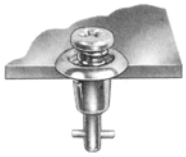

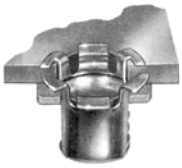

A 1/4-Turn Fasteners

B Other Quick-Operating Fasteners

C Captive Screws

D Inserts

E Printed Circuit Board Fasteners, Avionic Hold-Down Mechanisms And Chassis Latches

F Clamps

Fairchild Fasteners

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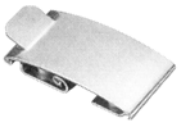
H Commercial & Industrial Latches



Light Duty Tension Latches

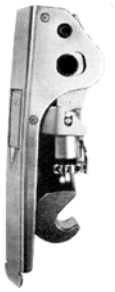
Medium Duty Tension Latches

Heavy Duty Tension Latches

Pawl Latches

Panel Latches

I Ram Aerospace Mechanisms



The products described and offered for sale in this catalog are produced to the quality standards of Camloc/Ram Products Division and meet the physical and functional requirements specified. Conformance to quality or certification requirements other than stated herein must be specified in writing prior to order acceptance by Camloc/Ram Products Division.

Fairchild Fasteners

Choosing a Specialty Fastener Manufacturer

(Camloc article excerpts as appeared in Machine Design)

Sometimes there is no way around the need for a special-purpose fastener. But careful supplier selection will keep costs in line and may yield a few unexpected advantages.

Athough the word custom is usually associated with a higher cost, this type of design may actually prove less costly and more effective in the long run. The first task is to decide just what is needed. This is usually not a unilateral decision by the design engineer, but one in which the purchasing and manufacturing departments should also participate. Once needs are determined, the next step is to choose a manufacturer with the right experience and knowhow. There are several key factors to consider when critiquing potential manufacturers.

Preliminary considerations

Standard fasteners are usually considered first when resolving a product assembly problem. But, if it seems a standard won't do the job, a custom or special fastener design must be evaluated.

Research first: Many fasteners now considered standard by some companies started off as specials. Therefore, a review of supplier catalogs could reveal that the needed part is already available. Or, simple modification of existing designs could resolve the problem.

A company's own files should be checked. A fastener may have been designed for an earlier project, but never used in production. As more companies become automated, a computer run through the files may provide answers.

Custom or standard?: If new fastener design is indicated, the first decision is whether a custom design is worth the added investment of time and money. Custom fasteners have research and development costs to weight against future savings. If custom costs are too high, the customer may elect to live with the design compromises a standard fastener may require.

Manufacturer evaluation: There are numerous ways to obtain information about specific manufacturers. The direct approach is through telephone contact or a visit. Manufacturers typically offer case histories or testimonials that provide their ability to perform. To verify such information, contact customers that can offer specifics on their dealings with special manufacturer. What types of fasteners they were supplied with, and what problems occurred during production? These tips from previous customers can alert the design engineers to possible problem areas that could arise in his own dealings with the company.

Manufacturers who appear more intent on making a sale than solving problems should be avoided. Observing the attitudes of prospective manufacturers early in the selection process could prevent problems later on. Some problems can be identified before they happen. But there are those that require troubleshooting during the design process. Both sides must be willing to cooperate to resolve the headaches.

Final selection

The evaluation process becomes more complex after a supplier is found who gets good reviews and can apparently provide the needed custom designs. Important issues such as part production and cost then take priority.

Internal design: The ideal situation is one where a special manufacturer designs the fasteners in-house Using outside design services complicates matters in terms of late delivery and higher costs. An in-house method is preferred, because the same company handles all development phases from designing the model to building prototypes. Small changes are made more economically with one company and there is less of a temptation to compromise the design.

The design process goes more smoothly if the customers bring the problem and not preconceived ideas about the design. Designer creativity is hampered by customers who are close-minded about design ideas. They are, in effect, forced into a specific design that probably will not be what the customer really wants. The result may be costly, unwelcome redesigns.

Some manufacturers, in lieu of a new design, take on the task of modifying a current one to meet customer needs. Not all manufacturers perform this service and timing plays an important role in this area.

Prototypes: The manufacturer should have the ability to provide prototypes. If the supplier has facilities on the premises to handle these tests, it is a further assurance that the final design will be exactly what was desired.

It is imperative that customers be allowed to test prototypes under actual working conditions. This allows customers to locate design problems, if any, that can be changed before final production begins.

Pre-production runs can also point out design problems during the manufacturing process. Testing and documentation of all phases should be agreed upon in advance to determine if supplier or customer will perform these tasks and at what cost, if any.

Costs: It is important to have a reasonable handle on what the fastener will cost in terms for each phases of development phase. Typically, research and development costs will not increase very much unless there are serious design problems or severe disagreements between customer and supplier. Each service, including designing, testing, and building prototypes, usually has an associated price tag.

However, potential problems during production require special attention. Changing customer demands frequently contribute to rising costs. For instance, if a design alteration has to be made immediately, it will cost more than a change that has a liberal time constraint. Sometimes manufacturers have allowances for problems, but each one maintains different policies.

Keep in mind that the potential volume of the fastener helps defray the research and development costs of the manufacturer. For example, if a customer needs 5,000 pieces but the manufacturer must produce 50,000 pieces to realize development costs, the customer will make up the cost difference. Customers must evaluate all variable costs and determine whether a custom design is worth it. Note that research development and tooling costs associated with a new design may be entirely absorbed by the supplier, if the production quantities are large enough.

Location: Supplier location takes on increasing importance as product development continues. Customers usually have frequent meetings with knowledgeable representatives from the manufacturer. It is therefore usually agreed that representatives of the manufacturer will be available to the customer at no cost or at some predetermined fixed cost.

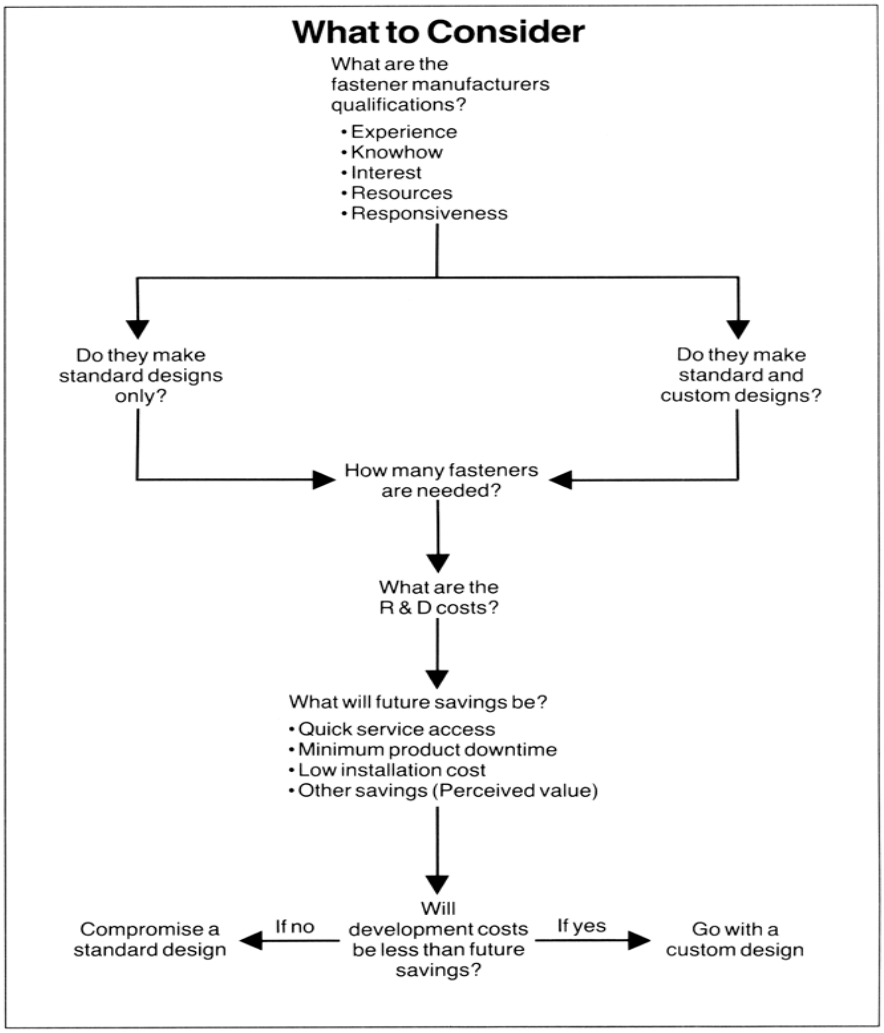
Final product delivery also takes into account the location of supplier and customer. Shipping costs from a supplier located too far away may drive the cost out of reason.

Operating considerations

The final area to be considered is how well the manufacturer will perform while designing, manufacturing, and delivering the product. While this is difficult to evaluate in advance, the design engineer can protect himself by setting standards for vendors to follow.

Problem solving: Suppliers must be committed to solving problems that occur during the development phase. There are warning signs that enable customers to identify when events are not proceeding as well as anticipated. If the manufacturer is pushing the customer toward a standard instead of a specialty fastener, the customer should question the supplier fairly because the supplier may have a legitimate reason for offering the standard. If it appears the supplier does not want to cooperate, any problems that arise will be hard to overcome.

Deliveries: One of the simplest ways to judge manufacturers is to see if they consistently meet delivery dates. A clue to determining the company's ability to make on-time deliveries is to observe turn-around time for the manufacturer's other products that may have been purchased. Purchasing departments help in this area.

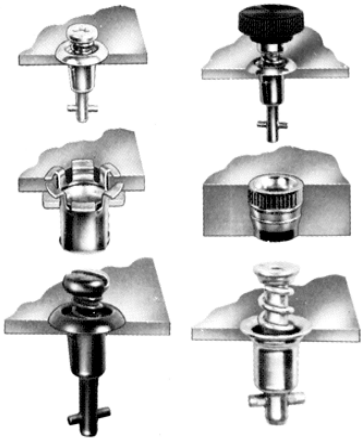


CAMLOC 1/4 TURN FASTENERS

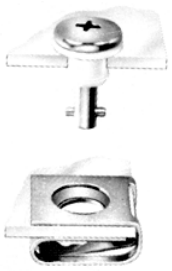
Camloc 1/4-Turn Fasteners for Low Installed Costs.

5F Series. Low cost, high speed installation. Tool and hand-operated snap-in studs. Receptacle clips onto frame by hand.

General Purpose Fasteners:



2600/2700 Series. Widest selection of hand and tool-operated studs. Large choice of receptacles, including ultrasonic and hand-installed.



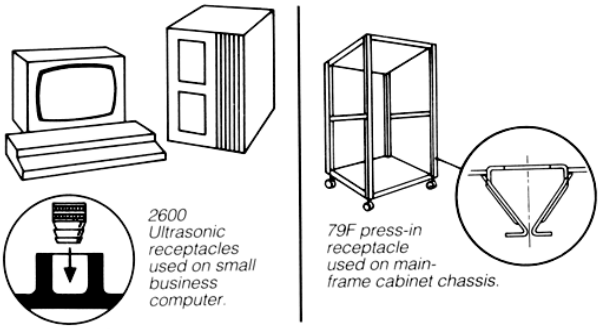
50F Series. Mid-Size fastener with snap-in stud and clip-on receptacle.

4002 Series. High strength, vibration-resistant; heavy-duty use. Clip-in and floating receptacles. Studs come with 4mm & 6mm hex recesses.

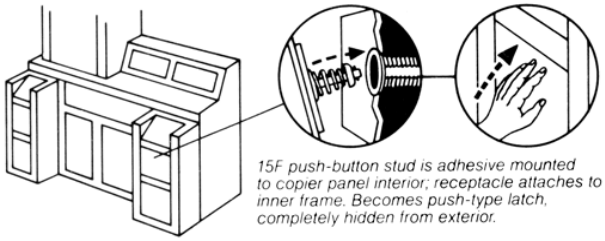
Typical Applications

Electronic Computing & Office Equipment

Receptacles for blind installation into plastic molded components and metal square tubing.

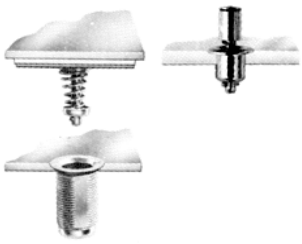


Concealed fasteners provide smooth panel appearance.



Quick-Operating Fasteners With Special Features.

34F/39F Series. A unique adjustable cross pin allows variable clamping loads and provides the ability to compensate for variations in joint thickness as well as gasket set. Capable of carrying high-tensile loads.



15F Series. Push-to-open, push-to-close fastener is available with numerous stud actuators including an adhesive mounted concealed version.

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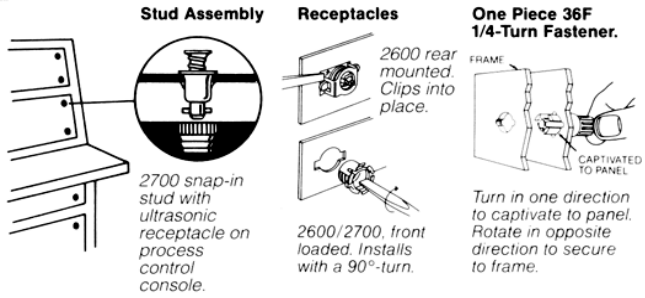
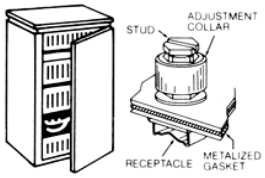
Instrumentation & Telecommunications

Hand installed 1/4-turn fasteners for high speed assembly.

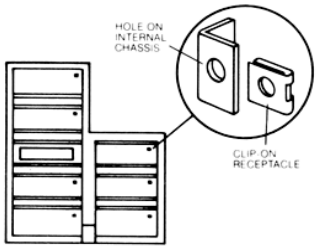


Adjustable preload fastener for RFI/EMI suppression.

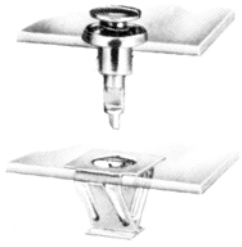


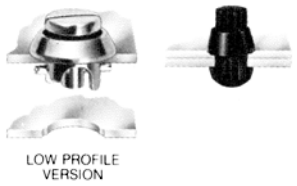
32F adjustable fastener provides secure and easy access to central PBX telephone equipment.

Receptacle clips-on to electronic chassis rail.



5F, clip-on, used on electronic chassis rail of central processing unit.





79F Series.* Snap-in studs and receptacles for low cost installation. Push stud to close; open with 1/4-turn. Tool-operated head styles include 3mm hex recess.

*Patented

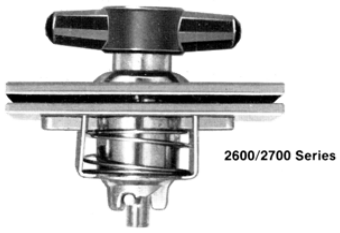
36F/38F Series. One piece fastener available in hand and low-profile, tool-operated styles. No receptacle required.

Index

A

1/4-TURN FASTENING SYSTEM

- The quickest operating high re-use mechanical fastening system available.
- Securely locks and quickly unlocks with a 1/4-turn every time, time after time.



An assembled fastening system normally consists of a stud and receptacle, the panel and frame, and a method of retaining the stud. Stud retention might be a grommet or a retaining ring, or both. Some series shown include snap-in type studs which do not require the use of a retaining ring, and some studs do not require retaining rings or receptacles.

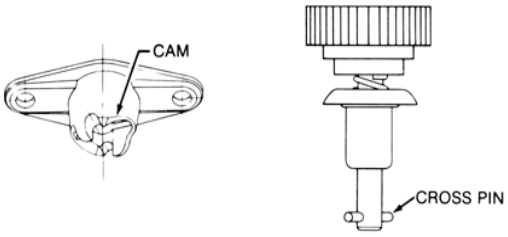
A choice of receptacle types are included with each stud series. Most attach by rivets to the underside of the frame. Some, however, simply snap into place from the front or from the rear of a frame, and some are ultrasonically installed.

Optional Styles:

If you don't see a design in this catalog to suit your needs, consult the factory or your Camloc field sales representative. Special designs, or other materials, styles and finishes are available for the 1/4-turn fasteners shown in this catalog.

Design Principle: A Quick Operating Cam.

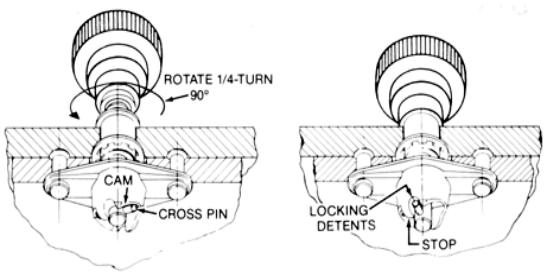
Each receptacle has a built-in quick operating cam. The mating stud assembly has an integral cross pin which acts as a cam follower.



How It Operates:

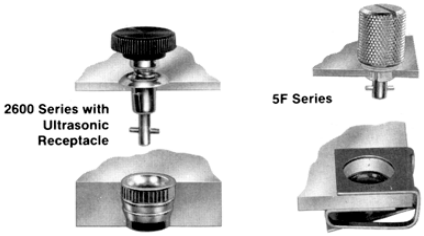
When the stud assembly is rotated, the stud cross pin rides up the cam causing a controlled joint preload to be applied. This action is accomplished by rotating the stud 90°.

At that point a positive mechanical stop is reached and the cross pin falls into locking detents. Excellent resistance to vibration induced loosening is assured.



Built-in Spring Component Insures Controlled Preload, High Cycle Life.

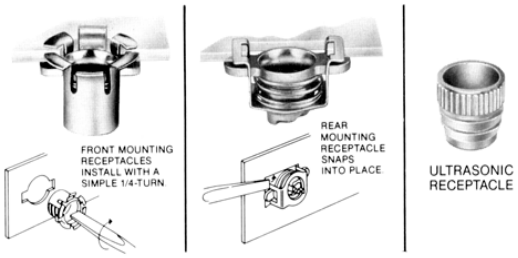
Unlike threaded fasteners, Camloc fasteners do not rely on the elasticity of joint and fastener materials to accomplish preload. The stud assembly or receptacle is designed with a spring component. This allows repeated application of controlled preload with assured reliability over an extremely high number of cycles.



Labor Saving Designs Speed Installation.

A variety of designs are available which allow significant savings in installed cost:

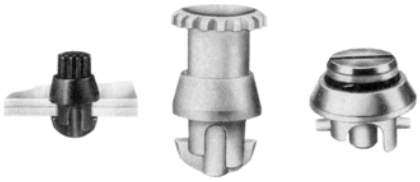
Receptacles which eliminate riveting, welding and the need for special tools.



Stud assemblies which snap into panels with ordinary thumb pressure, eliminating retaining rings.

26F Series 50F Series

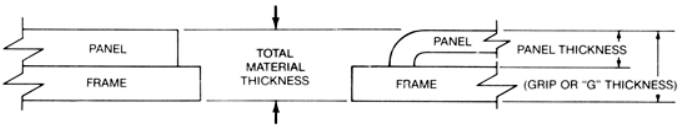
Designs which eliminate both retaining rings and mating receptacles (36F/38F Series).



36/38F Series

1/4-TURN FASTENING SYSTEM

How To Select The Correct Fastener:



1. See Stud Selector Guide on Pages A-10 and A-11 to choose desired stud based on strength requirements, head style, installation method and operational characteristics.

2. Choose one of the receptacles shown with each fastener series. (Note frame thickness limitations with certain receptacles.) See Receptacle Selector Guide on Page A-12.

3. When calculating total material thickness, be sure to consider any paint, finishes or compressed gaskets involved.

See Stud Selector Guide and Section Index on following page.

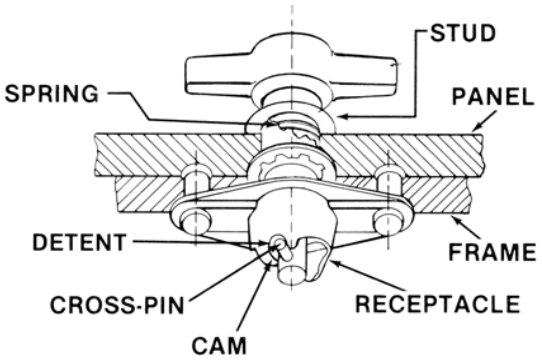
Design Considerations for Using 1/4-Turn Fasteners vs. Treaded Bolts/Nuts

1/4-Turn Fasteners	Threaded Bolts/Nuts
Frequently Operated Repeatable Performance.	Seldom Operated Because Serviceability Not A Design Factor. More Structural In Nature, Limited Life If Operated Often.
Quick Accessibility Allows Fast Removal Of Access Panels.	Disassembly Is Time Consuming And Usually Infrequent.
User Convenience, Simple To Operate.	More Difficult To Operate Due To Multiple Turns Necessary To Install and Remove.
Controlled Joint Preload, But Limited Ability To Accept Variations In Material Thickness.	Inconsistent Compression Of Panel Gasket But Capable Of Handling Large Grip Ranges.
Low Installed Cost For New Generation Of High Speed Assembly Types (i.e., Snap-In Rivetless Types).	Installation Is Simple But Time Consuming.
All Fastener Components Captivated.	Generally Not Captivated Subject To Being Lost Or Misplaced.
Vibration Resistant.	Relies On Thread Engagement Subject To Loosening Under Vibration.
Reduced Service/ Maintenance Time.	Increased Service/ Maintenance Time.
More Expensive But Adds Value To Finished Product.	Less Expensive (4 to 5 Times), But Readily Offset On Applications With Frequent Service Requirement.

1/4-TURN FASTENER TECHNICAL DESCRIPTION

Definition:

A 1/4-turn fastener is a through-joint fastener which locks and unlocks by rotating the stud 90°.



Characteristics of 1/4-Turn Fasteners (vs. Bolts/Nuts):

1. Non-Threaded Design — Operation based on a stud with projecting cross-pin, which travels up a sloped cam against the force of a compression spring, and locks into a detent beyond the high point of the cam.
2. Internal spring provides controlled joint preload, resulting in even compression of panel.
3. Positive vibration security provided by locking detent.

1/4-TURN & QUICK OPERATING FASTENING SYSTEMS

STUD SELECTOR GUIDE

Stud Selector Guide

Illustrations are typical only and vary by part number

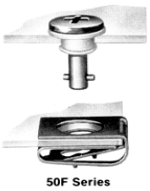
	Series Number	Page Number	Ultimate Tensile Strength (lbs.)	Versions Manufactured to MIL-F-5911**	PROTRUDING HEADS								
					Tool-Operated						Hand-Operated		
					Slotted Recess	Cross Recess	Recess Style	Hex Socket	Hex Head	Slotted Hex	Folding Wing	Fixed Wing	Offset Fixed Wing
Miniature Series	5F	A-14-A-15	150		● Δ	● Δ						● Δ	
	49F	B-7	*		Δ	–							
General Purpose Series	2600/2700	A-24-A-26	300	●	● Δ	● Δ	●	● Δ				●	
	28F	A-34	300		●	●						●	
	50F	A-38-A-39	200		● Δ	● Δ						● Δ	● Δ
Heavy Duty	4002	A-46-A-47	1050	●	●	●	●	●				●	●
Extra Heavy Duty	50F	A-44	800		●							●	●
	91F	A-64-A65	1800							●		●	
	39/34F	B-11-B-12	5000/10,000						●				
Designs With Special Features	15F	B-2-B-3	*										
	36/38F	A-20	*		●								
	79F	B-8-B-9	*		● Δ	● Δ		●Δ					
	KM	B-15	*								●	●	
	37F	E-44-E-46	150		●	●		●				●	

**For strength values, contact Camloc Products Division.*
***Meets the design, physical and performance requirements of MIL-F-5591. However, full mechanical properties testing may not be performed on each production lot.*

General Purpose Fasteners


2600/2700 Series with ultrasonic receptacle


2600/2700 with rear mount receptacle


50F Series

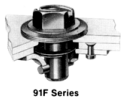
2600/2700 Series is available with front-mount, rear-mount and ultrasonic receptacles. The 50F is a simple design for use in industrial and agricultural applications.

Heavy Duty Fasteners


4002 Series

The 4002 Series utilizes grommet in top panel for added strength.

Extra Heavy Duty Fasteners


91F Series

The 91F is a simple, rugged design; ideal for industrial and agri-cultural equipment requiring high strenth.

Fairchild Fasteners

1/4-TURN & QUICK OPERATING FASTENING SYSTEMS

• =Illustrated in catalog
△=Snap-in versions available

	PROTRUDING HEADS						FLUSH MOUNTING					DESIGNS WITH SPECIAL FEATURES			
	Hand-Operated						Tool-Operated								
	Folding Bail Handle	Knurled Head	Knurled Knob	Plastic Knob	Plastic T-Knob	Handle Operated	Slotted Recess	Cross Recess	Recess Style per NAS4000	Recess Style per NAS1078	High torque	Tamper Resistant	Sealed	Push to Operate	Self-Captivating for Rapid Installation
	•	△	•	△ •	△ •	△		• △							•
	•	•	•	•	△ •	△	•	△ • △	•	•	•		•		•
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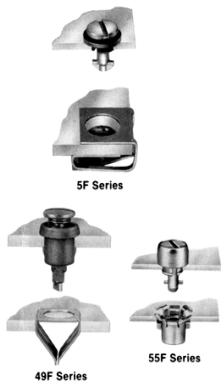
Miniature Fasteners



Low profile versions and decorative styles. Unique receptacles available such as clip-on, ultrasonically installed and snap-in types.

Designs with Special Features

15F; push to lock and push to unlock. 36/38F; one-piece; eliminates retaining rings and mating receptacles. 79F; push to lock; 1/4-turn to unlock; ideal for sheetmetal panels. 34F/39F; adjustable cross pin allows variable clamping loads and provides the ability to compensate for variations in joint thickness as well as gasket set. 37F; positive insertion and extraction to install or remove printed circuit boards.

See Receptacle Selector Guide on following page.

Fairchild Fasteners

1/4-TURN & QUICK OPERATING FASTENING SYSTEMS

SELECTOR GUIDE

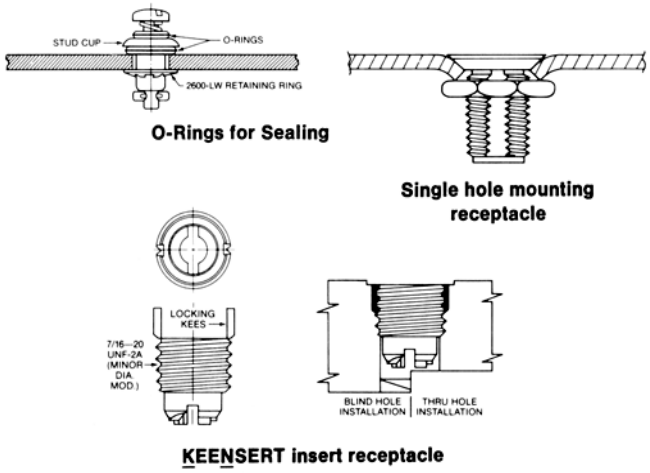
Receptacle Selector Guide

Illustrations are typical only and vary by part number

• = Illustrated in catalog.

	Series Number	Page Number	Standard Mounting	Side Mounting	Rivetless For Rapid Installation: Clip-on	Rivetless For Rapid Installation: Front Loading	Rivetless For Rapid Installation: Rear Loading	Rivetless For Rapid Installation: Ultrasonic	Corner Mounting	Special Purpose	Encapsulated	Floating	Weld Attachment
Miniature Series	5F	A-15-A-16	•	•	•								
	49F	B-7				•							
General Purpose Series	2600/2700	A-27-A-30	•	•		•	•	•	•	•	•		•
	28F	A-34	•	•	•								
	50F	A-38			•								
Heavy Duty	4002	A-48-A-50	•	•			•				•	•	•
Extra Heavy Duty	50F	A-42	•										•
	91F	A-64-A-65	•				•					•	•
	39/34F	B-11-B-12	•										•
Designs With Special Features	15F	B-3-B-4								•			
	36/38F	A-20							NONE REQUIRED				
	79F	B-8	•			•							
	KM	B-15							NONE REQUIRED				
	37F	E-11	•								•		

System Accessories Provide Increased Versatility.

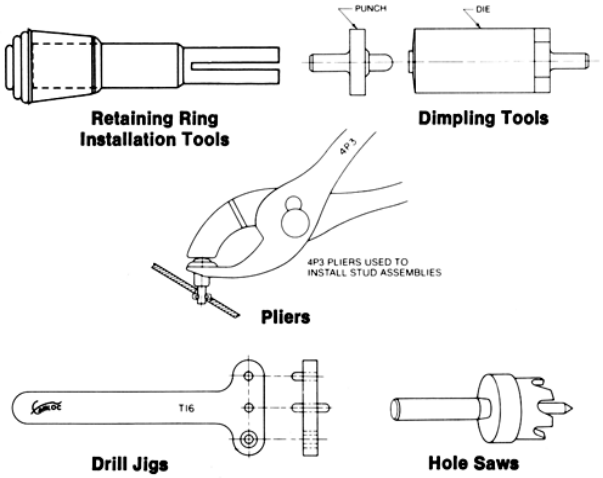


O-Rings for Sealing

Single hole mounting receptacle

KEENSERT insert receptacle

Selected Installation Tools Are Available As a Convenience.



Retaining Ring Installation Tools

Dimpling Tools

Pliers

Drill Jigs

Hole Saws

Fairchild Fasteners

Fastening Takes a Quarter Turn

An innovative idea in fastening spawns multiple variations
(Article reprinted from Appliance Magazine)

All quarter turn fasteners are turned 90 degrees to lock them into a detent; or in reverse, to unlock them. Unlike threaded fasteners, they provide a spring-initiated, controlled preload that does not rely on the elasticity of the joined and fastener materials. This allows a very high number of repeated fastening/unfastening cycles.

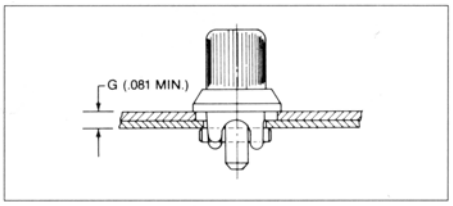


Figure 1. The original Camloc quarter turn receptacleless fastener.

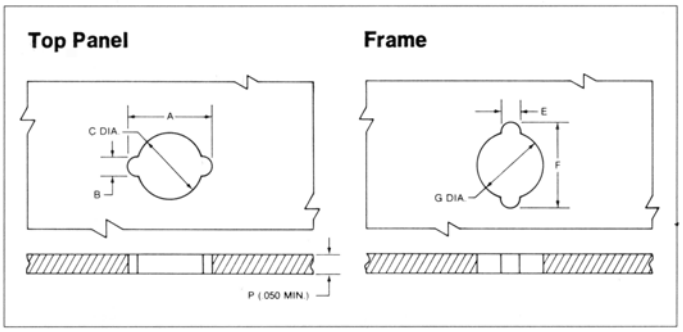


Figure 2. Hole configurations for the first receptacleless fastener.

All quarter turn fasteners of the early 1970's required either retaining rings, mating receptacles, or both. Looking forward to applications that would need direct fastening without receptacles, a designer at Camloc Products Division developed a line that utilizes only punched holes in the panel and frame. The fastener is of one piece construction, and is operated either by hand or screwdriver (see Figure 1). The construction materials are a zinc plated steel stud, a cross pin, and a die cast zinc alloy base with optional nickel plating.

Dimensions For Panel Preparation						
Series	"Top" Panel			Frame		
	A	B	C Dia.	E Min.	F	G Dia.
36S	.545 / .535	.115 / .105	.380 / .372	.120	.560	.390 / .380
38S	.685 / .675	.167 / .157	.505 / .495	.170	.760 / .740	.525 / .515

Two years passed before this design was applied. It has since been used on electronic access panels, lighting fixtures, and business appliances. Potential applications include computers, peripherals, telecommunication, and process control equipment.

Variations
The original design has been modified to suit individial requirements. There are now eight different versions. A, B, C, D, and E were developed for electronic banking equipment. The E type was developed for initial installation by a robot and subsequent hand operation. Robotic mounting is facilitated by a slotted knob top, which aids rotation and orientation, and by two sets of cross pin detents located at the same level in the die cast body. These detents are shaped to reduce the force needed to depress the stud spring during installation. The G and H version have a black plastic knob, which is designed for easier hand turning.

Other versions of this design include one with pushbutton activation for speed, and one with oversize cross pins (version F) to accommodate oversize installa- tion holes in electronic equipment panels, which are edged with RG gasketing mesh.

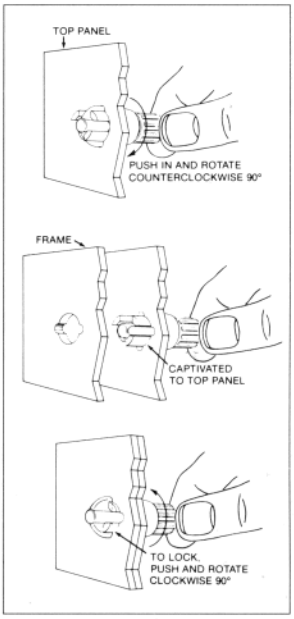


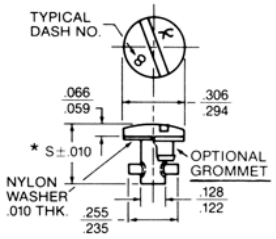
Figure 3. Installing the stud assembly. First, place the stud assembly in the top panel, push in, and rotate it counter clockwise 90 degrees. The stud is now captivated in the: panel. Second, close the panel so the stud enters the frame hole and then push it and rotate it clockwise 90 degrees. The panel is now locked to the frame.

5F Series. Miniature Stud Assemblies and Receptacles

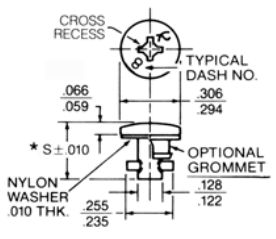
Features: Minimum stud head projection.
• Wide range of head styles. • Variety of materials.
• Stud available with either retaining ring or snap-in grommet for quick assembly.

Small and compact, these fasteners feature a high strength-to-weight ratio. They are specifically designed for use on miniaturized equipment.

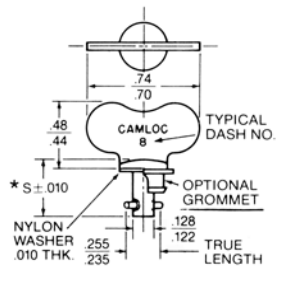
Note: Part numbers shown are basic part numbers only. See ordering information on Page A-18 and A-19 for required dash numbers.



* S=.264 + (.015 x Dash No.)
Slotted Recess



* S=.264 + (.015 x Dash No.)
Cross Recess

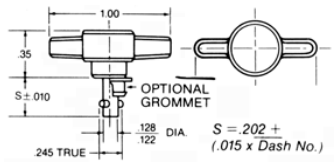
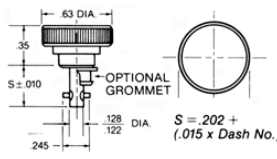


* S = .264 + (.015 x Dash No.)
Fixed Wing

Material	Used With Retaining Ring	With Nylon Snap-in Grommet**	Used With Retaining Ring	With Nylon Snap-in Grommet**	Used With Retaining Ring	With Nylon Snap-in Grommet**
Stainless Steel	5S35-[ ]	5S34-[ ]-[ ]BB	5S15-[ ]	5S54-[ ]-[ ]BB	—	5S55-[ ]-[ ]BB
Steel (Cadmium Plated)	5S5-[ ]	5S34-[ ]-[ ]AA	5S1-[ ]	5S54-[ ]-[ ]AA	5S10-[ ]	5S55-[ ]-[ ]AA
Steel (Nickel Plated)	5S27-[ ]	—	—	—	5S28-[ ]	—
Steel (Satin Black Enamel)	5S5-[ ]A	—	—	—	—	—
Steel (Chrome Plated)	—	—	—	—	—	—
Maximum Service Temperatures	300°F.		5S15 = 550°F. (Supplied with S.S. washer in lieu of nylon.) All others 300°F.		300°F.	

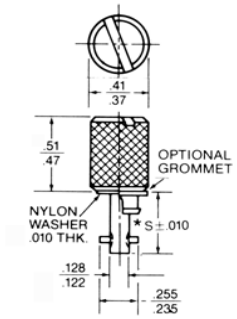
Plastic Knob Styles

Basic Part Nos.

		Shank Material: Steel (zinc plated) Maximum Service Temperature: 300°F.			
		Black	Red	Grey	Beige
	T-Knob Used With Retaining Ring	5S58-[ ]-1AA	5S58-[ ]-1AB	5S58-[ ]-1AC	5S58-[ ]-1AD
	With Nylon Snap-in Grommet**	5S51-[ ]-[ ]AA	5S51-[ ]-[ ]AB	5S51-[ ]-[ ]AC	5S51-[ ]-[ ]AD
	Knurled Knob Used With Retaining Ring	5S59-[ ]-1AA	5S59-[ ]-1AB	5S59-[ ]-1AC	—
	With Nylon Snap-in Grommet**	5S52-[ ]-[ ]AA	5S52-[ ]-[ ]AB	5S52-[ ]-[ ]AC	—

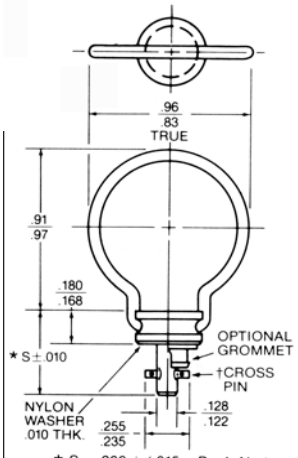
****Note:** *Use of grommet increases maximum head protrusion .030 inch.*

QUICK OPERATING 1/4-TURN FASTENERS 5F SERIES



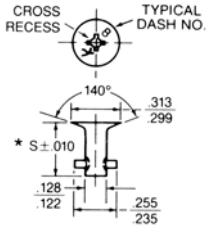
* S = .202 + (.015 x Dash No.)

Knurled Knob



* S = .366 + (.015 x Dash No.)

Folding Bail Handle



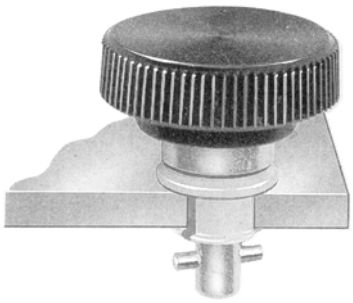
* S = .192 + (.015 x Dash No.)

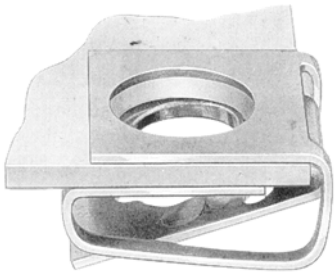
Flush-Head Cross Recess

	Used With Retaining Ring	With Nylon Snap-in Grommet**	UsedWith Retaining Ring	With Nylon Snap-in Grommet**	Used With Retaining Ring
	5S25-[ ]B	5S57-[ ]-[ ]BB	5S37-[ ]-2BB	5S60-[ ]-[ ]BB	5S44-[ ]-1AA
	—	—	5S37-[ ]-1AA	5S60-[ ]-[ ]AA	5S7-[ ]
	—	—	—	—	—
	—	—	—	—	—
	5S25-[ ]	5S57-[ ]-[ ]AA	—	—	—
	300°F.		5S37-[ ]-2BB version: 550°F. (supplied with stainless steel washer in lieu of nylon). Steel versions: 300°F.		5S7=450°F. 5S44=550°F.

†The position of handle relative to cross pin varies by part number.

Typical Assembly





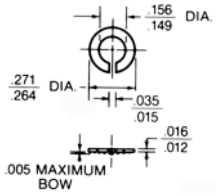
Specifications:

Ultimate tensile strength: 150 lbs.
Working strength: 100 lbs.
Stud grip increments: .015 inch
For optional styles, materials and finishes, contact the Camloc Products Division.

Retaining Ring

Order separately. Retaining Ring not required when Snap-in Grommet style is specified.

See Page A-58 for installation.



Part No.	Material	Maximum Service Temperature
5S3-1	Steel (Cadmium Plated)	450°F.
5S3-2	Stainless Steel	550°F

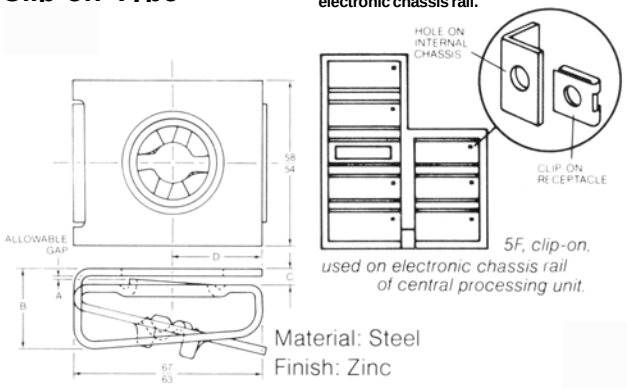
Weight per 100 pcs.: .02 lbs.

QUICK OPERATING 1/4-TURN FASTENERS 5F SERIES

Receptacles

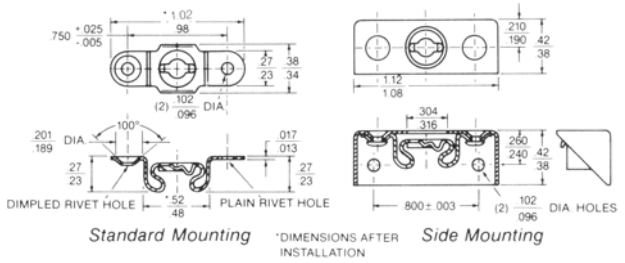
Clip-on Type

Clip-on Type receptacle used on electronic chassis rail.



Part No.	A Ref.	B	C	D
5R16-1-1AA	.010	.29 / .25	.08 / .04	.33 / .29
5R16-2-1AA	.085	.37 / .33	.15 / .11	.26 / .22

Standard or Side Mounting Versions

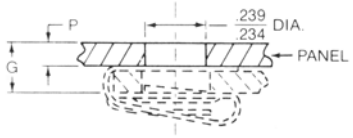


Standard Mounting Part No.	Side Mounted Part No.	Material	Rivet Holes	Temp.
5R2-1	5R3-1	Steel (Cad. Plated)	Plain	450°F.
5R2-2	—	Steel (Cad. Plated)	Dimpled	450°F.
5R2-3	—	Stainless Steel	Plain	550°F.
5R2-4	—	Stainless Steel	Dimpled	550°F.

(5R2) weight per 100 pcs.: 0.21 lbs.
(5R3) weigth per 100 pcs.: 0.54 lbs.

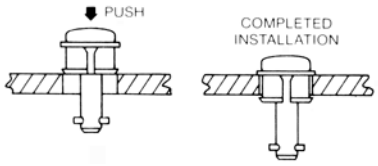
Panel Preparation and Installation Data

Studs with Snap-In Grommet



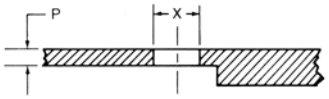
Form through hole to .234-.239 diameter. Panels with thicknesses greater than .115 inch must be back counterbored to a concentric .375 inch diameter with a remaining material thickness of .115 inch max. Note: Snap-in grommets will protrude from the backside of the panel. Minimum total thickness “G” must be observed to prevent grommets from jamming against the receptacle.

P max.	G min.
.070	.095
.115	.140



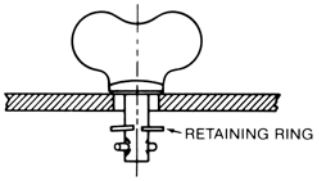
Place stud/grommet assembly on hole and push down to snap into place.

Protruding Head Studs with Retaining Ring



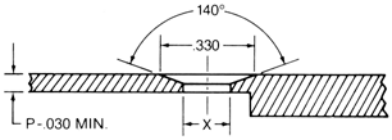
Determine panel thickness “P” and form through hole to corresponding “X” diameter. Note: Panels with thicknesses greater than .090 inch must be back counterbored to a concentric .375 inch diameter with a remaining maximum material thickness of .090 inch.

P	X dia.
up to -.054	.215-.225
.055-.090	.229-.239



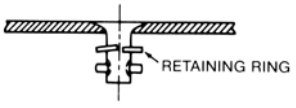
Insert stud through panel and attach retaining ring.

Flush Head Studs with Retaining Ring



Panel preparation is the same as for protruding heads except countersink is required as shown. A minimum panel “P” thickness of .030 inch is recommended.

P	X dia.
.030-.054	.205-.215
.055-.090	.229-.239

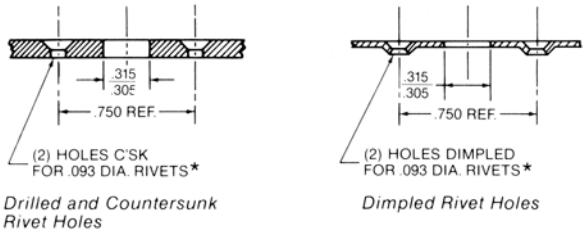


Insert stud through panel and attach retaining ring.

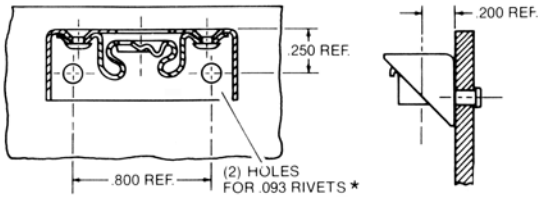
Panel Preparation and Installation Data (Continued)

Frame Preparation for Receptacle Installation (Rivet Type)

5R2 Standard Mount



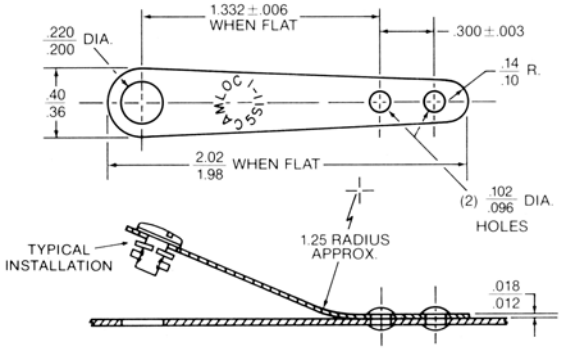
5R3 Side Mount



* RIVETS NOT FURNISHED

Stud Ejector Spring For Plain Rivet Holes

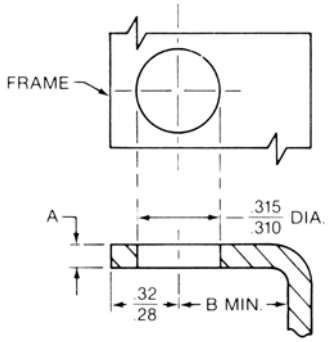
Provides full retraction of stud assembly to allow opening and closing of equipment without the possibility of jamming or damage.



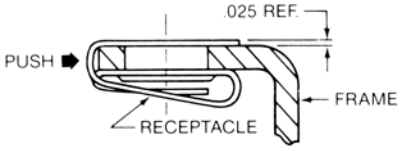
Part No.	Material and Finish	Temperature
5S11-1	Spring Steel (Cad. Plated)	450°F.
5S11-1A	Spring Steel (Black Finish)	450°F.

Note: Add .015 to total "G" thickness when using this part.
Weight per 100 pcs.: .23 lbs.

Frame Preparation for Clip-On Receptacle Installation



Form through hole to .310-.315 diameter.

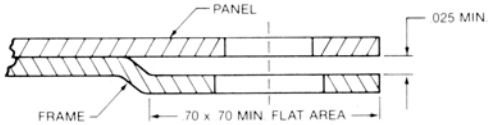


Slide receptacle onto frame and locate on through hole.

Part No.	A Frame Thickness	B Min.
5R16-1-1AA	.001-.080	.35
5R16-2-1AA	.081-.130	.35

Recessed Frame

Standard installation will cause minimum gap of .025 inch between panel and frame due to receptacle protrusion. To eliminate gap, dimple frame to provide recess as shown.



5F SERIES. Order Information/Stud and Grommet Dash Number Selection.

Using Clip-On Receptacles.

To Select Stud Dash Number.

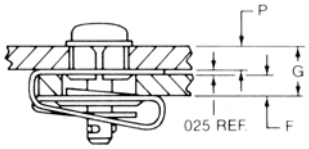
1. Determine "G" thickness.
Note: Increase "G" to allow for thickness of paint or other finishes and for the compressed thickness of any gasket.

2. Stud dash number varies with retention method (Retaining Ring vs. Snap-in Grommet). This information must be known before proceeding.

3. Locate "G" total thickness from the table below right.

4. Then find the corresponding stud dash number in the column designated for the selected method of retention.

5. When using Snap-in Grommets, specify the Grommet dash number corresponding to top panel thickness "P".



Stud Assembly with Nylon Snap-in Grommet

How to Order:

Example 1.
(For stud assemblies using retaining ring)

Stud Assembly Used: 5Sb- [?]
"G" Total Thickness = .160 inch
Retention Method = Retaining Ring
Stud Dash Number From Table = -17
Complete Part Number: 5S5-17

Example 2.
(For Stud assemblies using snap-in grommet)

Stud Assembly Used: 5S34-[ ]-[ ]-AA
- Grommet Dash Number
- Stud Dash Number
- Basic Part Number

"G" Total Thickness = .160 inch
Stud Dash Number from Table = -18
"P" Panel Thickness = .053
Grommet Dash Number From Table = -5
Complete Part Number: 5S34-18-6-AA

GROMMET DASH NUMBER SELECTION		
P Max.	Dash Numbers	G Min.
.055	- 5*	.080
.070	- 6	.095
.115	- 9	.140
.145	-11*	.170

*Contact Camloc

Stud Part Number Structure

5S71-[ ]-1AC
- Material and Finish
- Stud Dash Number (Based on Total Thickness, "G")
- Basic Part Number

For Studs Used With Clip-On Receptacles

Stud Dash Number Selection		
G Total Thickness	Stud Assembly	
	Dash Numbers For Studs Using Retaining Rings	Dash Numbers For Studs With Snap-in Grommets
.050-.064	-10	-11
.065-.079	-11	-12
.080-.094	-12	-13
.095-.109	-13	-14
.110-.124	-14	-15
.125-.139	-15	-16
.140-.154	-16	-17
.155-.169	-17	-18
.170-.184	-18	-19
.185-.199	-19	-20
.200-.214	-20	-21
.215-.229	-21	-22
.230-.244	-22	-23
.245-.259	-23	-24
.260-.274	-24	-25

****Note:** If "G" total thickness is very near the top of the thickness range, selection of the next greater dash number is recommended. For "G" thicknesses greater than those tabulated, contact Camloc Products Division.*

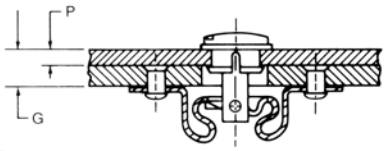
A

Using Rivet Type Receptacles.

To Select Stud Dash Number.

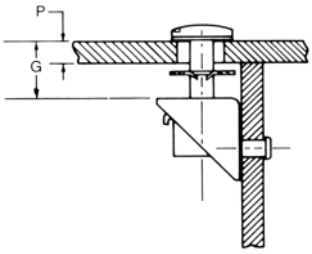
1. Determine "G" thickness.
Note: Increase "G" to allow for thickness of paint or other finishes and for the compressed thickness of any gasket.
2. Stud dash number varies with retention method (Retaining Ring vs. Snap-in Grommet) and with the receptacle used. This information must be known before proceeding.
3. Locate "G" total thickness from the table below.
4. Then find the corresponding stud dash number in the column designated for the selected combination of retention and receptacle.
5. When using Snap-in Grommets, specify the Grommet dash number corresponding to top panel thickness "P".

5R2 STANDARD MOUNT RECEPTACLE



Note: Add .015 to total "G" thickness when using stud ejector spring.

5R3 SIDE MOUNT RECEPTACLE



How to Order:

Example 1.
(For stud assemblies using retaining rings.)

Stud Assembly Used: 5S5-[?]
"G" Total Thickness =.160 inch
Receptacle Used = 5R2 (Standard Mount)
Retention Method = Retaining Ring
Stud Dash Number From Table =-10
Complete Part Number: 5S5 -10

Example 2.
(For stud assemblies using snap-in grommets.)

Stud Assembly Used: 5S34 - [?] - [?] - AA

- Grommet Dash Number
- Stud Dash Number
- Basic Part Number

"G" Total Thickness =.160 inch
Receptacle Used = 5R2 (Standard Mount)
Retention Method = Snap-In Grommet
Stud Dash Number From Table =-11
"P" Panel Thickness =.053
Grommet Dash Number From Table =-6
Complete Part Number: 5S34-11-6

GROMMET DASH NUMBER SELECTION		
P Max.	Dash Numbers	Min. Grip
.070	-6	.095
.115	-9	.140

For Studs Used With
Standard Or Side Mount Receptacles

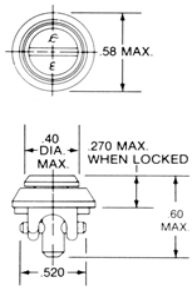
Stud Dash Number Selection				
G Total Thickness	Stud Assembly			
	Dash Numbers For Studs Using Retaining Rings		Dash Numbers For Studs With Snap-In Grommets	
	Receptacles		Receptacles	
	5R2 Std. Mount	5R3 Side Mount	5R2 Std. Mount	5R3 Side Mount
.020 -.034	- 1	- 2	-	-
.035 -.049	- 2	- 3	-	-
.050 -.064	- 3	- 4	-	-
.065 -.079	- 4	- 5	-	-
.080 -.094	- 5	- 6	-	-
.095 -.109	- 6	- 7	- 7	- 8
.110 -.124	- 7	- 8	- 8	- 9
.125 -.139	- 8	- 9	- 9	- 10
.140 -.154	- 9	- 10	- 10	- 11
.155 -.169	- 10	- 11	- 11	- 12
.170 -.184	- 11	- 12	- 12	- 13
.185 -.199	- 12	- 13	- 13	- 14
.200 -.214	- 13	- 14	- 14	- 15
.215 -.229	- 14	- 15	- 15	- 16
.230 -.244	- 15	- 16	- 16	- 17
.245 -.259	- 16	- 17	- 17	- 18
.260 -.274	- 17	- 18	- 18	- 19
.275 -.289	- 18	- 19	- 19	- 20
.290 -.304	- 19	- 20	- 20	- 21
.305 -.319	- 20	- 21	- 21	- 22
.320 -.334	- 21	- 22	- 22	- 23
.335 -.349	- 22	- 23	- 23	- 24
.350 -.364	- 23	- 24	- 24	- 25
.365 -.379	- 24	- 25	- 25	-
.380 -.394	- 25	-	-	-

Important Note: *If the total thickness "G" is very near the top of the thickness range, selection of the next greater dash number is recommended. For "G" thickness greater than those tabulated, contact Camloc Products Division.*

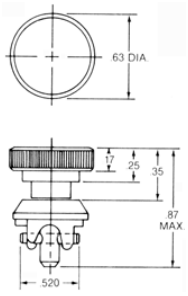
QUICK OPERATING 1/4-TURN FASTENERS 36F/38F SERIES

Features: One piece assembly eliminates retaining rings and mating receptacles. • Simply push down and turn 90° to lock or unlock. • Installs blind from one side of panel. • Particularly suited for electronic access panels, lighting fixtures, office equipment and recreational vehicles.

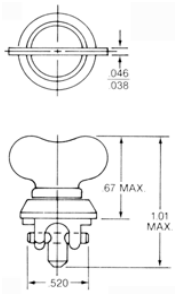
Note: Part numbers shown are basic part numbers only. See ordering information for required dash numbers.



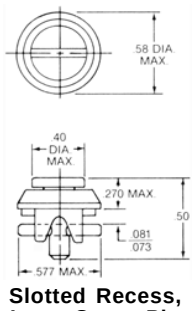
Slotted Recess



Knurled Knob

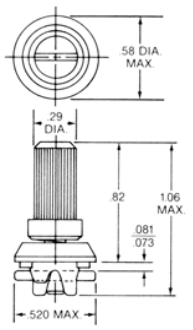


Wing Head

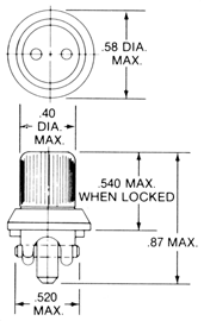


Slotted Recess, Long Cross Pin

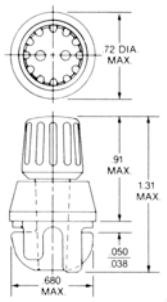
Material	Part No.	Part No.	Part No.	Part No.
Stud: Steel (Zinc Plated, Clear Chromate) Cross Pin: Steel (Cadmium Plated) Bushing:Zinc (Zinc Plated, Clear Chromate)	36S05-[ ]-1AA	36S05-[ ]-3AA	36S05-[ ]-4AA	-
Stud: Steel Cross Pin: Steel (Cadmium Plated) Bushing : Zinc Stud and Bushing Finish: Nickel Plated	-	36S05-[ ]-3AB	-	-
Stud: Steel (Zinc Plated, Clear Chromate) Bushing: Zinc (Zinc Plated, Clear Chromate) Cross Pin: Steel (Zinc Plated)	-	-	-	36S10-3-1AA



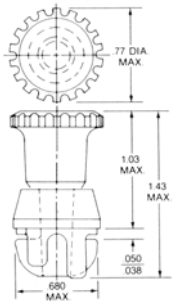
V-Notch Type



Knurled Knob



Knurled Knob



Knurled Knob

Material	Part No.	Part No.	Part No.	Part No.
Stud & Bushing: Zinc (Zinc Plated, Clear Chromate) Cross Pin: Steel (Zinc Plated, Blue Chromate)	-	36S01-[ ]-1AA	-	-
Plastic (Black), Steel Spring	-	-	38S01-[ ]-1AB	38S01-[ ]-2AB
Plastic (White), Steel Spring	-	-	38S01-[ ]-1AA	38S01-[ ]-2AA
Stud: Zinc (Zinc Plated, Clear Chromate) Bushing: Zinc (Zinc Plated, Blue Chromate) Cross Pin: Steel (Zinc Plated, Blue Chromate)	36S11-3-1AA	-	-	-

Maximum Service Temperature: 250°F. Plastic versions meet U.L. Specification #94HB

Specifications:

Ultimate tensile strength:
36F Series: 100 lbs.
38F Series: 40 lbs.

Stud grip increment:
36F Series: .050 inches
38F Series: .180 inches

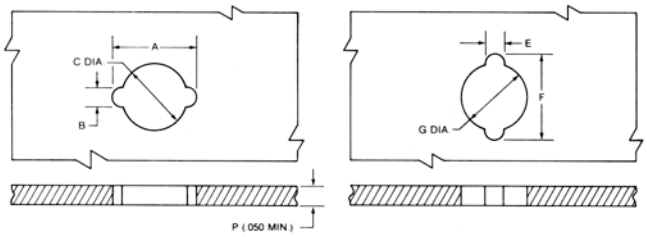
Stud Part Number Structure

36S05-[ ]-1AA
- 1AA — Material and Finish
- [ ] — Stud Dash Number (Based on Total Thickness, "G")
- 36S05 — Basic Part Number

QUICK OPERATING 1/4-TURN FASTENERS 36F/38F SERIES

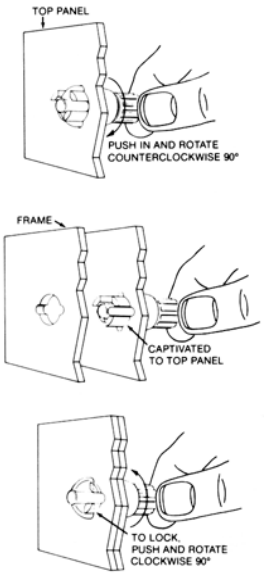
Panel Preparation and Installation Data

Top Panel **Frame**



Dimensions For Panel Preparation						
Series	"Top" Panel			Frame		
	A	B	C Dia.	E Min.	F	G Dia.
36S	.545 / .535	.115 / .105	.380 / .372	.120	.560	.390 / .380
38S	.685 / .675	.167 / .157	.505 / .495	.170	.760 / .740	.525 / .515

Form through holes in top and frame as shown.
Important Notes: *1) Long axis "A" of top panel hole must be rotated 90° from long axis "F" of frame hole. 2) If close alignment is maintained between top panel and frame mounting holes, top panel dimensions may be used for both.*

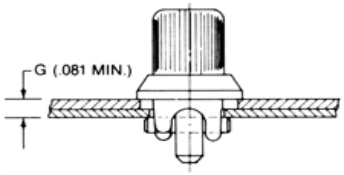


A

Installing Stud Assembly

1. Place stud assembly in top panel. Push in and rotate counter clockwise 90°. Stud is now captivated to panel.
2. Close panel so that stud enters frame hole and then push and rotate clockwise 90°. Panel is now locked to frame.

Ordering Information/Stud Dash Number Selection



To Select Stud Dash Number.

1. Determine "G" thickness.
Note: Increase "G" to allow for thickness of paint or other finishes and for the compressed thickness of any gasket.
2. Stud dash number varies with stud series used. This information must be known before proceeding.
3. Locate "G" total thickness in the table below.
4. Then find the corresponding dash number in the column designated for the stud series used.

Stud Dash Number Selection		
G Total Thickness	For 36F Series	For 38F Series
.081 -.130	-3	-4
.131 -.180	-4	
.181 -.260	—	

How to Order:

Example 1.
Stud Assembly Used: 36S01-[?]-1AA
"G" Total Thickness = .090 inch
Stud Dash Number From Table = -3
Completed Part Number: 36S01-3-1AA

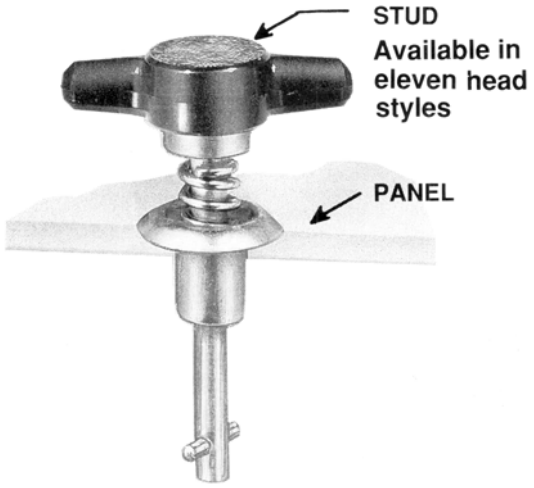
Example 2.
Stud Assembly Used: 38S01-[?]-1AA
"G" Total Thickness = .120 inch
Stud Dash Number From Table = -4
Completed Part Number: 38S01-4-1AA

Stud Part Number Structure

36S05-[]-1AA
- 1AA — Material and Finish
- [] — Stud Dash Number (Based on Total Thickness, "G")
- 36S05 — Basic Part Number

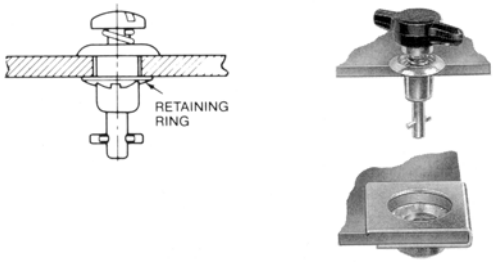
2600/2700 Series General Purpose 1/4-Turns.

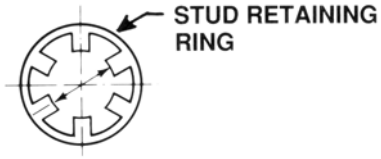
A wide choice of general purpose studs and receptacles are available with this series. Certain 2600 and 2700 series 1/4-turn fasteners are qualified to MIL-F-5591* specifications. Also included are receptacles for fast installation, or for ultrasonic installation. Integral stud cup protects top panel surface from abrasion.



2600 Series.

Plus flush head styles and solid retaining rings.

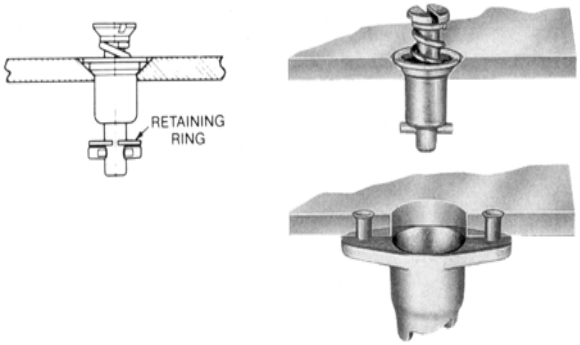


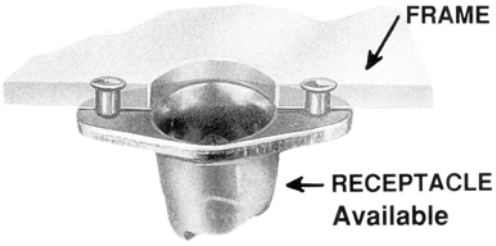


Retaining rings are used with stud lengths -5 and greater, except for snap-in versions which do not require retaining rings.

2700 Series.

Flush head styles and split retaining ring.





Specifications:
Ultimate tensile strength: 300 lbs.
Working strength: 200 lbs

*Meets the design, physical and performance requirements of MIL-F-5591. However, full mechanical properties testing may not be performed on each production lot.

Section Contents

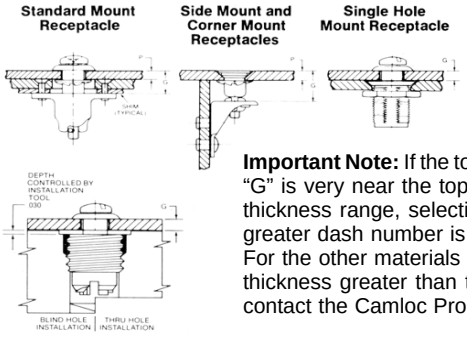
Ordering Information

Note: Receptacles determine which stud is selected, therefore, an overview is included here.

To Select Stud Part Number.

1. Stud part number varies with receptacle used. **The receptacle must be chosen before selecting stud part number.** See receptacle detail on Pages A-27 through A-30.

2. Determine "G" thickness as shown in drawings below.



Important Note: If the total thickness "G" is very near the top of the thickness range, selection of the next greater dash number is recommended. For the other materials and for "G" thickness greater than those tabulated, contact the Camloc Products Division.

Notes:

a) Increase "G" to allow for thickness of paint or other finishes and for the compressed thickness of any gasket.

b) "G" must be increased for the following "special" conditions:

"Special" Condition	Increase "G" Thickness
212-12B Series receptacles installed	Add .038 inch
Front mounting receptacle (P/N 26R41-1-1AA) installed	Allow .022 inch for receptacles top side protrusion
Rear mounting receptacle (P/N 26R45-1-1AA) installed	Allow .018 inch for receptacle top side protrusion
Clip-on receptacle (P/N 99R11) installed	Add .090 and subtract 7 dash numbers
Single hole mounting receptacle (P/Nos. 99R10 and 99E10)	Add .020 inch
KNQ2 Series. Keenserts installed	Add .030 inch

3. Locate "G" total thickness in the tables with each stud.
4. Then find the corresponding stud part number in the column designated for the selected receptacle.

Example 1.
Stud Assembly Used: 2700-[ ]
"G" Total Thickness = .275 inch
Receptacle Used: 212-12AD
Stud Dash Number From Table: -9
Complete Part Number: 2700-9

Example 2.
Stud Assembly Used: 2600-[ ]
"G" Total Thickness =.163 inch
Receptacle Used: 212-12BR
Required Calculation: "G" + .038 = .163 + .038 = .201
Stud Dash Number Selected From Table: -6
Complete Part Number: 2600-6S

Stud Dash Number Selection

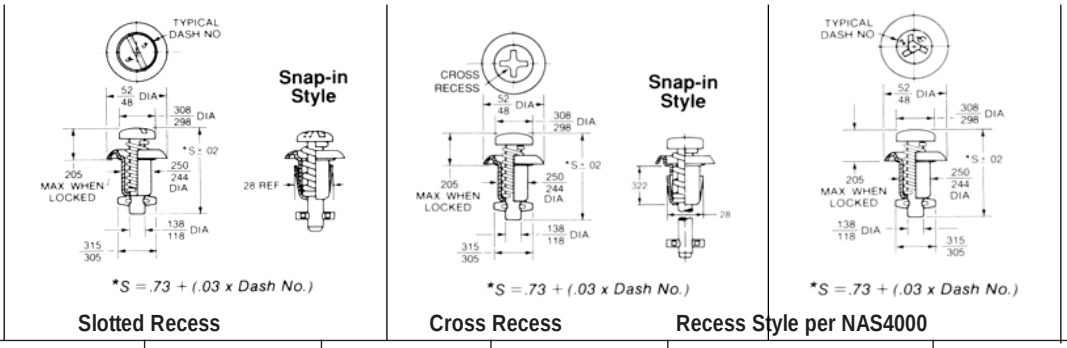
"G" Total Thickness	Receptacles		
	26R1 26R2	26R5 312-12	All Other P/N's Not Tabulated
.020-.029	–	–	–
.030-.059	- 2*	–	- 1*
.060-.079	–	–	–
.060-.089	- 3	–	- 2*
.080-.089	–	–	–
.090-.119	- 4	–	- 3
.120-.149	- 5	–	- 4
.150-.179	- 6	–	- 5
.180-.209	- 7	–	- 6
.210-.239	- 8	–	- 7
.240-.269	- 9	–	- 8
.270-.299	-10	–	- 9
.300-.329	-11	–	-10
.330-.359	-12	–	-11
.360-.389	-13	–	-12
.390-.419	-14	- 1*	-13
.420-.449	-15	- 2*	-14
.450-.479	-16	- 3	-15
.480-.509	-17	- 4	-16
.510-.539	-18	- 5	-17
.540-.569	-19	- 6	-18
.570-.599	-20	- 7	-19
.600-.629	-21	- 8	-20
.630-.659	-22	- 9	-21
.660-.689	-23	-10	-22
.690-.719	-24	-11	-23
.720-.749	-25	-12	-24
.750-.779	-26	-13	-25
.780-.809	-27	-14	-26
.810-.839	-28	-15	-27
.840-.869	-29	-16	-28
.870-.899	-30	-17	-29
.900-.929	-31	-18	-30
.930-.959	-32	-19	-31
.960-.989	-33	-20	-32
.990-1.019	-34	-21	-33
1.020-1.049	-35	-22	-34
1.050-1.079	-36	-23	-35
1.080-1.109	-37	-24	-36
1.110-1.139	-38	-25	-37
1.140-1.169	-39	-26	-38
1.170-1.199	-40	-27	-39
1.200-1.229	-41	-28	-40
1.230-1.259	-42	-29	-41
1.260-1.289	-43	-30	-42
1.290-1.319	-44	-31	-43
1.320-1.349	-45	-32	-44
1.350-1.379	-46	-33	-45
1.380-1.409	-47	-34	-46
1.410-1.439	-48	-35	-47
1.440-1.469	-49	-36	-48
1.470-1.499	-50	-37	-49
1.500-1.529	–	-38	-50
1.530-1.559	–	-39	–
1.560-1.589	–	-40	–
1.590-1.619	–	-41	–
1.620-1.649	–	-42	–
1.650-1.679	–	-43	–
1.680-1.709	–	-44	–
1.710-1.739	–	-45	–
1.740-1.769	–	-46	–
1.770-1.799	–	-47	–
1.800-1.829	–	-48	–
1.830-1.859	–	-49	–
1.860-1.889	–	-50	–

*2700 Series studs with -1 or -2 lengths require special part numbers; contact Camloc Products Division.

2600/2700 Series. General Purpose Stud Assemblies.

Features: • Wide variety of studs and receptacles offered as standards. • Integral stud cup protects top panel surface from abrasion. • Sealed versions available (not shown).

Note: Part numbers shown are basic part numbers only. See ordering information on Page A-23 for required dash numbers.

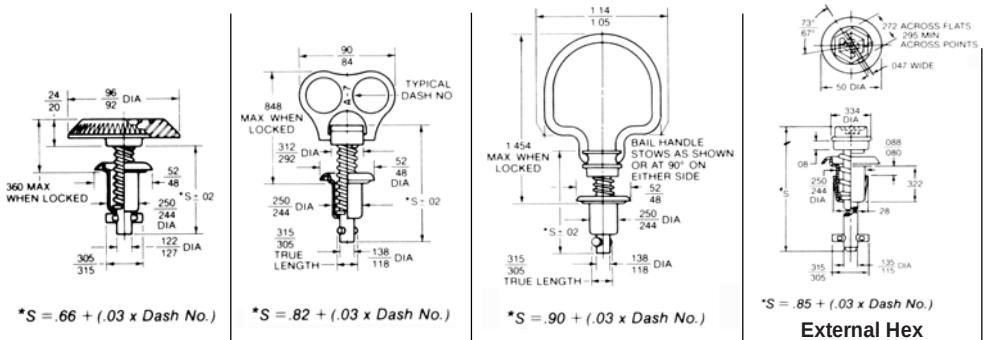


Slotted Recess | **Cross Recess** | **Recess Style per NAS4000**

Material	Part No.1	Part No.	Part No.	Part No.	Part No.	
Stainless Steel	2600-[ ]S	-	26S51-[ ]	-	26S82-[ ]-3BB	
Stainless Steel (Non-Magnetic)	26S26-[ ]	-	-	-	-	
Steel (Cadmium Plated)	2600-[ ]	-	26S8-[ ]	-	26S82-[ ]-3AA	
Steel (Cadmium Plated, Clear Chromate)	-	-	-	-	-	
Steel (Nickel Plated)	26S42-[ ]	-	26S39-[ ]	-	-	
Steel (Satin Black Enamel)	2600-[ ]B	-	26S8-[ ]B	-	-	
Steel (Chrome Plated)	26S38-[ ]	-	-	-	-	
Steel (Zinc Plated)	-	26S103-[*]-1AA	-	26S107-[*]-1AA	-	
Steel (Black Phosphate Coated)	-	26S103-[*]-1AB	-	26S107-[*]-1AB	-	
A286 CRES (Passivated)	-	-	26S51-[ ] B	-		

*Stud lenghts to -15.

2600 Studs continued



Knurled Head | **Folding Wing** | **Folding Bail Handle** | **External Hex Snap-In Style**

Material	Part No.	Part No.	Part No.	Part No.	
Stainless Steel	-	-	26S22-[ ]B	-	
Steel (Cadmium Plated)	2600-[ ]KA	26S13-A-[ ]	26S22-[ ]	-	
Steel (Cadmium Plated, Clear Chromate)	-	26S13-B-[ ]	-	-	
Steel (Zinc Plated, Clear Chromate)	-	-	-	26S135-[*]-1A	

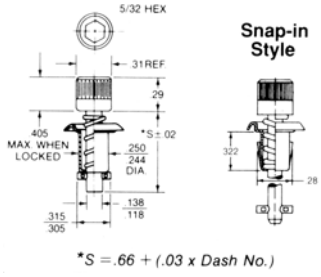
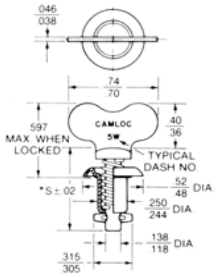
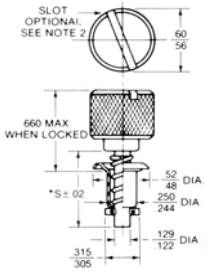
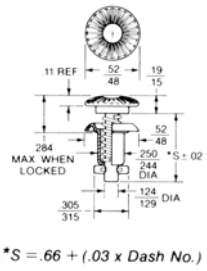
*Stud lenghts to -15.

Notes: *1. For Beryllium Copper material specify Part No. 26S26-[ ]B.*
2. For Slotted Knob style in Steel (Cadmium Plated) use Part No. 26S34-[ ]D.
Maximum Service Temperature: Stainless Steel—700°F.; Plastic Knobs—300°F.; all others—450°F.

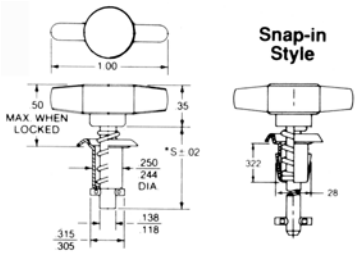
QUICK OPERATING 1/4-TURN FASTENERS 2600/2700 SERIES

Specifications:

Ultimate tensile strength: 300 lbs. Working strength: 200 lbs. Stud grip increments: .030 inch. For other styles, materials or finishes, please contact Camloc Products Division.

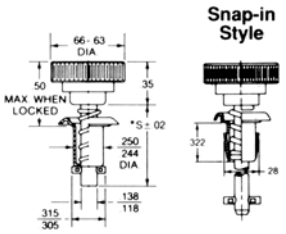
	 *S = .66 + (.03 x Dash No.)		 *S = .73 + (.03 x Dash No.)	 *S = .66 + (.03 x Dash No.)	 *S = .66 + (.03 x Dash No.)
	Hex Socket		**Fixed Wing**	**Knurled Knob**	**Knurled Head**
	Part No.	Part No.	Part No.	Part No.	Part No.
	-	-	2600-[ ]SW	-	-
	-	-	26S36-[ ]	26S26-[ ]A	-
	26S97-[ ]-1AA	-	2600-[ ]W	-	2600-[ ]K
	-	-	-	26S34-[ ]B	26S35-[ ]
	-	-	26S37-[ ]	-	26S40-[ ]
	-	-	-	26S34-[ ]A	-
	-	-	-	26S34-[ ]	-
	-	26S108-[*]-1AA	-	-	-
	-	26S108-[*]-1AB	-	-	-
	-	-	-	-	-

Plastic Knob Styles



*S = .66 + (.03 x Dash No.)

T-Knob



*S = .66 + (.03 x Dash No.)

Knurled Knob

Basic Part Nos.

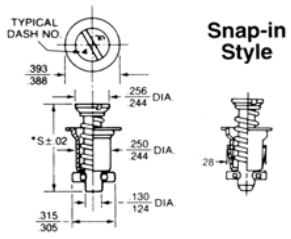
	Shank Material: Steel (Zinc Plated)			
	Black	Red	Grey	Beige
T-Knob	26S98-[ ]-1DA	26S98-[ ]-1DB	26S98-[ ]-1DC	26S98-[*]-1DD
T-Knob (Snap-In)	26S109-[*]-1AA	26S109-[*]-1AB	26S109-[*]-1AC	26S109-[*]-1AD
Knurled Knob	26S99-[ ]-1DA	26S99-[ ]-1DB	26S99-[ ]-1DC	-
Knurled Knob (Snap-In)	26S110-[*]-1AA	26S110-[*]-1AB	26S110-[*]-1AC	-

*Stud lengths to -15.

QUICK OPERATING 1/4-TURN FASTENERS 2600/2700 SERIES

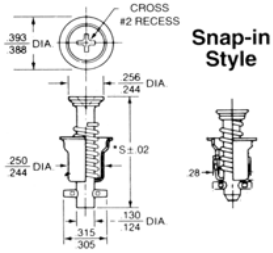
2600/2700 Series. General Purpose Stud Assemblies.

Note: Part numbers shown are basic part numbers only. See ordering information on Page A-23 for required dash numbers



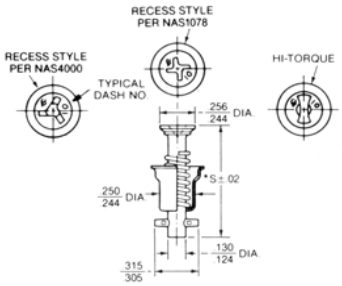
*S = .58 + (.03 x Dash No.)

Slotted Recess



*S = .58 + (.03 x Dash No.)

Cross Recess



*S = .58 + (.03 x Dash No.)

"Tamper Resistant" Recesses

Material	Part No.	Part No.	Part No.	Part No.	Part No.
Stainless Steel	2700-[ ]S	-	-	-	-
Steel (Cadmium Plated)	2700-[ ]	27S17-[*]-1AC	27S3-[ ]	27S18-[*]-1AC	27S8-[ ]-1AA Per NAS1078
	-	-	-	-	27S8-[ ]-3AA Per NAS4000
	-	-	-	-	27S8-[ ]-4AA Hi-Torque Recess
Steel (Satin Black Enamel)	2700-[ ]A	-	27S3-[ ]A	-	-
Steel (Chrome Plated)	2700-[ ]B	27S17-[*]-1AB	-	27S18-[*]-1AB	-
Beryllium Copper (Non-Magnetic)	27S12-[ ]-1BB	-	-	-	-
Steel (Zinc Plated)	-	27S17-[*]-1AA	-	27S18-[*]-1AA	-

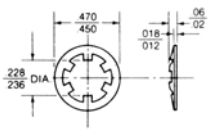
Maximum Service Temperatures: Stainless Steel—700°F; Steel and Bryllium Copper—450°F.

Retaining Rings (for 2600/2700 Series)

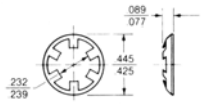
Solid rings are used to hold stud assemblies stationary to the top panel.

Split ring allows stud assemblies to move freely within the top panel.

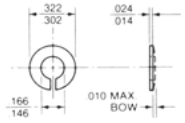
Notes:
1. Order separately.
2. Retaining rings are required for stud length dash numbers "5" and greater.
3. Studs with smaller dash numbers are self-captivating and retaining rings are not used.
4. Please see page A-33 for installation procedures for split rings.



Solid Ring General Purpose



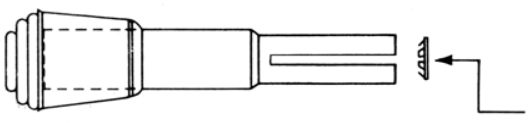
Solid Ring Require For Use With Dimpled Panels (2700 Series Stud Assembly)



Split Ring General Purpose

Material (Finish)				
Stainless Steel	2600-LW-7	-	2600-SW
Steel (Cadmium)			
Electro Plated	2600-LW*	27S5-1	2600-SW2
Mechanical Plated	2600-LWM	27S5-1M	-
Steel (Zinc)			
Electro Plated	99W10-01A1*	-	99W11-01A1
Mechanical Plated	99W10-01M1	-	-
Weight per 100 pieces	0.04 lbs.	0.04 lbs.	0.03 lbs.
Installation Tool Required	T98-1	T98-1	Use needle nose pliers For more information see Page A-33

**Not recommended for use with Stud Ejector Springs. Use 2600-SW.*
Maximum Service Temperatures: Stainless Steel—700°F.; all others—450°F.

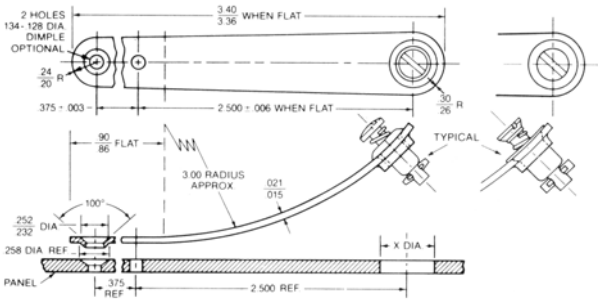


Retaining Ring Installation Tool T98-1
(For use with Solid Rings Only)

QUICK OPERATING 1/4-TURN FASTENERS 2600/2700 SERIES

Stud Ejector Springs

Provides for retraction of stud assembly to allow opening and closing of equipment without the possibility of jamming or damage. Select the ejector spring corresponding to stud assembly series selected. See table for part numbers.

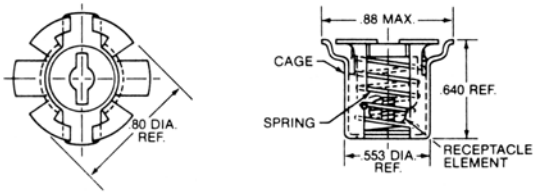


	Use with 2600 Series Stud Assemblies	Use with 2700 Series Stud Assemblies
X Diameter	.438 (Ref.)	.500 (Ref.)
Plain Rivet Holes	2600-ES	----
Dimpled Rivet Holes	2600-ESD	2700-ESD
Weight per 100 pieces	0.831 lbs.	0.941 lbs.
Material and Finish	Spring Steel (Cadmium plated gold chromate)	
Maximum Service Temperature	450°F.	450°F.

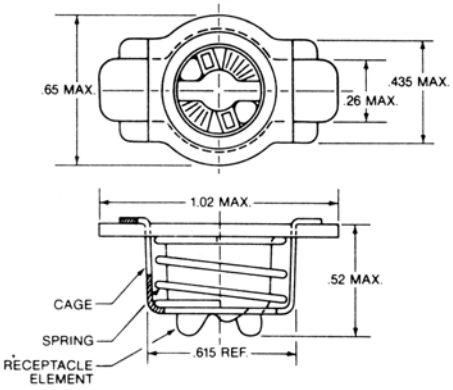
Notes: *1. Thru hole in Ejector Spring Part Number 2700-ESD is formed to allow 2700 Series Stud Assemblies to seat flush to top surface of Ejector Spring.*
2. Add .018 to total "G" thickness when using these parts.

Receptacles for Fast Installation

Front Mounting Version
Part Number: 26R41-1-1AA

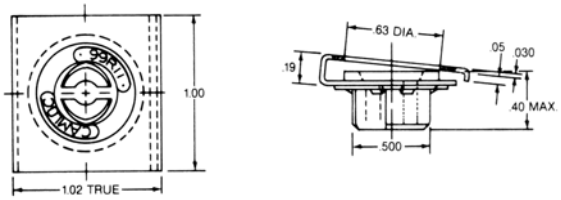


Rear Mounting Version
Part Number: 26R45-1-1AA



MATERIAL: cage: carbon steel, (zinc plated); receptacle element: zinc diecasting, (zinc plated).

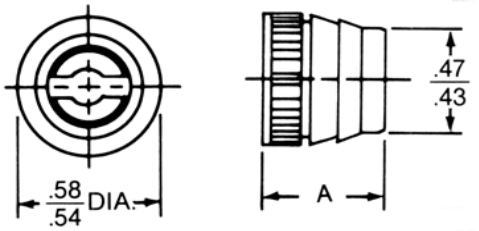
Clip-on Version
Part Number: 99R11-1-1AA



MATERIAL: carbon steel clip (zinc plated); zinc alloy insert (zinc plated); steel retaining ring.

Ultrasonicaly Installed Version

Installs into Thermoplastics.



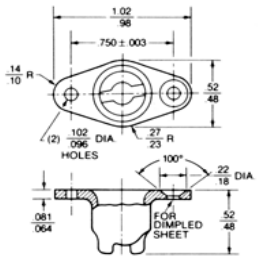
MATERIAL: zinc alloy (zinc plated).

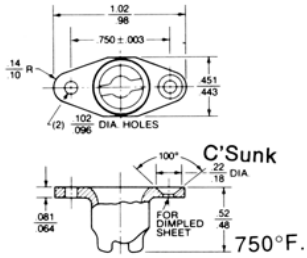
STYLE	PART NO.	A DIM
LONG	26R48-1-1AA	.500
SHORT	26R48-2-1AA	.30

Note: *When selecting studs for short version (26R48-2-1AA) receptacle, subtract .200 in. from total grip.*

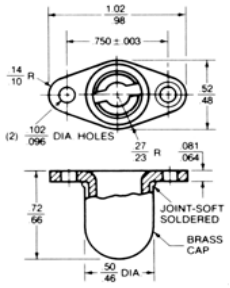
Receptacles. (For use with 2600/2700 and 26F Series Stud Assemblies).

Standard Mounting Versions



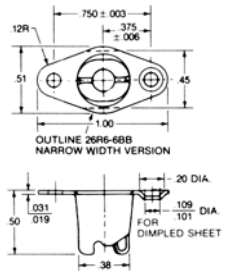


Narrow Width



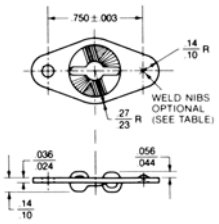
Encapsulated
See Note 1 For Sealing

Material	Part No.	Max. Temp.	Rivet Holes	Weight (per 100 pcs.) (lbs.)	Part No.	Max. Temp.	Rivet Holes	Weight (per 100 pcs.) (lbs.)	Part No.	Max. Temp.	Rivet Holes	Weight (per 100 pcs.) (lbs.)
Stainless Steel (Non-Mag -- Passivated)	212-12S	750°F.	Plain	1.05	—	—	—	—	26R18-1	750°F.	Plain	1.63
	212-12SD	750°F.	C'Sunk	1.00	—	—	—	—	26R18-2	750°F.	C'Sunk	1.63
Silicon Bronze (Cadmium Plated)	212-12	450°F.	Plain	1.21	212-12N	450°F.	Plain	1.17	26R16-1	300°F.	Plain	1.63
	212-12D	450°F.	C'Sunk	1.16	212-12ND	450°F.	C'Sunk	1.12	26R16-2	300°F.	C'Sunk	1.63
Silicon Bronze (Nickel Plated)	212-29	450°F.	Plain	1.21	—	—	—	—	—	—	—	—
Zinc (Zinc Plated)	212-12E	300°F.	Plain	1.21	—	—	—	—	—	—	—	—
Aluminum Alloy (Anodized)	212-12A	350°F.	Plain	.40	—	—	—	—	—	—	—	—
	212-12AD	350°F.	C'Sunk	.38	—	—	—	—	—	—	—	—
Aluminumm Alloy (Hard Anodized)	212-12A-H	350°F.	Plain	.40	—	—	—	—	—	—	—	—



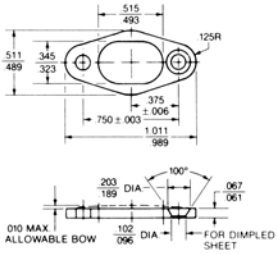
Weight per 100 pcs.: 0.50 lbs.

Lightweight



Weight per 100 pcs.: 0.23 lbs.

Low Profile
Restricted usage (see Note 2)



Weight per 100 pcs.: 0.11 lbs.

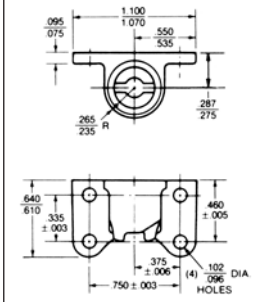
Shims

Material	Part No.	Max. Temp.	Rivet Holes	Part No.	Max. Temp.	Rivet Holes	Part No.	Max. Temp.	Rivet Holes
Stainless Steel	—	—	—	312-12A	750°F.	Plain .134/.128 dia.	—	—	—
	—	—	—	312-12S	750°F.	Plain .102/.096 dia.	—	—	—
	—	—	—	312-12WS	750°F.	Non (Weld Nibs)	—	—	—
Steel (Cadmium Plated)	26R6-1BB	450°F.	Plain	312-12	450°F.	Plain .102/.096 dia.	—	—	—
	26R6-4BB	450°F.	C'Sunk	—	—	—	—	—	—
	26R6-6BB (Narrow Width)	450°F.	Plain	—	—	—	—	—	—
Aluminum Alloy (Anodized)	—	—	—	—	—	—	26R8-1	350°F.	Plain
	—	—	—	—	—	—	26R8-2	350°F.	C'Sunk

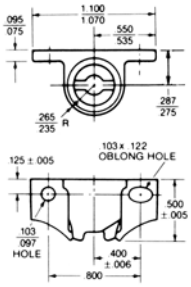
Notes: *1. Encapsulated receptacle may be sealed against air, water, and dust by using 3M brand EC847 or a silicon adhesive sealant.*
2. Use of 312-12 low profile receptacles is restricted to applications with total "G" thickness of .390 inch and greater. Please see illustration Page A-23 for definition of "G."

Receptacles (continued)

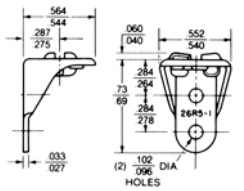
Side Mounting Versions



Weight per 100 pcs.: 0.66 lbs.

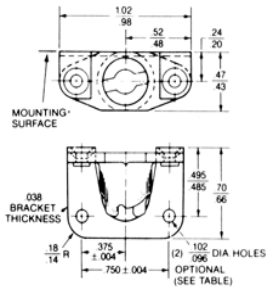


Weight per 100 pcs.: 0.56 lbs.



Weight per 100 pcs.: 0.45 lbs.

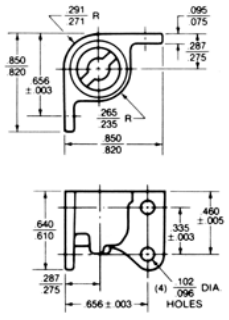
Lightweight



-12B-R Weight per 100 pcs.: 1.74 lbs.
-12B Weight per 100 pcs.: 1.76 lbs.

Material	Part No.	Max. Temp.	Part No.	Max. Temp.	Part No.	Max. Temp.	Part No.	Max. Temp.
Steel (Cadmium Plated)	—	—	—	—	26R5-1	450°F.	—	—
Receptacle Element: Silicon Bronze Bracket: Stainless Steel	—	—	—	—	—	—	212-12B-R	450°F.
							212-12B For Welding Attachment (no rivet holes)	450°F.
Aluminum Alloy (Anodized)	26R1-1	350°F.	—	—	—	—	—	—
Aluminum Alloy (Hard Anodized)	26R1-5	350°F.	26R3-1	350°F.	—	—	—	—

Corner Mounting Versions

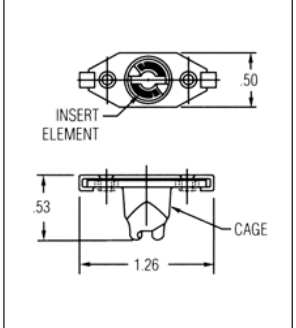


Weight per 100 pcs.: 0.75 lbs.

Material	Part No.	Max. Temp.
Aluminum Alloy Anodized)	26R2-1	350°F.
Aluminum Alloy (Hard Anodized)	26R2-5	350°F.

Floating Version

(Float = ±.030)



Material	Part No.	Max. Temp.
Insert Element: CRES per ASTM A167 Cage: CRES per ASTM A743	26R51-1-1AA	–

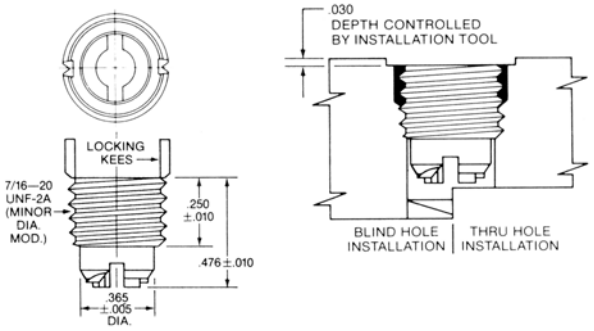
Special Purpose Receptacles

KEENSERTS® Insert

For use in aluminum and magnesium castings and other thick materials.

Installation:

Drill, counterbore, and then tap thread in structure using data from table below. Turn KEENSERTS Insert into tapped hole using installation tool P/N TQ-2A for positive depth control. Drive locking kees down into the tapped threads of the structure using tool P/N TQ-2B. This provides a positive mechanical lock against rotation.



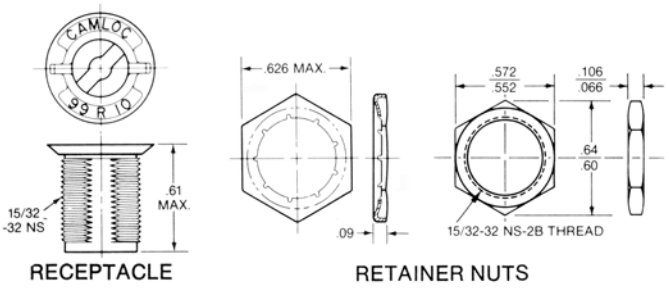
Installation Data

Part Numbers		Tap Drill Dia.	Tap Drill Depth Min.	C'Bore Dimensions	Tap Size	Min. Full Thread Depth	Install Tools	Removal Data	
Stainless Steel	Steel							Drill Size	Drill Depth
KNQ-2S	—	.410 .405	.657	.500 Dia. x .055-.035 Depth	7/16-20 UNF-2B	.30	TQ-2A and TQ-2B	11/32	5/32
—	KNQ-2								

Removal: In the unlikely event it becomes necessary to remove the KEENSERT Insert, simply drill to the indicated depth, deflect the locking kees inward and break them off. Then remove insert with an E-Z out type tool. An identical insert can now be installed in the original hole without rework.

Single Hole Mounting Receptacles

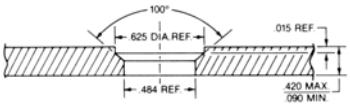
Designed to allow mounting in dimpled or drilled and countersink holes. Can also be installed in tapped holes. Blind end version is ideal when receptacle is to be used with structural foams.



	Part Number	Material/ Finish	Max. Temp.	Weight (per 100 pcs.) (lbs.)
Receptacles	99R10-01A1	Zinc with Zinc Plating	300°F.	1.04
	99E10-01 Encapsulated Version		300°F.	1.10
Nuts	99N10-01A1 Sheet-Metal Version	Steel (Zinc Plated, Clear Chromate)	300°F.	0.13
	15R10-1AC Solid Version	Steel (Cadmium Plated, Clear Chromate)	300°F.	0.23

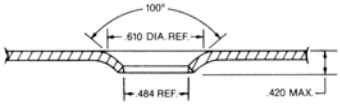
Installation Options

Drilled Panel



Dimpled Panel

Drill .406 Dia. hole, then form to shape illustrated.

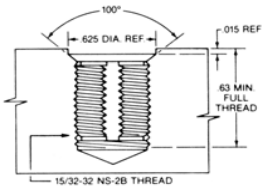


Optional Hole Shapes

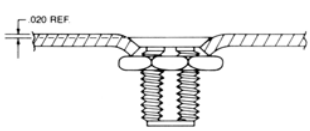
Notes: *1. "D" and double "D" shaped holes provide a positive stop against rotation.*

2. When using round mounting holes, retainer nut must be securely tightened to prevent rotation of receptacles.

Threaded Installation

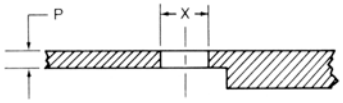


Typical Installation



Panel Preparation and Installation Data

2600 Series Protruding Head Studs



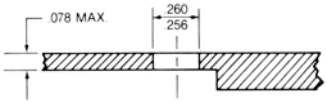
Determine panel thickness “P” and form through hole to corresponding “X” diameter. Note: Panels with thicknesses greater than .125 inch must be back counterbored to a concentric .375 inch diameter with a remaining maximum material thickness of .125 inch. Use split style retaining rings with back counterbore.

P	X Dia. Ref.
.030 to .065	.257
.066 to .125	.281

Float:

To provide float for stud assembly, increase “X” diamater to .312 inch. This hole diameter allows “P” thickness to be increased to .187 inch without back counterboring. Larger hole requires used of solid retaining ring, P/N 2600-LW.

2600/2700 Series Snap-in Studs

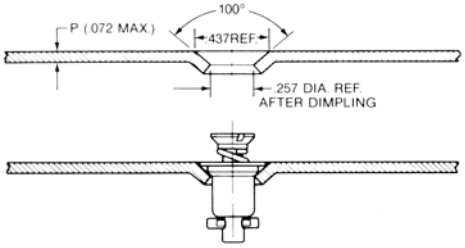


Form through hole to .260-.256 diameter. Note: Panels with panel thicknesses greater than .078 must be back counterbored to a concentric .375" diameter with a remaining maximum thickness of .078.

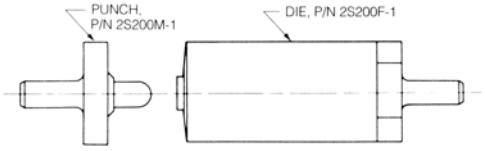
2700 Series Flush Mounting Studs

Installation in “Thin” Panel

For panel thicknesses “P” up to .072 inch maximum, form through hole to .213 diameter. Then dimple using tools shown below. Through hole after dimpling to be .257; ream if necessary.



Stud Assembly Seats Flush



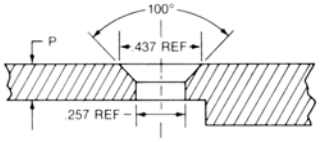
Dimpling Tool Both Punch and Die Required

Installation in “Thick” Panel

For panel thickness “P” larger than .072 inch, form through hole to .257 diameter and 100° C’Sink to a diameter of .437.

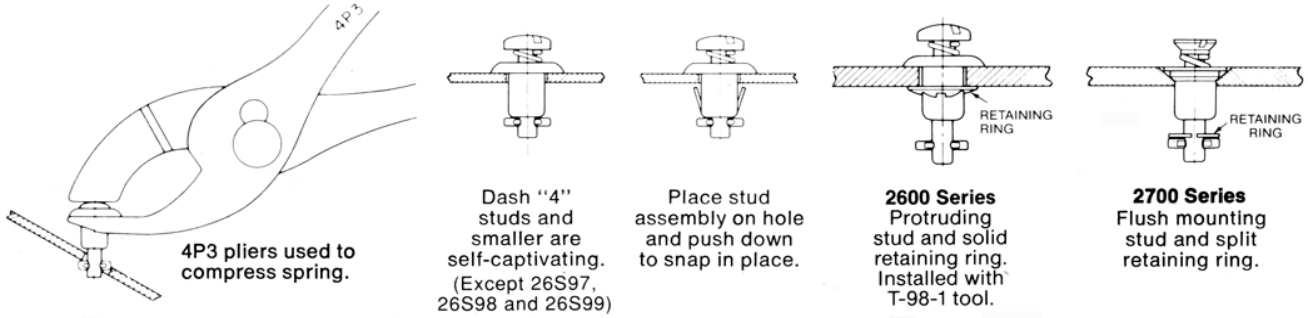
Panels with thicknesses greater than .140 inch must be back counterbored to a concentric .375 inch diameter with a remaining material thickness of .140 inch maximum.

Use split style ring with back counterbore.



Installing Stud Into Panel

Compress stud assembly spring using Camloc pliers, P/N 4P3, as shown. Insert stud into panel and release when cross pin clears panel.



Typical Installations

Note: If float is required, all dash lengths require retaining rings as described in “Float” above.

Receptacle Installation Data

Standard Mounting Versions

1. Drill #30 (.1285) dia. pilot hole.

2. Drill holes for .093 dia. rivets using drill jig P/N T12 or equivalent.

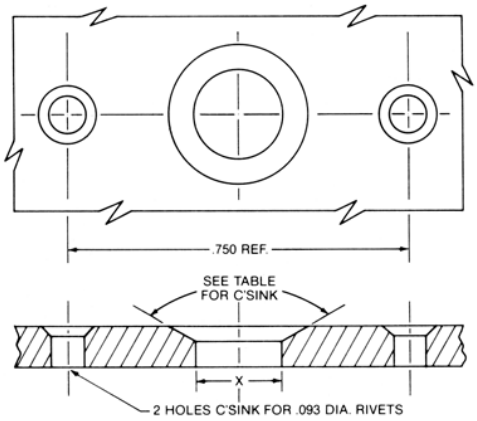
3. Enlarge pilot hole to X diameter and countersink if required.

4. Rivet receptacle in place.

Important Note: 1100 F aluminum alloy rivets should be used with aluminum receptacles.

Typical Installation

(Thin panels may be dimpled)

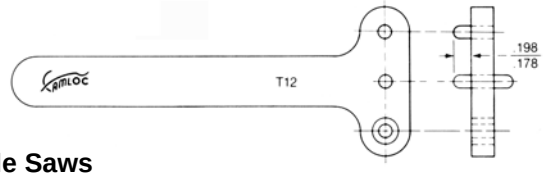


Receptacle	"X" Dia.	C'Sink	Hole Saw*
Encapsulated P/N's 26R16-1, 26R16-2	.437	90° x 500 Dia.	HS-437
All Other Standard Mount Receptacles	.500	None Required	HS-500 or HS-500

** Hole Saws are available as a convenience in selected sizes.*

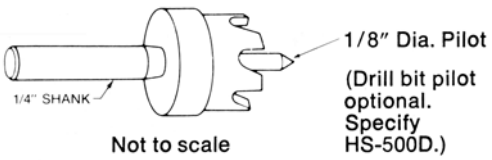
Drill Jig T12

Provides convenient means for accurately locating rivet holes with .750 inch spacing relative to stud mounting hole.



Hole Saws

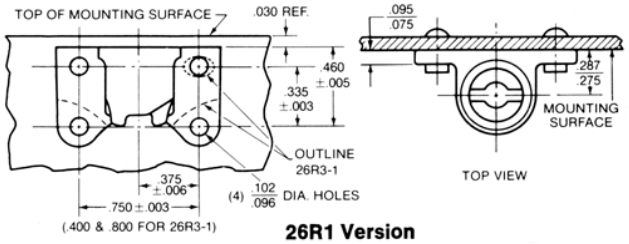
Accurately sizes mounting holes
Availble with either a smooth or drill bit pilot.

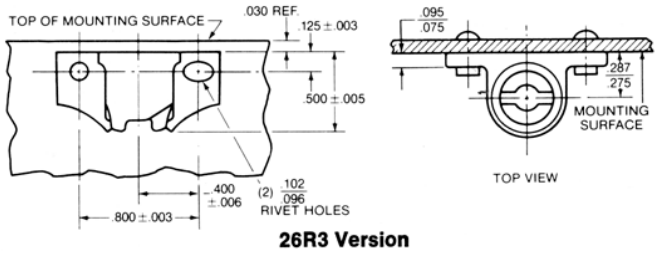


Side Mounting Versions

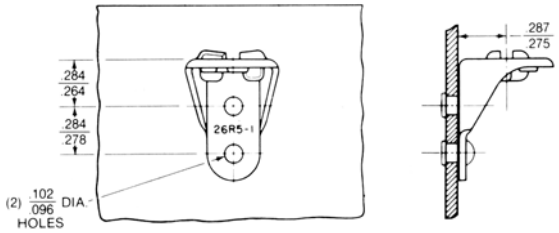
26R1 and 26R3 Aluminum Receptacles

Important Note: 1100F aluminum alloy rivets should be used with aluminum receptacles.

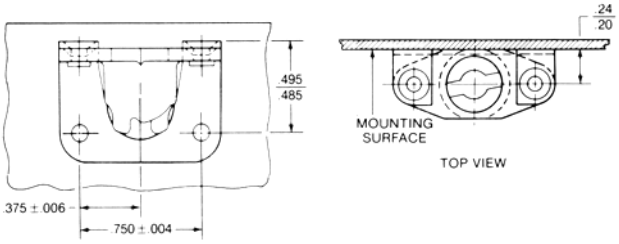




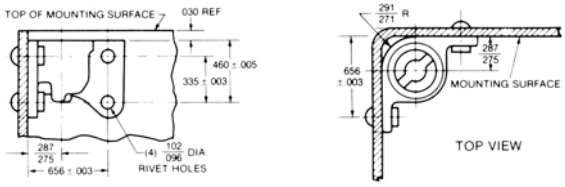
26R5 Lightweight Receptacle



212-12B Silicon Bronze Receptacles



26R2 Aluminum Corner Mounting Receptacle



Important Note: 1100 F aluminum alloy rivets should be used with aluminum receptacles.

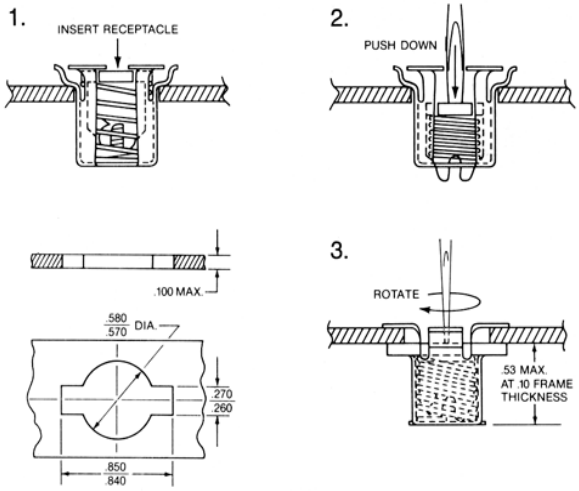
Fairchild Fasteners

QUICK OPERATING 1/4-TURN FASTENERS 2600/2700 SERIES

Front Mount Version

Part Number 26R41-1-1AA

No riveting or special tools required.



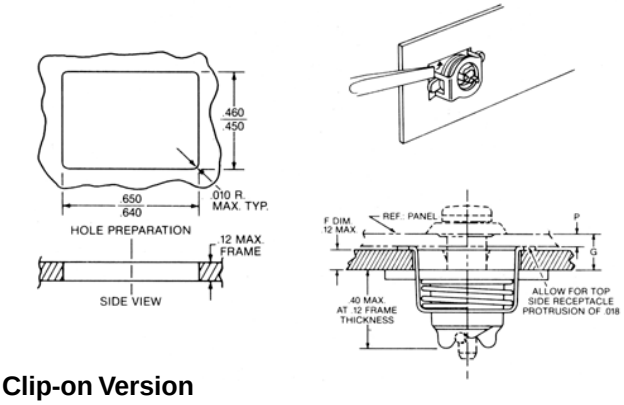
HOLE PREPARATION

Rear Mount Version

Part Number 26R45-1-1AA

No riveting or special tools required.

Rear mounting receptacle snaps in place.

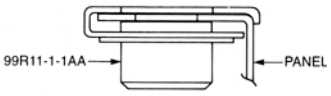


Clip-on Version

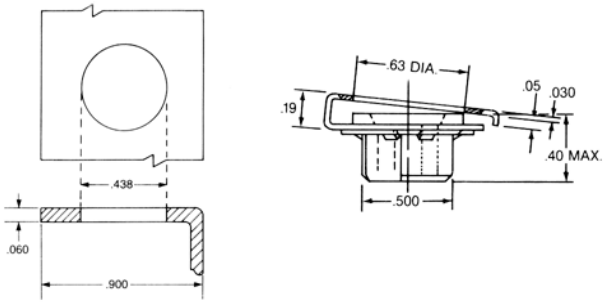
Part Number 99R11-1-1AA

Designed to clip-on .060 thick x .900 wide inner frame. Add .090 to panel thickness used to determine total grip, "G" select stud dash number, then subtract seven dash numbers.

Requires .438 diameter installation hole.

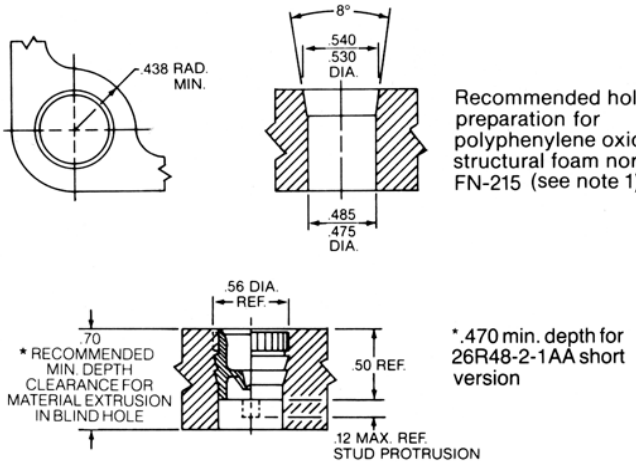


HOLE PREPARATION



Ultrasonically Installed Versions

Part Number 26R48-1-1AA/26R48-2-1AA



Recommended hole preparation for polyphenylene oxide structural foam noryl FN-215 (see note 1)

*.470 min. depth for 26R48-2-1AA short version

Notes:

1. To be used as a guide only. To obtain optimum performance, final hole size should be determined for particular application.
2. See Page A-23 for "G" total thickness for stud length selection. When using 2600-LW or 99W10 type solid ring retainers, a .018 inch gap between panel and frame will occur. Increase "G" total thickness by .018 inch. To eliminate gap, refer to table for options.

To Eliminate Gap	Increase G Thickness
Mold or drill a counterbore into frame, .590 inch min. diameter by .020 inch deep, and install receptacle to this depth.*	Add .020 inch.
Counterbore underside of panel .475 inch min. diameter by .020 inch deep.	No increase required

**Welding horn must be* $\frac{.590}{.560}$ *diameter.*

Retaining Ring Installation

1. To install, place retaining ring on stud with slot aligned over left side of cross pin as shown on figure 1.
2. Snap retaining ring under cross pin using needle nose pliers, then rotate retaining ring 180° until ring is over right side of cross pin as shown on figures 2 and 3.
3. To complete installation, snap retaining ring over the right side of cross pin.
4. Completed installation is shown in figure 4.

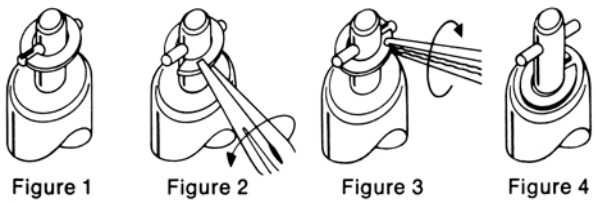
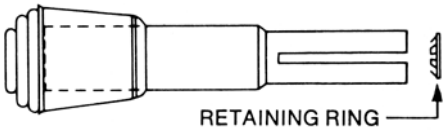


Figure 1 Figure 2 Figure 3 Figure 4

Retaining Ring Installation Tool T98-1

(For use with Solid Rings Only)



A

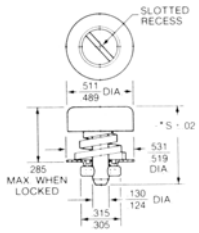
28F Series. Stud Assemblies and Receptacles

Features: Designed for decorative styling.
• Clip-on receptacle provides high assembly rates. Receptacles have low profile for minimum interior projection.

Specifications: Ultimate tensile strength: 300 lbs. Working strength: 200 lbs. Stud grip in increments: .030 inch. For other styles, materials or finishes, contract Camloc Products Division.

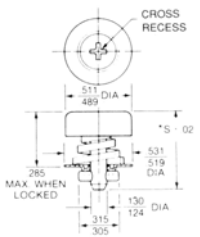
Stud Assemblies

Note: Part numbers shown are basic part numbers only. See ordering information on Page A-36 for required dash numbers.



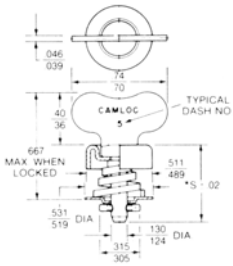
S = .45 + (.03 x Dash No.)

Slotted Recess



S = .45 + (.03 x Dash No.)

Cross Recess



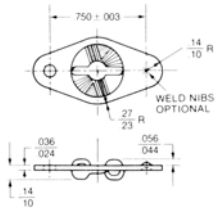
S = .45 + (.03 x Dash No.)

Fixed Wing

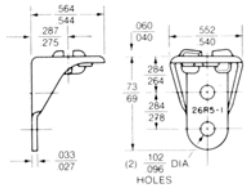
Material	Part No.	Part No.	Part No.
Stainless Steel	28S11-[ ]	---	28S7-[ ]A
Steel (Cadmium Plated)	28S1-[ ]	28S14-[ ]	28S7-[ ]
Steel (Nickel Plated)	28S20-[ ]	28S19-[ ]	---

Maximum Service Temperatures: Stainless Steel-750°F.; Steel (Cadmium Plated)-450°F.; Steel (Nickel Plated)-550°F.

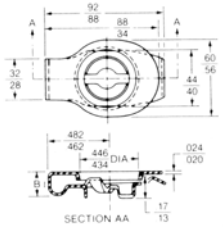
Receptacles



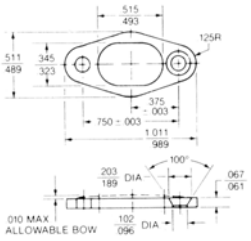
Low Profile, Standard Mounting
Weight per 100 pcs.: 0.23 lbs.



Side Mounting, Lightweight
Weight per 100 pcs.: 0.45 lbs.



Clip-on Type
Weight per 100 pcs.: 0.42 lbs.



Shims
Weight per 100 pcs.: 0.12 lbs.

Material	Part No.	Max. Temp.	Rivet Holes	Part No.	Max. Temp.	Part No.	Max. Temp.	Part No.	Max Temp.	Rivet Holes
Stainless Steel	312-12A	750°F.	Plain .134 .128 dia.	---	---	---	---	---	---	---
	312-12S	750°F.	Plain .102 .096 dia.	---	---	---	---	---	---	---
	312-12WS	750°F.	None (Weld Nibs)	---	---	---	---	---	---	---
Steel (Cadmium Plated)	312-12	450°F.	Plain .102 .096 dia.	26R5-1	450°F.	28R1-1AA* 28R1-2AA**	450°F. 450°F.	---	---	---
Aluminum Alloy (Anodized)	---	---	---	---	---	---	---	26R8-1	350°F.	Plain
	---	---	---	---	---	---	---	26R8-2	350°F.	C'Sunk†

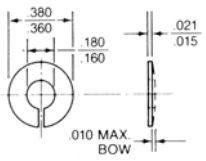
**B Max.=.186*
***B Max.=.201*

†Use with dimpled rivet holes.

Retaining Ring.

Order separately.

See page A-58 for installation

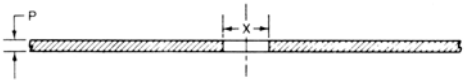


Part No.	Material	Maximum Service Temperature
28S10-1	Stainless Steel	750°F.
28S10-2	Steel (Cadmium Plated)	450°F.

Weight per 100 pcs.: .04 lbs.

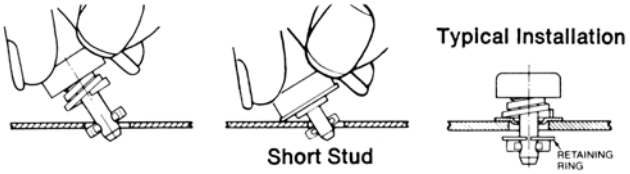
28F Series. Panel Preparation and Installation Data.

Determine panel thickness “P” and form through hole to corresponding “X” diameter.



“P” panel thickness	“X” dia.
Up to .091	.257
.092 and greater	.312

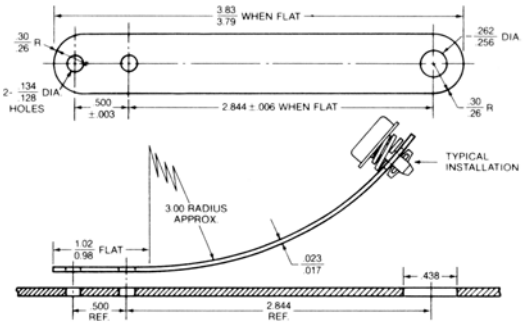
Installing stud into panel:
Tilt stud and insert into panel as shown. It may be necessary to compress spring by pressing stud assembly against panel. When cross pin clears, center stud assembly in mounting hole and release. (To remove stud assembly reverse procedure.)



Note: *Retaining ring is required for all studs used with .312 inch mounting holes. For .257 inch mounting holes, retaining rings may be omitted where: P≥(.030 N)-.100 P=Panel thickness N=Stud length dash number*

Stud Ejector Spring

Provides full retraction of stud assembly to allow opening and closing of equipment without the possibility of jamming or damage.

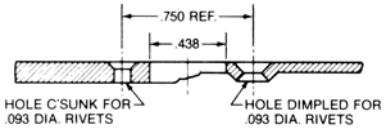


Part No.	Material and Finish	Max. Temp.
2600-E2S	Spring Steel (Cad. Plated)	450°F.

Note: *Add .020 to total “G” thickness when using this part. See page A-36 Weight per 100 pcs.: 1.24 lbs.*

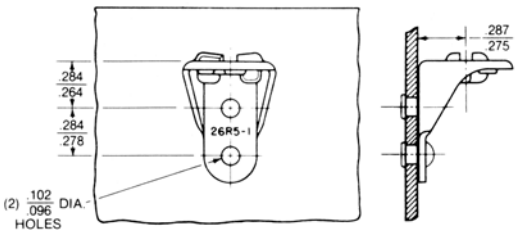
28F Series. Receptacle Installation.

312-12 Series. Standard Mounting

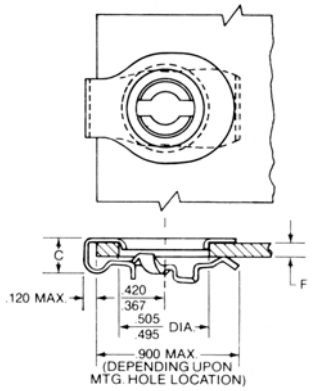


1. Drill #30 (.1285) diameter pilot hole.
2. Drill holes for .093 diameter rivets using drill jig P/N T12.
3. Enlarge pilot hole to .438 diameter using hole saw HS-437.
4. Rivet receptacle in place.

P/N 26R5 Series. Side Mounting Receptacle



28R Series. Clip-on Receptacle



Part No.	F Panel Thickness	C Max.
28R1-1AA	.020-.064	.186
28R1-2AA	.065-.109	.201

Note: *Form .505-.495 mounting hole, then slide receptacle over mounting hole to clip in place.*

28F Series. Ordering Information.

To Select Stud Dash Number.

1. Determine "G" thickness as shown below.

Notes: a) Increase "G" to allow for thickness of paint or other finishes and for the compressed thickness of any gasket.

b) "G" must be increased for the following "special" conditions:

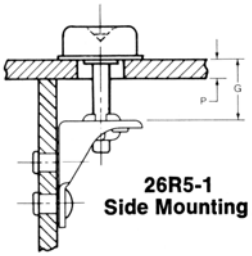
"Special" Condition	Increase "G" Thickness
2600-E2S Ejector Spring installed	Add .020 inch
26R8 shims Installed	Add .067 inch for each shim used

2. Stud dash number varies with receptacle used. This information must be known before proceeding.

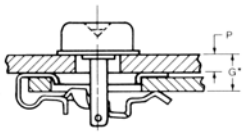
3. Locate "G" total thickness in the table.

4. Then find the corresponding stud dash number in the column designated for the selected receptacle.

Important Note: If the total thickness "G" is very near the top of the thickness range, selection of the next greater dash number is recommended. For "G" thicknesses greater than those tabulated, contact Camloc Products Division.

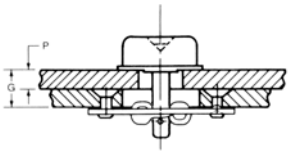


26R5-1 Side Mounting



*(*Allow .024 inch for receptacle protrusion)*

28R Series Clip-on Version



312-12 Series Low Profile

Stud Dash Number Selection			
"G" Total Thickness	Receptacles		
	26R5	28R1	312-12
.029-.059	—	- 3	—
.060-.089	—	- 4	—
.080-.089	-2	—	- 2
.090-.119	- 3	- 5	- 3
.120-.149	- 4	- 6	- 4
.150-.179	- 5	- 7	- 5
.180-.209	- 6	- 8	- 6
.210-.239	- 7	- 9	- 7
.240-.269	- 8	-10	- 8
.270-.299	- 9	-11	- 9
.300-.329	-10	-12	-10
.330-.359	-11	-13	-11
.360-.389	-12	-14	-12
.390-.419	-13	-15	-13
.420-.449	-14	-16	-14
.450-.479	-15	-17	-15
.480-.509	-16	-18	-16
.510-.539	-17	-19	-17
.540-.569	-18	-20	-18
.570-.599	-19	-21	-19
.600-.629	-20	-22	-20
.630-.659	-21	-23	-21
.660-.689	-22	-24	-22
.690-.719	-23	-25	-23
.720-.749	-24	-26	-24
.750-.779	-25	-27	-25
.780-.809	-26	-28	-26
.810-.839	-27	-29	-27
.840-.869	-28	-30	-28
.870-.899	-29	-31	-29
.900-.929	-30	-32	-30
.930-.959	-31	-33	-31
.960-.989	-32	-34	-32
.990-1.019	-33	-35	-33
1.020-1.049	-34	-36	-34
1.050-1.079	-35	-37	-35
1.080-1.109	-36	-38	-36
1.110-1.139	-37	-39	-37
1.140-1.169	-38	-40	-38
1.170-1.199	-39	-41	-39
1.200-1.229	-40	-42	-40
1.230-1.259	-41	-43	-41
1.260-1.289	-42	-44	-42
1.290-1.319	-43	-45	43
1.320-1.349	-44	-46	-44
1.350-1.379	-45	-47	-45
1.380-1.409	-46	-48	-46
1.410-1.439	-47	-49	-47
1.440-1.469	-48	-50	-48
1.470-1.499	-49	-51	-49
1.500-1.529	-50	-52	-50

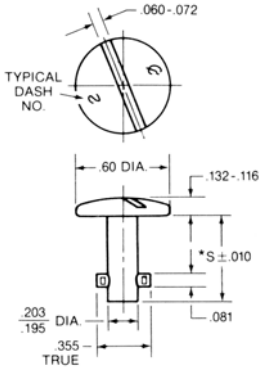
NOTES

50F Series. General Purpose Stud Assemblies and Receptacles

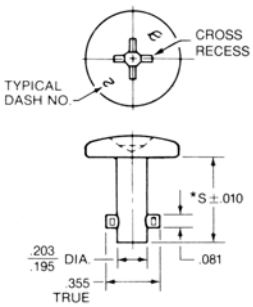
Features: Designed for use in agricultural, industrial, and similar environments where a simplified rugged design is desired. • Studs are retained with a snap-in grommet or with optional retaining ring.

• Receptacles install without rivets or special tools.
• Significantly improves assembly rates to provide lower installed costs.

Note: Part numbers shown are basic part numbers only. See ordering information on Page A-41 for required dash numbers.



Slotted Recess



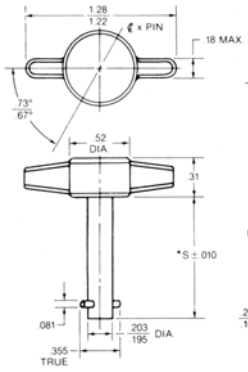
Cross Recess

Material	Part No.	Part No.
Stainless Steel (Passivated)	50S10-[ ]-1BB	50S10-[ ]-4BB
Steel (Zinc Plated, Clear Chromate)	50S10-[ ]-1AA	---

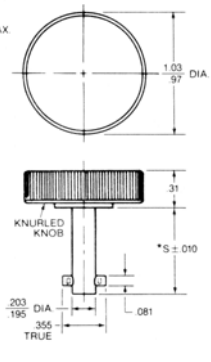
Maximum Service Temperature: 450°F., except when plastic snap-in grommets are used. These styles are limited to 250°F.

**S = .429 + (.024 x Dash No.)*

Plastic Knob Styles



T-Knob

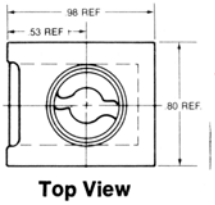


Knurled Knob

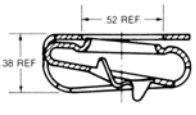
	Basic Part Nos. Maximum Service Temperature: 250°F. Shank Material: Steel (Zinc Plated, Clear Chromate)			
	Black	Red	Grey	Beige
T-Knob	50S10-[ ]-6AC	50S10-[ ]-6AD	50S10-[ ]-6AE	50S10-[ ]-6AF
Knurled Knob	50S10-[ ]-7AC	50S10-[ ]7AD	50S10-[ ]-7AE	---

**S=.429 + (.024 x Dash No.)*

Clip-on Receptacle



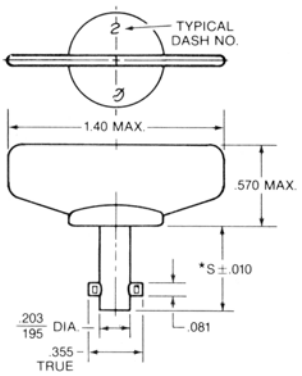
Top View



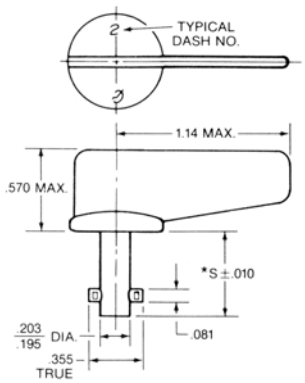
Side View

Part No.	Material/Finish	Weight (per 100 pcs.) (lbs.)	Max Temp.
50R4-1-1-1AA	Steel (Cadmium Plated, Gold Chromate)	1.95	450°F.

QUICK OPERATING 1/4-TURN FASTENERS 50F SERIES



Fixed Wing



Fixed Offset Wing

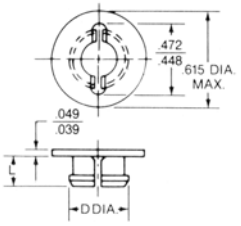
Part No.	Part No.
-	-
50S10-[ ] -2AA	50S10-[ ]-3AA

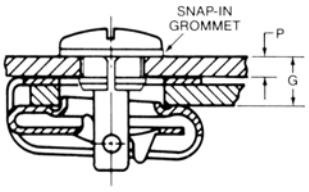
Specifications:

Ultimate Tensile Strength: 200 lbs.
Stud Grip Increments: 0236 inch (0.6 mm)
For optional styles, materials and finishes, contact the Camloc Products Division.

Plastic Snap-In Grommet

Order separately. Use to captivate stud assembly to panel. Eliminate need for retaining ring. Speeds assembly.





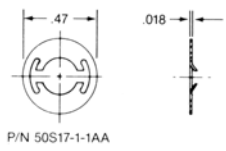
Typical Installation

Part No.	L Ref.	D Dia. Max.	P. Max.	G Min. (see note)	Weight (per 100 pcs.) (lbs.)
50S2-1-1AA	.140	.348	.062	.032	.035
50S12-1-1AA	.195	.390	.112	.094	.040
50S12-2-1AA	.245		.162	.144	
50S12-3-1AA	.295		.212	.194	
50S12-4-1AA	.345		.262	.244	

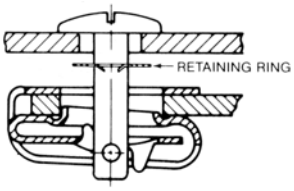
Notes: *1. Grommets will protrude from the back side of panel. Minimum "G" thickness must be observed to prevent grommets from jamming against the receptacle.*
2. Standard grommet color is white.

Retaining Ring

Order separately. Use to captivate stud assembly to panel in lieu of snap-in grommet.



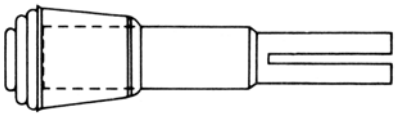
Steel (Cadmium, Gold Chromated)
Weight per 100 pcs.: 0.10 lbs.



Typical Installation

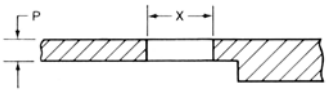
Retaining Ring Installation Tool

P/N T98-1



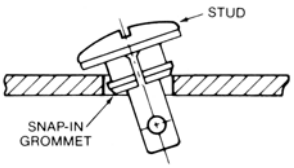
50F Series. Panel Preparation and Installation Data

For Studs used with Snap-in Grommets

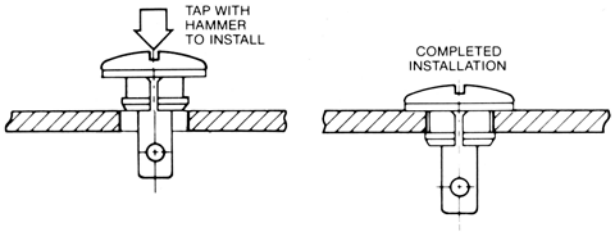


Determine panel thickness “P” and form through hole to corresponding “X” diameter. Panels with thicknesses greater than .262 inch must be back counterbored to a concentric diameter of .438 inch with a maximum remaining material thickness of .262 inch.

P	X
up to .062	.315-.320
.063-.162	.350-.355
.163-.262	.357-.362

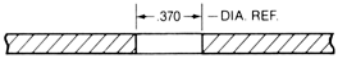


Assemble stud with grommet and insert stud through panel.

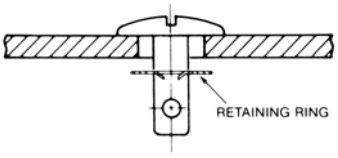


Tap stud with hammer to seat assembly into panel.

For Studs used with Retaining Rings

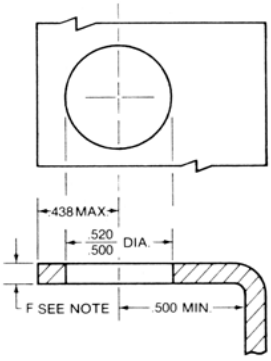


Form through hole to .370 inch diameter.



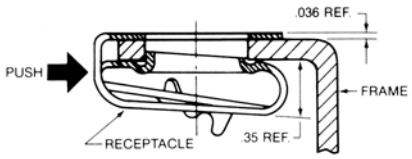
Insert stud through panel and attach retaining ring.

Frame Preparation for Receptacle Installation



Form .500-.520 through hole.

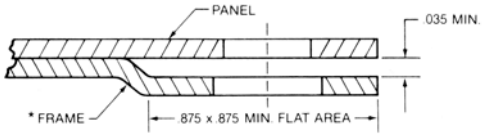
Important Note: Recommended “F” thickness range is .062-.188. The range can be extended to .032 to .219 at the extreme, however, installation problems may be encountered.



Slide receptacle onto frame and locate on through hole.

Recessed Frame

Standard installation (illustrated above) will cause a minimum gap of .035 inch between panel and frame due to receptacle protrusion. To eliminate gap, dimple frame to provide recess as shown.

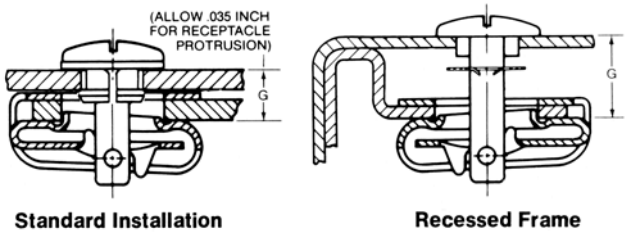


50F Series. Ordering Information/ Stud Dash Number Selection

A

To Select Stud Dash Number:

1. Determine "G" total thickness.
Note: Increase "G" to allow for thickness of paint or other finishes, and for the compressed thickness of any gasket.
2. Locate "G" in the table below.
3. Then find the corresponding stud dash number in the column designated for the selected retention method.



Standard Installation **Recessed Frame**

How to Order:

Example 1.
(For stud assembly using retaining ring)
Study Assembly Used: 50S10-[?] -1AA
"G" Total Thickness = .155 inch
Stud Dash Number From Table = -7
Completed Part Number: 50S10-7-1AA

Example 2.
(For stud assembly using snap-in grommets)
Stud Assembly Used: 50S10-[?]-1AA
"G" Total Thickness = .155 inch
Stud Dash Number From Table = -9
Completed Part Number: 50S10-9-1AA (plus snap-in grommet selected)

Stud Dash Number Selection		
*G	Dash Number For Studs Used With Retaining Rings	Dash Numbers For Studs Used With Grommets
.055-.078	- 3	- 5
.079-.101	- 4	- 6
.102-.125	- 5	- 7
.126-.149	- 6	- 8
.150-.172	- 7	- 9
.173-.196	- 8	-10
.197-.220	- 9	-11
.221-.243	-10	-12
.244-.267	-11	-13
.268-.291	-12	-14

***Notes:** 1. If "G" total thickness is very near the top of the thickness range, selection of the next greater dash number is recommended. For "G" thickness greater than those tabulated, contact Camloc Products Division.*
2. Grip ranges are based on 0.6 mm increments converted to nearest thousandth of an inch.

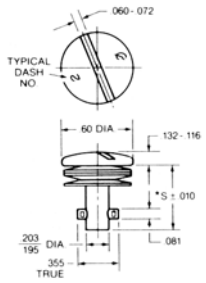
50F Series. Extra Heavy-Duty Stud Assemblies and Receptacles

Features: Rugged simplified design. * Particularly suited for use in adverse industrial and agricultural environments. * Utilizes belleville washers for high preloads and enhanced vibration resistance.

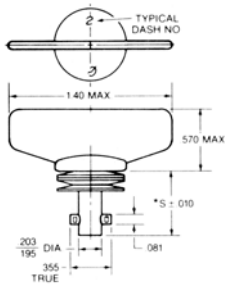
Specifications:

Ultimate Tensile Strength: 800 lbs.
Stud Grip Increments: .0236 inch (0.6 mm).

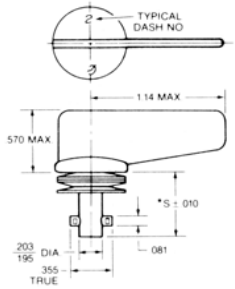
Note: Part numbers shown are basic part numbers only. See ordering information on opposite page for required dash numbers.



Slotted Recess



Fixed Wing



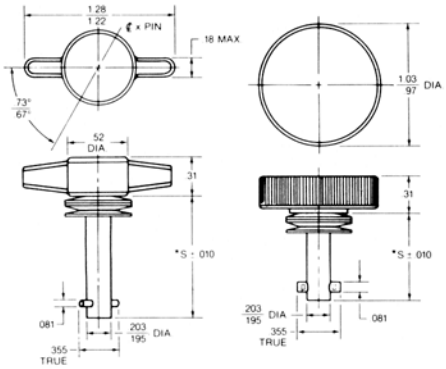
Offset Fixed Wing

Material	Part No.	Part No.	Part No.
Steel Stud (Zinc Plated, Clear Chromate) Washer (Cadmium Plated, Clear Chromate)	50S8-[ ] -1AA	50S8-[ ]-2AA	50S8-[ ]-3AA

Maximum Service Temperature:

**S = .429 + (.0236 x Dash No.)*

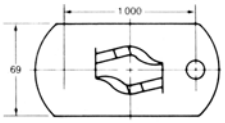
Plastic Knob Styles



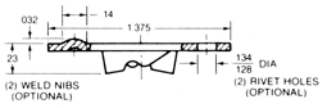
	Basic Part Nos. Shank Material: Steel (Zinc Plated, Clear Chromate) Washer Material: Steel (Cadmium Plated, Clear Chromate)			
	Black	Red	Grey	Beige
T-Knob	50S8-[ ]-6AC	50S8-[ ]-6 AD	50S8-[ ]-6AE	50S8-[ ]-6 AF
Knurled Knob	50S8-[ ]-AC	50S8-[ ]-7AD	50S8-[ ]-7AE	-

**S =.429 + (.0236 x Dash No.)*

Receptacles



Bottom View

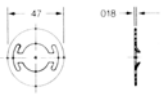


Side View

Material	Part No. (with rivet holes)	Part No. (with weld nibs)
Steel (Zinc Plated)	50R3-1-AA	-
Steel (Oil Coated)	-	50R3-1-2AB

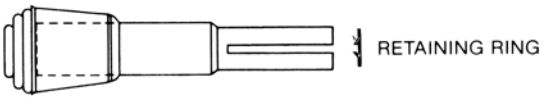
Weight per 100 pcs.: 1.43 lbs.

Snap-on Retaining Ring



Part No.	Material	Weight (per 100 pcs.) (lbs.)
50S17-1-1AA	Steel (Cadmium Plated, Gold Chromate)	0.10

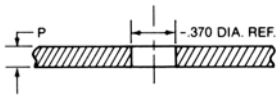
Retaining Ring Installation Tool T98-1



A

Panel Preparation and Installation Data

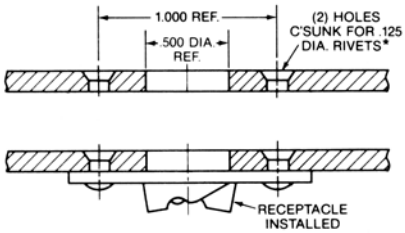
Panel Preparation for Stud Installation.



Form .370 Dia. through hole. Insert stud through panel and attach retaining ring.

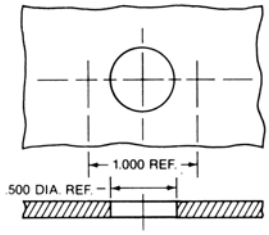
Panel Preparation for Receptacle Installation.

50R3-1-1AA Standard Mount



Drilled and countersunk rivet holes
**Rivets Not Furnished.*

50R3-1-2AB Weld Mount

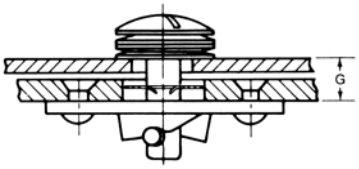


Form .500 inch through hole.
Locate receptacle on center and spot weld in place.

Ordering Information/ Stud Dash Number Selection

To Select Stud Dash Number.

1. Determine "G" thickness.
Note: Increase "G" to allow for thickness of paint or other finishes and for the compressed thickness of any gasket.
2. Locate "G" total thickness from the table below.
3. Then find the corresponding stud dash number.



How to Order:

Study Assembly Used: 50SB-[?]-1AA
"G" Total Thickness = .246 inch
Stud Dash Number From Table = -10
Complete Part Number: 50S8-10-1AA

Stud Dash Number Selection	
"G" Total Thickness	Dash Number
.020-.043	- 1
.044-.066	- 2
.067-.090	- 3
.091-.113	- 4
.114-.137	- 5
.138-.161	- 6
.162-.184	- 7
.185-.208	- 8
.209-.231	- 9
.232-.255	- 10

Important Note: *If the total thickness "G" is very near the top of the thickness range, selection of the next greater dash number is recommended. For "G" thickness longer than those tabulated, contact Camloc. Products Division.*

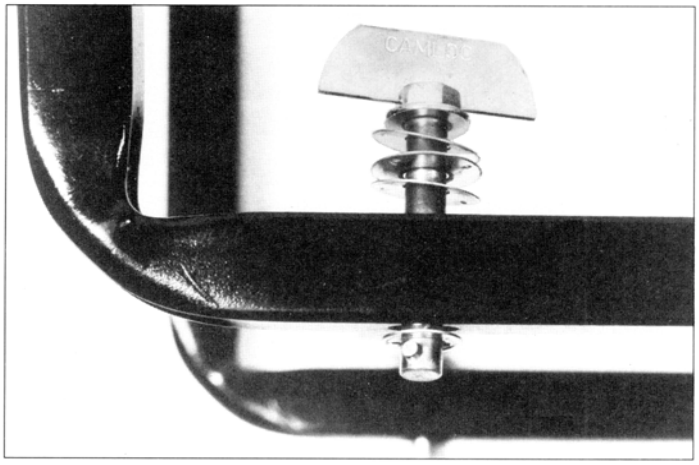
Fairchild Fasteners

Extra Heavy Duty Fastener Enhances Passenger Safety in Vans

(Excerpts from an article in RV News)
(See 91F Series in this catalog.)

Motor vehicle safety standard 207 squarely addresses the significance of adequately anchored seating in multi-passenger vehicles. A seat that tears loose on impact adds to the hazards that are inherent in crash situations. It must remain in place, affording protection to the occupant rather than become an additional source of danger.

Standard 207 sets rigid strength requirements for the anchorage of occupant seats which demand fasteners of high strength and positive clamping force. A recent fastener design by the Camloc Products Division, designated 91F, was specifically created to meet the requirements affecting van seat hold-down. Here is a brief description of a test recently conducted by an independent test organization on a three-passenger sofa lounge seat.



***91F Series** centered, fixed-wing 1/4 turn fastener for van seat hold-down. Shown assembled to seat rail with 3 Belleville spring washer and retaining ring.*

Test Specimen:

• A typical three-passenger sofa lounge fastened with four Camloc 1/4 turn heavy duty fasteners (91F Series, Pg. A-64-A-66) designed to anchor in equally heavy duty receptacles. The seat assembly was made of 9/16" plywood and two fasteners were located on each leg 1 1/2" inboard of the inner surface of the vertical members of the leg assembly. The weight of the upholstered seat was established at 65 pounds and the center of gravity as being situated 12.64" above the floor. Each leg of the seat assembly was rigidly attached to a formed sheet metal plate on which the receptacles had been installed. The steel plates were bolted to structural steel channels and the whole assembly clamped to a non-yielding test stand.

Specification Standard:

• In any position to which the seat can be adjusted it must be able to withstand 20 times its weight applied in a forward or rearward longitudinal direction. It must also be able to withstand a horizontal force in a rearward direction at the top of the seat back that produces 6600 inch-pounds moment about the “seating reference point”.

Center of gravity loads were applied using a hydraulic ram which pulls with an effective piston area of 6,075 square inches. The seat was tested with loading in the both forward and rearward directions.

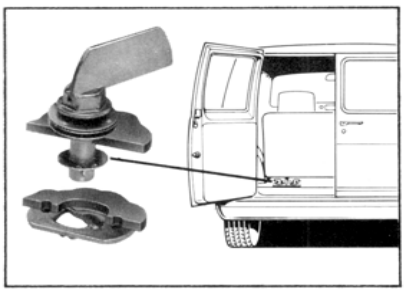
Forward CG Load (20w)	330#
Rearward CG Load (20w)	1320#
Moment Load	10,080#

The Camloc 91F fasteners successfully passed all the tests involved. In the ultimate test to failure, the hydraulic ram pull-bar fractured but the studs remained engaged and looked fine to the very end of the test.

How They Operate:

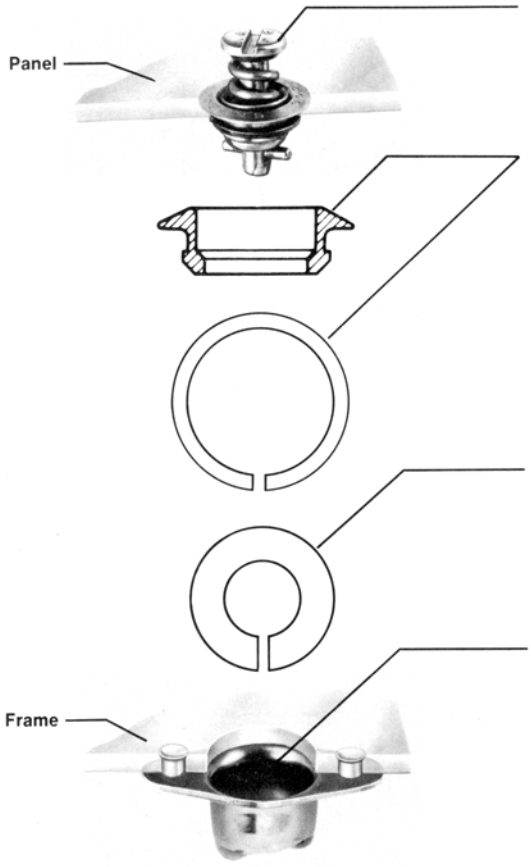
Attachment or removal of the seat support assembly is almost instantaneous. All it takes is a quarter turn (90 degrees) to secure or release the locking pin from the receptacle. Proper sizing of the stud length allows it to pass through the carpet, pad, plywood and steel floor. The clamping force of the fastener is more than adequate to hold the seat firmly preventing movement on impact.

These heavy-duty fasteners are recommended for use on all types of multi-seat vehicles during original construction or for van conversions.



QUICK OPERATING 1/4-TURN FASTENERS 4002 SERIES

The 4002 Series fasteners utilize a variety of grommets designated to reinforce the panel for added strength. Certain 4002 series 1/4-turn fasteners are qualified to MIL-F-5591* specifications for sizes 5 and 7.

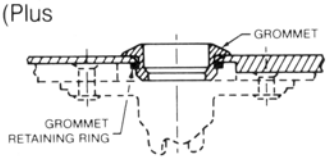


Stud

Available in six head styles.

Grommet and Grommet Retaining Ring

Must be installed in top of panel (Plus Flush Version shown for Ring Retained Grommets). Flare Retained Grommets are also available which do not use a Retaining Ring.



Grommet and Grommet Retaining Ring shown installed in panel

Stud Retaining Ring

Used for long studs (-16 or greater). Shorter studs (-15 and under) are self-captivating and do not require retaining rings.

Receptacle

Available in six styles.

Specifications:

Ultimate tensile strength: 1050 lbs.
Working strength: 700 lbs.
Stud grip increments: .030 inch.
Contact factory for strengths for stainless steel stud assemblies.

To Order a Complete Fastening System:

1. Select receptacle to be used. Stud part numbers vary depending upon the specific receptacle used.

2. Select style of stud to be used, then combine thicknesses of panel and frame to determine total thickness, “G”. Find the specific stud part number adjacent to “G” Total Thickness column with respect to receptacle selected.

3. If you are ordering long studs (-16 or greater), you will need to order a Stud Retaining Ring. Shorter studs (-15 and under) are self-captivating and do not require retaining rings.

4. A Grommet is required for all 4002 studs except Part Number 40S128. A choice of Flared or Retaining Ring Retained styles are available.

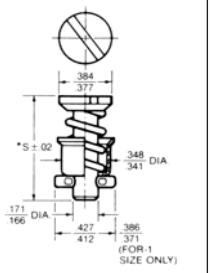
*Meets the design, physical and performance requirements of MIL-F-5591. However, full mechanical properties testing may not be performed on each production lot.

Section Contents

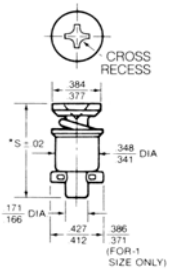
A

4002 Series. Stud Assemblies and Receptacles

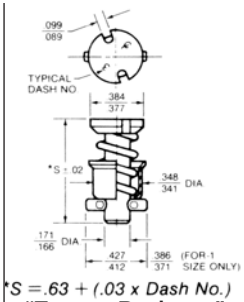
Note: Part numbers shown are basic part numbers only. See ordering information on Page A-62 for required dash numbers.



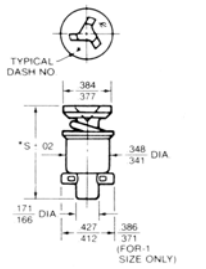
*S = .63 + (.03 x Dash No.)
Slotted Recess



*S = .62 + (.03 x Dash No.)
Cross Recess



*S = .63 + (.03 x Dash No.)
"Tamper Resistant" Recess



*S = .62 + (.03 x Dash No.)
Recess Style per NAS4000

Material	Part No.	Part No.	Part No.	Part No.	
Stainless Steel	4002-[ ]S	4055-[ ]S	—	40S119-[ ]-3AA	
Stainless Steel High Strength	40S41-[ ]S	—	40S80-[ ]B		—
Stainless Steel (Spring: Inconel "X")	40S45-[ ]	—	—		—
Steel (Cadmium Plated, Yellow Chromate)	4002-[ ]	40S5-[ ]	—	40S119-[ ]-3BB	
Steel (Zinc Plated, Clear Chromate)	—	40S5-[ ]C	40S80-[ ]C		—
Steel (Nickel Plated)	40S79-[ ]	—	—		—
Steel (Head: Chrome Plated)	—	—	—		—
Steel (Zinc Plated, Yellow Chromate)	—	40S5-[ ]D	40S80-[ ]E		—

Maximum Service Temperature: Stainless Steel with inconel "X" Spring—700°F.; Stainless Steel—550°F.; Sealed Stud Assembly, P/N 40S37-[ ]—130°F.; all others 450°F.

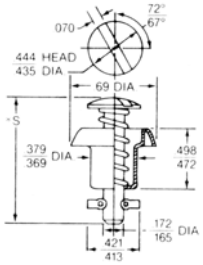
***Note:** 4002 Series stud assemblies seat nominally flush with mating grommet. For Wing, Bail Handle or Knurled Knob versions, top side protrusion is nominally equal to mating grommet "B" dimension plus the height of the wing, handle or knob.*

Specifications:

This series utilizes a variety of grommets which must be installed into the top panel. They significantly enhance the system's performance.

Ultimate tensile strength: 1050 lbs.
Working strength: 700 lbs.
Stud grip increments: .030 inch.
Contact factory for strengths for stainless steel stud assemblies.
For other styles, materials, or finishes, please contact Camloc Products Division.

Grommetless Stud

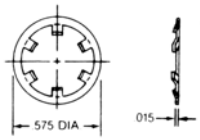


S=Protruding Slotted Head Part No. 40S128-( )-1AA

40S128
Protruding Head

NOTE: This stud does not require a grommet, but must be used with retaining ring part number 40S142-1-1AA.

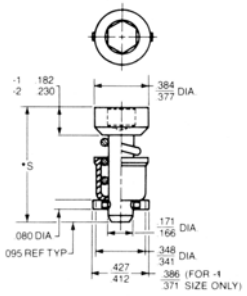
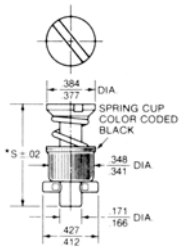
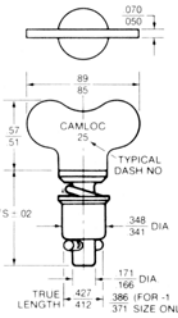
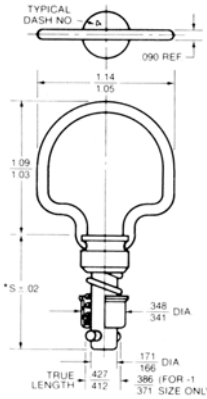
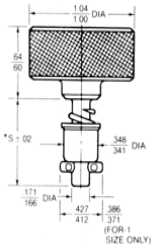
Retaining Ring



Part Number
40S142-1-1AA

CRES Spring Steel (Passivated)

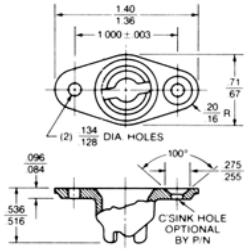
QUICK OPERATING 1/4-TURN FASTENERS 4002 SERIES

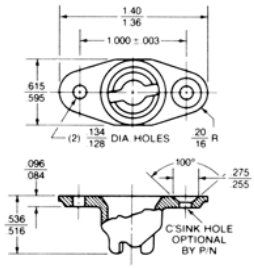
	 *S = .71 + (.03 × Dash No.) **Hex Recess**		 *S = .63 + (.03 x Dash No.) **Sealed**	 *S = .63 + (.03 x Dash No.) **Fixed Wing**	 *S = .81 + (.03 x Dash No.) **Folding Bail Handle**	 *S = .53 + (.03 x Dash No.) **Knurled Knob**
	4mm Part No.	6mm Part No.	Part No.	Part No.	Part No.	Part No.
—		—	—	4002-[ ]SW	—	40S83-[ ]
—		—	—	—	—	—
—		—	—	—	—	—
—		—	40S37-[ ]†	4002-[ ]W	40S47-[ ]	40S83-[ ]A
—		—	—	—	—	—
—		—	—	40S77-[ ]	40S47-[ ]A	—
—		—	—	—	—	40S83-[ ]B
	40S122-[ ]-1AA	40S122-[ ]-2AA	—	—	—	—

† *Not available with dash numbers smaller than #4.*
Refer to installation instructions on page A-59.

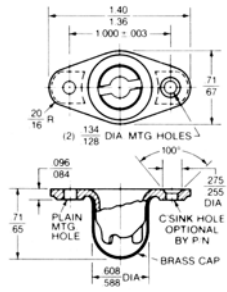
4002 Series. Receptacles

Standard Mounting





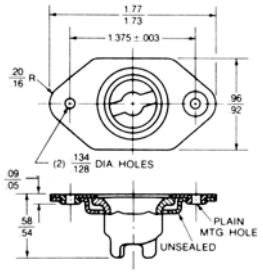
Narrow Width



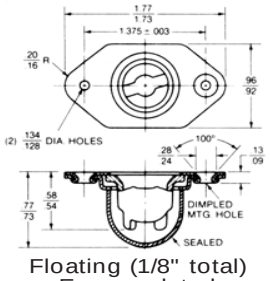
Encapsulated
See Note 1 for sealing

Material	Part No.	Rivet Holes	Weight (per 100 pcs.) (lbs.)	Part No.	Rivet Holes	Weight (per 100 pcs.) (lbs.)	Part No.	Rivet Holes	Weight (per 100 pcs.) (lbs.)
Stainless Steel	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—
Stainless Steel (Red Dye)	214-16S	Plain	1.76	—	—	—	—	—	—
	214-16SD	C'Sunk	1.68	—	—	—	—	—	—
Steel (Cadmium Plated)	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—
Silicon Bronze (Cadmium Plated)	214-16	Plain	1.85	214-16N	Plain	1.80	40R12-1	Plain	2.45
	214-16D	C'Sunk	1.77	214-16ND	C'Sunk	1.72	40R12-2	C'Sunk	2.37
Zinc (Zinc Plated)	214-16E	Plain	1.44	—	—	—	—	—	—
Steel (Cad. Plated) Receptacle Element: Silicon Bronze (Cad. Plated)	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—
Steel (Cad. Plated) Receptacle Element: Zinc (Zinc Plated)	—	—	—	—	—	—	—	—	—

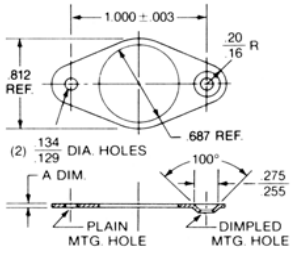
Standard Mounting Continued



Floating (1/8" total)



Floating (1/8" total)
Encapsulated
See Note 1 for sealing



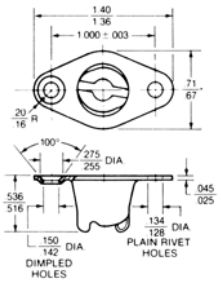
Shims

Material	Part No.	Rivet Holes	Weight (per 100 pcs.) (lbs.)	Part No.	Rivet Holes	Weight (per 100 pcs.) (lbs.)	Part No.	A Dim.	Rivet Holes	Weight (per 100 pcs.) (lbs.)
Stainless Steel	244-22S	Plain	2.77	---	---	---	---	---	---	---
Steel (Cad. Plated) Receptacle Element: Silicon Bronze (Cad. Plated)	244-22	Plain	2.99	244-22C	Plain	3.98	---	---	---	---
Steel (Cad. Plated) Receptacle Element: Zinc (Zinc Plated)	244-22E	Plain	2.61	244-22EC	Plain	3.60	---	---	---	---
Aluminum	---	---	---	---	---	---	40R8-16-1A	.019-.013	Plain	0.06
	---	---	---	---	---	---	40R8-16-1	.033-.027	Plain	0.11
	---	---	---	---	---	---	40R8-16-2	.033-.027	Dimpled	0.11

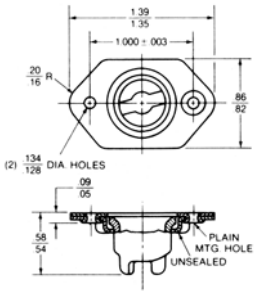
Notes: 1. *Use to seal against leakage of air, dust or water. Install with suitable sealing compound such as 3M #EC-847 or adhesive silicon sealant.*
2. *Receptacles and Shims with countersunk holes are for sure with dimpled panels.*

Maximum Service Temperatures for Standard Mounting Types: Stainless Steel—700°F.; Steel (Cadmium Plated) and Silicon Bronze (Cadmium Plated)—450°F.; Silicon Bronze with Brass Cap and Steel with Zinc Receptacle Element—300°F.; Aluminum—350°F.

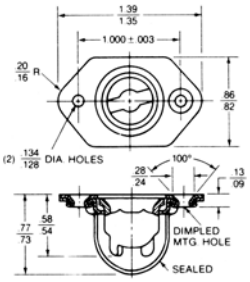
QUICK OPERATING 1/4-TURN FASTENERS 4002 SERIES



Lightweight



Floating (1/16" total)



Floating (1/16" total)
Encapsulated
See Note 1 for sealing

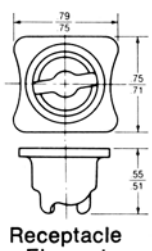
Part No.	Rivet Holes	Weight (per 100 pcs.) (lbs.)	Part No.	Rivet Holes	Weight (per 100 pcs.) (lbs.)	Part No.	Rivet Holes	Weight (per 100 pcs.) (lbs.)
40R17-1	Plain	1.20	244-16S	Plain	2.57	244-16SC	Plain	3.31
40R17-2	Dimpled	1.20	244-16SD	Dimpled	2.59	244-16SCD	Dimpled	3.33
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
40R17-5	Plain	1.19	—	—	—	—	—	—
40R17-6	Dimpled	1.19	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	244-16	Plain	2.60	244-16C	Plain	3.33
—	—	—	244-16D	Dimpled	2.62	244-16CD	Dimpled	3.35
—	—	—	244-16E	Plain	2.24	—	—	—

2-Piece Floating Receptacles/Spotweld Attachment

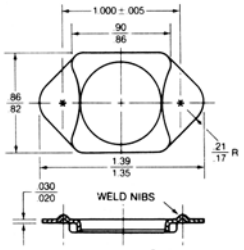
These receptacles are designed to be attached by spotwelding. Separate cage and receptacle element allow smaller envelopes and significant weight savings over conventional designs. Choose from versions within 1/16 inch or 1/8 inch total float.

Order receptacle element and cage separately.

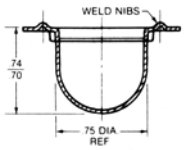
For 1/16 inch Total Float



Receptacle Element

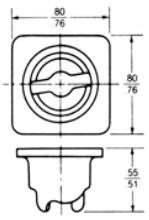


Standard Cage

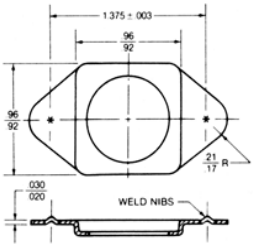


Encapsulated Cage

For 1/8 inch Total Float



Receptacle Element



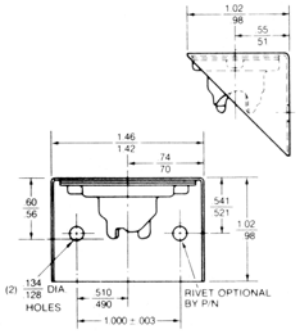
Cage

Material	Receptacle Element		Cages				Receptacle Element		Cage	
	Part No.	Weight*	Standard		Encapsulated		Part No.	Weight *	Part No.	Weight*
			Part No.	Weight *	Part No.	Weight *				
Steel (Cadmium Plated)	---	---	756W	0.51	757W	1.43	---	---	706W	0.70
Silicon Bronze (Cadmium Plated)	751	1.74	---	---	---	---	701	1.65	---	---
Zinc (Zinc Plated)	751D	1.36	---	---	---	---	701E	1.29	---	---

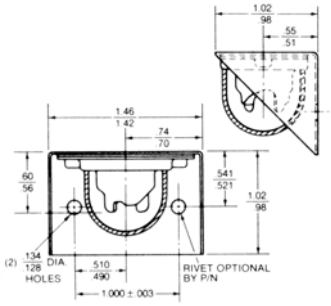
**Weights shown are in lbs. per 100 pcs.*

4002 Series. Receptacles continued

Side Mounting



Floating (1/16" total)



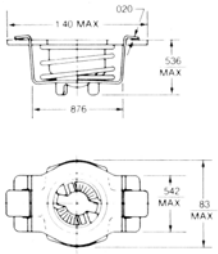
Floating (1/16" total) Encapsulated
See Note 1 for sealing

Material	No.	Rivet Holes	Weight (per 100 pcs.) (lbs.)	Part No.	Rivet Holes	Weight (per 100 pcs.) (lbs.)
Steel (Cad. Plated) Receptacle Element: Silicon Bronze (Cad. Plated)	244-16B-R	Plain	4.80	244-16BC-R	Plain	5.84
	244-16B	None (Wed Type)	4.84	244-16BC	None (Weld Type)	5.80

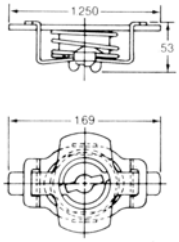
Notes: *1. Use to seal against leakage of air, dust or water. Install with suitable sealing compound such as 3M #EC-847 or adhesive silicon sealant.*

2. Maximum Service Temperature: 450°F.

Clip-in



Bottom View
Provides 1/8" Float



Bottom View

Provides ¼" Float

Material	Part No.	Rivet Holes	Part No.	Rivet Holes
Steel & Zinc Alloy (Zinc Plated)	40R39-1-1AA	None	–	–
Steel (Cad. Plated) Receptacle Element: Silicon Bronze (Cadmium Plated)	–	–	40R44-1-1AA	None

Maximum Service Temperature: 300°F.

4002 Series. Grommets

4002 Series stud assemblies must be used in conjunction with one of the grommets shown here.

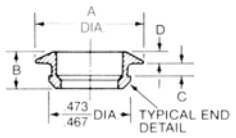
Both flush mounting and plus flush grommets are available with either retailing ring or flare retention.

A

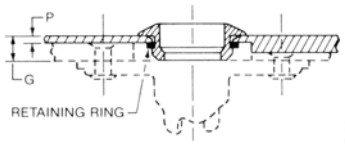
Retaining Ring Retailed

Plus Flush Grommets

Ring retained grommets are easily installed without the need for extensive special tooling.



Plus Flush Version

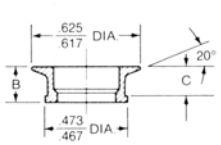


Typical Installation
(for detail see Page A-54).

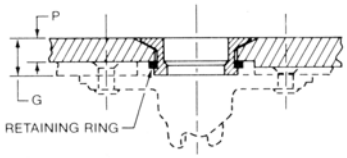
Part No.	P Max. Thickness	Material	A	B	C	D	G Min. (Note 1)	Weight (per 100 pcs.) (lbs.)
4002-N2S	.025	Stainless Steel (Cadmium Plated)	.625 .617	.201 .193	.082 .074	.069 .063	.053	0.40
4002-N2		Steel (Cadmium Plated)						0.39
4002-NS	.065	Stainless Steel	.625 .617	.201 .193	.122 .114	.029 .023	.091	0.31
4002-N		Steel (Cadmium Plated)						0.30
40G6-2		Alloy Stee (Cadmium Plated, Olive Drab)						0.30
4002-0S	.094	Stainless Steel	.625 .617	.202 .192	.157 .137	.029 .023	.116	0.34
4002-0		Steel (Cadmium Plated)						0.33
40G6-1		Alloy Steel (Cadmium Plated, Olive Drab)						0.33
4002-N3	.128	Steel (Cadmium Plated)	.876 .867	.252 .244	.128 .120	.054 .048	.150	0.60

Retaining Ring Retained

Flush Mounting Grommets (Standard Series)



Flush Mounting Version



Typical Installation
(for detail see Page A-54).

Part No.	P Max. Thickness		Material	B	C	G* Min. (Note 1)	Weight (per 100 pcs.) (lbs.)
	Std. Panel	Dimpled Panel					
4002-GS	.074	.064	Stainless Steel	.191 .183	.132 .124	.090	0.31
4002-G			Steel (Cadmium Plated)				0.30
40G5			Alloy Steel (Cadmium Plated, Olive Drab)				0.30
4002-HS	.117	.086	Stainless Steel	.201 .193	.173 .167	.150	0.34
4002-H			Steel (Cadmium Plated)				0.33
40G10			Alloy Steel (Cadmium Plated, Olive Drab)				0.33

Notes: *(Applies to both Plus Flush and Flush Mounting Versions above.)*

**1. Grommets will protrude from the back side of panel. Minimum total thickness "G" must be observed to prevent grommets from jamming against the receptacle. (Under certain conditions "G" minimum may be reduced. See Note 3 on Page A-62.*

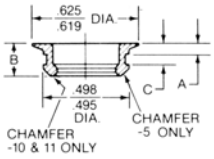
2. Panels with thicknesses greater than "P" Max. may be back counterbored.

3. Maximum Service Temperatures: Stainless — 700°F.: Steel — 450°F.

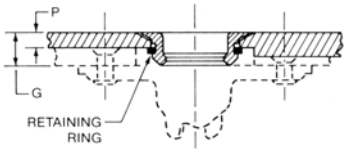
4002 Series. Grommets

Retaining Ring Retained

Flush Mounting Grommets. (High Shear Series)



High Shear Flush Mounting



Typical Installation
(for detail see Page A-54).

Maximum Service Temperature: — 450°F.

Part No.	Material	P Max.	G* Min.	Dimensions			Weight (per 100 pcs.) (lbs.)
				A	B	C	
40G1-5	Alloy Steel (Cadmium Plated)	.065	.120	.063-.066	.185-.189	.129-.132	.37
40G1-8		.092	.150	.090-.093	.185-.189	.156-.159	.41
40G1-10		.113	.175	.111-.114	.215-.218	.177-.180	.50
40G1-11		.128	.175	.126-.129	.215-.218	.192-.195	.50

Important Notes:

**1. Grommets will protrude from the back side of panel. Minimum total thickness "G" must be observed to prevent grommets from jamming against the receptacle. (Under certain conditions "G" minimum may be reduced. See Note 3 on Page A-62.)*

2. For maximum shear capability, receptacle mounting hole in substructure may be reduced to .578 inch. This hole size provides no accommodation for misalignment.

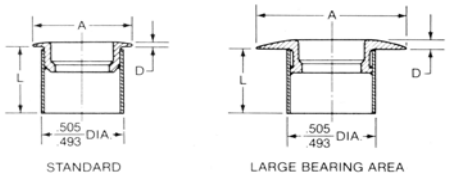
Flare Retained

Flush and Plus Flush Grommets

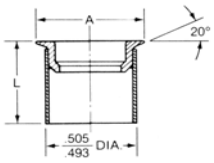
Flare retained grommets will accommodate relatively thick panels often eliminating the need for back counterboring. Flared grommets should also be specified when axial grommet to movement must be restricted.

Note: *Part numbers shown are basic part numbers only. See Date Table indicated below for "P" panel thickness, "L" dimension and required grommet length dash number.*

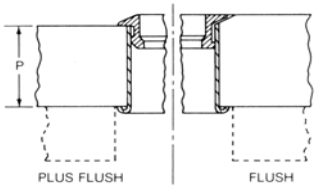
Plus Flush Series



Flush Series



Typical Installation



Series	Part No.	Material	A. dia	D	Data Tables: Look up "P" and "L" dimensions, plus grommet length dash number, from the data table indicated below. (See next page)
Plus Flush, Standard	40G16-[ ]	Alloy Steel (Cadmium Plated)	.625 / .617	.049 / .043	#1
	40G16-[ ]S	Stainless Steel		.049 / .043	#1
	4002-P3-[ ]	Steel (Cadmium Plated)		.032 / .025	#3
	40G16-[ ]-1	Alloy Steel (Nickel Plated)		.049 / .043	#1
	40G16-[ ]-2	Alloy Steel (Cadmium Plated, Clear Chromate)		.049 / .043	#1
Plus Flush, Large Bearing Area	4002-P4-[ ]A	Stainless Steel	.876 / .867	.061 / .041	#3
	4002-P4-[ ]	Steel (Cadmium Plated)			#3
	4002-P4-[ ]B	Steel (Nickel Plated)			#3
Flush	40G15-[ ]S	Stainless Steel	.625 / .617	N/A	#2
	4002-P2-[ ]	Steel (Cadmium Plated)			#3
	40G15-[ ]	Alloy Steel (Cadmium Plated)			#2

Notes: *1. Maximum Service Temperature: Stainless Steel — 700°f.; Steel (Cadmium Plated) — 450°F.; Steel (Nickel Plated) — 550°F.*

2. For weighs see Page A-63.

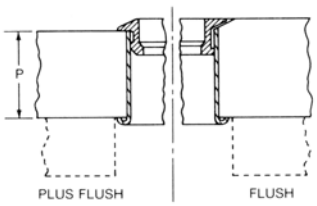
4002 Series. Grommets (continued)

Data Tables for Flared Retained Grommets.

("P", "L" and Grommet Dash Numbers)

To Select Grommet Dash Number

1. Determine "P" panel thickness.
2. Locate "P" thickness in the appropriate table below.
3. Find the corresponding dash number to the right.



Typical Installation
(for detail See Page A-57).

DATA TABLE 1		
P Panel Thickness	L	Grommet Length Dash Number
.040-.069	.109-.116	-040
.070-.099	.142-.149	-070
.100-.129	.172-.179	-100
.130-.159	.202-.209	-130
.160-.189	.232-.239	-160
.190-.219	.262-.269	-190

DATA TABLE 2		
P Panel Thickness	L	Grommet Length Dash Number
.040-.069	.155-.166	-140
.070-.099	.145-.156	-070
.100-.129	.165-.176	-100
.130-.159	.193-.204	-130
.160-.189	.220-.231	-160
.190-.219	.250-.261	-190

Notes: *1. For longer lengths contact Camloc Products Division.*

2. Data tables are applicable to specific part numbers. Select the correct table as indicated on Page A-52.

See Grommet Weights on Page A-63.

DATA TABLE 3		
P Panel Thickness	L	Grommet Length Dash Number
.156-.219	.266-.296	-187
.220-.281	.328-.358	-250
.282-.343	.391-.421	-312
.344-.407	.453-.483	-375
.368-.432	.478-.508	-400
.405-.469	.516-.546	-437
.468-.532	.587-.608	-500
.593-.657	.703-.733	-625
.718-.782	.828-.858	-750
.780-.844	.891-.921	-812
.843-.907	.953-.983	-875
.968-1.032	1.078-1.108	-1000
1.030-1.094	1.141-1.171	-1062
1.093-1.157	1.203-1.233	-1125
1.218-1.282	1.328-1.358	-1250
1.343-1.407	1.453-1.433	-1375
1.468-1.532	1.578-1.608	-1500

How to Order:

Example:
"P" thickness = .125 inch.
Grommet selected: 40G15-[ ]S
From data above, Table #2 applies.
Grommet Dash Number selected from Table #2: -100.
Complete part number: 40G15-100S.

4002 Series. Panel Preparation and Installation Data

(For Ring Retained Grommets)

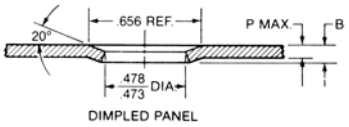
Plus Flush Grommets

Drill #30 (.1285) pilot hole. Enlarge pilot hole to .478-.473 diameter with hole saw HS-471. "P" maximum panel thickness varies with grommet selected. Please see Page A-51 for tabulation.

Panels with thicknesses greater than "P" maximum must be back counterbored to a concentric .688 inch diameter with a remaining material thickness not exceeding "P" maximum.

Note: *Hole saws and counterboring tools are available as a convenience in selected sizes. Please see Page A-55.*

Flush Mounting Grommets



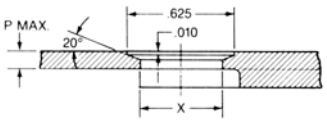
DIMPLED PANEL

P Max.	B Max.	Hole Saw	Dimpling Tool Set* (order both P/Ns)
.064	.074	HS-471	4G200M-[ ]
.086	.117		4G200F-[ ]

** See Next page for dimpling tool ordering information.*

Dimpled Panel Preparation for panel thicknesses "P" up to .086 inch. Drill #30 (.1285) pilot hole. Enlarge pilot hole to .478-.473 diameter with hole saw HS-471. Then dimple using tools specified in the table above. Spot face back side of panel if required to meet "B" maximum.

Note: When using panels constructed of ductile materials, see alternate dimpling method.



DRILLED PANEL

For panel thickness "P" large than .086 inch, drill #30 pilot hole. Enlarge pilot hole using hole saw specified below to X diameter. C'Sink using tool specified.

Grommet	X Dia.	Hole Saw	C'Sink Tool
40G1 High shear version only	.500 Min.	N/A	4GC-500 or 4GC-1-500*
All other flush mounting ring retained versions	.478 .473	HS-471	4GC or 4GC-1-470*

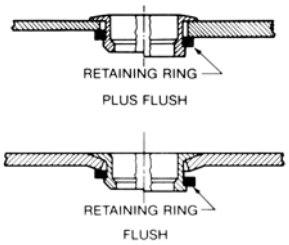
** Supplied with optional 1/4-28-UNF-2A Thread*

"P" maximum panel thickness varies with grommet selected. Please see Pages A-51 and A-52. Panels with thicknesses greater than "P" maximum must be back counterbored to a concentric .688 inch diameter with a remaining material thickness not exceeding "P" maximum.

Note: *Hole saws, counterboring tools and countersinks are available as a convenience in selected sizes (see alternative dimple method).*

Installing Grommet

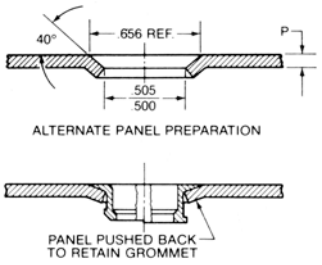
Insert grommet into mounting hole and captivate with retaining ring. Please see Page A-56 for more information.



Typical Installations

Alternate Dimpling Method.

"Thin" panels constructed from ductile materials allow use of an alternative method which eliminates the need for grommet retaining rings.



P Max.	Hole Saw	Dimpling Tool Set* (order both P/Ns)	Closing Tools* (order both P/Ns)
.086	HS-418	4-G100M-[ ]	4-GM-[ ]
		4-G100F-[ ]	4-GF-[ ]

** See Next Page for dimpling tool ordering information.*

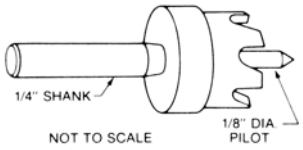
Drill #30 (.1285) pilot hole. Enlarge hole using hole saw P/N HS-418. Then dimple using tools tabulated above. Insert grommet and push panel back using closing tool specified. Panel must be securely engaged behind shoulder of grommet for positive retention.

4002 Series. Panel Preparation and Installation Data (continued)

Installation Tools for Ring Retained Grommets.

Hole Saws

Accurately sizes grommet mounting holes.

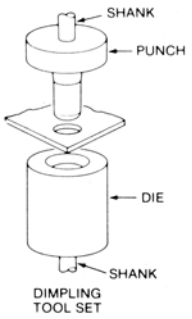


Part No.	Application
HS-418	Alternate dimple method only
HS-471	All mounting holes except alternate dimple method

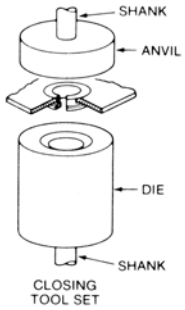
Dimpling and Closing Tools

(Part number for dimpling and closing tools are listed with the installation instructions on preceding page.)

Dimpling tools for dimpling thin panels.



Closing tools must be used with alternative dimpling method to push back panel.



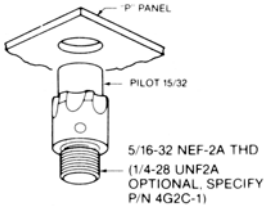
Dash Nos. for Shank Diameters and Lengths Used On Dimpling and Closing Tools		
Dash Number	Shank Dia.	Shank Length
-1	1/4	9/16
-2	5/16	5/8
-3	5/16	7/8
-4	3/8	7/8

Note:
It is recommended that tools be ordered in sets.
However, punch and dies may be ordered separately.

Tooling Part Number Structure
Example: 4G200M-2
2 = 5/16" Dia. x 5/8" Long Shank
M = Punch
F = Die

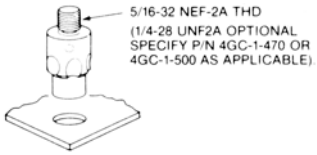
Counterboring Tool 4G2C

For back counterboring thick panels to .688 concentric diameter.



Countersinking Tool (4GC)

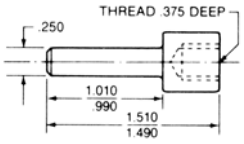
Forms C'Sink required for flush mounting grommets.



Part Number	Thread	Pilot Hole
4GC	5/16-32	.470
4GC-500	5/16-32	.500
4GC-1-470	1/4-28	.470
4GC-1-500	1/4-28	.500

Adaptors

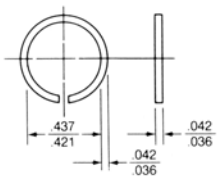
May be used to adapt any C'Sinking or C'Boring tool for use in a drill chuck.



C'Sink Tool Thread	Adaptor Part No.
5/16-32 NEF-2B	T19
1/4-28 UNF-2B	T19-1

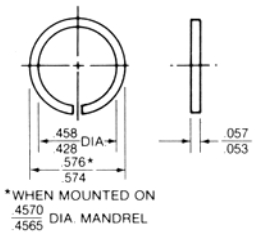
QUICK OPERATING 1/4-TURN FASTENERS 4002 SERIES

Retaining Rings for Ring Retained Grommets.



Standard Retaining Ring

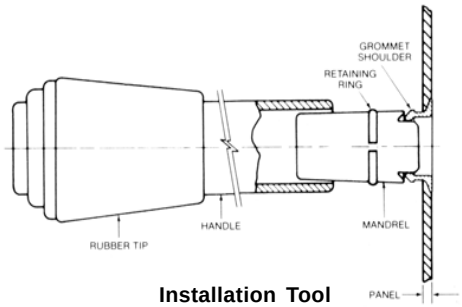
Part No.	Material	Weight (per 100 pcs.) (lbs.)	Application	Tool
R4G	Steel (Cadmium Plated)	0.06	For use with all ring retained grommets except 40G1 Series	T26
40G26-1	Cres. (Non-Magnetic, Corrosion-Resistant)	0.07		



High Shear Retaining Ring

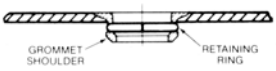
Part No.	Material	Weight (per 100 pcs.) (lbs.)	Application	Tool
R4T	Alloy Steel (Cadmium Plated)	0.15	For use with 40G1 Series High Shear Grommets only	T39-1

Retaining Ring Installation



Installation Tool

1. Place grommet in prepared hole.
2. Place mandrel into grommet.
3. Place retaining ring over mandrel as shown.
4. Push handle over mandrel until sharp ring is fully seated behind shoulder of grommet.



Installed Grommet

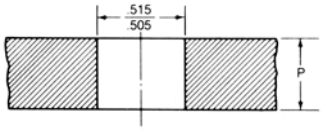
Retaining Ring Installation Tool and Replacement Components.

Description	Part No.
Complete Installation Tool	T-26
Rubber Tip	T-26-1
Mandrel	T-26-2

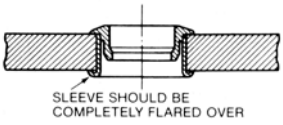
4002 Series. Panel Preparation and Installation Data (continued)

For Flare Retained Grommets

Plus Flush Grommets

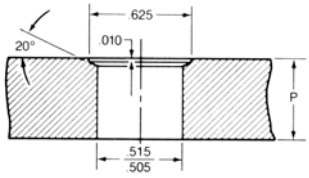


Form .515-505 mounting hole. Insert grommet into panel and flare using appropriate flaring tools from table at right.

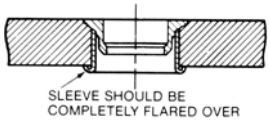


Typical Installation

Flush Mounting Grommets



Form .515-.505 mounting hole. Countersink with C'Sink tool P/N 4-GC-500. Insert grommet into panel and flare using appropriate flaring tool set from table at right.

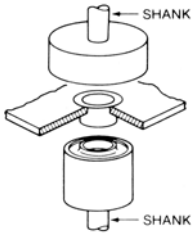


Typical Installation

Installation Tools

Flaring Tools

Used to flare grommets in place.



Tool Part Numbers		
Grommet Part No.	Punch	Die
4002- { P, P3, P4	4-GM-[ ]	4-PF-[ ]
40G15 40g16	4-GM-[ ]	T92-[ ]

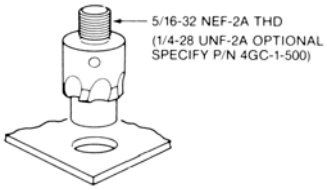
Determine basic part number from table above. Flaring tools are available in a number of shank diameters and shank lengths. Select from table below and list corresponding dash number as a suffix to basic part number.

Shank Diameters and Lengths		
Dash Number	Shank Diameter	Shank Length
-1	1/4	9/16
-2	5/16	5/8
-3	5/16	7/8
-4	3/8	7/8

Example: To specify Flaring Die P/N 4-PF-1[?], with 5/16" shank diameter and 7/8" shank length, complete the part number with a-3. Completed part number: 4-PF-3.

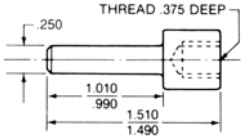
Countersinking Tool 4GC-500

Forms C'Sink required for Flush Mounting Grommets.



Adaptors for Countersinking Tools

May be used to adapt any C'Sinking tool for use in drill chuck.

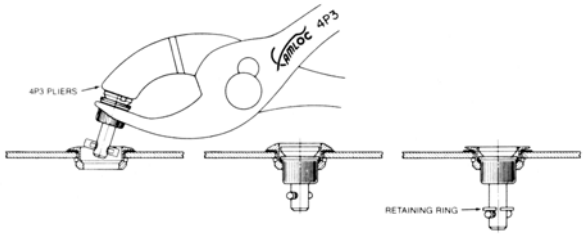


C'Sink Tool Thread	Adaptor Part Number
5/16-32NEF-2B	T19
1/4-28UNF-2B	T19-1

4002 Series. Stud Assembly Installation

Installing Stud Into Panel

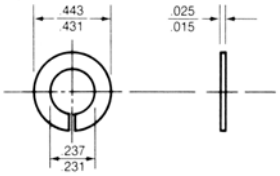
4002 Series studs must be used in conjunction with a grommet. (See Page A-51 for grommet selection.) Compress stud assembly spring using Camloc pliers P/N 4P43 as shown. Insert stud through grommet and release when cross pin clears. Studs with dash numbers greater than -15 require retaining rings. These longer studs may be installed without compressing the stud assembly spring (pliers not required).



Dash "15" studs and smaller are self captivating.

Longer studs require a retaining ring.

Retaining Rings



Part No.	Material	Maximum Service Temperature
4002-SW	Spring Steel (Cadmium Plated)	450°F.
4002-SW-SS	Stainless Steel	700°F.

Retaining Ring Installation

1. To install, place retaining ring on stud with slot aligned over left side of cross pin as shown on figure 1.
2. Snap retainingring under cross pin using needle nose pliers, then rotate retaining ring 180° until ring is over right side of cross pin as shown on figures 2 and 3.
3. To complete installation, snap retaining ring over the right side of cross pin.
4. Completed installation is shown in figure 4.

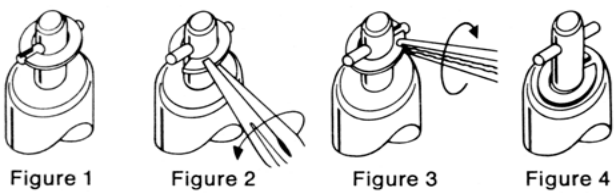
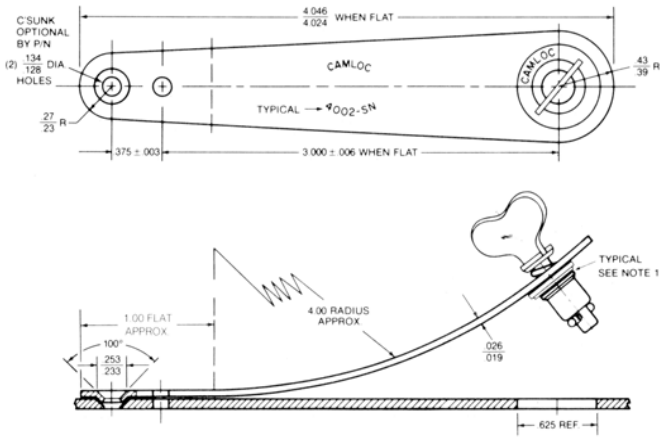


Figure 1 Figure 2 Figure 3 Figure 4

Stud Ejector Spring (Optional)

Provides full retraction of stud assembly to allow opening and closing of equipment without the possibility of jamming or damage.



Material	Part Numbers: For use with Flush Grommets	Part Numbers: For use with Plus Flush Grommets	Rivet Holes
Spring Steel (Cadmium Plated)	4002 SG		Plain
		4002 SN	
	4002 SGD		Dimpled
		4002 SND	
	4002 SGF*		Plain
		4002 SNF*	

**Ejector P/N 4002 SNF is flat; i.e. no 4" radius bend.*

Notes:
1. *Thru hole in Ejector Spring Part Numbers 4002SN, SND and SNF is formed to allow grommet to seat flush to top surface of Ejector Spring.*
2. *When using Stud Ejector Springs, Retaining Ring/Retained style grommets must be used.*
3. *Maximum Service Temperature: 450°F.*
4. *Add .021 to total material thickness "G" when using these parts. See Page A-61.*
5. *Weight per 100 pieces:*
   Ejector Spring used with Flush Grommet: 1.84 lbs.
   Ejector Spring used with Plus Flush Grommet: 1.86 lbs.

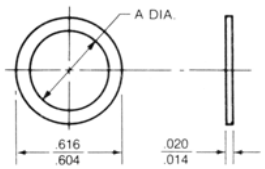
4002 Series. Sealed Stud and Grommet Installation

A

40S37 Series stud assembly contains an integral seal which is usually sufficient where only splash-proof installation is required. For more complete sealing the following procedure should be followed.

Grommet Installation

1. Select grommet from the table below.
2. Prepare panel according to standard procedures. See table below for page reference.
3. Install gasket onto grommet.
4. Place grommet in prepared hole and complete installation following standard procedure.

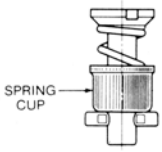


GROMMET GASKET

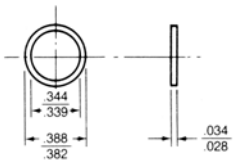
Grommet/Gasket Selection				
Grommets	Gasket Part Number	A Dia.	Gasket Material	Installation Instructions
Ring Retained: 4002-G, H, N, O	40G11-3	.443 / .431	Vellumoid Gasket Material per Fed. Spec. HH-P-96	See Pages A-54-A-56
Flare Retained: 4002-P2-P3 40G15, 40G16	40G11-4	.501 / .489		See Page A-57

Stud Installation

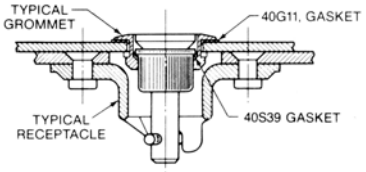
1. Install gasket P/N 40S39 over stud spring cup.
2. Using 4P3 pliers, install stud into grommet following standard procedures. (See Page A-58.)
3. For studs with dash numbers greater than -15, install retaining ring. For procedures see Page A-58



40S37 Stud
Spring cup is color coded black. (See Page 35 for complete dimensions.)



40S39 Stud Gasket



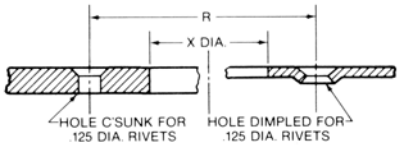
Typical Installation
Choice of receptacle has no effect on sealing capability of stud/grommet assembly.

Notes: *1. Applications using this assembly are limited by the gasket material to 130°F. maximum temperature.*
2. Add .045 inch to "G" thickness to compensate for gasket thickness. (See Page A-61.)
3. 40S37 Stud Assemblies are not available with dash numbers smaller than -4.

4002 Series. Receptacle Installation Data

Standard Mounting Receptacles

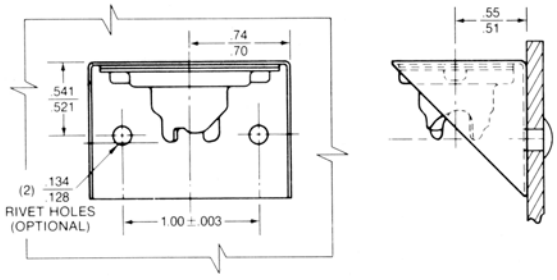
1. Drill #30 (.1285) diameter pilot hole.
2. Drill holes for .125 rivets using drill jig specified.
3. Enlarge pilot hole to X diameter.
4. Rivet receptacle in place.



Typical Installation
(Thin panels may be dimpled)

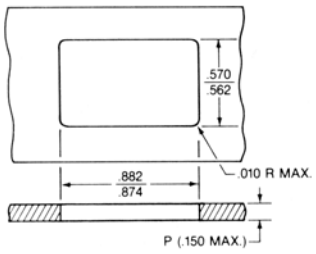
Receptacle	X Dia. (Ref.)	Hole Saw	R Rivet Hole Spacing (Ref.)	Drill Jig
244-22 Series Standard Mount	.812	HS-812	1.375	T22
All Other Standard Mount	.688	H-687	1.00	T1

Side Mounting Receptacle

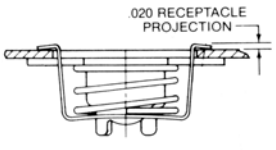


Typical Installation

Snap-in Receptacle (P/N 40R39-1-1AA)



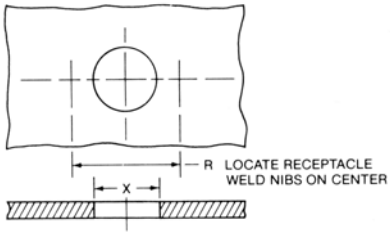
Panel Preparation



Typical Installation

Two piece floating receptacles Spot weld attachment

1. Form through hole to X diameter.
2. Place receptacle element into cage.
3. Locate receptacle assembly on center and spot weld in place.



Typical Installation

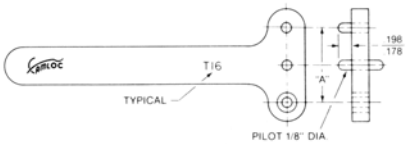
Receptacle Assembly	X Dia. (Ref.)	R (Ref.)	Hole Saw
1/16" Float Versions 751, 751E/756W, 757W	.687	1.00	HS-687
1/8" Float Versions 701, 701E/706W	.812	1.375	HS-812

Optional Installation Tools

Drill Jigs

Provide convenient means for accurately locating rivet holes relative to receptacle mounting hole.

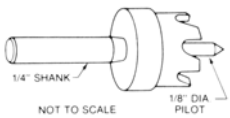
Drill Jig	A
T16	1.000
T22	1.375



Hole Saws

Accurately size mounting holes.

Hole Saw	Forms Hole Dia.
HS-687	.687
HS-812	.812



When using hole saw, first drill #30 (.1285) pilot hole.

4002 Series. Ordering Information/ Stud Dash Number Selection

To Select Stud Dash Number

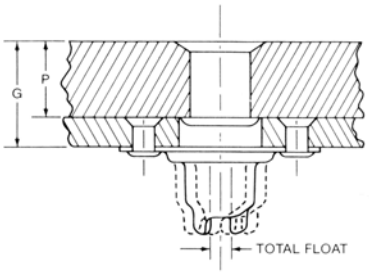
1. Stud dash number varies with receptacle used. This information must be known before proceeding. Select receptacle from Pages A-48 through A-50.

2. Determine "G" thickness.

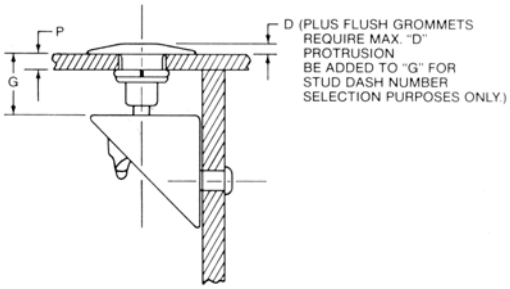
Notes: (a) Increase "G" to allow for thickness of paint or other finishes and for the compressed thickness of any gasket.

(b) When selecting stud dash number, "G" must be increased for the following "Special" conditions.

"Special" Conditions	Increase "G" Thickness
4002 Series Ejector Spring installed	Add .021 inch
Snap-in Receptacle (P/N 40R 39-1-1AA) installed	Allow .020 inch for receptacle top side protrusion.
40R8 Series Receptacle Shims installed	For each shim used, add an amount equal to "A" max. shim thickness. (See Page a-48)
Plus Flush Grommets installed	For purposes of selecting stud dash number only, add "D" max. protrusion of grommet. (See Pages A-51 and A-52)
40S37 Stud Assembly installed with sealing gaskets	Add .045 inch



Standard Mount Floating Receptacle



Side Mount Receptacle

3. Locate "G" total thickness in the stud dash number table on the following page.

4. Then find the corresponding stud dash number in the column designated for the receptacle selected.

How To Order

Example 1.

Stud Assembly Used: 4002-[?]S
"G" Total Thickness: .220 inch
Grommet Used: 4002-0S (Plus Flush Style)
Receptacle Used: 40R17-1
Required Calculation*: G + .029 = .220 + .029 = .249
Stud Dash Number Selected From Table: -7
Completed Part Number: 4l002-7S

*(Plus Flush grommets require that "D" max. dimension from Pages A-51 and A-52 be added to "G" total thickness when determining Stud Dash Number).

Example 2.

Stud Assembly Used: 40S5-[?]
"G" Total Thickness: 1.520 inch
Grommet Used: 4002-P2-625 (Flush Style)
Receptacle Used: 244-16E
Stud Dash Number Selected From Table: -51 (See Note 2, Page A-62)
Completed Part Number: 40S5-51

QUICK OPERATING 1/4-TURN FASTENERS 4002 SERIES

Stud Dash Number Selection Table

Grommeted Studs				Grommetless Studs		
1	2	3	4	5	6	7
G Total Thickness	All rec. not tab. at right	All 244-16 ex-16B &-16BR All 244-22	All 244-16B 244-16B-R	All rec. not tab. at right	All 244-16 ex. 16B &-16BR All 244-22	All 244-16B 244-16B-R
.021-.050	-	-	-2	-	-	-2
.051-.080	-	-2	-3	-	-2	-2
.081-.110	-2	-3	-4	-2	-2	-4
.111-.140	-3	-4	-5	-2	-4	-4
.141-.170	-4	-5	-6	-4	-4	-6
.171-.200	-5	-6	-7	-4	-6	-6
.201-.230	-6	-7	-8	-6	-6	-8
.231-.260	-7	-8	-9	-6	-8	-8
.261-.290	-8	-9	-10	-8	-8	-10
.291-.320	-9	-10	-11	-8	-10	-10
.321-.350	-10	-11	-12	-10	-10	-12
.351-.380	-11	-12	-13	-10	-12	-12
.381-.310	-12	-13	-14	-12	-12	-14
.411-.440	-13	-14	-15	-12	-14	-14
.441-.470	-14	-15	-16	-14	-14	-16
.471-.500	-15	-16	-17	-14	-16	-16
.501-.530	-16	-17	-18	-16	-16	-18
.531-.560	-17	-18	-19	-16	-18	-18
.561-.590	-18	-19	-20	-18	-18	-20
.591-.620	-19	-20	-21	-18	-20	-20
.621-.650	-20	-21	-22	-20	-20	-22
.651-.680	-21	-22	-23	-20	-22	-22
.681-.710	-22	-23	-24	-22	-22	-24
.711-.740	-23	-24	-25	-22	-24	-24
.741-.770	-24	-25	-26	-24	-24	-26
.771-.800	-25	-26	-27	-25	-26	-26
.801-.830	-26	-27	-28	-26	-26	-28
.831-.860	-27	-28	-29	-26	-28	-28
.861-.890	-28	-29	-30	-28	-28	-30
.891-.920	-29	-30	-31	-28	-30	-30
.921-.950	-30	-31	-32	-30	-30	-32
.951-.980	-31	-32	-33	-32	-32	-32
.981-1.010	-32	-33	-34	-32	-32	-34
1.011-1.040	-33	-34	-35	-32	-34	-34
1.041-1.070	-34	-35	-36	-34	-34	-36
1.071-1.100	-35	-36	-37	-34	-36	-36
1.101-1.130	-36	-37	-38	-36	-36	-38
1.131-1.160	-37	-38	-39	-36	-38	-38
1.161-1.190	-38	-39	-40	-38	-38	-40
1.191-1.220	-39	-40	-41	-38	-40	-40
1.221-1.250	-40	-41	-42	-40	-40	-42
1.251-1.280	-41	-42	-43	-40	-42	-42
1.281-1.310	-42	-43	-44	-42	-42	-44
1.311-1.340	-43	-44	-45	-42	-44	-44
1.341-1.370	-44	-45	-46	-44	-44	-46
1.371-1.400	-45	-46	-47	-44	-46	-46
1.401-1.430	-46	-47	-48	-46	-46	-48
1.431-1.460	-47	-48	-49	-46	-48	-48
1.461-1.490	-48	-49	-50	-48	-48	-50
1.491-1.520	-49	-50	-51	-48	-50	-50
1.521-1.550	-50	-51	-52	-50	-50	-52

Important Notes: 1.40S37 stud assemblies are not available with dash numbers smaller than -4. 2. If the total thickness “G” is very near the top of the thickness range, selection of the next greater dash number is recommended. For. “G” thicknesses longer than those tabulated, contact Camloc Products Division. 3. “G” min. thickness specified on Pages. A-51 and A-52 may be reduced. .030 inch when column 3 dash numbers apply and .060 inch when column 4 dash numbers apply.

4002 Series.
Weights for Flare Retained Grommets

(Pounds per 100 pieces. All weights are approximate.)

A

Grommet Dash Numbers	Data Table 1*	Data Table 2*
	40G16-[ ]-1 40G16-[ ]-2 40G16-[ ]S	40G15-[ ] 40G15-[ ]S
- 40	.35	.41
- 70	.36	.41
-100	.38	.42
-130	.39	.43
-160	.40	.44
-190	.42	.46

Grommet Dash Numbers	Data Table 3		
	4002-P2-[ ]	4002-P3-[ ]	4002-P4-[ ] 4002-P4-[ ]A 4002-P4-[ ]B
- 187	0.48	0.49	0.79
- 250	0.51	0.52	0.81
- 312	0.53	0.55	0.84
- 375	0.56	0.58	0.87
- 400	0.57	—	—
- 437	—	0.60	—
- 500	0.62	0.63	0.92
- 625	0.67	0.69	0.98
- 750	0.72	0.74	1.03
- 812	—	0.77	—
- 875	0.78	0.79	1.09
-1000	0.83	0.85	1.14
-1062	—	0.88	—
-1125	0.89	0.90	1.20
-1250	0.94	0.96	1.25
-1375	1.00	1.01	1.30
-1500	1.05	1.07	1.36
-1562	—	1.09	—

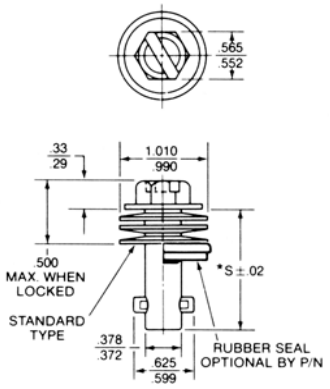
** Data Table Numbers Correspond to those listed on Page A-53.*

Extra Heavy-Duty Stud Assemblies and Receptacles

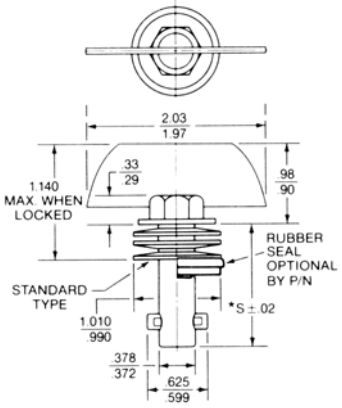
Features: Designed for heavy duty service in farm, construction equipment and other applications where high strength and clamping force are required.

Stud Assemblies

Note: Part numbers shown are basic part numbers only. See ordering information for required dash numbers.



Slotted-Hex Head



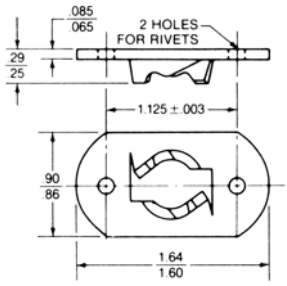
Slotted-Hex Head

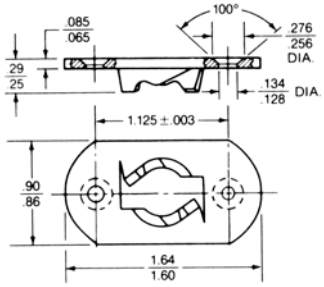
Material	Standard Part No.	Self-sealing Part No.	Standard Part No.	Self-sealing Part No.
Steel (Cadmium Plated)	91S2-[ ]	91S7-[ ]	91S2-[ ]W	91S7-[ ]W

Maximum Service Temperature: Self-Sealing parts have rubber seal and temperature limitation of 225°F.; Standard: 450°F.; Plastic Knob Version: 140°F.

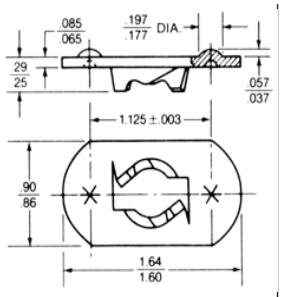
**S=.64 + (.03 x Dash No.)*

Receptacles





For use with dimpled panels

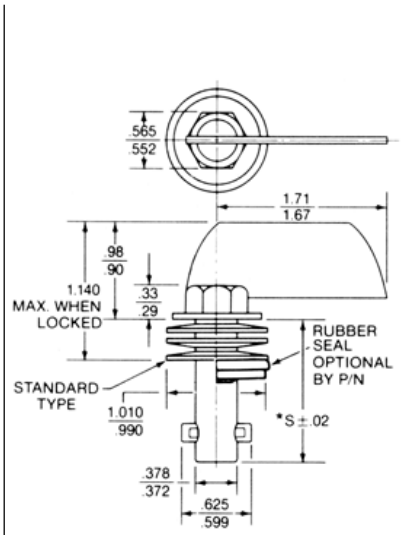


For Spot Weld Attachment

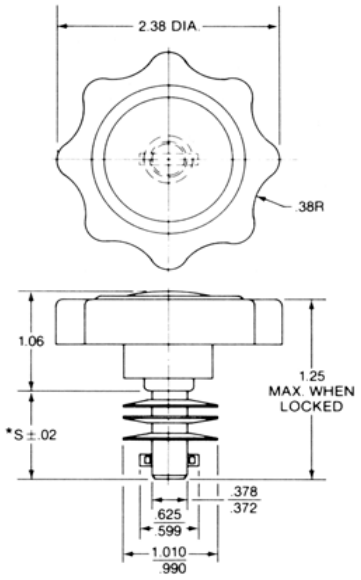
Material	Part No.	Rivet Holes	Rivet Hole Dia.	Part No.	Rivet Holes	Part No.
Steel (Cadmium Plated)	119-18	Plain (for 1/8" rivets)	.134 .128	119-18D	C'Sunk (for 1/8" rivets)	–
	119-18A	Plain (for 5/32" rivets)	.165 .159	–	–	–
Steel (Oil Coated)	–	–	–	–	–	119-18C

Maximum Service Temperature: 450°F.

QUICK OPERATING 1/4-TURN FASTENERS 91F SERIES



Offset Fixed Wing



Plastic Knob

	Standard Part No.	Self-sealing Part No.	Part No.
	91S2-[ ]WO	91S7-[ ]WO	91S48-[ ]-1AA

Specifications:

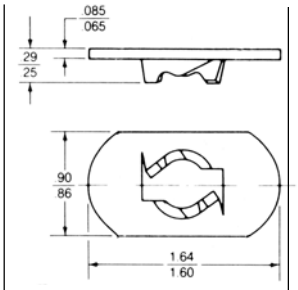
Ultimate Tensile Strength: 1800 lbs.
Workingn Strength: 1200 lbs.
Stud Grip Increments: .030 inches.

Stud Part Number Structure

91S2-[ ]-WO

- Material and Finish
- Stud Dash Number (Based on Total Thickness, “G”)
- Basic Part Number

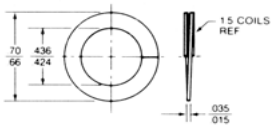
See Stud Dash Number Selection Table on the following page.



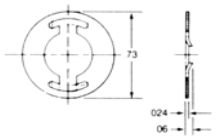
For Weld Attachment

	Part No.
	-
	-
	119-18L

Retaining Rings



Spiral Type
Weight per 100 pcs.: 0.24 lbs.



Snap-on Type
Weight per 100 pcs.: 0.15 lbs.

Material	Part No.	Max. Temp.	Part No.	Max. Temp.
Stainless Steel	91S3-1	550°F.	—	—
Steel (Cadmium Plated)	—	—	91S45-1-1AA	450°F.

Spiral Ring offers positive retention. It installs with the use of needle nose pliers.
Snap-on Type snaps into place over stud cross-pin for faster installation.

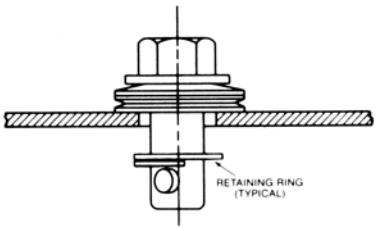
QUICK OPERATING 1/4-TURN FASTENERS 91F SERIES

Panel Preparation and Installation Data

Panel Preparation for Stud Installation

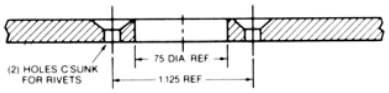
P	X Dia.
Up to .125	.562-.572
.126 & greater	.625-.635

Determine panel thickness "P" and form through hole to corresponding "X" diameter.

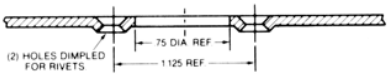


Insert stud through panel and attach retaining ring.

Panel Preparation for Receptacle Installation



Drilled and Countersunk rivet holes.

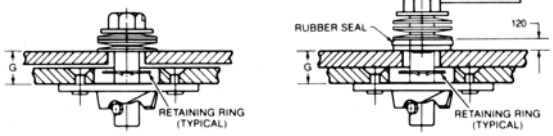


Thin panel dimpled for rivets.
(Use receptacle P/N 119-18D.)

Ordering Information/Stud Dash Number Selection

To Select Stud Dash Number:

1. Determine "G" total thickness.
Note: Increase "G" to allow for thickness of paint or other finishes and for the compressed thickness of any gasket. If self-sealing stud assemblies are used, add .120 inch to "G" thickness when determining stud dash number.
2. Locate total thickness in the Stud Dash Number Selection table.
3. Then find the corresponding stud dash number in the column to the right.



Typical Installations

How to Order:

Example 1.
(For standard stud assemblies)
Stud Assembly Used: 91S2-[?]
"G" Total Thickness = 1.125 inch
Stud Dash Number From Table = -37
Complete Part Number: 91S2-37

Example 2.
(For self-sealing stud assemblies)
Stud Assembly Used: 91S7-[?]WO
"G" Total Thickness = 1.125 inch
Required Calculation: 1.125 + .120 = 1.245
Stud Dash Number From Table = -41
Complete Part Number: 91S7-41WO

Stud Dash Number Selection			
Total Thickness	Dash Number	Total Thickness	Dash Number
.035-.064	- 1	.785-.814	-26
.065-.094	- 2	.815-.844	-27
.095-.124	- 3	.845-.874	-28
.125-.154	- 4	.875-.904	-29
.155-.184	- 5	.905-.934	-30
.185-.214	- 6	.935-.964	-31
.215-.244	- 7	.965-.994	-32
.245-.274	- 8	.995-1.024	-33
.275-.304	- 9	1.025-1.054	-34
.305-.334	-10	1.055-1.084	-35
.335-.364	-11	1.085-1.114	-36
.365-.394	-12	1.115-1.144	-37
.395-.424	-13	1.145-1.174	-38
.425-.454	-14	1.175-1.204	-39
.455-.484	-15	1.205-1.232	-40
.485-.514	-16	1.235-1.264	-41
.515-.544	-17	1.265-1.294	-42
.545-.574	-18	1.295-1.324	-43
.575-.604	-19	1.325-1.354	-44
.605-.634	-20	1.355-1.384	-45
.635-.664	-21	1.385-1.414	-46
.665-.694	-22	1.415-1.444	-47
.695-.724	-23	1.445-1.474	-48
.725-.754	-24	1.475-1.504	-49
.755-.784	-25	1.505-1.534	-50

Important Note: *If total thickness is very near the top of the thickness range, selection of the next greater dash number is recommended. For thicknesses greater than those tabulated, contact the Camloc Products Division.*

Stud Part Number Structure

91S2-[ ]-WO
- Material and Finish
- Stud Dash Number (Based on Total Thickness, "G")
- Basic Part Number