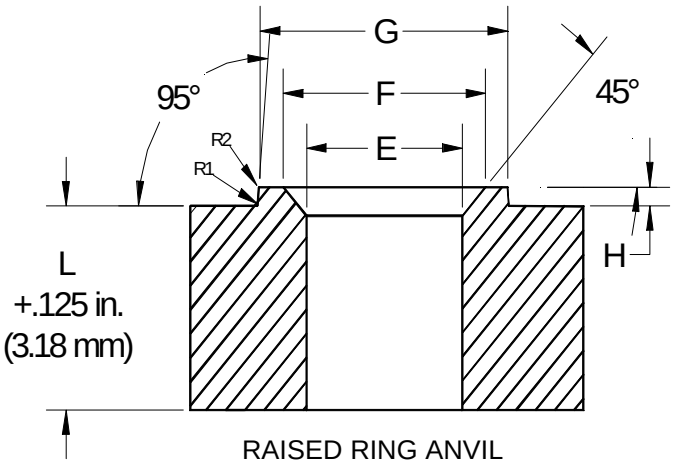
Be sure to monitor the height of the ring on the anvil periodically and replace anvil when ring height wears down to .005 in. (0.13mm) to assure desired performance.



INSTALLED STUD

INCH (in.) Thread Code	Anvil Dimensions (in.)					
	E	F	G	H	R1	R2
440	.113	.144	.174	.010	.003	.005
632	.140	.170	.200	.010	.003	.005
832	.166	.202	.236	.010	.003	.005
1032	.191	.235	.275	.010	.003	.005

METRIC (mm) Thread Code	Anvil Dimensions (mm)					
	E	F	G	H	R1	R2
M3	3.05	3.81	4.57	0.25	0.08	0.13
M4	4.04	4.95	5.82	0.25	0.08	0.13
M5	5.08	6.15	7.16	0.25	0.08	0.13



RAISED RING ANVIL

Studs For Stainless Steel Sheets

Series CHTS

Continued from previous page.

Dimensions & Specifications

INCH (in.)	Thread Code	Max. Nut Tightening Torque (in. lbs.)	Sheet Thickness & Material	Sheet Hardness HRB Max	Installation (lbs.)	Pushout (lbs.)	Torque-out (in.lbs.)	Pull thru (lbs.)
	440	6	.060 SS	92	9000	740	15	795
	632	11	.060 SS	92	9500	895	25	1340
	832	21	.060 SS	92	11200	995	57	1790
	1032	33	.060 SS	92	12000	1090	93	2245

METRIC (mm.)	Thread Code	Max. Nut Tightening Torque (N.m)	Sheet Thickness & Material	Sheet Hardness HRB Max	Installation (kN)	Pushout (N)	Torque-out (N.m)	Pull thru (N)
	M3	.9	1.5mm SS	92	40	3290	1.7	3510
	M4	2.1	1.5mm SS	92	50	4400	6.4	7960
	M5	4.3	1.5mm SS	92	53	4850	10.5	9980

Studs For Stainless Steel Sheets

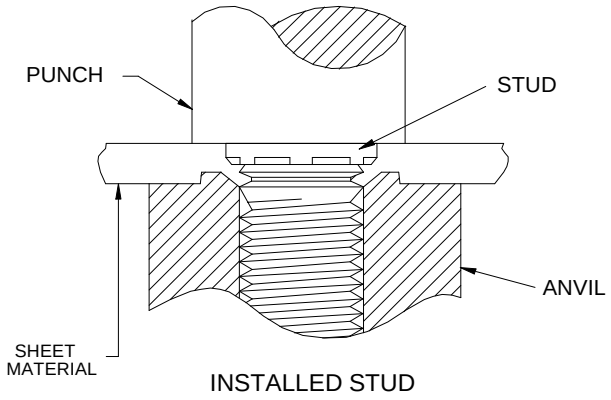
Series CHTS

Continued from previous page.

INSTALLATION DESCRIPTION

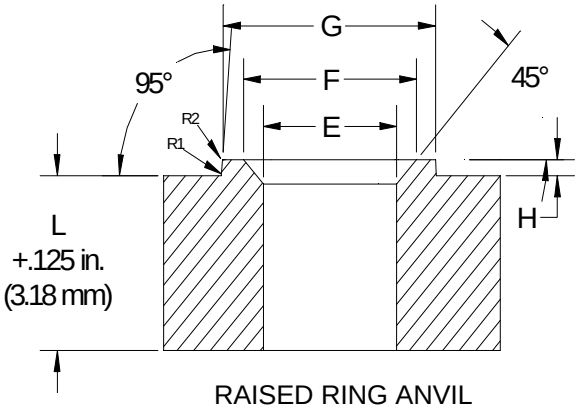
Drill or punch the proper size hole in the parent material and apply the recommended force, with a standard shop press, to fully seat the fastener. For best results, a flat punch with a minimum hardness of Rockwell C55 should be used along with a special anvil that has a raised ring. This will assure full displacement of the stainless sheet material into the clinch ring of the stud.

Be sure to monitor the height of the ring on the anvil periodically and replace anvil when ring height wears down to .005 in. (0.13mm) to assure desired performance.



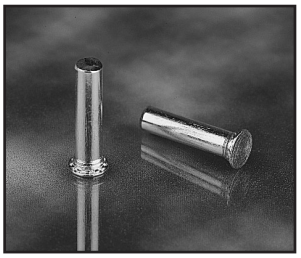
INSTALLED STUD

INCH (in.) Thread Code	Anvil Dimensions (in.)					
	E	F	G	H	R1	R2
440	.113	.144	.174	.010	.003	.005
632	.140	.170	.200	.010	.003	.005
832	.166	.202	.236	.010	.003	.005
1032	.191	.235	.275	.010	.003	.005



RAISED RING ANVIL

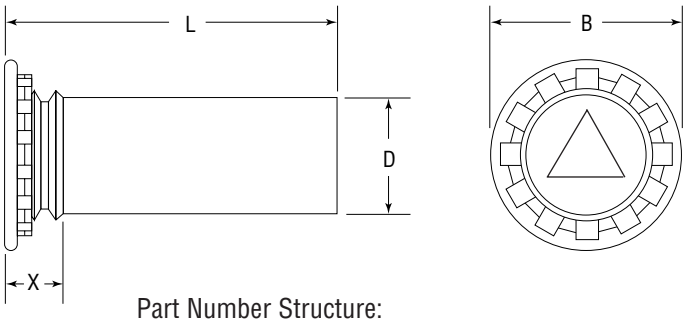
METRIC (mm) Thread Code	Anvil Dimensions (mm)					
	E	F	G	H	R1	R2
M3	3.05	3.81	4.57	0.25	0.08	0.13
M4	4.04	4.95	5.82	0.25	0.08	0.13
M5	5.08	6.15	7.16	0.25	0.08	0.13



Self-Clinching Pins

Series CH, CHN, CHS & CHA

CH pins provide a strong flush-head assembly in material as thin as .040 inches (1 mm) with high torque-out and pushout performance.



Part Number Structure:
CH 073-4
- Length Code
- Pin Diameter
- Series

Series	Material	Finish
CH	Carbon Steel, Heat-treated	Zinc* Clear
CHN	Carbon Steel, Non-heat treated	Zinc* Clear
CHS	300 Series Stainless Steel	Passivated ASTM A380
CHA	2024-T4 Aluminum	None

*Spec. ASTM B633-85

Use in: CH – Materials with HRB-80 or less.
CHN – Materials with HRB-50 or less.
CHS – Materials with HRB-70 or less.
CHA – Materials with HRB-50 or less.

Dimensions & Specifications

	Pin Dia. D ± .002	L Length ± .015 in. .250	.3125	.375	.500	.625	.750	.875	1.00	1.25	1.50	B ± .015	X Max.	Min.	+.003 −.000	Min.
INCH (in.)	.073	-4	-5	-6	-8	-10						.15	.075	.040	.085	.19
	.084	-4	-5	-6	-8	-10	-12					.16	.085	.040	.099	.22
	.094	-4	-5	-6	-8	-10	-12					.18	.085	.040	.111	.22
	.103	-4	-5	-6	-8	-10	-12					.18	.085	.040	.118	.22
	.106	-4	-5	-6	-8	-10	-12					.19	.090	.040	.125	.22
	.116	-4	-5	-6	-8	-10	-12	-14	-16	-20		.21	.090	.040	.137	.25
	.120	-4	-5	-6	-8	-10	-12	-14	-16	-20		.21	.090	.040	.137	.25
	.137	-4	-5	-6	-8	-10	-12	-14	-16	-20	-24	.23	.090	.040	.157	.28
	.141	-4	-5	-6	-8	-10	-12	-14	-16	-20	-24	.24	.090	.040	.163	.28
	.160		-5	-6	-8	-10	-12	-14	-16	-20	-24	.26	.100	.040	.189	.28
	.167		-5	-6	-8	-10	-12	-14	-16	-20	-24	.26	.100	.040	.189	.28
	.173		-5	-6	-8	-10	-12	-14	-16	-20	-24	.26	.100	.040	.197	.28
	.207			-6	-8	-10	-12	-14	-16	-20	-24	.32	.135	.062	.236	.31
	.215				-8	-10	-12	-14	-16	-20	-24	.34	.135	.062	.250	.31
	.223				-8	-10	-12	-14	-16			.34	.135	.062	.250	.31
	.273				-8	-10	-12	-14	-16	-20	-24	.38	.160	.093	.312	.38
	.281				-8	-10	-12	-14	-16			.38	.160	.093	.312	.38

Note: 1. Pins are available in lengths up to 3 in. (76.2 mm) upon special order.
2. Tapered-point pins are available upon request, subject to minimum order quantity.

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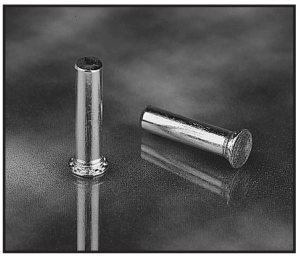
Self-Clinching Pins

Series CH, CHN, CHS & CHA



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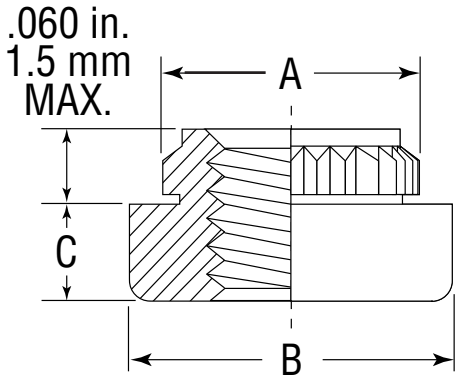
Dimensions & Specifications

	Pin Dia. D ± .05	L Length ± 0.4 mm										B ± 0.4	X Max.	 Min.	 +.08 –.00	 Min.
		6	8	10	12	15	18	20	25	30	35					
METRIC (mm)	3mm	-6	-8	-10	-12	-15	-18	-20	-25	-30	N/A	5.3	2.3	1.0	3.5	6.4
	4mm	N/A	-8	-10	-12	-15	-18	-20	-25	-30	-35	6.0	2.3	1.0	4.1	7.1
	5mm	N/A	-8	-10	-12	-15	-18	-20	-25	-30	-35	7.5	2.55	1.0	5.5	7.6

Broaching-Type Fasteners

Series CKF2 & CKFS2

CKF2 and CKFS2 broaching-type fasteners are designed for use on printed circuit boards and on most brittle or hard materials: glass laminates, epoxy or resin with paper, nylon, or canvas bases. They are also used on materials too thin or unsuitable for threading, such as acrylic and polycarbonate panels.



Series	Material	Finish
CKF2	Carbon Steel	Electro tin plating (Zinc* optional)
CKFS2	300 Series Stainless Steel	Passivated ASTM A380

*Spec. ASTM B633-85

Thread: Class 2B, MIL-S-7742; (6H ISO Metric).

Use in: Materials with Rockwell Hardness of B-60 or less.

Since the aforementioned materials do not flow under pressure, these fasteners are designed with a knurled shank that can be pressed into a drilled hole. The shank grips the board with an interference fit by broaching its way into the panel as it is squeezed into the holes.

All fasteners from Captive Fastener are identical to industry standards so that they can be fed through standard automatic insertion equipment.

Dimensions & Specifications

	Thread Size	Part Number Carbon Steel	Part Number Stainless Steel	A ± .003	B ± .005	C ± .005	+ .003 –.000	Min.	Min.
INCH (in.)	#2-56	CKF2256	CKFS2256	.165	.219	.065	.147	.16	.060
	#4-40	CKF2440	CKFS2440	.184	.219	.065	.166	.17	.060
	#6-32	CKF2632	CKFS2632	.231	.281	.065	.213	.22	.060
	#8-32	CKF2832	CKFS2832	.268	.344	.096	.250	.25	.060
	#10-24	CKF21024	CKFS21024	.290	.375	.127	.272	.28	.060
	#10-32	CKF21032	CKFS21032	.290	.375	.127	.272	.28	.060
	Thread Size	**Part Number Carbon Steel**	**Part Number Stainless Steel**	**A ± .08**	**B ± .13**	**C ± .13**	**+ .08 –.000**	**Min.**	**Min.**
METRIC (mm)	M2.5	CKF2M2.5	CKFS2M2.5	4.68	5.56	1.5	4.2	4.5	1.5
	M3 x 0.5	CKF2M3	CKFS2M3	4.68	5.56	1.5	4.2	4.5	1.5
	M4 x 0.7	CKF2M4	CKFS2M4	6.81	8.74	2.0	6.4	6.4	1.5
	M5 x 0.8	CKF2M5	CKFS2M5	7.37	9.53	3.0	6.9	7.1	1.5

Note: CKF2 & CKFS2 broaching fasteners are designed for unplated through-holes. When installed in plated through-holes, a hole tolerance of +.005 - .001 in. (+.13 - .03 mm) should be used.

When used in plated through-holes, performance will be reduced and plating may be damaged by knurl.

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Broaching-Type Fasteners

Series CKF2 & CKFS2

Continued from previous page.

Installation & Performance Data

		Fiberglass 0.060 in. (1.5 mm)		
	Thread Size	Installation Force (lbs.)	Pushout (lbs.)	Torque-out (in.-lbs.)
INCH (in.)	#2-56	400	60	6
	#4-40	400	65	15
	#6-32	500	80	30
	#8-32	700	95	35
	#10-24	700	100	40
	#10-32	700	100	40
	Thread Size	**Installation Force (kN)**	**Pushout (N)**	**Torque-out (N•m)**
METRIC (mm)	M2.5	2.22	200	1.35
	M3	2.22	200	1.35
	M4	2.22	330	3.73
	M5	2.90	350	4.52

Broaching-Type Standoffs

Series CKFE & CKFSE

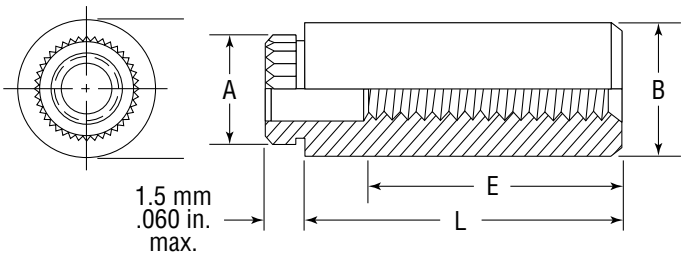
CKFE and CKFSE threaded and non-threaded standoffs allow screws to be inserted through multiple layered boards for stacked assemblies. All fasteners from Captive Fastener are identical to industry standards so that they can be fed through standard automatic insertion equipment.

Series	Material	Finish
CKFE	Carbon Steel	Electro Tin Plating ASTM B545 Class B (Zinc* Clear Optional)
CKFSE	300 Series Stainless Steel	Passivated ASTM A380

*Spec. ASTM B633-85

Thread: Class 2B, MIL-S-7742; (6H ISO Metric).

Use in: CKFE - Materials with Rockwell Hardness of B-60 or less.
CKFSE - Materials with Rockwell Hardness of B-70 or less.



Part Number Structure:

CKFE 440-4
- 440-4 → Length Code
- 440 → Thread/Hole Size
- CKFE → Series

Note: CKFE & CKFSE broaching standoffs are designed for unplated through-holes. When installed in plated through-holes, a hole tolerance of +.005 - .001 in. (+.13 - .03 mm) should be used.

When used in plated through-holes performance will be reduced and plating may be damaged by knurl.

† Not stocked, available on special order.

Dimensions & Specifications

	Thread Size	Thru Hole +.004 –.003	Part Number Carbon Steel	Part Number Stainless Steel	L Length ± .005 in. .125	.250	.375	.500	.625	.750	.875	A ± .003 in.	B ± .005 in.	+.003 in. –.000	Min.
INCH (in.)	#4-40		CKFE440	CKFSE440	-4	-8	-12	-16	-20	-24†		.184	.219	.166	.17
	#6-32		CKFE632	CKFSE632	-4	-8	-12	-16	-20	-24†	-28†	.231	.281	.213	.22
		.116	CKFE116	CKFSE116	-4	-8	-12	-16	-20	-24†		.184	.219	.166	.17
		.143	CKFE143	CKFSE143	-4	-8	-12	-16	-20	-24†	-28†	.231	.281	.213	.22
	E=minimum thread length				Full			.375 ± .015							

	Thread Size	+0.10 –0.08	Part Number Carbon Steel	Part Number Stainless Steel	Length ± 0.13 mm 3	4	6	8	10	12	14	16	A ± .08 mm	B ±.13 mm	+.08 mm –0.00	Min.
METRIC (mm)	M3x0.5		CKFEM3	CKFSEM3	-3	-4	-6	-8	-10	-12	-14	-16†	4.68	5.56	4.2	4.4
		3.6	CKFE3.6	CKFSE3.6	-3	-4	-6†	-8†	-10†	-12†	-14†	-16†	5.87	7.14	5.4	5.5
		4.2	CKFE4.2	CKFSE4.2	-3†	-4†	-6†	-8†	-10†	-12†	-14†	-16†	6.81	8.74	6.4	7.1
	E=minimum thread length (where applicable)				Full					9.5 ± 0.4						

Installation & Performance Data

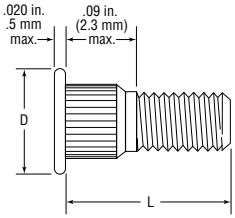
	Thread Size	Fiberglass 0.060 in. (1.5 mm) Installation Force (lbs.)	Pushout (lbs.)	Torque-out (in.-lbs.)
INCH (in.)	#4-40	500	65	12
	#6-32	500	80	28
METRIC (mm)	Thread Size	Installation Force (kN)	Pushout (N)	Torque-out (N•m)
	M3	2.22	200	1.35

Broaching-Type Studs

Series CKFH

CKFH broaching-type studs are electroplated with tin so they are readily solderable. Thus, they can be used both as solderable connectors and as permanently mounted mechanical fasteners.

Shank profile may vary.



Shank profile may vary.

Series	Material	Finish
CKFH	Phosphor Bronze CDA-510	Electro Tin Plating ASTM B545 Class B (Zinc* Optional)

*Spec. ASTM B633-85

Thread: Class 2A, MIL-S-7742; (6g ISO Metric).

Use in: Materials with Rockwell Hardness of B-55 or less.

Dimensions & Specifications

	Thread Size	Part Number	L Length ± .010 in. .250	.312	.375	.500	.625	.750	D ±.010	+.003 −.000	Max. Size Clear. Hole in Attach. Parts	Max. Nut Tight. Torque (in.-lbs.)	Min.	Anvil Hole +.003 −.000	Min.
INCH (in.)	#4-40	CKFH440	-4	-5	-6	-8	-10	-12	.18	.120	.145	4	.15	.113	.060
	#6-32	CKFH632	-4	-5	-6	-8	-10	-12	.20	.140	.170	8	.19	.140	.060
	#8-32	CKFH832		-5	-6	-8	-10	-12	.23	.166	.195	15	.20	.166	.060
	#10-32	CKFH1032			-6	-8	-10	-12	.25	.189	.220	18	.20	.191	.060
	Thread Size	Part Number	L Length ± .25 mm 6	8	10	12	15	18	D ±.25	+.08 −.000	Max. Size Clear. Hole in Attach. Parts	Max. Nut Tight. Torque (N•m)	Min.	Anvil Hole +.08 −.000	Min.
METRIC (mm)	M3x0.5	CKFHM3	-6	-8	-10	-12	-15	-18	4.58	3.0	3.7	0.45	3.8	3.1	1.5
	M4x0.7	CKFHM4		-8	-10	-12	-15	-18	5.74	4.2	4.8	1.60	5.1	4.1	1.5
	M5x0.8	CKFHM5			-10	-12	-15	-18	6.60	5.0	5.8	2.10	5.3	5.1	1.5

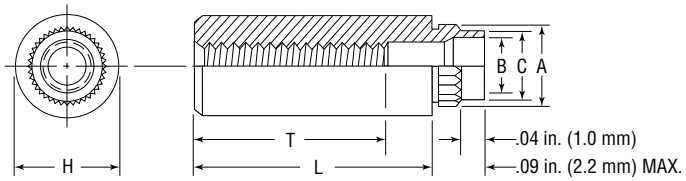
Installation & Performance Data

		Fiberglass 0.060 in. (1.5 mm)		
	Thread Size	Installation Force (lbs.)	Pushout (lbs.)	Torque-out (in.-lbs.)
INCH (in.)	#4-40	400	65	7
	#6-32	400	70	11
	#8-32	400	80	16
	#10-32	400	90	17
	Thread Size	Installation Force (kN)	Pushout (N)	Torque-out (N•m)
METRIC (mm)	M3	1.80	285	0.79
	M4	1.80	355	1.80
	M5	1.80	400	1.92

Flare Mounted Threaded Standoffs

Series CKFB3

CKFB3 flare mounted threaded standoffs provide a flared shank for stronger holding power and are used for spacing or stacking P-C boards.



Series	Material	Finish
CKFB3	Brass CDA-360	Electro Tin Plating ASTM B545 Class B (Zinc* Optional)

*Spec. ASTM B633-85

Thread: Class 2B, MIL-S-7742; (6H ISO Metric).
Use in: Materials with Rockwell Hardness of B-65 or less.

Dimensions & Specifications

	Thread Size	Part Number	L Length ± .005 in. .0625	.125	.1875	.250	.3125	.375	.500	.625	.750	A ±.003	C Max.	B ±.003	H ±.005	+.005 –.001	Min.	Min.
INCH (in.)	#4-40	CKFB3440	-2	-4	-6	-8	-10	-12	-16	-20		.179	.165	.122	.22	.166	.17	.050
	#6-32	CKFB3632	-2	-4	-6	-8	-10	-12	-16	-20*	-24*	.226	.212	.171	.28	.213	.22	.065
	"T" Minimum thread length		Full						.375 + .015									

Dimensions & Specifications

	Thread Size	Part Number	L Length ± 0.13 mm 2	3	4	6	8	10	12	14	16	A ± .08	C Max.	B ±.08	H ±.13	+.13 –.03	Min.	Min.
METRIC (mm)	M3x0.5	CKFB3M3	-2	-3	-4	-6	-8	-10	-12	-14	-16	4.55	4.21	3.20	5.56	4.2	4.33	1.27
	M4x0.7	CKFB3M4	-2	-3	-4	-6	-8	-10	-12	-14	-16	6.68	6.40	5.23	8.74	6.4	6.36	1.65
	"T" Minimum thread length		Full						9.5 ±0.4									

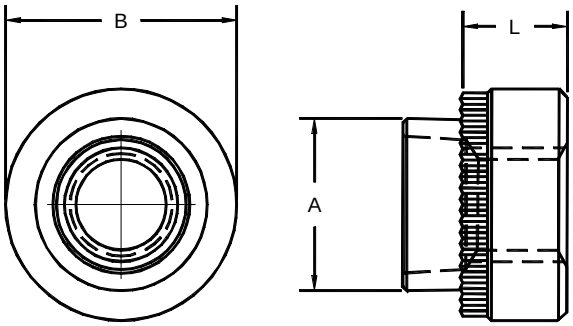
Installation & Performance Data

		Fiberglass 0.060 in. (1.5 mm)		
	Thread Size	Installation Force (lbs.)	Pushout (lbs.)	Torque-out (in.-lbs.)
INCH (in.)	#4-40	500	140	18
	#6-32	500	170	28
	Thread Size	**Installation Force (kN)**	**Pushout (N)**	**Torque-out (N•m)**
METRIC (mm)	M3	4.4	560	2.02
	M4	6.0	680	3.20

Nuts For Plated Holes In PC Boards

Series CKT

CKT nuts have a self-expanding shank for use in multi-layer PC boards, providing positive contact with plated thru-holes.



Series	Material	Finish
CKT	300 Series Stainless Steel	Passivated per ASTM A380

Thread: Class 2B, MIL-S-7742; (6g ISO Metric)
Use in: PC Board

Part Number Structure:
CKT 440-4

- Length Code
- Thread Code
- Series

Dimensions & Specifications

	THREAD SIZE	SERIES	THREAD CODE	L LENGTH +- .005				BOARD THICKNESS	PLATED HOLE SIZE IN BOARD +.004 -.003	A MAX.	B ±.005
				.125	.250	.375	.500				
INCH (in.)	#4-40	CKT	440	-4	-8	-12	-16	.056-.065	.166	.163	.219
	#6-32	CKT	632	-4	-8	-12	-16	.056-.065	.213	.210	.281
	#8-32	CKT	832	-4	-8	-12	-16	.056-.065	.250	.247	.344
	#10-32	CKT	1032	-4	-8	-12	-16	.056-.065	.272	.269	.375

Dimensions & Specifications

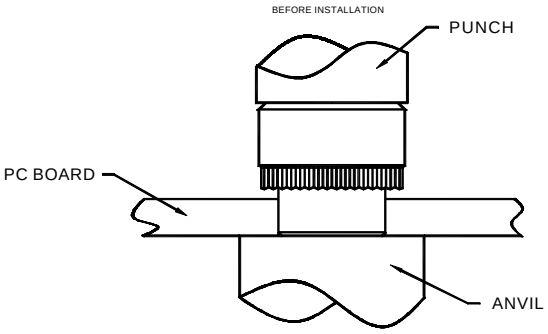
	THREAD SIZE	SERIES	THREAD CODE	L LENGTH ±0.13mm						BOARD THICKNESS	PLATED HOLE SIZE IN BOARD +0.1 -0.08	A MAX	B ±0.13
				3	4	6	8	10	12				
METRIC (mm)	M3 X 0.5	CKT	M3	-3	-4	-6	-8	-10	-12	1.42-1.65	4.2	4.14	5.56
	M4 X 0.7	CKT	M4	-3	-4	-6	-8	-10	-12	1.42-1.65	6.4	6.32	8.74
	M5 X 0.8	CKT	M5	-3	-4	-6	-8	-10	-12	1.42-1.65	6.9	6.84	9.52

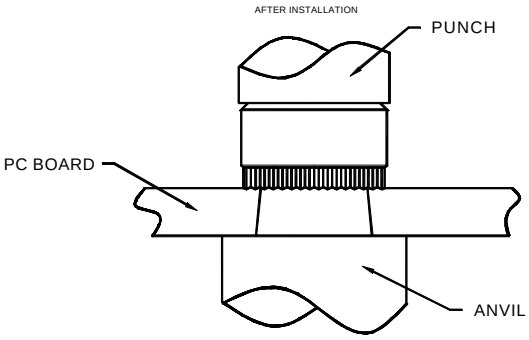
Nuts For Plated Holes In PC Boards

Series CKT

Continued from previous page.

INSTALLATION DESCRIPTION





1. Prepare a hole in the PCB board by punching or drilling, allowing for plating thickness to result in the desired diameter.
2. Insert the shank of the nut squarely into the hole and squeeze into place with a shop press using a flat punch and anvil.
3. Use adequate force to embed the front edge of the knurl serrations into the board up to the shoulder of the knurl, to seat the nut and expand shank.

Installation & Performance Data

	Type	Thread Code	Sheet Thickness & Material	Installation (lbs.)	Pushout (lbs.)	Torque-Out (in. lbs.)
UNIFIED (inch)	CKT	440 632 832 1032	.060 FR-4 FIBERGLASS	2500	40	5
			.060 FR-4 FIBERGLASS	3300	50	7
			.060 FR-4 FIBERGLASS	5000	70	12
			.060 FR-4 FIBERGLASS	6000	80	15

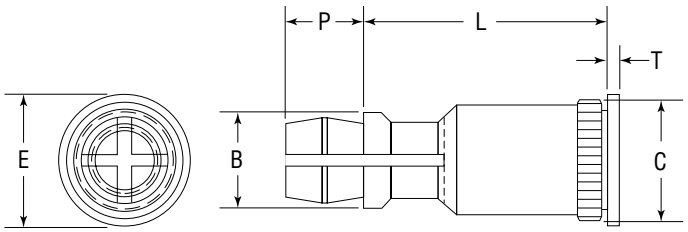
	Type	Thread Code	Sheet Thickness & Material	Installation (kN)	Pushout (N)	Torque-Out (N•m)
METRIC (mm)	CKT	M3 M4 M5	1.5 mm FR-4 FIBERGLASS	9.8	178	.56
			1.5 mm FR-4 FIBERGLASS	22.2	312	1.36
			1.5 mm FR-4 FIBERGLASS	26.7	356	1.7

Spring-Top Standoffs

Series CFKSSB

CFKSSB spring-top standoffs are designed for permanent installation into P-C boards by pressing into a drilled or punched hole. The spring-action post provides quick attachment and removal of P-C boards, with a simple snap eliminating the problems associated with loose hardware.

Material: CDA-360 Brass.
Finish: None.
Use in: P-C Boards;
HRB-65 Max. Hardness.



Part Number Structure:
CFKSSB 156-8
- Length Code
- Hole Diameter
- Series

Dimensions & Specifications

INCH (in.)

Series	Top Board Mounting Hole Diameter Code	Length L ± .005 (Length Code In 32nds Of An Inch) .250	.312	.375	.437	.500	.562	.625	.750	.875	1.000	B ± .005	C Max	E ± .005	P ± .005	T ± .005
CFKSSB	156	-8	-10	-12	-14	-16	-18	-20	-24	-28	-32	.188	.228	.250	.141	.020

Dimensions & Specifications

METRIC (mm)

Series	Top Board Mounting Hole Diameter Code	Length L ± 0.13 (Length Code In Millimeters) 8	10	12	14	16	18	20	22	25	B ± .13	C Max	E ± .13	P ± .13	T ± .13
CFKSSB	4 mm	-8	-10	-12	-14	-16	-18	-20	-22	-25	4.77	5.74	6.35	3.58	0.51

Continued on next page.

Spring-Top Standoffs

Series CFKSSB

Continued from previous page.

Installation & Performance Data

		Bottom Panel (Fixed)						Top Panel (Removable)			
	Series	Bottom Mounting Hole +.003 –.000	Material	Hardness Max.	Thickness Min.	Min.	Location Tolerance Max.	Top Mounting Hole +.003 –.000	Material	Thickness Range	Min.
INCH (in.)	CFKSSB	.213	P-C Board	HRB65	.050	.220	± .005	.156	P-C board or metal	.040-.070	.100

Installation & Performance Data

		Bottom Panel (Fixed)			Top Panel (Removable)		
	Type	Sheet Thickness & Sheet Material	Installation (lbs.)	Pushout (lbs.)	Max. first on force (lbs.)	Min. first off force (lbs.)	Min. 15th off force (lbs.)
INCH (in.)	CFKSSB	.060 FR-4 Fiberglass	500	110	13	3.0	1.0

Installation & Performance Data

		Bottom Panel (Fixed)						Top Panel (Removable)			
	Series	Bottom Mounting Hole +.08 –.00	Material	Hardness Max.	Thickness Min.	Min.	Location Tolerance Max.	Top Mounting Hole +.08 –.00	Material	Thickness Range	Min.
METRIC (mm)	CFKSSB	5.4	P-C Board	HRB65	1.25	5.6	± .013	4.0	P-C board or metal	1-1.8	2.5

Installation & Performance Data

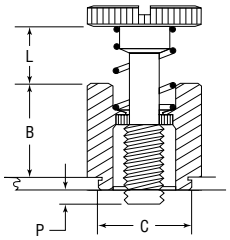
		Bottom Panel (Fixed)			Top Panel (Removable)		
	Type	Sheet Thickness & Sheet Material	Installation (kN)	Pushout (N)	Max. first on force (N)	Min. first off force (N)	Min. 15th off force (N)
METRIC (mm)	CFKSSB	1.52 FR-4 Fiberglass	2.2	484	58	13	4.0

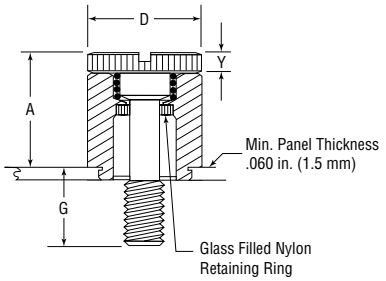
P-C Panel Board Fasteners

Series CPFK

CPFK P-C board panel fasteners provide permanent attachment of screw assemblies to P-C board substrate material. Screw assemblies remain captive for easy mounting and removal of board.

Series	Material	Finish
CPFK	300 Series Stainless Steel	Passivated ASTM A380





Dimensions & Specifications

	Thread Size	Part Number	G ± .016 in. (0.4 mm)	P ± .016 in. (0.4 mm)	L ± .016 in. (0.4 mm)	D +.016 in. –.010 in. +0.4 mm –0.25 mm	A Max.	Y ± .005 in. (0.13 mm)	B ± .010 in. (0.25mm)	C ± .003 in. (0.08mm)	+.003 in. (0.08 mm) –.000	Min.
INCH (in.)	#4-40	CPFK440-40	.250	.000	.19	.310	.36	.070	.28	.283	.265	.20
		CPFK440-62	.375	.125								
		CPFK440-84	.500	.250								
	#6-32	CPFK632-40	.250	.000	.19	.340	.36	.070	.28	.299	.281	.26
		CPFK632-62	.375	.125								
		CPFK632-84	.500	.250								
METRIC (mm)	M3 x 0.5	CPFKM3-40	6.4	0.0	4.8	8.2	9.1	1.9	7.2	7.28	6.75	5.1
		CPFKM3-62	9.5	3.2								
		CPFKM3-84	12.7	6.4								

Installation & Performance Data

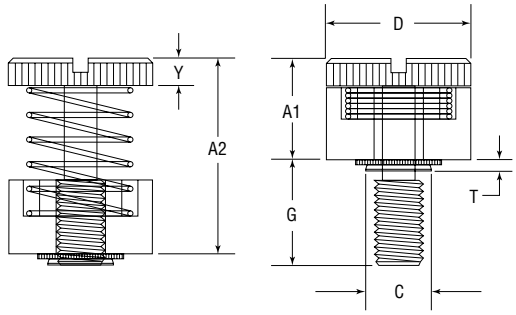
		Fiberglass 0.060 in. (1.5 mm)		
	Thread Size	Installation Force (lbs.)	Pushout (lbs.)	Torque-out (in.-lbs.)
INCH (in.)	#4-40	250	55	(1)
	#6-32	400	60	(1)
METRIC (mm)	Thread Size	Installation Force (kN)	Pushout (N)	Torque-out (N•m)
	M3	1.1	245	(3)

Patented

Low-Profile Panel Fastener

Series LP

LP panel fasteners are preassembled for attachment to removable sheet metal panels. Screw assemblies remain captive for servicing ease and provide low profile when secure.



Series	Material	Finish*
LP	Carbon Steel	Bright Nickel over Copper Flash

*Black Nitride (BN) finish available.
Thread: Class 2A (6g metric).
Use in: Materials with Rockwell Hardness of B-60 or less.

Part Number Structure: LP–0–440–30

- Length Code
- Thread Code
- Shank Code
- Series

Dimensions & Specifications

	Thread Size	Type	Thread Code	Screw Length Code	Min. Sheet Thickness	T Max.	G ±.015 in. ±0.4 mm	C Max.	D +.015 in. +0.4 mm -.005 in. -0.13 mm	Y ±.015 in. ±0.4 mm	A1 Max.	A2 ±.015 in. ±0.4 mm	+.003 in. +0.08 mm -0.00	Min.
INCH (in.)	#4-40	LP-0 LP-1 LP-2	440	30	.030 .040 .060	.030 .038 .058	.300	.202	.406	.083	.325	.595	.203	.26
	#6-32	LP-0 LP-1 LP-2	632	30	.030 .040 .060	.030 .038 .058	.300	.218	.438	.083	.325	.595	.219	.28
	#8-32	LP-0 LP-1 LP-2	832	30	.030 .040 .060	.030 .038 .058	.300	.249	.468	.088	.330	.600	.250	.29
	#10-32	LP-0 LP-1 LP-2	1032	30	.030 .040 .060	.030 .038 .058	.300	.311	.530	.101	.335	.605	.312	.33
	1/4-20	LP-2	420	35	.060	.058	.350	.374	.625	.123	.385	.675	.375	.38
METRIC (mm)	M3x0.5	LP-1 LP-2	M3	30	1 1.5	.97 1.47	7.6	5.47	10.3	2.1	8.3	15.3	5.5	6.6
	M4x0.7	LP-1 LP-2	M4	30	1 1.5	.97 1.47	7.6	6.37	11.9	2.2	8.4	15.4	6.4	7.4
	M5x0.8	LP-1 LP-2	M5	30	1 1.5	.97 1.47	7.6	7.97	13.5	2.6	8.5	15.4	8.0	8.4
	M6x1	LP-2	M6	35	1.5	1.47	8.9	9.47	15.9	3.1	9.7	17	9.5	9.7

Installation & Performance Data

	5052-H34 Aluminum					
Type	Thread Code	Installation Force (lbs)	Pushout (lbs)*	Thread Code	Installation Force (kN)	Pushout (N)*
LP-0	440	2200	60-180	M3	9.5	280-820
	632	2400	64-185	N/S	N/A	N/A
LP-1	832	2800	66-195	M4	12	300-885
	1032	3500	70-195	M5	15	315-1150
LP-2	420	4300	319	M6	19	1420

* Pushout varies with shank length. N/A Not Available. N/S Not Stocked.

Pre-Assembled Panel Fasteners

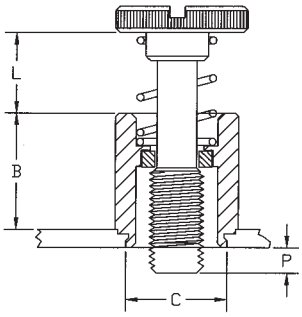
Series CPFC2

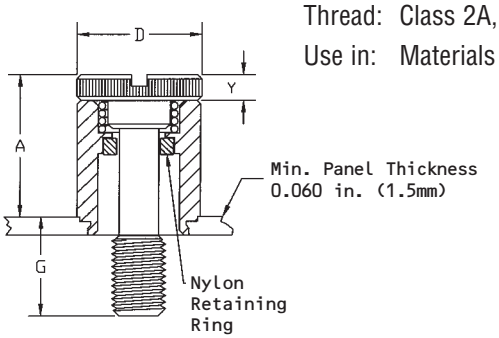
CPFC2 panel fasteners provide permanent attachment of screw assemblies to removable sheet metal panels. Pre-assembled screw assemblies remain captive for easy mounting and removal of panel.

Series	Material	Finish
CPFC2	300 Series Stainless Steel	Passivated ASTM A380

Thread: Class 2A, MIL-S-7742; (6g ISO Metric).

Use in: Materials with Rockwell Hardness B-70 or less.





Dimensions & Specifications

	Thread Size	Part Number	G ± .016 in.	P ± .016 in.	L ± .016 in.	D +.016 in. −.010 in.	A Max.	Y ± .005 in.	B ± .010 in.	C Max.	+.003 in. −.000	Min.
INCH (in.)	#4-40	CPFC2440-40	.250	.000	.19	.31	.36	.070	.28	.264	.265	.25
		CPFC2440-62	.375	.125								
		CPFC2440-84	.500	.250								
	#6-32	CPFC2632-40	.250	.000	.19	.34	.36	.070	.28	.280	.281	.28
		CPFC2632-62	.375	.125								
		CPFC2632-84	.500	.250								
	#8-32	CPFC2832-50	.312	.000	.25	.38	.45	.080	.36	.311	.312	.31
		CPFC2832-72	.437	.125								
		CPFC2832-94	.562	.250								
	#10-32	CPFC21032-50	.312	.000	.25	.41	.45	.080	.36	.343	.344	.34
		CPFC21032-72	.437	.125								
		CPFC21032-94	.562	.250								
	1/4-20	CPFC2420-60	.375	.000	.31	.47	.58	.095	.47	.412	.413	.38
		CPFC2420-82	.500	.125								
		CPFC2420-04	.625	.250								

Continued on next page.

Pre-Assembled Panel Fasteners

Series CPFC2

Continued from previous page.

Dimensions & Specifications

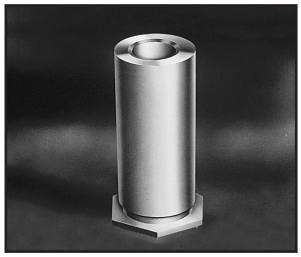
	Thread Size	Part Number	G ± 0.4 mm	P ± 0.4 mm	L ± 0.4 mm	D +0.4 mm –0.25 mm	A Max.	Y ± 0.13 mm	B ± 0.25 mm	C Max.	+0.08mm –.000	Min.
METRIC (mm)	M3 x 0.5	CPFC2M3-40	6.4	0.0	4.8	7.9	9.1	1.83	7.2	6.7	6.75	6.4
		CPFC2M3-62	9.5	3.2								
		CPFC2M3-84	12.7	6.4								
	M4 x 0.7	CPFC2M4-50	7.9	0.0	6.4	9.5	11.4	2.08	9.3	7.9	7.95	7.9
		CPFC2M4-72	11.1	3.2								
		CPFC2M4-94	14.3	6.4								
	M5 x 0.8	CPFC2M5-50	7.9	0.0	6.4	10.3	11.4	2.08	9.3	8.7	8.75	8.7
		CPFC2M5-72	11.1	3.2								
		CPFC2M5-94	14.3	6.4								
	M6 x 1.0	CPFC2M6-60	9.5	0.0	7.9	11.9	14.6	2.49	12.0	10.5	10.5	9.5
		CPFC2M6-82	12.7	3.2								
		CPFC2M6-04	15.9	6.4								

Installation & Performance Data

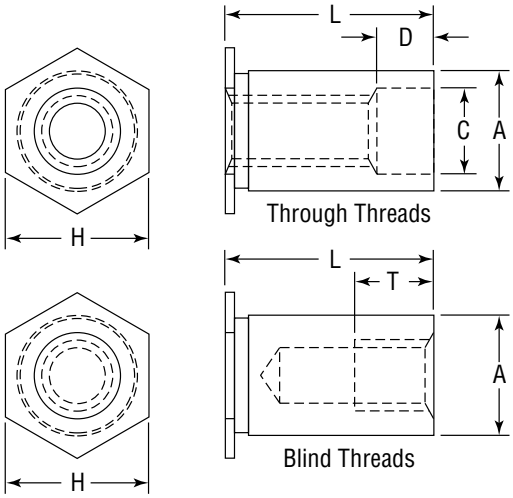
		Cold-rolled Steel		5052-H34 Aluminum	
	Thread Size	Installation Force (lbs.)	Pushout (lbs.)	Installation Force (lbs.)	Pushout (lbs.)
INCH (in.)	#4-40	3000	300	2400	240
	#6-32	3500	350	2700	275
	#8-32	3800	400	2900	300
	#10-32	4000	500	3000	400
	1/4-20	5000	600	3500	400
		(kN)	(N)	(kN)	(N)
METRIC (mm)	M3	13.3	1330	10.7	1070
	M4	16.9	1780	12.9	1330
	M5	17.8	2220	13.3	1780
	M6	22.2	2670	15.6	1780

Self-Clinching Standoffs

Series CFSO, CFSOS, CFSOA, CFBSO, CFBSOS & CFBSOA



CFSO and CFBSO self-clinching standoffs are designed for quick, easy installation with any standard pneumatic, hydraulic or mechanical press. Through-threaded or blind standoffs are used in metal panels with thickness of .040 in. (1.0 mm) and up. No secondary operation, such as reaming or deburring, is necessary prior to installation.



Series	Material	Finish
CFSO CFBSO	Heat-treated Carbon Steel	Zinc* Clear
CFSOS CFBSOS	303 Stainless Steel	Passivated ASTM A380
CFSOA CFBSOA	7075-T6 Aluminum	None

*Spec. ASTM B633-85

Thread: Class 2B, MIL-S-7742; (6H ISO Metric).

Use in: CFSO & CFBSO for materials with Rockwell Hardness of B-80 or less.

CFSOS & CFBSOS for materials with Rockwell Hardness of B-70 or less.

CFSOA & CFBSOA for materials with Rockwell Hardness of B-50 or less.

Part Number Structure:

CFSO6 440-4

- Length Code
- Thread Code
- Body Code (if applicable)
- Series

All Measurements In Inches

Dimensions & Specifications

Thread Size	Part Number	L Length +.002 –.005 in. .125	.1875	.250	.3125	.375	.4375	.500	.5625	.625	.6875	.750	.8125	.875	.9375	1.00	1.0625	+.003 –.000	A Dim. +.000 –.005	H Hex Dim. (Nom.)	C Counter-bore ±.005	Min.	Min.
#4-40	CFSO CFSOS CFSOA CFBSO 440	-4	-6	-8	-10	-12	-14	-16	-18	-20								.166	.165	.1875	.125	.23	.040
	CFBSOS CFBSOA				-10	-12	-14	-16	-18	-20	-22	-24											
#4-40	CFSO CFSOS CFSOA CFBSO 6440	-4	-6	-8	-10	-12	-14	-16	-18	-20	-22	-24						.213	.212	.25	.125	.27	.040
	CFBSOS CFBSOA				-10	-12	-14	-16	-18	-20	-22	-24											
T Dim. Min.					.1563		.1875		.25			.375											
D ±.0156		None				.1875				.3125				.4375									

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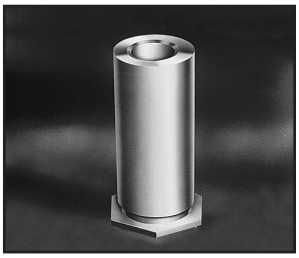

Self-Clinching Standoffs

Series CFSO, CFSOS, CFSOA, CFBSO, CFBSOS & CFBSOA

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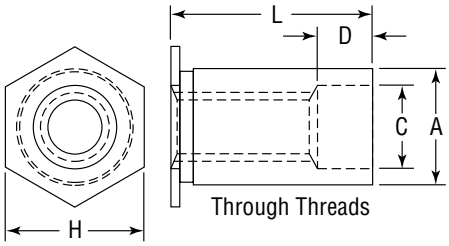

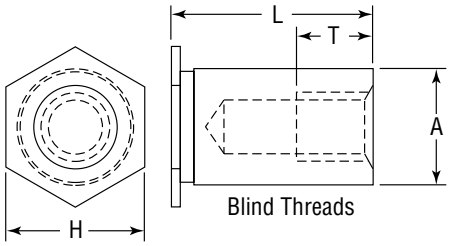

All Measurements In Inches

Dimensions & Specifications

Thread Size	Part Number	L Length +.002 –.005 in. .125	.1875	.250	.3125	.375	.4375	.500	.5625	.625	.6875	.750	.8125	.875	.9375	1.00	1.0625	+.003 –.000	A Dim. +.000 –.005	H Hex Dim. (Nom.)	C Counter-bore ±.005	Min.	Min.
#6-32	CFSO CFSOS CFSOA CFBSO CFBSOS CFBSOA 632	-4	-6	-8	-10	-12	-14	-16	-18	-20	-22	-24	-26	-28	-30			.213	.212	.25	.156	.27	.04
					-10	-12	-14	-16	-18	-20	-22	-24	-26	-28	-30	-32	-34						
#6-32	CFSO CFSOS CFSOA CFBSO CFBSOS CFBSOA 8632	-4	-6	-8	-10	-12	-14	-16	-18	-20	-22	-24	-26	-28				.281	.280	.3125	.156	.31	.05
					-10	-12	-14	-16	-18	-20	-22	-24	-26	-28	-30	-32	-34						
#8-32	CFSO CFSOS CFSOA CFBSO CFBSOS CFBSOA 832	-4	-6	-8	-10	-12	-14	-16	-18	-20	-22	-24	-26	-28	-30			.281	.280	.3125	.188	.31	.05
					-10	-12	-14	-16	-18	-20	-22	-24	-26	-28	-30	-32	-34						
#10-32	CFSO CFSOS CFSOA CFBSO CFBSOS CFBSOA 1032	-4	-6	-8	-10	-12	-14	-16	-18	-20	-22	-24	-26	-28	-30			.281	.280	.3125	.203	.31	.05
					-10	-12	-14	-16	-18	-20	-22	-24	-26	-28	-30	-32	-34						
T Dim. Min.					.1563		.1875		.25			.375											
D ±.0156		None				.1875				.3125				.4375									

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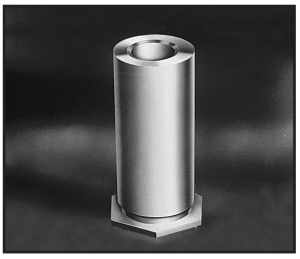
Self-Clinching Standoffs

Series CFSO, CFSOS, CFSOA, CFBSO, CFBSOS & CFBSOA



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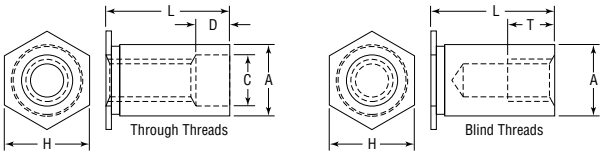

All Measurements In Millimeters

Dimensions & Specifications

Thread Size	Part Number	L Length +.05 –.13 mm 3	4	6	8	10	12	14	16	18	20	22	25	+.08 –.00	A Dim. +.00 –.13	H Hex Dim. (Nom.)	C Counter-bore ± 0.13	Min.	Min.
M3	CFSO CFSOS CFSOA CFBSO CFBSOS CFBSOA M3	-3	-4	-6	-8	-10	-12	-14						4.2	4.19	4.8	3.2	6.0	1.0
					-8	-10	-12	-14	-16	-18									
M3	CFSO CFSOS CFSOA CFBSO CFBSOS CFBSOA 3.5M3	-3	-4	-6	-8	-10	-12	-14	-16	-18				5.4	5.38	6.4	3.2	7.0	1.0
				-6	-8	-10	-12	-14	-16	-18	-20	-22	-25						
M3.5	CFSO CFSOS CFSOA CFBSO CFBSOS CFBSOA M3.5	-3	-4	-6	-8	-10	-12	-14	-16	-18				5.4	5.38	6.4	4.0	7.0	1.0
				-6	-8	-10	-12	-14	-16	-18	-20	-22	-25						
M4	CFSO CFSOS CFSOA CFBSO CFBSOS CFBSOA M4	-3	-4	-6	-8	-10	-12	-14	-16	-18	-20	-22		7.2	7.11	7.9	4.8	8.0	1.3
					-8	-10	-12	-14	-16	-18	-20	-22	-25						
M5	CFSO CFSOS CFSOA CFBSO CFBSOS CFBSOA M5	-3	-4	-6	-8	-10	-12	-14	-16	-18	-20	-22		7.2	7.11	7.9	5.2	8.0	1.3
					-8	-10	-12	-14	-16	-18	-20	-22	-25						
T Dim. Min.				3.2	4.0		5.0	6.5		9.5									
D ± 0.4		None				4.0			8.0			11.0							

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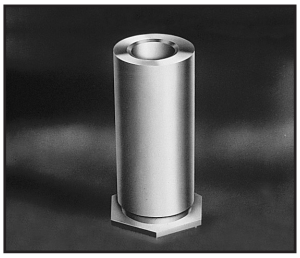


Self-Clinching Standoffs

Series CFSO, CFSOS, CFSOA, CFBSO, CFBSOS & CFBSOA

Continued from previous page.

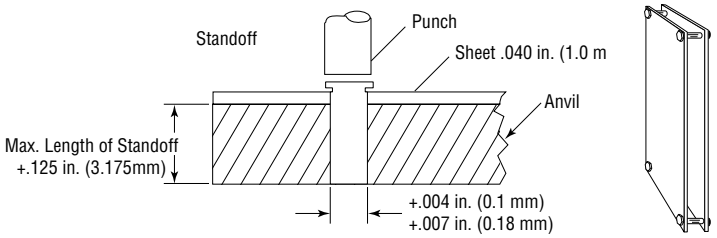
Installation & Performance Data

	Thread Code	Standoff Material	Installation (lbs.)	Pushout (lbs.)	Torque-out (in.- lbs.)	Pull Through (lbs.)	Installation (lbs.)	Pushout (lbs.)	Torque-out (in.- lbs.)	Pull Through (lbs.)	Rec Tighten Torque Max. (in.- lbs.)
		Sheet Material:	.060 in. 5052-H34 Aluminum				.060 in. Cold-rolled Steel				
INCH (in.)	440	Steel	1075	155	10	270	2100	220	18	225	4.7
		Stainless Steel	1075	155	10	220	2100	220	18	260	3.6
		Aluminum	1075	155	10	160	nr	nr	nr	nr	2.7
	6440, 632	Steel	1680	290	24	300	3200	410	32	375	4.6, 8.6
		Stainless Steel	1680	290	24	235	3200	410	32	300	3.6, 6.8
		Aluminum	1680	290	24	180	nr	nr	nr	nr	2.7, 5.1
	8632, 832, 1032	Steel	2350	380	44	560	3900	550	72	690	8.6, 17, 30
		Stainless Steel	2350	380	44	450	3900	550	72	550	6.8, 13, 24
		Aluminum	2350	380	44	340	nr	nr	nr	nr	5.2, 10, 17
	Thread Code	Standoff Material	Installation (kN)	Pushout (N)	Torque-out (N•m)	Pull Through (N)	Installation (kN)	Pushout (N)	Torque-out (N•m)	Pull Through (N)	Rec Tighten Torque Max. (N•m)
		Sheet Material:	1.5mm 5052-H34 Aluminum				1.5mm Cold-rolled Steel				
METRIC (mm)	M3	Steel	4.7	700	1.2	1230	9.6	990	2.1	1450	0.5
		Stainless Steel	4.7	700	1.2	985	9.6	990	2.1	1150	0.4
		Aluminum	4.7	700	1.2	740	nr	nr	nr	nr	0.3
	3.5M3	Steel	7.4	1310	2.79	1350	14.5	1850	3.9	1670	0.5
		Stainless Steel	7.4	1310	2.79	1100	14.5	1850	3.9	1350	0.4
		Aluminum	7.4	1310	2.79	810	nr	nr	nr	nr	0.3
	M4, M5	Steel	10.5	1750	5.01	2550	17.6	2460	8.45	3100	1.9, 3.4
		Stainless Steel	10.5	1750	5.01	2020	17.6	2460	8.45	2450	0.9, 2.7
		Aluminum	10.5	1750	5.01	1525	nr	nr	nr	nr	1.1, 2.1

nr = Not recommended.

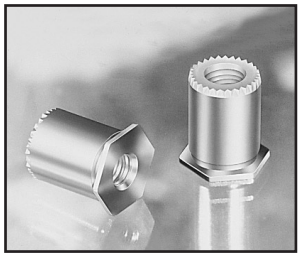
RECOMMENDED INSTALLATION PROCEDURE

1. Insert Standoff through hole in sheet into anvil.
2. Apply only sufficient squeezing force between parallel surfaces of punch an anvil to embed hex head flush in sheet. Avoid excessive pressures.

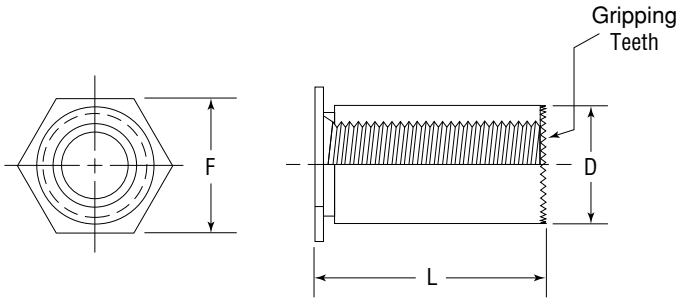


Self-Grounding Standoffs

Series CFSOSG & CFSOAG



CFSOSG & CFSOAG self-grounding standoffs are designed to be installed in steel and aluminum chassis to ground PC boards. Projecting teeth assure excellent electrical contact with PC board circuit and eliminate need for serrated or star washers.



† Not stocked, available on special order.

Series	Material	Finish
CFSOSG	300 Series Stainless Steel	Passivated ASTM A380
CFSOAG	7075-T6 Aluminum	None

Thread: Class 2B, MIL-S-7742; (6H ISO Metric).

Use in: CFSOSG for materials with Rockwell Hardness of B-70 or less.

CFSOAG for materials with Rockwell Hardness of B-50 or less.

Dimensions & Specifications

	Thread Size	Part Numbers		L Length +.010 –.000 in.							F	+.003 in. D		Min.
		Stainless	Aluminum	.125	.187	.250	.312	.375	.437	.500			–.000	
INCH (in.)	#4-40	CFSOSG6440	CFSOAG6440	-4†	-6	-8	-10	-12	-14	-16	.250	.212	.213	.27
	#6-32	CFSOSG8632	CFSOAG8632	-4†	-6†	-8	-10	-12	-14	-16	.312	.280	.281	.31
	Thread Size	Part Numbers		L Length +0.25 –.000 mm.							F	+.08mm D	–.00	Min.
		Stainless	Aluminum	3	4	6	8	10	12	14				
METRIC (mm)	M3X0.5	CFSOSG3.5M3	CFSOAG-3.5M3	-3	-4	-6	-8	-10	-12	-14	6.4	5.38	5.4	6.86
	M4X0.7	CFSOSGM4	CFSOAGM4	-3	-4	-6	-8	-10	-12	-14	7.9	7.11	7.2	7.87

Installation & Performance Data

	Thread Size	5052-H34 Aluminum Min.	Installation Force	Pushout (lbs.)	Torque-out (in.-lbs.)
INCH (in.)	#4-40	.040	1500-2000	290	24
	#6-32	.040	1500-2000	380	44
	Thread Size	Min.	Installation Force (kN)	Pushout (N)	Torque-out (N•m)
METRIC (mm)	M3	1.0	8	1290	2.7
	M4	1.0	8	1690	5.0

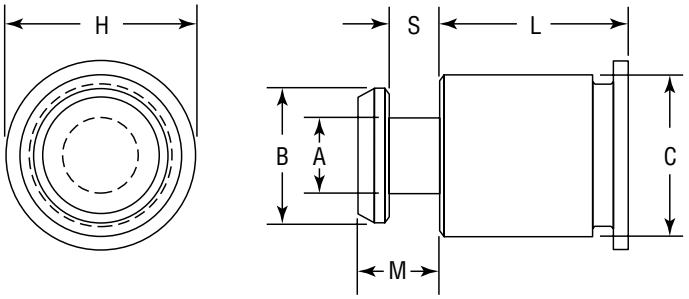
Self-Clinching Slide-Top Standoffs

Series CFSKC

CFSKC slide-top standoffs are designed for a P-C board or panel to be quickly attached and removed with a simple sliding motion. The slide-top standoffs provide advantages for reducing servicing time and eliminate the problems associated with loose hardware. Several slide-top standoffs can be used in conjunction with a Captive threaded standoff to lock the board in place.

Series	Material	Finish
CFSKC	300 Series Stainless Steel	Passivated ASTM A380

Use in: Materials HRB-70 or less.



Part Number Structure:

CFSKC 6060-6

- Length Code
- Body/Hole Code
- Series

Dimensions & Specifications

INCH (in.)

Series	Body/ Hole Code	L Length ± .005 in. Length Code is in 32nds of an Inch .188	.250	.312	.375	.437	.500	.562	.625	.750	.875	1.00	A ± .003	B ± .003	C Max.	S ± .003	M Max.	H Nom.	D Anvil Hole + .003 – .000
CFSKC	6060	-6	-8	-10	-12	-14	-16	-18	-20	-24	-28	-32	.099	.177	.212	.068	.108	.250	.216

Dimensions & Specifications

METRIC (mm)

Series	Body/ Hole Code	L Length ± 0.13 mm. 6	8	10	12	14	16	18	20	22	25	A ± 0.08	B ± 0.08	C Max.	S ± 0.08	M Max.	H Nom.	D Anvil Hole + 0.08 – 0.00
CFSKC	61.5	-6	-8	-10	-12	-14	-16	-18	-20†	-22†	-25†	2.5	4.5	5.38	1.72	2.75	6.35	5.5

† Not stocked, available on special order.

Installation & Performance Data

	Body Size/ Hole Code	.060 in. (1.52mm) 5052-H34 Aluminum Installation (lbs.)	Pushout (lbs.)	.060 in. (1.52mm) Cold-rolled Steel Installation (lbs.)	Pushout (lbs.)
INCH (in.)	6060	1600	250	3200	600
METRIC (mm)		(kN)	(N)	(kN)	(N)
	61.5	7.1	1100	14.2	2600

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Self-Clinching Slide-Top Standoffs

Series CFSKC

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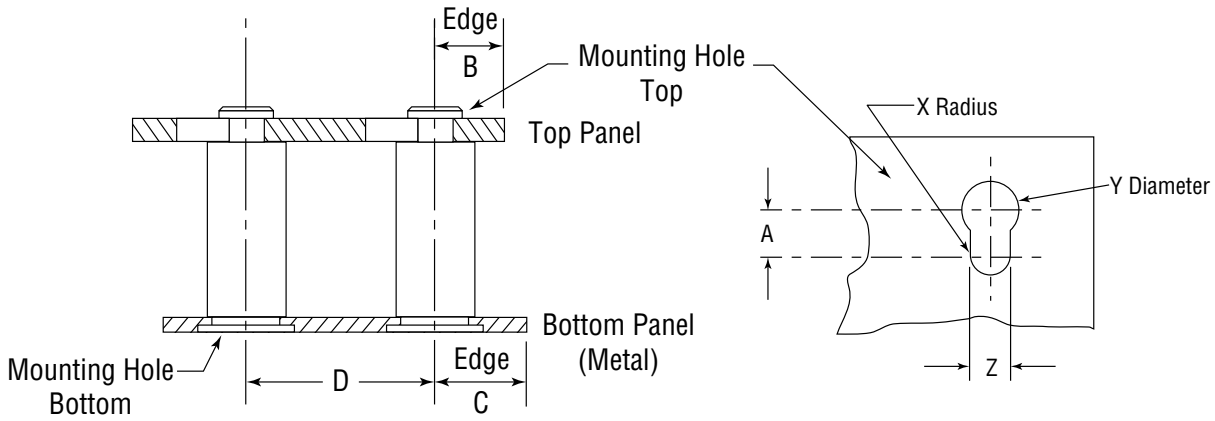
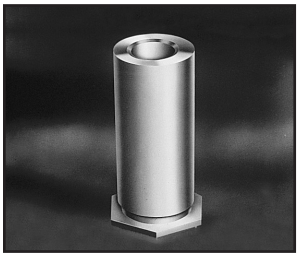


Installation & Performance Data

INCH (in.)	BOTTOM PANEL					TOP PANEL						
						Top Mounting Hole						
Series	Bottom Mounting Hole +.003 –.000	Min.	C Min.	Location Tolerance D Max.	X Nom.	Y ± .003	Z ± .003	A Min.	Material	Thickness Range	B Min.
CFSKC	.213	.040	.260	± .005	.059	.197	.118	.148	PC Board or Metal	.057 - .064	.160

Installation & Performance Data

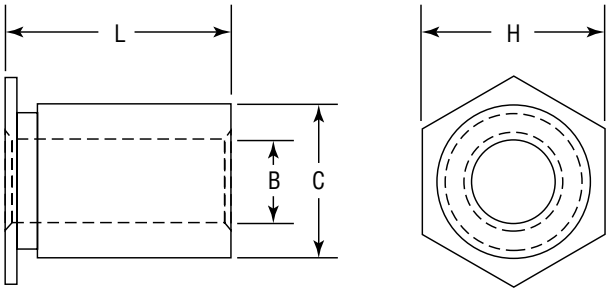
METRIC (mm)	BOTTOM PANEL					TOP PANEL						
						Top Mounting Hole						
Series	Bottom Mounting Hole +0.08 –.000	Min.	C Min.	Location Tolerance D Max.	X Nom.	Y ± 0.08	Z ± 0.08	A Min.	Material	Thickness Range	B Min.
CFSKC	5.4	1.0	6.6	± 0.13	1.5	5.0	3.0	3.75	PC Board or Metal	1.45 - 1.62	4.1



Unthreaded Thru-Hole Standoffs

Series CFSO, CFSOS & CFSOA

CFSO self-clinching standoffs are designed for quick, simple installation with any standard press into a drilled or punched hole, and become permanently attached to the thin sheet metal material. They are primarily used to provide spacing of multi-panel assemblies. The unthreaded hole allows threaded studs to pass directly through the spacer to lower areas.



Series	Material	Finish
CFSO	Heat-treated Carbon Steel	Zinc* Clear
CFSOS	303 Stainless Steel	Passivated ASTM A380
CFSOA	7075-T6 Aluminum	None

*Spec. ASTM B633-85

Use in: CFSO for materials with Rockwell Hardness of B-80 or less.

CFSOS for materials with Rockwell Hardness of B-70 or less.

CFSOA for materials with Rockwell Hardness of B-50 or less.

Part Number Structure:

CFSO 4116-4

- Length Code
- Body/Hole Code
- Series

All Measurements In Inches

Dimensions & Specifications

B +.004 -.003 Thru-Hole Diameter	Part Number	L Length +.002 –.005 in. .125	.1875	.250	.3125	.375	.4375	.500	.5625	.625	.6875	.750	+.003 –.000	C +.000 –.005	H Hex Dim.	Min.	Min.
.116	CFSO CFSOS 4116 CFSOA	-4	-6	-8	-10	-12	-14	-16	-18	-20	-22	-24	.166	.165	.187	.23	.040
.116	CFSO CFSOS 6116 CFSOA	-4	-6	-8	-10	-12	-14	-16	-18	-20	-22	-24	.213	.212	.250	.27	.040
.143	CFSO CFSOS 6143 CFSOA	-4	-6	-8	-10	-12	-14	-16	-18	-20	-22	-24	.213	.212	.250	.27	.040
.143	CFSO CFSOS 8143 CFSOA	-4	-6	-8	-10	-12	-14	-16	-18	-20	-22	-24	.281	.280	.312	.31	.050
.169	CFSO CFSOS 8169 CFSOA	-4	-6	-8	-10	-12	-14	-16	-18	-20	-22	-24	.281	.280	.312	.31	.050
.194	CFSO CFSOS 8194 CFSOA	-4	-6	-8	-10	-12	-14	-16	-18	-20	-22	-24	.281	.280	.312	.31	.050

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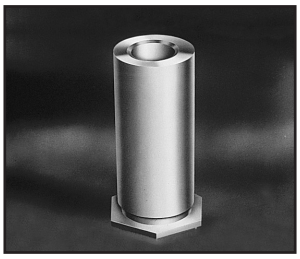
Unthreaded Thru-Hole Standoffs

Series CFSO, CFSOS & CFSOA



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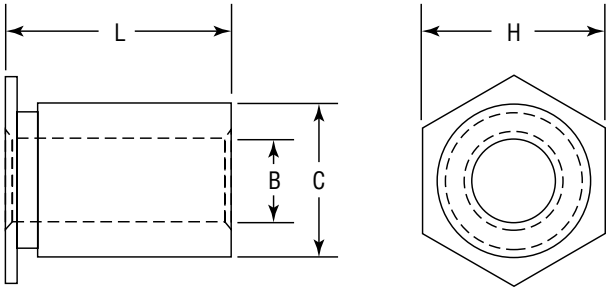


All Measurements In Millimeters

Dimensions & Specifications

B +0.10 -0.08 Thru-Hole Diameter	Part Number	L Length +0.05 –0.13 in. 3	4	6	8	10	12	14	16	18	20	+.08 –.000	C +.000 –.013	H Hex Dim.	Min.	Min.
3.1	CFSO CFSOS 43.1 CFSOA	-3	-4	-6	-8	-10	-12	-14	-16	-18	-20	4.2	4.19	4.8	6	1
3.1	CFSO CFSOS 63.1 CFSOA	-3	-4	-6	-8	-10	-12	-14	-16	-18	-20	5.4	5.38	6.4	6.8	1
3.6	CFSO CFSOS 63.6 CFSOA	-3	-4	-6	-8	-10	-12	-14	-16	-18	-20	5.4	5.38	6.4	6.8	1
3.6	CFSO CFSOS 83.6 CFSOA	-3	-4	-6	-8	-10	-12	-14	-16	-18	-20	7.2	7.11	7.9	8	1.3
4.1	CFSO CFSOS 84.1 CFSOA	-3	-4	-6	-8	-10	-12	-14	-16	-18	-20	7.2	7.11	7.9	8	1.3
5.1	CFSO CFSOS 85.1 CFSOA	-3	-4	-6	-8	-10	-12	-14	-16	-18	-20	7.2	7.11	7.9	8	1.3

Standoffs For Thin Sheet Material

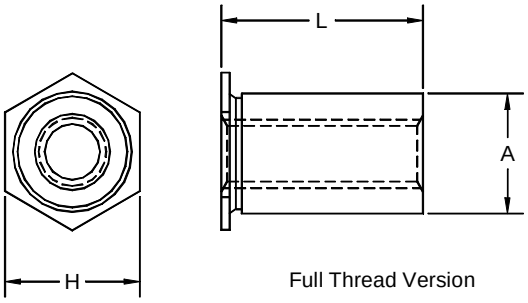
Series CFT, CFTS & CFTA

CFT standoffs allow flush-head installation in a material thickness of .025 in. (.63mm) or more.

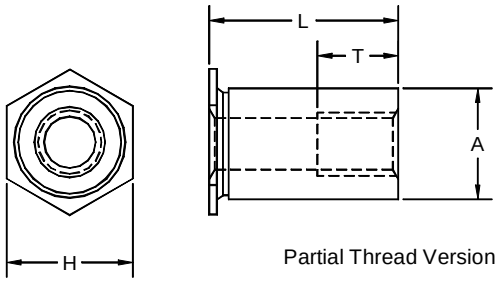
Series	Material	Finish
CFT	Non-heat-treated Carbon Steel	Zinc* Clear
CFTS	303 Stainless Steel	Passivate per ASTM A380
CFTA	7075-T6 Aluminum	None

*Spec. ASTM B633-85

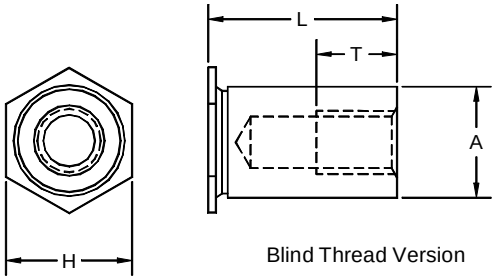
Thread: Class 2A, MIL-S-7742.
Use In: CFT – Materials with HR of B-60 or less.
CFTS – Materials with HR of B-70 or less.
CFTA – Materials with HR of B-50 or less.



Full Thread Version

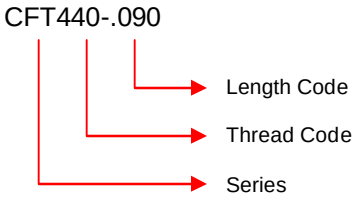


Partial Thread Version



Blind Thread Version

Part Number Structure:



All Measurements In Inches

Dimensions & Specifications

	Thread Size	Part Number	L Length +.002 - .005 in. .090	.125	.187	.250	.312	.375	.437	.500	.562	.625	.687	.750	+.003 -.000	A +.000 -.005	H Nom.	T Min.	Min.	Min.
INCH (in.)	#2-56	CFT CFTS 256 CFTA	-.090	-.125	-.187	-.250	-.312	-.375	-.437	-.500	-.562	-.625	-.687	-.750	.166	.165	.187	.200	.23	.025
	#6256	CFT CFTS 6256 CFTA	-.090	-.125	-.187	-.250	-.312	-.375	-.437	-.500	-.562	-.625	-.687	-.750	.213	.212	.250		.27	.025
	#4-40	CFT CFTS 440 CFTA	-.090	-.125	-.187	-.250	-.312	-.375	-.437	-.500	-.562	-.625	-.687	-.750	.166	.165	.187	.220	.23	.025
	#6440	CFT CFTS 6440 CFTA		-.125	-.187	-.250	-.312	-.375	-.437	-.500	-.562	-.625	-.687	-.750	.213	.212	.250		.27	.025
	#6-32	CFT CFTS 632 CFTA		-.125	-.187	-.250	-.312	-.375	-.437	-.500	-.562	-.625	-.687	-.750	.213	.212	.250	.270	.27	.025
	Version		Full Thread					Partial Thread			Blind Thread									

Note: Items may be subject to minimum order.

Standoffs For Thin Sheet Material

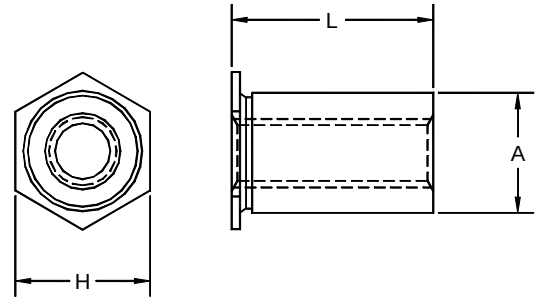
Series CFT, CFTS & CFTA

CFT standoffs allow flush-head installation in a material thickness of .025 in. (.63mm) or more.

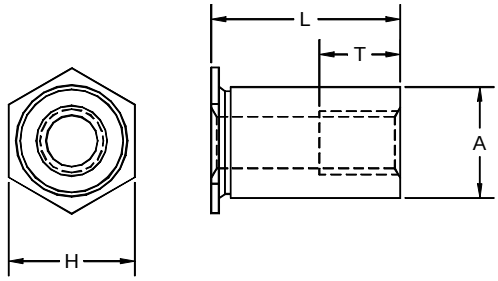
Series	Material	Finish
CFT	Heat-treated Carbon Steel	Zinc* Clear
CFTS	303 Stainless Steel	Passivate per ASTM A380
CFTA	7075-T6 Aluminum	None

*Spec. ASTM B633-85

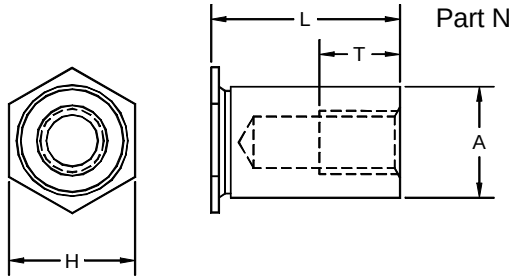
Thread: 6g ISO Metric.
Use In: CFT – Materials with HR of B-80 or less.
CFTS – Materials with HR of B-70 or less.
CFTA – Materials with HR of B-50 or less.



Full Thread Version

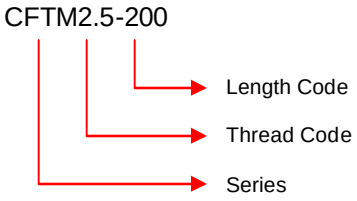


Partial Thread Version



Blind Thread Version

Part Number Structure:



All Measurements In Millimeters

Dimensions & Specifications

?

	Thread Size	Part Number	L Length ±0.08 mm 2.00	3.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	19.00	+0.08 -0.00	A +0.00 -0.13	H Nom.	T Min.	Min.	Min.
METRIC (mm.)	M2.5	CFT CFTS CFTA M2.5	-200	-300	-400	-600	-800	-1000	-1200	-1400	-1600	-1800	-1900	4.2	4.19	4.8	5.2	5.8	.63
	6M2.5	CFT CFTS CFTA 6M2.5	-200	-300	-400	-600	-800	-1000	-1200	-1400	-1600	-1800	-1900	5.4	5.38	6.4		7.1	.63
	M3	CFT CFTS CFTA M3	-200	-300	-400	-600	-800	-1000	-1200	-1400	-1600	-1800	-1900	4.2	4.19	4.8	6.2	5.8	.63
	6M3	CFT CFTS CFTA 6M3	-200	-300	-400	-600	-800	-1000	-1200	-1400	-1600	-1800	-1900	5.4	5.38	6.4		7.1	.63
	M3.5	CFT CFTS CFTA M3.5		-300	-400	-600	-800	-1000	-1200	-1400	-1600	-1800	-1900	5.4	5.38	6.4	7.0	7.1	.63
Version			Full Thread					Partial Thread		Blind Thread									

Note: Items may be subject to minimum order.

Standoffs For Thin Sheet Material

Series CFT, CFTS & CFTA

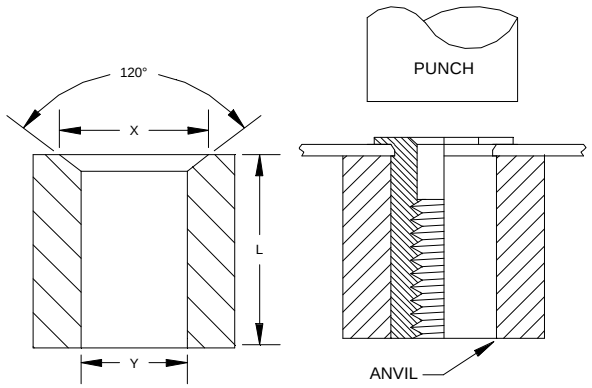
Continued from previous page.

Installation & Performance Data

A	SERIES	SHEET MATERIAL											
		.025 in. (0.64mm) 5052-H-34 Aluminium						.025 in. (0.64mm) Cold-rolled Steel					
		Installation		Pushout		Torque-out		Installation		Pushout		Torque-out	
		lbs.	kN	lbs.	N	In.lbs.	N•m	lbs.	kN	lbs.	N	In.lbs.	N•m
.165 in. (4.19mm)	CFT												
	CFTS	1500	6.7	68	302	5	0.56	2000	8.9	98	435	8	0.90
	CFTA							-	-	-	-	-	-
.212 in. (5.38 mm)	CFT												
	CFTS	1800	8	88	391	10	1.13	2500	11.1	148	658	14	1.6
	CFTA							-	-	-	-	-	-

The installation and performance data listed are nominal when all specifications are adhered to. Changes in sheet hardness and mounting hole tolerance will affect performance. Therefore, we recommend testing the product in your application to determine actual results. Samples are available upon request.

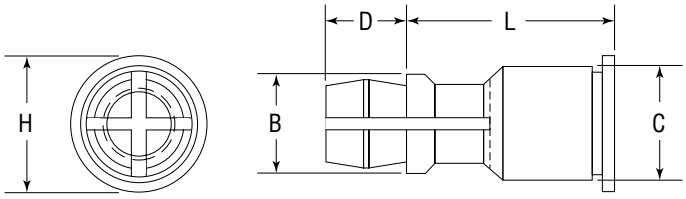
- Prepare the required size hole in the base material by punching or drilling. Do not deburr hole.
- Place standoff through hole in material and into installation anvil and squeeze into place using a shop press with flat punch.
- Apply a sufficient force to seat the hex head flush into the base material.
- Use chamfered anvil shown for sheet thickness of .025 to .032 in. (.63 to .81 mm) for sheets over .032 (.81 mm) The special anvil is not required.



Spring-Top Standoffs

Series CFSSA, CFSSS & CFSSC

CFSSA, CFSSS & CFSSC spring-top standoffs are designed for permanent installation into sheet metal by pressing into a prepared hole. The spring-action post provides quick attachment and removal with a simple snap eliminating the problems associated with loose hardware.



Series	Material	Finish
CFSSA	7075-T6 Aluminum	Plain
CFSSS	Carbon Steel	Zinc* Clear
CFSSC	400 Series Stainless Steel	Passivated ASTM A380

*Spec. ASTM B633-85

Use in: CFSSA – Cold-rolled Steel HRB-50 or less.
CFSSS – Cold-rolled Steel HRB-60 or less.
CFSSC – Cold-rolled Steel HRB-70 or less.

Part Number Structure:

CFSSA 156-8

- Length Code
- Hole Diameter
- Series

Dimensions & Specifications

	Series	Top Panel Mounting Hole Diameter Code	L Length ± .005 in. (Length Code in 32nds of an inch) .250	.312	.375	.437	.500	.562	.625	.750	.875	1.000	B ± .005	C Max.	D ± .005	H ± .005
INCH (in.)	CFSSA CFSSC CFSSS	156	-8	-10	-12	-14	-16	-18	-20	-24	-28	-32	.188	.212	.141	.250

Dimensions & Specifications

	Series	Top Panel Mounting Hole Diameter Code	L Length ± 0.13 mm (Length Code is in millimeters) 8	10	12	14	16	18	20	22	25	B ± .13	C Max.	D ± .13	H ± .13
METRIC (mm)	CFSSA CFSSC CFSSS	4mm	-8	-10	-12	-14	-16	-18	-20	-22	-25	4.77	5.38	3.58	6.35

Continued on next page.

Spring-Top Standoffs

Series CFSSA, CFSSS & CFSSC

Continued from previous page.

Installation & Performance Data

		Bottom Panel (Fixed)						Top Panel (Removable)			
	Series	Bottom Mounting Hole +.003 –.000	Material	Hardness Max.	Thickness Min.	Min.	Location Tolerance Max.	Top Mounting Hole +.003 –.000	Material	Thickness Range	Min.
INCH (in.)	CFSSA	.213	Metal	HRB50	.040	.260	± .005	.156	P-C board or metal	.040-.070	.100
	CFSSS	.213		HRB60	.040	.260	± .005	.156			.100
	CFSSC	.213		HRB70	.040	.260	± .005	.156			.100

Installation & Performance Data

		Bottom Panel (Fixed)			Top Panel (Removable)		
	Type	Sheet Thickness & Sheet Material	Installation (lbs.)	Pushout (lbs.)	Max. first on force (lbs.)	Min. first off force (lbs.)	Min. 15th off force (lbs.)
INCH (in.)	CFSSA	.040 Aluminum HRB 25	1500	200	10	3.0	1.0
	CFSSS	.040 Aluminum HRB 25	1500	200	20	6.0	2.0
	CFSSC	.060 Cold-rolled Steel HRB 64	3600	600	20	6.0	2.0

Installation & Performance Data

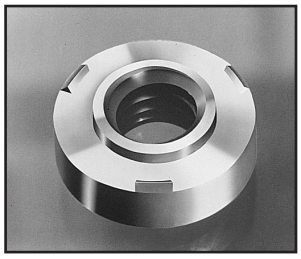
		Bottom Panel (Fixed)						Top Panel (Removable)			
	Series	Bottom Mounting Hole +.08 –.00	Material	Hardness Max.	Thickness Min.	Min.	Location Tolerance Max.	Top Mounting Hole +.08 –.00	Material	Thickness Range	Min.
METRIC (mm)	CFSSA	5.4	Metal	HRB50	1	6.6	± .013	4.0	P-C board or metal	1-1.8	2.5
	CFSSS	5.4		HRB60	1	6.6	± .013	4.0			2.5
	CFSSC	5.4		HRB70	1	6.6	± .013	4.0			2.5

Installation & Performance Data

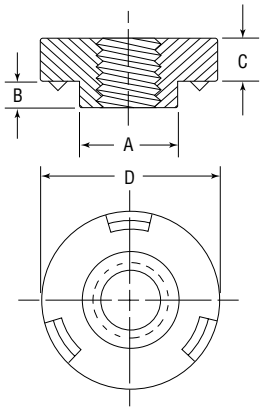
		Bottom Panel (Fixed)			Top Panel (Removable)		
	Type	Sheet Thickness & Sheet Material	Installation (kN)	Pushout (N)	Max. first on force (N)	Min. first off force (N)	Min. 15th off force (N)
METRIC (mm)	CFSSA	1.0 Aluminum HRB 25	6.7	880	44	13	4.0
	CFSSS	1.0 Aluminum HRB 25	6.7	880	89	27	9.0
	CFSSC	1.52 Cold-rolled Steel HRB 64	16	2670	89	27	9.0

Weld Nuts

Series CFWN & CFWNS



CFWN weld nuts are the solution to providing load bearing threads in sheets that are too thin to tap. They provide three-point projections for fast, easy welding. Captive Fastener weld nuts self align into standard hole sizes, and are dimensionally identical to industry standards. The alignment collar orients the weld nut and prevents weld spatter from entering thread area.



Series	Material	Finish
CFWN	Carbon Steel	Light Oil Coat (Copper Flash Optional)
CFWNS	300 Series Stainless Steel	Passivated ASTM A380

Thread: Class 2B, MIL-S-7742; (6H ISO Metric).

Dimensions & Specifications

	Thread Size	Part Number: Carbon Steel	Part Number: Stainless Steel	Min.	+.004 in. (+0.10 mm) –.000	A Max.	B Max.	C ± .004 in. (± 0.1 mm)	D +0.00 –.01 in. (–.25 mm)	Min.
INCH (in.)	#6-32	CFWN632	CFWNS632	.030	.193	.191	.030	.093	.340	.17
		CFWN632-1		.060	.193	.191	.050			
	#8-32	CFWN832	CFWNS832	.030	.218	.216	.030	.107	.370	.18
		CFWN832-1		.060	.218	.216	.050			
	#10-24	CFWN1024	CFWNS1024	.030	.250	.248	.030	.155	.440	.22
		CFWN1024-1		.060	.250	.248	.050			
	#10-32	CFWN1032	CFWNS1032	.030	.250	.248	.030	.155	.440	.22
		CFWN1032-1		.060	.250	.248	.050			
	1/4-20	CFWN420	CFWNS420	.050	.316	.315	.048	.185	.520	.26
METRIC (mm)	M3 x 0.5	CFWNM3	CFWNSM3	0.75	4.4	4.37	0.77	1.5	7.95	4.5
	M4 x 0.7	CFWNM4	CFWNSM4	0.77	5.6	5.57	0.77	2.6	9.4	5.2
	M5 x 0.8	CFWNM5	CFWNSM5	0.77	6.4	6.33	0.77	3.8	11.1	5.7
	M6 x 1.0	CFWNM6	CFWNSM6	1.25	8.1	8.03	1.24	4.6	13.2	6.7

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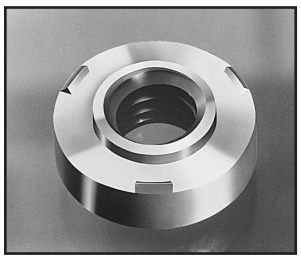


Weld Nuts

Series CFWN & CFWNS

PERFORMANCE DATA

	TYPE	THREAD CODE	SHEET MATERIAL .060 in. COLD-ROLLED STEEL Pushout (lbs.)	.060 in. COLD-ROLLED STEEL Torque-Out (in.lbs)	.060 in. 302 STAINLESS STEEL Pushout (lbs)	.060 in. 302 STAINLESS STEEL Torque-Out (in.lbs)
INCH	CFWN	440	500	13	N/A	N/A
		632	640	22	N/A	N/A
		832	760	33	N/A	N/A
		1032	880	56	N/A	N/A
		0420	1000	185	N/A	N/A
	CFWNS	440	N/A	N/A	680	13
		632	N/A	N/A	800	28
		832	N/A	N/A	850	45
		1032	N/A	N/A	900	110
		0420	N/A	N/A	1000	200

	TYPE	THREAD CODE	SHEET MATERIAL 1.5 mm COLD-ROLLED STEEL Pushout (N)	1.5 mm COLD-ROLLED STEEL Torque-Out (N•m)	1.5 mm 302 STAINLESS STEEL Pushout (N)	1.5 mm 302 STAINLESS STEEL Torque-Out (N•m)
METRIC	CFWN	M3	3020	1.4	N/A	N/A
		M4	3780	5	N/A	N/A
		M5	4000	12.4	N/A	N/A
		M6	4445	22.5	N/A	N/A
	CFWNS	M3	N/A	N/A	2220	1.4
		M4	N/A	N/A	3380	3.7
		M5	N/A	N/A	3910	6.3
		M6	N/A	N/A	4445	20.9

SETTING GUIDES

FOR WELD NUTS IN .030 in. (.077 mm) TO .063 in. (1.6 mm) SHEETS

	TYPE	THREAD CODE	SHEET MATERIAL COLD-ROLLED STEEL Electrode Ram Force (lbs)	COLD-ROLLED STEEL Secondary Current Amps ± 500	COLD-ROLLED STEEL Weld Time Cycles/ Sec.	302 STAINLESS STEEL Electrode Ram Force (lbs)	302 STAINLESS STEEL Secondary Current Amps ± 500	302 STAINLESS STEEL Weld Time Cycles/ Sec.
INCH	CFWN	440	450-500	17,000	6/0.10	N/A	N/A	N/A
		632	450-500	17,000	6/0.10	N/A	N/A	N/A
		832	450-500	16,500	6/0.10	N/A	N/A	N/A
		1032	400-500	20,500	10/0.17	N/A	N/A	N/A
		0420	450-500	20,500	10/0.17	N/A	N/A	N/A
	CFWNS	440	N/A	N/A	N/A	450-200	16,500	6/0.10
		632	N/A	N/A	N/A	450-500	16,500	6/0.10
		832	N/A	N/A	N/A	500-550	16,500	6/0.10
		1032	N/A	N/A	N/A	650-700	20,000	6/0.10
		0420	N/A	N/A	N/A	650-700	18,500	6/0.10

	TYPE	THREAD CODE	SHEET MATERIAL COLD-ROLLED STEEL Electrode Ram Force (N)	COLD-ROLLED STEEL Secondary Current Amps ± 500	COLD-ROLLED STEEL Weld Time Cycles/ Sec.	302 STAINLESS STEEL Electrode Ram Force (N)	302 STAINLESS STEEL Secondary Current Amps ± 500	302 STAINLESS STEEL Weld Time Cycles/ Sec.
METRIC	CFWN	M3	2000-2220	17,000	6/0.10	N/A	N/A	N/A
		M4	2000-2220	16,500	6/0.10	N/A	N/A	N/A
		M5	1775-2000	20,500	10/0.17	N/A	N/A	N/A
		M6	2000-2220	20,500	10/0.17	N/A	N/A	N/A
	CFWNS	M3	N/A	N/A	N/A	2000-2220	16,500	6/0.10
		M4	N/A	N/A	N/A	2220-2225	16,500	6/0.10
		M5	N/A	N/A	N/A	2890-3110	20,000	6/0.10
		M6	N/A	N/A	N/A	2890-3110	18,500	6/0.10

GUIDES FOR BETTER WELDING

Electrodes, weld nuts, and panels must be clean and free of grease, rust, and metal burrs. When welds appear satisfactory on installed nut, but pushout values are low, one or more of the following may be the cause:

(1) Ram pressure too high
(2) Current too low
(3) Panel not clean
(4) Weld nuts are not centered under electrodes
(5) Hold time not long enough to allow proper cooling
(6) Pressure regulator on welding equipment drifts

If installed threads are distorted, one or more of the following conditions may be the cause:

(1) Weld time too long
(2) Current too high
(3) Ram pressure too high

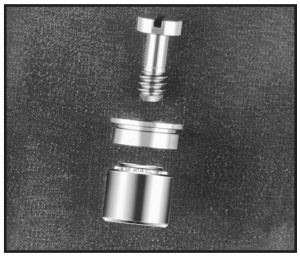
Electrode Force *is the force exerted by the electrodes on the fastener and sheet to clamp them together and ensure good contact. Electrode force also sets the weld nut down flush on the sheet as the projections melt during the welding period. Insufficient electrode force may result in flashing, spitting, burning, spatter, and discoloration. Conversely, excessive electrode force may flatten the fastener projections before proper welding temperature is reached or may imbed the projections of the cold fastener into the sheet. Excessive electrode force can also distort threads during the weld cycle.*

Secondary Current *determines the heat applied to the Captive weld nut and sheet.*

Timing Cycle *for projection welding comprises four periods:*
(1) Squeeze time
(2) Weld time
(3) Hold time
(4) Off time

Flush-Mounted Panel Screw Components

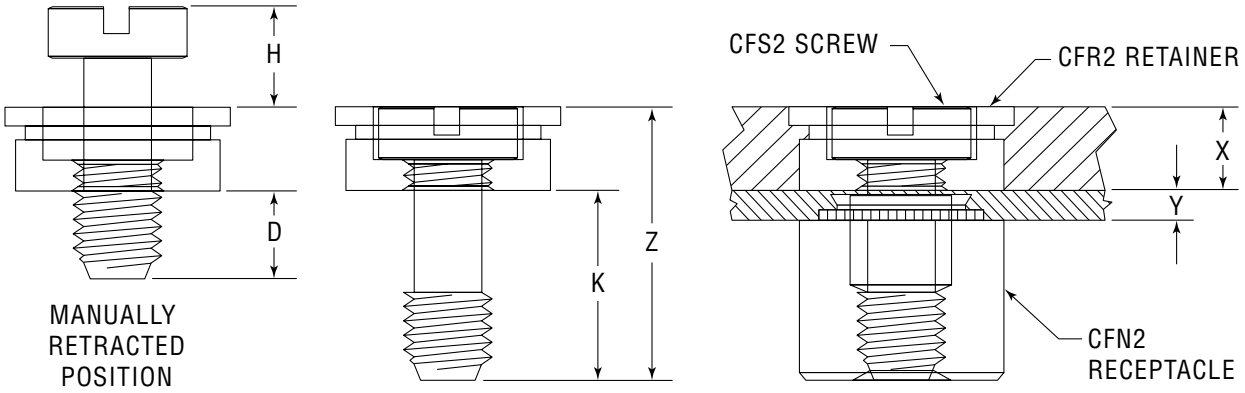
Series CFS2, CFR2 & CFN2



CFS2, CFR2 & CFN2 Panel Screw Components remain captive to panel and frame when unassembled. Panel Screws are designed to be flush in sheets as thin as .125 in. (3.2 mm.)

Series	Material	Finish
CFS2	300 Series Stainless Steel	Passivated ASTM A380
CFR2	300 Series Stainless Steel	Passivated ASTM A380
CFN2	Heat Treated Carbon Steel	Zinc Clear ASTM B633-85

Use in: materials of HRB 70 or less.



Dimensions & Specifications

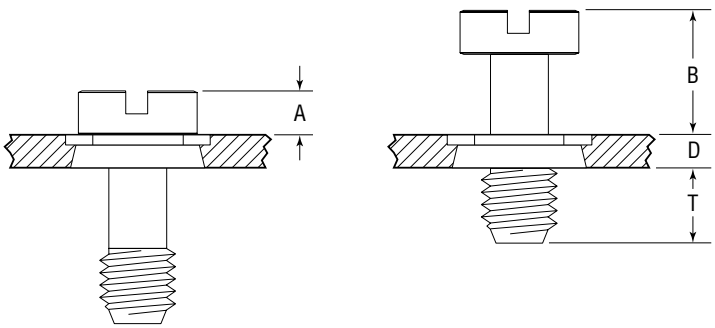
	Y Max.	X Nom.	Z ± .010	H	K	D Nom.
INCH (in.)	0.04	0.125	0.40	0.16	0.28	0.13

Dimensions & Specifications

	Y Max.	X Nom.	Z ± 0.25	H	K	D Nom.
METRIC (mm)	1.0	3.18	10.3	3.8	7.2	3.3

Alternate Attachment Method:

When thin panel material makes it necessary for the screw head to remain above the top panel surface, CFS2 Screws may be used with CFL Flush Nuts as retainers. CFL nuts self-clinch into sheets as thin as .060 in. (1.5 mm) and remain flush on both sides of the panel. CFS2 Screws are rotated through the threads of the CFL Retainers to install and captivate. Refer to CFL section for dimensions and installation data.



	P Max.	A	B	D Nom.
INCH (in.) CFS2 w/CFL Retainer	.060	.075	.210	.130
METRIC (mm) CFS2 w/CFL Retainer	1.50	1.90	5.40	3.30

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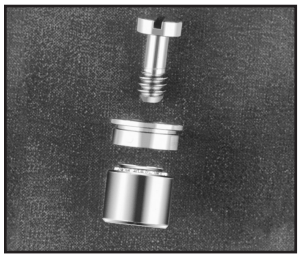

Flush-Mounted Panel Screw Components

Series CFS2, CFR2 & CFN2

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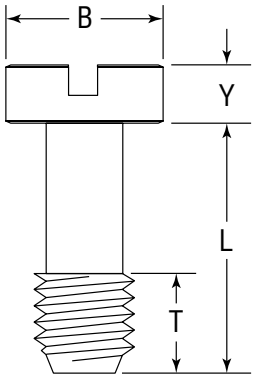
Series CFS2 Flush-Mounted Screw

Part Number Structure:
CFS2 440-40
- Screw Length
- Thread Code
- Series



Dimensions & Specifications

	Thread Size	Type	Thread Code	Screw Length Code	B Nom.	Y +.002 -.006	L ±.010	T Nom.
INCH (in.)	#4-40	CFS2	440	40	.18	.075	.33	.13
	#6-32	CFS2	632	40	.21	.075	.33	.13
	#8-32	CFS2	832	40	.25	.075	.33	.13
	#10-32	CFS2	1032	40	.28	.075	.33	.13

Dimensions & Specifications

	Thread Size	Type	Thread Code	Screw Length Code	B Nom.	Y +0.05 -0.15	L ±0.25	T Nom.
METRIC (mm)	M3 x 0.5	CFS2	M3	40	4.7	1.9	8.3	3.3
	M4 x 0.7	CFS2	M4	40	6.3	.1.9	8.3	3.3
	M5 x 0.8	CFS2	M5	40	7.1	1.9	8.3	3.3

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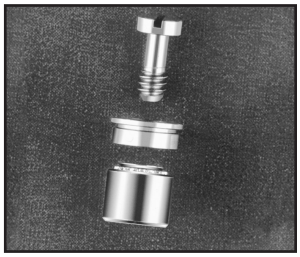
Flush-Mounted Panel Screw Components

Series CFS2, CFR2 & CFN2



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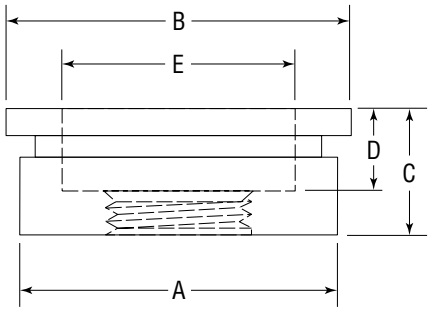
Series CFR2 Flush-Mounted Retainer

Part Number Structure:

CFR2 440

- 440 → Thread Code
- CFR2 → Series



Dimensions & Specifications

	Thread Size	Type	Thread Code	C Max.	Min. Self-clinching	Min. Flush Install.	+.003 -.000	E Nom.	A Max.	B Nom.	D Nom.	Min.
INCH (in.)	#4-40	CFR2	440	.124	.050	.125	.281	.195	.280	.310	.075	.310
	#6-32	CFR2	632	.124	.050	.125	.312	.225	.311	.340	.075	.330
	#8-32	CFR2	832	.124	.050	.125	.344	.255	.343	.370	.075	.340
	#10-32	CFR2	1032	.124	.050	.125	.375	.290	.374	.410	.075	.360

Dimensions & Specifications

	Thread Size	Type	Thread Code	C Max.	Min. Self-clinching	Min. Flush Install.	+0.08 -0.00	E Nom.	A Max.	B Nom.	D Nom.	Min.
METRIC (mm)	M3 x 0.5	CFR2	M3	3.15	1.40	3.20	7.10	5.00	7.08	7.90	2.0	7.90
	M4 x 0.7	CFR2	M4	3.15	1.40	3.20	8.75	6.50	8.71	9.50	2.0	8.70
	M5 x 0.8	CFR2	M5	3.15	1.40	3.20	9.50	7.40	9.47	10.30	2.0	9.20

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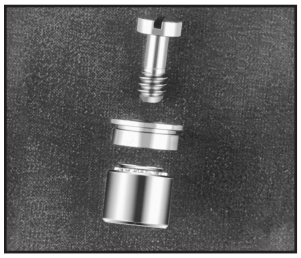

Flush-Mounted Panel Screw Components

Series CFS2, CFR2 & CFN2

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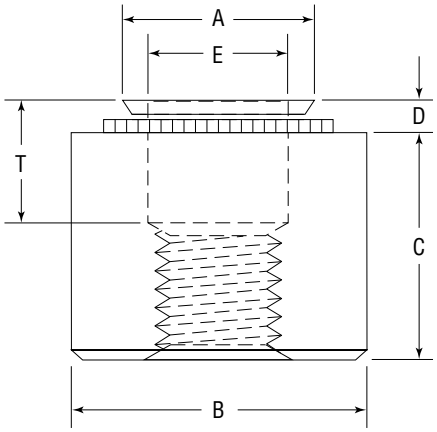
Series CFN2 Self-Clinching Nut

Part Number Structure:

CFN2 440-1

- Shank Code
- Thread Code
- Series



Dimensions & Specifications

	Thread Size	Type	Thread Code	Shank Code	D Max.	Min.	+.003 -.000	A Max.	B Nom.	T ±.010	E Nom.	C ±.005	Min.
INCH (in.)	#4-40	CFN2	440	1	.038	.040	.187	.186	.280	.130	.120	.240	.220
	#6-32	CFN2	632	1	.038	.040	.213	.212	.310	.130	.150	.240	.270
	#8-32	CFN2	832	1	.038	.040	.250	.249	.340	.130	.180	.240	.280
	#10-32	CFN2	1032	1	.038	.040	.277	.276	.370	.130	.210	.240	.310

Dimensions & Specifications

	Thread Size	Type	Thread Code	Shank Code	D Max.	Min.	+0.08 -0.00	A Max.	B Nom.	T ±0.25	E Nom.	C ±0.13	Min.
METRIC (mm)	M3 x 0.5	CFN2	M3	1	0.97	1.00	4.75	4.73	7.10	3.30	3.20	6.00	7.90
	M4 x 0.7	CFN2	M4	1	0.97	1.00	6.40	6.38	8.70	3.30	4.70	6.00	8.70
	M5 x 0.8	CFN2	M5	1	0.97	1.00	7.00	6.96	9.50	3.30	5.40	6.00	9.20

NOTES