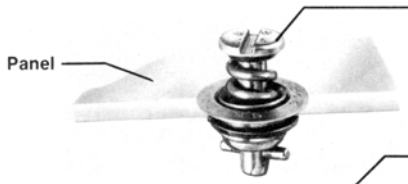
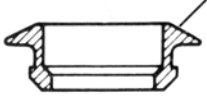
QUICK OPERATING 1/4-TURN FASTENERS 4002 SERIES

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.



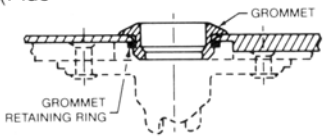
Stud

Available in six head styles.

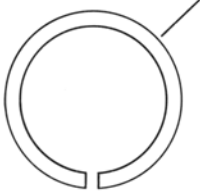


Grommet and Grommet Retaining Ring

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

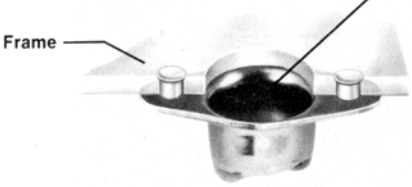


Stud Retaining Ring

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.

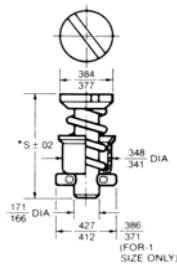
Section Contents

	Page No.
Stud Assemblies	A-46 - A-47
Receptacles	A-48 - A-50
Grommets	
Retaining Ring Retained	A-51 - A-52
Flare Retained	A-52 - A-53
Grommet Installation	
Retaining Ring Retained	A-54 - A-56
Flare Retained	A-57
Stud Assembly Installation	A-58
Sealed Stud and Grommet Installation	A-59
Receptacle Installation	A-60
Stud Dash Number Selection	A-61 - A-62
Weights for Flare Retained Grommets	A-63

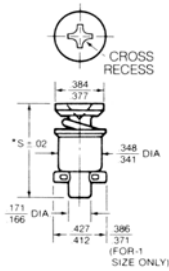
A

4002 Series. Stud Assemblies and Receptacles

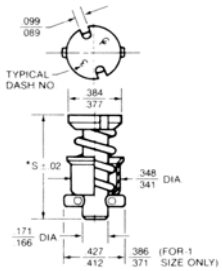
Note: Part numbers shown are basic part numbers only. See ordering information on Page A-62 for required dash numbers.



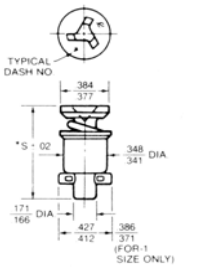
*S = .63 + (.03 x Dash No.)
Slotted Recess



*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	40S5-[ ]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.*

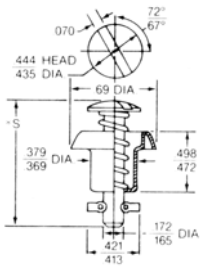
Specifications:

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.

Ultimate tensile strength for stainless steel: 735 lbs.
Working strength: 500 lbs.
Minimum Preload - 50 LBS

Grommetless Stud

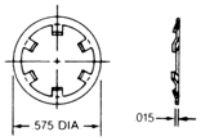


S=Protruding Slotted Head Part No. 40S128-( )-1AA

40S128
Protruding Head

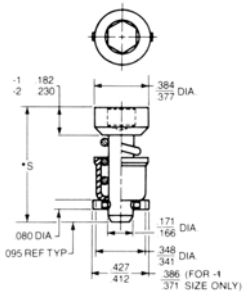
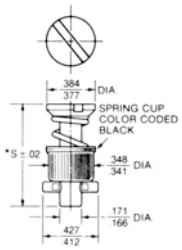
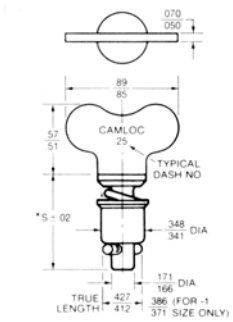
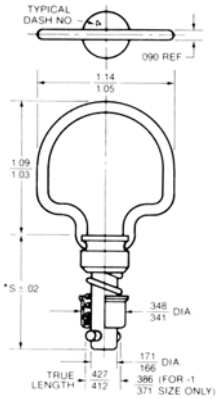
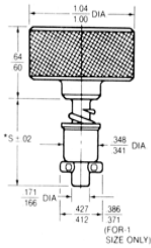
NOTE: This stud does not require a grommet, but must be used with retaining ring part number 40S142-1-1AA.

Retaining Ring



Part Number
40S142-1-1AA

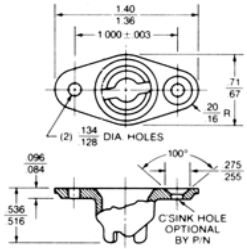
CRES Spring
Steel (Passivated)

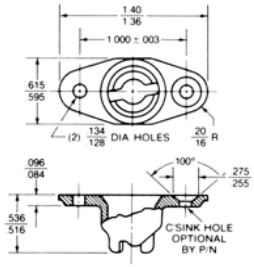
	 *S = .71 + (.03 × Dash No.)		 *S = .63 + (.03 x Dash No.)	 *S = .63 + (.03 x Dash No.)	 *S = .81 + (.03 x Dash No.)	 *S = .53 + (.03 x Dash No.)
	Hex Recess		**Sealed**	**Fixed Wing**	**Folding Bail Handle**	**Knurled Knob**
	4mm Part No.	6mm Part No.	Part No.	Part No.	Part No.	Part No.
—		—	—	4002-[ ]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.

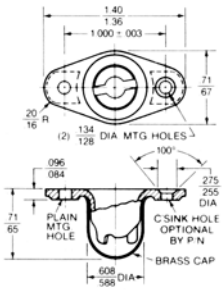
4002 Series. Receptacles

Standard Mounting





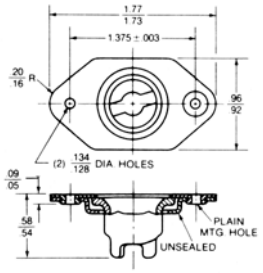
Narrow Width



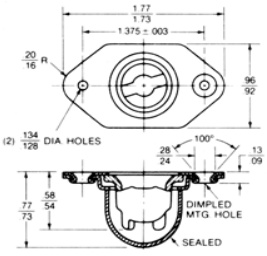
Encapsulated
See Note 1 for sealing

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)	—	—	—	—	—	—	—	—	—

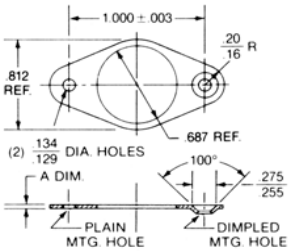
Standard Mounting Continued



Floating (1/8" total)



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

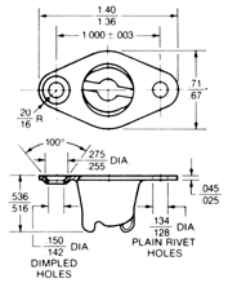


Shims

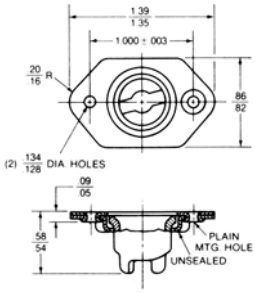
Material	Part No.	Rivet Holes	Weight (per 100 pcs.) (lbs.)	Part No.	Rivet Holes	Weight (per 100 pcs.) (lbs.)	Part No.	A Dim.	Rivet Holes	Weight (per 100 pcs.) (lbs.)
Stainless Steel	244-22S	Plain	2.77	---	---	---	---	---	---	---
Steel (Cad. Plated) Receptacle Element: Silicon Bronze (Cad. Plated)	244-22	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.

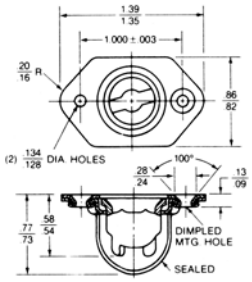
Maximum Service Temperatures for Standard Mounting Types: Stainless Steel—700°F.; Steel (Cadmium Plated) and Silicon Bronze (Cadmium Plated)—450°F.; Silicon Bronze with Brass Cap and Steel with Zinc Receptacle Element—300°F.; Aluminum—350°F.



Lightweight



Floating (1/16" total)



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

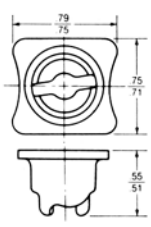
Part No.	Rivet Holes	Weight (per 100 pcs.) (lbs.)	Part No.	Rivet Holes	Weight (per 100 pcs.) (lbs.)	Part No.	Rivet Holes	Weight (per 100 pcs.) (lbs.)
40R17-1	Plain	1.20	244-16S	Plain	2.57	244-16SC	Plain	3.31
40R17-2	Dimpled	1.20	244-16SD	Dimpled	2.59	244-16SCD	Dimpled	3.33
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
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

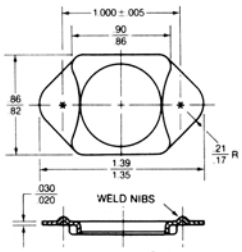
These receptacles are designed to be attached by spotwelding. Separate cage and receptacle element allow smaller envelopes and significant weight savings over conventional designs. Choose from versions within 1/16 inch or 1/8 inch total float.

Order receptacle element and cage separately.

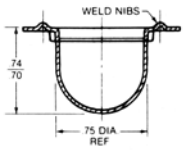
For 1/16 inch Total Float



Receptacle Element

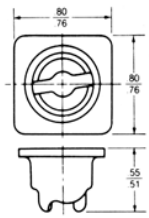


Standard Cage

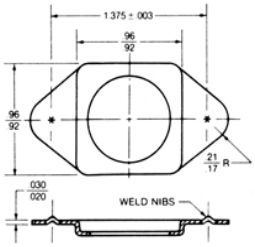


Encapsulated Cage

For 1/8 inch Total Float



Receptacle Element



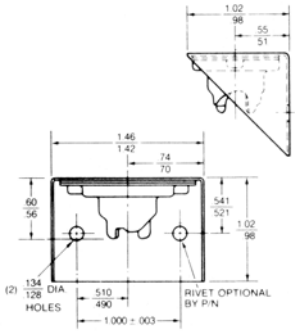
Cage

Material	Receptacle Element		Cages				Receptacle Element		Cage	
			Standard		Encapsulated					
	Part No.	Weight*	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	—	—

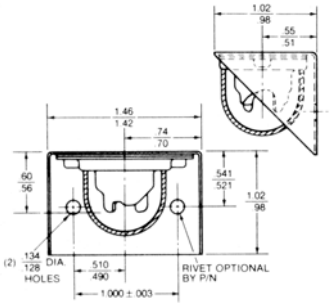
**Weights shown are in lbs. per 100 pcs.*

4002 Series. Receptacles continued

Side Mounting



Floating (1/16" total)



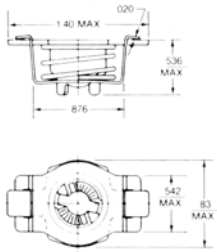
Floating (1/16" total) Encapsulated
See Note 1 for sealing

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

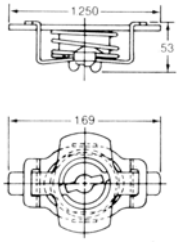
Notes: *1. Use to seal against leakage of air, dust or water. Install with suitable sealing compound such as 3M #EC-847 or adhesive silicon sealant.*

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.

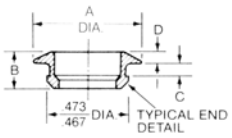
A

Retaining Ring Retailed

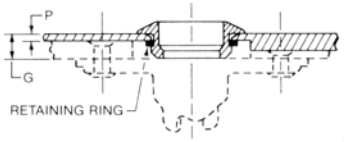
Plus Flush Grommets

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

P = C Min - .042 Max (retaining ring thickness - .008



Plus Flush Version

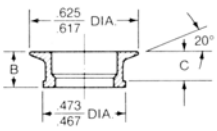


Typical Installation
(for detail see Page A-54).

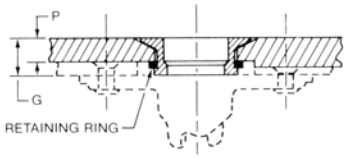
Part No.	P Max. Thickness	Material	A	B	C	D	G Min. (Note 1)	Weight (per 100 pcs.) (lbs.)
4002-N2S	.025	Stainless Steel (Cadmium Plated)	.625 / .617	.201 / .193	.082 / .074	.069 / .063	.053	0.40
4002-N2		Steel (Cadmium Plated)						0.39
4002-NS	.065	Stainless Steel	.625 / .617	.201 / .193	.122 / .114	.029 / .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	.072	Steel (Cadmium Plated)	.876 / .867	.201 / .193	.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.*

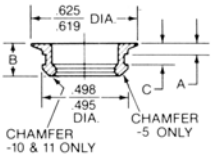
2. Panels with thicknesses greater than "P" Max. may be back counterbored.

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

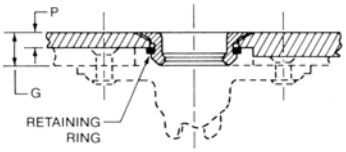
4002 Series. Grommets

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.

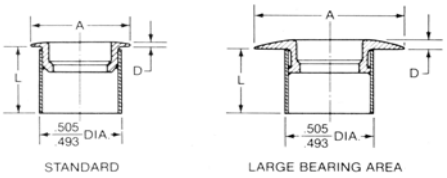
Flare Retained

Flush and Plus Flush Grommets

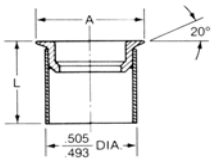
Flare retained grommets will accommodate relatively thick panels often eliminating the need for back counterboring. Flared grommets should also be specified when axial grommet to movement must be restricted.

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.*

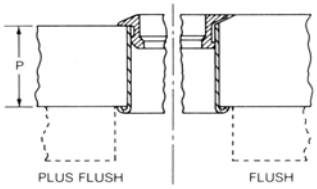
Plus Flush Series



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.

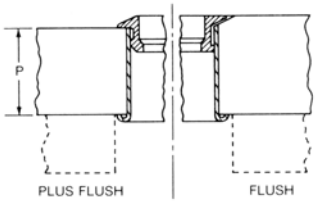
4002 Series. Grommets (continued)

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)

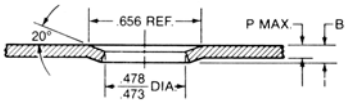
Plus Flush Grommets

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



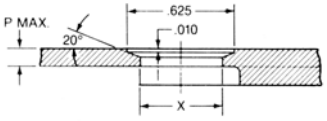
DIMPLED PANEL

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*

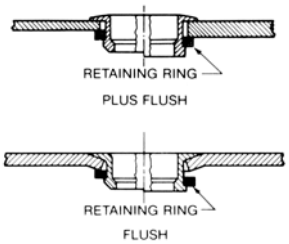
**Supplied with optional 1/4-28-UNF-2A Thread*

“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

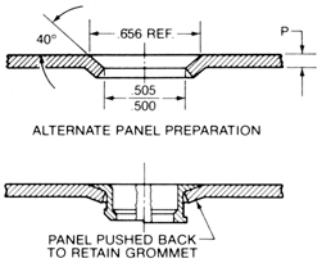
Insert grommet into mounting hole and captivate with retaining ring. Please see Page A-56 for more information.



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.



ALTERNATE PANEL PREPARATION

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.*

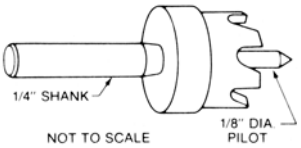
Drill #30 (.1285) pilot hole. Enlarge hole using hole saw P/N HS-418. Then dimple using tools tabulated above. Insert grommet and push panel back using closing tool specified. Panel must be securely engaged behind shoulder of grommet for positive retention.

4002 Series. Panel Preparation and Installation Data (continued)

Installation Tools for Ring Retained Grommets.

Hole Saws

Accurately sizes grommet mounting holes.

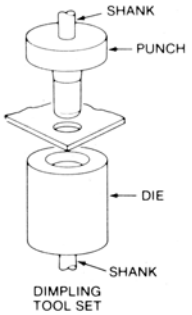


Part No.	Application
HS-418	Alternate dimple method only
HS-471	All mounting holes except alternate dimple method

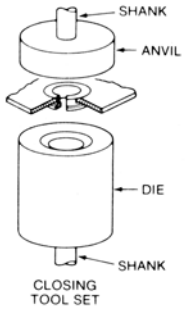
Dimpling and Closing Tools

(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.



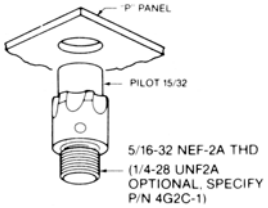
Dash Nos. for Shank Diameters and Lengths Used On Dimpling and Closing Tools		
Dash Number	Shank Dia.	Shank Length
-1	1/4	9/16
-2	5/16	5/8
-3	5/16	7/8
-4	3/8	7/8

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

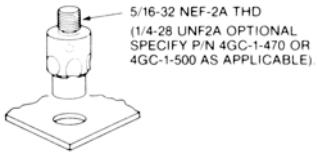
Counterboring Tool 4G2C

For back counterboring thick panels to .688 concentric diameter.



Countersinking Tool (4GC)

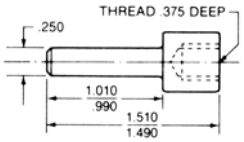
Forms C'Sink required for flush mounting grommets.



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

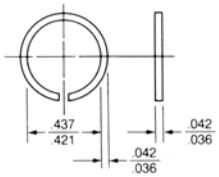
Adaptors

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



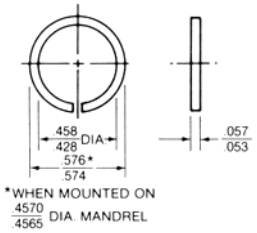
C'Sink Tool Thread	Adaptor Part No.
5/16-32 NEF-2B	T19
1/4-28 UNF-2B	T19-1

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	Elgiloy. (Non-Magnetic, Corrosion-Resistant)	0.07		

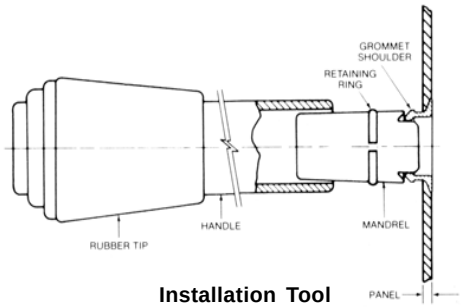


High Shear Retaining Ring

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

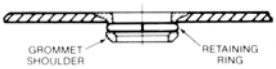
40G42 Elgiloy

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

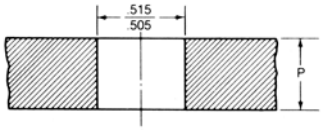
Retaining Ring Installation Tool and Replacement Components.

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

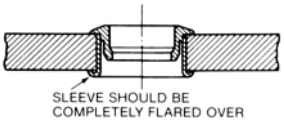
4002 Series. Panel Preparation and Installation Data (continued)

For Flare Retained Grommets

Plus Flush Grommets

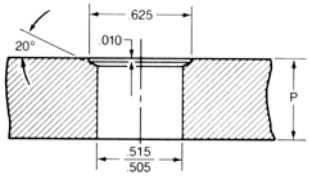


Form .515-505 mounting hole. Insert grommet into panel and flare using appropriate flaring tools from table at right.

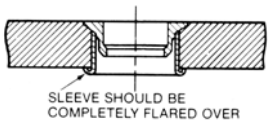


Typical Installation

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.

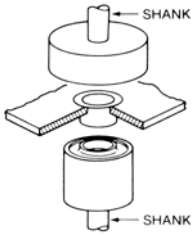


Typical Installation

Installation Tools

Flaring Tools

Used to flare grommets in place.



Tool Part Numbers		
Grommet Part No.	Punch	Die
4002- { P2, P3, P4	4-GM-[ ]	4-PF-[ ]
40G15 40g16	4-GM-[ ]	T92-[ ]

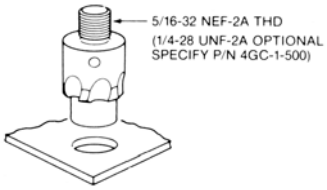
Determine basic part number from table above. Flaring tools are available in a number of shank diameters and shank lengths. Select from table below and list corresponding dash number as a sufix to basic part number

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.

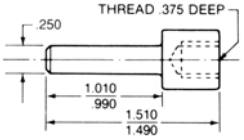
Countersinking Tool 4GC-500

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.

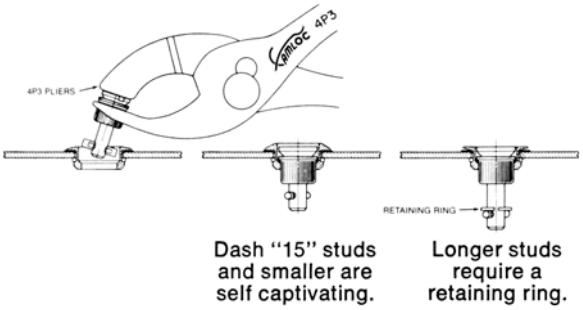


C'Sink Tool Thread	Adaptor Part Number
5/16-32NEF-2B	T19
1/4-28UNF-2B	T19-1

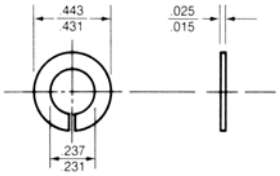
4002 Series. Stud Assembly Installation

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).



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.

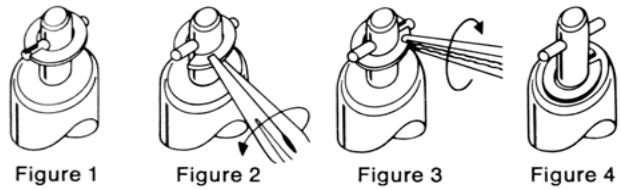
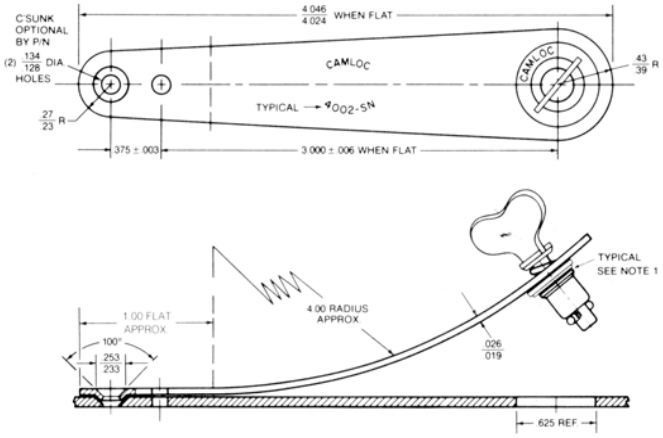


Figure 1 Figure 2 Figure 3 Figure 4

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 T emperature: 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.

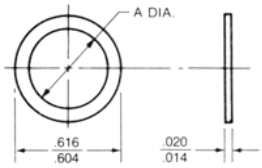
4002 Series. Sealed Stud and Grommet Installation

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.

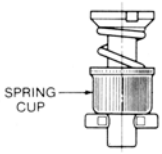


GROMMET GASKET

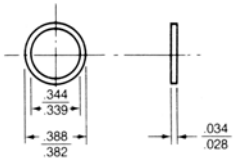
Grommet/Gasket Selection				
Grommets	Gasket Part Number	A Dia.	Gasket Material	Installation Instructions
Ring Retained: 4002-G, H, N, O	40G11-3	.443 / .431	Vellumoid Gasket Material per Fed. Spec. HH-P-96	See Pages A-54-A-56
Flare Retained: 4002-P2-P3 40G15, 40G16	40G11-4	.501 / .489		See Page A-57

Stud Installation

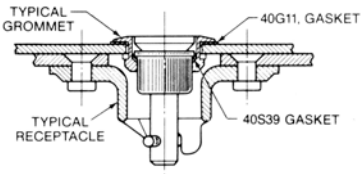
1. Install gasket P/N 40S39 over stud spring cup.
2. Using 4P3 pliers, install stud into grommet following standard procedures. (See Page A-58.)
3. For studs with dash numbers greater than -15, install retaining ring. For proced ures see Page A-58



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



40S39 Stud Gasket



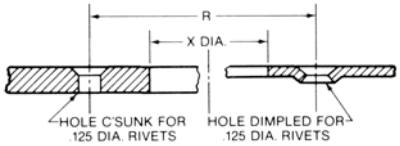
Typical Installation
Choice of receptacle has no effect on sealing capability of stud/grommet assembly.

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

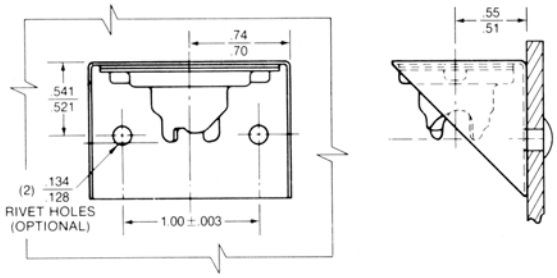
1. Drill #30 (.1285) diameter pilot hole.
2. Drill holes for .125 rivets using drill jig specified.
3. Enlarge pilot hole to X diameter.
4. Rivet receptacle in place.



Typical Installation
(Thin panels may be dimpled)

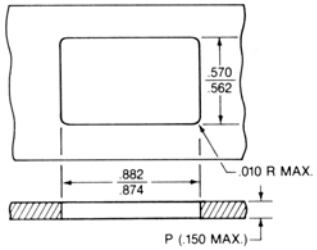
Receptacle	X Dia. (Ref.)	Hole Saw	R Rivet Hole Spacing (Ref.)	Drill Jig
244-22 Series Standard Mount	.812	HS-812	1.375	T22
All Other Standard Mount	.688	H-687	1.00	T1

Side Mounting Receptacle

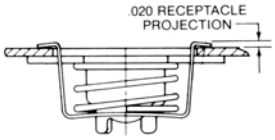


Typical Installation

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



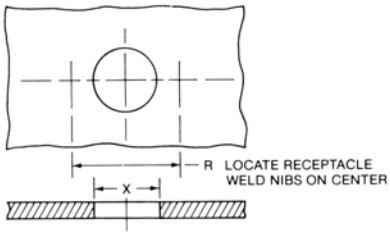
Panel Preparation



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

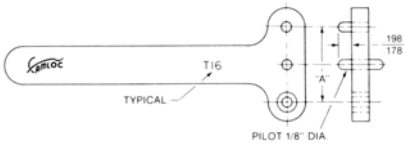
Receptacle Assembly	X Dia. (Ref.)	R (Ref.)	Hole Saw
1/16" Float Versions 751, 751E/756W, 757W	.687	1.00	HS-687
1/8" Float Versions 701, 701E/706W	.812	1.375	HS-812

Optional Installation Tools

Drill Jigs

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

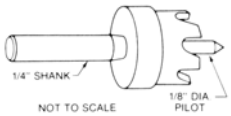
Drill Jig	A
T16	1.000
T22	1.375



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

A

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.

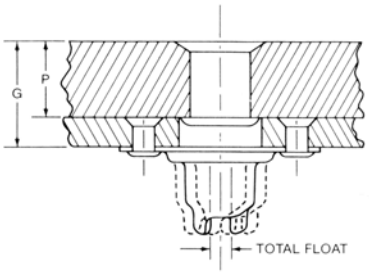
Notes: (a) Increase "G" to allow for thickness of paint or other finishes and for the compressed thickness of any gasket.

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

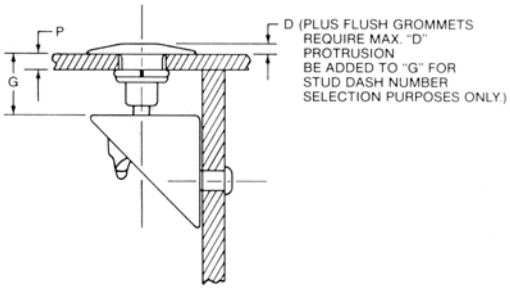
"Special" Conditions	Increase "G" Thickness
4002 Series Ejector Spring installed	Add .021 inch
Snap-in Receptacle (P/N 40R 39-1-1AA) installed	Allow .020 inch for receptacle top side protrusion.
40R8 Series Receptacle Shims installed	For each shim used, add an amount equal to "A" max. shim thickness. (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

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.



Standard Mount Floating Receptacle



Side Mount Receptacle

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 .

A

4002 Series.
Weights for Flare Retained Grommets

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

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.*