

EO 05-1-3/7

ROYAL CANADIAN AIR FORCE



**QUICK RELEASE
PRESSURE FASTENERS
AND
VIBRATION INSULATORS**

(This EO replaces Part 7 of EO 05-1-3)

ISSUED ON AUTHORITY OF THE CHIEF OF THE AIR STAFF

10 NOV 60

LIST OF RCAF REVISIONS

DATE	PAGE NO	DATE	PAGE NO
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TABLE OF CONTENTS

TITLE	PAGE
QUICK RELEASE PRESSURE FASTENERS	1
DZUS FASTENERS	6
CAMLOC FASTENERS	9
AIRLOC FASTENERS	11
SHAKEPROOF FASTENERS	13
PANELOC-ZAHODIAKIN AIRCRAFT FASTENER	13
LION FASTENERS	16
ODDIE FASTENERS	21
PLATE VIBRATION INSULATORS	22

LIST OF ILLUSTRATIONS

FIGURE	TITLE	PAGE
1 (Sheet 1 of 4)	Interchangeability Tables	2
1 (Sheet 2 of 4)	Interchangeability Tables	3
1 (Sheet 3 of 4)	Interchangeability Tables	4
1 (Sheet 4 of 4)	Interchangeability Tables	5
2	Installation Limits for Dzus Fasteners	6
3	Dzus Stud and Spring Dimensions	6
4	Installation Tools - Dzus Fasteners	7
5	Installation - Dzus Fasteners	8
6	Camloc Fastener	9
7	Camloc Fastener Dimensions	9
8	Camloc Grommet Installation	10
9	Airloc Fastener	11
10	Airloc Fastener Size Designations	11
11	Hole Sizes for Airloc Fastener Receptacles	12
12	Paneloc Zahodiakin Fastener	13
13	Pressure Seal Gasket and Shear Washer Application	14
14	Paneloc Part Number Coding	15
15	Paneloc Sheet Hole Sizes	16
16	Installation Dimension for Receptacles and Grommets	17
17	Lion High Strength HO Fastener	18
18	Lion No. 2 Fastener	18
19	Lion No. 5 Fastener	19
20	Lion Part Number Coding	20
21	Oddie Fastener - Exploded View	22
22	Oddie Fastener Installation Data	23
23 (Sheet 1 of 3)	Vibration Insulator Cross-reference Table	25
23 (Sheet 2 of 3)	Vibration Insulator Cross-reference Table	26
23 (Sheet 3 of 3)	Vibration Insulator Cross-reference Table	27
24	Loading Instructions - Vibration Dampeners	28
25 (Sheet 1 of 2)	Plate Vibration Insulators	29
25 (Sheet 2 of 2)	Plate Vibration Insulators	30
26	Table of Material Specifications	31

QUICK RELEASE PRESSURE FASTENERS

GENERAL

1 Quick release fasteners are used to secure engine cowlings, fairing, panels and similar sheet metal components requiring repeated and rapid attachment and removal, without being subjected to undue wear or localized fatigue of the surrounding metal. The quick release fasteners dealt with in this part are: Dzus, Camloc, Airloc, Paneloc-Zahodiakin, Lion and Oddie. For general instructions regarding the inspection of these fasteners, refer to EO 05-1-2Q.

INTERCHANGEABILITY

2 The interchangeability tables, see Figure 1, cover the main types of cowl fasteners approved for the use of the RCAF. The tables have been prepared as an aid in making replacements. In every case only complete assemblies may be interchanged, not the individual parts making up the assembly, i. e. studs, grommets or receptacles. The tables cover the following series of Dzus (Item 1) fasteners:

A	Round Head
AJ	Round Head, Long Undercut
AW	Wing Type Round Head
AJW	Wing Type Round Head, Long Undercut
F	Flush Head
FJ	Flush Head, Long Undercut
FW	Wing Type Flush Head
FJW	Wing Type Flush Head, Long Undercut
FA	Flush Head, Rounded Edge

3 The AW, AJ, AJW, FW, FJ and FJW series are not shown, since the callouts are the same as for the A and F series, respectively, except for the addition of W and/or J.

INSTALLATION

4 Special tools are provided for the installation of all types of fasteners and must be used to ensure proper assembly, refer to CAP 10. For instructions on dimpling procedure, refer to EO 05-1-3/5

INSTALLATION LIMITS

5 Flush head studs are to be flush with the external skin surface within the limits shown in Figure 2.

6 For illustration of critical zones of aircraft, refer to EO 05-1-3/5

Round Head								
Material Thickness	Dzus		Shake-proof SP-OS-5	1 Inch Mounting Centres Airloc 99835-1	Dzus A6-1/2	Shake-proof SP-OS-7	1-1/8 Inch Mounting Centres Airloc 99839-1	Camloc 4055
	A5	A6						
.045 to .050			-5	-.050		-5	-.050	
.051 to .054			-5	-.060		-5	-.060	-1
.055 to .060			-6	-.060		-6	-.060	-1
.061 to .064			-6	-.070		-6	-.070	-1
.065 to .070			-7	-.070		-7	-.070	-1
.071 to .074			-7	-.080		-7	-.080	-1
.075 to .080			-8	-.080		-8	-.080	-1
.081 to .084			-8	-.090		-8	-.090	-2
.085 to .090			-9	-.090		-9	-.090	-2
.091 to .094			-9	-.100		-9	-.100	-2
.095 to .100			-10	-.100		-10	-.100	-2
.101 to .104			-10	-.110		-10	-.110	-2
.105 to .110			-11	-.110		-11	-.110	-2
.111 to .114			-11	-.120		-11	-.120	-3
.115 to .120			-12	-.120		-12	-.120	-3
.121 to .124			-12	-.130		-12	-.130	-3
.125 to .130			-13	-.130		-13	-.130	-3
.131 to .134			-13	-.140		-13	-.140	-3
.135 to .140			-14	-.140		-14	-.140	-3
.141 to .144			-14	-.150		-14	-.150	-4
.145 to .150	-30		-15	-.150		-15	-.150	-4
.151 to .154	-30		-15	-.160		-15	-.160	-4
.155 to .160	-30		-16	-.160		-16	-.160	-4
.161 to .164	-30	-35	-16	-.170		-16	-.170	-4
.165 to .170	-30	-35	-17	-.170		-17	-.170	-4
.171 to .174	-30	-35	-17	-.180		-17	-.180	-5
.175 to .180	-30	-35	-18	-.180		-18	-.180	-5
.181 to .184	-30	-35	-18	-.190		-18	-.190	-5
.185 to .190	-30	-35	-19	-.190		-19	-.190	-5
.191 to .194	-30	-35	-19	-.200		-19	-.200	-5
.195 to .200	-35	-35	-20	-.200		-20	-.200	-5

Figure 1 (Sheet 1 of 4) Interchangeability Tables

Round Head								
Material Thickness	Dzus		Shake-proof SP-OS-5	1 Inch Mounting Centres Airloc 99835-1	Dzus A6-1/2	Shake- proof SP-OS-7	1-1/8 Inch Mounting Centres Airloc 99839-1	Camloc 4055
	A5	A6						
.201 to .204	-35	-35	-20	-.210		-20	-.210	-6
.205 to .210	-35	-35	-21	-.210		-21	-.210	-6
.211 to .214	-35	-40	-21	-.220	-40	-21	-.220	-6
.215 to .220	-35	-40	-22	-.220	-40	-22	-.220	-6
.221 to .224	-35	-40	-22	-.230	-40	-22	-.230	-6
.225 to .230	-35	-40	-23	-.230	-40	-23	-.230	-6
.231 to .234	-35	-40	-23	-.240	-40	-23	-.240	-7
.235 to .240	-35	-40	-24	-.240	-40	-24	-.240	-7
.241 to .244	-35	-40	-24	-.250	-40	-24	-.250	-7
.245 to .250	-40	-40	-25	-.250	-40	-25	-.250	-7
.251 to .254	-40	-40	-25	-.260	-40	-25	-.260	-7
.255 to .260	-40	-40		-.260	-40		-.260	-7
.261 to .264	-40	-45		-.270	-40		-.270	-8
.265 to .270	-40	-45		-.270	-40		-.270	-8
.271 to .274	-40	-45		-.280	-40		-.280	-8
.275 to .280	-40	-45		-.280	-40		-.280	-8
.281 to .284	-40	-45		-.290	-40		-.290	-8
.285 to .290	-40	-45		-.290	-40		-.290	-8
.291 to .294	-40	-45		-.300	-40		-.300	-9
.295 to .300	-40	-45		-.300	-40		-.300	-9
.301 to .304	-40	-45		-.310	-40		-.310	-9
.305 to .310	-40	-45		-.310	-40		-.310	-9
.311 to .314	-40	-50		-.320	-50		-.320	-9
.315 to .320	-40	-50		-.320	-50		-.320	-9
.321 to .324	-40	-50		-.330	-50		-.330	-10
.325 to .330	-40	-50		-.330	-50		-.330	-10
.331 to .334	-40	-50		-.340	-50		-.340	-10
.335 to .340	-40	-50		-.340	-50		-.340	-10
.341 to .344	-40	-50		-.350	-50		-.350	-10
.345 to .350	-50	-50		-.350	-50		-.350	-10
.351 to .354	-50	-50		-.360				

Figure 1 (Sheet 2 of 4) Interchangeability Tables

Flush Head

Material Thickness	Dzus			Shake-proof SP-SF-5	1 Inch Mounting Centres Airloc 98265-1	Dzus		Shake-proof SP-SF-7	1-3/8 Inch Mounting Centres Airloc 98266-1	Camloc 4055
	F5	F6	FA5			F 6-1/2	FA 6-1/2			
.045 to .050				-5	-.050			-5	-.050	
.051 to .054				-5	-.060			-5	-.060	-1
.055 to .060				-6	-.060			-6	-.060	-1
.061 to .064		-40		-6	-.070			-6	-.070	-1
.065 to .070		-40		-7	-.070			-7	-.070	-1
.071 to .074		-40		-7	-.080			-7	-.080	-1
.075 to .080		-40		-8	-.080			-8	-.080	-1
.081 to .084		-40		-8	-.090			-8	-.090	-2
.085 to .090		-40		-9	-.090			-9	-.090	-2
.091 to .094		-40		-9	-.100			-9	-.100	-2
.095 to .100	-35	-40		-10	-.100			-10	-.100	-2
.101 to .104	-35	-40	-35	-10	-.110			-10	-.110	-2
.105 to .110	-35	-40	-35	-11	-.110			-11	-.110	-2
.111 to .114	-35	-45	-35	-11	-.120			-11	-.120	-3
.115 to .120	-35	-45	-35	-12	-.120		-45	-12	-.120	-3
.121 to .124	-35	-45	-35	-12	-.130		-45	-12	-.130	-3
.125 to .130	-35	-45	-35	-13	-.130		-45	-13	-.130	-3
.131 to .134	-35	-45	-35	-13	-.140		-45	-13	-.140	-3
.135 to .140	-35	-45	-35	-14	-.140		-45	-14	-.140	-3
.141 to .144	-35	-45	-35	-14	-.150		-45	-14	-.150	-4
.145 to .150	-40	-45	-35	-15	-.150		-45	-15	-.150	-4
.151 to .154	-40	-45	-40	-15	-.160		-45	-15	-.160	-4
.155 to .160	-40	-45	-40	-16	-.160		-45	-16	-.160	-4
.161 to .164	-40	-50	-40	-16	-.170	-50	-45	-16	-.170	-4
.165 to .170	-40	-50	-40	-17	-.170	-50	-45	-17	-.170	-4
.171 to .174	-40	-50	-40	-17	-.180	-50	-45	-17	-.180	-5
.175 to .180	-40	-50	-40	-18	-.180	-50	-45	-18	-.180	-5
.181 to .184	-40	-50	-40	-18	-.190	-50	-45	-18	-.190	-5
.185 to .190	-40	-50	-40	-19	-.190	-50	-45	-19	-.190	-5
.191 to .194	-40	-50	-40	-19	-.200	-50	-45	-19	-.200	-5
.195 to .200	-45	-50	-40	-20	-.200	-50	-45	-20	-.200	-5

Figure 1 (Sheet 3 of 4) Interchangeability Tables

Flush Head										
Material Thickness	Dzus			Shake-proof SP-SF-5	1 Inch Mounting Centres Airlock 98265-1	Dzus		Shake-proof SP-SF-7	1-3/8Inch Mounting Centres Airloc 98266-1	Cam-lock 4055
	F5	F6	FA5			F 6-1/2	FA 6-1/2			
.201 to .204	-45	-50	-45	-20	-.210	-50	-45	-20	-.210	-6
.205 to .210	-45	-50	-45	-21	-.210	-50	-45	-21	-.210	-6
.211 to .214	-45	-50	-45	-21	-.220	-50	-45	-21	-.220	-6
.215 to .220	-45	-50	-45	-22	-.220	-50	-55	-22	-.220	-6
.221 to .224	-45	-50	-45	-22	-.230	-50	-55	-22	-.230	-6
.225 to .230	-45	-50	-45	-23	-.230	-50	-55	-23	-.230	-6
.231 to .234	-45	-50	-45	-23	-.240	-50	-55	-23	-.240	-7
.235 to .240	-45	-50	-45	-24	-.240	-50	-55	-24	-.240	-7
.241 to .244	-45	-50	-45	-24	-.250	-50	-55	-24	-.250	-7
.245 to .250	-50	-50	-45	-25	-.250	-50	-55	-25	-.250	-7
.251 to .254	-50	-50	-50	-25	-.260	-50	-55	-25	-.260	-7
.255 to .260	-50	-50	-50		-.260	-50	-55		-.260	-7
.261 to .264	-50	-60	-50		-.270	-50	-55		-.270	-8
.265 to .270	-50	-60	-50		-.270	-60	-55		-.270	-8
.271 to .274	-50	-60	-50		-.280	-60	-55		-.280	-8
.275 to .280	-50	-60	-50		-.280	-60	-55		-.280	-8
.281 to .284	-50	-60	-50		-.290	-60	-55		-.290	-8
.285 to .290	-50	-60	-50		-.290	-60	-55		-.290	-8
.291 to .294	-50	-60	-50		-.300	-60	-55		-.300	-9
.295 to .300	-50	-60	-50		-.300	-60	-55		-.300	-9
.301 to .304	-50	-60			-.310	-60	-55	-	-.310	-9
.305 to .310	-50	-60			-.310	-60	-55		-.310	-9
.311 to .314	-50	-60			-.320	-60	-55		-.320	-9
.315 to .320	-50	-60			-.320	-60	-55		-.320	-9
.321 to .324	-50	-60			-.330	-60	-65		-.330	-10
.325 to .330	-50	-60			-.330	-60	-65		-.330	-10
.331 to .334	-50	-60			-.340	-60	-65		-.340	-10
.335 to .340	-50	-60			-.340	-60	-65		-.340	-10
.341 to .344	-50	-60			-.350	-60	-65		-.350	-10
.345 to .350	-60	-60			-.350	-60	-65		-.350	-10

Figure 1 (Sheet 4 of 4) Interchangeability Tables

EJECTOR SPRINGS

7 Ejector springs may be used with most fasteners.

DZUS FASTENERS

GENERAL

8 The Dzus fastener, see Figure 3, consists of a stud provided with a slotted head, a light alloy grommet and a wire spring. The stud is retained in the outer sheet-metal member by means of a light alloy grommet. The spring is rivetted at each looped end to the underside of the inner member. When the stud is given a quarter turn in the clockwise direction, a helix slot machined in the stud end engages with the centre portion of the spring, drawing it up and thus pulling two members together.

STUD

9 The stud is made with oval or flush heads which are usually slotted, but wing heads are available, if required. The sleeve portion under the head is made in various lengths according to the application of the fastener and to the thickness of the plate in which the stud is fitted. The hole in the outer member is fitted with a light alloy grommet which prevents the stud from falling out when the fastener is unlocked.

SPRING

10 The fastener spring is a short length of spring-steel wire. The ends are coiled in opposite directions to form spirals, through the eyes of which the spring is rivetted to the inner member. The centre portion of the spring engages with the helix slot in the end of the stud. When the fastener is in its locked position, the spring is deflected by the helix slot and the outer member is held in position under compression. The recommended deflection for all springs where the pitch of the rivet centres is over 1" is 0.062 (± 0.010 "), while the deflection for most other types is 0.047 (± 0.010 "), exception being made in the case of the small-type spring. The latter can be identified by the diameter of the wire, which is 0.09" and by the rivet centre pitch which is 1". The deflection of the small-type spring is 0.062 (± 0.010 ").

INSTALLATION

11 Check that the correct type of spring is used with the required types of stud. Where a defective fastener is to be replaced by a new one, use the defective parts as a guide to the size and shape of the replacement parts required. Measure the length of the stud from the lower edge of the locking slot to the upper surface of the head, for all flush-type fasteners, or to the underside of the head for round-headed fasteners, see Figure 3. If the length of stud differs from the lengths of the nearest size available, use the next larger size and insert shim-washers to the required thickness under the spring seats to bring the spring deflection to the

Special Tolerance for Critical Zones	Standard Tolerance for Other Zones
.005 above	.010 above
.002 below	.002 below

Figure 2 Installation Limits for Dzus Fasteners

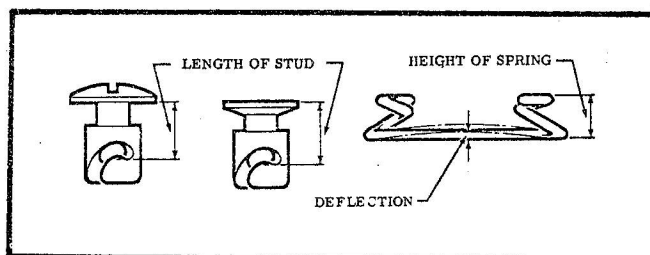
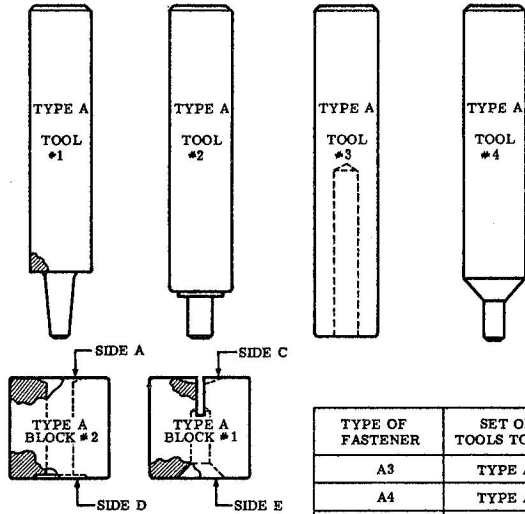


Figure 3 Dzus Stud and Spring Dimensions

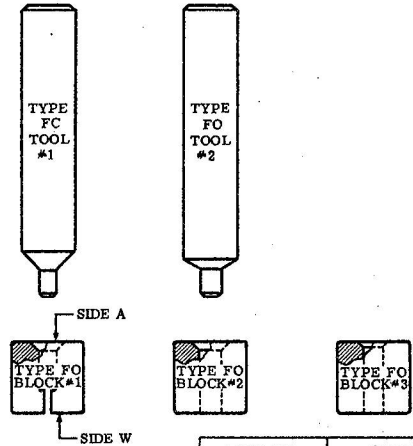
**FOR TYPE A AND AJ FASTENERS
WITH OR WITHOUT GROMMET INSTALLATION**



FOR INSTALLATION WITHOUT GROMMET - ORDER TOOL NO. 3 & 4 AND BLOCK NO. 1 ONLY.

TYPE OF FASTENER	SET OF TOOLS TO USE
A3	TYPE A3
A4	TYPE A4
A5	TYPE A5
A6	TYPE A6
A6-1/2	TYPE A6-1/2
A7	TYPE A7

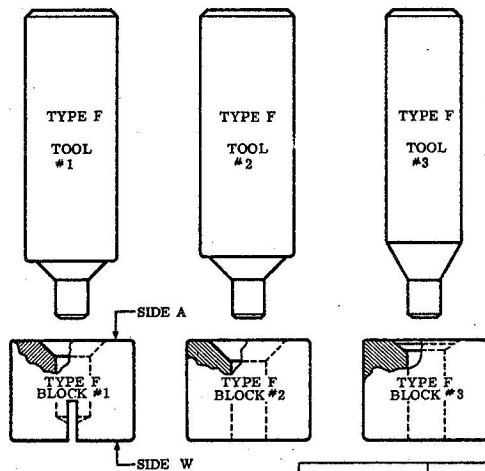
**FOR TYPE F- FJ FASTENERS
WITHOUT GROMMET INSTALLATION**



SOLD IN SETS ONLY

TYPE OF FASTENER	SET OF TOOLS TO USE
F3	TYPE F03
F4	TYPE F04
F5	TYPE F05
F6	TYPE F06
F6-1/2	TYPE F06-1/2

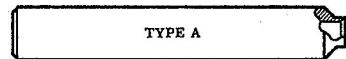
**FOR TYPE F-FJ-FA FASTENERS
WITH GROMMET INSTALLATION**



SOLD IN SETS ONLY

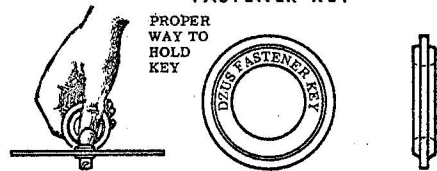
TYPE OF FASTENER	SET OF TOOLS TO USE
F4	TYPE F4
F5	TYPE F5
F6	TYPE F6
F6-1/2	TYPE F6-1/2
F7	TYPE F7

**STAKING TOOL
FOR TYPE A AND AJ FASTENERS**



TYPE OF FASTENER	TYPE OF TOOL TO USE	TYPE OF FASTENER	TYPE OF TOOL TO USE
A3	A3	A6	A6
A4	A4	A6-1/2	A6-1/2
A5	A5	A7	A7

FASTENER KEY



MECHANICS SHOULD BE INSTRUCTED TO USE THIS KEY WHEN OPENING OR LOCKING FASTENER. ITS USE PREVENTS DAMAGE CAUSED BY SLIPPAGE OF BAD SCREW DRIVERS. IF REQUIRED FOR USE WITH A3, A4, F3 OR F4 FASTENER SPECIFY THIS ON ORDER AND KEYS WILL BE SUPPLIED WITH EDGE GROUND TO FIT HEAD SLOT.

ALL INSTALLATION TOOLS DESIGNED FOR HAND INSTALLATION - STRIKE WITH SOFT FACED Mallet ONLY. POWER INSTALLATION TOOLS MAY BE MADE ON ORDER.

Figure 4 Installation Tools - Dzus Fasteners

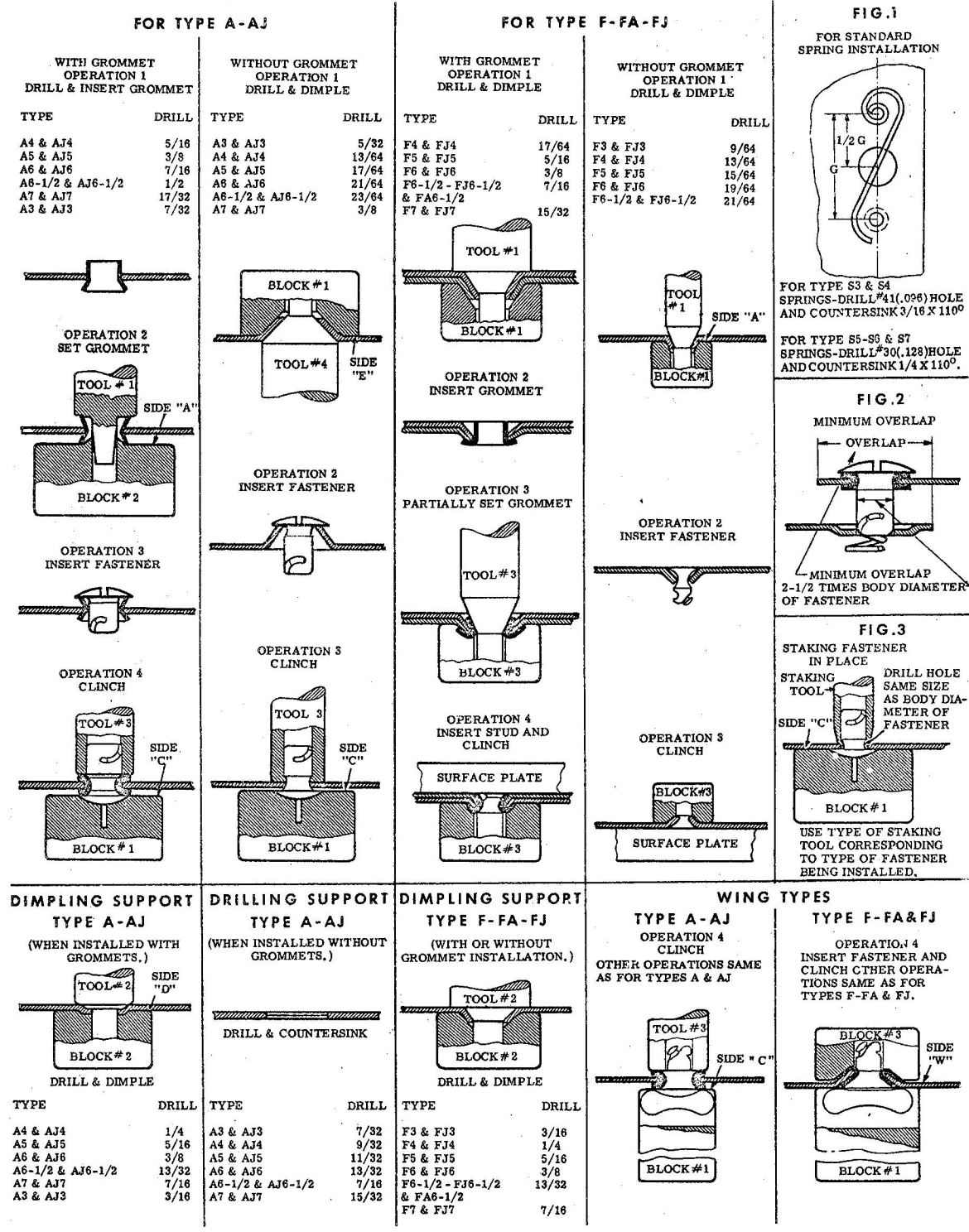


Figure 5 Installation - Dzus Fasteners

recommended figure. The procedure and special tools required for fitting the various types of fasteners are shown in Figures 4 and 5.

REMOVAL OF FASTENERS

12 If any part is defective, replace as follows:

- (a) To remove a defective stud, cut away the aluminum grommet, using a trepanning tool, centered by means of the sleeve end of the stud.
- (b) To remove a spring, drill out the rivets.
- (c) If a grommet is loose, reset using the appropriate drift and block for the type of fastener held in the grommet. If the grommet can not be successfully reset, replace.

CAMLOC FASTENERS

GENERAL

13 The Camloc fastener, see Figure 6, consists of a stud, a grommet and a receptacle. A snap ring is used in most applications to retain the grommet. For Camloc fastener dimensions, see Figure 7.

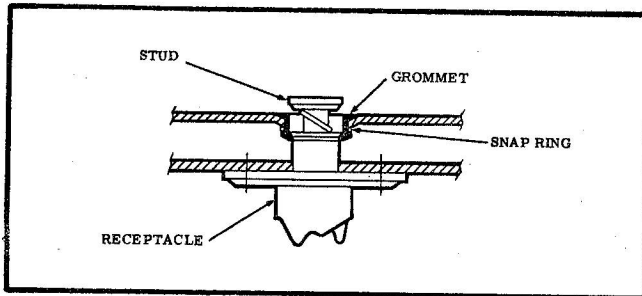
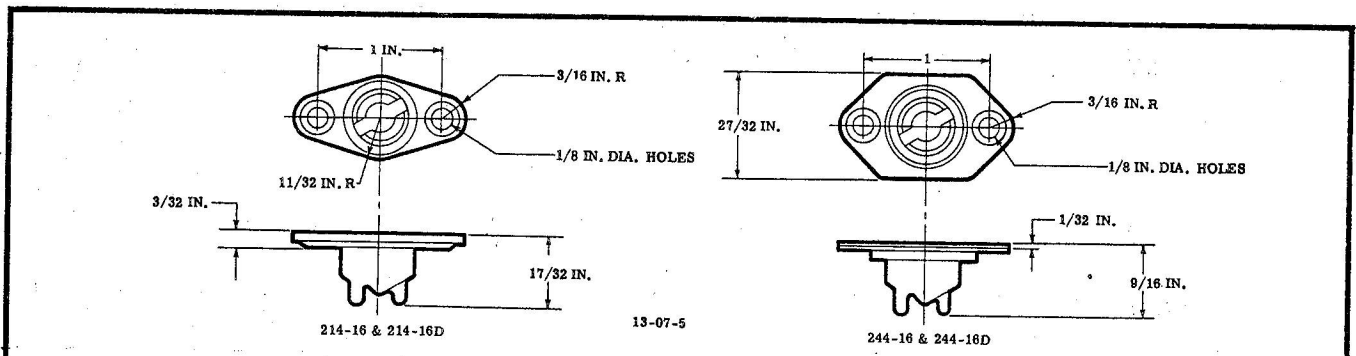


Figure 6 Camloc Fastener



Camloc Part No.	Rivet Holes	Material	Type
214-16	Plain	Silicon Bronze	Rigid
214-16D	Dimpled		
244-16	Plain	Silicon Bronze and steel	Floating (allows 1/16 float)
244-16D	Dimpled		

The hole required on inner panel to accommodate the grommet must be 11/16 diameter. Same hole size is applicable for rigid or floating types of receptacles.

Figure 7 Camloc Fastener Dimensions

STUD

14 The stud assembly is a complete unit, the stud cross pin having been factory assembled, centered and staked. This ensures perfect fit and guarantees proper centering of the pin. Spring tension of the stud assembly permits use of several dash numbers longer than shown on stud chart, if desired. In cases of varying sheet thickness due to tolerances which cause high locking torque, the stud can easily be replaced with one of suitable length without opening adjacent fasteners and removing the panel. This ensures a low locking torque for all fasteners in final assembly. Stud assemblies 4002-2 to 4002-15 inclusive, are installed with special Camloc pliers by compressing the spring cup and inserting the stud into the grommet. When the spring is released, the stud assembly cannot come out. Stud assemblies 4002-16 to 4002-25 inclusive are retained in the grommet by means of a special split washer which is furnished with these stud assemblies. No pliers are required. The stud is inserted into the grommet and the split washer is placed on the stud shank between the cross pin and the spring cup. The recommended type of stud for general use is No. 4002-()F cross recess head.

GROMMET

15 Grommets are used in all Camloc installations. They prevent the stud head from wearing on the removable panel and are especially desirable in soft or abrasive materials, such as magnesium, plywood, bonded materials and plastic. The grommet also protects the outer panel against abrasive action of locking and unlocking the fastener and assures uniform bearing on the panel in case of misalignment. Various types of grommets are available. The recommended grommet for general use is 4002G, which is a steel grommet for flush installation. The snap ring to be used with each grommet is R4G.

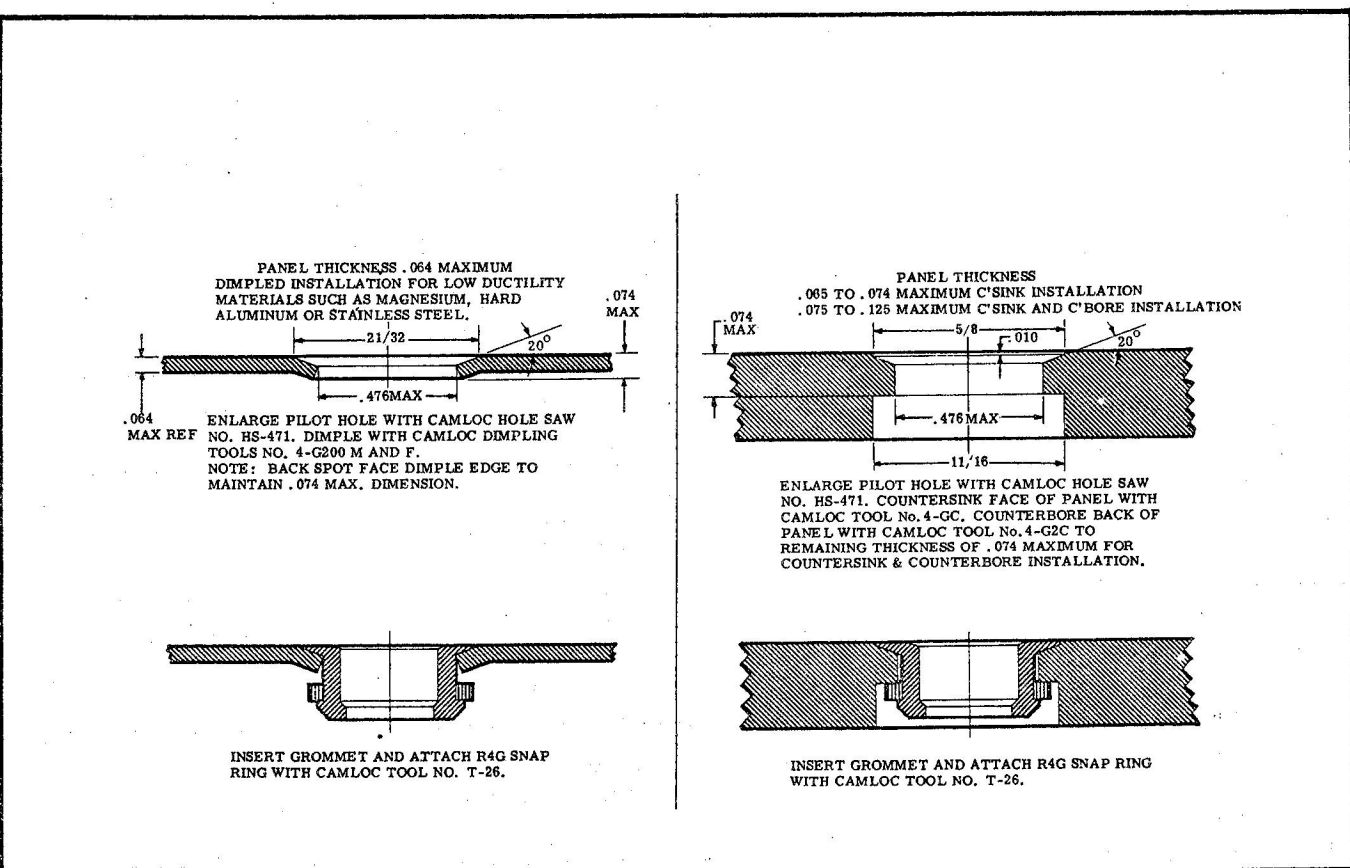


Figure 8 Camloc Grommet Installation

RECEPTACLE

16 The long sloping surface on the receptacle produces a uniform locking torque. As the locked position is reached, the cross pin snaps into a detent and prevents the possibility of accidentally unlocking. The combination of the detent and spring-loaded stud assembly permits the use of the same stud length for a wide range of material thickness without danger of opening through vibration. The receptacle is a silicon bronze diecasting and is permanently attached to the inner panel. It is furnished in both rigid and floating types, the latter to accommodate misalignment of the panels.

EDGE DISTANCE

17 The absolute minimum edge distance for both grommet and receptacle is 1/2" measured from the edge of the stud or rivet hole.

GROMMET INSTALLATION

18 For grommet installation, see Figure 8.

REPLACEMENT OF RECEPTACLE

19 To replace the Camloc receptacle, remove the rivets and install a new receptacle by rivetting into place. If the cowling or cowling support is damaged, it may be necessary to install a new section on which the receptacle is to be rivetted.

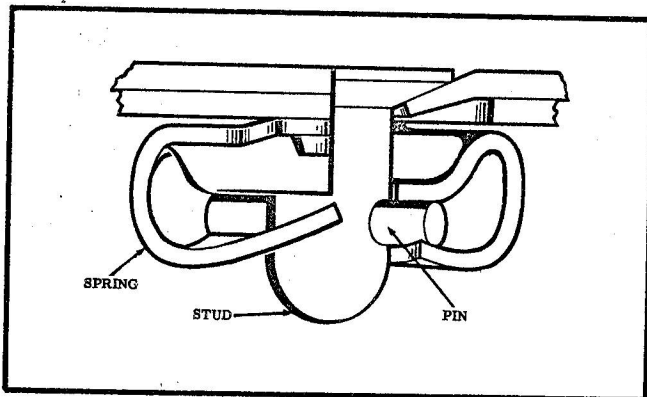


Figure 9 Airloc Fastener

Size	Rivet Centre Distance	Stud Shank Diameter	Stud Cross Pin Length
No. 7	1-3/8	5/16	.600
No. 5	1	17/64	.453
No. 2	3/4	11/64	.313

Figure 10 Airloc Fastener Size Designations

REPLACEMENT OF GROMMET

20 When necessary to replace a grommet in a cowling sheet, either cut the grommet out by use of plier or enlarge the dimple by pressure from the top. A new grommet can then be pressed into place and the dimple pressed back into its original form.

REPLACEMENT OF STUD ASSEMBLY

21 When replacing a stud assembly, compress the spring of the stud assembly with pliers and enter the stud through the grommet. Camloc pliers No. 4P4 are convenient for this operation. Any pliers may be ground to a similar shape or an improvised metal extractor may be used. Use the shortest stud assembly that will lock and unlock without binding.

AIRLOC FASTENERS

GENERAL

22 The airloc fastener, see Figure 9, consists a stud, cross pin and receptacle.

NUMBER 7

Outer Sheet

Dimpled, drill $11/32$ inch.

Dimple diameter, $49/64$ inch.

Protruding head, drill $3/8$ inch.

Inner Sheet

Drill $13/16$ inch.

Floating receptacle, drill $31/32$ inch.

Rivet centres $1-3/8$ inch, use $1/8$ inch rivets.

NUMBER 5

Outer Sheet

Dimpled, drill $9/32$ inch.

Dimple diameter, $5/8$ inch.

Protruding head, drill $21/64$ inch.

Inner Sheet, drill $5/8$ inch.

Floating receptacle,

If $1/8$ inch rivets are used,
drill $5/8$ inch.

If $3/32$ inch rivets are used,
drill $11/16$ inch.

Rivet centres 1 inch.

NUMBER 2

Outer Sheet

Dimpled, drill $3/16$ inch.

Dimple diameter, $7/16$ inch.

Protruding head, drill $3/16$ inch.

Inner Sheet, drill $7/16$ inch.

Rivet centres $3/4$ inch, use $3/32$ inch rivets.

They are manufactured in three sizes; No. 7, No. 5 and No. 2, see Figure 10.

STUD

23 The stud is of steel, casehardened to eliminate excessive wear. The cross pin hole is reamed to close tolerance with press fit of the pin in the stud. Head styles available are flush, oval and wing.

CROSS PIN

24 The cross pin is of chrome-vanadium steel, heat-treated to provide maximum strength, wear and holding power. It is held to close tolerance.

STUD RECEPTACLE

25 Two types of sheet spring receptacles are available; the rigid type and the floating type. Both are of high carbon, heat-treated steel. An upper wing provides ejection of the stud when the fastener is unlocked and enables the cross pin to be held in a locked position between the upper wing, the cam, the stop and the wing indenture without regard to the tension which the stud places on the receptacle.

DIMPLING

26 Use standard hand tools provided. For full instructions regarding dimpling, refer to EO 05-1-3/5.

REPLACEMENT OF RECEPTACLE

27 Remove old receptacle by drilling out rivets. Do not damage the sheet. Rivet receptacles to the inner surface of the inner sheet. Rivets must be flush with the outer surface of the inner sheet. For hole sizes, see Figure 11. Receptacles with plain rivet holes can be replaced by receptacles with countersunk rivet holes.

INSERTION OF CROSS PIN

28 Use standard hand tools provided for the size of fastener being replaced. Observe the following precautions:

Figure 11 Hole Sizes for Airloc Fastener Receptacles

- (a) Be sure the stud cross pin is centered in the stud as this will assure satisfactory operation of the fastener.
- (b) Do not re-use cross pins or studs. Only new parts will be sufficiently tight.

SERVICING AIRLOC FASTENERS

29 Airloc studs come in lengths varying ten-thousandths of an inch. To determine proper stud length to be used, proceed as follows:

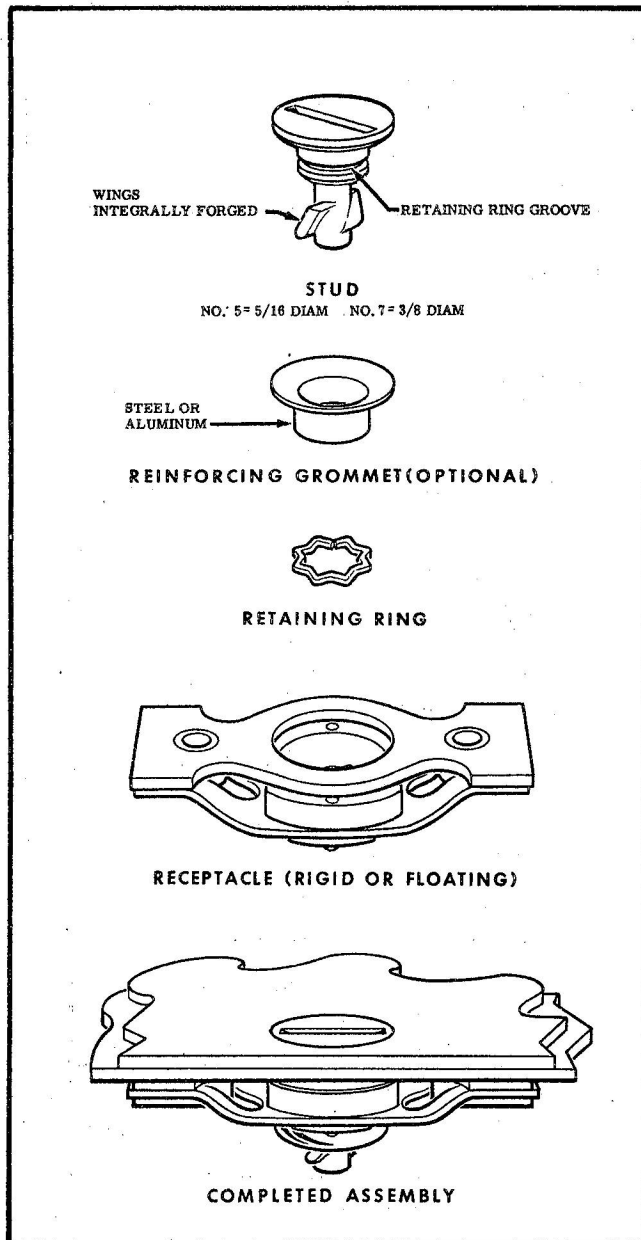


Figure 12 Paneloc Zahodiakin Fastener

- (a) Select type - flush head, roundhead, or wing.

(b) Determine total application thickness. Add thickness of inner (structure) and outer (panel, doors, and the like) sheets, including gaskets and reinforcements in thousandths of an inch, plus .010" to allow for wrinkling, warpage, etc. Take the nearest even .010" above this total.

(c) When selecting studs for #2 floating receptacle, an additional .020" must be added to the above. For the #5 and #7 floating receptacles an additional .030" must be added. For grip lengths, see Figure 1. Select a stud with this number stamped on the head.

SHAKEPROOF FASTENERS

GENERAL

30 Shakeproof fasteners (Item 4) are similar to the Airlock fastener and instructions for installation, removal and servicing are to be followed as detailed in paragraphs 27, 28 and 29, preceding.

PANELOC-ZAHODIAKIN AIRCRAFT FASTENER

GENERAL

31 The Paneloc fastener (Item 5) is a quick release fastener manufactured by the Scovill Mfg. Co., under patents of the Zahodiakin Research Corp., see Figure 12. It consists of a stud, a retaining ring and a receptacle. Ejector spring, reinforcing grommet, pressure seal gasket and shear washer are optional. They are available in two sizes: #5 and #7.

STUD

32 The studs are made of cadmium-plated steel and have wings integrally forged from the shank. They are available with flush heads, oval heads and wing heads. The stud is held in position by a retaining ring.

RETAINING RING

33 The retaining ring is made of cadmium-plated steel, and locks into a groove in the stud. No special installation tools are required.

RECEPTACLE

34 The receptacle is mounted on the inside sheet by means of two rivets. There are two types of receptacle, rigid and floating.

REINFORCING GROMMET

35 To strengthen the bearing area, the reinforcing grommet may be installed in the dimpled sheet before inserting the stud. The grommets are made of corrosion resistant steel and aluminum, the latter being used for soft material to protect the sheet from scoring.

PRESSURE SEAL GASKETS

36 Pressure seal gaskets, made of non-metallic material, see Figure 13, are used under the head of the studs to achieve fluid tightness.

SHEAR WASHERS

37 A shear washer is applied when it is necessary to reduce sheet deflection, especially in case of oval head studs. The washer, being closely fitted in the inner sheet, carries the shear load directly into the stud. Shear washers are made for oval and flush head studs.

PART NUMBER CODING

38 For part number coding for Paneloc fasteners, see Figure 14.

INSTALLATION

39 Paneloc fasteners are installed as follows:

(a) To install studs (Item 5) drill holes, see Figure 15, in the outer sheet, insert the stud and secure with a retaining ring.

(b) Install all receptacles using two 1/8" rivets. For hole sizes see Figure 16. Use countersunk receptacle where the skin rivet holes are dimpled, and non-countersunk receptacle where the skin holes are machine

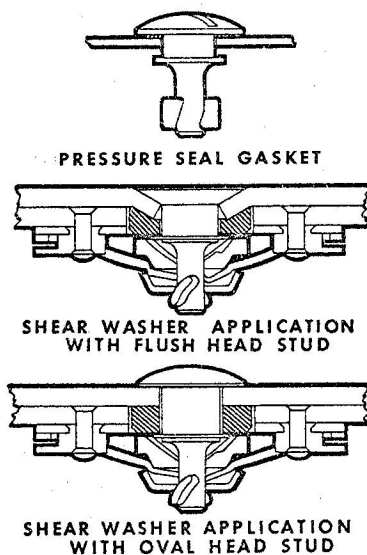


Figure 13 Pressure Seal Gasket and Shear Washer Application

countersunk. To determine the grip length add to total sheet thickness 0.144" for No. 5 receptacle, and add 0.175" for No. 7 receptacle.

- (c) Close and secure reinforcing grommets with standard grommet tools. Use the irregularly pierced holes where a non-turning grommet is required, see Figure 16.
- (d) To install ejector spring, drill outer sheet as specified to accommodate stud dimple and allow for the arc of the stud. Install stud in ejector spring and lock stud in receptacle. Use rivet holes in spring as template and drill top sheet for two 1/8" rivets.
- (e) Install pressure seal gasket between the head of the stud and the outer sheet. No reinforcing grommet is used with this installation.
- (f) Where shear washers are used, install underneath the outer sheet and secure with retaining ring. Drill holes in inner sheet, see Figure 15, to accommodate the washer. With the -68 and -79 shear washers, use special receptacles with oversize holes in the base plate corresponding to outside diameter of the washer.

EXAMPLES OF PART NO. CODING			
S2000-F-13	No.5 Flush Head Stud, grip length from 0.121 inch to 0.130 inch.	AG4000-F-46	No.7 Aluminum Alloy Grommet, for flush head stud, for outer sheet thickness from 0.040 inch to 0.060 inch.
S2000-R-15	No.5 Oval Head Stud, grip length from 0.141 inch to 0.150 inch.	SG4000-F-68	No.7 Corr. Res. Steel Grommet, for flush head stud, for outer sheet thickness from 0.060 inch to 0.080 inch.
S4000-W-18	No.7 Wing Head Stud, grip length from 0.171 inch to 0.180 inch.	E4000-D	No.7 Ejector Spring, dimpled.
L2000	No.5 Retaining Ring.	E2000-ND	No.5 Ejector Spring, non-dimpled.
L4000	No.7 Retaining Ring.	PS2000	No.5 Pressure Seal Gasket, for use with flush, oval and wing head studs.
R2000-Z-C	No.5 Floating Type Receptacle, countersunk rivet holes.	AW2000-43-4	No. 5 Aluminum Alloy Shear Washer, 0.430 inch outside diameter, for sheet thickness up to 0.040 inch.
R4000-NZ-NC	No.7 Rigid Type Receptacle, non-countersunk rivet holes.	SW4000-79-5	No.7 Steel Shear Washer, 0.798 inch outside diameter, for sheet thickness up to 0.051 inch.
AG2000-F-25	No.5 Aluminum Alloy Grommet, for flush head stud, for outer sheet thickness from 0.020 inch to 0.050 inch.		
SG2000-F-57	No.5 Corr. Res. Steel Grommet, for flush head stud, for outer sheet thickness from 0.050 inch to 0.070 inch.		

Figure 14 Paneloc Part Number Coding

LION FASTENERS

GENERAL

40 Lion fasteners (Item 6) consist of a stud, grommet and receptacle. The fasteners are manufactured in three sizes: Hi-Strength, corresponding to 3/8" diameter; No. 5 corresponding to 5/16" diameter; and No. 2 corresponding to 1/4" diameter, see Figures 17, 18 and 19.

STUD

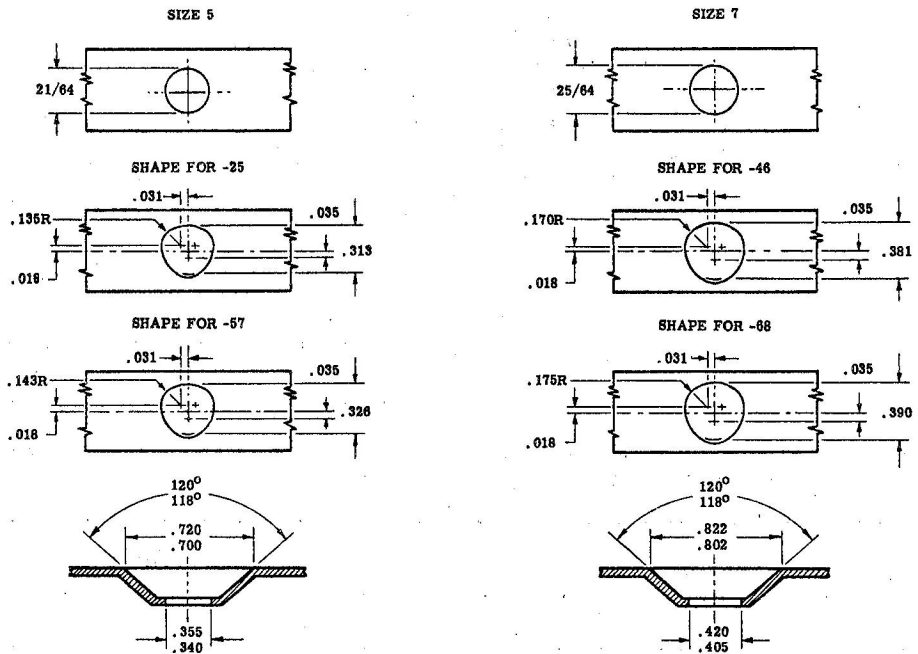
41 The one-piece studs, made of mild steel are available in the following head styles: Flush, oval, wing (5-W- and 5-WA-), ring (5-RA- and 5-RB-), notched (5-N-), key (5-N-) and knurled (5-K-). The stud of the Hi-Strength type is held in position by means of a ring which locks into holes in the stud. The studs of the remaining types are retained in the panels with grommets.

GROMMET

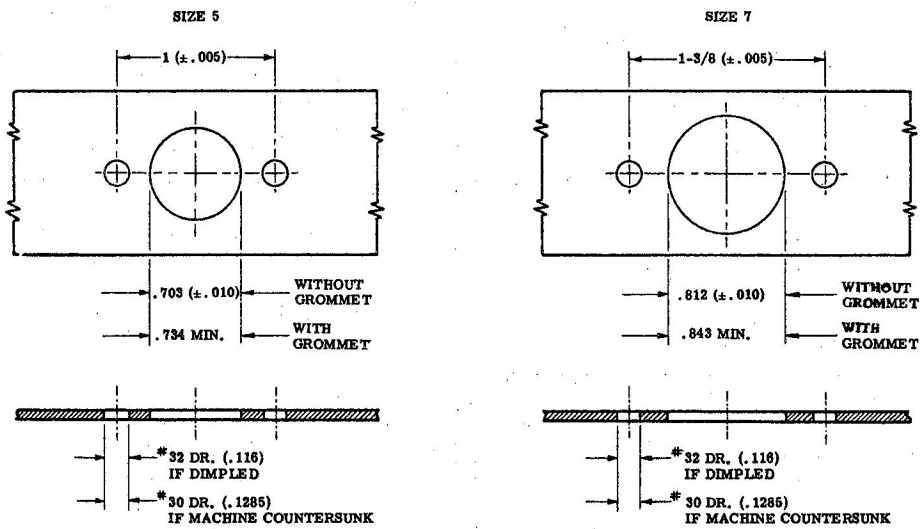
42 Grommets are used for No. 5 and No. 2 fasteners only. They are made of aluminum alloy and mild steel. In addition, rubber grommets (neoprene) are available to allow for hand removal of stud. They are made for No. 5 studs only.

NUMBER 7 STUD	NUMBER 5 STUD
<p>Outer Sheet</p> <p>Flush head stud: Before dimpling, drill 11/32 inch hole. Final hole 3/8 ($\pm .010$ inch). Dimple diameter: .700 inch to .720 inch. Angle 118° to 120°.</p> <p>Oval and wing heads: Final hole size 3/8 ($\pm .010$ inch).</p> <p>For ejector spring: Drill .812 ($\pm .010$ inch).</p> <p>For reinforcing grommet: See Figure 16.</p>	<p>Outer Sheet</p> <p>Flush head stud: Before dimpling, drill 19/64 inch hole. Final hole size 5/16 ($\pm .010$ inch). Dimple diameter: .630 inch to .650 inch. Angle 118° to 120°.</p> <p>Oval and wing head studs: Final hole size 5/16 ($\pm .010$ inch).</p> <p>For ejector spring: Drill .703 ($\pm .010$ inch) hole.</p> <p>For reinforcing grommet: See Figure 16.</p>
<p>Inner Sheet</p> <p>For receptacle holes: See Figure 16.</p> <p>For shear washers: Drill .500 inch to .505 inch hole for dash No. 49. .802 inch to .822 inch hole for dash No. 79.</p>	<p>Inner Sheet</p> <p>For receptacle holes: See Figure 16.</p> <p>For shear washers: Drill .435 inch to .440 inch hole for dash No. 43. .693 inch to .713 inch hole for dash No. 68.</p>

Figure 15 Paneloc Sheet Hole Sizes



HOLE SIZES, ROUND OR SHAPED FOR GROMMETS



HOLE SIZES AND PITCH DIMENSIONS FOR RECEPTACLES

Figure 16 Installation Dimension for Receptacles and Grommets

RECEPTACLE

43 A floating assembly made of mild steel allows for misalignment up to 0.153" on No. 5 fastener, and for a wide range tolerance of sheet thickness. Hi-Strength and No. 5 receptacles are attached with 1/8" and No. 2 receptacle with 3/32" flush head rivets. The No. 5 receptacle is also manufactured for spot-welding to the inner sheet (Part 5-296).

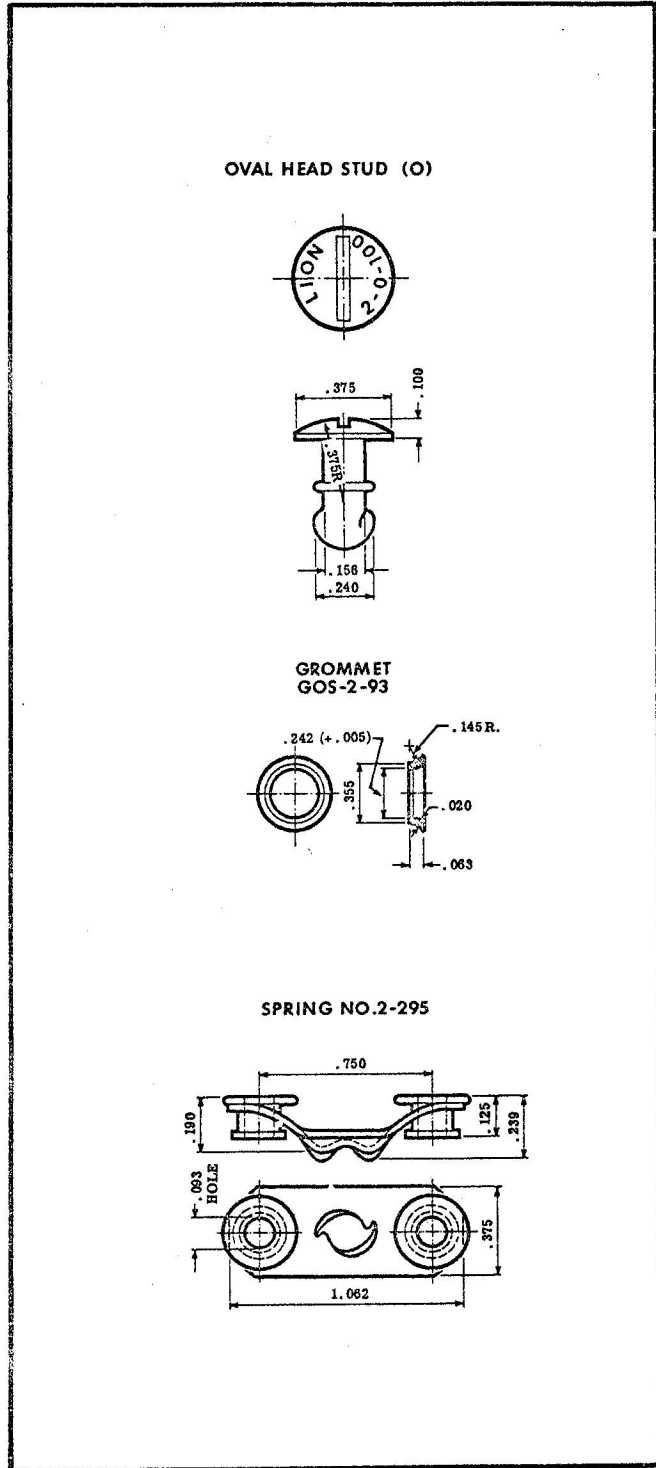
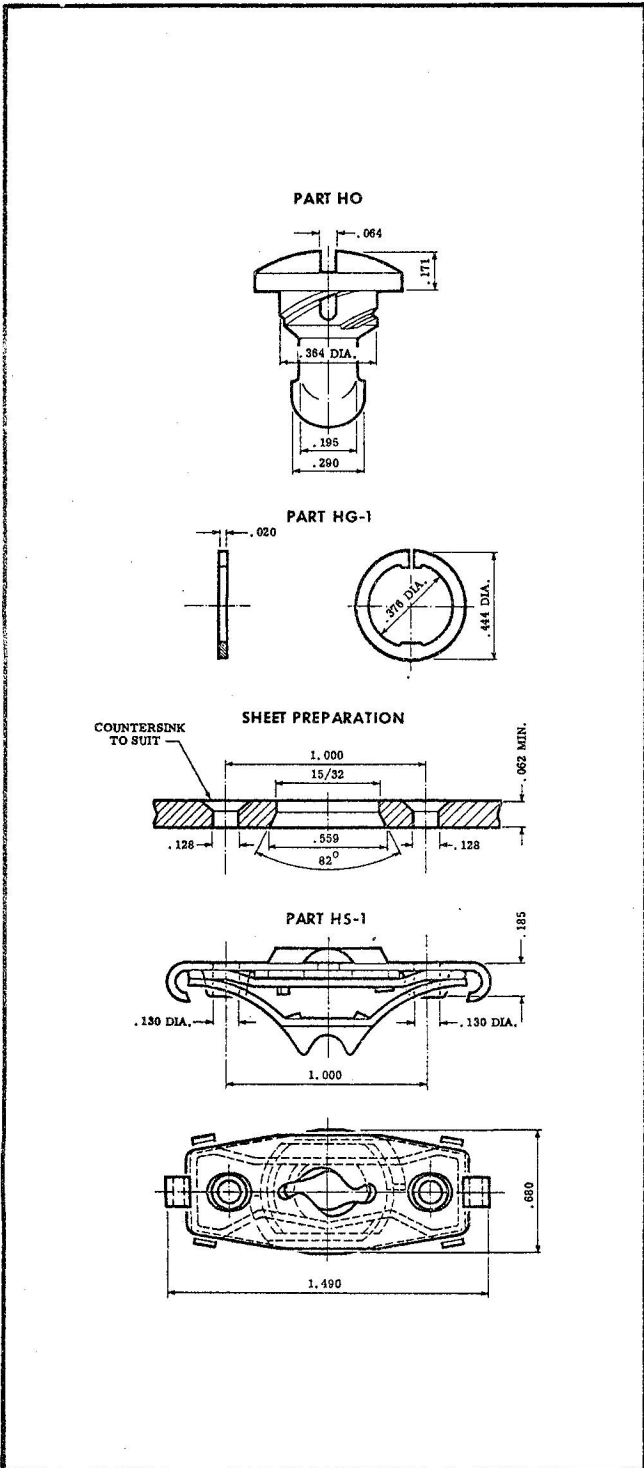


Figure 17 Lion High Strength HO Fastener

Figure 18 Lion No. 2 Fastener

CODING

44 For part number coding, see Figure 20.

INSTALLATION OF LION FASTENERS

45 Use special tools for sheet dimpling and closing of metal grommets. Employ flush head rivets for attaching receptacles. After rivetting, ensure that the receptacle spring floats in the base. Immobilization of the spring will limit the range of misalignment.

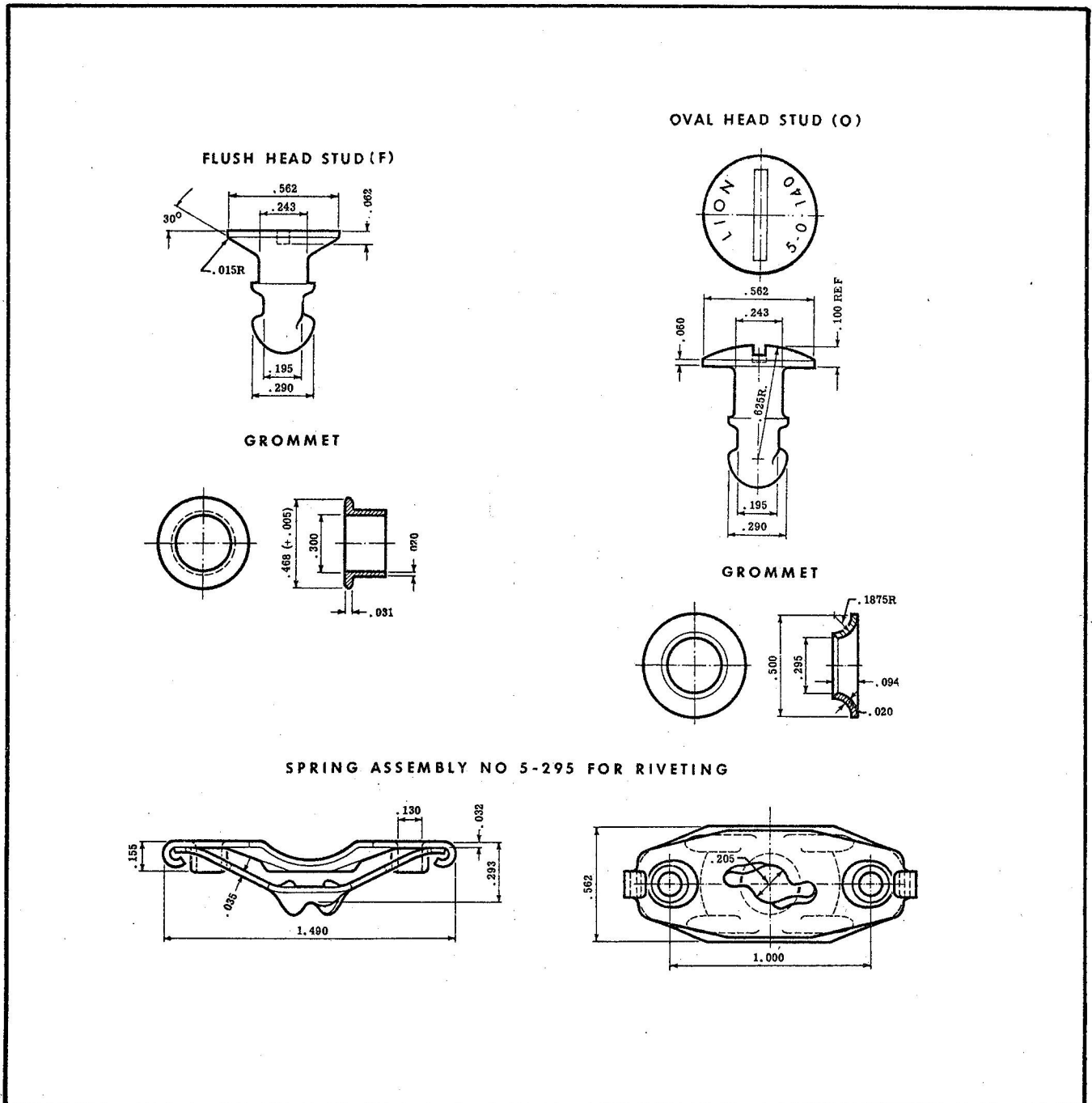


Figure 19 Lion No. 5 Fastener

HI-STRENGTH FASTENER

46 To install a Hi-Strength fastener, proceed as follows; see Figure 17.

(a) Drill a 3/8" hole in the outer sheet, insert the stud and secure it with retaining ring. No special tools are required.

(b) In the inner sheet, drill two No. 30 rivet holes to 1" centres and countersink. Drill a 15/32" centre hole and countersink the side of the sheet to which the receptacle is to be attached to 82° and to a depth of 0.044". The manufacturer's tool for drilling and countersinking is No. HT-1.

NOTE

The minimum thickness of the inner sheet for a Hi-Strength receptacle is 0.062".

EXAMPLES OF PART NO.CODING	
HO-140	Hi-Strength stud, grip length 0.130 inch to 0.150 inch. (Grip length available from 0.130 inch (Dash No.140) to 0.430 inch (Dash No.410) Increments in 0.030 inch.)
5-F-60	No.5 Flush head stud, grip length from 0.050 inch to 0.069 inch.
5-0-80	No. 5 Oval head stud, grip length from 0.070 inch to 0.089 inch. (The range of grip for Flush and Oval head studs from 0.050 inch (Dash No. 60) to 1.009 inch (Dash No. 1000). Increments in 0.020 inch.)
2-0-80	No.2 Oval head stud, grip length from 0.070 inch to 0.089 inch.
2-W-100	No.2 Wing head stud, grip length from 0.090 inch to 0.109 inch. (The range of grip from 0.070 inch (Dash No.80) to 0.250 inch (Dash No.240). Increments in 0.020 inch.)
HG-1	Hi-Strength retaining ring.
GF-130	No.5 Aluminum alloy flush head type grommet. (The range of sheet thickness up to 0.020 inch (Dash No.130) to 0.120 inch (Dash No.250).
<u>NOTE</u>	
For sheet thickness over 0.120 inch use GOS-5-93 grommet.	
GOS-5-93	No.5 Steel oval and flush head type grommet.
GO-5-93	No.5 Aluminum alloy oval-head type grommet.
GR-1	No.5 Rubber grommet.
GOS-2-93	No.2 Steel oval head type grommet.
GO-2-93	No.2 Aluminum alloy oval-head type grommet.
HS-1	Hi-Strength receptacle.
5-295	No.5 Receptacle for rivetting.
2-295	No.2 Receptacle.

Figure 20 Lion Part Number Coding

NO. 5 FASTENER

47 To install a flush head No. 5 fastener, using a GF grommet in the outer sheet proceed as follows:

- (a) Drill a 11/32" hole and insert stud and grommet. Curl grommet, using the flat end of tool No. 5-FD-3. Employ the countersunk end of tool to close the grommet and dimple the sheet.
 - (b) For thicknesses from 0.095" to 0.120", drill 11/32" hole. Countersink to provide proper conditions for closing the grommet and dimpling. For thicknesses over 0.120" drill 5/16" hole, countersink and use GOS-5-93 grommet.
- 48 To install an oval head No. 5 fastener, drill a 5/16" hole, insert stud and slip grommet on with the larger opening towards the head. Tap tool (Punch 5-OP-1; Die 5-OD-1) lightly to centre the grommet and then set the grommet.

NO. 5 RECEPTACLE

49 To install a No. 5 receptacle with flush head stud, proceed as follows:

- (a) Drill 1/2" hole in the inner sheet and dimple, using Punch No. 5-SP-1 and Die No. 5-SD-1.
- (b) For No. 5 receptacle with oval head stud only, drill a 9/16" hole.
- (c) For both types, drill two No. 30 (0.128") holes on 1" centres for 1/8" rivets and dimple if the thickness of the sheet is 0.040" or less. If the thickness is over 0.040", cut countersink.

NO. 2 FASTENER

50 Install No. 2 stud in the outer sheet in the same manner as No. 5 oval head type, drilling 1/4" hole.

51 To attach receptacle to the inner sheet, drill 15/32" centre hole, and two No. 41 (0.096") holes on 3/4" centres for 3/32" rivets.

ODDIE FASTENERS

GENERAL

52 Each Oddie fastener (Item 7) consists of a central pin, a coil spring or rubber washer and a two-legged spring clip. The spring clip is rivetted to the underside of the structure at the point where the fastening is to be made, see Figure 21.

DESCRIPTION

53 The central stud is made of mild steel with a rustproof coating and is available in standard and midget sizes, each in several lengths and with flush, oval or wing types of head. The stud is undercut below the head to accommodate the rubber washer or coiled spring which retains the stud in the panel. The bullet-shaped end of the stud is recessed at each side to mesh with the spring legs when in the locked position.

NOTE

The resilient watertight rubber washer is spaced between the panel and the mounting and is necessary to reduce vibration and chattering to a minimum. The coiled spring is intended for positions where excessive heat is expected to be encountered.

SPRING CLIPS

54 The spring clips, held in position by two light alloy rivets, are made from spring steel and are corrosion resistant. The spring clip legs engage with the flats on the stud, the leading ends of the spring acting as a guide on the bullet end of the stud.

INSTALLATION

55 All installation data and dimensions, see Figure 22, must be adhered to in order that the correct functioning of the fasteners is ensured. It is essential that the correct alignment is obtained between the stud and spring clip. Note the following points:

(a) Do not exceed the maximum dimensions given on the various assemblies, between the top or outer face of the panel, i. e. the grip length. Keep on the minus side of these dimensions to obtain secure engagement of the studs in the spring clips.

(b) It should always be possible to engage the fasteners by finger-pressure only, and there must be a definite and audible click as the fastener engages, indicating that it is locked. If the click is not heard, then the installation is incorrect and the condition should be rectified.

(c) The edge of a washer or similar device may be used to unlock the fastener by turning the head through 90°. When unlocked, it is advisable to turn the head 90° to its original position, ready for assembly.

REMOVAL OF FASTENERS

56 Remove the rubber washer at the inner side of the panel to remove the stud from its mounting. To remove the spring clip, drill out the rivets in the structure. Fit new rivets and spring clips, using the same rivet holes, when replacing.

PLATE VIBRATION INSULATORS

GENERAL

57 Vibration insulators used on aircraft in the installation of instruments, instrument panels, and other equipment requiring plate type vibration insulator mounting, consist of three essential parts: the mounting plate,

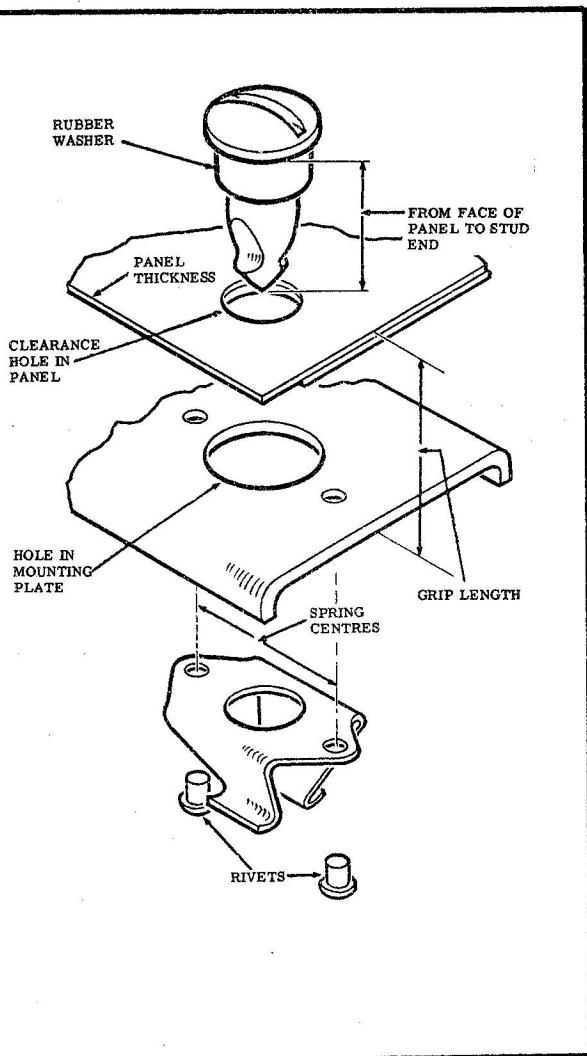


Figure 21 Oddie Fastener - Exploded View

Description	Atom	Midget		Standard	
	Dome head	Dome head	Flush head	Dome head	Flush head
Panel thickness	.065	.065	.065 dimpled .10 max.	.10	.10 dimpled .15 max.
Clearance hole in panel	3/16 dia.	1/4 dia.	1/4 dia.	3/8 dia.	3/8 dia.
Hole in mounting plate	5/16 dia.	15/32 dia.	15/32 dia.	5/8 dia.	5/8 dia.
Grip Length	.15 max.	.17 max.	.24 max.	.26 max.	.34 max.
Dia. of light alloy rivets for spring clip	1/16	3/32	3/32	1/8	1/8
Recommended pitch of fasteners per inch run	1 to 2	2 to 4	2 to 4	6 to 10	6 to 10
Distance from top face of panel to end of stud	.475	.70	.77	.95	1.04
Distance of rivet hole centres on clips	.50	.69	.69	1.000 min. 1.062 max.	1.000 min. 1.062 max.

Figure 22 Oddie Fastener Installation Data

the elastic medium (or element made of natural rubber) and the centre sleeve of metal. These mounts are manufactured in three types; the square plate, the cupped-outside load and the cupped-inside load. A cross-reference of manufacturers' and AN part numbers is shown in Figure 23.

MOUNTING PLATE

58 The mounting plate, either flat or cupped, is fabricated from aluminum alloy and is protected with an anodic film. The metal of the plate is of sufficient strength to withstand 15 times rated load without distortion.

CENTRE SLEEVE

59 The centre sleeve is fabricated of the same metal as the plate, the dimensions of which are listed in Figure 23. It is moulded into the rubber element or pressed into place and held in position by crimped washers. The side that protrudes above the plate the greater distance when it is not supporting a load is designated as the load side, and is shown in Figure 24.

ELASTIC ELEMENT

60 The elastic element is constructed of natural rubber only, and will retain its proper

vibration characteristics to -54°C (-65°F). The rubber element, either bonded or clamped to the metal depending on the manufacturing design, see Figure 25, is designed to give the proper deflection characteristics for both radial and axial loads. The design, in either case, is provided with a cushioned stop to prevent contact between vibration insulators or between the supported and supporting structures when more than the rated load is applied. The elastic element is so designed that when the rated load is applied axially on the load carrying side of the insulator centre sleeve, the deflection of the centre sleeve with respect to the plate will be 0.062 (± 0.009 ").

INSTALLATION

61 When it is necessary to install or to modify equipment requiring vibration insulator mounting in a specific type aircraft, mounting instructions will be included with the instructions directing the required work.

62 Vibration insulators have been made a design requirement on all aircraft instrument panels. Vibration insulators are mounted in pairs with their axes vertical in a plane parallel to the instrument board through the centre of gravity of the instrument board complete with instruments. The number, size, rating and location of vibration insulating units are such that a total deflection of $1/8$ ($\pm 1/64$ "") is produced on each pair of units. The rating of each single unit is the load required to deflect it $1/16$ ".

INSULATING UNIT SIZE

63 For instrument board, complete with instruments, weighing less than 24 pounds, Size 1 units (1" diameter) will be used. For instrument boards weighing more than 24 pounds, Size 2 units (1-1/2" diameter) or Size 3 units (2" diameter) will be used.

NOTE

These installations provide equal flexibility in all directions. If an instrument board weighs 16 pounds, four pairs of 4-pound units will produce a static deflection of $1/8$ ". The same deflection ($\pm 1/64$ "") may be obtained with five pairs of 3-pound units.

MOUNTING BRACKETS

64 All members or brackets to which vibration insulating units are attached are designed with sufficient rigidity to prevent any appreciable flexing in themselves or in their attachment to adjacent members. Supporting brackets must not be mounted on the cowling or any other member subject to vibration from the flow of air unless adequate provisions for rigid support are made.

SNUBBING

65 Suitable means are provided to prevent excessive deflection of insulating units, and to absorb shock due to catapulting, arrested landing or rough field landing. Snubbing is accomplished as shown in Figures 24 and 25.

CLEARANCE

66 Adequate clearance is provided for mounted unit in all directions when vibration insulators are used.

NOTE

Clearance is necessary to prevent instrument panels and instruments or similarly mounted equipment from coming in contact with any part of the aircraft, both under normal vibration conditions and shock due to landing.

Size	Shape	AN Part Number	Manufacturers Part Number				Load Rating Pounds Per 1/16 Inch Deflection
			Lord Mfg. Co. Erie, Pa.	Harris Products Co. Cleveland, Ohio.	M.B. Mfg. Co., Inc. 1060 State St. New Haven 11, Conn.	General Tire and Rubber Co. Wabash, Ind.	
1	Square Plate	AN8008D0					1/2
		AN8008D1	100PL-1			10059	1
		AN8008D2	100PL-2	1022-1D-2	171.32	10060	2
		AN8008D3	100PL-3	1022-1D-3	171.46		3
		AN8008D4			171.68		4
2		AN8008D5	150PL-2	1022-2D-2	172.32		2
		AN8008D6	150PL-4			10073	4
		AN8008D7	150PL-6	1022-2D-6	1721.0	10074	6
		AN8008D8	150PL-8	1022-2D-8		10075	8
		AN8008D9	150PL-10		1721.5	10076	10
3		AN8008D10	150PL-12		1721.8	10077	12
		AN8008D11	200PL-10		1731.5	10380	10
		AN8008D12	200PL-15			10381	15
		AN8008D13	200PL-20	1022-3D-20	1733.2	10382	20
		AN8008D14	200PL-25		1733.8		25
		AN8008D15	200PL-35		1735.6		35
	AN8008D16		1022-3D-45	1736.8		45	

Figure 23 (Sheet 1 of 3) Vibration Insulator Cross-reference Table

INSPECTION

67 At the periodic inspection nearest to 100 hours, mounted vibration insulators must be inspected as follows:

(a) Move the instrument panel and all vibration mounted instruments or equipment to extreme positions in every direction to determine if insulators have sagged or any loosening of rivets has developed.

Size	Shape	AN Part Number	Manufacturers Part Number				Load Rating Pounds Per 1/16 Inch Deflection
			Lord Mfg. Co. Erie, Pa.	Harris Products Co. Cleveland, Ohio.	M. B. Mfg. Co., Inc. 1060 State St. New Haven 11, Conn.	General Tire and Rubber Co. Wabash, Ind.	
1	Cupped Outside Load	AN8008D20					1/2
		AN8008D21				10313	1
		AN8008D22	100PHL-2			10314	2
		AN8008D23		1022-4D-3			3
		AN8008D24		1022-4D-4			4
2		AN8008D25	150PHL-2	1022-5D-25			2
		AN8008D26	150PHL-4			10187	4
		AN8008D27	150PHL-6	1022-5D-6		10188	6
		AN8008D28	150PHL-8	1022-5D-28		10089	8
		AN8008D29	150PHL-10			10090	10
3		AN8008D30	150PHL-12			10091	12
		AN8008D31	200PHL-10				10
		AN8008D32	200PHL-15				15
		AN8008D33	200PHL-20	1022-6D-20			20
		AN8008D34	200PHL-25				25
		AN8008D35	200PHL-35				35
	AN8008D36		1022-6D-45			45	

Figure 23 (Sheet 2 of 3) Vibration Insulator Cross-reference Table

- (b) Check rubber part of units for cracks.
- (c) Check centre sleeve for looseness.
- (d) Check mounting plates and rivets.
- (e) If any defective part is found, replace the vibration insulator with a serviceable insulator of proper size and type.

Size	Shape	AN Part Number	Manufacturers Part Number				Load Rating Pounds Per 1/16 Inch Deflection
			Lord MFG. Co. Erie, Pa.	Harris Products Co. Cleveland, Ohio.	M. B. Mfg. Co., Inc. 1060 State St. New Haven 11, Conn.	General Tire and Rubber Co. Wabash, Ind.	
1	Cupped Inside Load	AN8008D40					1/2
		AN8008D41	100PHUL-1			10340	1
		AN8008D42				10341	2
		AN8008D43	100PHUL-3	1022-7D-3		10342	3
		AN8008D44	100PHUL-4				4
2		AN8008D45	150PHUL-2	1022-8D-2			2
		AN8008D46	150PHUL-4			10172	4
		AN8008D47	150PHUL-6	1022-8D-6		10173	6
		AN8008D48	150PHUL-8	1022-8D-8		10174	8
		AN8008D49	150PHUL-10			10175	10
		AN8008D50	150PHUL-12			10176	12
3		AN8008D51	200PHUL-10				10
		AN8008D52	200PHUL-15				15
		AN8008D53	200PHUL-20	1022-9D-20			20
		AN8008D54	200PHUL-25				25
	AN8008D55	200PHUL-35				35	
	AN8008D56	200PHUL-45	1022-9D-45			45	

Figure 23 (Sheet 3 of 3) Vibration Insulator Cross-reference Table

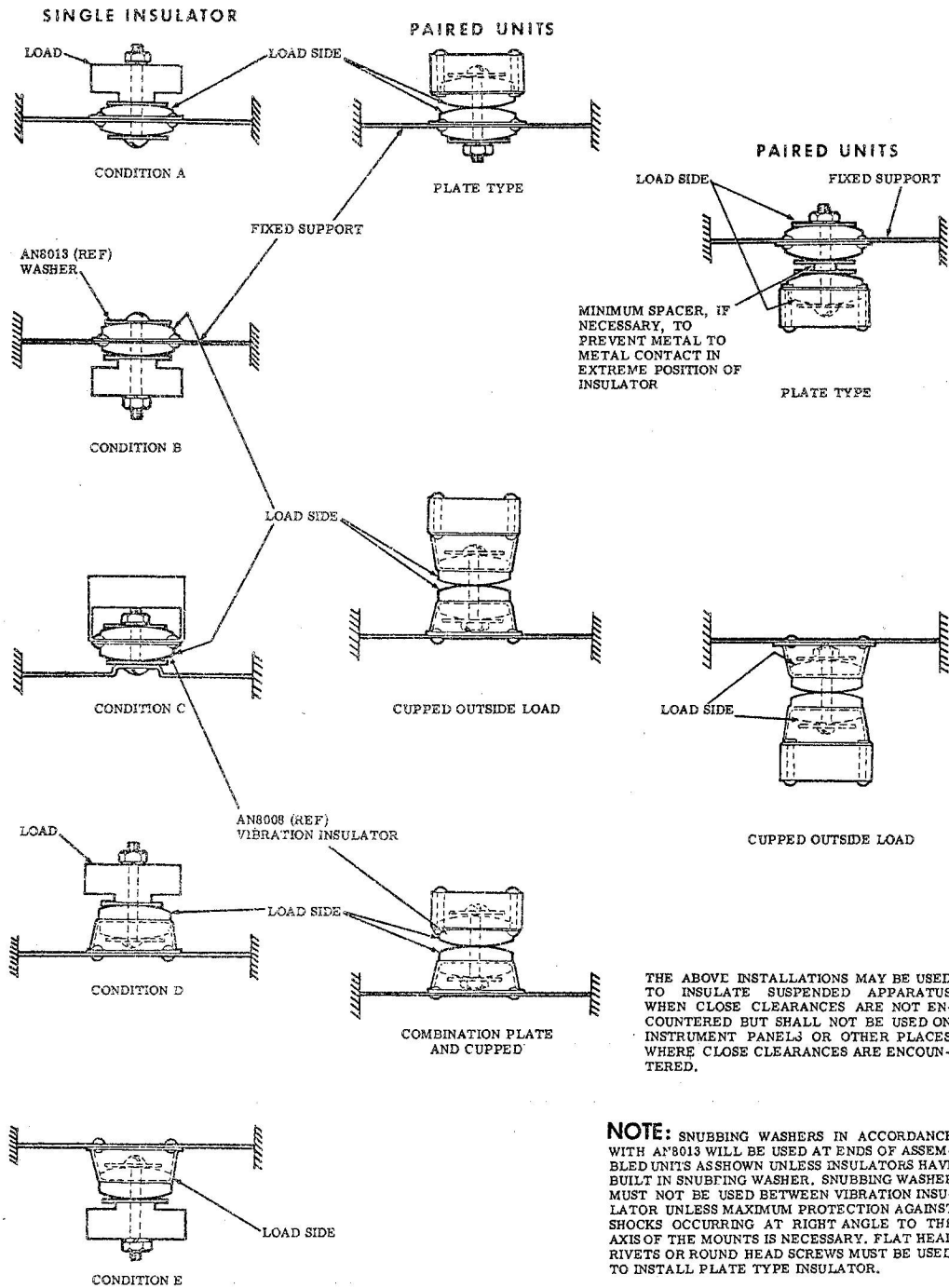


Figure 24 Loading Instructions - Vibration Dampeners

(f) If mounts have collected oil or grease, clean thoroughly by washing insulator in warm water containing detergent (Item 9).

REPLACEMENT

68 Replacement of vibration insulators is accomplished as follows:

- (a) Consult Figures 23 and 25 for size and type insulator to be used.
- (b) Install to conform to Figure 24.

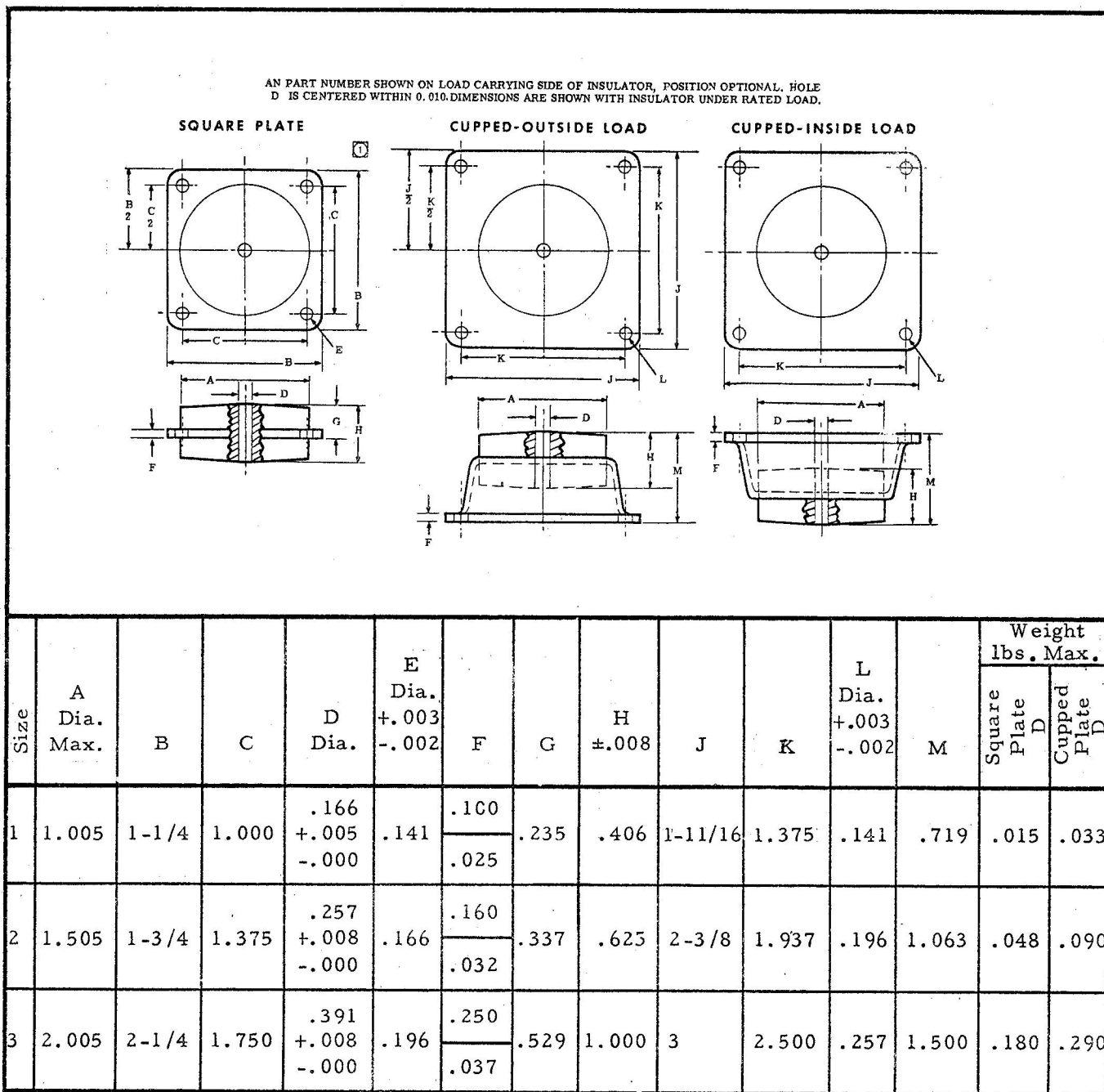


Figure 25 (Sheet 1 of 2) Plate Vibration Insulators

Load Rating Lbs. Per 1/16 Deflection	Square Plate		Cupped - Outside Load		Cupped - Inside Load	
	Dash No.	Size	Dash No.	Size	Dash No.	Size
1/2	0	1	20	1	40	1
1	1	1	21	1	41	1
2	2	1	22	1	42	1
3	3	1	23	1	43	1
4	4	1	24	1	44	1
2	5	2	25	2	45	2
4	6	2	26	2	46	2
6	7	2	27	2	47	2
8	8	2	28	2	48	2
10	9	2	29	2	49	2
12	10	2	30	2	50	2
10	11	3	31	3	51	3
15	12	3	32	3	52	3
20	13	3	33	3	53	3
25	14	3	34	3	54	3
35	15	3	35	3	55	3
45	16	3	36	3	56	3

NOTE

Dimensions in inches. Unless otherwise specified, tolerances on fractions $\pm 1/64$, decimals $\pm .010$.

Metal used is denoted by letter; Aluminum (D).

Example of AN part No. AN3008D7 indicates Aluminum, square plate insulator, Size 2, Load Rating: 6 pounds per 1/16 deflection.

Figure 25 (Sheet 2 of 2) Plate Vibration Insulators

MATERIAL SPECIFICATIONS

69 For table showing item numbers, materials, specifications and manufacturers called in this EO, see Figure 26.

Item No.	Material	RCAF Ref.	Specification	Manufacturer
1	Fastener, Dzus	28NS/	MIL-F-5591A	Dzus Fastener Co., P.O. Box 185, Babylon, New York.
2	Fastener, Camloc	28NS/	MIL-F-5591A	Camloc Fastener Corp., 22 Spring Valley Road, Paramus, New Jersey.
3	Fastener, Airloc	28NS/	MIL-F-5591A	United-Carr Fastener Corp., 31 Ames St., Cambridge, Mass.
4	Fastener, Shakeproof	28NS/	MIL-F-5591A	Shakeproof Inc., 2501 N Keeler Avenue, Chicago, Ill.
5	Fastener, Panelock-Zahodiakin	28NS/	MIL-F-5591A	Scovill Mfr. Co., Waterbury, Conn.
6	Fastener, Lion	28NS/	MIL-F-5591A	South Chester Corp., Lester, Penn.
7	Fastener, Oddie	28NS/	MIL-F-5591A	Brown Bros. (Aircraft) Ltd., Bedford Rd., Northampton, Eng.
8	Insulator, Vibration, AN8008	27LM/	MIL-I-5432A	Lord Mfr., 1635 W 12th St., Erie, Penn.
9	Detergent, (General Purpose)	33C/667	2-GP-103	

Figure 26 Table of Material Specifications

