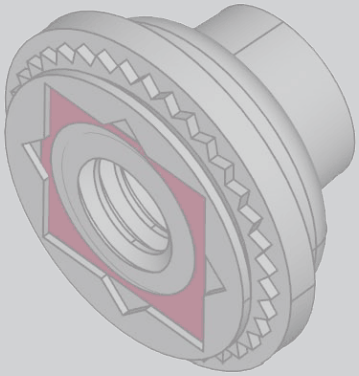
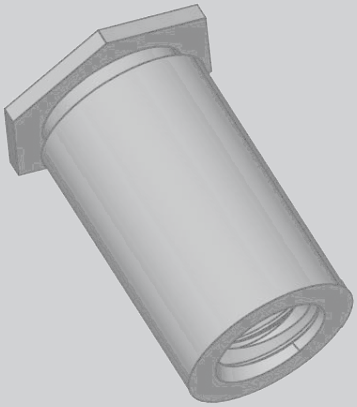
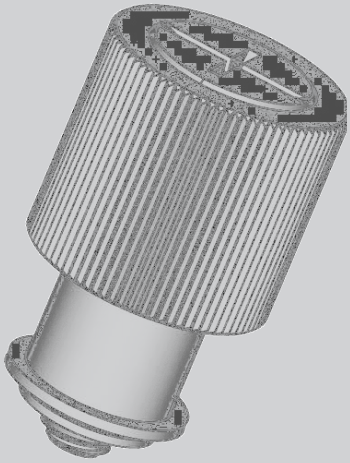
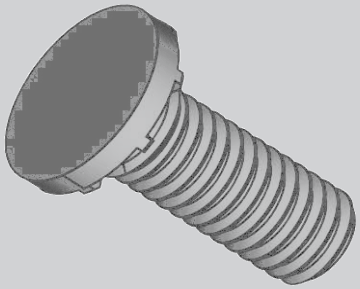
captive®

fastener corporation



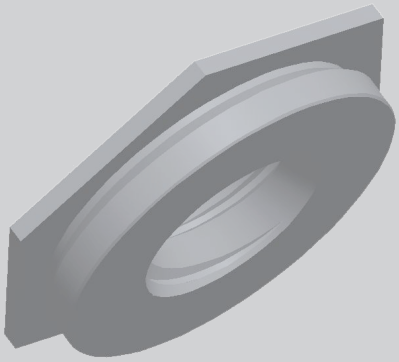




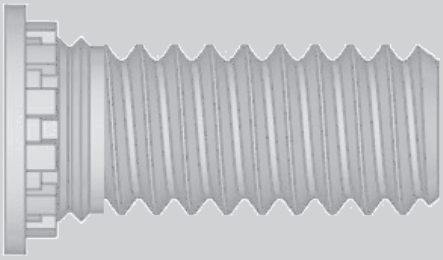


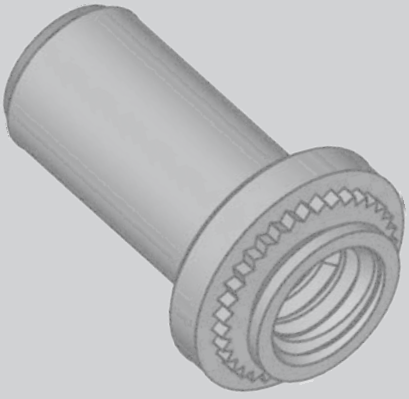


CAPTIVE FASTENER CORPORATION
Est. 1974
OAKLAND, NJ

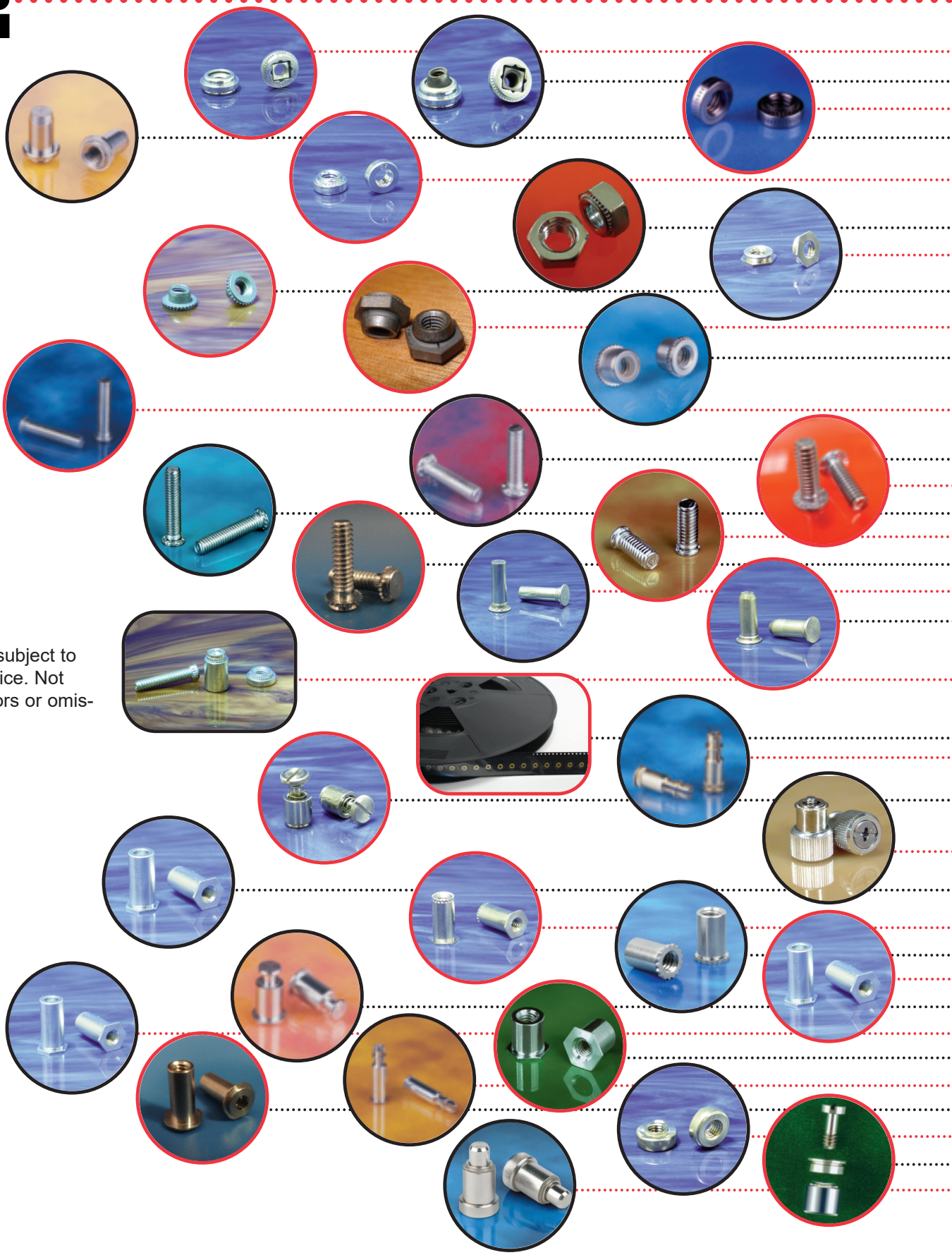


## SELF-CLINCHING FASTENERS





# Self-Clinching Fasteners



Specifications are subject to change without notice. Not responsible for errors or omissions.

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"PEM" is a registered trademark of PennEngineering®

# 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:**




Captive has two facilities containing a total of over 100,000 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.




**Product Conformance:**

ROHS (Restricted use of Hazardous Materials) - Captive is compliant with the European Union RoHS Directive, as it applies to certain restricted hazardous substances in the fasteners we currently manufacture.

DFARS (Defense Federal Acquisition Regulation Supplement) - Upon Request when ordering, Captive can provide product that is manufactured from materials that are produced in the United States or a qualified country.

REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) - All current Captive products are exempt from REACH since they do not have SVHC's (Substance of Very High Concern) exceeding the 0.1% by weight limit, set by the European Chemicals Agency (ECHA).

**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.

**Website:**

Visit our website at www.captive-fastener.com, where you can view the latest product information, find a local distributor, request a quote and download 3D CAD drawings to include in your new design project.

**Approved supplier for major OEM's (partial listing)...**

| | | | |
|---|---|---|---|
| ATT | IGT | ITT | Dell |
| Cisco | Motorola | BMW | Nokia |
| Daktronics | Harris | Xerox | Ericsson |
| Honeywell | GE | Hewlett Packard | Alcatel-Lucent |
| 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.

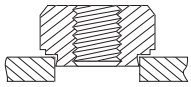
**Advantages:**

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.

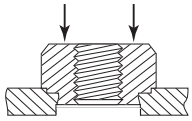
**Installation Principles:**

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.

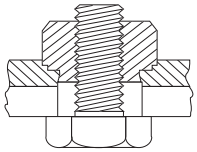
**Typical Self-Clinching Nut Installation**



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

**Interchangability:**

All Captive self-clinching fasteners conform to industry standards, which enables them to be fed through all standard automatic insertion equipment, and provide a substitute for form, fit and function.

## Typical applications for Captive self-clinching fasteners:

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

# Finishes

## Available finishes for self-clinching fasteners from Captive:

| Finish | Chromate | Suffix | RoHs |
|---|---|---|---|
| Black Dry Film Lube | -------- | ML | Yes |
| Black Nitrate | -------- | BN | Yes |
| Black Oxide | -------- | BO | Yes |
| Bright Acid Tin | -------- | BT | Yes |
| Cadmium | Black | CB | No |
| Cadmium | Yellow | CC | No |
| Cadmium | Clear | CI | No |
| Cadmium | Dry Film Lube | EF | No |
| Copper Flash | -------- | CF | Yes |
| Copper, Nickel, Tin | -------- | CT | Yes |
| Dacromet 320 | -------- | DM | No |
| Electro Tin | -------- | ET | Yes |
| Electro Tin (Matte Finish) | -------- | MT | Yes |
| Geomet | -------- | GM | Yes |
| LM1293 | -------- | LM | Yes |
| Nickel over Copper Flash | -------- | NC | Yes |
| Nickel Plate | -------- | NI | Yes |
| Nylon Locking Patch | -------- | NP | Yes |
| Tin Lead | -------- | TL | No |
| Zinc (*) | Clear | ZI | Yes |
| Zinc with Sealer (**) | Clear | ZS | Yes |
| Zinc (***) | Black | ZB | Yes |
| Zinc (***) | Blue | BZ | Yes |
| Zinc (***) | Green | ZG | Yes |
| Zinc (***) | Red | ZR | Yes |
| Zinc (***) | Yellow | ZC | Yes |
| None | -------- | X | Yes |

*Other Finishes available upon request*

Notes:

1. Unless otherwise specified self clinching fasteners will be provided with zinc/clear chromate (ZI).
2. P/N Structure example:
   C632-1 ZC
   ↳ Finish
3. In accordance with ANSI B1.1(inch) and ANSI B1.13M(metric) specifications, the maximum major diameter and pitch diameter of class 2A/6g plated studs can be gauged to class 3A/4h.

* Zinc with clear trivalent chromate, 5um thickness on all significant surfaces, withstand 12 hours salt spray to white corrosion. Reference applicable sections- ASTM B633, ASTM F1941, ASTM F1941M & ASTM B117.

** Zinc with clear trivalent chromate and sealer, 5um thickness on all significant surfaces, withstand 72 hours salt spray to white corrosion. Reference applicable sections- ASTM B633, ASTM F1941, ASTM F1941M & ASTM B117.

*** Zinc with color trivalent chromate, 5um thickness on all significant surfaces, withstand 96 hours salt spray to white corrosion. Reference applicable sections- ASTM B633, ASTM F1941, ASTM F1941M & ASTM B117.

## Captive Trade Mark Legend:

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

△ -STUDS ⬡ -FLOATING NUT ||||| -CFSP NUTS CF - STEEL &STAINLESS NUTS (Cold Formed)



# Locking Patch

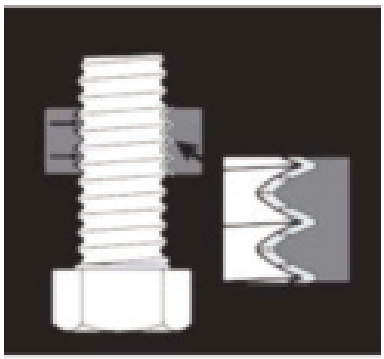
## Offered by Captive Fastener

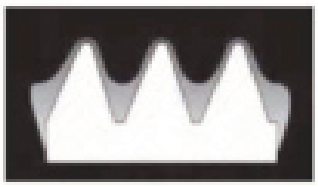
The ND Patch coating process produces a completely dry producto that is fused to the fastener and is ready to use right our of the box. ND Patch performs innediately upon assemly with no curing time required.

### How ND Patch Works:

- When assembly with a matin part the resilient ND Patch is compressed. The compressed engineering plastic (typically a Nylon Patch) provides locking action in the thread instead of at the bearing surface due to its vibration dampening characteristics. In general, the resilience of ND Patch holds the fastener in place with our adhesives or thread distortion. Due to its resilience, Patch can be repleadedly adjusted and reused.

- ND Patch is normally positioned on to three threads back from the end of the fastener to assure ease of starting. The normal coating length of the Patch is four to six threads. Special Patch location and coating length can be specified for specific applications.





### Features:

Saves Time: Fasteners coated with ND Patch can be automatically fed through standard feeding devices.

Retains Full Strength: ND Patch process involves no drilling or milling, so there is no loss of the fastener's Strength or hardness and any troublesome burrs or chips.

Saves Money: Use of ND Patch eliminates the need for costly lock washers, cotter pins, or castellated nuts. You get a close fit without the cost involved in obtaining close tolerances. Moreover, ND Patch is less expensive that applying bottle thread locking compounds at the point of assembly.

Resists Heat & Cold: ND Patch meets and exceeds IFI Specifications 124 & 524 as well as Military specification MIL-DTL-18240F, Type P, for temperatures from -70°F (-56°C) to -250°F (121°C).

Chemical Resistant: ND Patch will not dry , Shrink, or lose resiliency when exposed to commercial solvents, alcohol, gasoline, oil, caustic soda, jet fuel, etc.

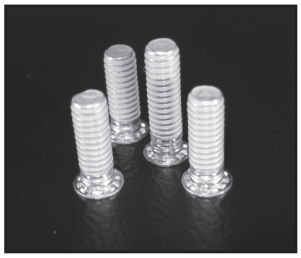
Reuseable: Fasteners coated with ND Patch can be reused repeatedly with our damage to threads. ND Patch is particularly resistant to deformation, which makes it ideal for repeated use.

*Note: Minimum Order Quantities Apply.*

*ND Patch® is a registered trademark of ND Industries.*

# Thread Coating

## Offered by Captive Fastener



**ND LM-1293®**

ND LM-1293 is an automotive approved process in which fasteners are accurately coated with on of a variety of thread masking and lubricating materials. The use of a Teflon® type material and a proprietary binder system in ND LM-1293 makes it the ideal coating for many applications.

**Description:**

ND LM-1293 can be applied to male or female, ferrous or non-ferrous threaded fasteners if virtually any finish. It is a cross-linked coating providoring excellent solvent resistance, high temperature resistance, e-coat resistance (as specified under GM6076-M), resistance to weld spatter, and improvement to torque-tension properties.

ND LM-1293 lubricates fastener threads to reduce driving friction, heat buildup, and thread galling in long rundowns while helping to ensure uniform clamp loading.

To meet your specific applications meeds, ND LM-1293 employs a wide range of polymers, including fluorinated ethylene polymer (Teflon®-type) material.

**Features:**

Reliable Masking: ND LM-1293 prevents undesirable substances such as electrodeposits undercoating, weld spatter and some other materials from adhering to fastener threads.

Low Heat Process: Unlike competitive processes which often subject parts to extremely high temperatures that may damage or discolor the fastener, ND's unique patented process employs minimal heat.

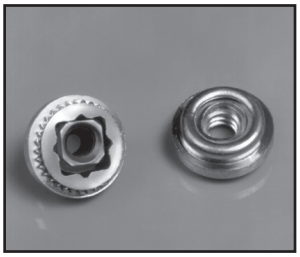
Minimal Pre-cleaning Requirements: Unlike competitive processes that require parts to be completely free of oil or toher rust preventative coatings, only parts with excess oil or surface contaminants may require pre-cleaning for ND LM-1293 processing.

Increases Productivity: By providing additional lubricity, ND LM-1293 speeds assembly operations and increases productivity.

Eliminates Capping and Plugging: ND LM-1293 eliminates the need to cap male and plug female threads.

*Note: Minimum Order Quantities Apply.*

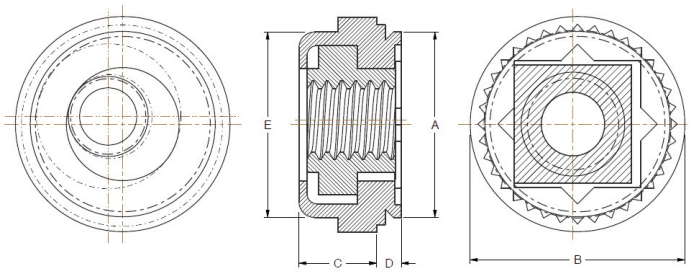
*ND LM-1293® is a registered trademark of ND Industries.*
*Teflon® is a registered trademark of Dupont de Nemeurs & Co. Inc.*



# Self-Clinching Floating Nuts

## Series CFAS & CFAC

CFAS & CFAC floating clinch nuts provide a self-clinching fastener with a floating nut that compensates for mating misalignments to .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 A967 |

*See Finish Spec. on Page 6.

Thread: Internal 2B, ANSI B1.1 (6H, ANSI/ASME B1.13M).

Float: .015 in. (.4mm) minimum in all directions from center, .030 in. (.8mm) total.

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

## *Dimensions & Specifications*

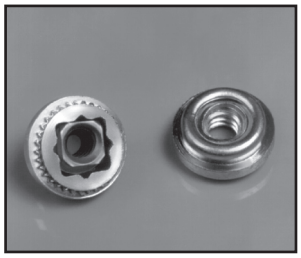
| | Thread Size | Part Number Carbon Steel | Part Number Stainless Steel | D Max | Min. | +.003 in. (.08mm) -.000(.00) | A Max | E Max | B ±.015 in. (±.38mm) | C Max | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | #4-40 | CFAS440-1 | CFAC440-1 | .038 | .038 | .290 | .289 | .290 | .36 | .130 | 0.3 |
| | | CFAS440-2 | CFAC440-2 | .054 | .054 | | | | | | |
| | #6-32 | CFAS632-1 | CFAC632-1 | .038 | .038 | .328 | .327 | .335 | .39 | .130 | 0.32 |
| | | CFAS632-2 | CFAC632-2 | .054 | .054 | | | | | | |
| | #8-32 | CFAS832-1 | CFAC832-1 | .038 | .038 | .368 | .367 | .365 | .44 | .130 | 0.34 |
| | | CFAS832-2 | CFAC832-2 | .054 | .054 | | | | | | |
| | #10-24 | CFAS1024-1 | CFAC1024-1 | .038 | .038 | .406 | .405 | .405 | .47 | .170 | 0.36 |
| | | CFAS1024-2 | CFAC1024-2 | .054 | .054 | | | | | | |
| | #10-32 | CFAS1032-1 | CFAC1032-1 | .038 | .038 | | | | | | |
| | | CFAS1032-2 | CFAC1032-2 | .054 | .054 | | | | | | |
| | 1/4-20 | CFAS420-2 | CFAC420-2 | .054 | .054 | .515 | .514 | .510 | .60 | .210 | 0.42 |
| | 1/4-28 | CFAS428-2 | CFAC428-2 | .054 | .054 | | | | | | |
| METRIC (mm) | M3x0.5 | CFASM3-1 | CFACM3-1 | .97 | .97 | 7.37 | 7.36 | 7.37 | 9.14 | 3.31 | 7.62 |
| | | CFASM3-2 | CFACM3-2 | 1.38 | 1.38 | | | | | | |
| | M4x0.7 | CFASM4-1 | CFACM4-1 | .97 | .97 | 9.35 | 9.33 | 9.28 | 11.18 | 3.31 | 8.64 |
| | | CFASM4-2 | CFACM4-2 | 1.38 | 1.38 | | | | | | |
| | M5x0.8 | CFASM5-1 | CFACM5-1 | .97 | .97 | 10.31 | 10.29 | 10.29 | 11.94 | 4.32 | 9.14 |
| | | CFASM5-2 | CFACM5-2 | 1.38 | 1.38 | | | | | | |
| | M6x1.0 | CFASM6-2 | CFACM6-2 | 1.38 | 1.38 | 13.08 | 13.06 | 12.96 | 15.24 | 5.34 | 10.67 |

†Not stocked, available on special order.

Continued on next page.

# Self-Clinching Floating 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 (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) |
| INCH (in.) | #4-40 | -1 | 3000 | 300 | 85 | 3000 | 220 | 65 | 1500 | 215 | 65 |
| | | -2 | 3000 | 300 | 150 | 3000 | 225 | 150 | 2000 | 225 | 80 |
| | #6-32 | -1 | 3000 | 300 | 150 | 3000 | 235 | 110 | 2000 | 240 | 140 |
| | | -2 | 3000 | 300 | 175 | 3000 | 275 | 150 | 2000 | 250 | 150 |
| | #8-32 | -1 | 3000 | 300 | 150 | 3000 | 240 | 110 | 2000 | 250 | 140 |
| | | -2 | 3000 | 400 | 200 | 3000 | 300 | 150 | 2000 | 265 | 150 |
| | #10-24 | -1 | 3500 | 400 | 150 | 3500 | 300 | 150 | 2000 | 300 | 150 |
| | | -2 | 3500 | 450 | 200 | 3500 | 300 | 200 | 2000 | 350 | 175 |
| | #10-32 | -1 | 3500 | 400 | 150 | 3500 | 300 | 150 | 2000 | 300 | 150 |
| | | -2 | 3500 | 450 | 200 | 3500 | 300 | 200 | 2000 | 350 | 175 |
| | 1/4-20 1/4-28 | -2 | 5000 | 500 | 325 | 5000 | 300 | 325 | 3000 | 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 | 13.3 | 1334 | 9.6 | 13.3 | 978 | 7.3 | 6.7 | 956 | 7.3 |
| | | -2 | 13.3 | 1334 | 16.9 | 13.3 | 1000 | 16.9 | 8.9 | 1000 | 9 |
| | M4 | -1 | 13.3 | 1334 | 16.9 | 13.3 | 1067 | 12.4 | 8.9 | 1112 | 15.8 |
| | | -2 | 13.3 | 1779 | 22.6 | 15.6 | 1334 | 16.9 | 8.9 | 1178 | 16.9 |
| | M5 | -1 | 15.6 | 1779 | 16.9 | 15.6 | 1334 | 16.9 | 8.9 | 1334 | 16.9 |
| | | -2 | 15.6 | 2001 | 22.6 | 16.6 | 1334 | 22.6 | 8.9 | 1556 | 19.7 |
| | M6 | -2 | 22.2 | 2224 | 36.7 | 22.2 | 1334 | 36.7 | 13.3 | 1779 | 36.7 |



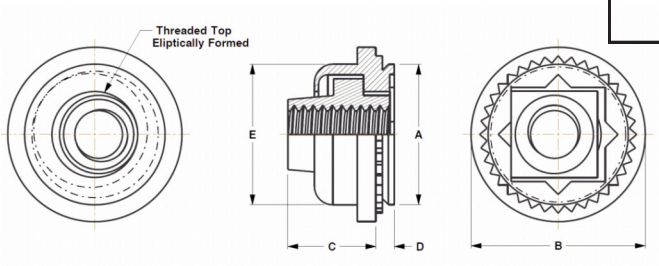
# Self-Clinching Floating Locking Nuts

## Series CFFS & CFFC

CFFS & CFFC floating clinch nuts provide a self-clinching fastener with a floating nut that compensates for mating misalignments to .030 inches (.8 mm) and provides prevailing torque for the mating screw equivalent to MIL-N-25027 specifications.

| Series | Material | | Finish | |
|---|---|---|---|---|
| | Body | Nut | Body | Nut |
| CFFS | Heat-treaded Carbon Steel | 300 Series Stainless Steel | Zinc* Clear | Black Dry Film Lubricant (ML) |
| CFFC | 300 Series Stainless Steel | 300 Series Stainless Steel | Passivated ASTM A967 | Black Dry Film Lubricant (ML) |

*See Finish Spec. on Page 6.
Spec. MIL-L-46010 available




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

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

Float: .015 in. (.4mm) minimum in all directions from center, .030 in. (.8mm) total.

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

## *Dimensions & Specifications*

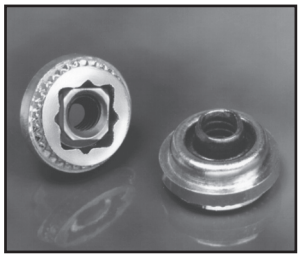
| | Thread Size | Part Number: Carbon Steel | Part Number: Stainless Steel | D Max | Min. | +.003 in. (.08mm) - .000(0.00) | A Max | E Max | B ±.015 in. (±.38mm) | C Max | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | #4-40 | CFFS440-1 | CFFC440-1 | .038 | .038 | .290 | .289 | .290 | .36 | .190 | 0.3 |
| | | CFFS440-2 | CFFC440-2 | .054 | .054 | | | | | | |
| | #6-32 | CFFS632-1 | CFFC632-1 | .038 | .038 | .328 | .327 | .335 | .39 | .200 | 0.32 |
| | | CFFS632-2 | CFFC632-2 | .054 | .054 | | | | | | |
| | #8-32 | CFFS832-1 | CFFC832-1 | .038 | .038 | .368 | .367 | .365 | .44 | .210 | 0.34 |
| | | CFFS832-2 | CFFC832-2 | .054 | .054 | | | | | | |
| | #10-24 | CFFS1024-1 | CFFC1024-1 | .038 | .038 | .406 | .405 | .405 | .47 | .270 | 0.36 |
| | | CFFS1024-2 | CFFC1024-2 | .054 | .054 | | | | | | |
| | #10-32 | CFFS1032-1 | CFFC1032-1 | .038 | .038 | | | | | | |
| | | CFFS1032-2 | CFFC1032-2 | .054 | .054 | | | | | | |
| | 1/4-20 | CFFS420-2 | CFFC420-2 | .054 | .054 | .515 | .514 | .510 | .60 | .310 | 0.42 |
| | 1/4-28 | CFFS428-2 | CFFC428-2 | .054 | .054 | | | | | | |
| METRIC (mm) | M3x0.5 | CFFSM3-1 | CFFCM3-1 | .97 | .97 | 7.37 | 7.36 | 7.337 | 9.14 | 4.83 | 7.62 |
| | | CFFSM3-2 | CFFCM3-2 | 1.38 | 1.38 | | | | | | |
| | M4x0.7 | CFFSM4-1 | CFFCM4-1 | .97 | .97 | 9.35 | 9.33 | 9.28 | 11.18 | 6.34 | 8.64 |
| | | CFFSM4-2 | CFFCM4-2 | 1.38 | 1.38 | | | | | | |
| | M5x0.8 | CFFSM5-1 | CFFCM5-1 | .97 | .97 | 10.31 | 10.29 | 10.29 | 11.94 | 6.86 | 9.14 |
| | | CFFSM5-2 | CFFCM5-2 | 1.38 | 1.38 | | | | | | |
| | M6x1.0 | CFFSM6-2 | CFFCM6-2 | 1.38 | 1.38 | 13.08 | 13.06 | 12.96 | 15.24 | 7.88 | 10.67 |

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

Continued on next page.

# Self-Clinching Floating Locking Nuts

## Series CFFS & CFFC



Continued from previous page.

### *Installation & Performance Data*

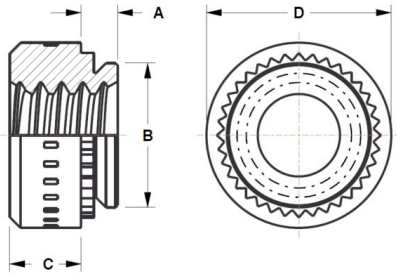
| | Thread Size | Shank | Cold-rolled Steel | | | 2024-T3 Aluminum | | | 5052-H34 Aluminum | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) |
| INCH (in.) | #4-40 | -1 | 3000 | 300 | 85 | 3000 | 220 | 65 | 1500 | 215 | 65 |
| | | -2 | 3000 | 300 | 150 | 3000 | 225 | 150 | 2000 | 225 | 80 |
| | #6-32 | -1 | 3000 | 300 | 150 | 3000 | 235 | 110 | 2000 | 240 | 140 |
| | | -2 | 3000 | 300 | 175 | 3000 | 275 | 150 | 2000 | 250 | 150 |
| | #8-32 | -1 | 3000 | 300 | 150 | 3000 | 240 | 110 | 2000 | 250 | 140 |
| | | -2 | 3000 | 400 | 200 | 3000 | 300 | 150 | 2000 | 265 | 150 |
| | #10-24 | -1 | 3500 | 400 | 150 | 3500 | 300 | 150 | 2000 | 300 | 150 |
| | | -2 | 3500 | 450 | 200 | 3500 | 300 | 200 | 2000 | 350 | 175 |
| | #10-32 | -1 | 3500 | 400 | 150 | 3500 | 300 | 150 | 2000 | 300 | 150 |
| | | -2 | 3500 | 450 | 200 | 3500 | 300 | 200 | 2000 | 350 | 175 |
| | 1/4-20 1/4-28 | -2 | 5000 | 500 | 325 | 5000 | 300 | 325 | 3000 | 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 | 1334 | 9.6 | 13.3 | 978 | 7.3 | 6.7 | 956 | 7.3 |
| | | -2 | 13 | 1334 | 16.9 | 13.3 | 1000 | 16.9 | 8.9 | 1000 | 9 |
| | M4 | -1 | 13 | 1334 | 16.9 | 13.3 | 1067 | 12.4 | 8.9 | 1112 | 15.8 |
| | | -2 | 13 | 1779 | 22.6 | 15.6 | 1334 | 16.9 | 8.9 | 1178 | 16.9 |
| | M5 | -1 | 15 | 1779 | 16.9 | 15.6 | 1334 | 16.9 | 8.9 | 1334 | 16.9 |
| | | -2 | 15 | 2001 | 22.6 | 16.6 | 1334 | 22.6 | 8.9 | 1556 | 19.7 |
| | M6 | -2 | 22 | 2224 | 36.7 | 22.2 | 1334 | 36.7 | 13.3 | 1779 | 36.7 |



# 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 (.8mm).




| Series | Material | Finish |
|---|---|---|
| CFSP | Precipitation Hardened Stainless Steel | Passivated ASTM A967 |

Thread: Internal 2B, ANSI B1.1 (6H, ANSI/ASME B1.13M).

Use in: Materials with Rockwell Hardness of B-90 or less.

### *Dimensions & Specifications*

| | Thread Size | Part Number | A Max. | Min. | +.003 in. (.08 mm) –.000 (.00) | 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 | .090 | | | | | |
| METRIC (mm) | M3 x 0.5 | CFSPM3-0 | .77 | .8-1 | 4.22 | 4.2 | 1.5 | 6.35 | 4.8 |
| | | CFSPM3-1 | .97 | 1.0 | | | | | |
| | | CFSPM3-2 | 1.38 | 1.4 | | | | | |
| | M4 x 0.7 | CFSPM4-0 | .77 | .8-1 | 5.41 | 5.38 | 2 | 7.87 | 6.9 |
| | | CFSPM4-1 | .97 | 1.0 | | | | | |
| | | CFSPM4-2 | 1.38 | 1.4 | | | | | |
| | M5 x 0.8 | CFSPM5-0 | .77 | .8-1 | 6.35 | 6.33 | 2 | 8.75 | 7.1 |
| | | CFSPM5-1 | .97 | 1.0 | | | | | |
| | | CFSPM5-2 | 1.38 | 1.4 | | | | | |
| | M6 x 1.0 | CFSPM6-1 | 1.38 | 1.4 | 8.75 | 8.73 | 4.08 | 11.1 | 8.6 |

Continued on next page.

# Self-Clinching Nuts for Stainless Steel

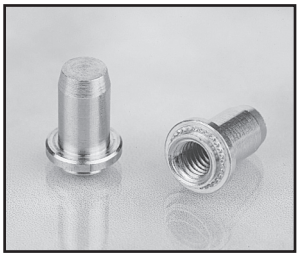
## Series CFSP



Continued from previous page.

### *Installation & Performance Data*

| | Thread Size | Shank Code | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) |
|---|---|---|---|---|---|
| INCH (in.) | #4-40 | -0 | 8000 | 130 | 14 |
| | | -1 | 9000 | 165 | 17 |
| | | -2 | 10000 | 290 | 18 |
| | #6-32 | -0 | 8500 | 140 | 18 |
| | | -1 | 9500 | 170 | 24 |
| | | -2 | 10500 | 340 | 28 |
| | #8-32 | -0 | 9000 | 145 | 30 |
| | | -1 | 10000 | 180 | 37 |
| | | -2 | 11000 | 360 | 45 |
| | #10-32 | -0 | 9500 | 180 | 35 |
| | | -1 | 10500 | 230 | 45 |
| | | -2 | 11500 | 400 | 60 |
| | 1/4-20 | -1 | 13500 | 450 | 150 |
| | | -2 | 13500 | 600 | 170 |
| | **Thread Size** | **Shank Code** | **Installation Force (kN)** | **Pushout (N)** | **Torque-out (N•m)** |
| METRIC (mm) | M3 | -0 | 35.6 | 575 | 1.58 |
| | | -1 | 40 | 725 | 1.92 |
| | | -2 | 44.5 | 1290 | 2.03 |
| | M4 | -0 | 40 | 645 | 3.38 |
| | | -1 | 44.5 | 800 | 4.18 |
| | | -2 | 49 | 1600 | 5.08 |
| | M5 | -0 | 42.3 | 800 | 3.95 |
| | | -1 | 46.7 | 1025 | 5.08 |
| | | -2 | 51.2 | 1775 | 6.77 |
| | M6 | -1 | 60 | 2000 | 17 |



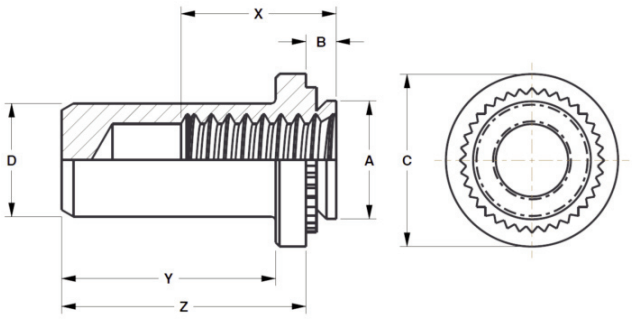
# Self-Clinching Blind Press Nuts

## 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 A967 |

*See Finish Spec. on Page 6.




Thread: Internal 2B, ANSI B1.1 (6H, ANSI/ASME B1.13M).

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

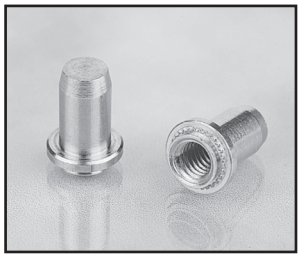
## Dimensions & Specifications

| | Thread Size | Part Number: Carbon Steel | Part Number: Stainless Steel | Barrel Dia. D Max. | Min. | +.003 in. (.08 mm) -.000(.00) | Shank Dia A Max. | Y Max | B Max | C ±.01 in. (±.25mm) | Z ±.01 in. (±.25mm) | Min. | X Depth Full Thread Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | 440 | CFB440-1 | CFBS440-1 | .149 | .040 | .166 | .165 | .335 | .038 | .25 | .38 | .19 | .21 |
| | | CFB440-2 | CFBS440-2 | | .056 | | | | .054 | | | | |
| | 632 | CFB632-1 | CFBS632-1 | .169 | .040 | .187 | .186 | .335 | .038 | .28 | .38 | .22 | .23 |
| | | CFB632-2 | CFBS632-2 | | .056 | | | | .054 | | | | |
| | 832 | CFB832-1 | CFBS832-2 | .204 | .040 | .213 | .212 | .385 | .038 | .31 | .44 | .27 | .28 |
| | | CFB832-2 | CFBS832-2 | | .056 | | | | .054 | | | | |
| | 1032 | 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) | M3X0.5 | CFBM3-1 | CFBSM3-1 | 3.8 | 1.0 | 4.25 | 4.22 | 8.5 | .97 | 6.35 | 9.6 | 4.8 | 5.3 |
| | | CFBM3-2 | CFBSM3-2 | | 1.4 | | | | 1.37 | | | | |
| | M4X0.7 | CFBM4-1 | CFBSM4-1 | 5.2 | 1.0 | 5.4 | 5.38 | 9.87 | .97 | 7.95 | 11.2 | 6.9 | 7.1 |
| | | CFBM4-2 | CFBSM4-2 | | 1.4 | | | | 1.37 | | | | |
| | M5X0.8 | CFBM5-1 | CFBSM5-1 | 6.0 | 1.0 | 6.4 | 6.38 | 9.8 | .97 | 8.75 | 11.2 | 7.1 | 7.1 |
| | | CFBM5-2 | CFBSM5-2 | | 1.4 | | | | 1.37 | | | | |
| | M6X1.0 | CFBM6-1 | CFBSM6-1 | 7.8 | 1.4 | 8.75 | 8.75 | 12.7 | 1.37 | 11.10 | 14.3 | 8.6 | 7.8 |
| | | CFBM6-2 | CFBSM6-2 | | 2.3 | | | | 2.21 | | | | |

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# Self-Clinching Blind Press Nuts

## Series CFB & CFBS

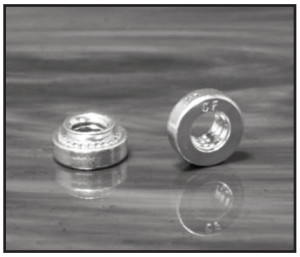


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## Installation & Performance Data

| | Thread Size | Shank Code | 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 | -1 | .040 | 2500 | 125 | 13 | 1600 | 90 | 10 |
| | | -2 | .056 | 3500 | 230 | 18 | 2000 | 170 | 13 |
| | #6-32 | -1 | .040 | 3000 | 130 | 18 | 1800 | 95 | 17 |
| | | -2 | .056 | 4000 | 260 | 28 | 2800 | 190 | 22 |
| | #8-32 | -1 | .040 | 3500 | 135 | 30 | 2000 | 105 | 23 |
| | | -2 | .056 | 5000 | 285 | 45 | 3000 | 220 | 35 |
| | #10-32 | -1 | .040 | 4000 | 140 | 35 | 2100 | 110 | 32 |
| | | -2 | .056 | 5000 | 250 | 60 | 3500 | 190 | 50 |
| | 1/4-20 | -1 | .056 | 6000 | 400 | 105 | 4000 | 315 | 90 |
| | | -2 | .090 | | | | | | |

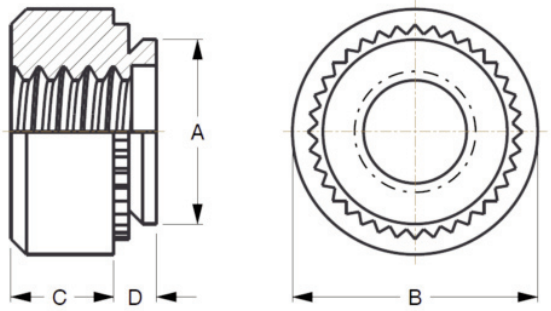
| | Thread Size | Shank Code | Min. | Cold Rolled Steel: Installation Force (kN) | Cold Rolled Steel: Pushout (N) | Cold Rolled Steel: Torque Out (N•m) | 5052-H34 Aluminum: Installation Force (kN) | 5052-H34 Aluminum: Pushout (N) | 5052-H34 Aluminum: Torque Out (N•m) |
|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm) | M3 | -1 | 1 | 11.1 | 550 | 1.5 | 7.1 | 400 | 1.15 |
| | | -2 | 1.4 | 14 | 1010 | 2.05 | 9 | 750 | 1.47 |
| | M4 | -1 | 1 | 15.6 | 600 | 3.4 | 8.9 | 470 | 2.6 |
| | | -2 | 1.4 | 20 | 1250 | 5.1 | 12.5 | 970 | 4 |
| | M5 | -1 | 1 | 17.8 | 620 | 5 | 9.3 | 480 | 3.6 |
| | | -2 | 1.4 | 25 | 1112 | 6.8 | 14 | 845 | 5.7 |
| | M6 | -1 | 1.4 | 25.7 | 1760 | 11.9 | 17.8 | 1400 | 10.2 |
| | | -2 | 2.3 | | | | | | |



# Self-Clinching Nuts

## Series C & CS

C & CS nuts provide strong load-bearing threads in sheet metal and other thin section assemblies. Some C & CS nuts meet specification features of NASM45938/1.




| Series | Material | Finish |
|---|---|---|
| C | Heat-treated Carbon Steel | Zinc* Clear |
| CS | 300 Series Stainless Steel | Passivated ASTM A967 |

*See Finish Spec. on Page 6.

Thread: Internal 2B, ANSI B1.1 (6H, ANSI/ASME B1.13M).

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 | .090 | | | | | |
| | #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 | .090 | | | | | |
| | #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 | .090 | | | | | |
| | #6-32 | C632-0 | CS632-0 | .030 | .030 | .1875 | .187 | .280 | .070 | .22 |
| | | C632-1 | CS632-1 | .038 | .040 | | | | | |
| | | C632-2 | CS632-2 | .054 | .056 | | | | | |
| | | C632-3 | CS632-3 | .087 | .090 | | | | | |
| | #8-32 | C832-0 | CS832-0 | .030 | .030 | .213 | .212 | .310 | .090 | .27 |
| | | C832-1 | CS832-1 | .038 | .040 | | | | | |
| | | C832-2 | CS832-2 | .054 | .056 | | | | | |
| | | C832-3 | CS832-3 | .087 | .090 | | | | | |

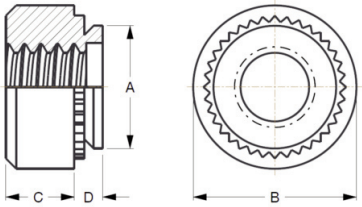
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# Self-Clinching Nuts

## Series C & CS



Continued from previous page.




### 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 | .340 | .090 | .28 |
| | | C1024-1 | CS1024-1 | .038 | .040 | | | | | |
| | | C1024-2 | CS1024-2 | .054 | .056 | | | | | |
| | | C1024-3 | CS1024-3 | .087 | .090 | | | | | |
| | #10-32 | C1032-0 | CS1032-0 | .030 | .030 | .250 | .249 | .340 | .090 | .28 |
| | | C1032-1 | CS1032-1 | .038 | .040 | | | | | |
| | | C1032-2 | CS1032-2 | .054 | .056 | | | | | |
| | | C1032-3 | CS1032-3 | .087 | .090 | | | | | |
| | #12-24 | C1224-1 | CS1224-1 | .038 | .040 | .277 | .276 | .370 | .130 | .31 |
| | | C1224-2 | CS1224-2 | .054 | .056 | | | | | |
| | | C1224-3 | CS1224-3 | .087 | .090 | | | | | |
| | 1/4-20 | C420-0 | CS420-0 | .045 | .047 | .344 | .343 | .440 | .170 | .34 |
| | | C420-1 | CS420-1 | .054 | .056 | | | | | |
| | | C420-2 | CS420-2 | .087 | .090 | | | | | |
| | | C420-3 | CS420-3 | .120 | .125 | | | | | |
| | 1/4-28 | C428-1 | CS428-1 | .054 | .056 | .344 | .343 | .440 | .170 | .34 |
| | | C428-2 | CS428-2 | .087 | .090 | | | | | |
| | | 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 | .090 | | | | | |
| | | 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 | .090 | | | | | |
| | | C524-3 | CS524-3 | .120 | .125 | | | | | |
| | 3/8-16 | C616-1 | CS616-1 | .087 | .090 | .500 | .499 | .560 | .270 | .44 |
| | | C616-2 | CS616-2 | .120 | .125 | | | | | |
| | | C616-3 | CS616-3 | .235 | .250 | | | | | |
| | 3/8-24 | C624-1 | CS624-1 | .087 | .090 | .500 | .499 | .560 | .270 | .44 |
| | | C624-2 | CS624-2 | .120 | .125 | | | | | |
| | | C624-3 | CS624-3 | .235 | .250 | | | | | |
| | 1/2-13 | C813-1 | CS813-1 | .120 | .125 | .656 | .655 | .810 | .360 | .63 |
| | | C813-2 | CS813-2 | .235 | .250 | | | | | |

Continued on next page.



# Self-Clinching Nuts

## Series C & CS

Continued from previous page.

### Dimensions & Specifications

| | Thread Size | Part Number: Carbon Steel | Part Number: Stainless Steel | D Max. | Min. | +.08 mm –.00 | A Max. | B ±.25 mm | C ±.25 mm | Min. |
|---|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm) | M2 x 0.4 | CM2-0 | CSM2-0 | .77 | .8 | 4.22 | 4.20 | 6.35 | 1.5 | 4.8 |
| | | CM2-1 | CSM2-1 | .97 | 1.0 | | | | | |
| | | CM2-2 | CSM2-2 | 1.38 | 1.4 | | | | | |
| | | CM2-3 | CSM2-3 | 2.21 | 2.29 | | | | | |
| | M2.5 x 0.45 | CM2.5-0 | CSM2.5-0 | .77 | .8 | 4.22 | 4.20 | 6.35 | 1.5 | 4.8 |
| | | CM2.5-1 | CSM2.5-1 | .97 | 1.0 | | | | | |
| | | CM2.5-2 | CSM2.5-2 | 1.38 | 1.4 | | | | | |
| | | CM2.5-3 | CSM2.5-3 | 2.21 | 2.29 | | | | | |
| | M3 x 0.5 | CM3-0 | CSM3-0 | .77 | .8 | 4.22 | 4.20 | 6.35 | 1.5 | 4.8 |
| | | CM3-1 | CSM3-1 | .97 | 1.0 | | | | | |
| | | CM3-2 | CSM3-2 | 1.38 | 1.4 | | | | | |
| | | CM3-3 | CSM3-3 | 2.21 | 2.29 | | | | | |
| | M3.5 x 0.6 | CM3.5-0 | CSM3.5-0 | .77 | .8 | 4.75 | 4.73 | 7.11 | 1.5 | 5.6 |
| | | CM3.5-1 | CSM3.5-1 | .97 | 1.0 | | | | | |
| | | CM3.5-2 | CSM3.5-2 | 1.38 | 1.4 | | | | | |
| | | CM3.5-3 | CSM3.5-3 | 2.21 | 2.29 | | | | | |
| | M4 x 0.7 | CM4-0 | CSM4-0 | .77 | .8 | 5.41 | 5.38 | 7.87 | 2.0 | 6.9 |
| | | CM4-1 | CSM4-1 | .97 | 1.0 | | | | | |
| | | CM4-2 | CSM4-2 | 1.38 | 1.4 | | | | | |
| | | CM4-3 | CSM4-3 | 2.21 | 2.29 | | | | | |
| | M5 x 0.8 | CM5-0 | CSM5-0 | .77 | .8 | 6.35 | 6.33 | 8.64 | 2.0 | 7.1 |
| | | CM5-1 | CSM5-1 | .97 | 1.0 | | | | | |
| | | CM5-2 | CSM5-2 | 1.38 | 1.4 | | | | | |
| | | CM5-3 | CSM5-3 | 2.21 | 2.29 | | | | | |
| | M6 x 1.0 | CM6-0 | CSM6-0 | 1.15 | 1.2 | 8.75 | 8.73 | 11.18 | 4.08 | 8.6 |
| | | CM6-1 | CSM6-1 | 1.38 | 1.4 | | | | | |
| | | CM6-2 | CSM6-2 | 2.21 | 2.29 | | | | | |
| | | CM6-3† | CSM6-3 | 3.05 | 3.18 | | | | | |
| | M8 x 1.25 | CM8-1 | CSM8-1 | 1.38 | 1.4 | 10.5 | 10.47 | 12.7 | 5.47 | 9.7 |
| | | CM8-2 | CSM8-2 | 2.21 | 2.29 | | | | | |
| | | CM8-3† | CSM8-3 | 3.05 | 3.2 | | | | | |
| | M10 x 1.5 | CM10-1 | CSM10-1 | 2.21 | 2.29 | 14.0 | 13.97 | 17.35 | 7.48 | 13.5 |
| | | CM10-2 | CSM10-2 | 3.05 | 3.18 | | | | | |
| | | CM10-3† | CSM10-3† | 6.00 | 6.4 | | | | | |
| | M12 x 1.75 | CM12-1† | CSM12-1† | 3.05 | 3.18 | 17.0 | 16.95 | 20.57 | 8.5 | 16 |
| | | CM12-2† | CSM12-2† | 6.00 | 6.4 | | | | | |

†Not stocked, available upon special order.

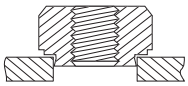
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# Self-Clinching Nuts

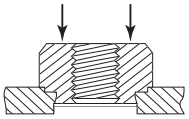
## Series C & CS



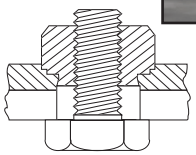
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Fastener Must Be Installed Squarely In Hole



Squeezing Force Is Applied To Head Of Fastener

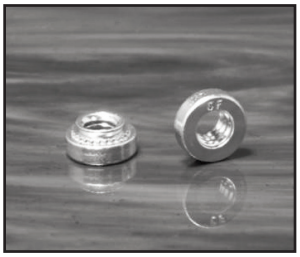


Install Bolt Or Screw From Opposite Side Of Head Of Fastener

### *Installation & Performance Data*

| | Thread Size | Shank Code | 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.) | #2-56<br>#3-48<br>#4-40 | -0<br>-1<br>-2<br>-3 | 2500-3500 | 105<br>125<br>230<br>230 | 13<br>15<br>18<br>18 | 1500-2000 | 63<br>90<br>170<br>170 | 8<br>10<br>13<br>13 |
| | #6-32 | -0<br>-1<br>-2<br>-3 | 3000-6000 | 110<br>130<br>275<br>275 | 16<br>20<br>28<br>28 | 2500-3000 | 63<br>95<br>190<br>190 | 16<br>17<br>22<br>22 |
| | #8-32 | -0<br>-1<br>-2<br>-3 | 4000-6000 | 110<br>145<br>285<br>285 | 26<br>35<br>45<br>45 | 2500-3000 | 68<br>105<br>220<br>220 | 21<br>23<br>35<br>35 |
| | #10-24<br>#10-32 | -0<br>-1<br>-2<br>-3 | 4000-9000 | 120<br>180<br>320<br>320 | 30<br>40<br>60<br>60 | 2500-3000 | 68<br>110<br>190<br>225 | 20<br>32<br>50<br>50 |
| | #12-24 | -1<br>-2<br>-3 | 5000-6500 | 200<br>350<br>350 | 74<br>80<br>80 | 2500-6500 | 120<br>285<br>285 | 63<br>70<br>70 |
| | 1/4-20<br>1/4-28 | -0<br>-1<br>-2-3 | 6000-8000 | 315<br>400 | 115<br>150 | 4000-7000 | 220<br>360 | 70<br>90<br>125 |
| | 5/16-18<br>5/16-24 | -1<br>-2-3 | 6000-8000 | 420<br>420 | 165<br>180 | 4000-7000 | 380<br>380 | 120<br>160 |
| | 3/8-16<br>3/8-24 | -1-2-3 | 7000-11000 | 460 | 320 | 5000-8000 | 400 | 270 |
| | 1/2-13 | -1-2 | 10000-15000 | 1050 | 735 | 7000-9000 | 475 | 350 |

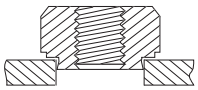
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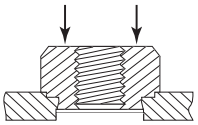
# Self-Clinching Nuts

## Series C & CS

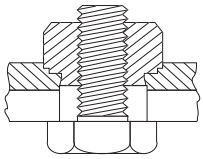
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Fastener Must Be Installed Squarely In Hole



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 | | | 5052-H34 Aluminum | | |
|---|---|---|---|---|---|---|---|---|
| | | | Installation Force (kN) | Pushout (N) | Torque-out (N•m) | Installation Force (kN) | Pushout (N) | Torque-out (N•m) |
| METRIC (mm) | M2 x 0.4<br>M2.5 x 0.45<br>M3 x 0.5 | -0<br>-1<br>-2<br>-3 | 11.2-15.6 | 470<br>550<br>1010<br>1100 | 1.47<br>1.7<br>2.03<br>2.0 | 6.7-8.9 | 280<br>400<br>750<br>850 | .9<br>1.13<br>1.47<br>1.47 |
| | M3.5 x 0.6 | -0<br>-1<br>-2<br>-3 | 13.4-26.7 | 480<br>570<br>1210<br>1300 | 1.8<br>2.3<br>2.3<br>2.5 | 11.2-13.5 | 280<br>400<br>840<br>1050 | 1.8<br>1.92<br>2.5<br>2.8 |
| | M4 x 0.7 | -0<br>-1<br>-2<br>-3 | 18-27 | 490<br>645<br>1250<br>1300 | 2.95<br>4<br>5.1<br>4.2 | 11.2-13.4 | 300<br>470<br>970<br>1100 | 2.37<br>2.6<br>4.0<br>4.0 |
| | M5 x 0.8 | -0<br>-1<br>-2<br>-3 | 18-38 | 530<br>800<br>1420<br>1500 | 3.6<br>4.5<br>6.8<br>6.0 | 11.2-15.6 | 300<br>480<br>845<br>1225 | 3.0<br>3.6<br>5.7<br>5.7 |
| | M6 x 1.0 | -0<br>-1-2-3 | 27-36 | 1380<br>1760 | 13<br>17 | 18-32 | 970<br>1580 | 7.9<br>10.2 / 14.1 |
| | M8 x 1.25 | -1-2-3 | 27-36 | 1870 | 18.7 / 20.3 | 18-32 | 1570 | 13.6 / 18.1 |
| | M10 x 1.5 | -1-2-3 | 32-50 | 2020 | 36.2 | 22-36 | 1760 | 32.7 |
| | M12 x 1.75 | -1-2 | 33-49 | 3065 | 73.9 | 23-30 | 1390 | 35.2 |

# Self-Clinching Steel Heavy Duty Nuts

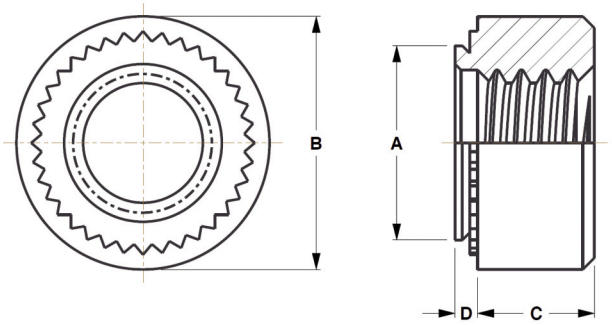
## Series CFH & CFHN



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

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

*See Finish Spec. on Page 6.




Thread: Internal 2B, ANSI B1.1
(6H, ANSI/ASME B1.13M).

Use in: CFH-materials with Rockwell Hardness of B-80 or less.
CFHN -materials with Rockwell Hardness of B-60 or less.

Part Number Structure:

CFH-420-X

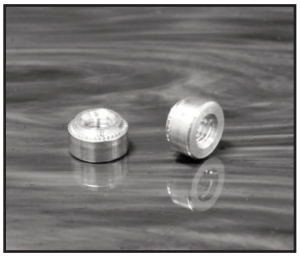
- Finish
- Thread Code
- Series

## *Dimensions & Specifications*

| | Thread Size | Part Number: Heat Treated | Part Number: Non-Heat Treated | D Max. | Min. | +.005 in. (.13mm) –.000(.00) | A Max. | B ±.01 in. (±.25 mm) | C ±.005 in. (±.13 mm) | Min. |
|---|---|---|---|---|---|---|---|---|---|---|
| INCH | 1/4-20 | CFH420 | CFHN420 | .058 | .058 | .344 | .343 | .500 | .189 | .380 |
| METRIC | M6 x 1.0 | CFHM6 | CFHNM6 | 1.48 | 1.48 | 8.75 | 8.72 | 12.7 | 5.0 | 10.0 |

## Installation & Performance Data

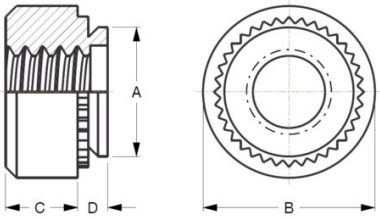
| | | Material | Panel Thickness | Installation Force | Pushout | Torque-out |
|---|---|---|---|---|---|---|
| INCH | 1/4-20 | Cold-rolled Steel | .060 in. | 4800 lbs. | 450 lbs. | 120 in.-lbs. |
| | | Aluminum | .062 in. | 3500 lbs. | 370 lbs. | 110 in.-lbs. |
| METRIC | M6 | Cold-rolled Steel | 2.24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



# Self-Clinching Aluminum 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.




| Series | Material | Finish |
|---|---|---|
| CA | 2024-T4 Aluminum | None |

Thread: Internal 2B, ANSI B1.1 (6H, ANSI/ASME B1.13M).

Use in: Materials with Rockwell Hardness of B-50 or less.

### *Dimensions & Specifications*

| | Thread Size | Part Number | D Max. | Min. | +.003 in. (+.08 mm) –.000 (–.00) | A Max. | B ±.01 in. (±.25 mm) | C ±.01 in. (±.25 mm) | 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 | .370 | .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 | | | | | |
| METRIC (mm) | M2 x 0.4 | CAM2-1 | .98 | 1.0 | 4.22 | 4.2 | 6.35 | 1.5 | 4.8 |
| | | CAM2-2 | 1.38 | 1.4 | | | | | |
| | M3 x 0.5 | CAM3-1 | .98 | 1.0 | 4.75 | 4.73 | 6.35 | 2.0 | 5.6 |
| | | CAM3-2 | 1.38 | 1.4 | | | | | |
| | M3.5 x 0.6 | CAM3.5-1 | .98 | 1.0 | 5.41 | 5.38 | 7.11 | 2.0 | 6.9 |
| | | CAM3.5-2 | 1.38 | 1.4 | | | | | |
| | M4 x 0.7 | CAM4-1 | .98 | 1.0 | 5.94 | 5.92 | 7.8 | 3.0 | 7.1 |
| | | CAM4-2 | 1.38 | 1.4 | | | | | |
| | M5 x 0.8 | CAM5-1 | .98 | 1.0 | 7.52 | 7.49 | 9.4 | 3.8 | 7.9 |
| | | CAM5-2 | 1.38 | 1.4 | | | | | |
| | M6 x 1.0 | CAM6-1 | 1.38 | 1.4 | 8.75 | 8.73 | 11.18 | 4.08 | 8.6 |
| | | CAM6-2 | 2.21 | 2.3 | | | | | |

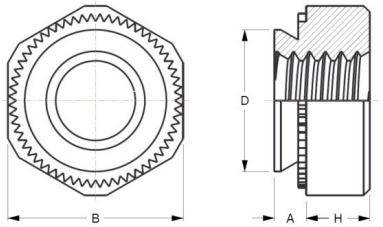
# Self-Clinching KAL Hex Nuts

## Series CKN



CKN self-clinching KAL-nuts provide strong internal threads in sheet material as thin as 1 mm.

| Series | Material | Finish |
|---|---|---|
| CKN | Heat-treated Carbon Steel | Zinc* Clear |




*See Finish Spec. on Page 6.

Thread: Internal 6H, ANSI/ASME B1.13.

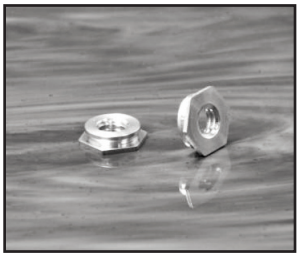
Use in: CKN – Materials with Rockwell Hardness of HRB-80 or less.

### Dimensions & Specifications

| | Thread Size | Part Number Carbon Steel | D Max | B +.00 -.20 | H ±.10 | A Max. | Min. | +.08 -.00 | Min. |
|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm) | M3 x 0.5 | CKNM3-1 | 4.45 | 5.5 | 2.0 | 1.0 | 1.0 | 4.5 | 4.5 |
| | | CKNM3-2 | | | | 1.4 | 1.4 | | |
| | M4 x 0.7 | CKNM4-1 | 5.45 | 7.0 | 2.2 | 1.0 | 1.0 | 5.5 | 5.5 |
| | | CKNM4-2 | | | | 1.4 | 1.4 | | |
| | M5 x 0.8 | CKNM5-1 | 6.45 | 8.0 | 3.0 | 1.0 | 1.0 | 6.5 | 6.5 |
| | | CKNM5-2 | | | | 1.4 | 1.4 | | |
| | M6 x 1.0 | CKNM6-1 | 7.95 | 10.0 | 4.0 | 1.0 | 1.0 | 8.0 | 8.0 |
| | | CKNM6-2 | | | | 1.4 | 1.4 | | |
| | M8 x 1.25 | CKNM8-2 | 9.95 | 13.0 | 4.5 | 1.4 | 1.4 | 10.0 | 10.0 |
| | | CKNM8-3 | | | | 2.0 | 2.0 | | |

### Installation & Performance Data

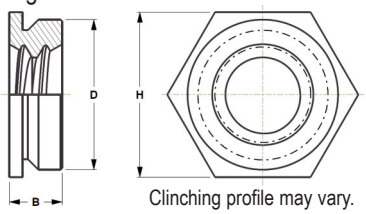
| | | | | Cold-rolled Steel | | | 5052-H34 Aluminum | | |
|---|---|---|---|---|---|---|---|---|---|
| | Thread Size | Shank | Min. Sheet | Installation Force (kN) | Pushout (N) | Torque-out (N•m) | Installation Force (kN) | Pushout (N) | Torque-out (N•m) |
| METRIC (mm) | M3 x 0.5 | -1 | 1.0 | 11.7 | 490 | 1.96 | 5.8 | 290 | 1.17 |
| | | -2 | 1.4 | 12.7 | 780 | 2.45 | 6.8 | 580 | 1.47 |
| | M4 x 0.7 | -1 | 1.0 | 12.7 | 580 | 2.94 | 7.8 | 390 | 1.96 |
| | | -2 | 1.4 | 13.7 | 880 | 3.92 | 9.8 | 680 | 2.94 |
| | M5 x 0.8 | -1 | 1.0 | 13.7 | 680 | 3.92 | 8.8 | 440 | 2.94 |
| | | -2 | 1.4 | 14.7 | 980 | 4.9 | 10.7 | 730 | 3.92 |
| | M6 x 1.0 | -1 | 1.0 | 16.6 | 880 | 7.84 | 11.7 | 580 | 5.88 |
| | | -2 | 1.4 | 19.6 | 1270 | 11.76 | 13.7 | 880 | 7.84 |
| | M8 x 1.25 | -2 | 1.4 | 24.5 | 1370 | 15.69 | 15.6 | 1070 | 9.80 |
| | | -3 | 2.0 | 29.4 | 1760 | 19.61 | 17.6 | 1370 | 11.76 |



# 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. All dimensions are identical to industry standards.




Clinching profile may vary.

| Series | Material | Finish |
|---|---|---|
| CFL | 300 Series Stainless Steel | Passivated ASTM A967 |

Thread: Internal 2B, ANSI B1.1 (6H, ANSI/ASME B1.13M)

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

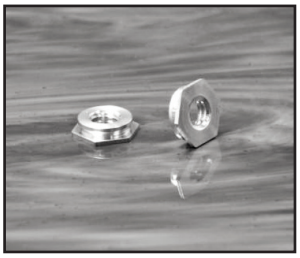
### *Dimensions & Specifications*

| | Thread Size | Part Number | D Max. | Min. | +.003 in. (.08 mm) −.000 (.00) | H Nom. | B Max. | Min. |
|---|---|---|---|---|---|---|---|---|
| INCH (in.) | #2-56 | CFL256-1 | .171 | .060 | .172 | .188 | .060 | .23 |
| | | CFL256-2 | | .091 | | | .090 | |
| | #4-40 | CFL440-1 | .171 | .060 | .172 | .188 | .060 | .23 |
| | | CFL440-2 | | .091 | | | .090 | |
| | #6-32 | CFL632-1 | .212 | .060 | .213 | .25 | .060 | .27 |
| | | CFL632-2 | | .091 | | | .090 | |
| | #8-32 | CFL832-1 | .289 | .060 | .290 | .312 | .060 | .28 |
| | | CFL832-2 | | .091 | | | .090 | |
| | #10-24 | CFL1024-1 | .311 | .060 | .312 | .343 | .060 | .31 |
| | | CFL1024-2 | | .091 | | | .090 | |
| | #10-32 | CFL1032-1 | .311 | .060 | .312 | .343 | .060 | .31 |
| | | CFL1032-2 | | .091 | | | .090 | |
| | 1/4-20 | CFL420-3 | .343 | .125 | .344 | .375 | .120 | .34 |
| | | CFL420-4 | | .156 | | | .151 | |
| | | CFL420-5 | | .187 | | | .182 | |
| | 1/4-28 | CFL428-3 | .343 | .125 | .344 | .375 | .120 | .34 |
| | | CFL428-4 | | .156 | | | .151 | |
| | | CFL428-5 | | .187 | | | .182 | |
| METRIC (mm) | M2 x 0.4 | CFLM2-1 | 4.35 | 1.53 | 4.37 | 4.8 | 1.53 | 6.0 |
| | | CFLM2-2 | | 2.3 | | | 2.3 | |
| | M2.5 x .45 | CFLM2.5-1 | 4.35 | 1.53 | 4.37 | 4.8 | 1.53 | 6.0 |
| | | CFLM2.5-2 | | 2.3 | | | 2.3 | |
| | M3 x 0.5 | CFLM3-1 | 4.35 | 1.53 | 4.37 | 4.8 | 1.53 | 6.0 |
| | | CFLM3-2 | | 2.3 | | | 2.3 | |
| | M3.5 x 0.6 | CFLM3.5-1 | 5.35 | 1.53 | 5.4 | 6.4 | 1.53 | 6.5 |
| | | CFLM3.5-2 | | 2.3 | | | 2.3 | |
| | M4 x 0.7 | CFLM4-1 | 7.35 | 1.53 | 7.37 | 7.9 | 1.53 | 7.2 |
| | | CFLM4-2 | | 2.3 | | | 2.3 | |
| | M5 x 0.8 | CFLM5-1 | 7.9 | 1.53 | 7.92 | 8.7 | 1.53 | 8.0 |
| | | CFLM5-2 | | 2.3 | | | 2.3 | |
| | M6 x 1.0 | CFLM6-3 | 8.72 | 3.18 | 8.74 | 9.5 | 3.05 | 8.8 |
| | | CFLM6-4 | | 3.96 | | | 3.84 | |
| | | CFLM6-5 | | 4.75 | | | 4.75 | |

Continued on next page.

# Self-Clinching Flush Nuts

## Series CFL



Continued from previous page.

### *Installation & Performance Data*

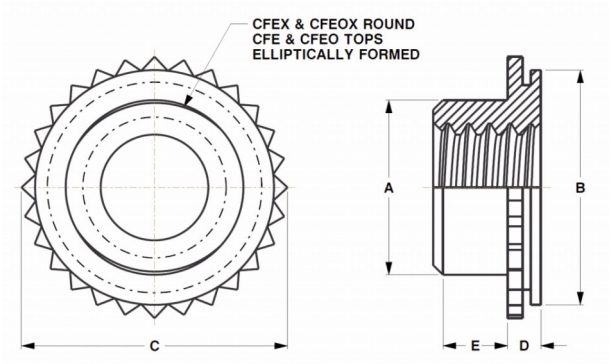
| | Part Number | Max. Screw torque (in.-lbs.) | Cold-rolled Steel | | 5052-H34 Aluminum | |
|---|---|---|---|---|---|---|
| | | | Installation Force (lbs.) | Pushout (lbs.) | Installation Force (lbs.) | Pushout (lbs.) |
| INCH (in.) | CFL256-1 | 1.5 | 3000 | 200 | 2000 | 200 |
| | CFL256-2 | 1.5 | 3000 | 200 | 2000 | 200 |
| | CFL440-1 | 2.5 | 3000 | 200 | 2000 | 200 |
| | CFL440-2 | 2.5 | 3000 | 200 | 2000 | 200 |
| | CFL632-1 | 3.5 | 3000 | 200 | 2000 | 200 |
| | CFL632-2 | 3.5 | 3000 | 200 | 2000 | 200 |
| | CFL832-1 | 5.25 | 4000 | 240 | 2000 | 240 |
| | CFL832-2 | 5.25 | 4000 | 240 | 2000 | 240 |
| | CFL1024-1 | 7.5 | 4000 | 240 | 4000 | 240 |
| | CFL1024-2 | 7.5 | 4000 | 240 | 4000 | 240 |
| | CFL1032-1 | 7.5 | 4000 | 240 | 4000 | 240 |
| | CFL1032-2 | 7.5 | 4000 | 240 | 4000 | 240 |
| | CFL420-3,4,5 | 36 | 4500 | 840 | 3500 | 640 |
| | CFL428-3,4,5 | 36 | 4500 | 840 | 3500 | 640 |
| | Part Number | Max. Screw Torque (N•m) | Installation Force (kN) | Pushout (kN) | Installation Force (kN) | Pushout (kN) |
| METRIC (mm) | CFLM2-1 | .16 | 13.3 | .890 | 8.9 | .890 |
| | CFLM2-2 | .16 | 13.3 | .890 | 8.9 | .890 |
| | CFLM2.5-1 | .23 | 13.3 | .890 | 8.9 | .890 |
| | CFLM2.5-2 | .23 | 13.3 | .890 | 8.9 | .9 |
| | CFLM3-1,2 | .36 | 13.3 | .890 | 8.9 | .890 |
| | CFLM3.5-1,2 | .4 | 15 | 1.0 | 8.9 | .9 |
| | CFLM4-1,2 | 1 | 17.8 | 1.068 | 17.8 | 1.068 |
| | CFLM5-1,2 | 1.3 | 17.8 | 1.068 | 17.8 | 1.068 |
| | CFLM6-3,4,5 | 4.5 | 20 | 3.736 | 20 | 3.736 |



# Self-Clinching Miniature Self Locking Nuts

## 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 (ML) | Self-Locking Internal 3B, ANSI B1.1 (6H,ANSI/ASME B1.13M) |
| CFEX,CFEOX | Passivated ASTM A967 | Non-Locking Internal 2B, ANSI B1.1 (6H,ANSI/ASME B1.13M) |

Material: 300 Series Stainless Steel.
Use in: Materials with Rockwell Hardness of B-70 or less.
Note: Thread locking performance for CFE & CFEO is equivalent to applicable NASM25027 specifications.

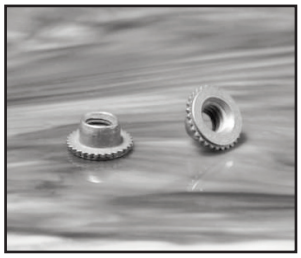
### *Dimensions & Specifications*

| | Thread Size | Part Number Self-Locking | Part Number Non-Locking | D Max. | Min. | +.003 in. (.08 mm) –.000(.00) | A Max. | E +.015 in. (.4 mm) –.000(.00) | B Max. | C ±.005 in. (.13 mm) | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | #4-40 | CFE440 | CFEX440 | .060 | .059 | .172 | .145 | .065 | .171 | .192 | .14 |
| | | CFEO440 | CFEOX440 | .040 | .039 | | | | | | |
| | #6-32 | CFE632 | CFEX632 | .060 | .059 | .213 | .180 | .075 | .212 | .244 | .17 |
| | | CFEO632 | CFEOX632 | .040 | .039 | | | | | | |
| | #8-32 | CFE832 | CFEX832 | .060 | .059 | .290 | .215 | .090 | .289 | .322 | .20 |
| | | CFEO832 | CFEOX832 | .040 | .039 | | | | | | |
| | #10-32 | CFE1032 | CFEX1032 | .060 | .059 | .290 | .245 | .110 | .289 | .322 | .20 |
| | | CFEO1032 | CFEOX1032 | .040 | .039 | | | | | | |
| | 1/4-20 | CFE420 | CFEX420† | .060 | .059 | .344 | .318 | .120 | .343 | .384 | .28 |
| | 1/4-28 | CFE428 | CFEX428† | .060 | .059 | | | | | | |
| METRIC (mm) | M3 x 0.5 | CFEOM3 | CFEOXM3 | 1.02 | .99 | 4.39 | 3.96 | 1.90 | 4.37 | 4.88 | 3.6 |
| | | CFEM3 | CFEXM3 | 1.53 | 1.5 | | | | | | |
| | M4 x 0.7 | CFEOM4 | CFEOXM4 | 1.02 | .99 | 7.39 | 5.23 | 2.55 | 7.37 | 8.17 | 5.2 |
| | | CFEM4 | CFEXM4 | 1.53 | 1.5 | | | | | | |
| | M5 x 0.8 | CFEOM5 | CFEOXM5 | 1.02 | .9 | 7.39 | 6.48 | 3.05 | 7.37 | 8.17 | 5.2 |
| | | CFEM5 | CFEXM5 | 1.53 | 1.5 | | | | | | |
| | M6 x 1.0 | CFEM6 | CFEXM6 | 1.53 | 1.5 | 8.74 | 7.72 | 3.30 | 8.72 | 9.74 | 7.1 |

†Not Stocked, available on special order.

Continued on next page.

# Self-Clinching Miniature Self Locking Nuts



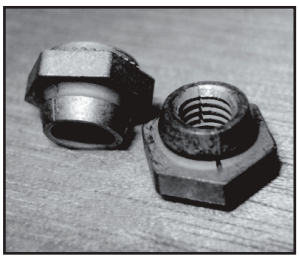
## Series CFE & CFEO
## Self-Locking Threads
## CFEX & CFEOX
## Non-Locking Threads

Continued from previous page.

### *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 | 140 | 12 | 900 | 88 | 12 |
| | | CFE, CFEX | .060 | 1500 | 210 | 12 | 900 | 135 | 12 |
| | #6-32 | CFEO, CFEOX | .040 | 2100 | 185 | 20 | 1200 | 105 | 20 |
| | | CFE, CFEX | .060 | 2100 | 255 | 20 | 1300 | 175 | 20 |
| | #8-32 | CFEO, CFEOX | .040 | 2500 | 260 | 48 | 1500 | 155 | 48 |
| | | CFE, CFEX | .060 | 2500 | 360 | 48 | 1500 | 255 | 48 |
| | #10-32 | CFEO, CFEOX | .040 | 2500 | 260 | 48 | 1500 | 155 | 48 |
| | | CFE, CFEX | .060 | 2500 | 360 | 48 | 1500 | 255 | 48 |
| | 1/4-20 1/4-28 | CFE, CFEX | .060 | 3500 | 420 | 110 | 2100 | 320 | 110 |

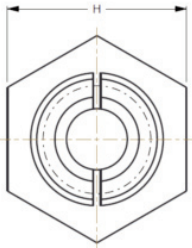
| | Thread Size | Series | Sheet Thickness (mm.) | Cold-rolled Steel: Installation Force (kN) | Cold-rolled Steel: Pushout (N) | Cold-rolled Steel: Torque-out (N•m) | 5052-H34 Aluminum: Installation Force (kN) | 5052-H34 Aluminum: Pushout (N) | 5052-H34 Aluminum: Torque-out (N•m) |
|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm) | M3 | CFEO, CFEOX | 1.0 | 6.7 | 622 | 1.35 | 4.0 | 391 | 1.35 |
| | | CFE, CFEX | 1.5 | 6.7 | 934 | 1.35 | 4.0 | 590 | 1.3 |
| | M4 | CFEO, CFEOX | 1.0 | 11.1 | 1156 | 5.42 | 6.7 | 689 | 5.42 |
| | | CFE, CFEX | 1.5 | 11.1 | 1601 | 5.42 | 6.7 | 1134 | 5.42 |
| | M5 | CFEO, CFEOX | 1.0 | 11.1 | 1156 | 5.42 | 6.7 | 689 | 5.42 |
| | | CFE, CFEX | 1.5 | 11.1 | 1601 | 5.42 | 6.7 | 1134 | 5.42 |
| | M6 | CFE, CFEX | 1.5 | 15.6 | 1864 | 12.43 | 9.4 | 1423 | 12.43 |

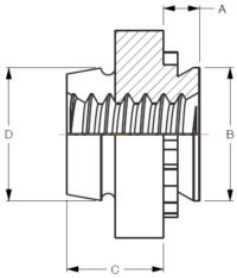


# Self-Clinching Self-Locking Nuts

## Series CRT, CRTS & CRTA

CRT series fasteners provide a low-installed-cost solution where a clinching fastener with repeat locking torque is required. The design allows for greater reusability and minimizes the possibility of thread damage of the mating screw.




Note: Thread locking performance for CRT & CRTS is equivalent to applicable NASM25027 specifications.

| Series | Material | Finish |
|---|---|---|
| CRT | Carbon Steel | Black Dry film Lubricant over Zinc Phosphate |
| CRTS | 300 Series Stainless Steel | Black Dry film Lubricant |
| CRTA | 7075-T6 Aluminum | None |

Thread: Internal 3B, ANSI B1.1 (6H ANSI/ASME B1.13M).

Use in: Cold-rolled Steel.

Part Number Structure:

CRTS 440-1ML

- RoHs Compliant
- Shank Code
- Thread Code
- Series

### Dimensions & Specifications

| | Thread Size | Series: Carbon Steel | Series: Stainless Steel | Series: Aluminum† | Shank Code | A Max. | Min. | +.003 -.000 | B Max. | D Max. | C ±.010 | H Nom. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | #440 | CRT | CRTS | CRTA | -1 | .038 | .040 | .187 | .186 | .185 | .135 | .250 | .156 |
| | | CRT | CRTS | CRTA | -2 | .054 | .056 | | | | | | |
| | #6-32 | CRT | CRTS | CRTA | -1 | .038 | .040 | .219 | .218 | .220 | .145 | .312 | .187 |
| | | CRT | CRTS | CRTA | -2 | .054 | .056 | | | | | | |
| | #8-32 | CRT | CRTS | CRTA | -1 | .038 | .040 | .266 | .265 | .250 | .175 | .343 | .203 |
| | | CRT | CRTS | CRTA | -2 | .054 | .056 | | | | | | |
| | #10-32 | CRT | CRTS | CRTA | -1 | .038 | .040 | .312 | .311 | .285 | .205 | .375 | .218 |
| | | CRT | CRTS | CRTA | -2 | .054 | .056 | | | | | | |

### Dimensions & Specifications

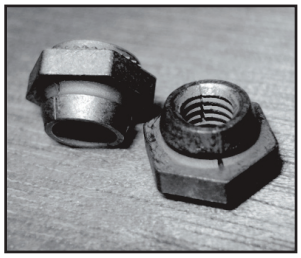
| | Thread Size | Series: Carbon Steel | Series: Stainless Steel | Series: Aluminum† | Shank Code | A Max. | Min. | +.08 -00 | B Max. | D Max. | C ±.010 | H Nom. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm) | M3 x 0.5 | CRT | CRTS | CRTA | -1 | .97 | 1.0 | 4.75 | 4.73 | 4.85 | 3.43 | 6.35 | 4 |
| | | CRT | CRTS | CRTA | -2 | 1.38 | 1.4 | | | | | | |
| | M4 x 0.7 | CRT | CRTS | CRTA | -1 | .97 | 1.0 | 6.76 | 6.73 | 6.2 | 4.45 | 8.73 | 5.2 |
| | | CRT | CRTS | CRTA | -2 | 1.38 | 1.4 | | | | | | |
| | M5 x 0.8 | CRT | CRTS | CRTA | -1 | .97 | 1.0 | 7.92 | 7.9 | 7.4 | 5.21 | 9.53 | 5.6 |
| | | CRT | CRTS | CRTA | -2 | 1.38 | 1.4 | | | | | | |

†Not Stocked, available on special order. *Lubricated screw is required.

Continued on next page.

# Self-Clinching Self-Locking Nuts

## Series CRT, CRTS & CRTA

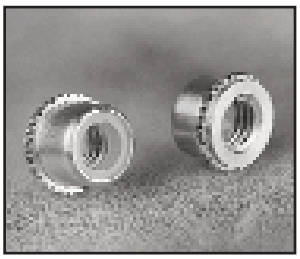


### Installation & Performance Data

| INCH (in.) | Thread Size | Shank Code | Cold-rolled Steel | | | 5052-H34 Aluminum | | |
|---|---|---|---|---|---|---|---|---|
| | | | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) |
| | #4-40 | -1 | 3000 | 150 | 30 | 1600 | 130 | 25 |
| | | -2 | 3000 | 250 | 40 | 2000 | 200 | 35 |
| | #6-32 | -1 | 4000 | 150 | 45 | 2400 | 130 | 25 |
| | | -2 | 4300 | 275 | 50 | 2700 | 225 | 45 |
| | #8-32 | -1 | 4000 | 190 | 50 | 2700 | 150 | 45 |
| | | -2 | 4300 | 300 | 70 | 3000 | 250 | 50 |
| | #10-32 | -1 | 4000 | 250 | 100 | 3200 | 150 | 90 |
| | | -2 | 4300 | 300 | 120 | 3200 | 250 | 105 |

### Installation & Performance Data

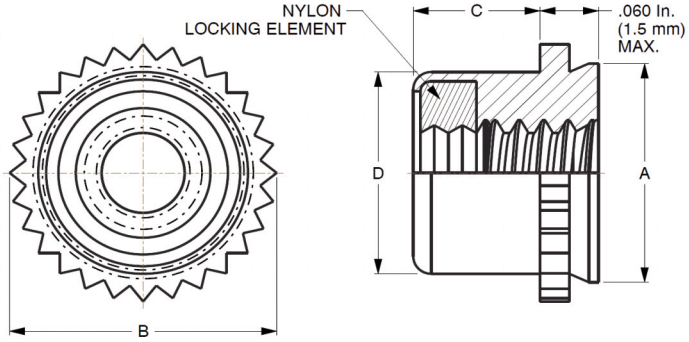
| METRIC (mm) | Thread Size | Shank Code | Cold-rolled Steel | | | 5052-H34 Aluminum | | |
|---|---|---|---|---|---|---|---|---|
| | | | Installation Force (kN) | Pushout (N) | Torque-out (N•m) | Installation Force (kN) | Pushout (N) | Torque-out (N•m) |
| | M3 | -1 | 13.3 | 667 | 3.4 | 7.1 | 578 | 2.8 |
| | | -2 | 13.3 | 1112 | 4.5 | 8.9 | 667 | 4 |
| | M4 | -1 | 17.8 | 845 | 5.6 | 12 | 667 | 5.1 |
| | | -2 | 19.1 | 1334 | 7.9 | 13.3 | 1112 | 5.7 |
| | M5 | -1 | 17.8 | 1112 | 11.3 | 14.2 | 667 | 10.2 |
| | | -2 | 19.1 | 1334 | 13.6 | 14.2 | 1112 | 11.9 |



# 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 | Nylon |
| CPLC | 300 Series Stainless Steel | Passivated ASTM A967 | Nylon |

*See Finish Spec. on Page 6.

Thread: Internal 2B, ANSI B1.1 (6H, ANSI/ASME B1.13M).

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 in. (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 in. (1.5mm).

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

Note 2. Thread locking performance for CPL & CPLC is equivalent to applicable NASM25027 specifications.

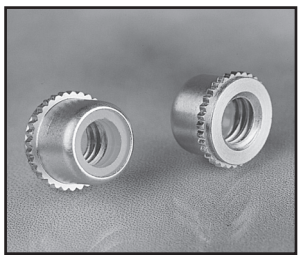
## *Dimensions & Specifications*

| | Thread Size | Part Number | | See Note 1 Thickness Range | +.003 in. (.08mm) –.000(.00) | A Max. | B Max. | C Max. | D Max. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Carbon Steel | Stainless Steel | | | | | | | |
| INCH (in.) | #4-40 | CPL440 | CPLC440 | .040-.070 | .234 | .233 | .274 | .130 | .215 | .132 |
| | #6-32 | CPL632 | CPLC632 | .040-.070 | .265 | .264 | .305 | .130 | .246 | .158 |
| | #8-32 | CPL832 | CPLC832 | .040-.070 | .297 | .296 | .338 | .155 | .278 | .184 |
| | #10-32 | CPL1032 | CPLC1032 | .040-.070 | .312 | .311 | .353 | .165 | .293 | .210 |
| METRIC (mm) | M3 x 0.5 | CPLM3 | CPLCM3 | 1-1.78 | 6.0 | 5.98 | 7.01 | 3.56 | 5.52 | 4.32 |
| | M4 x 0.7 | CPLM4 | CPLCM4 | 1-1.78 | 7.5 | 7.48 | 8.54 | 4.2 | 7.01 | 5.59 |
| | M5 x 0.8 | CPLM5 | CPLCM5 | 1-1.78 | 8.0 | 7.98 | 9.0 | 4.45 | 7.52 | 6.35 |

Continued on next page.

# Self-Clinching Top Collar Lock Nuts

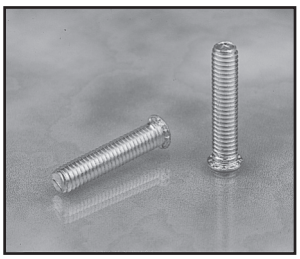
## Series CPL & CPLC



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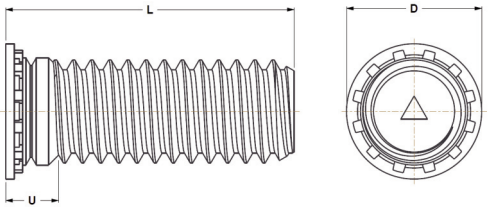
### *Installation & Performance Data*

| | Thread Size | Max. Tightening Torque (in.-lbs.) | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) |
|---|---|---|---|---|---|---|---|---|
| | | .048 in. Cold-rolled Steel | | | | .060 in. Cold-rolled Steel | | |
| INCH (in.) | #4-40 | 9.3 | 3000 | 225 | 20 | 3000 | 260 | 20 |
| | #6-32 | 12.9 | 3000 | 270 | 30 | 3000 | 290 | 30 |
| | #8-32 | 19.1 | 3000 | 270 | 60 | 3000 | 290 | 60 |
| | #10-32 | 26 | 3000 | 310 | 70 | 3000 | 350 | 70 |
| | Thread Size | Max. Tightening Torque (in.-lbs.) | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) |
| | | .060 in. 5052H34 Aluminum | | | | .040 in. 5052H34 Aluminum | | |
| | #4-40 | 9.3 | 2000 | 225 | 20 | 1500 | 160 | 20 |
| | #6-32 | 12.9 | 2000 | 285 | 30 | 1500 | 180 | 25 |
| | #8-32 | 19.1 | 2000 | 290 | 60 | 1500 | 180 | 28 |
| | #10-32 | 26 | 2000 | 300 | 70 | 1500 | 180 | 40 |
| | 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) |
| | | 1.5mm Cold-rolled Steel | | | | 1.2mm Cold-rolled Steel | | |
| METRIC (mm) | M3 | 1.13 | 13.34 | 1156 | 2.25 | 13.34 | 1000 | 2.25 |
| | M4 | 2.3 | 13.34 | 1290 | 6.77 | 13.34 | 1200 | 6.77 |
| | M5 | 3.12 | 13.34 | 1557 | 7.9 | 13.34 | 1380 | 7.9 |
| | 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) |
| | | 1.5mm 5052H34 Aluminum | | | | 1.0mm 5052H34 Aluminum | | |
| | M3 | 1.13 | 8.90 | 1000 | 2.25 | 6.67 | 710 | 2.25 |
| | M4 | 2.3 | 8.90 | 1290 | 6.77 | 6.67 | 800 | 3.16 |
| | M5 | 3.12 | 8.90 | 1330 | 7.9 | 6.67 | 800 | 4.51 |



# Self-Clinching Studs
# Flush Head
## 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 A967 |
| CHA | 2024-T4 Aluminum | None |

*See Finish Spec. on Page 6.

Thread: External 2A, ANSI B1.1 (6g ANSI/ASME B1.13M).**

Use in: CH- Materials with HRB-80 or less.
CHS- Materials with HRB-70 or less.
CHA- Materials with HRB-50 or less.
**See Note 3 on Page 6 for Gauging Spec.

## Dimensions & Specifications

| | Thread Size | Thread Code | L Length ±.015 in. .250 | .312 | .375 | .500 | .625 | .750 | .875 | 1.00 | 1.25 | 1.50 | D ±.015 | +.003 –.000 | Max. Hole in Attached Part | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | #2-56 | 256 | -4 | -5 | -6 | -8 | -10 | -12† | | | | | .144 | .085 | .105 | .187 | .040 |
| | #4-40 | 440 | -4 | -5 | -6 | -8 | -10 | -12 | -14 | -16† | -20 | | .176 | .111 | .135 | .219 | .040 |
| | #6-32 | 632 | -4 | -5 | -6 | -8 | -10 | -12 | -14 | -16 | -20 | -24† | .206 | .137 | .160 | .250 | .040 |
| | #8-32 | 832 | -4 | -5 | -6 | -8 | -10 | -12 | -14 | -16 | -20 | -24† | .237 | .163 | .185 | .281 | .040 |
| | #10-24 | 1024 | | -5† | -6 | -8 | -10 | -12 | -14 | -16 | -20 | -24† | .256 | .189 | .210 | .281 | .040 |
| | #10-32 | 1032 | | -5† | -6 | -8 | -10 | -12 | -14 | -16 | -20 | -24 | .256 | .189 | .210 | .281 | .040 |
| | 1/4-20 | 420 | | | -6 | -8 | -10 | -12 | -14 | -16 | -20 | -24 | .337 | .249 | .270 | .312 | .062 |
| | 5/16-18 | 518 | | | | -8 | -10 | -12 | -14 | -16 | -20 | -24 | .376 | .311 | .333 | .375 | .093 |

† Not stocked, available on special order.

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

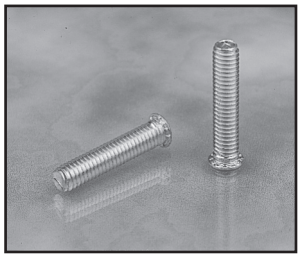
## Dimensions & Specifications

| | Thread Size | Thread Code | L Length ±.4 mm 6 | 8 | 10 | 12 | 15 | 18 | 20 | 22 | 25 | 28 | 30 | 35 | 38 | D ±.4 | +.08 –.00 | Max. Hole in Attached Part | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm) | M2.5x0.45 | M2.5 | -6† | -8† | -10† | -12† | -15† | -18† | | | | | | | | 4.1 | 2.5 | 3.1 | 5.4 | 1.0 |
| | M3x0.5 | M3 | -6† | -8 | -10 | -12 | -15 | -18 | -20 | -22 | -25 | | | | | 4.6 | 3.0 | 3.6 | 5.6 | 1.0 |
| | M3.5x0.6 | M3.5 | -6 | -8 | -10 | -12 | -15 | -18 | -20 | -22 | -25 | -28 | -30 | | | 5.3 | 3.5 | 4.1 | 6.4 | 1.0 |
| | M4x0.7 | M4 | -6† | -8 | -10 | -12 | -15 | -18 | -20 | -22 | -25 | -28 | -30 | -35 | -38 | 5.9 | 4.0 | 4.6 | 7.2 | 1.0 |
| | M5x0.8 | M5 | | -8† | -10 | -12 | -15 | -18 | -20 | -22 | -25 | -28 | -30 | -35 | -38 | 6.5 | 5.0 | 5.6 | 7.2 | 1.0 |
| | M6x1.0 | M6 | | | -10 | -12 | -15 | -18 | -20 | -22 | -25 | -28 | -30 | -35 | -38 | 8.2 | 6.0 | 6.6 | 7.9 | 1.6 |
| | M8x1.25 | M8 | | | | -12* | -15 | -18 | -20 | -22 | -25 | -28 | -30 | -35 | -38 | 9.6 | 8.0 | 8.6 | 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.

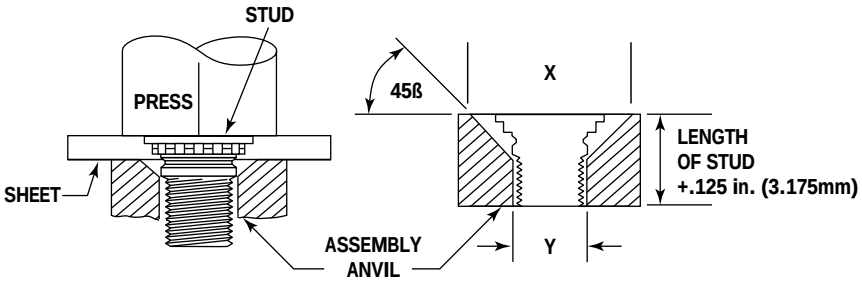
# Self-Clinching Studs
# Flush Head
## Series CH, CHS & CHA



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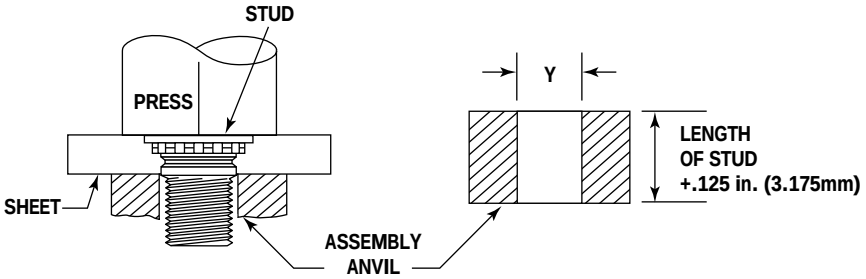
## TOOLING

**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.

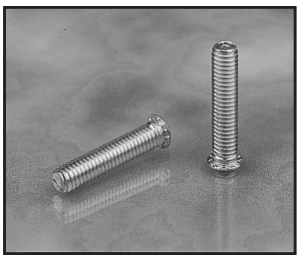



Tooling for sheet thickness .060 in. (1.51mm) minimum and greater with #2 (M2.5) thru #10 (M5) thread sizes and .092 in. (2.3mm) minimum and greater for 1/4 in. (M6) and 5/16 in. (M8) threads.

| | 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 +.1 | Y +.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 |

Continued on next page.



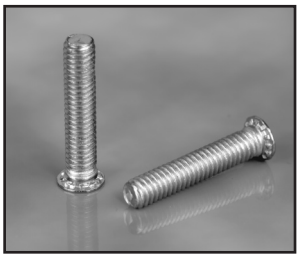
# Self-Clinching Studs
# Flush Head
## Series CH, CHS & CHA

Continued from previous page.

## Installation & Performance Data

| | Thread Code | SERIES | Rec. Nut Tightening (in-lbs) | Sheet Thickness & Material | Installation Force (lbs.) | Pushout (lbs.) | Torque out (in.-lbs.) | Pull Thru (lbs) |
|---|---|---|---|---|---|---|---|---|
| UNIFIED | 256 | CH | 4.4 | .062 ALUM | 2000 | 100 | 5 | 425 |
| | | CHS | 2.7 | .062 ALUM | 2000 | 100 | 4.5 | 300 |
| | | CH | 4.4 | .060 STEEL | 2500 | 180 | 5 | 425 |
| | | CHS | 2.7 | .060 STEEL | 2500 | 180 | 4.5 | 300 |
| | 440 | CH | 8.7 | .062 ALUM | 3800 | 170 | 10 | 650 |
| | | CHS | 5.9 | .062 ALUM | 3200 | 170 | 8 | 500 |
| | | CH | 8.7 | .060 STEEL | 4300 | 275 | 10 | 650 |
| | | CHS | 5.9 | .060 STEEL | 4700 | 275 | 8 | 500 |
| | 632 | CH | 14 | .062 ALUM | 3800 | 180 | 17 | 850 |
| | | CHS | 11 | .062 ALUM | 3500 | 180 | 16 | 775 |
| | | CH | 14 | .060 STEEL | 4700 | 300 | 20 | 850 |
| | | CHS | 11 | .060 STEEL | 500 | 300 | 16 | 775 |
| | 832 | CH | 20 | .062 ALUM | 4800 | 220 | 28 | 1000 |
| | | CHS | 16 | .062 ALUM | 4500 | 220 | 28 | 940 |
| | | CH | 25 | .060 STEEL | 6800 | 375 | 40 | 1270 |
| | | CHS | 19 | .060 STEEL | 5500 | 375 | 28 | 1130 |
| | 1024-1032 | CH | 28 | .062 ALUM | 5500 | 270 | 30 | 1220 |
| | | CHS | 24 | .062 ALUM | 5500 | 270 | 30 | 1220 |
| | | CH | 32 | .060 STEEL | 7500 | 450 | 60 | 1410 |
| | | CHS | 28 | .060 STEEL | 6800 | 450 | 50 | 1410 |
| | 420 | CH | 69 | .093 ALUM | 3500 | 310 | 65 | 2300 |
| | | CHS | 55 | .093 ALUM | 3500 | 310 | 65 | 2100 |
| | | CH | 77 | .088 STEEL | 9500 | 575 | 100 | 2550 |
| | | CHS | 67 | .088 STEEL | 10000 | 575 | 100 | 2550 |
| | 518 | CH | 85 | .093 ALUM | 6500 | 430 | 100 | 2280 |
| | | CHS | 74 | .093 ALUM | 6700 | 430 | 100 | 2280 |
| | | CH | 130 | .093 STEEL | 10000 | 650 | 175 | 3475 |
| | | CHS | 102 | .093 STEEL | 11200 | 650 | 175 | 3120 |

| | Thread Code | SERIES | Rec. Nut Tightening (N-m) | Sheet Thickness & Material | Installation Force (kN) | Pushout (N) | Torque out (N-m) | Pull Thru (N) |
|---|---|---|---|---|---|---|---|---|
| METRIC | M2.5 | CH | 0.78 | 1.6 mm ALUM | 8.9 | 465 | 1.0 | 2600 |
| | | CHS | 0.48 | 1.6 mm ALUM | 11.6 | 465 | 0.8 | 1820 |
| | | CH | 0.84 | 1.5 mm STEEL | 11.1 | 740 | 1.0 | 2800 |
| | | CHS | 0.48 | 1.5 mm STEEL | 13.8 | 740 | 0.8 | 1820 |
| | M3 | CH | 1.1 | 1.6 mm ALUM | 12.9 | 600 | 1.7 | 3150 |
| | | CHS | 0.81 | 1.6 mm ALUM | 12.9 | 600 | 1.3. | 2570 |
| | | CH | 1.4 | 1.5 mm STEEL | 14.7 | 820 | 1.7 | 3840 |
| | | CHS | 0.77 | 1.5 mm STEEL | 14.7 | 820 | 1.3 | 2440 |
| | M3.5 | CH | 1.6 | 1.6 mm ALUM | 15.6 | 800 | 1.7 | 3780 |
| | | CHS | 1.3 | 1.6 mm ALUM | 15.6 | 800 | 1.7 | 3445 |
| | | CH | 1.6 | 1.5 mm STEEL | 22.3 | 1335 | 2.8 | 0.78 |
| | | CHS | 1.3 | 1.5 mm STEEL | 22.3 | 1335 | 2.0 | 3445 |
| | M4 | CH | 2.1 | 1.6 mm ALUM | 20 | 975 | 2.9 | 4448 |
| | | CHS | 1.8 | 1.6 mm ALUM | 22.3 | 975 | 2.9 | 4180 |
| | | CH | 2.7 | 1.5 mm STEEL | 28.9 | 1780 | 4.2 | 5650 |
| | | CHS | 2 | 1.5 mm STEEL | 26.7 | 1780 | 2.9 | 4775 |
| | M5 | CH | 3.1 | 1.6 mm ALUM | 24.5 | 1070 | 3.5 | 5170 |
| | | CHS | 2.5 | 1.6 mm ALUM | 24.5 | 1070 | 3.5 | 4760 |
| | | CH | 3.8 | 1.5 mm STEEL | 33.4 | 2000 | 6.5 | 6270 |
| | | CHS | 3.2 | 1.5 mm STEEL | 32.5 | 2000 | 6.3 | 6000 |
| | M6 | CH | 7.3 | 2.4 mm ALUM | 28.9 | 1660 | 7.3 | 10200 |
| | | CHS | 5.7 | 2.4 mm ALUM | 28.9 | 1660 | 7.3 | 9090 |
| | | CH | 8.1 | 2.2 mm STEEL | 44.5 | 2560 | 11.3 | 11300 |
| | | CHS | 6.7 | 2.2 mm STEEL | 44.5 | 2560 | 10.1 | 10600 |
| | M8 | CH | 10 | 2.4 mm ALUM | 29.7 | 1910 | 11.3 | 10500 |
| | | CHS | 8 | 2.4 mm ALUM | 29.8 | 1910 | 11.3 | 9540 |
| | | CH | 15 | 2.2 mm STEEL | 44.5 | 2890 | 19.2 | 15450 |
| | | CHS | 11 | 2.2 mm STEEL | 49.8 | 2890 | 17.5 | 13630 |

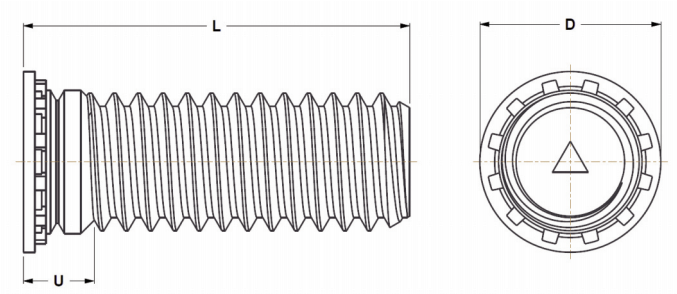


# Self-Clinching Studs For Stainless Steel

## 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 mm) with high torque-out and pushout performance.

| Series | Material | Finish |
|---|---|---|
| CHTS | 400 Series Stainless Steel | Passivated ASTM A967 |




Thread: External 2A, ANSI B1.1 (6g ANSI/ASME B1.13M).
Use in: CHTS - Materials with HRB-92 or less.

Part Number Structure:

CHTS 440-8

- 8 → Length Code
- 440 → Thread Code
- CHTS → 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. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #4-40 | CHTS | 440 | -4 | -5 | -6 | -8 | -10 | -12 | -14 | -16 | | | .040-.095 | .111 | .176 | .085 | .219 |
| #6-32 | CHTS | 632 | -4 | -5 | -6 | -8 | -10 | -12 | -14 | -16 | -20 | -24 | .040-.095 | .137 | .206 | .090 | .250 |
| #8-32 | CHTS | 832 | -4 | -5 | -6 | -8 | -10 | -12 | -14 | -16 | -20 | -24 | .040-.095 | .163 | .237 | .090 | .281 |
| #10-32 | CHTS | 1032 | | -5 | -6 | -8 | -10 | -12 | -14 | -16 | -20 | -24 | .040-.095 | .189 | .256 | .100 | .281 |
| 1/4-20 | CHTS | 420 | | | -6 | -8 | -10 | -12 | -14 | -16 | -20 | -24 | .062-.117 | .249 | .337 | .135 | .312 |
| 5/16-18 | CHTS | 518 | | | | -8 | -10 | -12 | -14 | -16 | -20 | -24 | .093-.148 | .311 | .376 | .160 | .375 |

### Dimensions & Specifications

METRIC (mm.)

| Thread Size | Series | Thread Code | L Length ±.4 mm. 6 | 8 | 10 | 12 | 15 | 18 | 20 | 25 | 30 | 35 | Sheet Thickness | Hole Size In Sheet +.08 -.00 | D ±.4 | U Max. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M3 x 0.5 | CHTS | M3 | -6 | -8 | -10 | -12 | -15 | -18 | -20 | -25 | | | 1 - 2.4 | 3 | 4.6 | 2.1 | 5.6 |
| M4 x 0.7 | CHTS | M4 | -6 | -8 | -10 | -12 | -15 | -18 | -20 | -25 | -30 | -35 | 1 - 2.4 | 4 | 5.9 | 2.4 | 7.2 |
| M5 x 0.8 | CHTS | M5 | | -8 | -10 | -12 | -15 | -18 | -20 | -25 | -30 | -35 | 1 - 2.4 | 5 | 6.5 | 2.7 | 7.2 |
| M6 x 1.0 | CHTS | M6 | | | -10 | -12 | -15 | -18 | -20 | -25 | -30 | -35 | 1.6 - 3 | 6 | 8.2 | 3.0 | 7.9 |
| M8 x 1.25 | CHTS | M8 | | | | -12 | -15 | -18 | -20 | -25 | -30 | -35 | 2.4 - 3.8 | 8 | 9.6 | 3.7 | 9.6 |

Note: All items subject to minimum order.

Continued on next page.

# Self-Clinching Studs For Stainless Steel

## Series CHTS

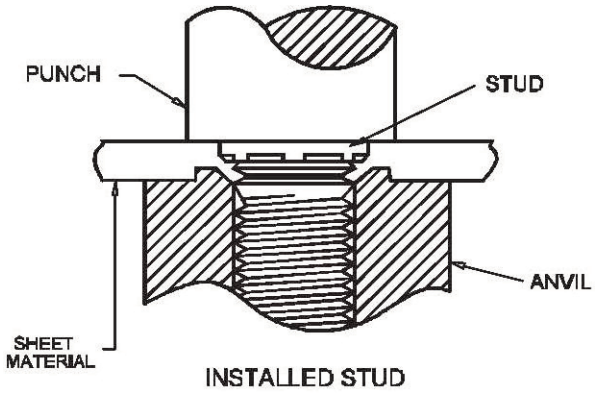


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### Installation Procedure

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 steel material into the clinch ring of the stud.

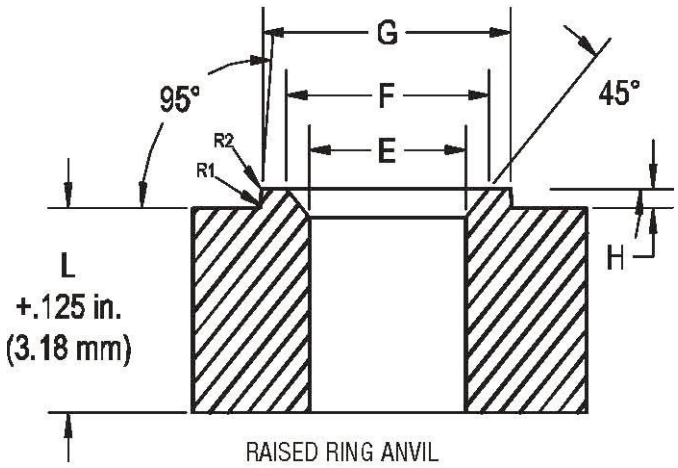
Be sure to monitor the height of the ring on the anvil periodically and replace anvil when ring height wears down to .005 in.(.13 mm) to assure desired performance



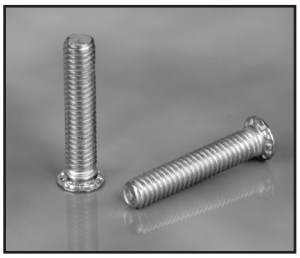

INSTALLED STUD

| | Thread Code | Anvil Dimensions (in.) | | | | | |
|---|---|---|---|---|---|---|---|
| | | E | F | G | H | R1 | R2 |
| INCH (in.) | 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 |
| | 420 | .251 | .310 | .363 | .020 | .003 | .005 |
| | 518 | .313 | .385 | .474 | .020 | .003 | .005 |

| | Thread Code | Anvil Dimensions (mm.) | | | | | |
|---|---|---|---|---|---|---|---|
| | | E | F | G | H | R1 | R2 |
| METRIC (mm.) | M3 | 3.05 | 3.81 | 4.57 | .25 | .08 | .13 |
| | M4 | 4.04 | 4.95 | 5.82 | .25 | .08 | .13 |
| | M5 | 5.08 | 6.15 | 7.16 | .25 | .08 | .13 |
| | M6 | 6.05 | 7.87 | 8.79 | .51 | .08 | .13 |
| | M8 | 7.95 | 9.78 | 10.27 | .51 | .08 | .13 |




RAISED RING ANVIL



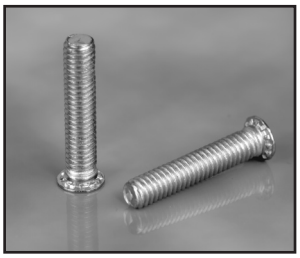
# Self-Clinching Studs For Stainless Steel

## Series CHTS

Continued from previous page.

### *Installation & Performance Data*

| | Thread Code | Max. Nut Tight. Torque (in-lbs.) | Sheet Thickness & Material | Sheet Hardness HRB Max. | Installation (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) | Pull thru (lbs.) |
|---|---|---|---|---|---|---|---|---|
| INCH (in.) | 440 | 6 | .060 SS | 87 | 9000 | 450 | 16 | 800 |
| | 632 | 11 | .060 SS | 87 | 9500 | 540 | 27 | 1350 |
| | 832 | 21 | .060 SS | 86 | 11200 | 780 | 58 | 1800 |
| | 1032 | 33 | .060 SS | 86 | 12000 | 800 | 95 | 2250 |
| | 420 | 70 | .060 SS | 88 | 13000 | 1600 | 156 | 3900 |
| | 518 | 80 | .090 SS | 92 | 16000 | 1775 | 295 | 7375 |
| | **Thread Code** | **Max. Nut Tight. Torque (N•m)** | **Sheet Thickness & Material** | **Sheet Hardness HRB Max.** | **Installation (kN)** | **Pushout (N)** | **Torque-out (N•m)** | **Pull thru (N)** |
| METRIC (mm) | M3 | .9 | 1.5mm SS | 87 | 40 | 2200 | 1.8 | 3500 |
| | M4 | 2.1 | 1.5mm SS | 86 | 50 | 3210 | 6.5 | 8000 |
| | M5 | 4.3 | 1.5mm SS | 86 | 53 | 3560 | 10.7 | 10000 |
| | M6 | 7.2 | 1.5mm SS | 88 | 58 | 4200 | 15.9 | 14900 |
| | M8 | 9.0 | 2.3mm SS | 92 | 71 | 7895 | 33.3 | 32804 |



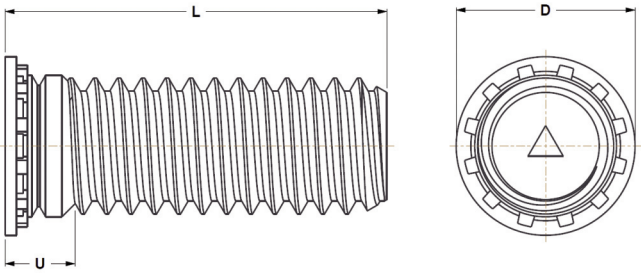
# Self-Clinching Studs for Stainless Steel with Superior Corrosion Resistance

## Series CH2S

CH2S studs are made of heat treated stainless steel providing a strong, flush-head assembly in stainless steel material as thin as .040 in. (1 mm) with high torque-out and pushout performance. They provide excellent corrosion resistance and are recommended for use in marine, food service, medical applications. They also can be used in applications up to 1200° F.

| Series | Material | Finish |
|---|---|---|
| CH2S | A286 Stainless Steel | Passivated ASTM A967 |

Thread: External 2A, ANSI B1.1 (6g ANSI/ASME B1.13M)
Use in: Materials with HRB-92 or less.




Part Number Structure:
CH2S-440-10
- Length Code
- Thread Code
- Series

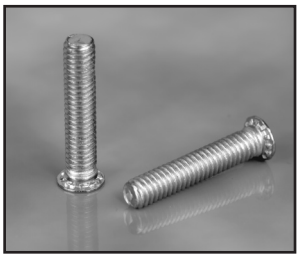
## Dimensions & Specifications

| | Thread Size | Thread Code | L Length ± .015 in. .250 | .312 | .375 | .500 | .625 | .750 | .875 | 1.00 | 1.25 | 1.50 | Thickness Range | +.003 .000 | D ±.015 | U Max | Min |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | #4-40 | 440 | -4 | -5 | -6 | -8 | -10 | -12 | -14 | -16 | | | .040-.095 | .111 | .176 | .085 | .219 |
| | #6-32 | 632 | -4 | -5 | -6 | -8 | -10 | -12 | -14 | -16 | -20 | -24 | .040-.095 | .137 | .206 | .090 | .250 |
| | #8-32 | 832 | -4 | -5 | -6 | -8 | -10 | -12 | -14 | -16 | -20 | -24 | .040-.095 | .163 | .237 | .090 | .281 |
| | #10-32 | 1032 | | -5 | -6 | -8 | -10 | -12 | -14 | -16 | -20 | -24 | .040-.095 | .189 | .256 | .100 | .281 |

## Dimensions & Specifications

| | Thread Size | Thread Code | L Length ± .4 mm 6 | 8 | 10 | 12 | 15 | 18 | 20 | 25 | 30 | 35 | Thickness Range | +.08 - .00 | D ±.4 | U Max | Min |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm) | M3x0.5 | M3 | -6 | -8 | -10 | 12 | -15 | -18 | -20 | -25 | | | 1 - 2.4 | 3 | 4.6 | 2.1 | 5.6 |
| | M4x0.7 | M4 | -6 | -8 | -10 | 12 | -15 | -18 | -20 | -25 | -30 | -35 | 1 - 2.4 | 4 | 5.9 | 2.4 | 7.2 |
| | M5x0.8 | M5 | | -8 | -10 | 12 | -15 | -18 | -20 | -25 | -30 | -35 | 1 - 2.4 | 5 | 6.5 | 2.7 | 7.2 |

Note: All items subject to minimum order.



# Self-Clinching Studs for Stainless Steel with Superior Corrosion Resistance

## Series CH2S

Continued from previous page.

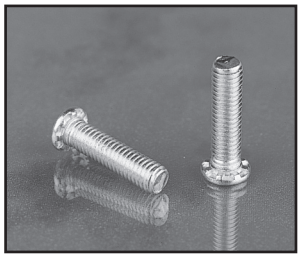
## Installation & Performance Data

| INCH (in.) | Thread Code | Max. Nut Tight. Torque (in-lbs.) | Sheet Thickness & Material | Sheet Hardness HRB Max. | Installation (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) | Pull thru (lbs.) |
|---|---|---|---|---|---|---|---|---|
| | 440 | 8.1 | .045 SS | 86 | 9000 | 520 | 10.6 | 605 |
| | 632 | 16 | .045 SS | 86 | 9500 | 670 | 19.5 | 940 |
| | 832 | 28 | .045 SS | 86 | 11200 | 785 | 37.5 | 1415 |
| | 1032 | 34 | .045 SS | 86 | 12000 | 800 | 59.5 | 1500 |

| METRIC (mm) | Thread Code | Max. Nut Tight. Torque (N•m) | Sheet Thickness & Material | Sheet Hardness HRB Max. | Installation (kN) | Pushout (N) | Torque-out (N•m) | Pull thru (N) |
|---|---|---|---|---|---|---|---|---|
| | M3 | 1.3 | 1.14mm SS | 86 | 40 | 2500 | 1.6 | 3500 |
| | M4 | 2.9 | 1.14mm SS | 86 | 50 | 3000 | 3.9 | 6000 |
| | M5 | 4.4 | 1.14mm SS | 86 | 53 | 3560 | 7.35 | 7320 |

# Self-Clinching Studs
# High Torque

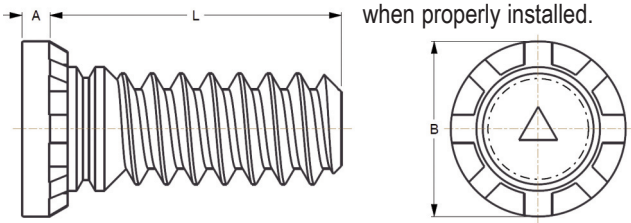
## Series HCH, HCHS & HCHB (High-Torque)



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.

The head of the stud will remain above the surface when properly installed.




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 A967 |
| HCHB | Phosphor Bronze CDA-510 | None |

*See Finish Spec. on Page 6.

Thread: External 2A, ANSI B1.1 (6g ANSI/ASME B1.13M).**

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.

**See Note 3 on Page 6 for Gauging Spec.

## 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 | .050 | .190 | .252 | .040 | .300 | .415 |
| #10-32 | 1032 | -8 | -12 | -16 | -20 | -24 | -28† | .050 | .190 | .252 | .040 | .300 | .415 |
| 1/4-20 | 420 | -8 | -12 | -16 | -20 | -24 | -28† | .060 | .250 | .312 | .050 | .380 | .460 |
| 5/16-18 | 518 | -8† | -12 | -16 | -20 | -24 | -28† | .075 | .312 | .374 | .070 | .480 | .500 |
| 3/8-16 | 616 | | -12 | -16 | -20 | -24 | -28† | .090 | .375 | .437 | .085 | .580 | .530 |

Thread Strength: HCH = 120 ksi / HCHS = 75 ksi / HCHB = 60 ksi.

† Not stocked, available on special order.

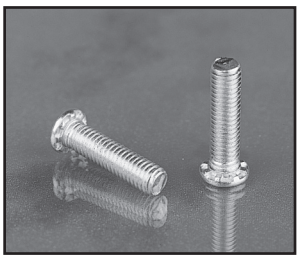
## Dimensions & Specifications

METRIC (mm)

| Thread Size | Thread Code | L Length ±.4 mm 20 | 25 | 30 | 35 | 40 | 50 | Min. | +.13 –.00 | Max. Hole In Attach. Parts | A Max. | B ±.25 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M5x0.8 | M5 | -20 | -25 | -30 | -35 | -40 | -50 | 1.3 | 5.0 | 6.4 | 1.14 | 7.8 | 10.7 |
| M6x1.0 | M6 | -20 | -25 | -30 | -35 | -40 | -50 | 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 | 10.0 | 11.5 | 2.29 | 15.7 | 13.7 |

Thread Strength: HCH = 900 MPa / HCHS = 515 MPa / HCHB = 415 MPa.
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
# High Torque

## Series HCH, HCHS & HCHB (High-Torque)

Continued from previous page.

### *Installation & Performance Data*

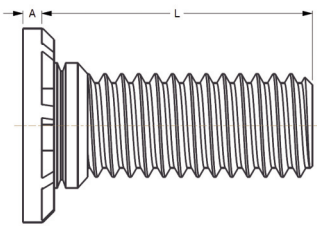
| | Thread Code | Series | Sheet Thickness & Material | Sheet Hardness HRB | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (ft.-lbs.) | Max. Nut Tightening Torque (ft.-lbs.) |
|---|---|---|---|---|---|---|---|---|
| INCH (in.) | 1024<br>1032 | HCH | .060 Aluminum | 15 | 3000 | 180 | 4 | 4.6 |
| | | HCH | .060 Steel | 65 | 6000 | 375 | 5 | 4.6 |
| | | HCHS | .050 Aluminum | 38 | 3000 | 180 | 4 | 2.5 |
| | | HCHS | .058 Aluminum | 52 | 4500 | 325 | 4 | 2.5 |
| | | HCHB | .061 Copper CDA-110 | 28 | 3400 | 150 | 2.9 | 1.7 |
| | 420 | HCH | .060 Aluminum | 43 | 5500 | 285 | 11 | 9.6 |
| | | HCH | .060 Steel | 59 | 7000 | 480 | 11 | 9.6 |
| | | HCHS | .064 Aluminum | 32 | 4000 | 285 | 8 | 5.2 |
| | | HCHS | .072 Aluminum | 43 | 6500 | 480 | 8 | 5.2 |
| | | HCHB | .061 Copper CDA-110 | 28 | 6000 | 380 | 5 | 3.6 |
| | 518 | HCH | .091 Aluminum | 39 | 8000 | 380 | 22 | 20 |
| | | HCH | .090 Steel | 58 | 10000 | 590 | 22 | 20 |
| | | HCHS | .087 Aluminum | 41 | 5500 | 380 | 15 | 11 |
| | | HCHS | .099 Steel | 44 | 7500 | 590 | 15 | 11 |
| | | HCHB | .126 Copper CDA-110 | 32 | 7500 | 500 | 11 | 7 |
| | 616 | HCH | .091 Aluminum | 39 | 12000 | 550 | 25 | 35 |
| | | HCH | .090 Steel | 58 | 16000 | 780 | 36 | 35 |
| | | HCHS | .123 Aluminum | 44 | 10000 | 560 | 25 | 19 |
| | | HCHS | .099 Steel | 44 | 13000 | 780 | 25 | 19 |
| | | HCHB | .126 Copper CDA-110 | 32 | 12000 | 560 | 18 | 13 |
| | Thread Code | Series | Sheet Thickness & Material | Sheet Hardness HRB | Installation Force (kN) | Pushout (N) | Torque-out (N • m) | Max. Nut Tightening Torque (N • m) |
| METRIC (mm) | M5 | HCH | 1.5 Aluminum | 15 | 13 | 800 | 5.4 | 7.7 |
| | | HCH | 1.5 Steel | 65 | 26 | 1500 | 7.6 | 7.7 |
| | | HCHS | 1.62 Aluminum | 35 | 12.4 | 800 | 5.4 | 3.8 |
| | | HCHS | 1.47 Aluminum | 54 | 21.7 | 1500 | 6.4 | 3.8 |
| | | HCHB | 1.5 Copper CDA-110 | 28 | 15.6 | 1115 | 3.4 | 2.7 |
| | M6 | HCH | 1.5 Aluminum | 43 | 29 | 1270 | 14 | 13 |
| | | HCH | 1.5 Steel | 59 | 33 | 1750 | 14 | 13 |
| | | HCHS | 1.62 Aluminum | 35 | 15.4 | 1270 | 11 | 6.5 |
| | | HCHS | 1.6 Aluminum | 45 | 24.6 | 1750 | 11 | 6.5 |
| | | HCHB | 1.5 Copper CDA-110 | 28 | 25.3 | 1600 | 6.7 | 4.5 |
| | M8 | HCH | 2.3 Aluminum | 39 | 35.6 | 1700 | 30 | 32 |
| | | HCH | 2.3 Steel | 58 | 44.5 | 2200 | 30 | 32 |
| | | HCHS | 2.23 Aluminum | 44 | 24.4 | 1700 | 20 | 16 |
| | | HCHS | 2.48 Steel | 43 | 37.8 | 2100 | 20 | 16 |
| | | HCHB | 3.2 Copper CDA-110 | 32 | 33 | 2250 | 15.3 | 11 |
| | M10 | HCH | 2.3 Aluminum | 39 | 53.3 | 2445 | 36 | 63 |
| | | HCH | 2.3 Steel | 58 | 91.2 | 3470 | 49 | 63 |
| | | HCHS | 2.3 Aluminum | 44 | 44.4 | 2445 | 36 | 31 |
| | | HCHS | 2.3 Steel | 44 | 57.7 | 3470 | 36 | 31 |
| | | HCHB | 3.2 Copper CDA-110 | 32 | 53.3 | 2500 | 25 | 22 |

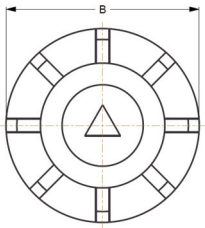
# Self-Clinching Studs
# High Torque (Wide Head)



## Series HCW (Wide-Head)

HCW Wide-Head studs offer advantages over weld studs and other fasteners. The wide head configuration provides strong load bearing threads in materials as thin as .040 in. (1mm).




| Series | Material | Finish |
|---|---|---|
| HCW | Heat-treated Medium Carbon Steel | Zinc* Clear |

*See Finish Spec. on Page 6.

Thread: External 2A, ANSI B1.1 (6g ANSI/ASME B1.13M).**

Use in: Cold-rolled Steel or 5052-H34 Aluminum with Rockwell Hardness of HRB-85 or less:

Part Number Structure:

HCW 1032-12
- 1032 → Length Code
- 12 → Thread Code
- HCW → Series

**See Note 3 on Page 6 for Gauging Spec.

## Dimensions & Specifications

| | Thread Size | Thread Code | L Length ±.015 in. .500 | .750 | 1.00 | 1.25 | 1.50 | 1.75 | 2.00 | Min. Sheet Thickness | +.005 -.000 | A Max. | B ±.01 | Max Hole in Attached Parts | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | #10-32 | 1032 | -8† | -12 | -16 | -20 | -24† | -28† | -32† | .040 | .190 | .048 | .357 | .280 | .360 |
| | 1/4-20 | 420 | -8† | -12 | -16 | -20 | -24† | -28† | -32† | .040 | .250 | .060 | .462 | .340 | .470 |
| | 5/16-18 | 518 | -8† | -12 | -16 | -20 | -24 | -28† | -32† | .060 | .312 | .083 | .586 | .402 | .560 |

Thread Strength= 120 ksi.

## Dimensions & Specifications

| | Thread Size | Thread Code | L Length ±.4 mm 15 | 20 | 25 | 30 | 35 | 40 | 50 | Min. Sheet Thickness | +.13 -.00 | A Max. | B ±.25 | Max Hole in Attached Parts | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm) | M5 x 08 | M5 | -15† | -20 | -25† | -30 | -35† | -40† | -50† | 1 | 5 | 1.35 | 9.6 | 7.3 | 10 |
| | M6 x 1.0 | M6 | -15† | -20 | -25† | -30 | -35† | -40† | -50† | 1 | 6 | 1.52 | 11.35 | 8.3 | 11.5 |
| | M8 x 1.25 | M8 | -15† | -20 | -25† | -30 | -35† | -40† | -50† | 1.5 | 8 | 2.13 | 15.3 | 10.3 | 14.5 |

Thread Strength= 900 MPa.

† Not stocked, available on special order.

Continued on next page.



# Self-Clinching Studs
# High Torque (Wide Head)

## Series HCW
## (Wide-Head)

Continued from previous page.

### *Installation & Performance Data*

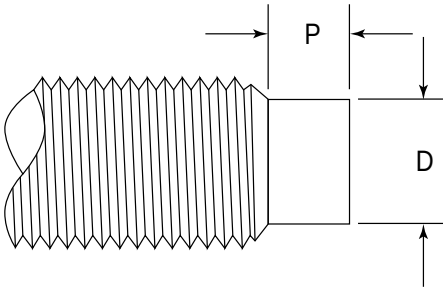
| | Thread Code | Sheet Thickness & Material | Sheet Hardness HRB | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) |
|---|---|---|---|---|---|---|
| INCH (in.) | 1032 | .040 Aluminum | 27 | 7500 | 170 | 60 |
| | | .040 Cold Rolled Steel | 67 | 9500 | 300 | 60 |
| | 420 | .040 Aluminum | 27 | 8000 | 180 | 120 |
| | | .040 Cold Rolled Steel | 67 | 13500 | 340 | 130 |
| | 518 | .060 Aluminum | 22 | 9000 | 275 | 240 |
| | | .060 Cold Rolled Steel | 65 | 15500 | 575 | 290 |
| | **Thread Code** | **Sheet Thickness & Material** | **Sheet Hardness HRB** | **Installation Force (kN)** | **Pushout (N)** | **Torque-out (N•m)** |
| METRIC (mm) | M5 | 1 mm Aluminum | 27 | 37.7 | 690 | 8.1 |
| | | 1 mm Cold Rolled Steel | 67 | 51.1 | 1350 | 8.1 |
| | M6 | 1 mm Aluminum | 27 | 39 | 750 | 11.8 |
| | | 1 mm Cold Rolled Steel | 67 | 60 | 1400 | 14.4 |
| | M8 | 1.5 mm Aluminum | 22 | 42 | 1230 | 23.5 |
| | | 1.5 mm Cold Rolled Steel | 65 | 71.1 | 2400 | 33.9 |

## 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 most CH, TCH, HCH, CHTS, and HCW style studs as a special order, using the following Part Number Structure:

Example: HCW 1032-8 DP

- DP → Dog-Point
- 8 → Length Code
- 1032 → Thread Code
- HCW → Series

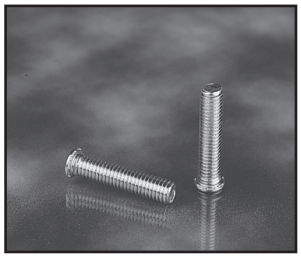



| INCH (in.) | D ±.005 | P ±.010 | METRIC (mm) | D ±.13 | P ±.25 |
|---|---|---|---|---|---|
| 6-32 | .086 | .050 | M3.5 x 0.6 | 2.4 | 1.27 |
| 8-32 | .111 | .055 | M4 x 0.7 | 2.79 | 1.4 |
| 10-24 | .124 | .065 | M5 x 0.8 | 3.66 | 1.78 |
| 10-32 | .138 | .065 | M6 x 1 | 4.37 | 2.03 |
| 1/4 x 20 | .173 | .085 | M8 x 1.25 | 6.05 | 2.67 |
| 1/4 x 28 | .192 | .085 | | | |
| 5/16 x 18 | .228 | .105 | | | |

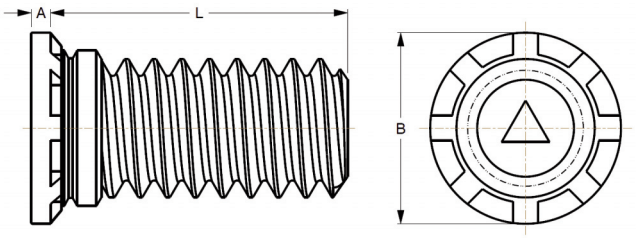
Note: Maximum dog-point diameter is .003 in. (.08 mm) less than the minimum minor diameter of 2B or 6g mating nut threads.

# Self-Clinching Studs
# Thin Sheets

## 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!




Part Number Structure:

TCH 440-4
- Length Code
- Thread Code
- Series

| Series | Material | Finish |
|---|---|---|
| TCH | Heat-treated Carbon Steel | Zinc* Clear |
| TCHS | 300 Series Stainless Steel | Passivated ASTM A967 |

*See Finish Spec. on Page 6.

Thread: External 2A, ANSI B1.1 (6g ANSI/ASME B1.13M).**

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.

**See Note 3 on Page 6 for Gauging Spec.

## Dimensions & Specifications

INCH (in.)

| Thread Size | Thread Code | L Length ±.015 in. .250 | .312 | .375 | .500 | .625 | .750 | .875 | 1.00 | 1.25 | 1.50 | Min. | +.003 –.000 | A Max. | B ±.015 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #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 |

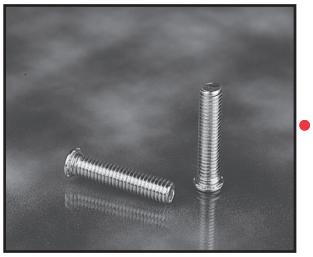
†Not stocked, available on special order.

## Dimensions & Specifications

METRIC (mm)

| Thread Size | Thread Code | L Length ±.4 mm 6 | 8 | 10 | 12 | 15 | 18 | 20 | 22 | 25 | 28 | 30 | 35 | 38 | Min. | +.08 –.00 | A Max. | B ±.4 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M3 x 0.5 | M3 | -6 | -8 | -10 | -12 | -15 | -18 | -20 | | -25 | | | | | .51 | 3.0 | .64 | 4.5 | 5.6 |
| M4 x 0.7 | M4 | | | -10 | -12 | -15 | -18 | -20 | -22 | -25 | -28 | -30 | -35 | -38 | .51 | 4.0 | .64 | 5.8 | 7.2 |
| M5 x 0.8 | M5 | | | -10 | -12 | -15 | -18 | -20 | -22 | -25 | -28 | -30 | -35 | -38 | .51 | 5.0 | .64 | 6.4 | 7.2 |

Continued on next page.



# Self-Clinching Studs
# Thin Sheets

## Series TCH & TCHS
## Non-Flush Studs

Continued from previous page.

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

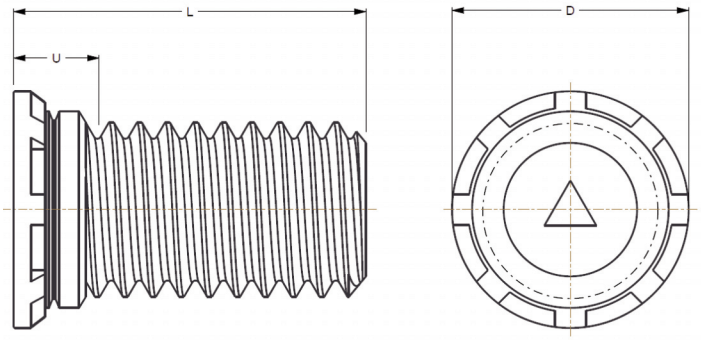
### *Installation & Performance Data*

| | Thread Code | Max. Nut Tight. Torque (in-lbs.) | Sheet Thickness & Material | Sheet Hardness HRB | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) |
|---|---|---|---|---|---|---|---|
| INCH (in.) | 440 | 5 | .020 Aluminum | 28 | 1200 | 45 | 7 |
| | | | .025 Steel | 52 | 1500 | 100 | 8 |
| | 632 | 9 | .020 Aluminum | 28 | 1500 | 50 | 8 |
| | | | .025 Steel | 52 | 2500 | 110 | 16 |
| | 832 | 17 | .020 Aluminum | 28 | 2200 | 60 | 11 |
| | | | .025 Steel | 52 | 2700 | 120 | 26 |
| | 1024 | 24 | .020 Aluminum | 28 | 2500 | 65 | 14 |
| | 1032 | 27 | .025 Steel | 52 | 3000 | 130 | 28 |
| | **Thread Code** | **Max. Nut Tight. Torque (N•m)** | **Sheet Thickness & Material** | **Sheet Hardness HRB** | **Installation Force (kN)** | **Pushout (N)** | **Torque-out (N•m)** |
| METRIC (mm) | M3 | .74 | .5 Aluminum | 28 | 5.3 | 195 | 6 |
| | | | .6 Steel | 52 | 6.7 | 300 | 1 |
| | M4 | 1.70 | .5 Aluminum | 28 | 9.8 | 250 | .7 |
| | | | .6 Steel | 52 | 13.4 | 500 | 2.5 |
| | M5 | 3.50 | .5 Aluminum | 28 | 13.4 | 270 | 1.3 |
| | | | .6 Steel | 52 | 17.8 | 670 | 3 |

# Self-Clinching Studs
# Close Edge
## 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 mm) or more.




| Series | Material | Finish |
|---|---|---|
| CHE | Heat-treated Carbon Steel | Zinc* Clear |
| CHES | 300 Series Stainless Steel | Passivated ASTM A967 |

* See Finish Spec. on Page 6

Thread: External 2A, ANSI B1.1 (6g ANSI/ASME B1.13M).**

Use in: CHE - Material with HRB=80 or less.
CHES - Material with HRB-70 or less.

Part Number Structure:
CHE 256 - 4




**See Note 3 on Page 6 for Gauging Spec.

## Dimensions & Specifications

Note: Min Sheet Thickness .040 in.

| 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 | +.003 -.000 | D ±.015 | U Max | Min |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #2-56 | CHE | CHES | 256 | -4 | -5 | -6 | -8 | -10 | -12 | | | | | .085 | .122 | .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 | -4 | -5 | -6 | -8 | -10 | -12 | -14 | -16 | -20 | -24 | .189 | .225 | .100 | .210 |

## Dimensions & Specifications

Note : Min Sheet Thickness 1 mm

| METRIC (mm) Thread Size | Series Steel | Series SS | Thread Code | L Length ±.4 mm 6 | 8 | 10 | 12 | 15 | 18 | 20 | 25 | 30 | 35 | +.08 -.00 | D ±.4 | U Max | Min |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M2.5 X 0.45 | CHE | CHES | M2.5 | -6 | -8 | -10 | -12 | -15 | -18 | | | | | 2.5 | 3.15 | 2.1 | 2.8 |
| M3 X 0.5 | CHE | CHES | M3 | -6 | -8 | -10 | -12 | -15 | -18 | -20 | | | | 3 | 3.65 | 2.1 | 3.3 |
| M3.5 X 0.6 | CHE | CHES | M3.5 | -6 | -8 | -10 | -12 | -15 | -18 | -20 | -25 | -30 | | 3.5 | 4.15 | 2.3 | 3.8 |
| M4 X 0.7 | CHE | CHES | M4 | -6 | -8 | -10 | -12 | -15 | -18 | -20 | -25 | -30 | -35 | 4 | 4.65 | 2.4 | 4.3 |
| M5 X 0.8 | CHE | CHES | M5 | -6 | -8 | -10 | -12 | -15 | -18 | -20 | -25 | -30 | -35 | 5 | 5.9 | 2.7 | 5.6 |

Continued on next page.



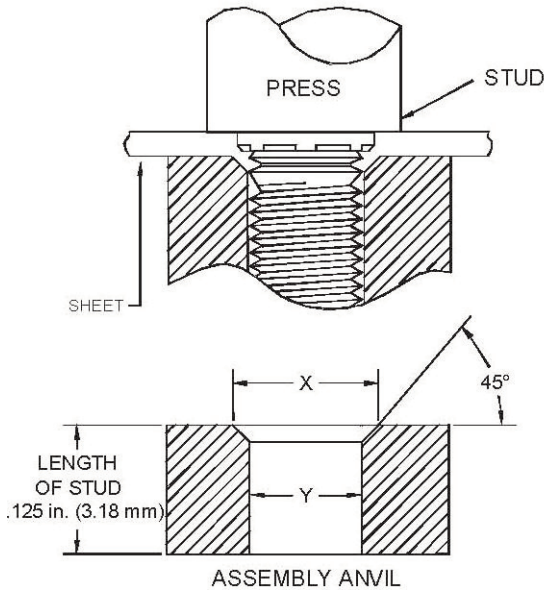
# Self-Clinching Studs
# Close Edge
## Series CHE & CHES

Continued from previous page.

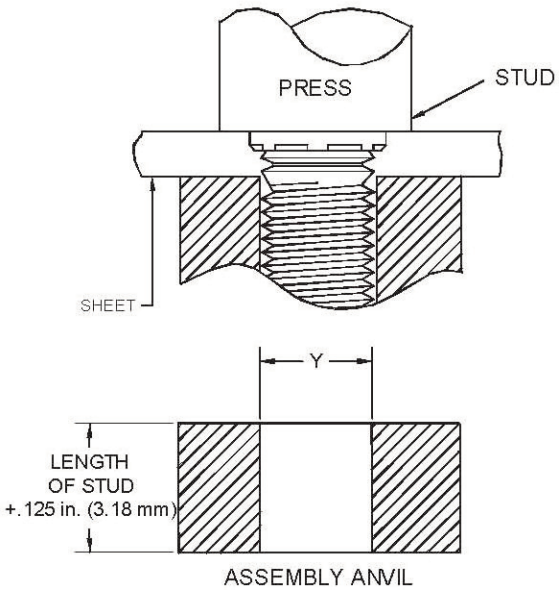
### Installation Procedure

1) Prepare the correct size hole in the base material by punching or drilling. Do not deburr hole.
2) Place the stud through 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 in. (1.5 mm) and less




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




| | | Anvil Dimensions (in) | |
|---|---|---|---|
| | SERIES | X + .004 | Y + .003 |
| INCH (in.) | 256 | .110 | .087 |
| | 440 | .136 | .113 |
| | 632 | .163 | .139 |
| | 832 | .188 | .165 |
| | 1032 | .216 | .191 |

| | | Anvil Dimensions (mm) | |
|---|---|---|---|
| | SERIES | X + .01 | Y + .08 |
| METRIC (mm) | M2.5 | 3.1 | 2.53 |
| | M3 | 3.6 | 3.03 |
| | M3.5 | 4.1 | 3.53 |
| | M4 | 4.6 | 5.03 |
| | M5 | 5.6 | 5.03 |

Continued on next page.

# Self-Clinching Studs
# Close Edge
## Series CHE & CHES



Continued from previous page.

### *Installation & Performance Data*

**INCH (in.)**

| Thread Code | Max. Nut Tightening Torque (in. lbs.) | Sheet Thickness And Material | Sheet Hardness HRB | Installation Force (lbs.) | Pushout (lbs.) | Torque Out (in.-lbs.) | Pull Thru (lbs.) | Test Bushing Hole Size |
|---|---|---|---|---|---|---|---|---|
| 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 |

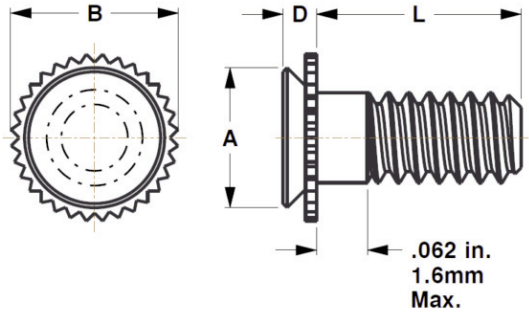
**METRIC (mm)**

| Thread Code | Max. Nut Tightening Torque (N.m.) | Sheet Thickness And Material | Sheet Hardness HRB | Installation Force (kN) | Pushout (N) | Torque Out (N•m) | Pull Thru (N) | Test Bushing Hole Size |
|---|---|---|---|---|---|---|---|---|
| M2.5 | .41 | 1.2mm Aluminum | 33 | 3.1 | 285 | .55 | 1200 | 3 |
| | .41 | 1.1mm Cold Rolled Steel | 54 | 5.3 | 450 | 1.1 | 2250 | 3 |
| M3 | .46 | 1.2mm Aluminum | 33 | 4.4 | 285 | .65 | 1300 | 3.5 |
| | .74 | 1.1mm Cold Rolled Steel | 54 | 5.3 | 475 | 1.25 | 2500 | 3.5 |
| M3.5 | .58 | 1.2mm Aluminum | 33 | 4.4 | 290 | .76 | 1400 | 4 |
| | 1.15 | 1.1mm Cold Rolled Steel | 54 | 6.6 | 500 | 1.75 | 2800 | 4 |
| M4 | .75 | 1.2mm Aluminum | 33 | 5.3 | 365 | 1.1 | 1550 | 4.5 |
| | 1.7 | 1.1mm 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 | 1.1mm Cold Rolled Steel | 54 | 20 | 1000 | 4.4 | 3750 | 5.5 |

# Self-Clinching Studs
# Concealed-Head
## Series CFA & CFC



CFA & CFC concealed-head studs allow permanent mounting in thin metal sheets, using a hollow punch and solid anvil. The stud head is pressed permanently into a blind milled hole, with no marring of the exterior surface.




| Series | Material | Finish |
|---|---|---|
| CFA | 2024-T4 Aluminum | None |
| CFC | 300 Series Stainless Steel | Passivated ASTM A967 |

Thread: External 2A, ANSI B1.1 (6g ANSI/ASME B1.13M).*

Use in: CFA - HRB-50 or less.
CFC - HRB-70 or less.

Part Number Structure:

CFA-1-440-4

- Length Code
- Thread Code
- Shank Length
- Series

*See Note 3 on Page 6 for Gauging Spec.

## Dimensions & Specifications

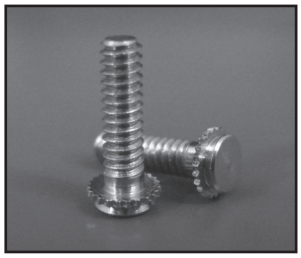
| | Thread Size | Material: Aluminum | Material: Stainless Steel | Thread Code | L Length ±.015 (Length Code is in 16ths of an inch): .250 | .375 | .500 | .625 | .750 | 1.00 | Min. | Blind Mounting Hole Dia. +.003 -.000 | Min. Depth Of Blind Hole | D Max. | B ±.010 | A Max. | Min. | Max. Hole in Attached Parts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | #4-40 | CFA-1 | CFC-1 | 440 | -4 | -6 | -8 | -10 | -12 | | .062 | .172 | .043 | .041 | .205 | .171 | .156 | .135 |
| | | CFA-2 | CFC-2 | | -4 | -6 | -8 | -10 | -12 | | .093 | | .075 | .071 | | | | |
| | #6-32 | CFA-1 | CFC-1 | 632 | -4 | -6 | -8 | -10 | -12 | -16 | .062 | .213 | .043 | .041 | .250 | .212 | .188 | .160 |
| | | CFA-2 | CFC-2 | | -4 | -6 | -8 | -10 | -12 | -16 | .093 | | .075 | .071 | | | | |
| | #8-32 | CFA-1 | CFC-1 | 832 | -4 | -6 | -8 | -10 | -12 | -16 | .062 | .290 | .043 | .041 | .328 | .289 | .219 | .185 |
| | | CFA-2 | CFC-2 | | -4 | -6 | -8 | -10 | -12 | -16 | .093 | | .075 | .071 | | | | |
| | #10-32 | CFA-1 | CFC-1 | 1032 | | -6 | -8 | -10 | -12 | -16 | .062 | .312 | .043 | .041 | .350 | .311 | .250 | .210 |
| | | CFA-2 | CFC-2 | | | -6 | -8 | -10 | -12 | -16 | .093 | | .075 | .071 | | | | |

## Dimensions & Specifications

| | Thread Size | Material: Aluminum | Material: Stainless Steel | Thread Code | L Length ±.4 (Length Code is in mm): 6 | 8 | 10 | 12 | 16 | 20 | 25 | Min. | Blind Mounting Hole Dia. +.08 -.00 | Min. Depth Of Blind Hole | D Max. | B ±.25 | A Max. | Min. | Max. Hole in Attached Parts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm) | M3x0.5 | CFA-1 | CFC-1 | M3 | -6 | -8 | -10 | -12 | -16 | -20 | | 1.6 | 4.37 | 1.1 | 1.04 | 5.21 | 4.35 | 4 | 3.6 |
| | | CFA-2 | CFC-2 | | -6 | -8 | -10 | -12 | -16 | -20 | | 2.4 | | 1.91 | 1.8 | | | | |
| | M4x0.7 | CFA-1 | CFC-1 | M4 | -6 | -8 | -10 | -12 | -16 | -20 | -25 | 1.6 | 7.37 | 1.1 | 1.04 | 8.33 | 7.35 | 5.6 | 4.6 |
| | | CFA-2 | CFC-2 | | -6 | -8 | -10 | -12 | -16 | -20 | -25 | 2.4 | | 1.91 | 1.8 | | | | |
| | M5x0.8 | CFA-1 | CFC-1 | M5 | | | -10 | -12 | -16 | -20 | -25 | 1.6 | 7.93 | 1.1 | 1.04 | 8.89 | 7.9 | 6.4 | 5.6 |
| | | CFA-2 | CFC-2 | | | | -10 | -12 | -16 | -20 | -25 | 2.4 | | 1.91 | 1.8 | | | | |

†Not stocked, available on special order.

Continued on next page.



# Self-Clinching Studs Concealed-Head

## Series CFA & CFC

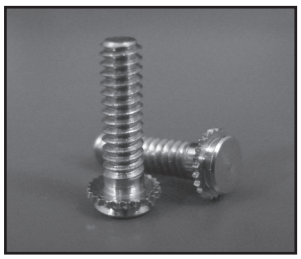
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### *Installation & Performance Data*

| | Type | Thread Code | Tightening Torque Max. (in.-lbs.) | Sheet Material: Cold-rolled Steel Installation Force (lbs.) | Cold-rolled Steel Pullout (lbs.) | 5052-H34 Aluminum Installation Force (lbs.) | 5052-H34 Aluminum Pullout (lbs.) |
|---|---|---|---|---|---|---|---|
| INCH (in.) | CFC-1 | 440 | 4.75 | 4000 | 300 | 2800 | 200 |
| | | 632 | 8.75 | 4500 | 350 | 3000 | 240 |
| | | 832 | 18 | 4800 | 400 | 4000 | 270 |
| | | 1032 | 32 | 5500 | 450 | 5000 | 290 |
| | CFC-2 | 440 | 4.75 | 4300 | 350 | 2900 | 220 |
| | | 632 | 8.75 | 5000 | 360 | 3200 | 240 |
| | | 832 | 18 | 5300 | 440 | 4000 | 300 |
| | | 1032 | 32 | 6000 | 600 | 5000 | 430 |
| | CFA-1 | 440 | 2.85 | N/A | N/A | 1400 | 130 |
| | | 632 | 5.4 | N/A | N/A | 1800 | 160 |
| | | 832 | 10.8 | N/A | N/A | 2800 | 180 |
| | | 1032 | 19.2 | N/A | N/A | 4000 | 210 |
| | CFA-2 | 440 | 2.85 | N/A | N/A | 1500 | 200 |
| | | 632 | 5.4 | N/A | N/A | 2500 | 260 |
| | | 832 | 10.8 | N/A | N/A | 3000 | 310 |
| | | 1032 | 19.2 | N/A | N/A | 3500 | 300 |

| | Type | Thread Code | Max. (N•m) | (kN) | (N) | (kN) | (N) |
|---|---|---|---|---|---|---|---|
| METRIC (mm) | CFC-1 | M3 | .5 | 8 | 1065 | 6.2 | 575 |
| | | M4 | 2 | 17.8 | 1200 | 12.5 | 800 |
| | | M5 | 3.6 | 22.2 | 1290 | 17.8 | 930 |
| | CFC-2 | M3 | .5 | 8.9 | 1065 | 6.7 | 890 |
| | | M4 | 2 | 14.7 | 1955 | 13.3 | 1375 |
| | | M5 | 3.6 | 17.8 | 3020 | 15.6 | 1600 |
| | CFA-1 | M3 | .3 | N/A | N/A | 6.2 | 555 |
| | | M4 | 1.2 | N/A | N/A | 12.5 | 645 |
| | | M5 | 2.16 | N/A | N/A | 17.8 | 755 |
| | CFA-2 | M3 | .3 | N/A | N/A | 6.7 | 845 |
| | | M4 | 1.2 | N/A | N/A | 13.3 | 1065 |
| | | M5 | 2.16 | N/A | N/A | 15.6 | 1330 |

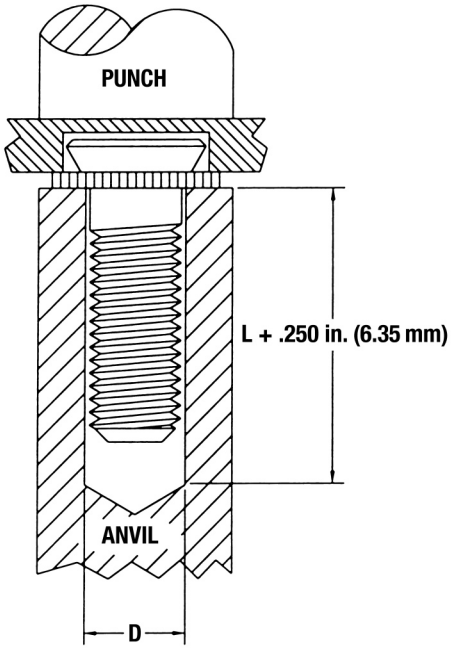
# Self-Clinching Studs
# Concealed-Head
## Series CFA & CFC
## Typical Installation Method



Continued from previous page.

### Installation Procedure

1. Mill a blind hole in material to specified depth.*
2. Place fastener into hole in anvil.
3. Place sheet material over head of fastener.
4. Apply a downward squeezing force with punch, pressing on sheet material until serrated collar of fastener is flush with surface.

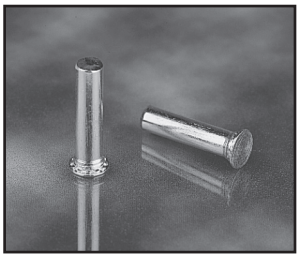



*Depth of blind holes may be greater than minimum, if sheet thickness allows.

### *Anvil 'D' Diameter Dimensions for Concealed Head Studs*

| | Series | Thread Code | D Dia. (in.) |
|---|---|---|---|
| INCH (in.) | CFA CFC | 440 | .127 |
| | | 632 | .152 |
| | | 832 | .179 |
| | | 1032 | .205 |

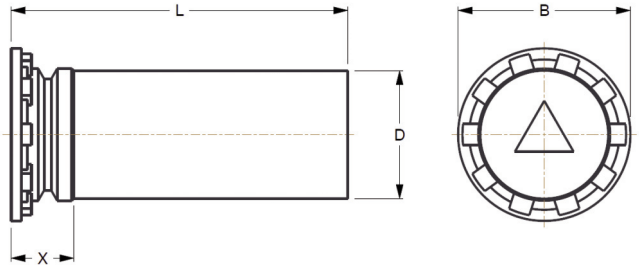
| | Series | Thread Code | D Dia. (mm) |
|---|---|---|---|
| METRIC (mm) | CFA CFC | M3 | 3.4 |
| | | M4 | 4.4 |
| | | M5 | 5.4 |



# 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 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 A967 |
| CHA | 2024-T4 Aluminum | None |

*See Finish Spec. on Page 6.

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*

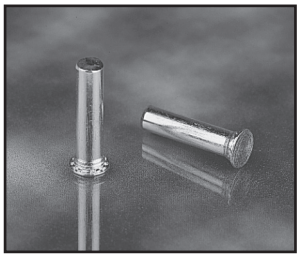
| | D Pin Dia. ±.002 | L Length ±.015 in. .250 | .312 | .375 | .500 | .625 | .750 | .875 | 1.00 | 1.25 | 1.50 | B ±.015 | X Max. | Min. | +.003 –.000 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | .073 | -4 | -5 | -6 | -8 | -10 | | | | | | .15 | .075 | .040 | .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 | -14 | -16 | -20 | | .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.

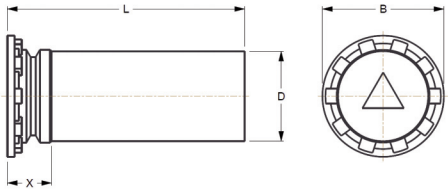
Continued on next page.

# Self-Clinching Pins

## Series CH, CHN, CHS & CHA



Continued from previous page.




### *Dimensions & Specifications*

| METRIC (mm) | D Pin Dia. ±.05 | L Length ±.4mm | | | | | | | | | | B ±.4 | X Max. | Min. | + .08 – .00 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 8 | 10 | 12 | 15 | 18 | 20 | 25 | 30 | 35 | | | | | |
| | 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 |

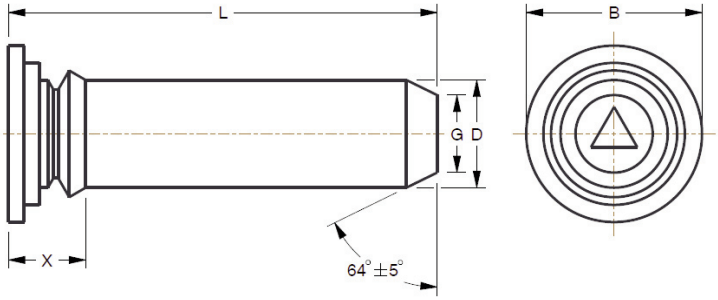


# Self-Clinching Tapered Guide Pins

## Series CGS (Tapered Guide Pins)

CGS Tapered Guide Pins provide a stong flush-head assembly in materials as thin as .040 in. (1mm) with high pushout resistance. A tapered end allows ease of locating mating hole in a variety of alignment and pivot applications.

| Series | Material | Finish |
|---|---|---|
| CGS | 300 Series Stainless Steel | Passivated ASTM A967 |




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

Part Number Structure:

CGS-125-8

- Length Code
- Thread Code
- Series

## Dimensions & Specifications

| | Pin Dia. D ±.002 | L Length ±.015 in. .375 | .500 | .625 | .750 | 1.00 | B ±.015 | X Max. | G ±.006 | Min. | + .003 – .000 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | .125 | -6 | -8 | -10 | -12 | | .205 | .090 | .090 | .040 | .144 | .250 |
| | .187 | -6 | -8 | -10 | -12 | -16 | .270 | .090 | .132 | .040 | .205 | .280 |
| | .250 | | -8 | -10 | -12 | -16 | .335 | .090 | .177 | .040 | .272 | .310 |

| | Pin Dia. D ±.05 | L Length ±.4mm 8 | 10 | 12 | 16 | 20 | B ±.4 | X Max. | G ±.15 | Min. | + .08 – .00 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm) | 3mm | -8 | -10 | -12 | -16 | | 5.2 | 2.29 | 2.05 | 1 | 3.5 | 6.4 |
| | 4mm | -8 | -10 | -12 | -16 | | 6.12 | 2.29 | 2.82 | 1 | 4.5 | 7.1 |
| | 5mm | | -10 | -12 | -16 | -20 | 7.19 | 2.29 | 3.53 | 1 | 5.5 | 7.6 |
| | 6mm | | | -12 | -16 | -20 | 8.13 | 2.29 | 4.24 | 1 | 6.5 | 7.9 |

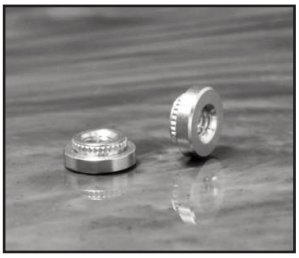
## Installation & Performance Data

| | Pin Dia. D ±.002 | Test Material | Sheet Hardness HRB | Installation (lbs.) | Pushout (lbs.) |
|---|---|---|---|---|---|
| INCH (in.) | .125 | Aluminum | 20 | 4500 | 150 |
| | | Steel | 62 | 6500 | 250 |
| | .187 | Aluminum | 18 | 6500 | 230 |
| | | Steel | 60 | 8000 | 400 |
| | .250 | Aluminum | 18 | 7000 | 270 |
| | | Steel | 62 | 9000 | 500 |

| | Pin Dia. D ±.05 | Test Material | Sheet Hardness HRB | Installation (kN) | Pushout (kN) |
|---|---|---|---|---|---|
| METRIC (mm) | 3mm | Aluminum | 22 | 12 | .56 |
| | | Steel | 65 | 22 | .98 |
| | 4mm | Aluminum | 19 | 22 | .89 |
| | | Steel | 66 | 26.4 | 1.54 |
| | 5mm | Aluminum | 18 | 28.6 | 1.01 |
| | | Steel | 60 | 35.2 | 1.76 |
| | 6mm | Aluminum | 18 | 30.8 | 1.1 |
| | | Steel | 62 | 39.6 | 2.1 |

# Broaching Type Nuts

## Series CKF2 & CKFS2



CKF2 and CKFS2 broaching-type fasteners are designed for use on printed circuit boards and on most brittle or hard materials; such as, 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.

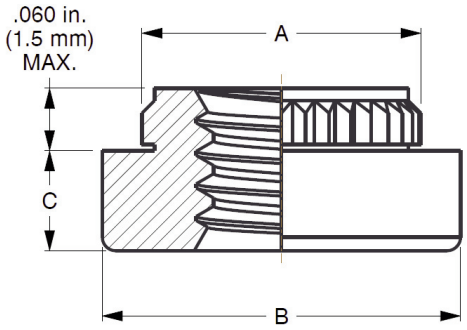
Since the aforementioned materials do not flow under pressure, these fasteners are designed with a knurled shank that can be pressed into a drilled hole. The shank grips the board with an interference fit by broaching its way into the panel as it is squeezed into the holes.

| Series | Material | Finish |
|---|---|---|
| CKF2 | Carbon Steel | Electro tin plating (Zinc* optional) |
| CKFS2 | 300 Series Stainless Steel | Passivated ASTM A967 |

*See Finish Spec. on Page 6.

Thread: Internal 2B, ANSI B1.1 (6H, ANSI/ASME B1.13M).

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



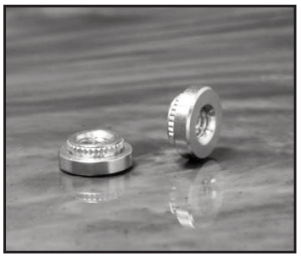

## *Dimensions & Specifications*

| | 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 –.00** | **Min.** | **Min.** |
| METRIC (mm) | M2 x 0.4 | CKF2M2 | CKFS2M2 | 4.19 | 5.56 | 1.5 | 3.73 | 4.2 | 1.53 |
| | M2.5 x 0.45 | CKF2M2.5 | CKFS2M2.5 | 4.68 | 5.56 | 1.5 | 4.22 | 4.4 | 1.53 |
| | M3 x 0.5 | CKF2M3 | CKFS2M3 | 4.68 | 5.56 | 1.5 | 4.22 | 4.4 | 1.53 |
| | M4 x 0.7 | CKF2M4 | CKFS2M4 | 6.81 | 8.74 | 2.0 | 6.4 | 6.4 | 1.53 |
| | M5 x 0.8 | CKF2M5 | CKFS2M5 | 7.37 | 9.53 | 3.0 | 6.9 | 7.1 | 1.53 |

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.

Continued on next page.



# Broaching Type Nuts

## Series CKF2 & CKFS2

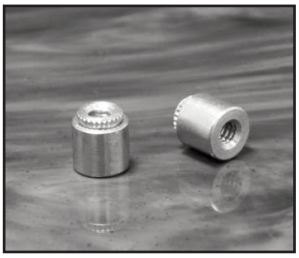
Continued from previous page.

### *Installation & Performance Data*

| | | Fiberglass .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 | 2.22 | 265 | .65 |
| | M2.5 | 2.22 | 285 | 1.35 |
| | M3 | 2.22 | 285 | 1.70 |
| | M4 | 2.90 | 415 | 3.95 |
| | M5 | 2.90 | 435 | 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 A967 |

*See Finish Spec. on Page 6.

Thread: Internal 2B, ANSI B1.1 (6H, ANSI/ASME B1.13M).

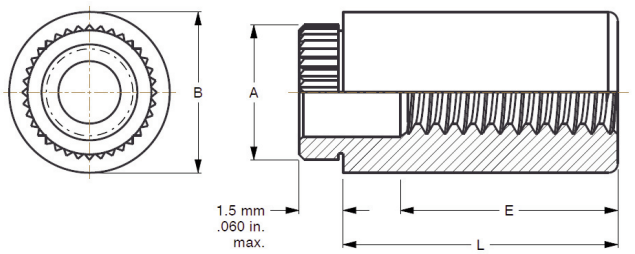
Use in: CKFE - Materials with Rockwell Hardness of B-60 or less.
CKFSE - Materials with Rockwell Hardness of B-70 or less.

Part Number Structure:

CKFE 440-4
- 4 → Length Code
- 40 → 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.

Note: Min Panel Thickness .060 in. (1.5mm)

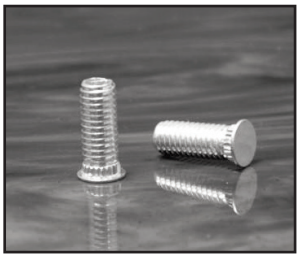
## Dimensions & Specifications

| | 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 | B ±.005 | +.003 -.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 | +.10 -.08 | Part Number Carbon Steel | Part Number Stainless Steel | Length ±.13 mm 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | A ±.08 | B ±.13 | +.08 -.00 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm) | M3x0.5 | | CKFEM3 | CKFSEM3 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16† | 4.68 | 5.56 | 4.22 | 4.4 |
| | | 3.6 | CKFE3.6 | CKFSE3.6 | -3 | -4 | -6† | -8† | -10† | -12† | -14† | -16† | 5.87 | 7.14 | 5.41 | 5.5 |
| | | 4.2 | CKFE4.2 | CKFSE4.2 | -3† | -4† | -6† | -8† | -10† | -12† | -14† | -16† | 6.86 | 8.74 | 6.4 | 7.1 |
| | E=minimum thread length (where applicable) | | | | Full | | | | | 9.5 ±.4 | | | | | | |

## Installation & Performance Data

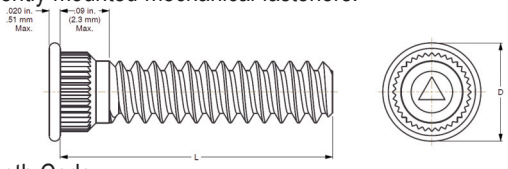
| | Thread Size | Fiberglass .060 in. (1.5 mm) Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) |
|---|---|---|---|---|
| INCH (in.) | #4-40 | 400 | 65 | 15 |
| | #6-32 | 500 | 80 | 30 |
| METRIC (mm) | Thread Size | Installation Force (kN) | Pushout (N) | Torque-out (N•m) |
| | M3 | 2.2 | 290 | 1.7 |



# 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.




Part Number Structure:

CKFH 440-4

- Length Code
- Thread Code
- Series

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

*See Finish Spec. on Page 6.

Thread: External 2A, ANSI B1.1 (6g ANSI/ASME B1.13M).**

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

**See Note 3 on Page 6 for Gauging Spec.

## 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 | .225 | .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 –.00 | Max. Size Clear. Hole in Attach. Parts | Max. Nut Tight. Torque | Min. | Anvil Hole +.08 –.00 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm) | M3x0.5 | CKFHM3 | -6 | -8 | -10 | -12 | -15 | -18 | 4.58 | 3 | 3.7 | .45 | 3.8 | 3.1 | 1.53 |
| | M4x0.7 | CKFHM4 | -6 | -8 | -10 | -12 | -15 | -18 | 5.74 | 4.2 | 4.8 | 1.60 | 5.1 | 4.1 | 1.53 |
| | M5x0.8 | CKFHM5 | -6 | -8 | -10 | -12 | -15 | -18 | 6.60 | 5 | 5.8 | 2.10 | 5.3 | 5.1 | 1.53 |

## Installation & Performance Data

| | Thread Size | Fiberglass .060 in. (1.5 mm) 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 |

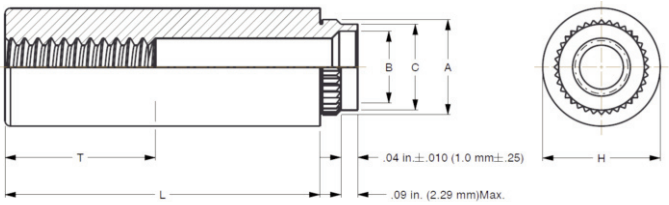
| | Thread Size | Installation Force (kN) | Pushout (N) | Torque-out (N•m) |
|---|---|---|---|---|
| METRIC (mm) | M3 | 1.80 | 285 | .79 |
| | M4 | 1.80 | 355 | 1.80 |
| | M5 | 1.80 | 400 | 1.92 |

# Broaching Type 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 PC boards.




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

Part Number Structure:

CKFB3 440-2
- 440-2 → Length Code
- 440-2 → Thread Code
- CKFB3 → Series

*See Finish Spec. on Page 6.

Thread: Internal 2B ANSI B1.1 (6H, ANSI/ASME B1.13M).
Use in: Materials with Rockwell Hardness of B-65 or less.

## Dimensions & Specifications

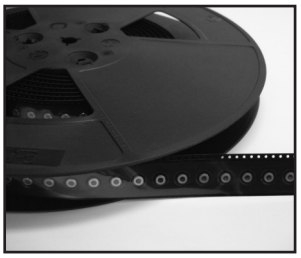
| | Thread Size | Part Number | L Length ±.005 in. .0625 | .125 | .187 | .250 | .312 | .375 | .500 | .625 | .750 | A ±.003 | C Max. | B ±.003 | H ±.005 | +.005 –.001 | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | #4-40 | CKFB3440 | -2 | -4 | -6 | -8 | -10 | -12 | -16 | -20 | | .179 | .165 | .122 | .218 | .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 ±.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 | 4.20 | 3.23 | 5.56 | 4.22 | 4.33 | 1.27 |
| | M4x0.7 | CKFB3M4 | -2 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | 6.68 | 6.33 | 5.23 | 8.74 | 6.40 | 6.36 | 1.65 |
| | "T" Minimum thread length | | Full | | | | | | 9.5 ±.4 | | | | | | | | | |

## Installation & Performance Data

| | | Fiberglass .060 in. (1.5 mm) | | |
|---|---|---|---|---|
| | Thread Size | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) |
| INCH (in.) | #4-40 | 1000 | 140 | 18 |
| | #6-32 | 1500 | 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 |



# Reel Mounted Spacers and Nuts

## Series CRM

CRM Reel Mount nuts and spacers provide a low-install-cost solution for surface mount hardware. The fasteners are fed from the recycleable reel using "pick and place" equipment and oriented prior to the reflow soldering operation.

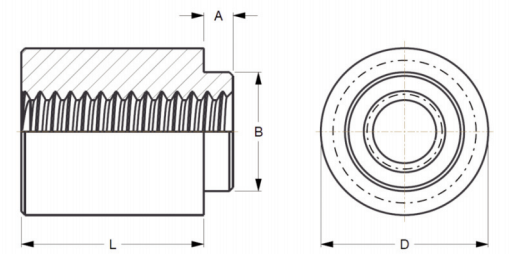
| Series | Material | Finish |
|---|---|---|
| CRM | Carbon Steel | Electro Tin Plating ASTM B545 Class A w/Preservative Coating |

Thread: Internal 2B,ANSI B1.1 (6H,ANSI/ASME B1.13M).

Part Number Structure:

CRM- 440 - 4

- Length Code
- Thread Code
- Series




### *Dimensions & Specifications*

| | Thread Size | Series | Thread Code | Thru Hole +.004 -.003 | L Length ±.005 .062 | .125 | .250 | .375 | A Max. | Min | +.003 -.000 | B Max | D ±.005 | Min Solder Pad Ø |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | #2-56 | CRM | 256 | | -2 | -4 | -8 | -12 | .060 | .060 | .147 | .142 | .219 | .244 |
| | #4-40 | CRM | 440 | | -2 | -4 | -8 | -12 | .060 | .060 | .166 | .161 | .219 | .24 |
| | #6-32 | CRM | 632 | | -2 | -4 | -8 | -12 | .060 | .060 | .213 | .208 | .281 | .306 |
| | #8-32 | CRM | 832 | | -2 | -4 | -8 | -12 | .060 | .060 | .250 | .245 | .344 | .369 |
| | | CRM | | .116 | -2 | -4 | -8 | -12 | .060 | .060 | .166 | .161 | .219 | .244 |
| | | CRM | | .143 | -2 | -4 | -8 | -12 | .060 | .060 | .213 | .208 | .281 | .306 |

| | Thread Size | Series | Thread Code | Thru Hole +.10 -.08 | L Length ±.13 mm 2 | 3 | 4 | 6 | 8 | 10 | A Max. | Min | +.08 -.00 | B Max | D ±.13 | Min Solder Pad Ø |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm.) | M2 x 0.4 | CRM | M2 | | -2 | -3 | -4 | -6 | -8 | -10 | 1.53 | 1.53 | 3.73 | 3.6 | 5.56 | 6.2 |
| | M2.5 x 0.45 | CRM | M2.5 | | -2 | -3 | -4 | -6 | -8 | -10 | 1.53 | 1.53 | 4.22 | 4.09 | 5.56 | 6.2 |
| | M3 x 0.5 | CRM | M3 | | -2 | -3 | -4 | -6 | -8 | -10 | 1.53 | 1.53 | 4.22 | 4.09 | 5.56 | 6.2 |
| | M3.5 x 0.6 | CRM | M3.5 | | -2 | -3 | -4 | -6 | -8 | -10 | 1.53 | 1.53 | 5.41 | 5.28 | 7.14 | 7.77 |
| | M4 x 0.7 | CRM | M4 | | -2 | -3 | -4 | -6 | -8 | -10 | 1.53 | 1.53 | 6.35 | 6.22 | 8.74 | 9.37 |
| | | CRM | | 3.6 | -2 | -3 | -4 | -6 | -8 | -10 | 1.53 | 1.53 | 5.41 | 5.28 | 7.14 | 7.77 |
| | | CRM | | 4.2 | -2 | -3 | -4 | -6 | -8 | -10 | 1.53 | 1.53 | 6.35 | 6.22 | 8.74 | 9.37 |

Note: All Items Subject to Minmun Order

**Number of Parts per Reel / Pitch (mm) for Each Size - as per EIA standard (13"reels/24mm wide)**

| Thread Size & Thru Hole Size | Length 2 | 3 | 4 | 6 | 8 | 10 | 12 |
|---|---|---|---|---|---|---|---|
| 256, 440, 632, .116, .143 | 1500 / 12 | -- | 1000 / 12 | -- | 650 / 12 | -- | 300 / 16 |
| 832 | 1100 / 16 | -- | 800 / 16 | -- | 500 / 16 | -- | 300 / 16 |
| M2, M2.5, M3, M3.5, 3.6 | 1500 /12 | 1000 / 12 | 900 / 12 | 650 / 12 | 375 / 16 | 300 / 16 | -- |
| M4, 4.2 | 1100 / 16 | 800 / 16 | 675 / 16 | 500 / 16 | 375 / 16 | 200 / 16 | -- |

# Broaching Type Spring-Top Standoffs

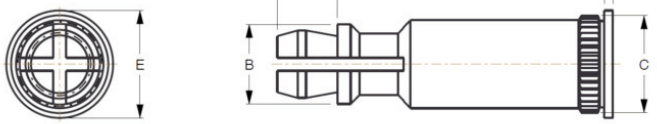
## Series CFKSSB



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

| Series | Material | Finish |
|---|---|---|
| CFKSSB | CDA-360 Brass | None |

Use in: PC Boards with Rockwell Hardness B-65 or less.




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 in. (Length Code In 32nds Of An Inch) .250 | .312 | .375 | .437 | .500 | .562 | .625 | .750 | .875 | 1.000 | B ±.005 | C ±.003 | E ±.005 | P ±.005 | T ±.005 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CFKSSB | 156 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -24 | -28 | -32 | .188 | .226 | .250 | .141 | .020 |

### Dimensions & Specifications

| METRIC (mm) Series | Top Board Mounting Hole Diameter Code | Length L ±.13mm (Length Code In Millimeters) 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 25 | B ±.13 | C ±.08 | E ±.13 | P ±.13 | T ±.13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CFKSSB | 4 MM | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | 4.8 | 5.74 | 6.35 | 3.58 | .51 |

Continued on next page.



# Broaching Type Spring-Top Standoffs

## Series CFKSSB

Continued from previous page.

### Installation & Performance Data

| | Series | Bottom Panel (Fixed) | | | | | | Top Panel (Removable) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 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 | PC board | HRB65 | .050 | .220 | ±.005 | .156 | PC board or metal | .040-.070 | .100 |

### Installation & Performance Data

| | Series | Bottom Panel (Fixed) | | | Top Panel (Removable) | | |
|---|---|---|---|---|---|---|---|
| | | 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

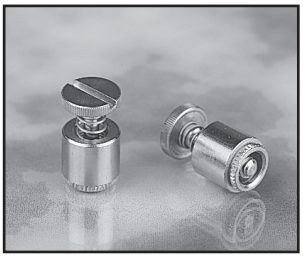
| | Series | Bottom Panel (Fixed) | | | | | | Top Panel (Removable) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Bottom Mounting Hole +.08 –.00 | Material | Hardness Max. | Thickness Min. | Min. | Location Tolerance Max. | Top Mounting Hole +.08 –.00 | Material | Thickness Range | Min. |
| METRIC (mm) | CFKSSB | 5.4 | PC board | HRB65 | 1.25 | 5.6 | ±.13 | 4.0 | PC board or metal | 1-1.8 | 2.5 |

### Installation & Performance Data

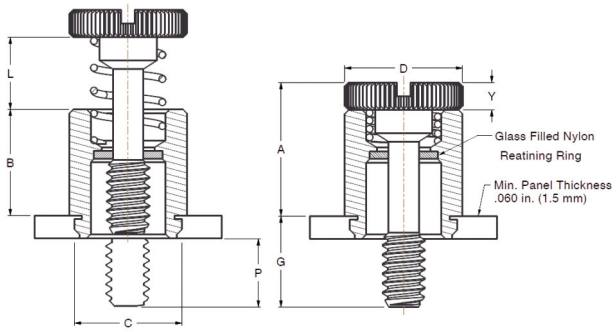
| | Series | Bottom Panel (Fixed) | | | Top Panel (Removable) | | |
|---|---|---|---|---|---|---|---|
| | | Sheet Thickness & Sheet Material | Installation (kN) | Pushout (N) | Max. first on force (N) | Min. first off force (N) | Min. 15th off force (N) |
| METRIC (mm) | CFKSSB | 1.52 FR-4 Fiberglass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

# Broaching Type Panel Fasteners

## Series CPFK



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




| Series | Material | Finish |
|---|---|---|
| CPFK | 300 Series Stainless Steel | Passivated ASTM A967 |

Thread: External 2A, ANSI B1.1 (6g ANSI/ASME B1.13M).*

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

*See Note 3 on Page 6 for Gauging Spec.

## Dimensions & Specifications

| | Thread Size | Part Number | G ±.016 in. (.4 mm) | P ±.016 in. (.4 mm) | L ±.016 in. (.4 mm) | D +.016 in. (.4mm) -.010 in. (.25 mm) | A Max. | Y ±.005 in. (.13 mm) | B ±.010 in. (.25mm) | C ±.003 in. (.08mm) | +.003 in. (.08 mm) –.000(.00) | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | #4-40 | CPFK440-40 | .250 | .000 | .19 | .312 | .36 | .072 | .28 | .283 | .265 | .20 |
| | | CPFK440-62 | .375 | .125 | | | | | | | | |
| | | CPFK440-84 | .500 | .250 | | | | | | | | |
| | #6-32 | CPFK632-40 | .250 | .000 | .19 | .344 | .36 | .072 | .28 | .299 | .281 | .26 |
| | | CPFK632-62 | .375 | .125 | | | | | | | | |
| | | CPFK632-84 | .500 | .250 | | | | | | | | |
| METRIC (mm) | M3 x 0.5 | CPFKM3-40 | 6.4 | .0 | 4.8 | 7.92 | 9.14 | 1.83 | 7.2 | 7.19 | 6.73 | 5.8 |
| | | CPFKM3-62 | 9.5 | 3.2 | | | | | | | | |
| | | CPFKM3-84 | 12.7 | 6.4 | | | | | | | | |

## Installation & Performance Data

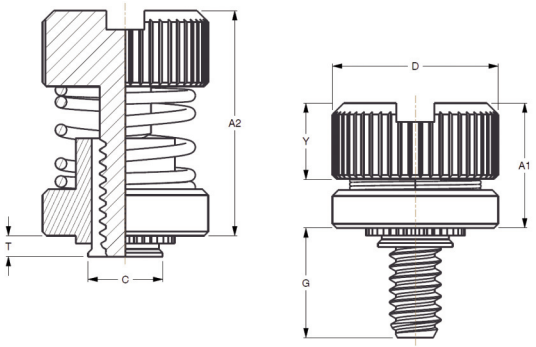
| | | Fiberglass .060 in. (1.5 mm) | | |
|---|---|---|---|---|
| | Thread Size | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) |
| INCH (in.) | #4-40 | 250 | 55 | (1) |
| | #6-32 | 400 | 60 | (1) |
| METRIC (mm) | Thread Size | Installation Force (kN) | Pushout (N) | Torque-out (N•m) |
| | M3 | 1.1 | 245 | (3) |



# Self-Clinching Low-Profile Panel Fastener

## Series LPH

LPH panel fasteners are preassembled for attachment to removable sheet metal panels. Screw assemblies remain captive for servicing ease and provide low profile when secure. Slotted head with deep skirt allows tool or finger operation.




| Series | Material | Finish* |
|---|---|---|
| LPH | Carbon Steel | Bright Nickel over Copper Flash |

*Black Nitride (BN) finish available

Thread: External 2A, ANSI B1.1 (6g ANSI/ASME B1.13M).**
Use in: Materials with Rockwell Hardness of B-60 or less.

Part Number Structure:

LPH-0 440-30

- Length Code
- Thread Code
- Shank Length
- Series

**See Note 3 on Page 6 for Gauging Spec.

## Dimensions & Specifications

| | Thread Size | Type | Thread Code | Screw Length Code | Min. | T Max. | G ±.015 | C Max. | D ±.010 | Y ±.005 | A1 Max. | A2 Nom. | +.003 -.000 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | #4-40 | LPH-0 | 440 | 30 | .030 | .030 | .300 | .202 | .406 | .202 | .325 | .595 | .203 | .26 |
| | | LPH-1 | | | .040 | .038 | | | | | | | | |
| | | LPH-2 | | | .060 | .058 | | | | | | | | |
| | #6-32 | LPH-0 | 632 | 30 | .030 | .030 | .300 | .218 | .438 | .202 | .325 | .595 | .219 | .28 |
| | | LPH-1 | | | .040 | .038 | | | | | | | | |
| | | LPH-2 | | | .060 | .058 | | | | | | | | |
| | #8-32 | LPH-0 | 832 | 30 | .030 | .030 | .300 | .249 | .468 | .207 | .330 | .600 | .250 | .29 |
| | | LPH-1 | | | .040 | .038 | | | | | | | | |
| | | LPH-2 | | | .060 | .058 | | | | | | | | |
| | #10-32 | LPH-0 | 1032 | 30 | .030 | .030 | .300 | .311 | .530 | .220 | .335 | .605 | .312 | .33 |
| | | LPH-1 | | | .040 | .038 | | | | | | | | |
| | | LPH-2 | | | .060 | .058 | | | | | | | | |
| | 1/4-20 | LPH-2 | 420 | 35 | .060 | .058 | .350 | .374 | .625 | .242 | .385 | .675 | .375 | .38 |
| METRIC (mm) | Thread Size | Type | Thread Code | Screw Length Code | Min. | T Max. | G ±.4 | C Max. | D ±.25 | Y ±.13 | A1 Max. | A2 Nom. | +.08 -.00 | Min. |
| | M3 x 0.5 | LPH-0 | M3 | 30 | .76 | .76 | 7.62 | 5.48 | 10.31 | 5.13 | 8.26 | 15.11 | 5.5 | 6.6 |
| | | LPH-1 | | | 1 | .97 | | | | | | | | |
| | | LPH-2 | | | 1.5 | 1.48 | | | | | | | | |
| | M4 x 0.7 | LPH-0 | M4 | 30 | .76 | .76 | 7.62 | 6.38 | 11.89 | 5.26 | 8.38 | 15.24 | 6.4 | 7.37 |
| | | LPH-1 | | | 1 | .97 | | | | | | | | |
| | | LPH-2 | | | 1.5 | 1.48 | | | | | | | | |
| | M5 x 0.8 | LPH-0 | M5 | 30 | .76 | .76 | 7.62 | 7.98 | 13.46 | 5.59 | 8.51 | 15.37 | 8 | 8.38 |
| | | LPH-1 | | | 1 | .97 | | | | | | | | |
| | | LPH-2 | | | 1.5 | 1.48 | | | | | | | | |
| | M6 x 1 | LPH-2 | M6 | 35 | 1.5 | 1.48 | 8.89 | 9.48 | 15.88 | 6.12 | 9.78 | 17.15 | 9.5 | 9.65 |

Continued on next page.

# Self-Clinching Low-Profile Panel Fastener

## Series LPH



Continued from previous page.

### Installation & Performance Data

| | Type | Thread Code | Sheet Material: 5052-H34 Aluminum — Installation Force (lbs.) | 5052-H34 Aluminum — Pushout (lbs.) | Cold-rolled Steel (B-60 Max) — Installaion Force (lbs.) | Cold-rolled Steel (B-60 Max) — Pushout (lbs.) |
|---|---|---|---|---|---|---|
| INCH (in.) | LPH-0 | 440 | 2200 | 64 | 5000 | 90 |
| | LPH-1 | | | 105 | | 110 |
| | LPH-2 | | | 185 | | 300 |
| | LPH-0 | 632 | 2400 | 66 | 5500 | 90 |
| | LPH-1 | | | 105 | | 130 |
| | LPH-2 | | | 190 | | 300 |
| | LPH-0 | 832 | 2800 | 68 | 6000 | 90 |
| | LPH-1 | | | 110 | | 130 |
| | LPH-2 | | | 200 | | 300 |
| | LPH-0 | 1032 | 3500 | 72 | 8000 | 95 |
| | LPH-1 | | | 150 | | 160 |
| | LPH-2 | | | 260 | | 425 |
| | LPH-2 | 420 | 4300 | 320 | 12000 | 450 |

### Installation & Performance Data

| | Type | Thread Code | Sheet Material: 5052-H34 Aluminum — Installation Force (kN) | 5052-H34 Aluminum — Pushout (N) | Cold-rolled Steel (B-60 Max) — Installaion Force (kN) | Cold-rolled Steel (B-60 Max) — Pushout (N) |
|---|---|---|---|---|---|---|
| METRIC (mm) | LPH-0 | M3 | 9.8 | 285 | 22.2 | 400 |
| | LPH-1 | | | 465 | | 489 |
| | LPH-2 | | | 823 | | 1334 |
| | LPH-0 | M4 | 12.5 | 302 | 26.7 | 400 |
| | LPH-1 | | | 489 | | 578 |
| | LPH-2 | | | 890 | | 1334 |
| | LPH-0 | M5 | 15.6 | 320 | 35.6 | 423 |
| | LPH-1 | | | 667 | | 712 |
| | LPH-2 | | | 1156 | | 1890 |
| | LPH-2 | M6 | 19.1 | 1423 | 53.4 | 2002 |



# Self-Clinching Panel Fastener

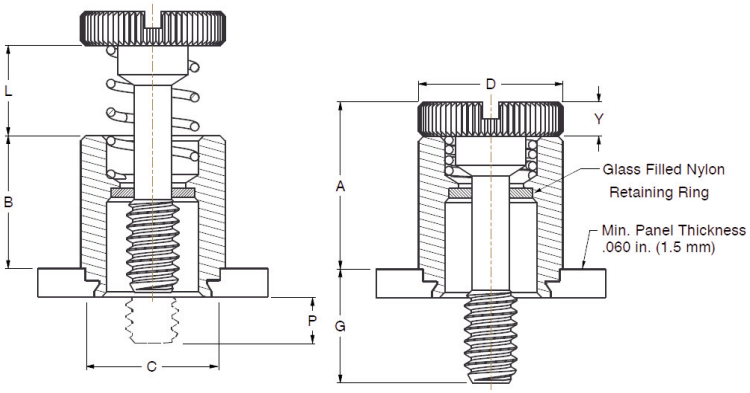
## Series CPFC2

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 A967 |

Thread: External 2A, ANSI B1.1 (6g, ANSI/ASME B1.13M).

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




Part Number Structure:

CPFC2 440-40

- Length Code
- Thread Code
- Series

### *Dimensions & Specifications*

| | Thread Size | Part Number | G ±.016 | P ±.016 | L ±.016 | D +.016 −.010 | A Max. | Y ±.005 | B ±.010 | C Max. | +.003 −.000 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | #4-40 | CPFC2440-40 | .250 | .000 | .19 | .312 | .36 | .072 | .28 | .264 | .265 | .25 |
| | | CPFC2440-62 | .375 | .125 | | | | | | | | |
| | | CPFC2440-84 | .500 | .250 | | | | | | | | |
| | #6-32 | CPFC2632-40 | .250 | .000 | .19 | .344 | .36 | .072 | .28 | .280 | .281 | .28 |
| | | CPFC2632-62 | .375 | .125 | | | | | | | | |
| | | CPFC2632-84 | .500 | .250 | | | | | | | | |
| | #8-32 | CPFC2832-50 | .312 | .000 | .25 | .375 | .45 | .082 | .36 | .311 | .312 | .31 |
| | | CPFC2832-72 | .437 | .125 | | | | | | | | |
| | | CPFC2832-94 | .562 | .250 | | | | | | | | |
| | #10-32 | CPFC21032-50 | .312 | .000 | .25 | .406 | .45 | .082 | .36 | .343 | .344 | .34 |
| | | CPFC21032-72 | .437 | .125 | | | | | | | | |
| | | CPFC21032-94 | .562 | .250 | | | | | | | | |
| | 1/4-20 | CPFC2420-60 | .375 | .000 | .31 | .468 | .58 | .097 | .47 | .412 | .413 | .38 |
| | | CPFC2420-82 | .500 | .125 | | | | | | | | |
| | | CPFC2420-04 | .625 | .250 | | | | | | | | |

Continued on next page.

# Self-Clinching Panel Fasteners

## Series CPFC2



Continued from previous page.

### Dimensions & Specifications

| | Thread Size | Part Number | G ±.4 | P ±.4 | L ±.4 | D +.4 –.25 | A Max. | Y ±.13 | B ±.25 | C Max. | +.08 –.00 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm) | M3 x 0.5 | CPFC2M3-40 | 6.4 | .0 | 4.8 | 7.92 | 9.14 | 1.83 | 7.2 | 6.71 | 6.73 | 6.35 |
| | | CPFC2M3-62 | 9.5 | 3.2 | | | | | | | | |
| | | CPFC2M3-84 | 12.7 | 6.4 | | | | | | | | |
| | M4 x 0.7 | CPFC2M4-50 | 7.9 | .0 | 6.4 | 9.53 | 11.43 | 2.08 | 9.3 | 7.9 | 7.92 | 7.87 |
| | | CPFC2M4-72 | 11.1 | 3.2 | | | | | | | | |
| | | CPFC2M4-94 | 14.3 | 6.4 | | | | | | | | |
| | M5 x 0.8 | CPFC2M5-50 | 7.9 | .0 | 6.4 | 10.31 | 11.47 | 2.08 | 9.3 | 8.72 | 8.74 | 8.63 |
| | | CPFC2M5-72 | 11.1 | 3.2 | | | | | | | | |
| | | CPFC2M5-94 | 14.3 | 6.4 | | | | | | | | |
| | M6 x 1.0 | CPFC2M6-60 | 9.5 | .0 | 7.9 | 11.89 | 14.73 | 2.46 | 12.0 | 10.47 | 10.49 | 9.65 |
| | | CPFC2M6-82 | 12.7 | 3.2 | | | | | | | | |
| | | CPFC2M6-04 | 15.9 | 6.4 | | | | | | | | |

### Installation & Performance Data

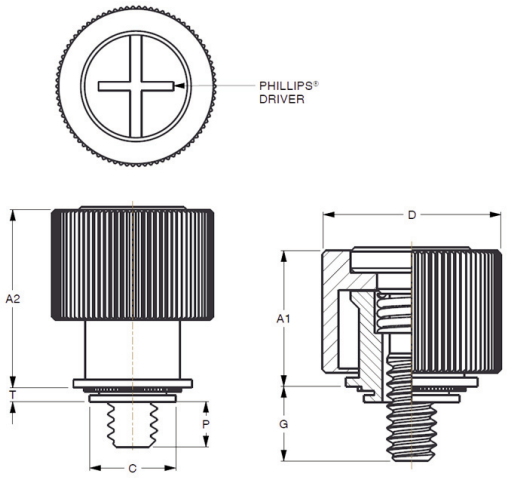
| | | Cold-rolled Steel | | 5052-H34 Aluminum | |
|---|---|---|---|---|---|
| | Thread Size | Installation Force (lbs.) | Pushout (lbs.) | Installation Force (lbs.) | Pushout (lbs.) |
| INCH (in.) | #4-40 | 3000 | 300 | 2400 | 240 |
| | #6-32 | 3500 | 350 | 2700 | 275 |
| | #8-32 | 3800 | 400 | 2900 | 300 |
| | #10-32 | 4000 | 500 | 3000 | 400 |
| | 1/4-20 | 5000 | 600 | 3500 | 400 |
| | | (kN) | (N) | (kN) | (N) |
| METRIC (mm) | M3 | 13.3 | 1334 | 10.7 | 1068 |
| | M4 | 16.9 | 1779 | 12.9 | 1334 |
| | M5 | 17.8 | 2224 | 13.3 | 1779 |
| | M6 | 22.2 | 2669 | 15.6 | 1779 |

# Self-Clinching Collar Base Panel Fastener

## Series PSK/PSS



PS panel fastener are preassembled for attachment to removable sheet metal panels. Captive screw assemblies are spring loaded, for servicing ease, and provide low profile when secured. Combination cross-recess/slot head with knurled or smooth knob allows finger to tool operation. The base design ha a collar that provides a mechanical stop when installed.




| Series | Head | Material | Finish* |
|---|---|---|---|
| PSK | Knurled | Aluminum Knob | Nartural |
| | | Steel Base | Nickel/Copper ASTM B689 |
| PSS | Smooth | Stainless Screw | Passivated ASTM A967 |

* Black Nitride (BN) finish available

Thread: External 2A, ANSI B1.1 (6g, ANSI/ASME B1.13M).

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

Part Number Structure:

PSK-440-0

- Screw Length Code
- Thread Code
- Series

## *Dimensions & Specifications*

| | Thread Size | Driver Size | Type: Knurled Head | Type: Smooth Head | Thread Code | Screw Length Code | Min. | T Max. | P ±.025 | G ± .025 | C Max. | D ± .010 | A1 Nom. | A2 Nom. | +.003 -.000 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | 440 | #1 | PSK | PSS | 440 | -0 | .036 | .036 | .000 | .170 | .218 | .417 | .310 | .450 | .219 | .28 |
| | | | | | | -1 | | | .060 | .230 | | | | | | |
| | | | | | | -2 | | | .120 | .290 | | | | | | |
| | 632 | #2 | PSK | PSS | 632 | -0 | .036 | .036 | .000 | .230 | .249 | .450 | .450 | .640 | .250 | .29 |
| | | | | | | -1 | | | .060 | .290 | | | | | | |
| | | | | | | -2 | | | .120 | .350 | | | | | | |
| | 832 | #2 | PSK | PSS | 832 | -0 | .036 | .036 | .000 | .230 | .311 | .514 | .450 | .640 | .312 | .33 |
| | | | | | | -1 | | | .060 | .290 | | | | | | |
| | | | | | | -2 | | | .120 | .350 | | | | | | |
| | 1032 | #2 | PSK | PSS | 1032 | -0 | .036 | .036 | .000 | .230 | .311 | .514 | .450 | .640 | .312 | .33 |
| | | | | | | -1 | | | .060 | .290 | | | | | | |
| | | | | | | -2 | | | .120 | .350 | | | | | | |
| | 1/4-20 | #2 | PSK | PSS | 420 | -0 | .036 | .036 | .000 | .290 | .374 | .575 | .530 | .790 | .375 | .46 |
| | | | | | | -1 | | | .060 | .350 | | | | | | |
| | | | | | | -2 | | | .120 | .410 | | | | | | |

Continued on next page.



# Self-Clinching Collar Base Panel Fastener

## Series PSK/PSS

### Dimensions & Specifications

| | Thread Size | Driver Size | Type: Knurled Head | Type: Smooth Head | Thread Code | Screw Length Code | Min. | T Max. | P ±.64 | G ± .64 | C Max. | D ± .25 | A1 Nom. | A2 Nom. | +.08 -.00 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm.) | M3x0.5 | #1 | PSK | PSS | M3 | -0 | .92 | .92 | 0 | 4.32 | 5.54 | 10.59 | 7.87 | 11.43 | 5.56 | 7.11 |
| | | | | | | -1 | | | 1.52 | 5.84 | | | | | | |
| | | | | | | -2 | | | 3.05 | 7.37 | | | | | | |
| | M3.5x0.6 | #2 | PSK | PSS | M3.5 | -0 | .92 | .92 | 0 | 5.84 | 6.33 | 11.43 | 11.43 | 16.26 | 6.35 | 7.37 |
| | | | | | | -1 | | | 1.52 | 7.37 | | | | | | |
| | | | | | | -2 | | | 3.05 | 8.89 | | | | | | |
| | M4x0.7 | #2 | PSK | PSS | M4 | -0 | .92 | .92 | 0 | 5.84 | 7.9 | 13.06 | 11.43 | 16.26 | 7.92 | 7.38 |
| | | | | | | -1 | | | 1.52 | 7.37 | | | | | | |
| | | | | | | -2 | | | 3.05 | 8.89 | | | | | | |
| | M5x0.8 | #2 | PSK | PSS | M5 | -0 | .92 | .92 | 0 | 5.84 | 7.9 | 13.06 | 11.43 | 16.26 | 7.92 | 7.38 |
| | | | | | | -1 | | | 1.52 | 7.37 | | | | | | |
| | | | | | | -2 | | | 3.05 | 8.89 | | | | | | |
| | M6x1.0 | #2 | PSK | PSS | M6 | -0 | .92 | .92 | 0 | 7.37 | 9.5 | 14.61 | 13.46 | 20.07 | 9.53 | 11.68 |
| | | | | | | -1 | | | 1.52 | 8.89 | | | | | | |
| | | | | | | -2 | | | 3.05 | 10.41 | | | | | | |

### Installation & Performance Data

| Type | Thread Code | Sheet Material: Aluminum — Installation Force (lbs.) | Aluminum — Pushout (lbs.) | Cold-rolled Steel — Installation Force (lbs.) | Cold-rolled Steel — Pushout (lbs.) |
|---|---|---|---|---|---|
| PSK PSS | 440 | 1500 | 80 | 2500 | 145 |
| | 632 | 2000 | 95 | 3500 | 150 |
| | 832 | 3000 | 100 | 4500 | 160 |
| | 1032 | 3000 | 100 | 4500 | 160 |
| | 420 | 3000 | 105 | 5000 | 195 |

| Type | Thread Code | Installation Force (kN.) | Pushout (N) | Installation Force (kN.) | Pushout (N) |
|---|---|---|---|---|---|
| PSK PSS | M3 | 6.7 | 355 | 11.1 | 645 |
| | M4 | 13.3 | 445 | 20 | 710 |
| | M5 | 13.3 | 445 | 20 | 710 |
| | M6 | 15.6 | 465 | 22.2 | 865 |



# Self-Clinching Standoffs

## Series CFSO, CFSOS & CFSOA (Through Threads)

CFSO self-clinching standoffs are designed for quick, easy installation with any standard pneumatic, hydraulic or mechanical press. Through-threaded 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 | Heat-treated Carbon Steel | Zinc* Clear |
| CFSOS | 300 Series Stainless Steel | Passivated ASTM A967 |
| CFSOA | 7075-T6 Aluminum | None |

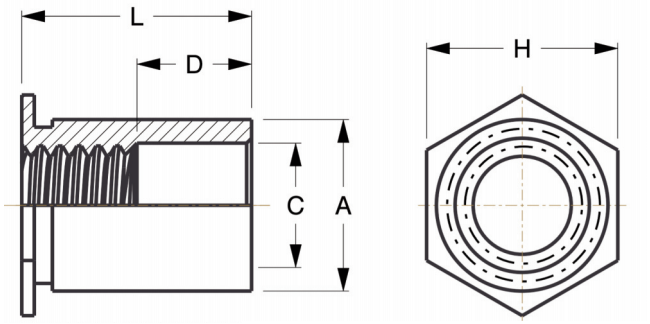
*See Finish Spec. on Page 6.

Thread: Internal 2B, ANSI B1.1 (6H, ANSI/ASME B1.13M).

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:

CFSOS 6440-4

- 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 | .187 | .250 | .312 | .375 | .437 | .500 | .562 | .625 | .687 | .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 440 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | | .166 | .165 | .187 | .125 | .23 | .040 |
| | CFSOS 440 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | | | | | | | |
| | CFSOA 440 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | | | | | | | |
| #4-40 | CFSO 6440 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | | .213 | .212 | .25 | .125 | .27 | .040 |
| | CFSOS 6440 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | | | | | | | |
| | CFSOA 6440 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | | | | | | | |
| D ±.0156 | | None | | | | .1875 | | | | .3125 | | | | .4375 | | | | | | | | | |

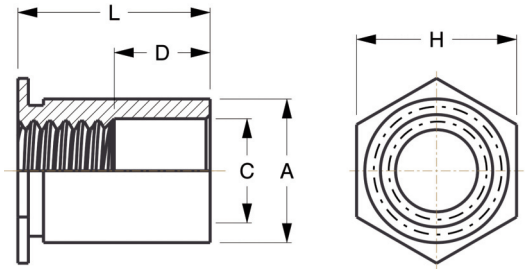
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# Self-Clinching Standoffs

## Series CFSO, CFSOS & CFSOA (Through Threads)



Continued from previous page.




All Measurements In Inches.

### *Dimensions & Specifications*

| Thread Size | Part Number | L Length +.002 –.005 in. .125 | .187 | .250 | .312 | .375 | .437 | .500 | .562 | .625 | .687 | .750 | .812 | .875 | .937 | 1.00 | 1.062 | +.003 –.000 | A Dim. +.000 –.005 | H Hex Dim. (Nom.) | C Counter-bore ±.005 | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #6-32 | CFSO 632 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .213 | .212 | .25 | .156 | .27 | .04 |
| | CFSOS 632 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | | |
| | CFSOA 632 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | | |
| #6-32 | CFSO 8632 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .281 | .280 | .312 | .156 | .31 | .05 |
| | CFSOS 8632 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | | |
| | CFSOA 8632 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | | |
| #8-32 | CFSO 832 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .281 | .280 | .312 | .188 | .31 | .05 |
| | CFSOS 832 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | | |
| | CFSOA 832 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | | |
| #10-32 | CFSO 1032 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .281 | .280 | .312 | .203 | .31 | .05 |
| | CFSOS 1032 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | | |
| | CFSOA 1032 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | | |
| D ±.0156 | | None | | | | .1875 | | | | .3125 | | | | .4375 | | | | | | | | | |

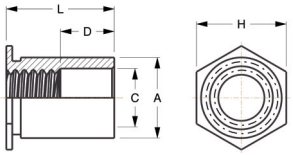
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# Self-Clinching Standoffs

## Series CFSO, CFSOS & CFSOA (Through Threads)

Continued from previous page.




All Measurements In Millimeters.

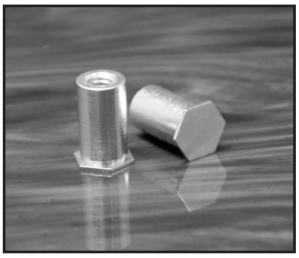
### Dimensions & Specifications

| Thread Size | Part Number | L Length +.05 –.13 mm | | | | | | | | | | | | +.08 –.00 | A Dim. +.00 –.13 | H Hex Dim. (Nom.) | C Counter-bore ±.13 | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 25 | | | | | | |
| M3x0.5 | CFSO M3 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | | | | 4.22 | 4.2 | 4.8 | 3.2 | 6.0 | 1.0 |
| | CFSOS M3 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | | | | | | | | | |
| | CFSOA M3 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | | | | | | | | | |
| M3x0.5 | CFSO 3.5M3 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | | | | 5.41 | 5.39 | 6.4 | 3.2 | 6.8 | 1.0 |
| | CFSOS 3.5M3 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | | | | | | | | | |
| | CFSOA 3.5M3 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | | | | | | | | | |
| M3.5x0.6 | CFSO M3.5 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | 5.41 | 5.39 | 6.4 | 4.0 | 6.8 | 1.0 |
| | CFSOS M3.5 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | | | |
| | CFSOA M3.5 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | | | |
| M4x0.7 | CFSO M4 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | 7.14 | 7.12 | 7.9 | 4.8 | 8.0 | 1.27 |
| | CFSOS M4 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | | | |
| | CFSOA M4 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | | | |
| M5x0.8 | CFSO M5 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | 7.14 | 7.12 | 7.9 | 5.35 | 8.0 | 1.27 |
| | CFSOS M5 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | | | |
| | CFSOA M5 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | | | |
| D ±.4 | | None | | | | 4.0 | | | 8.0 | | | 11.0 | | | | | | | |

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# Self-Clinching Standoffs

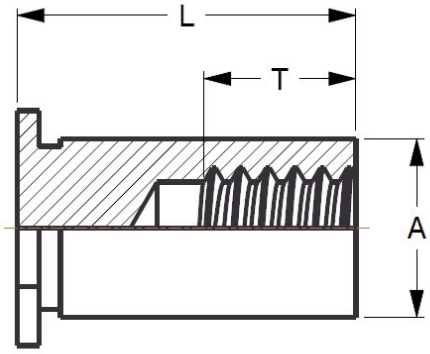
## Series CFBSO, CFBSOS & CFBSOA (Blind Threads)

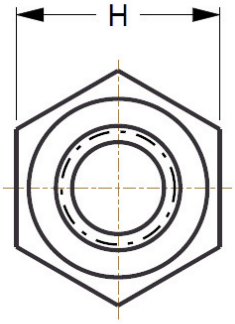


CFBSO self-clinching standoffs are designed for quick, easy installation with any standard pneumatic, hydraulic or mechanical press. Blind standoffs are used in metal panels with thickness of .040 in. (1.0 mm) and up. No secondary operation, such as reaming or deburring, is necessary prior to installation.

| Series | Material | Finish |
|---|---|---|
| CFBSO | Heat-treated Carbon Steel | Zinc* Clear |
| CFBSOS | 300 Series Stainless Steel | Passivated ASTM A967 |
| CFBSOA | 7075-T6 Aluminum | None |

*See Finish Spec. on Page 6.




Thread: Internal 2B ANSI B1.1 (6H, ANSI/ASME B1.13M).

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

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

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

Part Number Structure:

CFBSOS 6440-10

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

All Measurements In Inches.

## Dimensions & Specifications

| Thread Size | Part Number | L Length +.002 –.005 in. .312 | .375 | .437 | .500 | .562 | .625 | .687 | .750 | .812 | .875 | .937 | 1.00 | 1.062 | +.003 –.000 | A Dim. +.000 –.005 | H Hex Dim. (Nom.) | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #4-40 | CFBSO 440 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .166 | .165 | .187 | .23 | .040 |
| | CFBSOS 440 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | |
| | CFBSOA 440 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | |
| #4-40 | CFBSO 6440 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .213 | .212 | .25 | .27 | .040 |
| | CFBSOS 6440 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | |
| | CFBSOA 6440 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | |
| T Min. | | .156 | | .187 | .25 | | | .375 | | | | | | | | | | | |

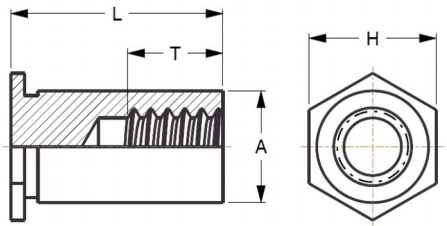
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# Self-Clinching Standoffs

## Series CFBSO, CFBSOS & CFBSOA (Blind Threads)

Continued from previous page.




All Measurements In Inches.

### Dimensions & Specifications

| Thread Size | Part Number | L Length +.002 –.005 in. .312 | .375 | .437 | .500 | .562 | .625 | .687 | .750 | .812 | .875 | .937 | 1.00 | 1.062 | +.003 –.000 | A Dim. +.000 –.005 | H Hex Dim. (Nom.) | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #6-32 | CFBSO 632 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .213 | .212 | .25 | .27 | .04 |
| | CFBSOS 632 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | |
| | CFBSOA 632 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | |
| #6-32 | CFBSO 8632 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .281 | .280 | .312 | .31 | .05 |
| | CFBSOS 8632 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | |
| | CFBSOA 8632 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | |
| #8-32 | CFBSO 832 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .281 | .280 | .312 | .31 | .05 |
| | CFBSOS 832 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | |
| | CFBSOA 832 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | |
| #10-32 | CFBSO 1032 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .281 | .280 | .312 | .31 | .05 |
| | CFBSOS 1032 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | |
| | CFBSOA 1032 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | | | | | |
| T Min. | | .156 | | .187 | .25 | | | .375 | | | | | | | | | | | |

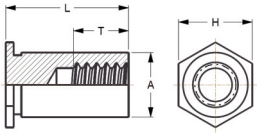
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# Self-Clinching Standoffs

## Series CFBSO, CFBSOS & CFBSOA (Blind Threads)



Continued from previous page.




All Measurements In Millimeters.

### Dimensions & Specifications

| Thread Size | Part Number | L Length +.05 –.13 mm 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 25 | +.08 –.00 | A Dim. +.00 –.13 | H Hex Dim. (Nom.) | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M3x0.5 | CFBSO M3 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | 4.22 | 4.2 | 4.8 | 6.0 | 1.0 |
| | CFBSOS M3 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | | |
| | CFBSOA M3 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | | |
| M3x0.5 | CFBSO 3.5M3 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | 5.41 | 5.39 | 6.4 | 6.8 | 1.0 |
| | CFBSOS 3.5M3 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | | |
| | CFBSOA 3.5M3 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | | |
| M3.5x0.6 | CFBSO M3.5 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | 5.41 | 5.39 | 6.4 | 6.8 | 1.0 |
| | CFBSOS M3.5 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | | |
| | CFBSOA M3.5 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | | |
| M4x0.7 | CFBSO M4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | 7.14 | 7.12 | 7.9 | 8.0 | 1.27 |
| | CFBSOS M4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | | |
| | CFBSOA M4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | | |
| M5x0.8 | CFBSO M5 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | 7.14 | 7.12 | 7.9 | 8.0 | 1.27 |
| | CFBSOS M5 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | | |
| | CFBSOA M5 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | | |
| T Min. | | 3.2 | 4.0 | | 5.0 | 6.5 | | 9.5 | | | | | | | | |

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# Self-Clinching Standoffs

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

Continued from previous page.

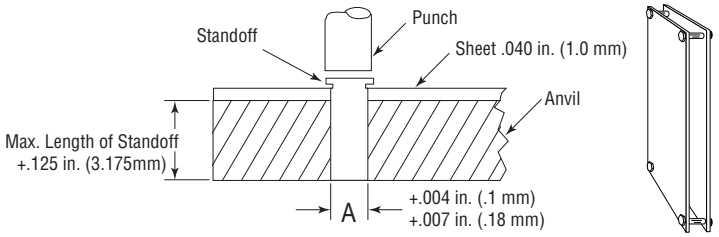
### *Installation & Performance Data*

| | Thread Code | Standoff Material | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) | Pull Through (lbs.) | Installation Force (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 | 1100 | 160 | 11 | 280 | 2200 | 225 | 19 | 330 | 4.75 |
| | | Stainless Steel | 1100 | 160 | 11 | 224 | 2200 | 225 | 19 | 264 | 3.8 |
| | | Aluminum | 1100 | 160 | 11 | 168 | nr | nr | nr | nr | 2.85 |
| | 6440, 632 | Steel | 1700 | 300 | 25 | 280 | 3300 | 420 | 35 | 380 | 4.75, 8.75 |
| | | Stainless Steel | 1700 | 300 | 25 | 248 | 3300 | 420 | 35 | 304 | 3.8, 7 |
| | | Aluminum | 1700 | 300 | 25 | 186 | nr | nr | nr | nr | 2.85, 5.25 |
| | 8632, 832, 1032 | Steel | 2400 | 400 | 45 | 580 | 4000 | 560 | 75 | 700 | 8.75, 18, 32 |
| | | Stainless Steel | 2400 | 400 | 45 | 464 | 4000 | 560 | 75 | 560 | 7, 14.4, 25.6 |
| | | Aluminum | 2400 | 400 | 45 | 348 | nr | nr | nr | nr | 5.25, 11, 19 |
| | Thread Code | Standoff Material | Installation Force (kN) | Pushout (N) | Torque-out (N•m) | Pull Through (N) | Installation Force (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 | 4.9 | 710 | 1.24 | 1245 | 9.8 | 1000 | 2.15 | 1465 | .55 |
| | | Stainless Steel | 4.9 | 710 | 1.24 | 996 | 9.8 | 1000 | 2.15 | 1172 | .44 |
| | | Aluminum | 4.9 | 710 | 1.24 | 747 | nr | nr | nr | nr | .33 |
| | 3.5M3 | Steel | 7.6 | 1330 | 2.82 | 1245 | 14.7 | 1860 | 3.95 | 1465 | .55 |
| | | Stainless Steel | 7.6 | 1330 | 2.82 | 996 | 14.7 | 1860 | 3.95 | 1172 | .44 |
| | | Aluminum | 7.6 | 1330 | 2.82 | 747 | nr | nr | nr | nr | .33 |
| | M4, M5 | Steel | 10.7 | 1780 | 5.08 | 2575 | 17.8 | 2490 | 8.47 | 3110 | 2, 3.6 |
| | | Stainless Steel | 10.7 | 1780 | 5.08 | 2060 | 17.8 | 2490 | 8.47 | 2488 | 1.6, 2.88 |
| | | Aluminum | 10.7 | 1780 | 5.08 | 1545 | nr | nr | nr | nr | 1.2, 2.16 |

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 and anvil to embed hex head flush in sheet. Avoid excessive pressures.

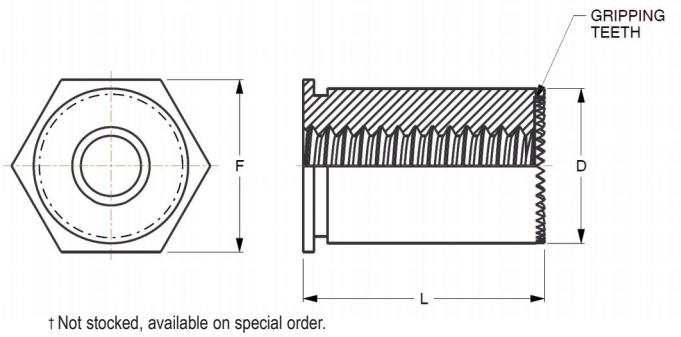


# Self-Clinching Grounding Standoffs

## 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 A967 |
| CFSOAG | 7075-T6 Aluminum | None |

Thread: Internal 2B ANSI B1.1 (6H, ANSI/ASME B1.13M).

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

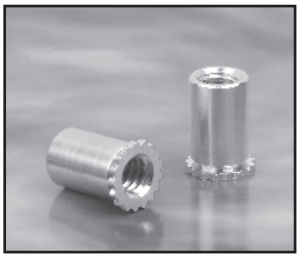
CFSOAG for materials with Rockwell Hardness of B-50 or less.

## Dimensions & Specifications

| | Thread Size | Part Numbers | | L Length +.010 –.000 in. | | | | | | | F Hex Dim. (Nom.) | D +.000 –.005 | +.003 –.000 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Stainless | Aluminum | .125 | .187 | .250 | .312 | .375 | .437 | .500 | | | | |
| 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 +.25 – .00 mm | | | | | | | F Hex Dim. (Nom.) | D +.00 –.13 | +.08 –.00 | Min. |
| | | Stainless | Aluminum | 3 | 4 | 6 | 8 | 10 | 12 | 14 | | | | |
| METRIC (mm) | M3x0.5 | CFSOSG3.5M3 | CFSOAG3.5M3 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | 6.4 | 5.39 | 5.41 | 6.86 |

## Installation & Performance Data

| | Thread Size | 5052-H34 Aluminum | | | |
|---|---|---|---|---|---|
| | | Min. | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) |
| INCH (in.) | #4-40 | .040 | 1500-2000 | 300 | 25 |
| | #6-32 | .050 | 1500-2000 | 400 | 45 |
| | Thread Size | Min. | Installation Force (kN) | Pushout (N) | Torque-out (N•m) |
| METRIC (mm) | M3 | 1.0 | 8 | 1330 | 2.82 |



# Self-Clinching Miniature Standoffs

## Series CF40 & CF40S (Miniature Standoff)

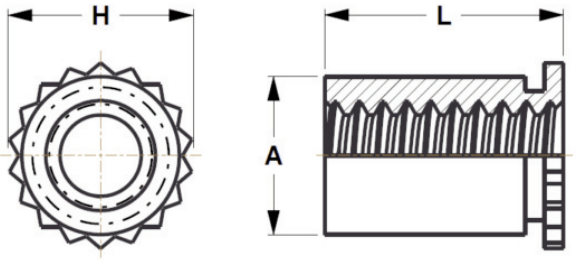
CF40 & CF40S MIniature Standoffs are designed to be used in limited space applications. They are ideal for securing D-sub connectors to enclosure backplanes and provide a flush mounting surface for RFI/EMI gaskets.

| Series | Material | Finish |
|---|---|---|
| CF40 | Heat-treated Carbon Steel | Zinc* Clear |
| CF40S | 300 Series Stainless Steel | Passivated ASTM A967 |

*See Finish Spec. on Page 6.

Thread: Internal 2B ANSI B1.1 (6H, ANSI/ASME B1.13M).

Use in: CF40 for Material with HRB-80 or less.
CF40S for Material with HRB-70 or less.




Part Number Structure:

CF40 - 440 - .250
- .250 → Length Code
- 440 → Thread Code
- CF40 → Series

All Measurements In Inches.

### Dimensions & Specifications

| Thread Size | Part Number: Steel | Part Number: Stainless Steel | L Length +.002 –.005 in. | | +.003 –.000 | A Dim. Max. | H Dim. (Nom.) | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|
| #4-40 | CF40-440 | CF40S-440 | -.250 | -.275 | .166 | .165 | .194 | .126 | .037-.250 |

All Measurements In Millimeters.

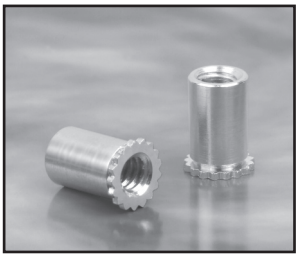
### Dimensions & Specifications

| Thread Size | Part Number: Steel | Part Number: Stainless Steel | L Length +.05 –.13mm | | +.08 –.00 | A Dim. Max. | H Dim. (Nom.) | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|
| M3 x 0.5 | CF40-M3 | CF40S-M3 | -6.35 | -7 | 4.22 | 4.2 | 4.92 | 3.2 | .94-6.35 |

Continued on next page.

# Self-Clinching Miniature Standoffs

## Series CF40 & CF40S (Miniature Standoff)



Continued from previous page.

### *Installation & Performance Data*

**INCH (in.)**

| Sheet Material: .040 in. Cold-rolled Steel | | | | | | Sheet Material: .040 in. 5052-H34 Aluminum | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Thread Code | Material | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) | Rec. Tightening Torque Max. (in.-lbs.) | Thread Code | Material | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) | Rec. Tightening Torque Max. (in.-lbs.) |
| 440 | Steel | 1300 | 75 | 10 | 3.8 | 440 | Steel | 1000 | 50 | 10 | 3.8 |
| | Stainless Steel | 1300 | 75 | 10 | 3.8 | | Stainless Steel | 1000 | 50 | 10 | 3.8 |

**METRIC (mm)**

| Sheet Material: 1mm Cold-rolled Steel | | | | | | Sheet Material: 1mm 5052-H34 Aluminum | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Thread Code | Material | Installation Force (kN) | Pushout (N) | Torque-out (N•m) | Rec. Tightening Torque Max. (N•m) | Thread Code | Material | Installation Force (kN) | Pushout (N) | Torque-out (N•m) | Rec. Tightening Torque Max. (N•m) |
| M3 | Steel | 5.8 | 334 | 1.1 | .44 | M3 | Steel | 4.5 | 223 | 1.1 | .44 |
| | Stainless Steel | 5.8 | 334 | 1.1 | .44 | | Stainless Steel | 4.5 | 223 | 1.1 | .44 |



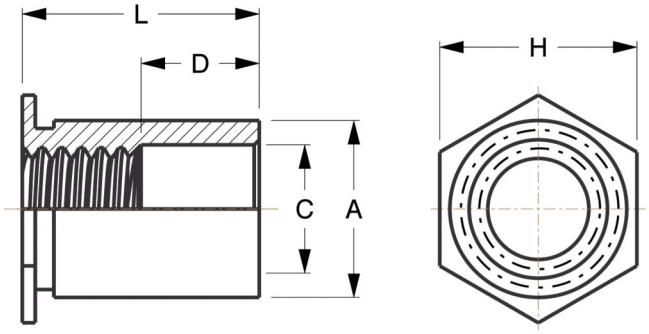
# Self-Clinching Standoffs for Stainless Steel

## Series CF4-SO (400 Series Standoffs)

CF4-SO Standoffs are designed to be pressed into round holes in stainless steel material as thin as .040 (1mm). The through-hole versions are available in a choice of inch and metric sizes.

| Series | Material | Finish |
|---|---|---|
| CF4-SO | 400 Series Stainless Steel | Passivated ASTM A967 |

Thread: Internal 2B, ANSI B1.1 (6H, ANSI/ASME B1.13M).
Use in: Materials with Rockwell Hardness of B88 or less.




Part Number Structure:

CF4-SO 6440-4

- Length Code
- Thread Code
- Body Code (if Applicable)
- Body Type
- Series

All Measurements In Inches.

### Dimensions & Specifications

| Thread Size | Part Number | L Length +.002 –.005 in. .125 | .187 | .250 | .312 | .375 | .437 | .500 | .562 | .625 | .687 | .750 | .812 | .875 | .937 | 1.00 | 1.062 | +.003 –.000 | A Dim. +.000 –.005 | H Hex Dim. (Nom.) | C Counter-bore ±.005 | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #4-40 | CF4-SO 440 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | | .166 | .165 | .187 | .125 | .23 | .040 |
| | CF4-SO 6440 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | | .213 | .212 | .250 | .125 | .27 | .040 |
| #6-32 | CF4-SO 632 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .213 | .212 | .250 | .156 | .27 | .040 |
| | CF4-SO 8632 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .281 | .280 | .312 | .156 | .31 | .050 |
| #8-32 | CF4-SO 832 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .281 | .280 | .312 | .188 | .31 | .050 |
| #10-32 | CF4-SO 1032 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .281 | .280 | .312 | .203 | .31 | .050 |
| D ±.010 | | None | | | | .187 | | | | .312 | | | | .437 | | | | | | | | | |

All Measurements In Millimeters.

| 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 ±.13 | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M3x0.5 | CF4-SO M3 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | | | | 4.22 | 4.2 | 4.8 | 3.2 | 6 | 1.02 |
| | CF4-SO 3.5M3 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | | | | 5.41 | 5.39 | 6.4 | 3.2 | 6.8 | 1.02 |
| M3.5x0.6 | CF4-SO M3.5 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | 5.41 | 5.39 | 6.4 | 3.9 | 6.8 | 1.02 |
| M4x0.7 | CF4-SO M4 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | 7.14 | 7.12 | 7.9 | 4.8 | 8 | 1.27 |
| M5x0.8 | CF4-SO M5 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | 7.14 | 7.12 | 7.9 | 5.35 | 8 | 1.27 |
| D ±.25 | | None | | | | 4.0 | | | 8.0 | | | 11.0 | | | | | | | |

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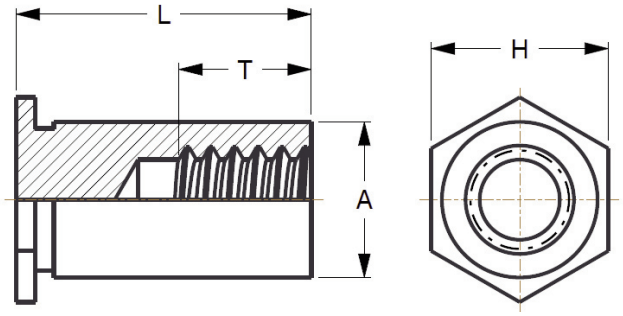
# Self-Clinching Standoffs for Stainless Steel

## Series CF4-BSO (400 Series Blind Standoffs)



Continued from previous page.

CF4-BSO Standoffs are designed to be pressed into round holes in stainless steel material as thin as .040 (1mm). The blind-hole versions are available in a choice of inch and metric sizes.




| Series | Material | Finish |
|---|---|---|
| CF4-BSO | 400 Series Stainless Steel | Passivated ASTM A967 |

Thread: Internal 2B, ANSI B1.1 (6H, ANSI/ASME B1.13M).

Use in: Materials with Rockwell Hardness of B88 or less.

Part Number Structure:

CF4-BSO 6440-10

- Length Code
- Thread Code
- Body Code
- Body Type
- Series

All Measurements In Inches.

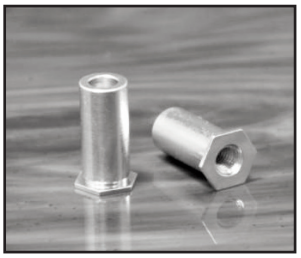
### *Dimensions & Specifications*

| Thread Size | Part Number | L Length +.002 –.005 in. .312 | .375 | .437 | .500 | .562 | .625 | .687 | .750 | .812 | .875 | .937 | 1.00 | 1.062 | +.003 –.000 | A Dim. +.000 –.005 | H Hex Dim. (Nom.) | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #4-40 | CF4-BSO 440 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .166 | .165 | .187 | .23 | .040 |
| | CF4-BSO 6440 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .213 | .212 | .250 | .27 | .040 |
| #6-32 | CF4-BSO 632 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .213 | .212 | .250 | .27 | .040 |
| | CF4-BSO 8632 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .281 | .280 | .312 | .31 | .050 |
| #8-32 | CF4-BSO 832 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .281 | .280 | .312 | .31 | .050 |
| #10-32 | CF4-BSO 1032 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | .281 | .280 | .312 | .31 | .050 |
| T Dim. Min. | | .156 | | .187 | .250 | | | .375 | | | | | | | | | | | |

All Measurements In Millimeters.

| Thread Size | Part Number | L Length +.05 –.13 mm 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 25 | +.08 –.00 | A Dim. +.00 –.13 | H Hex Dim. (Nom.) | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M3x0.5 | CF4-BSO M3 | -6 | -8 | -10 | 12 | -14 | -16 | -18 | -20 | -22 | -25 | 4.22 | 4.2 | 4.8 | 6 | 1 |
| | CF4-BSO 3.5M3 | -6 | -8 | -10 | 12 | -14 | -16 | -18 | -20 | -22 | -25 | 5.41 | 5.39 | 6.4 | 6.8 | 1 |
| M3.5x0.6 | CF4-BSO M3.5 | -6 | -8 | -10 | 12 | -14 | -16 | -18 | -20 | -22 | -25 | 5.41 | 5.39 | 6.4 | 6.8 | 1 |
| M4x0.7 | CF4-BSO M4 | -6 | -8 | -10 | 12 | -14 | -16 | -18 | -20 | -22 | -25 | 7.14 | 7.12 | 7.9 | 8 | 1.27 |
| M5x0.8 | CF4-BSO M5 | -6 | -8 | -10 | 12 | -14 | -16 | -18 | -20 | -22 | -25 | 7.14 | 7.12 | 7.9 | 8 | 1.27 |
| T Dim. Min. | | 3.2 | | 4.0 | 5.0 | | 6.5 | | 9.5 | | | | | | | |

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# Self-Clinching Standoffs for Stainless Steel

## Series CF4-SO & CF4-BSO (400 Series Standoffs)

### *Installation & Performance Data*

Sheet Material: .050 in. 300 Series Stainless Steel

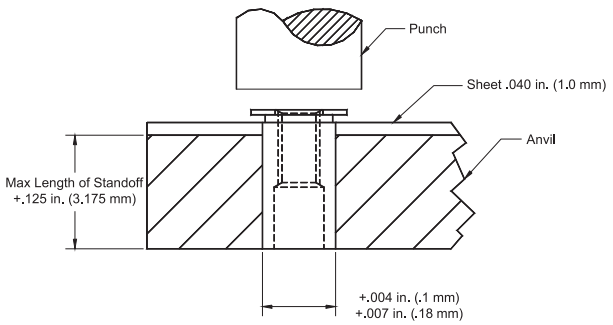
| INCH (in.) Thread Code | Installation Force (lbs.) | Pushout (lbs.) | Torque-out (in.-lbs.) | Pull Through (lbs.) | Rec. Tightening Torque Max. (in.-lbs.) |
|---|---|---|---|---|---|
| 440 | 5500 | 336 | 17 | 600 | 4.75 |
| 6440 | 9500 | 647 | 30 | 680 | 4.75 |
| 632 | 9500 | 647 | 30 | 680 | 8.75 |
| 8632 | 10500 | 900 | 71 | 1392 | 8.75 |
| 832 | 10500 | 900 | 71 | 1517 | 18 |
| 1032 | 10500 | 900 | 71 | 1368 | 32 |

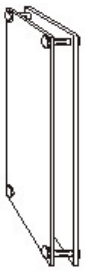
Sheet Material: 1.3mm 300 Series Stainless Steel

| METRIC (mm) Thread Code | Installation Force (kN) | Pushout (N) | Torque-out (N•m) | Pull Through (N) | Rec. Tightening Torque Max. (N•m) |
|---|---|---|---|---|---|
| M3 | 24.5 | 1493 | 2.36 | 2650 | .55 |
| 3.5 M3 | 42.3 | 2877 | 3.06 | 3025 | .55 |
| M3.5 | 42.3 | 2877 | 3.06 | 3025 | .91 |
| M4 | 46.7 | 4003 | 8.89 | 6458 | 2 |
| M5 | 46.7 | 4003 | 8.89 | 6226 | 3.6 |

*RECOMMENDED INSTALLATION PROCEDURE*

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



# Self-Clinching Slide-Top Standoffs

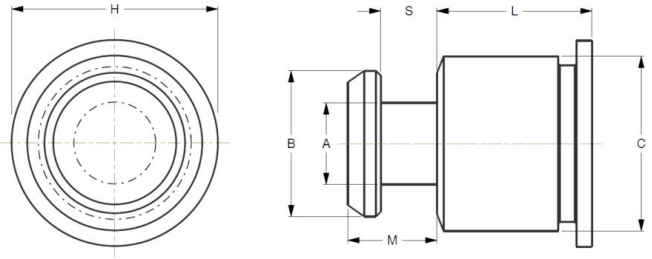
## Series CFSKC



CFSKC slide-top standoffs are designed for a PC 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 stand-off to lock the board in place.

| Series | Material | Finish |
|---|---|---|
| CFSKC | 300 Series Stainless Steel | Passivated ASTM A967 |

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. | Anvil Hole Dia. +.003 –.000 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CFSKC | 6060 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -24 | -28 | -32 | .099 | .177 | .212 | .068 | .108 | .250 | .216 |

## Dimensions & Specifications

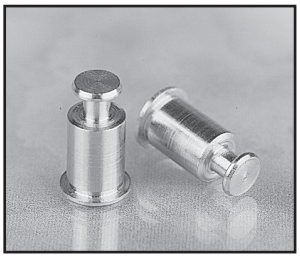
| METRIC (mm) Series | Body/ Hole Code | L Length ±.13mm. 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 25 | A ±.08 | B ±.08 | C Max. | S ±.08 | M Max. | H Nom. | Anvil Hole Dia. +.08 –.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CFSKC | 61.5 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20† | -22† | -25† | 2.51 | 4.5 | 5.39 | 1.73 | 2.75 | 6.35 | 5.5 |

† Not stocked, available on special order.

## Installation & Performance Data

| INCH (in.) 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.) |
|---|---|---|---|---|
| 6060 | 1600 | 250 | 3200 | 600 |
| METRIC (mm) | (kN) | (N) | (kN) | (N) |
| 61.5 | 7.1 | 1100 | 14.2 | 2600 |

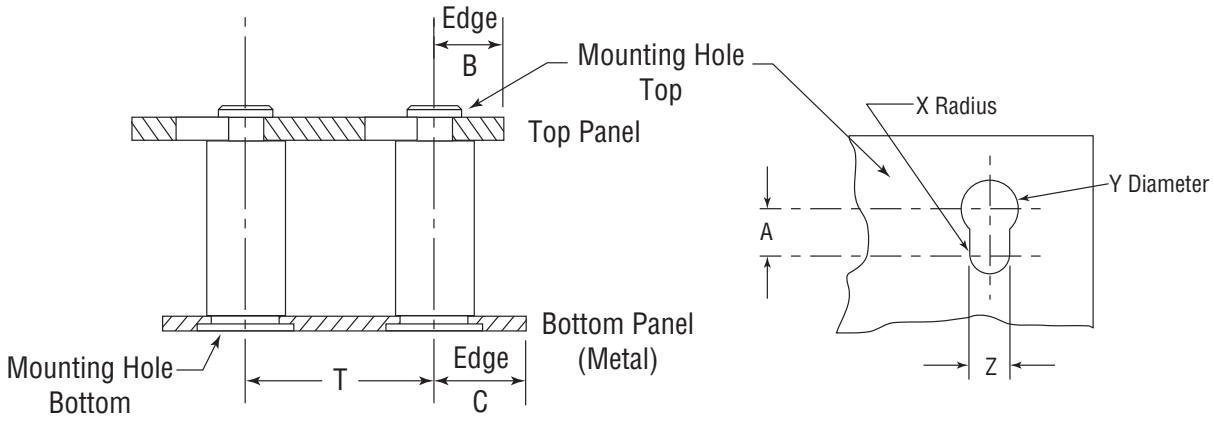
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# Self-Clinching Slide-Top Standoffs

## Series CFSKC

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## Installation & Performance Data

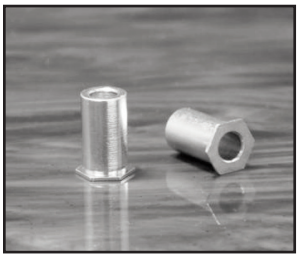
INCH (in.)

| Bottom Panel | | | | | Top Panel | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Top Mounting Hole | | | | | | |
| Series | Bottom Mounting Hole +.003 –.000 | Min. | C Min. | Location Tolerance T 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)

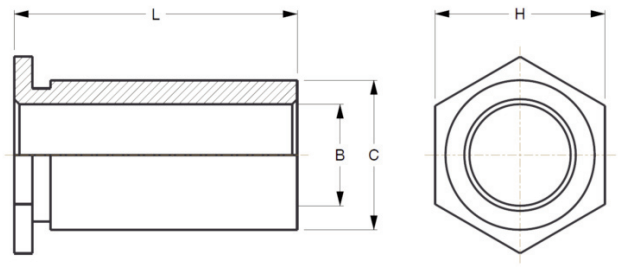
| Bottom Panel | | | | | Top Panel | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Top Mounting Hole | | | | | | |
| Series | Bottom Mounting Hole +.08 –.00 | Min. | C Min. | Location Tolerance T Max. | X Nom. | Y ±.08 | Z ±.08 | A Min. | Material | Thickness Range | B Min. |
| CFSKC | 5.41 | 1.02 | 6.6 | ±.13 | 1.5 | 5.0 | 3.0 | 3.75 | PC Board or Metal | 1.45 - 1.62 | 4.1 |



# Self-Clinching 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 | 300 Series Stainless Steel | Passivated ASTM A967 |
| CFSOA | 7075-T6 Aluminum | None |

*See Finish Spec. on Page 6.

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.

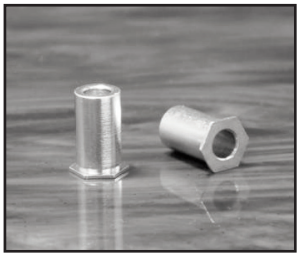
### *Dimensions & Specifications*

| B +.004 -.003 Thru-Hole Diameter | Part Number | L Length +.002 –.005 in. .125 | .187 | .250 | .312 | .375 | .437 | .500 | .562 | .625 | .687 | .750 | +.003 –.000 | C +.000 –.005 | H Hex Dim. | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .116 | CFSO 4116 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | .166 | .165 | .187 | .23 | .040 |
| | CFSOS 4116 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | |
| | CFSOA 4116 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | |
| .116 | CFSO 6116 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | .213 | .212 | .250 | .27 | .040 |
| | CFSOS 6116 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | |
| | CFSOA 6116 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | |
| .143 | CFSO 6143 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | .213 | .212 | .250 | .27 | .040 |
| | CFSOS 6143 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | |
| | CFSOA 6143 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | |
| .143 | CFSO 8143 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | .281 | .280 | .312 | .31 | .050 |
| | CFSOS 8143 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | |
| | CFSOA 8143 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | |
| .169 | CFSO 8169 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | .281 | .280 | .312 | .31 | .050 |
| | CFSOS 8169 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | |
| | CFSOA 8169 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | |
| .194 | CFSO 8194 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | .281 | .280 | .312 | .31 | .050 |
| | CFSOS 8194 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | |
| | CFSOA 8194 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | | | | | |

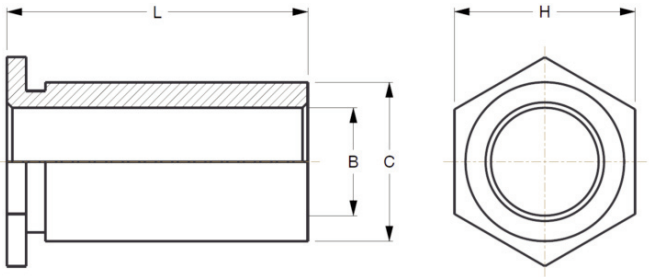
Continued on next page.

# Self-Clinching Unthreaded Thru-Hole Standoffs

## Series CFSO, CFSOS & CFSOA



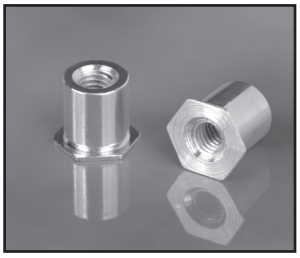
Continued from previous page.




All Measurements In Millimeters.

### *Dimensions & Specifications*

| B +.10 -.08 Thru-Hole Diameter | Part Number | L Length +.05 -.13 mm 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | +.08 -.00 | C +.00 -.13 | H Hex Dim. | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.1 | CFSO | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | 4.22 | 4.19 | 4.8 | 6 | 1.02 |
| | CFSOS 43.1 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | | | | | |
| | CFSOA | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | | | | | |
| 3.1 | CFSO | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | 5.41 | 5.38 | 6.4 | 6.8 | 1.02 |
| | CFSOS 63.1 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | | | | | |
| | CFSOA | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | | | | | |
| 3.6 | CFSO | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | 5.41 | 5.38 | 6.4 | 6.8 | 1.02 |
| | CFSOS 63.6 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | | | | | |
| | CFSOA | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | | | | | |
| 3.6 | CFSO | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | 7.14 | 7.11 | 7.9 | 8 | 1.27 |
| | CFSOS 83.6 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | | | | | |
| | CFSOA | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | | | | | |
| 4.1 | CFSO | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | 7.14 | 7.11 | 7.9 | 8 | 1.27 |
| | CFSOS 84.1 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | | | | | |
| | CFSOA | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | | | | | |
| 5.1 | CFSO | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | 7.14 | 7.11 | 7.9 | 8 | 1.27 |
| | CFSOS 85.1 | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | | | | | |
| | CFSOA | -3 | -4 | -6 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | | | | | |



# Self Clinching Standoffs For Thin Sheet Material

## Series CFT, CFTS & CFTA

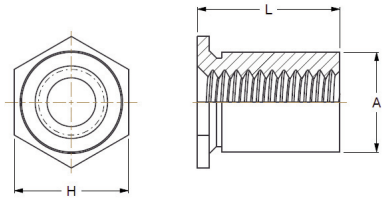
CFT standoffs allow flush-head installation in a material thickness of .025in.(.63mm) or more

| Series | Material | Finish |
|---|---|---|
| CFT | Heat-treated Carbon Steel | Zinc* Clear |
| CFTS | 300 Series Stainless Steel | Passivated ASTM A967 |
| CFTA | 7075-T6 Aluminum | None |

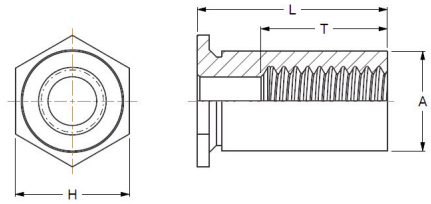
*See Finish Spec on Page 6.

Thread: Internal 2B, ANSI B1.1

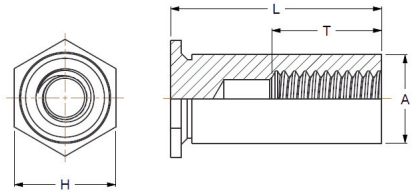
Use in : CFT- Material wth HR of B-60 or less
CFTS- Material with HR of B-70 or less
CFTA- Material with HR of B-50 or less



Full Thread Version



Partial Thread Version



Blind Thread Version

Part Number Structure:

CFT 440-.090

- Length Code
- Thread Code
- Series

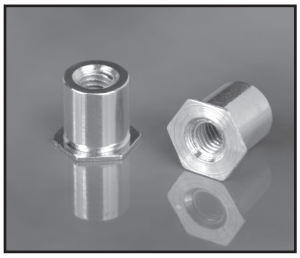
## Dimensions & Specifications

| | Thread Size | Part Number | L Length ±.003 in. 0.09 | 0.125 | 0.187 | 0.25 | 0.312 | 0.375 | 0.437 | 0.5 | 0.562 | 0.625 | 0.687 | 0.75 | +.003 -.000 | A +.000 -.005 | H Nom. | T Min. | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | #2-56 | CFT 256 | -0.09 | -0.125 | -0.187 | -0.25 | -0.312 | -0.375 | -0.437 | -0.5 | -0.562 | -0.625 | -0.687 | -0.75 | 0.166 | 0.165 | 0.187 | 0.2 | 0.23 | 0.025 |
| | | CFTS 256 | -0.09 | -0.125 | -0.187 | -0.25 | -0.312 | -0.375 | -0.437 | -0.5 | -0.562 | -0.625 | -0.687 | -0.75 | | | | | | |
| | | CFTA 256 | -0.09 | -0.125 | -0.187 | -0.25 | -0.312 | -0.375 | -0.437 | -0.5 | -0.562 | -0.625 | -0.687 | -0.75 | | | | | | |
| | | CFT 6256 | -0.09 | -0.125 | -0.187 | -0.25 | -0.312 | -0.375 | -0.437 | -0.5 | -0.562 | -0.625 | -0.687 | -0.75 | 0.213 | 0.212 | 0.25 | | 0.27 | 0.025 |
| | | CFTS 6256 | -0.09 | -0.125 | -0.187 | -0.25 | -0.312 | -0.375 | -0.437 | -0.5 | -0.562 | -0.625 | -0.687 | -0.75 | | | | | | |
| | | CFTA 6256 | -0.09 | -0.125 | -0.187 | -0.25 | -0.312 | -0.375 | -0.437 | -0.5 | -0.562 | -0.625 | -0.687 | -0.75 | | | | | | |
| | #4-40 | CFT 440 | -0.09 | -0.125 | -0.187 | -0.25 | -0.312 | -0.375 | -0.437 | -0.5 | -0.562 | -0.625 | -0.687 | -0.75 | 0.166 | 0.165 | 0.187 | 0.22 | 0.23 | 0.025 |
| | | CFTS 440 | -0.09 | -0.125 | -0.187 | -0.25 | -0.312 | -0.375 | -0.437 | -0.5 | -0.562 | -0.625 | -0.687 | -0.75 | | | | | | |
| | | CFTA 440 | -0.09 | -0.125 | -0.187 | -0.25 | -0.312 | -0.375 | -0.437 | -0.5 | -0.562 | -0.625 | -0.687 | -0.75 | | | | | | |
| | | CFT 6440 | -0.09 | -0.125 | -0.187 | -0.25 | -0.312 | -0.375 | -0.437 | -0.5 | -0.562 | -0.625 | -0.687 | -0.75 | 0.213 | 0.212 | 0.25 | | 0.27 | 0.025 |
| | | CFTS 6440 | -0.09 | -0.125 | -0.187 | -0.25 | -0.312 | -0.375 | -0.437 | -0.5 | -0.562 | -0.625 | -0.687 | -0.75 | | | | | | |
| | | CFTA 6440 | -0.09 | -0.125 | -0.187 | -0.25 | -0.312 | -0.375 | -0.437 | -0.5 | -0.562 | -0.625 | -0.687 | -0.75 | | | | | | |
| | #6-32 | CFT 632 | | -0.125 | -0.187 | -0.25 | -0.312 | -0.375 | -0.437 | -0.5 | -0.562 | -0.625 | -0.687 | -0.75 | 0.213 | 0.212 | 0.25 | 0.27 | 0.27 | 0.025 |
| | | CFTS 632 | | -0.125 | -0.187 | -0.25 | -0.312 | -0.375 | -0.437 | -0.5 | -0.562 | -0.625 | -0.687 | -0.75 | | | | | | |
| | | CFTA 632 | | -0.125 | -0.187 | -0.25 | -0.312 | -0.375 | -0.437 | -0.5 | -0.562 | -0.625 | -0.687 | -0.75 | | | | | | |
| Version | | | Full Thread | | | | | Partial Thread | | | Blind Thread | | | | Note: Items may be subject to minimum order | | | | | |

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# Self-Clinching Standoffs For Thin Sheet Material

## Series CFT, CFTS & CFTA



Continued from previous page.

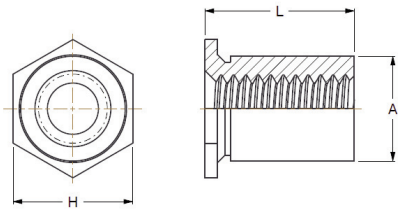
CFT standoffs allow flush-head installation in a material thickness of .025in.(.63mm) or more

| Series | Material | Finish |
|---|---|---|
| CFT | Heat-treated Carbon Steel | Zinc* Clear |
| CFTS | 300 Series Stainless Steel | Passivated ASTM A967 |
| CFTA | 7075-T6 Aluminum | None |

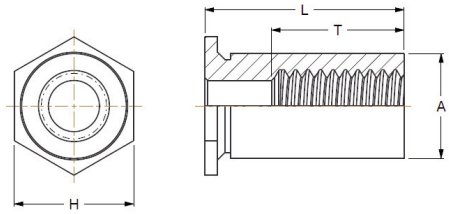
*See Finish Spec on Page 6.

Thread: Internal 2B, ANSI B1.1

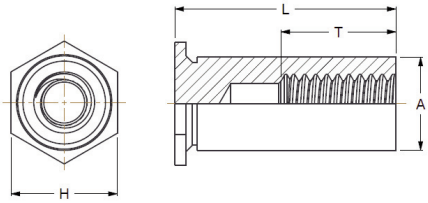
Use in : CFT- Material with HR of B-60 or less
CFTS- Material with HR of B-70 or less
CFTA- Material with HR of B-50 or less




Full Thread Version




Partial Thread Version




Blind Thread Version

Part Number Structure:

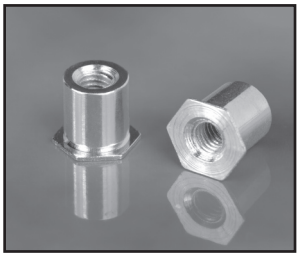
CFT M2.5- 200

- Length Code
- Thread Code
- Series

## *Dimensions & Specifications*

| | Thread Size | Part Number | L Length ±.08 mm. 2.00 | 3.00 | 4.00 | 6.00 | 8.00 | 10.00 | 12.00 | 14.00 | 16.00 | 18.00 | 19.00 | +.08 -.000 | A +.000 -.13 | H Nom. | T Min. | Min. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm.) | M2.5x0.45 | CFT M2.5 | -200 | -300 | -400 | -600 | -800 | -1000 | -1200 | -1400 | -1600 | -1800 | -1900 | 4.22 | 4.2 | 4.8 | 5.2 | 5.8 | 0.63 |
| | | CFTS M2.5 | -200 | -300 | -400 | -600 | -800 | -1000 | -1200 | -1400 | -1600 | -1800 | -1900 | | | | | | |
| | | CFTA M2.5 | -200 | -300 | -400 | -600 | -800 | -1000 | -1200 | -1400 | -1600 | -1800 | -1900 | | | | | | |
| | | CFT 6M2.5 | -200 | -300 | -400 | -600 | -800 | -1000 | -1200 | -1400 | -1600 | -1800 | -1900 | 5.41 | 5.39 | 6.4 | | 7.1 | 0.63 |
| | | CFTS 6M2.5 | -200 | -300 | -400 | -600 | -800 | -1000 | -1200 | -1400 | -1600 | -1800 | -1900 | | | | | | |
| | | CFTA 6M2.5 | -200 | -300 | -400 | -600 | -800 | -1000 | -1200 | -1400 | -1600 | -1800 | -1900 | | | | | | |
| | M3x0.5 | CFT M3 | -200 | -300 | -400 | -600 | -800 | -1000 | -1200 | -1400 | -1600 | -1800 | -1900 | 4.22 | 4.2 | 4.8 | 6.2 | 5.8 | 0.63 |
| | | CFTS M3 | -200 | -300 | -400 | -600 | -800 | -1000 | -1200 | -1400 | -1600 | -1800 | -1900 | | | | | | |
| | | CFTA M3 | -200 | -300 | -400 | -600 | -800 | -1000 | -1200 | -1400 | -1600 | -1800 | -1900 | | | | | | |
| | | CFT 6M3 | -200 | -300 | -400 | -600 | -800 | -1000 | -1200 | -1400 | -1600 | -1800 | -1900 | 5.41 | 5.39 | 6.4 | | 7.1 | 0.63 |
| | | CFTS 6M3 | -200 | -300 | -400 | -600 | -800 | -1000 | -1200 | -1400 | -1600 | -1800 | -1900 | | | | | | |
| | | CFTA 6M3 | -200 | -300 | -400 | -600 | -800 | -1000 | -1200 | -1400 | -1600 | -1800 | -1900 | | | | | | |
| | M3.5x0.6 | CFT M3.5 | | -300 | -400 | -600 | -800 | -1000 | -1200 | -1400 | -1600 | -1800 | -1900 | 5.41 | 5.39 | 6.4 | 7 | 7.1 | 0.63 |
| | | CFTS M3.5 | | -300 | -400 | -600 | -800 | -1000 | -1200 | -1400 | -1600 | -1800 | -1900 | | | | | | |
| | | CFTA M3.5 | | -300 | -400 | -600 | -800 | -1000 | -1200 | -1400 | -1600 | -1800 | -1900 | | | | | | |
| Version | | | Full Thread | | | | | Partial Thread | | Blind Thread | | | | Note: Items may be subject to minimum order | | | | | |

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# Self-Clinching Standoffs For Thin Sheet Material

## Series CFT, CFTS & CFTA

Continued from previous

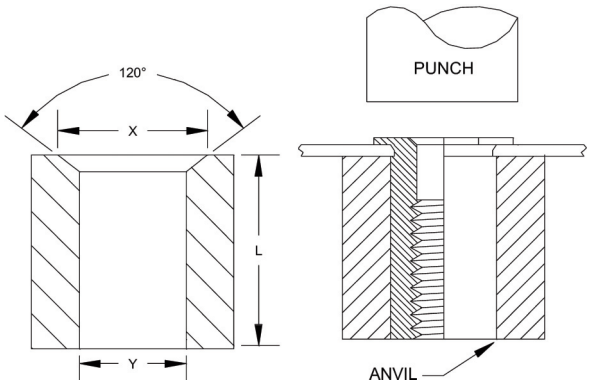
### *Installation & Performance Data*

| A Dim. | Series | Sheet Material | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | .025 in. (.64mm) 5052-H-34 Aluminum | | | | | | .025 in. (.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 (4.2 mm) | CFT | 1500 | 6.7 | 70 | 311 | 6 | 0.68 | 2000 | 8.9 | 100 | 445 | 9 | 1 |
| | CFTS | | | | | | | | | | | | |
| | CFTA | | | | | | | - | - | - | - | - | - |
| .212 in. (5.39mm) | CFT | 1800 | 8 | 90 | 400 | 11 | 1.24 | 2500 | 11.1 | 150 | 667 | 15 | 1.7 |
| | CFTS | | | | | | | | | | | | |
| | 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.

### Installation

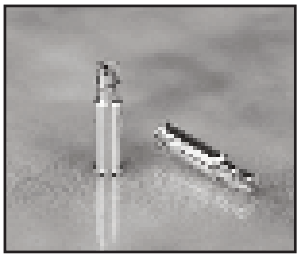
1. Prepare the required size hole in the base material by punching or drilling. Do not deburr hole.
2. Place standoff through hole in material and into installation anvil and squeeze into place using a shop press with flat punch
3. Apply a sufficient force to seat the hex head flush into the base material.
4. 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.



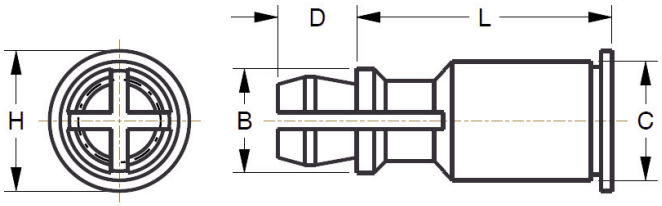

| Standoff A Dimension | Anvil Dimensions | | | |
|---|---|---|---|---|
| | Y | | X | |
| | Inches | mm | Inches | mm |
| .165 in./4.2mm | .167 - .170 | 4.24 - 4.32 | .187 - .194 | 4.75 - 4.93 |
| .212 in./5.39mm | .213 - .216 | 5.41 - 5.49 | .250 - .257 | 6.35 - 6.53 |

# Self-Clinching 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 A967 |

*See Finish Spec. on Page 6.

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 | 156 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -24 | -28 | -32 | .188 | .212 | .141 | .250 |
| | CFSSC | 156 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -24 | -28 | -32 | | | | |
| | CFSSS | 156 | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -24 | -28 | -32 | | | | |

### Dimensions & Specifications

| | Series | Top Panel Mounting Hole Diameter Code | L Length ±.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 | 4MM | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | 4.78 | 5.39 | 3.58 | 6.35 |
| | CFSSC | 4MM | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | |
| | CFSSS | 4MM | -8 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -25 | | | | |

Continued on next page.



# Self-Clinching Spring Top Standoffs

## Series CFSSA, CFSSS & CFSSC

Continued from previous page.

### Installation & Performance Data

| | Series | Bottom Panel (Fixed) | | | | | | Top Panel (Removable) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 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

| | Series | Bottom Panel (Fixed) | | | Top Panel (Removable) | | |
|---|---|---|---|---|---|---|---|
| | | 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 | 13 | 3.0 | 1.0 |
| | CFSSS | .040 Aluminum HRB 25 | 1500 | 200 | 20 | 6.0 | 2.0 |
| | CFSSC | .060 Cold-rolled Steel HRB 64 | 3600 | 400 | 20 | 6.0 | 2.0 |

### Installation & Performance Data

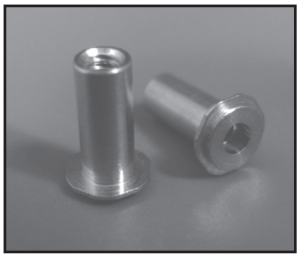
| | Series | Bottom Panel (Fixed) | | | | | | Top Panel (Removable) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Bottom Mounting Hole +.08 –.00 | Material | Hardness Max. | Thickness Min. | Min. | Location Tolerance Max. | Top Mounting Hole +.08 –.00 | Material | Thickness Range | Min. |
| METRIC (mm) | CFSSA | 5.41 | Metal | HRB50 | 1 | 6.6 | ±.134 | 4.0 | P-C board or metal | 1-1.8 | 2.54 |
| | CFSSS | 5.41 | | HRB60 | 1 | 6.6 | ±.134 | 4.0 | | | 2.54 |
| | CFSSC | 5.41 | | HRB70 | 1 | 6.6 | ±.134 | 4.0 | | | 2.54 |

### Installation & Performance Data

| | Series | Bottom Panel (Fixed) | | | Top Panel (Removable) | | |
|---|---|---|---|---|---|---|---|
| | | 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 | 58 | 13 | 4.0 |
| | CFSSS | 1.0 Aluminum HRB 25 | 6.7 | 880 | 89 | 27 | 9.0 |
| | CFSSC | 1.52 Cold-rolled Steel HRB 64 | 15.5 | 1780 | 89 | 27 | 9.0 |

# Self-Clinching Concealed-Head Standoffs

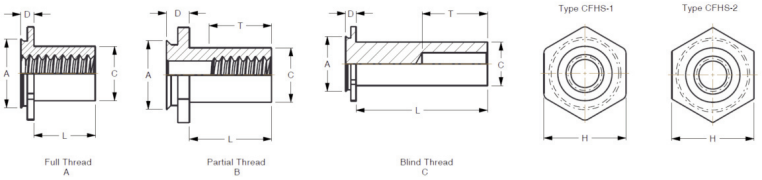
## Series CFHS



CFHS concealed head standoffs allow permanent mounting in thin metal sheets, using a hollow punch and solid anvil. The standoff is pressed permanently into a blind milled hole, with no marring of the exterior surface.

| Series | Material | Finish |
|---|---|---|
| CFHS | 300 Series Stainless Steel | Passivated ASTM A967 |

Thread: Internal 2B, ANSI B1.1 (6H ANSI/ASME B1.13M)
Use in: Materials with HRB-70 or less.




Part Number Structure:

CFHS-1-440-4

- Length Code
- Thread Code
- Type Code
- Series

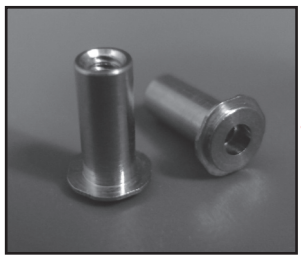
## Dimensions & Specifications

| | Thread Size | Type Code | Thread Code | L Length +.002 –.005 (in.) .187 | .250 | .312 | .375 | .500 | .625 | .750 | 1.00 | Min. Sheet Thickness | Blind Mounting Hole Dia. +.003 -.000 | Min. Depth Of Blind Hole | T Min. Depth Full Thread | D Max. | C Max. | A Max. | H Nom. | Min. Dist. Hole C/L To Edge |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | .112-40 (#4-40) | CFHS-1 | 440 | 3[A] | 4[B] | 5[B] | 6[B] | 8[C] | 10[C] | 12[C] | 16[C] | .062 | .213 | .043 | .188 | .041 | .165 | .212 | .250 | .188 |
| | | CFHS-2 | | | | | | | | | | .093 | | .075 | | .072 | | | | |
| | .138-32 (#6-32) | CFHS-1 | 632 | 3[A] | 4[A] | 5[B] | 6[B] | 8[C] | 10[C] | 12[C] | 16[C] | .062 | .290 | .043 | .250 | .041 | .213 | .289 | .312 | .219 |
| | | CFHS-2 | | | | | | | | | | .093 | | .075 | | .072 | | | | |
| | .164-32 (#8-32) | CFHS-1 | 832† | 3[A] | 4[A] | 5[B] | 6[B] | 8[C] | 10[C] | 12[C] | 16[C] | .062 | .312 | .043 | .250 | .041 | .245 | .311 | .344 | .250 |
| | | CFHS-2 | | | | | | | | | | .093 | | .075 | | .072 | | | | |
| | .190-32 (#10-32) | CFHS-1 | 1032† | 3[A] | 4[A] | 5[A] | 6[A] | 8[B] | 10[C] | 12[C] | 16[C] | .062 | .344 | .043 | .375 | .041 | .290 | .343 | .375 | .281 |
| | | CFHS-2 | | | | | | | | | | .093 | | .075 | | .072 | | | | |
| | .250-20 (1/4-20) | CFHS-2 | 420† | 3[A] | 4[A] | 5[A] | 6[A] | 8[B] | 10[B] | 12[C] | 16[C] | .093 | .390 | .075 | .375 | .072 | .354 | .389 | .438 | .375 |

| | Thread Size | Type Code | Thread Code | L Length +.05 –.13 (mm) 4 | 6 | 8 | 10 | 12 | 16 | 20 | 25 | Min. Sheet Thickness | Blind Mounting Hole Dia. +.08 -.00 | Min. Depth Of Blind Hole | T Min. Depth Full Thread | D Max. | C Max. | A Max. | H Nom. | Min. Dist. Hole C/L To Edge |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm) | M3x0.5 | CFHS-1 | M3 | 4[A] | 6[A] | 8[B] | 10[C] | 12[C] | 16[C] | 20[C] | 25[C] | 1.6 | 5.41 | 1.1 | 5 | 1.04 | 4.2 | 5.39 | 6.35 | 4.8 |
| | | CFHS-2 | | | | 8[C] | | | | | | 2.4 | | 1.91 | | 1.83 | | | | |
| | M4x0.7 | CFHS-1 | M4 | 4[A] | 6[A] | 8[B] | 10[B] | 12[C] | 16[C] | 20[C] | 25[C] | 1.6 | 7.92 | 1.1 | 6.5 | 1.04 | 6.23 | 7.9 | 8.74 | 6.4 |
| | | CFHS-2 | | | | | 10[C] | | | | | 2.4 | | 1.91 | | 1.83 | | | | |
| | M5x0.8 | CFHS-1 | M5† | 4[A] | 6[A] | 8[B] | 10[B] | 12[B] | 16[C] | 20[C] | 25[C] | 1.6 | 8.74 | 1.1 | 9.6 | 1.04 | 7.37 | 8.72 | 9.53 | 7.2 |
| | | CFHS-2 | | | | | | | | | | 2.4 | | 1.91 | | 1.83 | | | | |
| | M6x1 | CFHS-2 | M6† | 4[A] | 6[A] | 8[A] | 10[B] | 12[B] | 16[C] | 20[C] | 25[C] | 2.4 | 9.9 | 1.91 | 9.6 | 1.83 | 9 | 9.89 | 11.11 | 9.5 |

†Not stocked, available on special order.

Continued on next page.



# Self-Clinching Concealed-Head Standoffs

## Series CFHS

Continued from previous page.

### Installation & Performance Data

| | Type Code | Thread Code | Tightening Torque Max (in.-lbs.) | Test Sheet Material | | | |
|---|---|---|---|---|---|---|---|
| | | | | Cold-rolled Steel | | 5052-H34 Aluminum | |
| | | | | Installation Force (lbs.) | Pullout (lbs.) | Installation Force (lbs.) | Pullout (lbs.) |
| INCH (in.) | CFHS-1 | 440 | 4.75 | 4000 | 300 | 2800 | 200 |
| | | 632 | 8.75 | 4500 | 350 | 3000 | 240 |
| | | 832 | 18 | 4800 | 400 | 4000 | 270 |
| | | 1032 | 32 | 5500 | 450 | 5000 | 290 |
| | CFHS-2 | 440 | 4.75 | 4300 | 330 | 2900 | 220 |
| | | 632 | 8.75 | 5000 | 360 | 3200 | 240 |
| | | 832 | 18 | 5300 | 440 | 4000 | 300 |
| | | 1032 | 32 | 6000 | 600 | 5000 | 400 |
| | | 420 | 64 | 6500 | 650 | 5500 | 430 |

### Installation & Performance Data

| | Type Code | Thread Code | Tightening Torque Max (N•m) | Test Sheet Material | | | |
|---|---|---|---|---|---|---|---|
| | | | | Cold-rolled Steel | | 5052-H34 Aluminum | |
| | | | | Installation Force (kN) | Pullout (N) | Installation Force (kN) | Pullout (N) |
| METRIC (mm) | CFHS-1 | M3 | .55 | 17.8 | 1330 | 12.5 | 890 |
| | | M4 | 2 | 21.3 | 1775 | 17.8 | 1200 |
| | | M5 | 3.6 | 24.5 | 2000 | 22.2 | 1290 |
| | CFHS-2 | M3 | .55 | 19.2 | 1465 | 12.9 | 975 |
| | | M4 | 2 | 23.6 | 1955 | 17.8 | 1335 |
| | | M5 | 3.6 | 26.7 | 2665 | 22.2 | 1775 |
| | | M6 | 7.2 | 28.9 | 2860 | 24.4 | 1915 |

# Self-Clinching Concealed-Head Standoffs

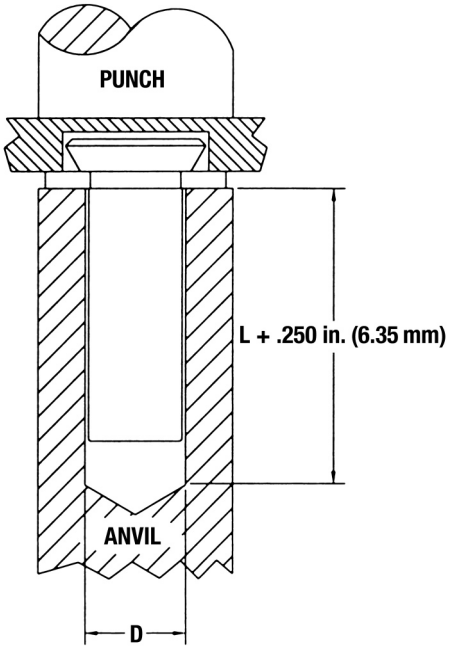
## Series CFHS
## Typical Installation Method



Continued from previous page.

### Installation Procedure

1. Mill a blind hole in material to specified depth.
2. Place fastener into hole in anvil.
3. Place sheet material over head of fastener.
4. Apply a downward squeezing force with punch, pressing on sheet material until serrated collar of fastener is flush with surface.




*Depth of blind holes may be greater than minimum, if sheet thickness allows.

### *Anvil 'D' Diameter Dimensions for Concealed Head Studs*

| | Series | Thread Code | D Dia. (in.) |
|---|---|---|---|
| INCH (in.) | CFHS | 440 | .170 |
| | | 632 | .218 |
| | | 832 | .250 |
| | | 1032 | .295 |
| | | 420 | .358 |

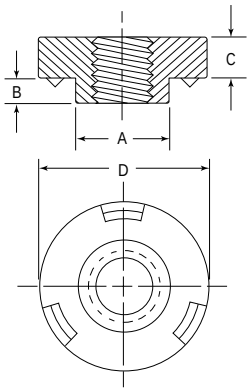
| | Series | Thread Code | D Dia. (mm) |
|---|---|---|---|
| METRIC (mm) | CFHS | M3 | 4.33 |
| | | M4 | 6.36 |
| | | M5 | 7.5 |
| | | M6 | 9.13 |



# 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 A967 |

Thread: Internal 2B, ANSI B1.1 (6H, ANSI/ASME B1.13M).

Part Number Structure:

CFWN 632-1

- → Sheet Thickness
- → Thread Code
- → Series

### *Dimensions & Specifications*

| | Thread Size | Part Number: Carbon Steel | Part Number: Stainless Steel | Min. | +.004 in. (+.10 mm) -.000(.00) | A Max | B Max | C ±.004 in.(±.10 mm) | D +.000 in. (+.00 mm) -.010 in. (-25 mm) | Min. |
|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | #4-40 | CFWN440 | CFWNS440 | .030 | .173 | .173 | .030 | .065 | .308 | .154 |
| | #6-32 | CFWN632 | CFWNS632 | .030 | .193 | .192 | .030 | .094 | .341 | .171 |
| | | CFWN632-1 | N/A | .060 | .193 | .192 | .050 | | | |
| | #8-32 | CFWN832 | CFWNS832 | .030 | .218 | .217 | .030 | .108 | .371 | .186 |
| | | CFWN832-1 | N/A | .060 | .218 | .217 | .050 | | | |
| | #10-24 | CFWN1024 | CFWNS1024 | .030 | .250 | .249 | .030 | .156 | .440 | .220 |
| | | CFWN1024-1 | N/A | 060 | .25 | .249 | .050 | | | |
| | #10-32 | CFWN1032 | CFWNS1032 | .030 | .250 | .249 | .030 | .156 | .440 | .220 |
| | | CFWN1032-1 | N/A | .060 | .250 | .249 | .050 | | | |
| | 1/4-20 | CFWN420 | CFWNS420 | .048 | .316 | .315 | .048 | .186 | .522 | .261 |
| METRIC (mm) | M3 x 0.5 | CFWNM3 | CFWNSM3 | .77 | 4.39 | 4.36 | .77 | 1.49 | 7.82 | 3.91 |
| | M4 x 0.7 | CFWNM4 | CFWNSM4 | .77 | 5.53 | 5.5 | .77 | 2.58 | 9.42 | 4.71 |
| | M5 x 0.8 | CFWNM5 | CFWNSM5 | .77 | 6.35 | 6.32 | .77 | 3.78 | 11.17 | 5.59 |
| | M6 x 1.0 | CFWNM6 | CFWNSM6 | 1.24 | 8.04 | 8.01 | 1.22 | 4.56 | 13.25 | 6.63 |

N/A = Not Available

Continued on next page.

# Weld Nuts

## Series CFWN & CFWNS



Continued from previous page.

### Performance Data

| | Series | Thread Size | Cold-Rolled Steel .060 in. (1.5mm) Pushout (lbs.) | Cold-Rolled Steel .060 in. (1.5mm) Torque-Out (in.-lbs.) | 300 Series Stainless Steel .060 in. (1.5mm) Pushout (lbs.) | 300 Series Stainless Steel .060 in. (1.5mm) Torque-Out (in.-lbs.) |
|---|---|---|---|---|---|---|
| INCH (in.) | CFWN | #4-40 | 500 | 13 | N/A | N/A |
| | | #6-32 | 640 | 22 | | |
| | | #8-32 | 460 | 33 | | |
| | | #10-32 | 880 | 56 | | |
| | | 1/4-20 | 1000 | 185 | | |
| | CFWNS | #4-40 | N/A | N/A | 680 | 13 |
| | | #6-32 | | | 800 | 28 |
| | | #8-32 | | | 850 | 45 |
| | | #10-32 | | | 900 | 110 |
| | | 1/4-20 | | | 1000 | 200 |
| METRIC (mm) | CFWN | Thread Size | Pushout (N) | Torque-Out (N•m) | Pushout (N) | Torque-Out (N•m) |
| | | M3 | 2220 | 1.4 | N/A | N/A |
| | | M4 | 3380 | 3.7 | | |
| | | M5 | 3910 | 6.3 | | |
| | | M6 | 4445 | 20.9 | | |
| | CFWNS | M3 | N/A | N/A | 3020 | 1.4 |
| | | M4 | | | 3780 | 5 |
| | | M5 | | | 4000 | 12.4 |
| | | M6 | | | 4445 | 22.5 |

### Installation Data

| | Series | Thread Size | Sheet material .030 in. (.077 mm) to .063 in. (1.6mm) — Cold Rolled Steel: Electro Ram Force (lbs.) | Cold Rolled Steel: Secondary Current Amps ±500 | Cold Rolled Steel: Weld Time Cycle/Sec. | 300 Series Stainless Steel: Electro Ram Force (lbs.) | 300 Series Stainless Steel: Secondary Current Amps ±500 | 300 Series Stainless Steel: Weld Time Cycle/Sec. |
|---|---|---|---|---|---|---|---|---|
| INCH (in.) | CFWN | #4-40 | 450-500 | 17,000 | 6/0.10 | N/A | N/A | N/A |
| | | #6-32 | 450-500 | 17,000 | 6/0.10 | | | |
| | | #8-32 | 450-500 | 17,000 | 6/0.10 | | | |
| | | #10-32 | 500-550 | 18,000 | 10/0.17 | | | |
| | | 1/4-20 | 550-600 | 20,000 | 10/0.17 | | | |
| | CFWNS | #4-40 | N/A | N/A | N/A | 450-500 | 16,500 | 6/0.10 |
| | | #6-32 | | | | 450-500 | 16,500 | 6/0.10 |
| | | #8-32 | | | | 500-550 | 16,500 | 6/0.10 |
| | | #10-32 | | | | 550-600 | 18,500 | 6/0.10 |
| | | 1/4-20 | | | | 650-700 | 20,000 | 6/0.10 |
| METRIC (mm.) | CFWN | Thread Size | Electro Ram Force (lbs.) | Secondary Current Amps ±500 | Weld Time Cycle/Sec. | Electro Ram Force (lbs.) | Secondary Current Amps ±500 | Weld Time Cycle/Sec. |
| | | M3 | 2000-2200 | 17,000 | 6/0.10 | N/A | N/A | N/A |
| | | M4 | 2000-2200 | 17,000 | 6/0.10 | | | |
| | | M5 | 2220-2440 | 18,000 | 10/0.17 | | | |
| | | M6 | 2440-2670 | 20,000 | 10/0.17 | | | |
| | CFWNS | M3 | N/A | N/A | N/A | 2000-2220 | 16,500 | 6/0.10 |
| | | M4 | | | | 2220-2225 | 16,500 | 6/0.10 |
| | | M5 | | | | 2440-2670 | 18,500 | 6/0.10 |
| | | M6 | | | | 2890-3110 | 20,000 | 6/0.10 |

### TECHNIQUES FOR BETTER WELDING

Be sure the electrodes, sheet material and weld nuts themselves are clean and contain no grease, rust,or burrs. If installed welds look food, but pushout performance is poor, check for the following causes:

- ∑ Electro force too high
- ∑ Low current level
- ∑ Dirty panel
- ∑ Nuts not centered
- ∑Hold time too short, causing unsufficient cooling
- ∑Inconsistent pressure regulator

If threads are distorted after installation, check for the following causes:

- ∑Long weld time
- ∑High current level
- ∑ Electrode force too high

### INSTALLATION TIPS

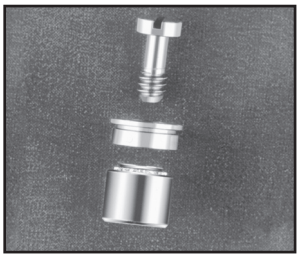
Electrode force is the pressure applied by electrodes on the weld nut and sheet material to squeeze them together and make good contact.

Low electrode force may cause discoloration, flashing, burning or spatter.

High electrode force may compress weld projections before correct temperature is achieved or push projections of the unheated weld nut into the sheet.

Secondary current setting controls the heat applied to the Captive weld nut and sheet material.

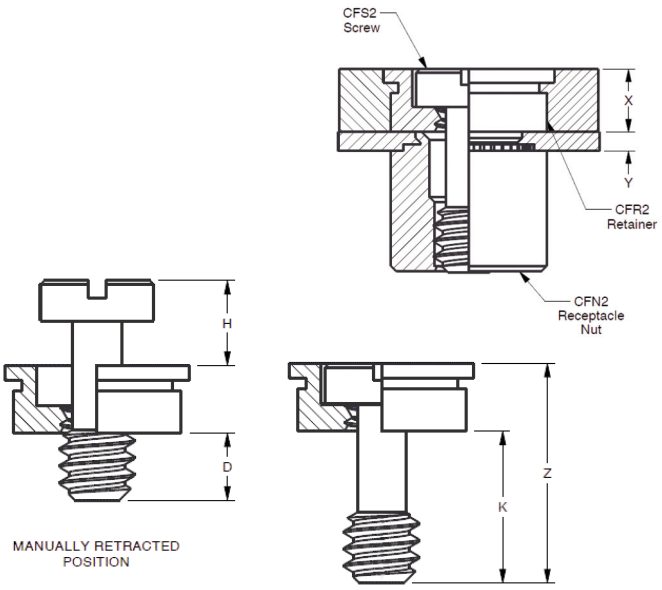
**N/A = Not Available**



# 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 A967 |
| CFR2 | 300 Series Stainless Steel | Passivated ASTM A967 |
| CFN2 | Heat-treated Carbon Steel | Zinc* Clear |

*See Finish Spec. on Page 6.

Threads:

CFS2 - External 2A, ANSI B1.1 (6g, ANSI/ASME B1.13M)
CFR2 - Internal 2B, ANSI B1.1 (6H, ANSI/ASME B1.13M)
CFN2 - Internal 2B, ANSI B1.1 (6H, ANSI/ASME B1.13M)

Use in: materials of HRB 70 or less.

### Dimensions & Specifications

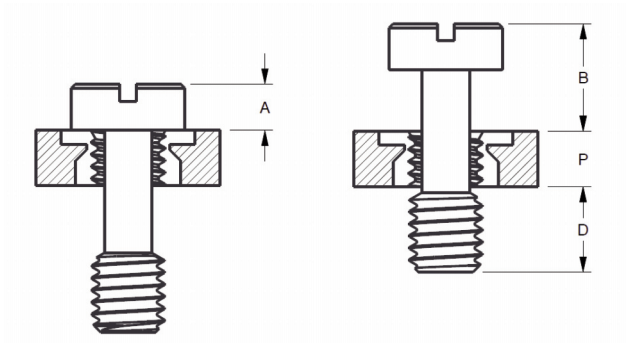
| INCH (in.) | Y Min. | X Nom. | Z ±.010 | H | K | D Nom. |
|---|---|---|---|---|---|---|
| | .04 | .125 | .40 | .16 | .28 | .13 |

### Dimensions & Specifications

| METRIC (mm) | Y Min. | X Nom. | Z ±.25 | H | K | D Nom. |
|---|---|---|---|---|---|---|
| | 1.0 | 3.18 | 10.16 | 4.06 | 7.11 | 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.

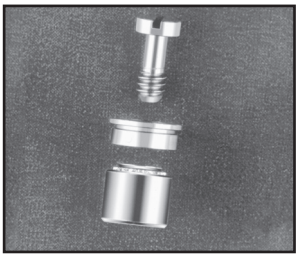



| | P Max. | A | B | D Nom. |
|---|---|---|---|---|
| INCH (in.) CFS2 w/CFL Retainer | .060 | .075 | .210 | .130 |
| METRIC (mm) CFS2 w/CFL Retainer | 1.50 | 1.90 | 5.40 | 3.30 |

Continued on next page.

# Flush-Mounted Panel Screw Components

## Series CFS2, CFR2 & CFN2



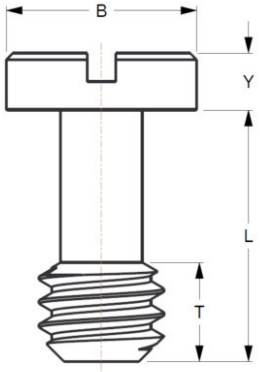
Continued from previous page.

## Series CFS2 Flush-Mounted Screw

Part Number Structure:

CFS2 440-40

- Screw Length
- Thread Code
- Series



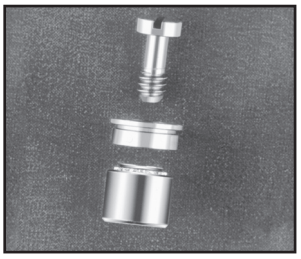

### Dimensions & Specifications

| | Thread Size | Series | 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 | Series | Thread Code | Screw Length Code | B Nom. | Y +.05 –.15 | L ±.25 | T Nom. |
|---|---|---|---|---|---|---|---|---|
| METRIC (mm) | M3 x 0.5 | CFS2 | M3 | 40 | 4.7 | 1.91 | 8.38 | 3.3 |
| | M4 x 0.7 | CFS2 | M4 | 40 | 6.3 | 1.91 | 8.38 | 3.3 |
| | M5 x 0.8 | CFS2 | M5 | 40 | 7.1 | 1.91 | 8.38 | 3.3 |

Continued on next page.



# Flush-Mounted Panel Screw Components

## Series CFS2, CFR2 & CFN2

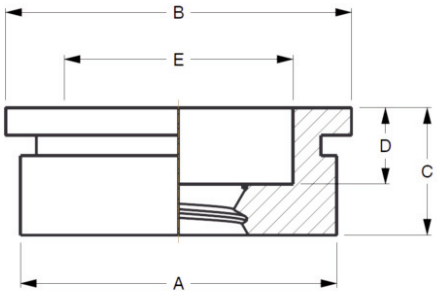
Continued from previous page.

## Series CFR2
## Flush-Mounted Retainer

Part Number Structure:

CFR2 440

- 440 → Thread Code
- CFR2 → Series




### Dimensions & Specifications

| | Thread Size | Series | 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 | .125 | .050 | .125 | .281 | .195 | .280 | .310 | .075 | .310 |
| | #6-32 | CFR2 | 632 | .125 | .050 | .125 | .312 | .225 | .311 | .340 | .075 | .330 |
| | #8-32 | CFR2 | 832 | .125 | .050 | .125 | .344 | .255 | .343 | .370 | .075 | .340 |
| | #10-32 | CFR2 | 1032 | .125 | .050 | .125 | .375 | .290 | .374 | .410 | .075 | .360 |

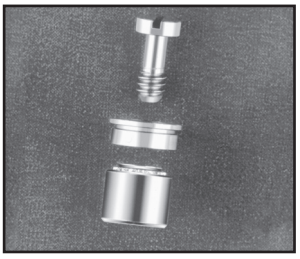
### Dimensions & Specifications

| | Thread Size | Series | Thread Code | C Max. | Min. Self-clinching | Min. Flush Install. | +.08 -.00 | E Nom. | A Max. | B Nom. | D Nom. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm) | M3 x 0.5 | CFR2 | M3 | 3.18 | 1.27 | 3.18 | 7.14 | 4.75 | 7.12 | 7.87 | 1.91 | 7.87 |
| | M4 x 0.7 | CFR2 | M4 | 3.18 | 1.27 | 3.18 | 8.74 | 6.48 | 8.72 | 9.53 | 1.91 | 8.64 |
| | M5 x 0.8 | CFR2 | M5 | 3.18 | 1.27 | 3.18 | 9.53 | 7.37 | 9.50 | 10.41 | 1.91 | 9.14 |

Continued on next page.

# Flush-Mounted Panel Screw Components

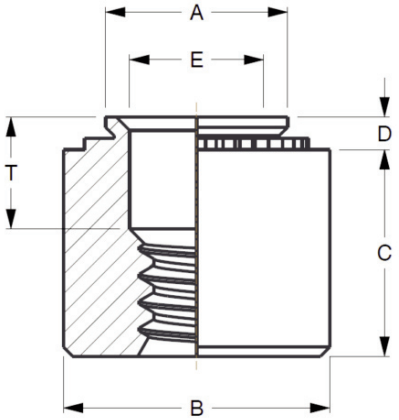
## Series CFS2, CFR2 & CFN2



Continued from previous page.

## Series CFN2 Self-Clinching Nut

Part Number Structure:
CFN2 440-1
- Shank Code
- Thread Code
- Series




### Dimensions & Specifications

INCH (in.)

| Thread Size | Series | Thread Code | Shank Code | D Max | Min. | +.003 -.000 | A Max. | B Nom. | T ±.010 | E Nom. | C ±.005 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #4-40 | CFN2 | 440 | -1 | .038 | .040 | .187 | .186 | .280 | .130 | .126 | .240 | .220 |
| #6-32 | CFN2 | 632 | -1 | .038 | .040 | .213 | .212 | .310 | .130 | .156 | .240 | .270 |
| #8-32 | CFN2 | 832 | -1 | .038 | .040 | .250 | .249 | .340 | .130 | .187 | .240 | .280 |
| #10-32 | CFN2 | 1032 | -1 | .038 | .040 | .277 | .276 | .370 | .130 | .213 | .240 | .310 |

### Dimensions & Specifications

METRIC (mm)

| Thread Size | Series | Thread Code | Shank Code | D Max | Min. | +.08 -.00 | A Max. | B Nom. | T ±.25 | E Nom. | C ±.13 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M3 x 0.5 | CFN2 | M3 | -1 | .97 | 1.00 | 4.75 | 4.73 | 7.11 | 3.30 | 3.20 | 6.00 | 5.59 |
| M4 x 0.7 | CFN2 | M4 | -1 | .97 | 1.00 | 6.33 | 6.33 | 8.64 | 3.30 | 4.75 | 6.00 | 7.11 |
| M5 x 0.8 | CFN2 | M5 | -1 | .97 | 1.00 | 7.01 | 7.01 | 9.53 | 3.30 | 5.41 | 6.00 | 7.87 |

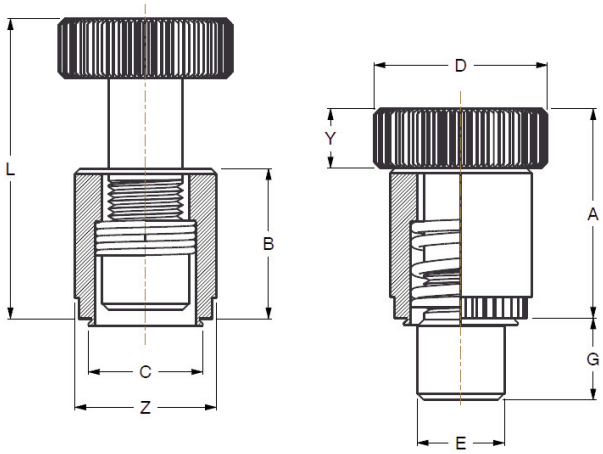


# Self-Clinching Spring Loaded Plungers

## Series CPN & CPR

CPN & CPR Spring-Loaded Plunger Assemblies are used as positioning pins and locking stops on drawer slides and equipment consoles. CPR series has a hold open feature activated by pulling out the plunger head and rotating it, which allows smooth slide operation.

| Series | Material | Finish | Feature |
|---|---|---|---|
| CPN | Carbon Steel | Bright Nickel over Copper Flash ASTM B689 | Spring Return |
| CPR | | | Hold Open |




Use in: Cold-rolled Steel or 5052-H34 Aluminum with Rockwell Hardness of HRB-80 or less.

Part Number Structure:

CPN - 04 - 4

- Length Code
- Diameter Code
- Series

### *Dimensions & Specifications*

| | Series | Plunger Diameter | Plunger Length | A ±.010 | B ±.005 | C Max. | D ±.010 | E +.000 –.005 | G ±.010 | L Nom. | Y ±.010 | Z ±.010 | Min. | +.003 –.000 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH (in.) | CPR | 04 | 4 | .595 | .430 | .327 | .50 | .250 | .310 | .895 | .17 | .406 | .060 | .328 | .34 |
| | CPN* | 04 | 4 | .510 | .350 | .327 | .50 | .250 | .310 | .780 | .17 | .406 | .060 | .328 | .34 |

| | Series | Plunger Diameter | Plunger Length | A ±.25 | B ±.13 | C Max. | D ±.25 | E +.00 –.13 | G ±.25 | L Nom. | Y ±.25 | Z ±.25 | Min. | +.08 –.00 | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METRIC (mm) | CPR | 04 | 4 | 15.11 | 10.92 | 8.31 | 12.7 | 6.35 | 7.87 | 22.73 | 4.32 | 10.3 | 1.53 | 8.33 | 8.64 |
| | CPN* | 04 | 4 | 12.95 | 8.89 | 8.31 | 12.7 | 6.35 | 7.87 | 19.81 | 4.32 | 10.3 | 1.53 | 8.33 | 8.64 |

*Available on special order.

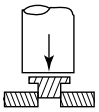
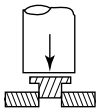
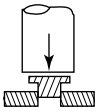
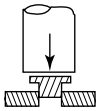
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# Self-Clinching Spring Loaded Plungers

## Series CPN & CPR



Continued from previous page.

| | Series | Cold Rolled Steel | | Aluminum | |
|---|---|---|---|---|---|
| | |  Installation Force (lbs.) |  Pushout (lbs.) |  Installation Force (lbs.) |  Pushout (lbs.) |
| INCH (in.) | CPN CPR | 4000 | 500 | 3000 | 4000 |
| | Series |  Installation Force (lbs.) |  Pushout (lbs.) |  Installation Force (lbs.) |  Pushout (lbs.) |
| METRIC (mm) | CPN CPR | 17.8 | 2224 | 13.3 | 1779 |

# Recommended Installation Procedure

To achieve the correct installation results for Captive self-clinching fasteners, please follow the 11 simple rules listed below:

**DO:**

1. Provide the properly sized mounting hole for each fastener.
2. Place fastener in hole on punched side of panel.
3. Be sure the fastener shank or pilot is squarely within the hole before pressure is applied.
4. Apply a steady squeezing force between press and anvil.
5. Use sufficient force to embed the clinching ring around its entire circumference.

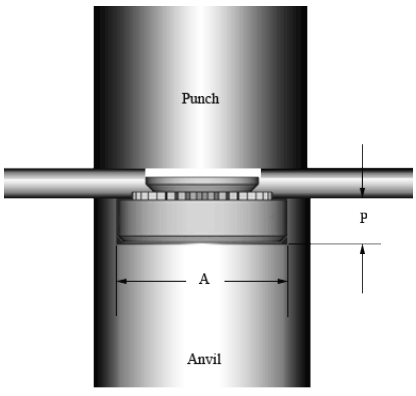
**DO NOT:**

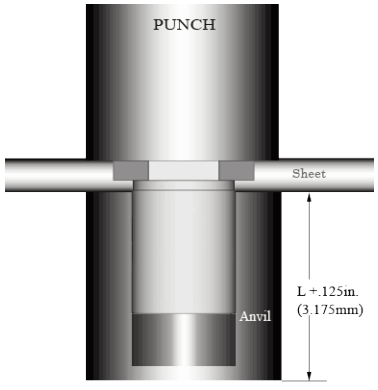
6. Do not install steel and stainless fasteners in aluminum before the panels have been anodized.
7. Do not deburr mounting holes, as the rough metal is used to help clinch the fastener into the sheet.
8. Do not install the fastener closer to the edge of the sheet than specified in the dimension table for the fastener in use.
9. Do not over squeeze, as this may flatten the fastener head, distort the thread and buckle the panel.
10. Do not install fastener with a hammer blow; doing so does not allow sufficient time for the sheet metal to flow into the clinching profile. A squeezing force is required for optimum performance.
11. Do not install the screw in the head side of the fastener, but from the opposite side, which directs the load toward the sheet.

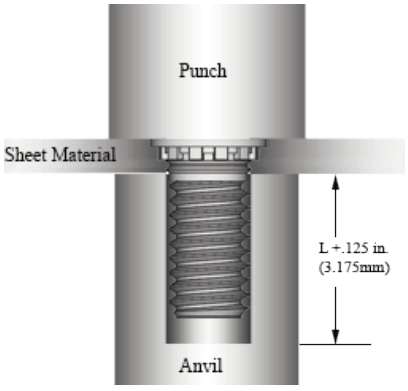
**NOTES:**

1. All installation, pushout and torque-out force references are nominal, based on recommended installation specifications and procedures. Differences in mounting hole dimensions, sheet material and installation methods may alter this data. Testing the performance of this product in application is suggested. Samples are available for this purpose upon request.

2. Dimensional and performance characteristics are subject to change without notice.



# Sheet Metal Conversion Chart

## Inch (in.)

| Gage No. | Steel | Stainless Steel | Aluminum |
|---|---|---|---|
| 7 | 0.179 | | |
| 8 | 0.164 | 0.172 | |
| 9 | 0.150 | 0.156 | |
| 10 | 0.135 | 0.141 | |
| 11 | 0.120 | 0.125 | |
| 12 | 0.105 | 0.109 | |
| 13 | 0.090 | 0.094 | 0.072 |
| 14 | 0.075 | 0.078 | 0.064 |
| 15 | 0.067 | 0.070 | 0.057 |
| 16 | 0.060 | 0.063 | 0.051 |
| 17 | 0.054 | 0.056 | 0.045 |
| 18 | 0.048 | 0.050 | 0.040 |
| 19 | 0.042 | 0.044 | 0.036 |
| 20 | 0.036 | 0.038 | 0.032 |
| 21 | 0.033 | 0.034 | 0.028 |
| 22 | 0.030 | 0.031 | 0.025 |
| 23 | 0.027 | 0.028 | 0.023 |
| 24 | 0.024 | 0.025 | 0.020 |
| 25 | 0.021 | 0.022 | 0.018 |
| 26 | 0.018 | 0.019 | 0.017 |
| 27 | 0.016 | 0.017 | 0.014 |
| 28 | 0.015 | 0.016 | |
| 29 | 0.014 | 0.017 | |
| 30 | 0.012 | 0.013 | |
| 31 | | 0.011 | |

## Metric (mm)

| Gage No. | Steel | Stainless Steel | Aluminum |
|---|---|---|---|
| 7 | 4.55 | | |
| 8 | 4.17 | 4.37 | |
| 9 | 3.81 | 6.95 | |
| 10 | 3.43 | 3.58 | |
| 11 | 3.05 | 3.18 | |
| 12 | 2.67 | 2.77 | |
| 13 | 2.29 | 2.39 | 1.83 |
| 14 | 1.91 | 1.98 | 1.63 |
| 15 | 1.70 | 1.78 | 1.45 |
| 16 | 1.52 | 1.60 | 1.30 |
| 17 | 1.37 | 1.42 | 1.14 |
| 18 | 0.12 | 1.27 | 1.02 |
| 19 | 1.07 | 1.12 | 0.91 |
| 20 | 0.91 | 0.97 | 0.81 |
| 21 | 0.84 | 0.86 | 0.71 |
| 22 | 0.76 | 0.79 | 0.64 |
| 23 | 0.69 | 0.71 | 0.58 |
| 24 | 0.61 | 0.64 | 0.51 |
| 25 | 0.53 | 0.56 | 0.46 |
| 26 | 0.46 | 0.59 | 0.43 |
| 27 | 0.41 | 0.43 | 0.36 |
| 28 | 0.38 | 0.41 | |
| 29 | 0.36 | 0.36 | |
| 30 | 0.30 | 0.33 | |
| 31 | | 0.28 | |

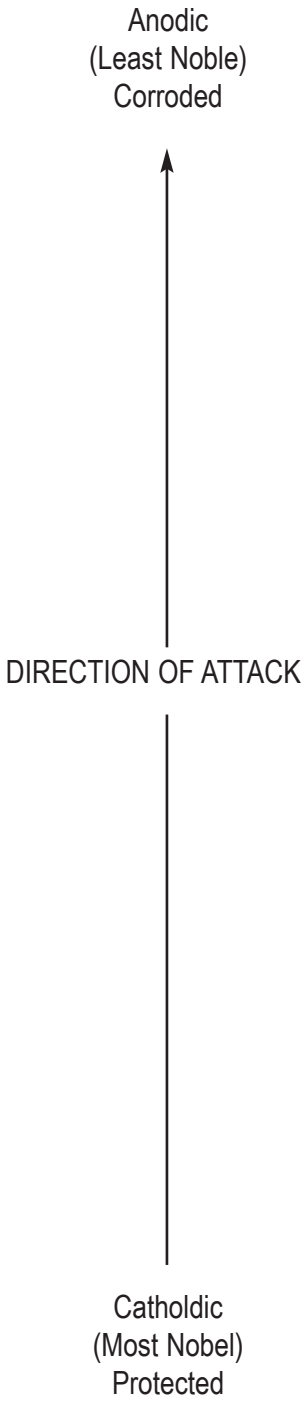
## Inch – Metric Conversion Table

| 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 | $3.937 \times 10^{-5}$ | 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 |

# Galvanic Corrosion Chart

Galvanic Corrosion is a concern when selecting a fastener to be used in a panel of dissimilar metal, especially when it will be subjected to moisture or water. Ideally, the fastener should be the more noble metal and the panel the less noble metal, to reduce the effects of corrosion. Generally, metals close to one another on the chart will not have a strong effect on one another. However, the further apart the materials are on the chart, the stronger the corrosion effect will be on the least noble metal. Therefore, since the fastener is the smaller element, it needs to be made of the more noble metal so it will not be attacked. The larger panel can be of the less noble metal, where corrosion will not affect the larger surface as readily.

Magnesium
Magnesium Alloys
Zinc
Berylium
Aluminum 1100, 3003, 3004,5052, 6053
Cadmium
Aluminum 2017, 2024, 2117
Mild Steel 1018, Wrought Iron
HSLA Steel, Cast Iron
Chrome Iron(active)
430 Stainless (active)
302, 303, 321, 347, 410, 416 Stainless Steel (active)
Ni-Resist
316, 317 Stainless (active)
Carpenter 20cb-3 Stainless (active)
Aluminum Bronze (CA687)
Hastelloy C(active) Inconel 625(active) Titanium(active)
Lead/Tin Solder
Lead
Tin
Inconel 600 (active)
Nickel (actiev)
60% Ni 15% Cr (active)
80% Ni 20% Cr (active)
Hastelloy B (active)
Naval Brass (CA464), Yellow Brass (CA268)
Red Brass (CA230), Admiralty (CA443)
Copper (CA102)
Manganese Bronze(CA675), Tin Bronze(CA903, 905)
410, 416 Stainless(passive) Phosphor Bronze(CA521, 524)
Silicon Bronze (CA651, 655)
Nickel Silver (CA 732, 735, 745, 752, 754, 757, 765, 770, 794)
Cupro Nickel 90-10
Cupro Nickel 80-20
430 Staimless (passive)
60% Ni 15% Cr (passive)
Inconel 600 (passive)
80% Ni 20% Cr (passive)
Chrome Iron (passive)
302, 303, 304, 321, 347 Stainless (passive)
316, 317 Stainless (passive)
Carpenter 20Cb-3 Stainless (passive, Incoloy 825 (passive)
Silver
Titanium (passive), Hastelloy C & C276 (passive)
Graphite
Zirconium
Gold
Platinum



# NOTES

# NOTES

# Part Number Cross Reference Chart

| CAPTIVE FASTENER® SERIES | PEM® SERIES | PAGE |
|---|---|---|
| CFAS, CFAC | AS, AC | 9-10 |
| CFFS, CFFC | LAS, LAC | 11-12 |
| CFSP | SP | 13-14 |
| CFB, CFBS | B, BS | 15-16 |
| C / CS<br>CFH, CFHN<br>CA | S,SS / CLS, CLSS<br>H, HN<br>CLA | 17-21<br>22<br>23 |
| CKN | - | 24 |
| CFL | F | 25-26 |
| CFE, CFEO<br>CFEX, CFEOX | FE, FEO<br>FEX, FEOX | 27-28 |
| CRT | LK | 29-30 |
| CPL, CPLC | PL, PLC | 31-32 |
| CH, CHS, CHA | FH, FHS, FHA | 33-35 |
| CHTS | FH4 | 36-38 |
| CH2S | FHP | 39-40 |
| HCH, HCHS, HCHB | HFH, HFHS, HFHB | 41-42 |
| HCW | HFE | 43-44 |
| TCH, TCHS | TFH, TFHS | 45-46 |
| CHE, CHES | FHL, FHLS | 47-49 |
| CFA-1, CFA-2 / CFC-1, CFC-2 | CHA, CFHA / CHC, CFHC | 50-52 |
| CH, CHN, CHS, CHA | FH, FHN, FHS, FHA | 53-54 |
| CGS | TPS | 55 |
| CKF2, CKFS2<br>CKFE, CKFSE<br>CKFH<br>CKFB3 | KFS, KFS2<br>KFE, KFSE<br>KFH<br>KFB3 | 56-57<br>58<br>59<br>60 |
| CRM | SMTSO | 61 |
| CFKSSB | KSSB | 62-63 |
| CPFK<br>LPH-0, 1, 2<br>CPFC2 | PFK<br>PF30, 31, 32<br>PFC2 | 64<br>65-66<br>67-68 |
| PSK / PSS | PF11 / PF12 | 69-70 |
| CFSO, CFSOS, CFSOA<br>CFBSO, CFBSOS, CFBSOA | SO, SOS, SOA<br>BSO, BSOS, BSOA | 71-77 |
| CFSOSG, CFSOAG | SOSG, SOAG | 78 |
| CF40, CF40S | DSO, DSOS | 79-80 |
| CF4-S0, CF4-BS0 | S04, BS04 | 81-83 |
| CFSKC | SKC | 84-85 |
| CFSO, CFSOS, CFSOA | SO, SOS, SOA | 86-87 |
| CFT, CFTS, CFTA | TSO, TSOS, TSOA | 88-90 |
| CFSSA, CFSSS, CFSSC | SSA, SSS, SSC | 91-92 |
| CFHS-1, CFHS-2 | CSS, CSOS | 92-95 |
| CFWN, CFWNS | WN, WNS | 96-97 |
| CFS2, CFR2, CFN2 | PS10, PR10, N10 | 98-101 |
| CPN, CPR | PSL2, PTL2 | 102-103 |
| | | |

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# Product Series Cross Reference

| CAPTIVE FASTENER® SERIES | PEM® SERIES | DESCRIPTION | TECHNICAL FEATURE |
|---|---|---|---|
| CFAS, CFAC | AS, AC | Self-Clinching Floating Nuts | Allows for mating hole misalignment. Locking and non-locking versions. |
| CFFS, CFFC | LAS, LAC | Self-Clinching Floating Locking Nuts | |
| CFSP | SP | Self-Clinching Nuts for Stainless Steel | |
| CFB, CFBS | B, BS | Blind Press Nuts | Provides strong internal threads in material too thin to tap. Special versions include blind end, flush, locking and miniature types. Inch and metric sizes in steel, stainless and aluminum. |
| C / CS<br>CFH, CFHN<br>CA | S,SS / CLS, CLSS<br>H, HN<br>CLA | Self-Clinching Steel and Stainless Steel Nuts<br>Self-Clinching Steel Heavy Duty Nuts<br>Self-Clinching Aluminum Nuts | |
| CKN | - | Self-Clinching KAL-Nuts | |
| CFL | F | Self-Clinching Flush Nuts | |
| CFE, CFEO<br>CFEX, CFEOX | FE, FEO<br>FEX, FEOX | Miniature Self-Clinching Self-Locking Fasteners | |
| CRT | LK | Self-Clinching Self-Locking Nuts | |
| CPL, CPLC | PL, PLC | Self-Clinching Top Collar Lock Nuts | |
| CH, CHS, CHA<br>CHTS<br>CH2S | FH, FHS, FHA<br>FH4<br>FHP | Self-Clinching Studs, Flush Head<br>400 Series Studs, for Stainless Steel<br>A286 Series Studs, for High Heat / Corrosion enviorment | Provides permanent threads or alignment pins in thin material. Inch and metric sizes in steel, stainless and aluminum. |
| HCH, HCHS, HCHB | HFH, HFHS, HFHB | Self-Clinching Studs, High Torque | |
| HCW | HFE | Self-Clinching Studs, Wide Head | |
| TCH, TCHS | TFH, TFHS | Self-Clinching Studs, Thin Sheet | |
| CHE, CHES | FHL, FHLS | Close-to-Edge Studs | |
| CFA-1, CFA-2 / CFC-1, CFC-2 | CHA, CFHA / CHC, | Self-Clinching Concealed Head Studs | |
| CH, CHN, CHS, CHA | FH, FHN, FHS, FHA | Self-Clinching Pins | |
| CGS | TPS | Self-Clinching Tapered Guide Pins | |
| CKF2, CKFS2<br>CKFE, CFKSE<br>CKFH<br>CFKB3 | KF2, KFS2<br>KFE, KFSE<br>KFH<br>KFB3 | Broaching Type Fasteners for Permanent Mounting in Non-Ductile Materials and Printed Circuit Boards | Provides permanent internal/external threads in PC boards. Variety of standoffs for stacking PC modules. Self-contained panel fasteners broach/clinch into PCB/metal. |
| CRM | SMTSO | Reel Mounted Spacers and Nuts | |
| CFKSSB | KSSB | Spring-Top Standoffs for PC Boards | |
| CPFK<br>LPH-0, 1, 2<br>CPFC2 | PFK<br>PF30, 31, 32<br>PFC2 | PC Board Panel Fasteners<br>Low-Profile Panel Fasteners<br>Self-Clinching Panel Fastener Assemblies | |
| PSK / PSS | PF11 / PF12 | Collar Based Self-Clinching Panel Fasteners | |
| CFSO, CFSOS, CFSOA<br>CFBSO, CFBSOS, CFBSOA | SO, SOS, SOA<br>BSO, BSOS, BSOA | Self-Clinching Standoffs | Standoffs that clinch into thin sheet metal allow for stacking of modules and assure good grounding. Inch and metric sizes in steel, stainless and aluminum. |
| CFSOSG, CFSOAG | SOSG, SOAG | Self-Clinching Grounding Standoffs | |
| CF40, CF40S | DSO, DSOS | Miniature Self-Clinching Standoffs | |
| CF4-S0, CF4-BS0 | S04, BS04 | 400 Series Stainless Steel Standoffs | |
| CFSKC | SKC | Self-Clinching Slide-Top Standoffs | |
| CFSO, CFSOS, CFSOA | SO, SOS, SOA | Unthreaded Thru-Hole Standoffs | |
| CFT, CFTS, CFTA | TSO, TSOS, TSOA | Thin Head Standoffs | |
| CFSSA, CFSSS, CFSSC | SSA, SSS, SSC | Spring-Top Standoffs | |
| CFHS-1, CFHS-2 | CSS, CSOS | Self-Clinching Concealed Head Standoffs | |
| CFWN, CFWNS | WN, WNS | Weld Nuts | **Collar prevents weld spatter.** |
| CFS2, CFR2, CFN2 | PS10, PR10, N10 | Panel Screw Components | **Flush mounted, self-retained.** |
| CPN, CPR | PSL2, PTL2 | Self-Clinching Spring-Loaded Plungers | Provides position stops on slides. |
| | | | |

Special designs available on request.
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