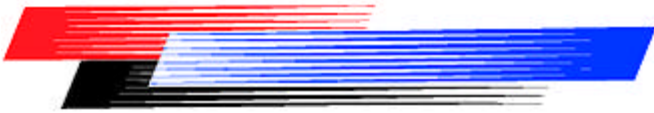


Fairchild Fasteners



Santa Ana Operations

Fluid Boss Adapters - RF8500, RF9500 and RFR9500 Series





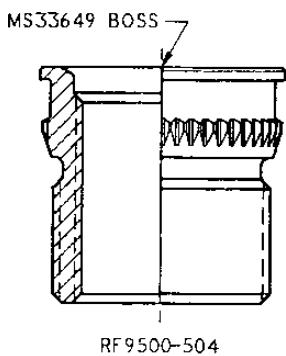
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INSERT AND TOOLING DIMENSIONS SHOWN IN THIS CATALOG ARE PROVIDED FOR ENVELOPE AND INSPECTION PURPOSES ONLY AND DO NOT INCLUDE DIMENSIONS NECESSARY FOR FABRICATION OF PRODUCT.

Rosan is registered trademark in the United States and foreign countries.

WHAT IS THE ROSAN FLUID BOSS INSERT?



The Rosan Fluid Boss Insert is a threaded insert designed to provide local structural strength as well as allowing fluids and gasses to pass through it.

Threaded inserts have been used for years in aluminum and magnesium housings to increase the strength of the housing at the fastening locations.

Since the external thread of the insert is larger than the internal thread, the shear engagement area of the thread assembly is increased. This allows greater loads to be imposed on these light weight housings without an appreciable increase in weight.

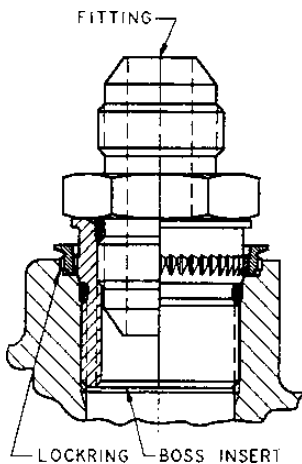
In many of those same aluminum and magnesium housings there are fluid or gas connection "ports" or "bosses".

One such design that sees extensive use in aircraft is the MS33649 "Bosses, Fluid Connection, Internal Straight Thread".

The Rosan RF9500 Fluid Connection Boss Insert Series is a design that integrates an insert's structural strength with an MS33649 internal boss configuration.

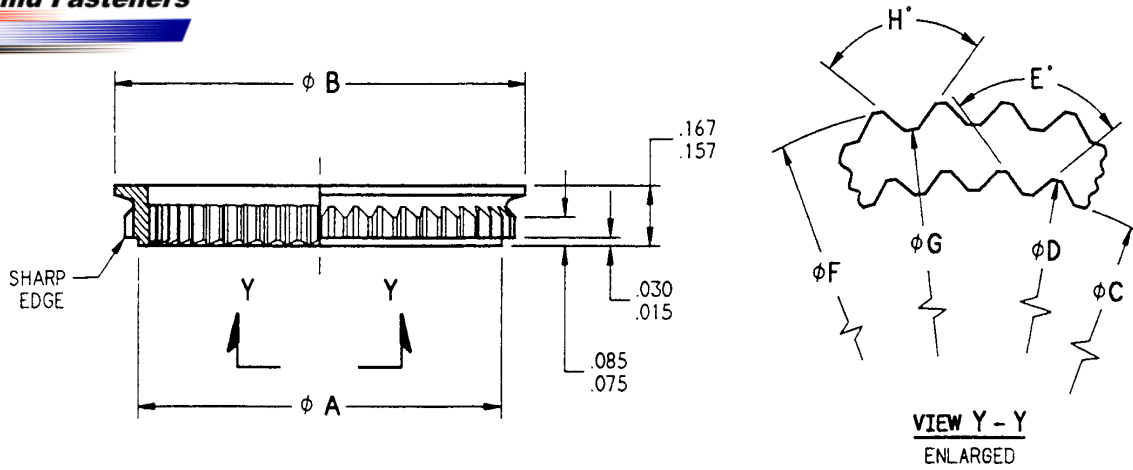
BENEFITS OF THE ROSAN DESIGN APPROACH

The installation of a fluid fitting into a boss requires the use of torque. The torque is absorbed in the boss by friction, tension and compression.



When a Rosan RF9500-6 Boss Insert Assembly is used:

1. The Rosan boss insert provides a hard, clean internal thread and upper flange which allows a greater portion of the torque to be absorbed as tension. Thus, a tight, long lasting joint occurs between the fitting, insert and aluminum or magnesium housing.
2. Since the boss insert is harder than the lightweight housing, the possibility of field abuse by cross threading is reduced which cuts maintenance costs.
3. When the fitting is installed, the hex face rests on a hard, stainless steel surface. The possibility of galvanic corrosion between the fitting and housing is eliminated.
4. The 32RMS finish required in an MS33649 boss, at the sealing surfaces, is less likely to be damaged in the hard RF9500 insert than in the soft housing; reducing maintenance cost.
5. The unique Rosan lockring, used with insert, prevents the insert from turning at fitting installation or removal. In addition, the insert will not rotate due to the severe frequencies associated with flight vibration.
6. The lockring was designed with a flange which allows it and the insert to be removed from the housing without cutting metal.
7. The PS10040 boss, into which the insert and lockring are installed provides an O-ring cavity with sufficient volume to allow for proper radial squeeze and anticipated swell of the O-ring.
8. The insert and housing are in metal-to-metal contact at the 20 degree conical surface of the PS10040 boss above the O-ring cavity. This eliminates any need for "back-up rings" and increases the fluid tight reliability of the Rosan Fluid Boss Insert.



ROSAN PART NUMBER	SAE IDENT NUMBER	φA MAX	φB ±.010	φC +.005 -.002	φD ±.005	E° +2° -1°	φ F +.005 -.004	φ G +.005 -.004	H° ±2°	WEIGHT lb/100 PIECES APPROX
RLT9502-24	AS3077-02	.630	.765	.511	.554	96°	.701	.653	94°	.69
RLT9503-24	AS3077-03	.693	.830	.578	.621	95°	.764	.716	94°30'	.72
RLT9504-24	AS3077-04	.755	.890	.641	.682	94°30'	.826	.778	94°	.77
RLT9505-24	AS3077-05	.818	.950	.704	.747	94°	.889	.841	94°	.87
RLT9506-24	AS3077-06	.865	1.000	.766	.811	94°	.936	.888	94°	.78
RLT9508-24	AS3077-08	1.113	1.250	.996	1.039	93°	1.187	1.138	93°30'	1.12
RLT9510-24	AS3077-10	1.238	1.380	1.131	1.182	93°	1.312	1.263	93°	1.17
RLT9512-24	AS3077-12	1.455	1.600	1.319	1.372	92°30'	1.531	1.482	92°30'	1.61
RLT9516-24	AS3077-16	1.716	1.860	1.569	1.622	92°	1.797	1.748	92°	2.10
RLT9520-24	AS3077-20	2.111	2.250	1.975	2.027	91°30'	2.187	2.138	92°	2.39

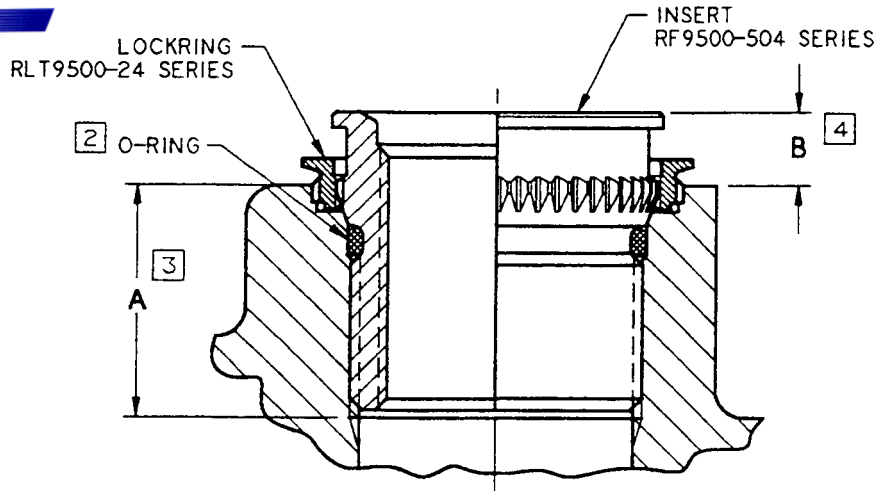
NOTES:

1. MATERIAL: A286 Cres per AMS5731, AMS5732, AMS5734 or AMS5737. These parts are also available in other materials. Refer to page 11, Table III.
2. HEAT TREAT: 130 KSI UTS min.
3. FINISH: Passivate per QQ-P-35.
4. Break sharp edges .003-.015 except serration.
5. All non-serrated surfaces shall be smooth to 125 microinches Ra and serration 250 micro inches Ra per ANSI/ASME B46.1.
6. Identification per AS478 class 35D. Manufacturer's name, trademark or CAGE CODE, part number and lot number.

**LOCKRING, LIFT/TYPE,
AS3077-()**

**RL T9500-24
SERIES**

CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704



RF9500-6 SERIES INSERT
 INSTALLED PER AS1959 IN ROSAN PS10040 (AS1958) PORT

ROSAN ASSEMBLY NUMBER	INSERT NUMBER	LOCKRING NUMBER	ROSAN PORT NUMBER	O-RING SIZE [2] REF	A [3]	B +.000 -.045
RF9502-6	RF9502-504	RLT9502-24	PS10040-02	AS568-012	.550	.255
RF9503-6	RF9503-504	RLT9503-24	PS10040-03	AS568-013	.520	.255
RF9504-6	RF9504-504	RLT9504-24	PS10040-04	AS568-014	.565	.255
RF9505-6	RF9505-504	RLT9505-24	PS10040-05	AS568-015	.590	.255
RF9506-6	RF9506-504	RLT9506-24	PS10040-06	AS568-016	.620	.255
RF9508-6	RF9508-504	RLT9508-24	PS10040-08	AS568-019	.745	.255
RF9510-6	RF9510-504	RLT9510-24	PS10040-10	AS568-021	.830	.265
RF9512-6	RF9512-504	RLT9512-24	PS10040-12	AS568-024	.950	.280
RF9516-6	RF9516-504	RLT9516-24	PS10040-16	AS568-128	.950	.280
RF9520-6	RF9520-504	RLT9520-24	PS10040-20	AS568-132	1.000	.280

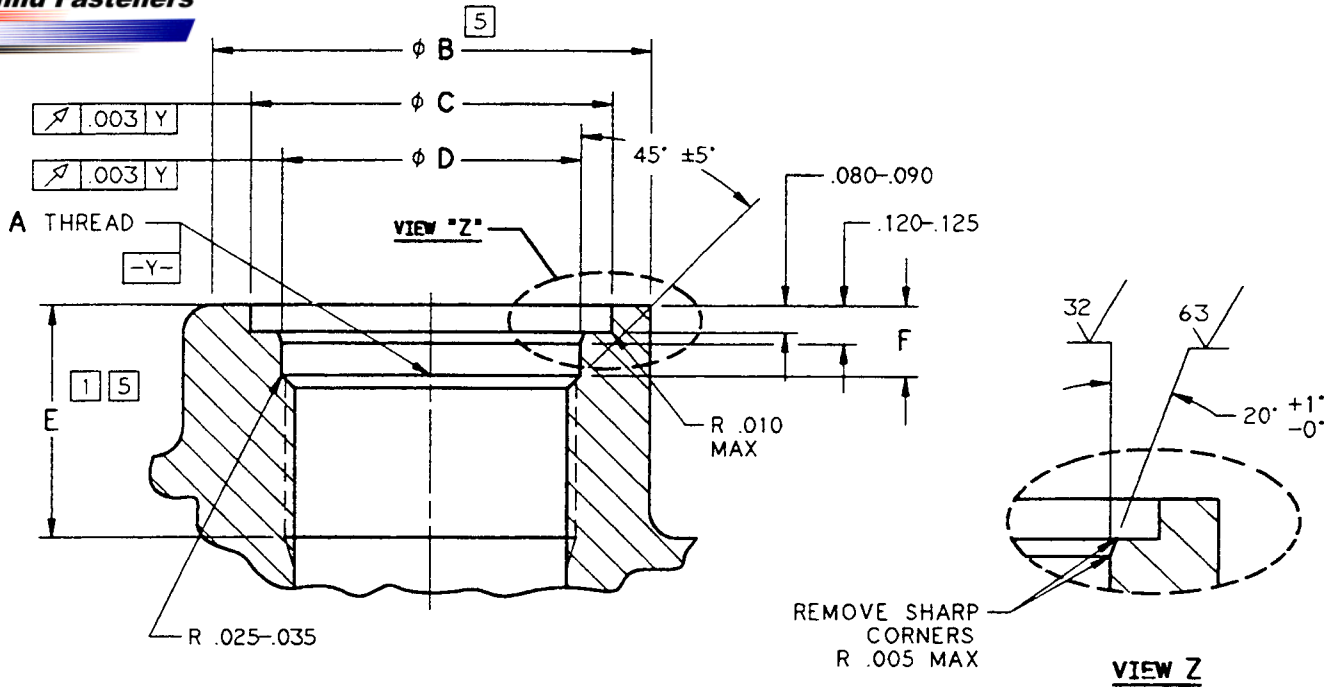
ENGINEERING INFORMATION

1. The RF9500-6 series provides a semi-permanent hydraulic port primarily for use in 3000 PSI fluid systems.
- [2] O-rings must be specified separately and shall be selected based on system fluid and temperature-and are not supplied by Rosan. O-ring size per AS568.
- [3] Maximum insert installation depth or minimum recommended parent material thickness.
- [4] Dimension "B" is for design purpose only. Do not use as installation data.
5. These inserts and lockrings are installed in standard Rosan ports per PS10040 of equivalent size in accordance with page 5 of this catalog.

**ASSEMBLY,
 INSERT - FLUID CONNECTION**

**RF 9500-6
 SERIES**

CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704



ROSAN PORT NUMBER	SAE IDENT NUMBER	A THREAD MIL-S-8879 CLASS-3B	øB [5] MIN	øC +.005 -.000	øD +.002 -.000	E [5] MIN	F ±.005
PS10040-02	AS1958-02	.4375-28UNJEF	.80	.670	.473	.550	.225
PS10040-03	AS1958-03	.5000-28UNJEF	.84	.733	.540	.520	.225
PS10040-04	AS1958-04	.5625-24UNJEF	.92	.795	.603	.565	.225
PS10040-05	AS1958-05	.6250-24UNJEF	.98	.858	.666	.590	.225
PS10040-06	AS1958-06	.6875-24UNJEF	1.03	.905	.728	.620	.225
PS10040-08	AS1958-08	.9375-20UNJEF	1.40	1.155	.958	.745	.225
PS10040-10	AS1958-10	1.0625-18UNJEF	1.60	1.280	1.083	.830	.225
PS10040-12	AS1958-12	1.2500-18UNJEF	1.83	1.499	1.271	.950	.225
PS10040-16	AS1958-16	1.5000-18UNJEF	2.20	1.765	1.521	.950	.225
PS10040-20	AS1958-20	1.8750-16UNJ	2.80	2.155	1.922	1.000	.265

NOTES:

- [1] Recommended minimum full thread depth.
2. The drill and porting tool method of preparing the machined cavity is recommended. Refer to the RPT9500 series port contour cutter on page 21.
3. When installing RF9500 series inserts into stainless steel, titanium or hardened ferrous materials the use of the RFPBT9500 or RFPBT9500HBD series broach tool is required. For additional information contact the Rosan Engineering Department and request Technical Sales Bulletin TSB84-0405.
4. When using the hand held piloted broach tool, the drill and porting method of preparing the machined cavity is mandatory.
- [5] The minimum port diameter "B" and port depth "E" are satisfactory for use in materials that exhibit a minimum shear strength of 14 ksi.

**PORT - INSERT FLUID CONNECTION TYPE,
(AS1958)**

PS10040

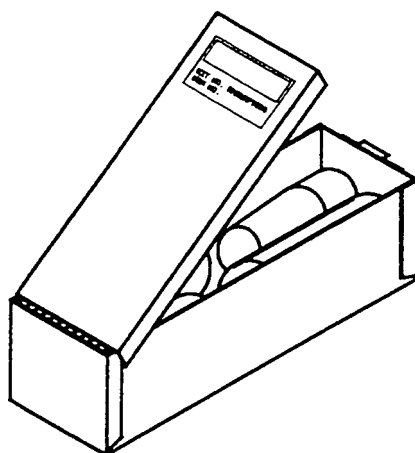
CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704

PORTING, INST ALLATION AND REMOVAL TOOLS

ROSAN ASSEMBLY NUMBER	ROSAN PORT NUMBER	PORTING TOOL	INSTALLATION TOOLS			LOCKRING REMOVAL TOOL	INSERT REMOVAL TOOL
			O-RING INSTALLATION TOOL	WRENCH	LOCKRING DRIVE TOOL		
RF9502-6	PS10040-02	RPT9502	ORT95-437	RF8502WA	RF9502DA	RF9502LPD	RF9502RT
RF9503-6	PS10040-03	RPT9503	ORT95-500	RF8503WA	RF9503DA	RF9503LPD	RF9503RT
RF9504-6	PS10040-04	RPT9504	ORT95-562	RF8504WA	RF9504DA	RF9504LPD	RF9504RT
RF9505-6	PS10040-05	RPT9505	ORT95-625	RF8505WA	RF9505DA	RF9505LPD	RF9505RT
RF9506-6	PS10040-06	RTP9506	ORT95-687	RF8506WA	RF9506DA	RF9506LPD	RF9506RT
RF9508-6	PS10040-08	RPT9508	ORT95-937	RF8508WA	RF9508DA	RF9508LPD	RF9508RT
RF9510-6	PS10040-10	RPT9510	ORT95-1062	RF8510WA	RF9510DA	RF9510LPD	RF9510RT
RF9512-6	PS10040-12	RPT9512	ORT95-1250	RF8512WA	RF9512DA	RF9512LPD	RF9512RT
RF9516-6	PS10040-16	RPT9516	ORT95-1500	RF8516WA	RF9516DA	RF9516LPD	RF9516RT
RF9520-6	PS10040-20	RPT9520	ORT95-1875	RF8520WA	RF9520DA	RF9520LPD	RF9520RT

TOOL KIT

ROSAN ASSEMBLY NUMBER	ROSAN KIT NUMBER	KIT CONTENTS						
		PORTING TOOL	BOTTOMING TAP	O-RING INSTALLATION TOOL	WRENCH	LOCKRING DRIVE TOOL	LOCKRING REMOVAL TOOL	INSERT REMOVAL TOOL
RF9502-6	KM52RF9502	RPT95002	PS40-02BT	ORT95-437	RF8502WA	RF9502DA	RF9502LPD	RF9502RT
RF9503-6	KM52RF9503	RPT9503	PS40-03BT	ORT95-500	RF8503WA	RF9503DA	RF9503LPD	RF9503RT
RF9504-6	KM52RF9504	RPT9504	PS40-04BT	ORT95-562	RF8504WA	RF9504DA	RF9504LPD	RF9504RT
RF9505-6	KM52RF9505	RPT9505	PS40-05BT	ORT95-625	RF8505WA	RF9505DA	RF9505LPD	RF9505RT
RF9506-6	KM52RF9506	RPT9506	PS40-06BT	ORT95-687	RF8506WA	RF9506DA	RF9506LPD	RF9506RT
RF9508-6	KM52RF9508	RPT9508	PS40-08BT	ORT95-937	RF8508WA	RF9508DA	RF9508LPD	RF9508RT
RF9510-6	KM52RF9510	RPT9510	PS40-10BT	ORT95-1062	RF8510WA	RF9510DA	RF9510LPD	RF9510RT
RF9512-6	KM52RF9512	RPT9512	PS40-12BT	ORT95-1250	RF8512WA	RF9512DA	RF9512LPD	RF9512RT
RF9516-6	KM52RF9516	RPT9516	PS40-16BT	ORT95-1500	RF8516WA	RF9516DA	RF9516LPD	RF9516RT
RF9520-6	KM52RF9520	RPT9520	PS40-20BT	ORT95-1875	RF8520WA	RF9520DA	RF9520LPD	RF9520RT



PORT PREPARATION, INSERT INSTALLATION
AND REMOVAL TOOLS
AND TOOL KITS

CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704

1. PORT PREPARATION

1.1 Prepare boss and port per PS10040, page 5. Drill through or to depth specified on applicable drawing. Use a drill with a diameter .015-.030 smaller than the required thread minor diameter specified in standard PS10040 prior to finishing port using RPT9500 series porting tool.

2. LOCKRING INSTALLATION

2.1 Slide the lockring over the insert thread and engage into insert serration such that the pilot of the lockring faces the thread. See Figure 1.

3. O-RING INSTALLATION

3.1 Place the O-ring installation tool over the outside thread of the insert. Submerge the insert, the lockring, the O-ring and the O-ring tool in the fluid to be used in the working system, or a lubricant compatible with the system fluid.

3.2 Slide the O-ring over the O-ring tool and onto the insert. Be sure that the O-ring is not twisted and is properly seated in the groove of the insert. See Figure 1.

3.3. Remove the O-ring installation tool.

4. INSERT INSTALLATION

4.1 Lubricate the internal surfaces of the port and the entire insert assembly using the same fluid or lubricant as specified in paragraph 3. Scratches, nicks or rough spots are not allowed in O-ring contact area on the insert or in the port.

4.2 Screw the drive wrench into the thread of the insert until the plastic collar touches the surface of the insert. See Figure 2.

4.3 Screw the insert assembly into the port by hand using a clockwise rotation until the assembly is firmly set (See Figure 2).

CAUTION: Be sure that the lockring internal serrations are engaged with the insert serrations.

To avoid possible O-ring damage, the insert should not be rotated in a counterclockwise direction. If this has been done, replace the O-ring.

4.4 Place the torque wrench of the proper size into the square of the drive wrench and apply a torque equal to the value specified in Table I on page 8. Remove the torque wrench and not the drive wrench.

4.5 Apply enough Zinc Chromate primer (TT-P-1757) with a brush or small syringe to the counterbore area of the port by lifting the lockring slightly by hand so primer will be extruded out between external serrations of the lockring and the port counterbore when lockring is installed. NOTE: Design activity may specify another primer in place of or in addition to Zinc Chromate.

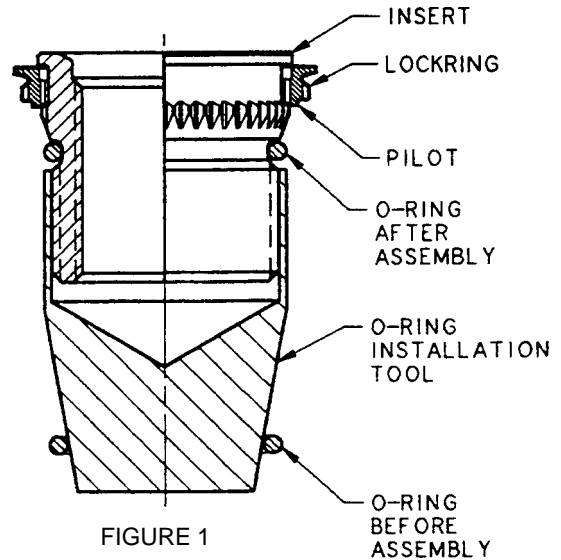


FIGURE 1

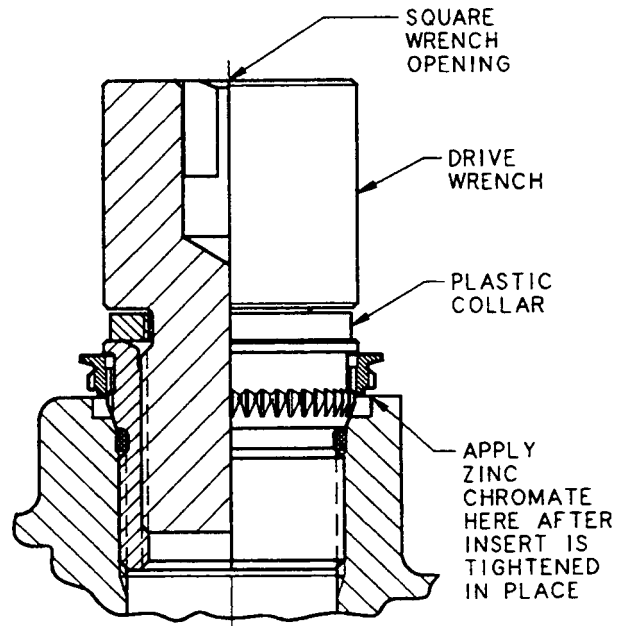


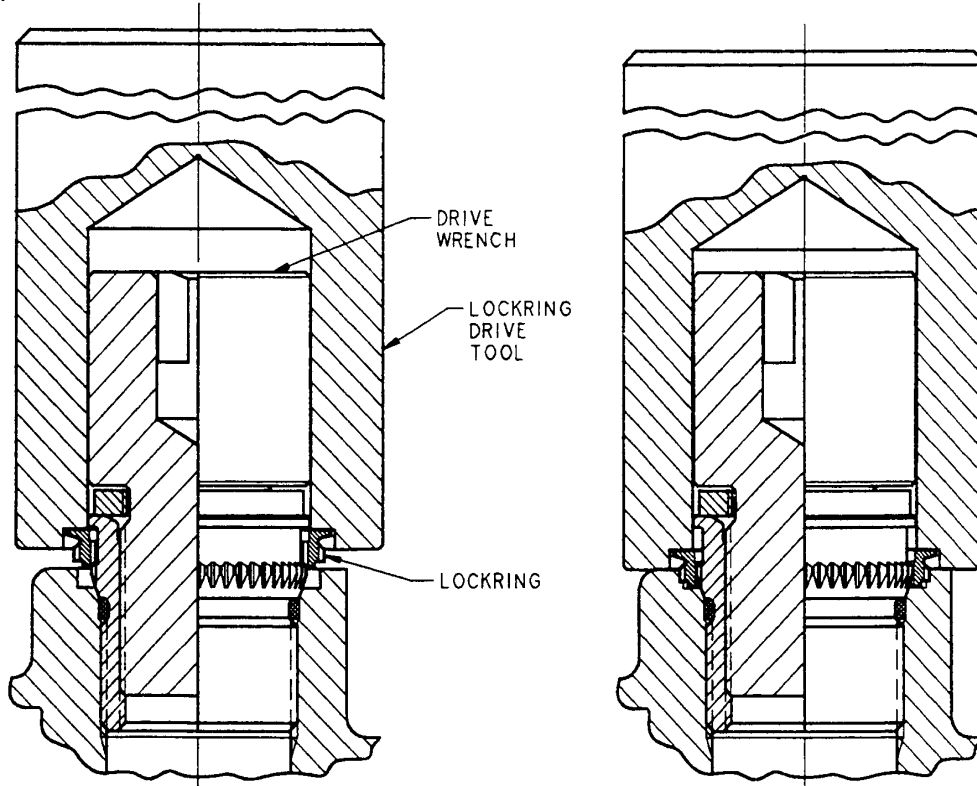
FIGURE 2

INSTALLATION AND REMOVAL, RF9500 SERIES FLUID INSERT

4.6 While the Zinc Chromate (or other primer) is still wet, place the locking drive tool over the drive wrench and let it rest on the locking top surface. see Figure 3. Apply a sufficient downward force to drive locking into the surface of port counterbore until the face of the locking drive tool touches the port surface. See Figure 4.

NOTE: Depending upon the component configuration, it may be necessary to support the port in order not to deform the internal configuration of the component.

4.7 Remove the tools and excess Zinc Chromate (or other primer) that has formed on the surface of port and locking.



PLACEMENT OF LOCKRING DRIVE TOOL
FIGURE 3

LOCKRING INSTALLATION
FIGURE 4

TABLE I

ROSAN ASSEMBLY NUMBER	ROSAN PORT NUMBER REF	O-RING NUMBER REF	INSTALLATION TORQUE lbf in	
			MIN	MAX
RF9502-6	PS10040-02	AS568-012	40	50
RF9503-6	PS10040-03	AS568-013	65	84
RF9504-6	PS10040-04	AS568-014	80	105
RF9505-6	PS10040-05	AS568-015	120	150
RF9506-6	PS10040-06	AS568-016	145	185
RF9508-6	PS10040-08	AS568-019	350	400
RF9510-6	PS10040-10	AS568-021	500	600
RF9512-6	PS10040-12	AS568-024	700	800
RF9516-6	PS10040-16	AS568-028	1200	1300
RF9520-6	PS10040-20	AS568-132	1800	2000

INSTALLATION AND REMOVAL, RF9500 SERIES FLUID INSERT (CONTD)

5. PRESSURE TESTING

5.1 A proof pressure test of unit may be conducted at this point. Place a pressure plug in the insert. Pressurize the unit from another location on the unit to 1.5 times the operating pressure for three (3) minutes. There shall be no leakage.

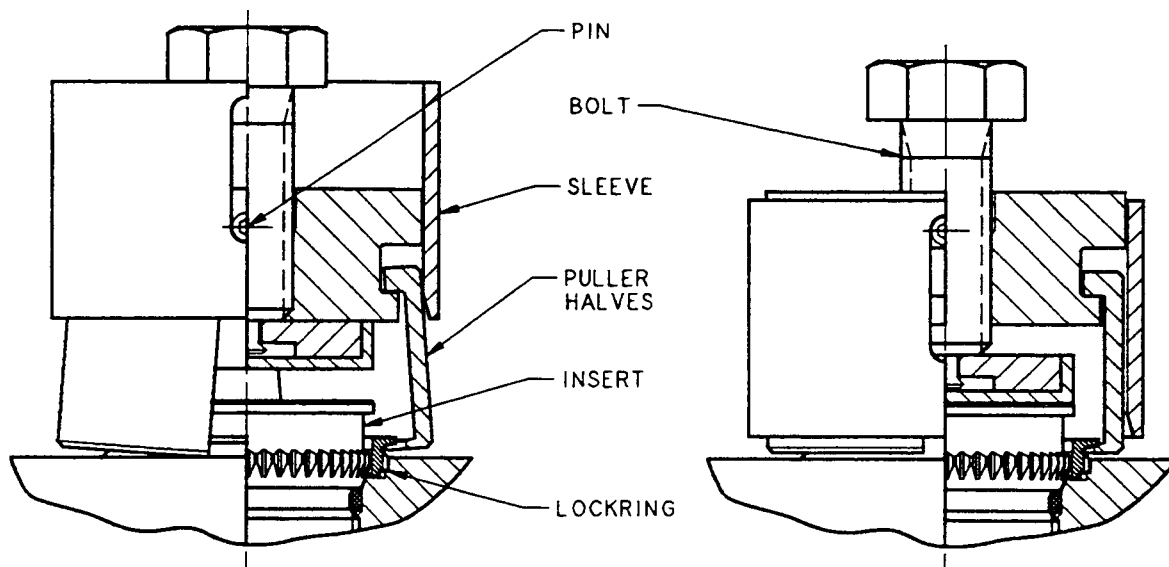
Note: Using design activity may require testing other than shown.

6. LOCKRING REMOVAL

6.1 If a sealant has been used to cover locking, carefully remove sealant to expose locking.

6.2 Select the proper size locking removal tool from page 6.

6.3 Spread the puller halves apart by retracting the sleeve from the tool until the pin bottoms in the groove of the sleeve per Figure 5. Holding the puller halves apart, place tool over protruding insert so the nylon pad rests on the top surface of the insert. Release the puller halves and locate in the groove of the locking. Adjustment up or down is achieved by rotating the bolt head. Slide the sleeve over the puller halves and check for proper engagement of the puller halves in the locking groove. See Figure 6.



SLEEVE RETRACTED, PULLER HALVES
READY TO BE LOCATED IN LOCKRING GROOVE
FIGURE 5

SLEEVE OVER PULLER HALVES
READY FOR TORQUING OF BOLT
FIGURE 6

6.4 Place wrench on the bolt head of the removal tool and turn in a clockwise direction while holding the sleeve with other hand. This action will cause the lockring to be jacked out of the port counterbore. When the external serrations of the lockring are clear of the boss surface, the turning may be stopped. Remove the tool from the insert assembly by loosening the bolt and lifting the sleeve to free the puller halves.

INSTALLATION AND REMOVAL, RF9500 SERIES FLUID INSERT (CONTD)

7. INSERT REMOVAL

7.1 If the insert is damaged and will not be used again, place shims between the locking and the port surface. Drive a screw extractor into the internal threads and remove the insert.

7.2 If the insert is not damaged and it will be reinstalled:

- Screw the insert removal tool into the insert thread such that the thread is below the top surface of the insert.
- Assemble the left hand thread nut onto the tool stud. The hexagon drive socket in the stud should be held to prevent the stud from backing out. Place shims between the locking and the port surface to prevent locking from dropping back down into the port serration.
- Seat the nut firmly against the top surface of the insert by turning in a counter-clockwise direction. Continue to tighten nut. The insert will break away from its seat at approximately half the installation torque value. See Figure 7.

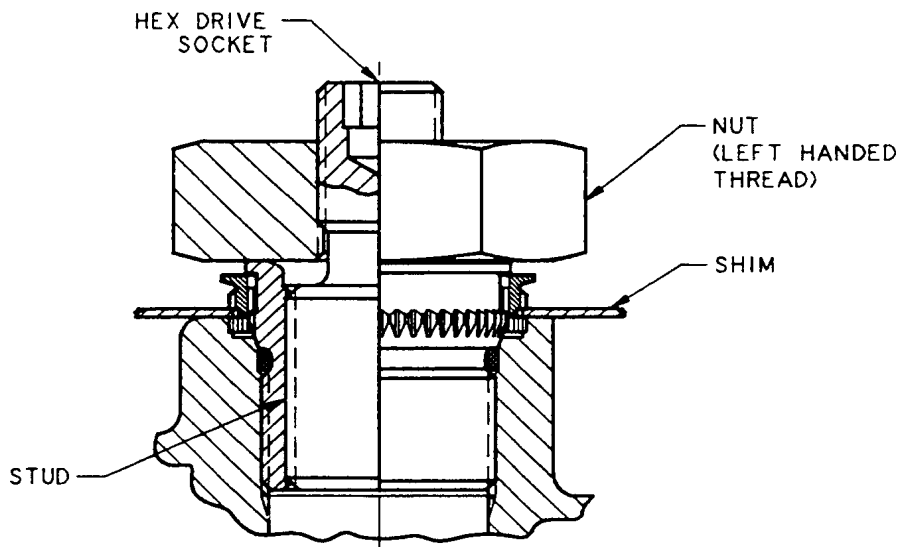


FIGURE 7

8. REINSTALLATION OF INSERT AND LOCKRING:

8.1 Reinstall locking as described in paragraph 2.

8.2 Reinstall O-ring as described in paragraph 3. using a new O-ring per Table I, page 8.

8.3 Reinstall insert assembly into port as described in paragraph 4. except a shim shall be used between locking and the broached surface to prevent premature engagement of serrations.

Torque to the minimum value specified in Table I. If the locking serrations does not align with the port serrations, continue to slowly torque the insert towards the maximum value allowed in Table I until the serrations of the locking aligns with the port serrations, then remove shim before driving locking.

INSTALLATION AND REMOVAL, RF9500 SERIES FLUID INSERT



RF8500 AND RF9500 SERIES, ASSEMBLY MATERIAL CODE

TABLE I

ASSEMBLY MATERIAL CODE	INSERT MATERIAL CODE	LOCKRING MATERIAL CODE
RF8500-()	RF8500-()	RL8500-()
RF9500-()	RF9500-()	RLT9500-()
2 [1]	502	21
4 [1]	502	22
5	503	21
6	504	24
7 [1]	505	24

MATERIAL, HEAT TREAT AND FINISH, INSERT

TABLE II

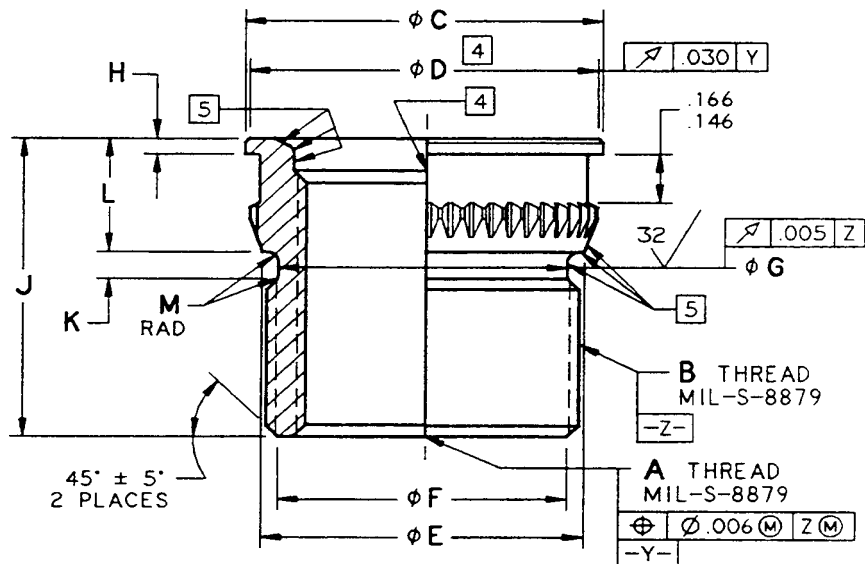
INSERT MATERIAL CODE	MATERIAL	SPECIFICATION	HEAT TREAT	FINISH
-502 [1]	CRES, 17-4PH	AMS5643	COND H1200	PASSIVATE PER QQ-P-35
-503	4130 STEEL ALTERNATE: 4140 STEEL	MIL-S-6758 COND F MIL-S-5626 COND F	125,000 PSI UTS MIN	CAD PLATE PER QQ-P-416, TY II, CL 3
-504	CRES, A286	AMS5731, AMS5732 AMS5734 OR AMS5737	130,000 PSI UTS MIN	PASSIVATE PER QQ-P-35
-505 [1]	TITANIUM, 6Al-4V	AMS4965 OR AMS4967	140,000 PSI UTS MIN	DRY FILM LUBRICANT ON ALL SURFACES

MATERIAL, HEAT TREAT AND FINISH, LOCKRING

TABLE III

LOCKRING MATERIAL CODE	MATERIAL	SPECIFICATION	HEAT TREAT	FINISH
-21	STEEL, 1117	ASTM A108	CASE HARDEN 36-45 HRC	CAD PLATE PER QQ-P-416. TY II, CL 3
-22 [1]	CRES, 17-4PH	AMS5643	COND H900	PASSIVATE PER QQ-P-35
-24	CRES, A286	AMS5731, AMS5732 AMS5734 OR AMS5737	130,000 PSI UTS MIN	PASSIVATE PER QQ-P-35

- NOTES: [1] RF8500 series are not available in noted materials.
 2. Rosan fluid boss inserts and their corresponding mating lockring may be ordered separately or by the assembly number.
 EXAMPLE: RF9506-5 consists of RF9506-503 and RLT9506-2J.
 RF8506-5 consists of RF8506-503 and RL8506-21.



ROSAN PART NUMBER	TUBE OD REF	A	B	ϕC	ϕD	ϕE	ϕF	ϕG	H
		THREAD MIL-S-8879 CLASS-3B	THREAD MIL-S-8879 CLASS-3A	MAX	MIN	$\pm .003$	$\pm .010$	$+ .005$ $- .002$	$+ .010$ $- .004$
RFR9503-02-504	.125	.3125-24UNJF	.5000-28UNJEF	.685	.665	.536	.442	.440	.047
RFR9504-03-504	.188	.3750-24UNJF	.5625-24UNJEF	.748	.728	5.99	.498	.503	.047
RFR9505-04-504	.250	.4375-20UNJF	.6250-24UNJEF	.810	.790	.662	.558	.566	.047
RFR9506-05-504	.312	.5000-20UNJF	.6875-24UNJEF	.867	.852	.724	.623	.628	.047
RFR9508-06-504	.375	.5625-18UNJF	.9375-20UNJEF	1.060	1.040	.954	.857	.858	.047
RFR9510-08-504	.500	.7500-16UNJF	1.0625-18UNJEF	1.185	1.165	1.079	.973	.983	.057
RFR9512-10-504	.625	.8750-14UNJF	1.2500-18UNJEF	1.435	1.415	1.267	1.161	1.171	.072
RFR9516-12-504	.750	1.0625-12UNJ	1.5000-18UNJEF	1.685	1.665	1.517	1.411	1.421	.072
RFR9520-16-504	1.000	1.3125-12UNJ	1.8750-16UNJ	2.020	1.978	1.918	1.775	1.760	.072

ROSAN PART NUMBER	J	K	L	M
	$\pm .010$	$+ .010$ $- .005$	$\pm .015$	RAD
RFR9503-02-504	.729	.082	.364	.030-.045
RFR9504-03-504	.777	.082	.364	.030-.045
RFR9505-04-504	.802	.082	.364	.030-.045
RFR9506-05-504	.830	.082	.364	.030-.045
RFR9508-06-504	.955	.082	.364	.030-.045
RFR9510-08-504	1.051	.082	.374	.030-.045
RFR9512-10-504	1.185	.082	.389	.030-.045
RFR9516-12-504	1.185	.082	.389	.030-.045
RFR9520-16-504	1.237	.122	.389	.045-.065

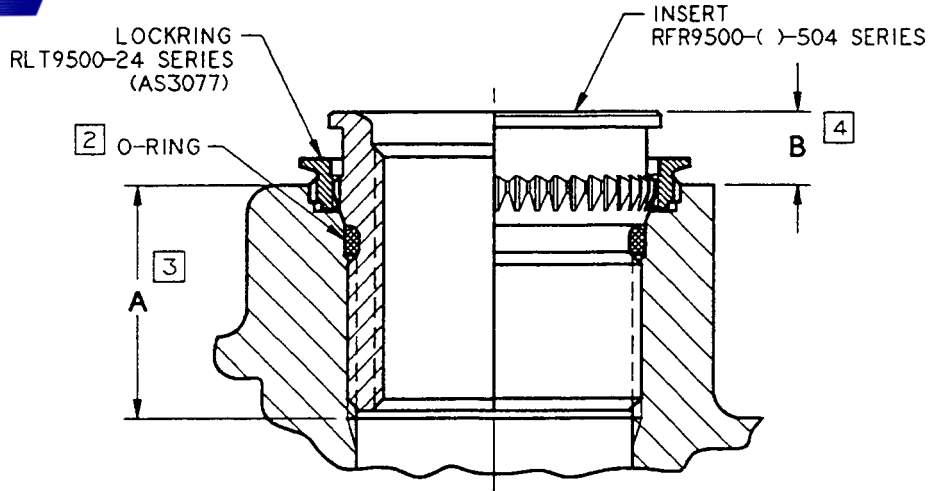
NOTES:

1. MATERIAL: A286 Cres per AMS5731, AMS5732, AMS5734 or AMS5737. These parts are also available in other materials. Refer to page 11, Table II.
2. HEAT TREAT: 130 KSI UTS min.
3. FINISH: Passivate per QQ-P-35.
- [4] Insert internal configuration and "D" diameter per MS33649.
- [5] Sealing surface: No visible defects. To be protected for shipment.
6. Break sharp edges .003-.015, except serration.
7. Fluorescent penetrant inspection per AMS2645 and AS3071.
8. All machined surfaces shall be smooth to 125 microinches Ra, serration 250 microinches Ra, and sealing surfaces 63 microinches Ra per ANSI/ASME B46.1.
9. Identification per AS478 class 35D. Manufacturer's name, trademark or CAGE CODE, part number and lot number.

INSERT - FLUID CONNECTION, 3000 PSI,
ONE SIZE OVERSIZE

RFR9500-()-504
SERIES

CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704



RFR9500-()-6 SERIES INSERT INSTALLED IN ROSAN PS10040 (AS1958) PORT

ROSAN ASSEMBLY NUMBER	INSERT NUMBER	LOCKRING NUMBER	ROSAN PORT NUMBER	O-RING SIZE REF [2]	A [3]	B +.000 -.045
RFR9503-02-6	RFR9503-02-504	RLT9503-24	PS10040-03	AS568-013	.520	.255
RFR9504-03-6	RFR9504-03-504	RLT9504-24	PS10040-04	AS568-014	.565	.255
RFR9505-04-6	RFR9505-04-504	RLT9505-24	PS10040-05	AS568-015	.590	.255
RFR9506-05-6	RFR9506-05-504	RLT9506-24	PS10040-06	AS568-016	.620	.255
RFR9508-06-6	RFR9508-06-504	RLT9508-24	PS10040-08	AS568-019	.745	.255
RFR9510-08-6	RFR9510-08-504	RLT9510-24	PS10040-10	AS568-021	.830	.265
RFR9512-10-6	RFR9512-10-504	RLT9512-24	PS10040-12	AS568-024	.950	.280
RFR9516-12-6	RFR9516-12-504	RLT9516-24	PS10040-16	AS568-028	.950	.280
RFR9520-16-6	RFR9520-16-504	RLT9520-24	PS10040-20	AS568-132	1.000	.28

NOTES:

- Rosan assembly number RFR9500-()-6 series consists of RFR9500-()-504 fluid insert and RLT9500-24 lockring.
- O-rings must be specified separately and shall be selected based on system fluid and temperature and are not supplied by Rosan. O-ring size per AS568.
- Maximum insert installation depth or minimum recommended parent material thickness.
- Dimension "B" is for design purpose only. Do not use as installation data.
- These inserts and lockrings are installed in standard Rosan ports per PS10040 of equivalent size in accordance with page 5 of this catalog.

TABLE I

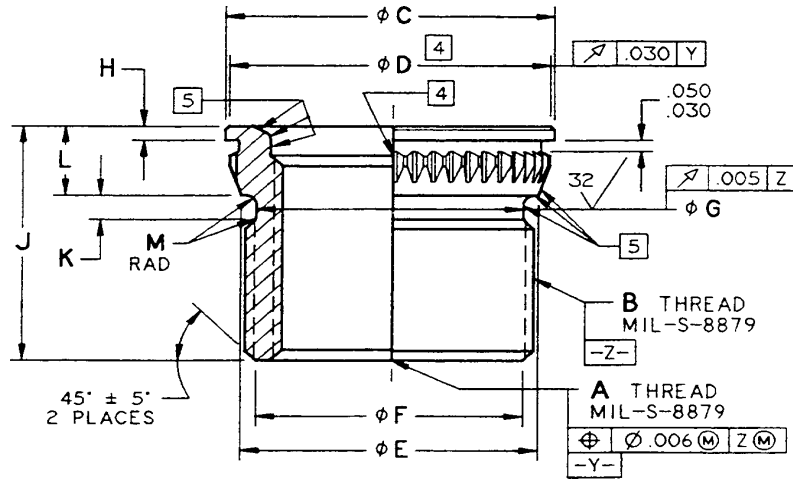
ROSAN ASSEMBLY PART NUMBER REF	PORTING TOOL	INSTALLATION TOOLS			INSTALLATION TORQUE lbf.IN		REMOVAL TOOLS	
		O-RING INSTALLATION TOOL	WRENCH	LOCKRING DRIVE TOOL	MIN	MAX	LOCKRING REMOVAL TOOL	INSERT REMOVAL TOOL
RFR9503-02-6	RPT9503	ORT95-500	RF8502WA	RF9503DA	65	84	RF9503LPD	RF9502RT
RFR9504-03-6	RPT9504	ORT95-562	RF8503WA	RF9504DA	80	105	RF9504LPD	RF9503RT
RFR9505-04-6	RPT9505	ORT95-625	RF8504WA	RF9505DA	120	150	RF9505LPD	RF9504RT
RFR9506-05-6	RPT9506	ORT95-687	RF8505WA	RF9506DA	145	185	RF9506LPD	RF9505RT
RFR9508-06-6	RPT9508	ORT95-937	RF8506WA	RF9508DA	350	400	RF9508LPD	RF9506RT
RFR9510-08-6	RPT9510	ORT95-1062	RF8508WA	RF9510DA	500	600	RF9510LPD	RF9508RT
RFR9512-10-6	RPT9512	ORT95-1250	RF8510WA	RF9512DA	700	800	RF9512LPD	RF9510RT
RFR9516-12-6	RPT9516	ORT95-1500	RF8512WA	RF9516DA	1200	1300	RF9516LPD	RF9512RT
RFR9520-16-6	RPT9520	ORT95-1875	RF8516WA	RF9520DA	1800	2000	RF9520LPD	RF9516RT

NOTE: 1. For hole preparation, installation and removal procedure refer to page 7 thru 10. For tooling and installation torque values, see Table I above.

**ASSEMBLY, INSERT - FLUID CONNECTION
TOOLS, INSTALLATION AND REMOVAL, ONE SIZE OVERSIZE**

**RFR9500-()-6
SERIES**

CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704



FOR NEW DESIGN REFER TO RF9500 (AS3078) SERIES

ROSAN PART NUMBER	TUBE OD REF	A THREAD MIL-S-8879 CLASS-3B	B THREAD MIL-S-8879 CLASS-3A	ø C MAX	ø D MIN	ø E ±.003	ø F ±.010	ø G +.005 - .002	H +.010 - .004	J ±.010
RF8502-504	.125	.3125-24UNJF	.4375-28UNJEF	.622	.602	.469	.380	.373	.047	.645
RF8503-504	.188	.3750-24UNJF	.5000-28UNJEF	.685	.665	.536	.442	.440	.047	.613
RF8504-504	.250	.4375-20UNJF	.5625-24UNJEF	.748	.728	.599	.498	.503	.047	.661
RF8505-504	.312	.5000-20UNJF	.6250-24UNJEF	.810	.790	.662	.558	.566	.047	.686
RF8506-504	.375	.5625-18UNJF	.6875-24UNJEF	.867	.852	.724	.623	.628	.047	.714
RF8508-504	.500	.7500-16UNJF	.9375-20UNJEF	1.060	1.040	.954	.857	.858	.047	.839
RF8510-504	.625	.8750-14UNJF	1.0625-18UNJEF	1.185	1.165	1.079	.973	.983	.057	.935
RF8512-504	.750	1.0625-12UNJ	1.2500-18UNJEF	1.435	1.415	1.267	1.161	1.171	.072	1.069
RF8516-504	1.000	1.3125-12UNJ	1.5000-18UNJEF	1.685	1.665	1.517	1.411	1.421	.072	1.069
RF8520-504	1.250	1.6250-12UNJ	1.8750-16UNJ	2.020	1.978	1.918	1.775	1.760	.072	1.121

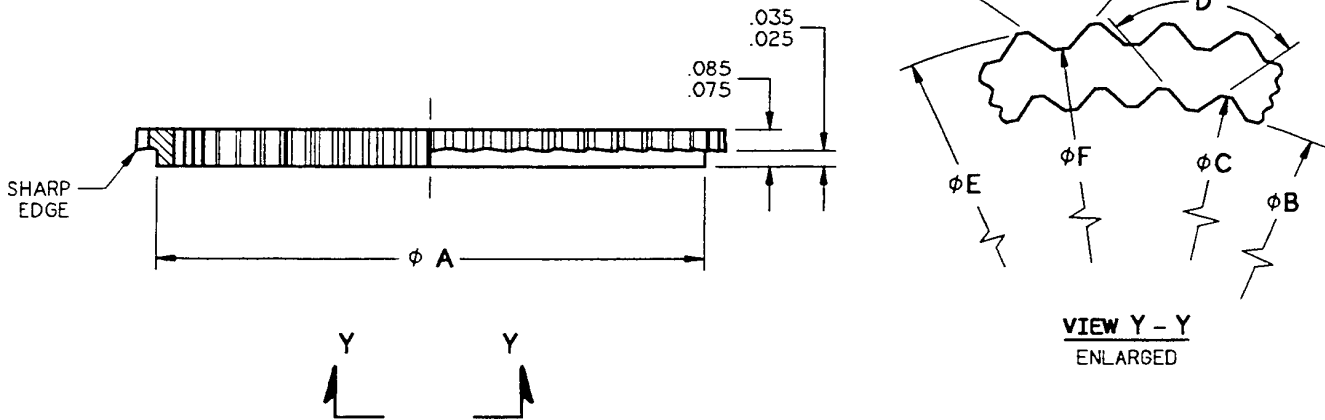
ROSAN PART NUMBER	K +.010 - .005	L ±.015	M RAD
RF8502-504	.082	.248	.030-.045
RF8503-504	.082	.248	.030-.045
RF8504-504	.082	.248	.030-.045
RF8505-504	.082	.248	.030-.045
RF8506-504	.082	.248	.030-.045
RF8508-504	.082	.248	.030-.045
RF8510-504	.082	.260	.030-.045
RF8512-504	.082	.276	.030-.045
RF8516-504	.082	.276	.030-.045
RF8520-504	.122	.276	.045-.065

NOTES:

- MATERIAL A286 Cres per AMS5731, AMS5732, AMS5734 or AMS5737. These parts also available in other materials. Refer to page 11, Table II.
- HEAT TREAT: 130 KSI UTS min.
- FINISH: Passivate per QQ-P-35.
- [4] Insert internal configuration and "D" diameter per MS33649.
- [5] Sealing surface: No visible defects. To be protected for shipment.
- Break sharp edges .003-.015, except serration.
- All machined surfaces shall be smooth to 125 microinches Ra, serration 250 microinches Ra and sealing surfaces 63 microinches Ra and as shown per ANSI/ASME B46.1.
- Identification per AS478 class 35D. Manufacturer's name, trademark or CAGE CODE, part number and lot number.

**INSERT - FLUID CONNECTION, 3000 PSI, RF 8500-504
MS33649 INTERNAL CONFIGURATION SERIES**

CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704



ROSAN PART NUMBER	ϕA	ϕB	ϕC	D°	ϕE	ϕF	G°
	± 005	$+005$ -002	± 005	$+2^\circ$ -1°	$+005$ -004	$+005$ -004	$\pm 2^\circ$
RL8502-24	.622	.511	.554	96°	.701	.653	94°
RL8503-24	.685	.578	.621	95°	.764	.716	94°30'
RL8504-24	.747	.641	.682	94°30'	.826	.778	94°
RL8505-24	.810	.704	.747	94°	.889	.841	94°
RL8506-24	.857	.766	.811	94°	.963	.888	94°
RL8508-24	1.105	.996	1.039	93°	1.187	1.138	93°30'
RL8510-24	1.230	1.131	1.182	93°	1.312	1.263	93°
RL8512-24	1.447	1.319	1.372	92°30'	1.531	1.482	92°30'
RL8516-24	1.708	1.569	1.622	92°	1.797	1.748	92°
RL8520-24	2.103	1.975	2.027	91°30'	2.187	2.138	92

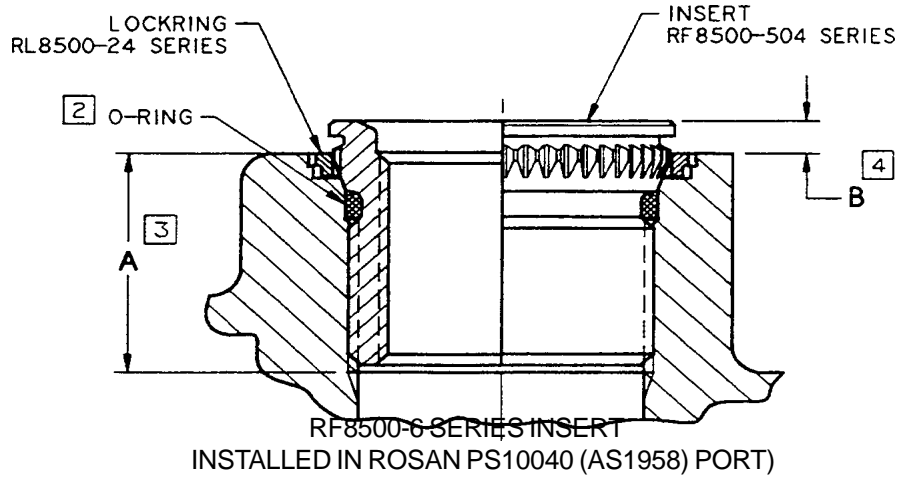
NOTES:

1. MATERIAL: A286 Cres per AMS5731, AMS5732, AMS5734 or AMS5737. These parts are also available in other materials. Refer to page 11. Table III.
2. HEAT TREAT: 130 KSI UTS min.
3. FINISH: Passivate per QQ-P-35.
4. Break sharp edges .003-.015 except serration.
5. All non-serrated surfaces shall be smooth to 125 microinches Ra and serration 250 microinches Ra per ANSI/ASME B46.1.
6. Identification per AS478 class 35D. Manufacturer's name, trademark or CAGE CODE, part number and lot number.

**LOCKRING, FLUID
CONNECTION BOSS**

**RL8500-24
SERIES**

CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704



ROSAN ASSEMBLY NUMBER	INSERT NUMBER	LOCKRING NUMBER	ROSAN PORT NUMBER	O-RING SIZE [2] REF	A [3]	B +.000 -.045
RF8502-6	RF8502-504	RL8502-24	PS10040-02	AS568-012	.550	.139
RF8503-6	RF8503-504	RL8503-24	PS10040-03	AS568-013	.520	.139
RF8504-6	RF8504-504	RL8504-24	PS10040-04	AS568-014	.565	.139
RF8505-6	RF8505-504	RL8505-24	PS10040-05	AS568-015	.590	.139
RF8506-6	RF8506-504	RL8506-24	PS10040-06	AS568-016	.620	.139
RF8508-6	RF8508-504	RL8508-24	PS10040-08	AS568-019	.745	.139
RF8510-6	RF8510-504	RL8510-24	PS10040-10	AS568-021	.830	.149
RF8512-6	RF8512-504	RL8512-24	PS10040-12	AS568-024	.950	.164
RF8516-6	RF8516-504	RL8516-24	PS10040-16	AS568-128	.950	.164
RF8520-6	RF8520-504	RL8520-24	PS10040-20	AS568-132	1.000	.164

ENGINEERING INFORMATION

1. The RF8500-6 series provides a semi-permanent hydraulic port primarily for use in 3000 PSI fluid systems.
- [2] O-rings must be specified separately and shall be selected based on system fluid and temperature and are not supplied by Rosan. O-ring size per AS568.
- [3] Maximum insert installation depth or minimum recommended parent material thickness.
- [4] Dimension "B" is for design purpose only. Do not use as installation data.
5. These inserts and lockrings are installed in standard Rosan ports per PS10040 of equivalent size in accordance with page 5 of this catalog.
6. If it is required to remove a RF8500-() series insert, a new insert and lockring assembly will be required upon reinstallation. Use of the RF9500-() series allows for the reuse at assembly.

**ASSEMBLY,
INSERT - FLUID CONNECTION**

**RF 8500-6
SERIES**

CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704

PORTING, INSTALLATION AND REMOVAL TOOLS

ROSAN ASSEMBLY NUMBER	ROSAN PORT NUMBER	PORTING TOOL	INSTALLATION TOOLS		
			O-RING INSTALLATION TOOL	WRENCH	LOCKRING DRIVE TOOL
RF8502-6	PS10040-02	RPT9502	ORT95-437	RF8502WA	RF8502DA
RF8503-6	PS10040-03	RPT9503	ORT95-500	RF8503WA	RF85035DA
RF8504-6	PS10040-04	RPT9504	ORT95-562	RF8504WA	RF8504DA
RF8505-6	PS10040-05	RPT9505	ORT95-625	RF8505WA	RF8505DA
RF8506-6	PS10040-06	RPT9506	ORT95-687	RF8506WA	RF8506DA
RF8508-6	PS10040-08	RPT9508	ORT95-937	RF8508WA	RF8508DA
RF8510-6	PS10040-10	RPT9510	ORT95-1062	RF851WA	RF8510A
RF8512-6	PS10040-12	RPT9512	ORT95-1250	RF8512WA	RF851DA
RF8516-6	PS10040-16	RPT9516	ORT95-1500	RF8516WA	RF8516DA
RF8520--6	PS10040-20	RPT9520	ORT95-1875	RF8520WA	RF8520DA

ROSAN ASSEMBLY NUMBER	REMOVAL DRILL SIZE	REMOVAL COUNTERBORE TOOL
RF8502-6	25/64 (.3906)	RF8502R
RF8503-6	15/32 (.4687)	RF8503R
RF8504-6	17/32 (.5312)	RF8504R
RF8505-6	19/32 (.5937)	RF8505R
RF8506-6	21/32 (.6562)	RF8506R
RF8508-6	7/8 (.8750)	RF8508R
RF8510-6	1 (1.0000)	RF8510R
RF8512-6	1-7/32 (1.2188)	RF8512R
RF8515-6	1-7/16 (1.4375)	RF8516R
RF8520-6	1-13/16 (1.8125)	RF8520R

PORT PREPARATION, INSERT INSTALLATION AND REMOVAL TOLLS

1. PORT PREPARATION

1.1 Prepare boss and port per PS10040 page 5. Drill through or to depth specified on applicable drawing. Use a drill with a diameter .015-.030 smaller than the required thread minor diameter specified in standard PS10040 prior to finishing part using RPT9500 series porting tool.

2. LOCKRING INSTALLATION

2.1 Slide the locking over the insert thread and engage into insert serration such that the pilot of the locking faces the thread. See Figure 1.

3. O-RING INSTALLATION

3.1 Place the O-ring installation tool over the outside thread of the insert. Submerge the insert the locking the O-ring and the O-ring too in the fluid to be used in the working system or a lubricant compatible with the system fluid.

3.2 Slide the O-ring over the O-ring tool and onto the insert. Be sure that the O-ring is not twisted and is properly seated in the groove of the insert. See Figure 1.

3.3 Remove the O-ring installation tool.

4. INSERT INSTALLATION

4.1 Lubricate the internal surfaces of the port and the entire insert assembly using the same fluid or lubricant as specified in paragraph 3. Scratches nicks or rough spots are not allowed in O-ring contact area on the insert or in the port.

4.2 Screw the drive wrench into the thread of the insert until the plastic collar touches the surface of the insert. See Figure 2.

4.3 Screw the insert assembly into the port by hand using a clockwise rotation until the assembly is firmly set (See Figure 2).

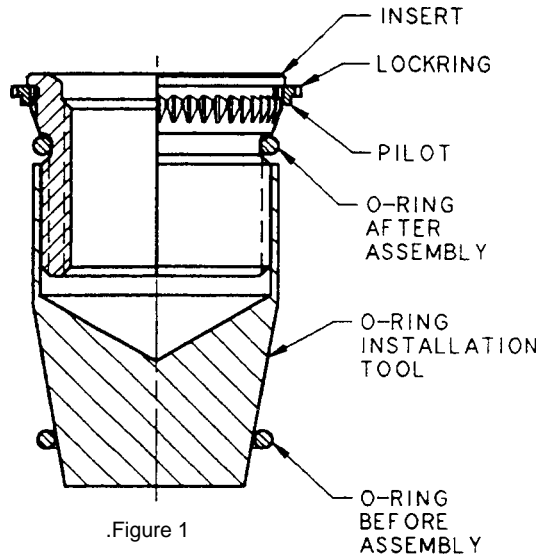
CAUTION: Be sure that the locking internal serrations are engaged with the insert serrations.

To avoid possible O-ring damage the insert should not be rotated in a counterclockwise direction. If this has been done replace the O-ring.

4.4 Place the torque wrench of the proper size into the square of the drive wrench and apply a torque equal to the value specified in Table I on page 19. Remove the torque wrench and not the drive wrench.

4.5 Apply enough Zinc Chromate primer (TT-P-1757) with a brush or small to the counterbore area of the port by lifting the locking slightly by hand so primer will be extruded out between external serrations of the locking and the port counterbore when locking is installed.

NOTE: Design activity may specify another primer in place of or in addition to Zinc Chromate.



.Figure 1

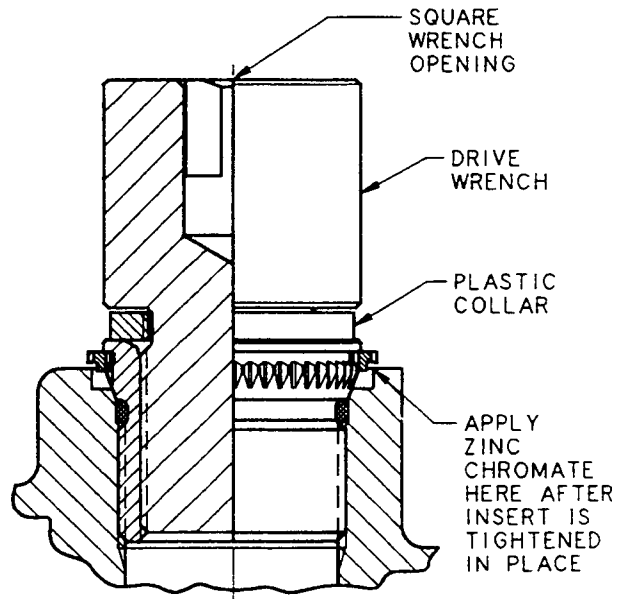


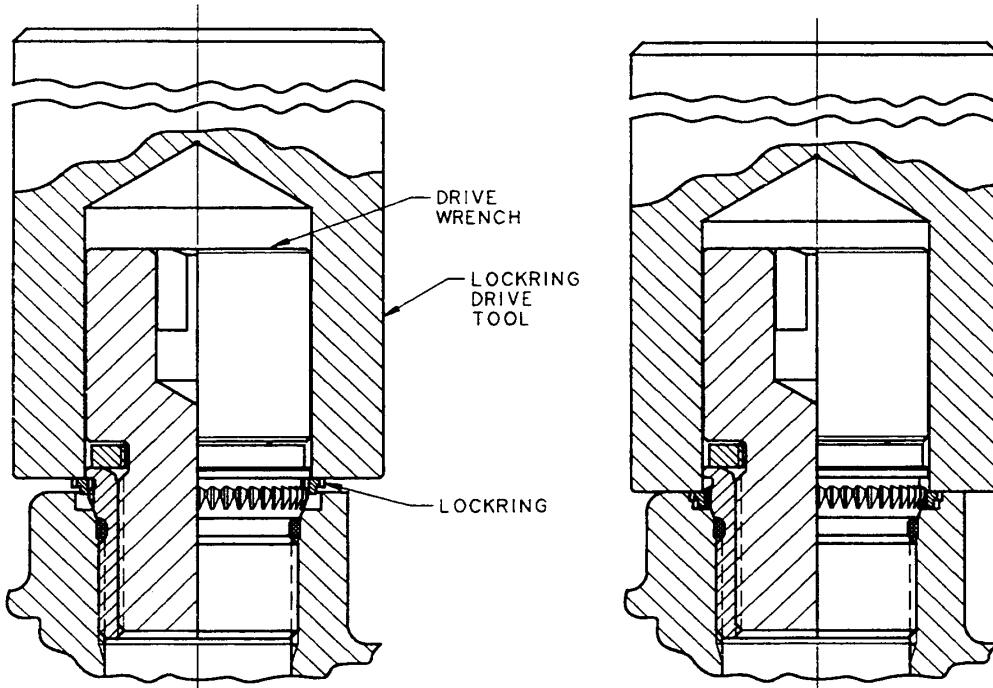
Figure 2

INSTALLATION AND REMOVAL, RF8500 SERIES FLUID INSERT

4.6 While the Zinc Chromate (or other primer) is still wet, the locking drive tool over the drive wrench and let it rest on the locking top surface see Figure 3. Apply a sufficient downward force to drive locking into the surface of port counterbore until the face of the locking drive tool touches the port surface. See Figure 4.

NOTE: Depending upon he component configuration it may be necessary to support the port in order not to deform the internal configuration of the component.

4.7 Remove the tools and excess Zinc Chromate (or other primer) that has formed on the surface of port and locking.



PLACEMENT OF LOCKRING DRIVE TOOL
FIGURE 3

LOCKRING INSTALLATION
FIGURE 4

TABLE I

ROSAN ASSEMBLY NUMBER	ROSAN PORT NUMBER REF	O-RING NUMBER REF	INSTALLATION TORQUE lbf-in	
			MIN	MAX
RF8502-6	PS10040-02	AS568-012	40	50
RF8503-6	PS10040-03	AS568-013	65	84
RF8504-6	PS10040-04	AS568-014	80	105
RF8505-6	PS10040-05	AS568-015	120	150
RF8506-6	PS10040-06	AS568-016	145	185
RF8508-6	PS10040-08	AS568-019	350	400
RF8510-6	PS10040-10	AS568-021	500	600
RF8512-6	PS10040-12	AS568-024	700	800
RF8516-6	PS10040-16	AS568-028	1200	1300
RF8520-6	PS10040-20	AS568-132	1800	200

**INSTALLATION AND REMOVAL
RF8500 SERIES FLUID INSERT (CONTD)**

5. PRESSURE TESTING

- 5.1 A proof pressure test of unit may be conducted at this point. Place a pressure plug in the insert. Pressurize the unit from another location on the unit to 1.5 times the operating pressure for three (3) minutes. There shall be leakage.

NOTE: Using design activity may require testing other than shown.

6. INSERT REMOVAL

The removal of RF8500 series boss inserts is to be accomplished in a manner that will not damage the parent material.

- 6.1 Obtain the proper drill size from table on page 17.
- 6.2 The drill must be centered to the insert internal threads. Set drill stop so that the drill diameter will penetrate 160 inches below the parent material surface. Drill until insert has separated which will normally be about .140 inches below the parent material surface.
NOTE: This drilling operation will separate the insert in the O-ring gland area thereby not touching the parent material cavity or the lockring.
- 6.3 Lift the upper portion of the insert out.
- 6.4 Using a screw extractor or similar device unscrew the bottom half of the insert from the cavity. The lockring will still be in the parent material.
CAUTION: Do not pry out lockring. This could damage the 20° angle of the cavity sealing surface and also could enlarge or damage parent material serrations and affect the security of a replacement lockring.

7. LOCKRING REMOVAL

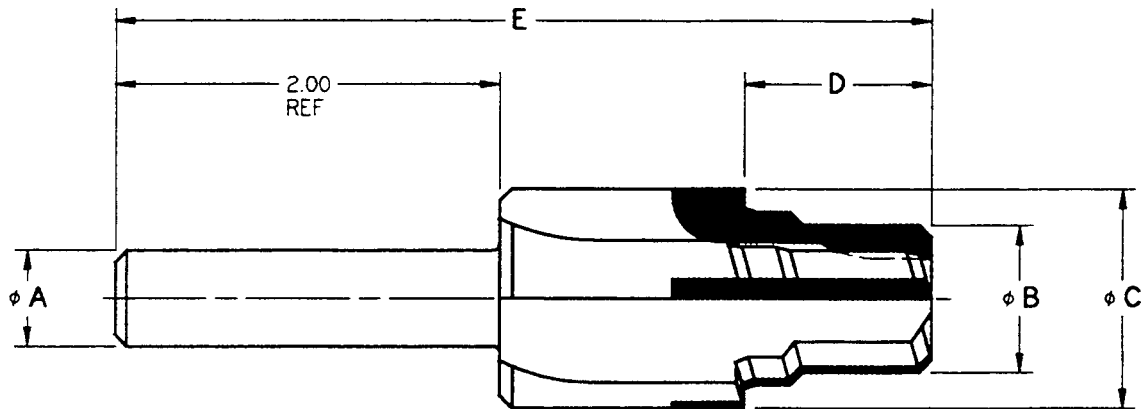
- 7.1 If a sealant has been used to cover lockring carefully remove sealant to expose lockring.
- 7.2 Select the proper size removal counterbore too from table on page 17. This tool pilots in the minor diameter of the cavity thread and bores into the lockring without touching the parent material serrations.
- 7.3 Bore into the lockring .050-.055 inches deep. This will leave a thin wall and externa serrations on lockring and separates the lockring pilot.
- 7.4 Using a thin pointed punch collapse the remaining portion of the lockring radially inward being careful not to mar the parent material remove lockring and lockring pilot.
- 7.5 Remove all loose and hanging burrs in counterbore area and clean cavity.
- 7.6 Purge unit or system.

8. REINSTALLATION OF INSERT AND LOCKRING:

- 8.1 Reinstall lockring as described in paragraph 2 page 18.
- 8.2 Reinstall O-ring as described in paragraph 3 page 18 using a new O-ring per Table I page 19.
- 8.3 Reinstall insert assembly into part as described in paragraph 4 page 18 except a shim shall be used between lockring and the broached surface to prevent premature engagement of serrations.

Torque to the minimum value specified in Table I page 19. If the lockring serrations does not align with the port serrations continue to slowly torque the insert towards the maximum value allowed in Table I page 19 until the serrations of the lockring aligns with the port serrations then remove shim before driving lockring.

**INSTALLATION AND REMOVAL
RF8500 SERIES FLUID INSERT (CONTD)**



PORTING TOOL NUMBER	ϕA	ϕB	ϕC	D	E	PORT THREAD MIL-S-8879 CLASS-3B	TO PRODUCE CONTOUR FOR PORT NUMBER
	+0.0000 -0.0003	± 0.0005	± 0.0003	± 0.005	REF	REF	
RPT9502	.4998	.4057	.6725	.700	3.450	.4375-28UNJEF	PS10040-02
RPT9503	.4998	.4682	.7355	.645	3.645	.5000-28UNJEF	PS10040-03
RPT9504	.4998	.5249	.7975	.750	3.750	.5625-24UNJEF	PS10040-04
RPT9505	.4998	.5874	.8605	.750	3.750	.6250-24UNCJEF	PS10040-05
RPT9506	.4998	.6499	.9075	.800	3.800	.6875-24UNJEF	PS10040-06
RPT9508	.7498	.8918	1.1575	1.005	4.255	.9375-20UNJEF	PS10040-08
RPT9510	.7498	1.0114	1.2825	1.120	4.370	1.0625-18UNJEF	PS10040-10
RPT9512	.7498	1.1989	1.5015	1.240	4.740	1.2500-18UNJEF	PS10040-12
RPT9516	.7498	1.4489	1.7675	1.240	4.740	1.5000-18UNJEF	PS10040-16
RPT9520	.7498	1.8172	2.1575	1.330	4.830	1.8750-16UNJ	PS10040-20

NOTES:

- MATERIAL: Body - High Speed Steel.
Cutting Edges - Carbide Inserts.

APPLICATION

This tool counterbores, countersinks, provides a radius and produces a perfect tap drill diameter in one pass. Contours are ground to insure concentricity. Cutter geometry permits the use of these tools with most common materials.

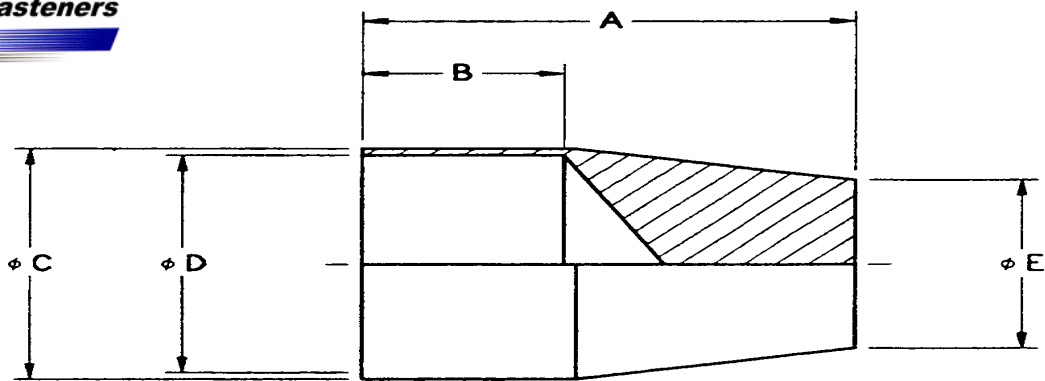
METHOD

Drill through or to a depth specified on the applicable drawing using a drill with a diameter .015-.030 smaller than that specified (ref: "fB"). This will allow Rosan "RPT9500" series porting tool to finish all diameters of the port (PS10040) to the dimensions required. The user must set the cutting depth.

**PORTING TOOL
CARBIDE TIPPED
PS10040 (AS 1958) PORT**

**RPT9500
SERIES**

CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704



O-RING TOOL NUMBER	A	B	øc	øD	øE
	±0.6	+0.05 -0.01	MAX	MIN	±0.040
ORT95-437	.91	.33	.509	.440	.310
ORT95-500	.88	.30	.572	.502	.472
ORT95-562	.93	.35	.635	.565	.435
ORT95-625	.97	.38	.697	.627	.495
ORT95-687	1.02	.40	.760	.690	.546
ORT95-937	1.34	.53	1.013	.940	.731
ORT95-1062	1.44	.61	1.143	1.065	.856
ORT95-1250	1.56	.73	1.330	1.252	1.043
ORT95-1500	1.60	.73	1.590	1.502	1.290
ORT95-1875	1.63	.75	1.965	1.877	1.66

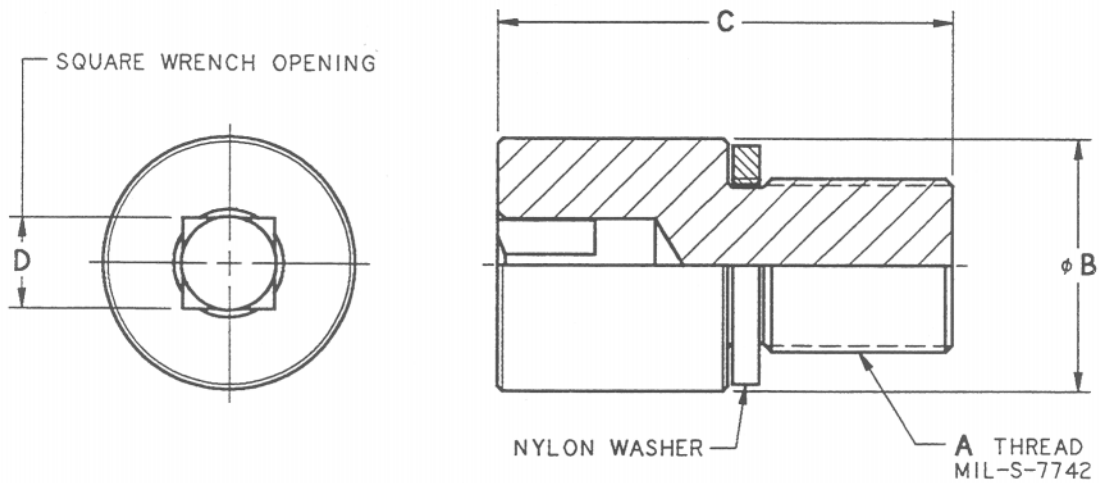
NOTES:

1. MATERIAL: Teflon or Nylon.

O-RING INSTALLATION TOOL

ORT95-()
SERIES

CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704



PORTING TOOL NUMBER	WASHER PART NUMBER	A	ØB	C	D
		THREAD MIL-S-7742 CLASS 3-A	MAX	MAX	NOMINAL
RF8502WA	RF8502WA1	.3125-24UNF	.617	1.47	.25
RF8503WA	RF8503WA1	.3750-24UNF	.680	1.67	.25
RF8504WA	RF8504WA1	.4375-20UNF	.745	1.72	.25
RF8505WA	RF8505WA1	.5000-20UNF	.805	1.72	.38
RF8506WA	RF8506WA1	.5625-18UNF	.870	1.77	.38
RF8508WA	RF8505WA-1	.7500-16UNF	1.057	1.90	.38
RF8510WA	RF8510WA-1	.8750-14UNF	1.180	2.02	.50
RF8512WA	RF8512WA-1	1.0625-12UN	1.430	2.16	.50
RF8516WA	RF8516WA-1	1.3125-12UN	1.680	2.50	.75
RF8520WA	RF8520WA-1	1.6250-12UN	1.995	2.55	.75

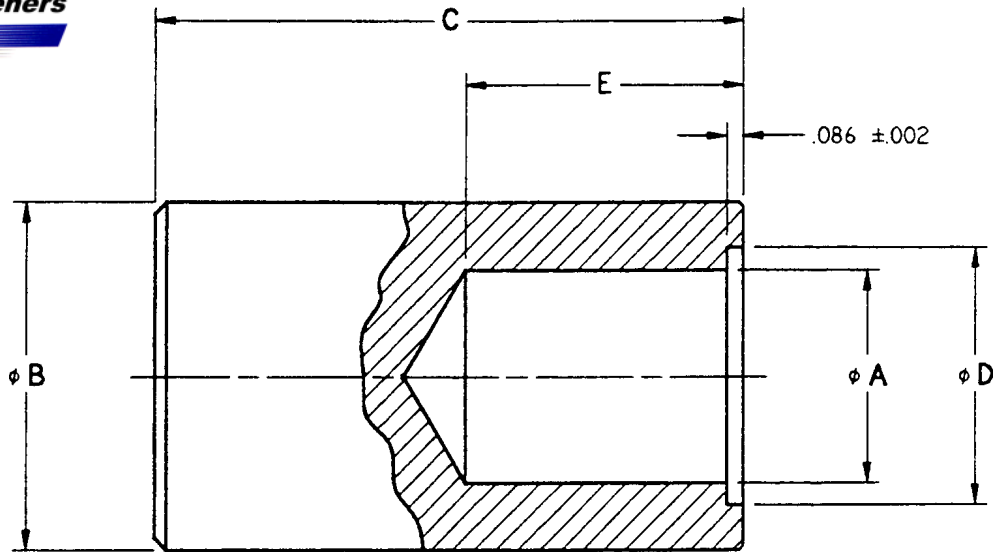
NOTES:

1. MATERIAL: Alloy steel.
2. HEAT TREAT: Heat treated.
3. FINISH: Black oxide plus oil.

WRENCH

RF8500WA
SERIES

CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704



LOCKRING DRIVE TOOL NUMBER	φA +.005 -.002	φB +.010 -.030	C ±.05	φD ±.010	E MIN
RF9502DA	.627	1.18	3.00	.805	1.39
RF9503DA	.690	1.25	3.00	.870	1.39
RF9504DA	.753	1.31	3.00	.930	1.39
RF9505DA	.815	1.37	3.00	.990	1.39
RF9506DA	.872	1.42	3.00	1.040	1.39
RF9508DA	1.065	1.73	3.00	1.290	1.39
RF9510DA	1.190	1.86	3.00	1.420	1.45
RF9512DA	1.440	2.08	3.50	1.640	1.45
RF9516DA	1.690	2.34	3.50	1.900	1.79
RF9520DA	2.025	2.73	3.50	2.290	1.79

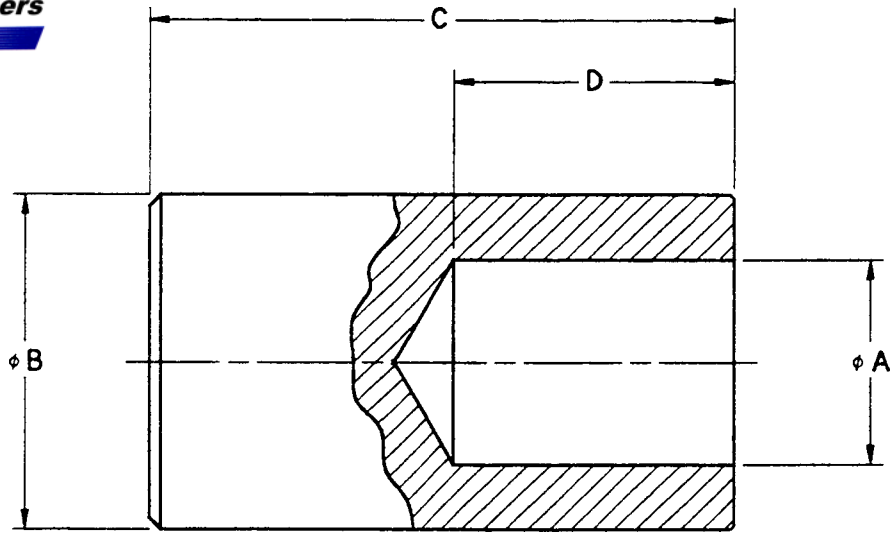
NOTES:

1. MATERIAL: Alloy steel.
2. HEAT TREAT: Heat treated.
3. FINISH: Black oxide plus oil.

LOCKRING DRIVE TOOL

**RF 9500DA
SERIES**

CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704



LOCKRING DRIVE TOOL NUMBER	ϕA +.005 -.002	ϕB +.010 -.030	C $\pm .05$	D MIN
RF8502DA	.627	1.00	3.00	1.27
RF8503DA	.690	1.06	3.00	1.27
RF8504DA	.753	1.12	3.00	1.27
RF8505DA	.815	1.18	3.00	1.27
RF8506DA	.872	1.25	3.00	1.27
RF8508DA	1.065	1.50	3.00	1.27
RF8510DA	1.190	1.62	3.00	1.33
RF8512DA	1.440	1.88	3.50	1.33
RF8516DA	1.690	2.12	3.50	1.67
RF8520DA	2.025	2.50	3.50	1.67

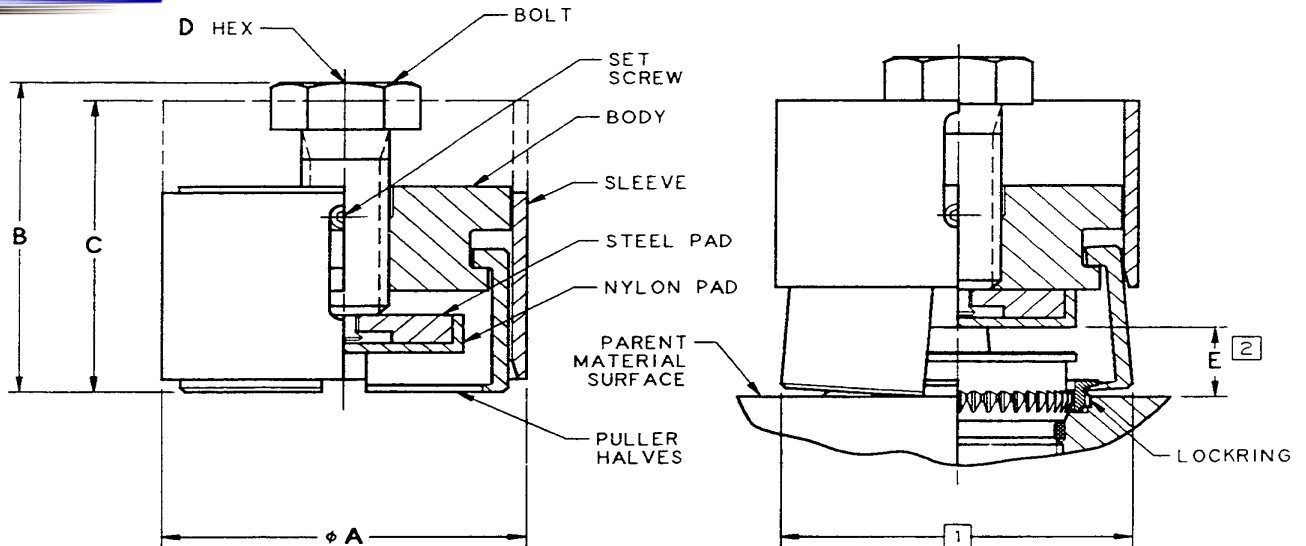
NOTES:

1. MATERIAL: Alloy steel.
2. HEAT TREAT: Heat treated.
3. FINISH: Black oxide plus oil.

LOCKRING DRIVE TOOL

RF8500DA
SERIES

CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704



LOCKRING REMOVAL TOOL NUMBER	øA MAX	B MAX	C MAX	D HEX NOM	E [2]	
					MIN	MAX
RF9502LPD	1.06	1.64	1.34	.438	.05	.26
RF9503LPD	1.14	1.64	1.54	.438	.05	.26
RF9504LPD	1.20	1.64	1.54	.438	.05	.26
RF9505LPD	1.27	1.74	1.57	.562	.05	.26
RF9506LPD	1.32	1.74	1.57	.562	.05	.26
RF9508LPD	1.63	1.89	1.59	.562	.05	.26
RF9510LPD	1.70	1.89	1.67	.562	.05	.27
RF9512LPD	1.93	1.89	1.67	.562	.05	.29
RF9516LPD	2.20	2.02	1.88	.562	.05	.29
RF9520LPD	2.62	2.02	1.88	.562	.05	.2

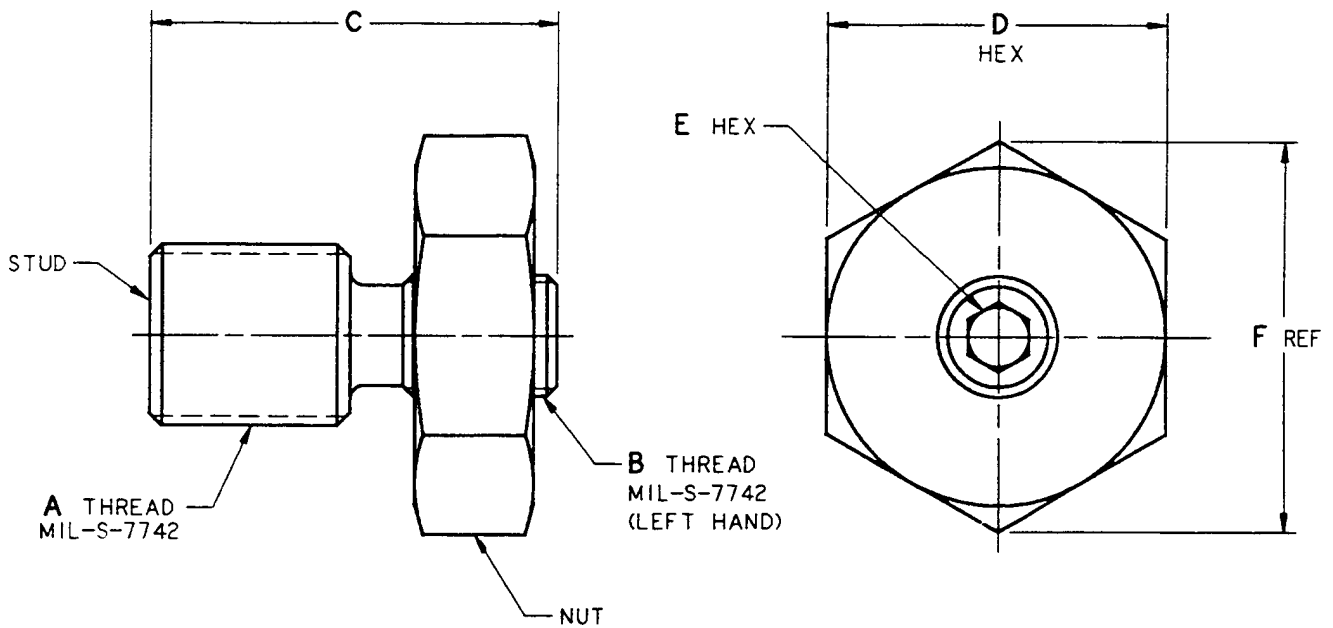
NOTES:

- [1] Puller halves will engage lockring groove when expanded to "A" diameter.
- [2] Range of insert stand-off that removal tool will accommodate.
- 3. MATERIAL: Alloy steel.
- 4. HEAT TREAT: Heat treated.
- 5. FINISH: Black oxide plus oil.
- 6. PAD: Nylon.

**LOCKRING REMOVAL TOOL
LIFT TYPE**

**RF 9500LPD
SERIES**

CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704



INSERT REMOVAL TOOL NUMBER	A THREAD CLASS-3A	B THREAD CLASS-3A (LEFT HAND)	C ±.03	D HEX	E HEX	F REF
RF9502RT	.3125-24UNF	.2500-28UNF	1.40	.875	.125	1.01
RF9503RT	.3750-24UNF	.2500-28UNF	1.40	.875	1.25	1.01
RF9504RT	.4375-20UNF	.2500-28UNF	1.40	.875	.125	1.01
RF9505RT	.5000-20UNF	.2500-28UNF	1.45	.875	.125	1.01
RF9506RT	.5625-18UNF	.5000-20UNF	1.50	1.437	.250	1.66
RF9508RT	.7500-16UNF	.5000-20UNF	1.70	1.437	.250	1.66
RF9510RT	.8750-16UNF	.5000-20UNF	1.90	1.437	.250	1.66
RF9512RT	1.0625-12UN	.5000-20UNF	2.00	1.437	.250	1.66
RF9516RT	1.3125-12UN	1.2500-20UN	2.00	2.000	.500	2.31
RF9520RT	1.6250-12UN	1.2500-20UN	2.00	2.000	.500	2.31

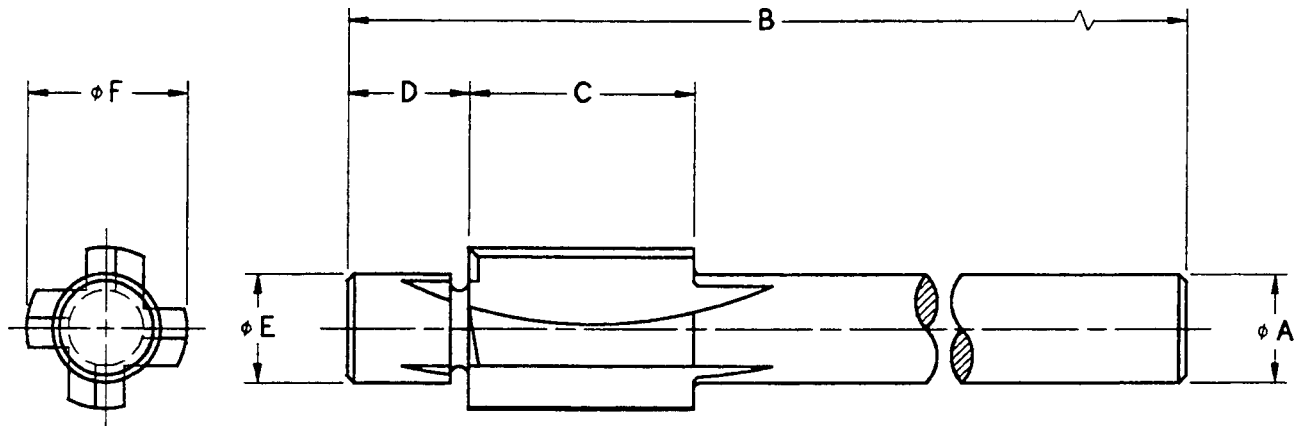
NOTES:

1. MATERIAL: Alloy steel.
2. HEAT TREAT: Heat treated.
3. FINISH: Stud: Black oxide plus oil.
Nut: Cadmium Plate.

INSERT REMOVAL TOOL

**RF9500RT
SERIES**

CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704



LOCKRING REMOVAL TOOL NUMBER	ϕA	B	C	D	ϕE	ϕF
	$\pm .005$	$\pm .03$	$\pm .030$	$\pm .015$	$+ .001$	$\pm .001$
RF8502R	.500	3.75	.937	.500	.404	.635
RF8503R	.500	3.75	1.000	.500	.467	.698
RF8504R	.500	4.12	1.125	.500	.524	.760
RF8505R	.500	4.12	1.125	.500	.586	.823
RF8506R	.500	4.12	1.125	.500	.649	.870
RF8508R	.625	4.38	1.250	.625	.891	1.120
RF8510R	.625	4.50	1.250	.750	1.010	1.245
RF8512R	.750	4.75	1.250	.750	1.198	1.464
RF8516R	.750	4.75	1.250	.750	1.448	1.730
RF8520R	.750	4.75	1.250	.750	1.816	2.120

NOTES:

1. MATERIAL: Alloy steel.
2. HEAT TREAT: 60-65 HRC.
3. FINISH: None.
4. Number of flutes and flute configuration are per tool manufacturer's standard.

LOCKRING REMOVAL TOOL

**RF8500R
SERIES**

CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704



TEST RESULTS OF THE ROSAN FLUID BOSS INSERT

TESTED AND APPROVED

The Rosan RF9500 series insert has been tested by the Naval Air System Commande Development Center.

The abstract of the Naval Test Report states "...The Ring Locked boss insert assembly, developed by Rosan and evaluated to the requirements of MIL-F-18280 was found suitable for new design where interchangeability of the boss-insert in a component is desirable. It is also suitable as a repair insert for damaged or worn bosses of hydraulic components, where machining to the boss-insert dimension, is possible."

THE TEST RESULTS

The Naval Test Reports the following results:

1. Proof Pressure - All assemblies satisfactorily withstood the 6000 PSI proof pressure test.
2. Flexural Strength - The two samples tested completed this test without any failures as shown in Table I.
3. Pressure Impulsing - The four test assemblies satisfactorily completed the 200,000 impulse pressure cycles without failure, blow-off or leakage and withstood the subsequent 6000 PSI proof pressure test.
4. Thermal Shock - The four test assemblies previously subjected to flexural and impulse testing completed this test without any leakage or other failure. One test sample, each size, thereafter was pressurized to 3000 PSI, 6000 PSI and 22,000 PSI respectively, without leakage or blow-off as shown in Table II.

TABLE I - FLEXURAL STRENGTH

SIZE	COMBINED STRESSES (psi)	CYCLES COMPLETED	COMBINED STRESSES To (psi)	ADDITIONAL CYCLES	TOTAL CYCLES	REMARKS
-12	30,000	10,300,000	35,000	1,400,000	11,700,000	TUBING RUPTURED
-16	30,000	10,200,000	35,000	5,350,000	15,550,000	TUBING RUPTURED

MIL-F-18280 requires 10,000,000 flexural cycles

TABLE II - THERMAL SHOCK

SIZE	350°F 3000 psi	-65°F 3000 psi	75°F 6000 psi	75°F 12,000 psi	ULTIMATE BURST psi	REMARKS
-12	NO LEAK	NO LEAK	NO LEAK	NO LEAK	—	NO RUPTURE
-12	NO LEAK	NO LEAK	NO LEAK	NO LEAK	22,000	
-16	NO LEAK	NO LEAK	NO LEAK	NO LEAK	—	NO RUPTURE
-16	NO LEAK	NO LEAK	NO LEAK	NO LEAK	22,000	

Original MS28778 O-ring used throughout testes in MS33649 configuration.

ACCEPTABILITY OF THE ROSAN FLUID BOSS INSERT

Many major companies have used the Rosan Fluid Boss Insert: Sikorsky Aircraft; General Electric, Lynn (T700 and F404 Jet Engine Programs); General Electric Evendale (CF6 Program); Airesearch, Arizona; Purolator; Ronson Hydraulics; Aircraft Gear; Western Gear; Sier Bath; Fenn Manufacturing; Indiana Gear Works and Menasco, to name just a few.

DESIGN CONSIDERATIONS

The parent material shear strength (Fsu), at operating temperature, should be in excess of those listed in the table below, in order for the insert to function properly. Each insert has been designed to resist a burst pressure of four times the system pressure when used as specified in the table below.

SYSTEM PRESSURE psi	PARENT MATERIAL SHEAR STRENGTH (AT OPERATING TEMP.) psi Fsu MIN	TUBING O.D. REF	INSERT SIZE
3,000	12,000	1/4 THRU 1	04 THRU 16
3,000	14,000	1/8 THRU 1-1/4	02 THRU 2

CAGE CODE 83324 ROSAN / Fairchild Fastener Division, 3130 West Harvard Street, Santa Ana, CA 92704

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Customer Team Los Angeles

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Fax: 310.784.6665

Customer Team Seattle

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3400 188th Street S.W.
Lynnwood, WA 98037 USA
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Fax: 425.744.1283

• DISTRIBUTION OFFICES •

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Arlington, TX 76015 USA
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Fax: 817.417.4129

Customer Team-Worldwide Distribution Los Angeles

3016 West Lomita Boulevard
Torrance, CA 90505 USA
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Fax: 310.784.6608

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• AEROSPACE OFFICES •

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Fax: 49.5121.762.496

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Leicester LE4 9JD England
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Via San Nullo 171
80014 Giugliano (Na) Italy
Tel: 39.81.804.8852
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72110 Saint Cosme en Vairais France
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Fax: 33(0)2.43.31.41.41

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Industriestraße 6
D-65779 Kelkheim Germany
Tel: 49.6195.8050
Fax: 49.6195.5647

Customer Team U.K.

15 New Star Road
Leicester LE4 9JD England
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Fax: 44.0116.274.3666

Manufacturing Facilities

Industry: Unruh

Screwcorp / Voi-Shan
135 North Unruh Avenue
City of Industry, CA 91744 USA
Tel: 626.937.5400
Fax: 626.937.5454

Santa Ana

Deltron / Rosán
3130 West Harvard Street
Santa Ana, CA 92704 USA
Tel: 714.641.8800
Fax: 714.641.8801

South Bay

Camloc / RAM / Tridair / Voi-Shan
3000 West Lomita Boulevard
Torrance, CA 90505 USA
Tel: 310.784.2600
Fax: 310.784.6606

Kelkheim

Camloc / Tridair
Industriestraße 6
D-65779 Kelkheim Germany
Tel: 49.6195.8050
Fax: 49.6195.5647

Guarda

Eurosim / Simmonds
Parque Industrial da Guarda
Lotes 53/54 6300 Guarda Portugal
Tel: 35.10.712.22007

Fullerton

Kaynar / Eagle
800 S. State College Blvd.
Fullerton, CA 92831 USA
Tel: 714.871.1550
Fax: 714.680.0175

Fullerton: Plant 2

K-Fast / APS
801 S. Placentia Ave.
Fullerton, CA 92831 USA
Tel: 714.738.3600
Fax: 714.278.9900

Placentia

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Placentia, CA 92670 USA
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44 Campanelli Parkway
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Fax: 33(0)5.61.51.60.78

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Fax: 61.3.9563.1980

Fémipari KFT

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Dózsa György u. 2/a
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Fax: 36.06.88.265.802

Industry: Temple

Screwcorp / Voi-Shan
13001 Temple Avenue
City of Industry, CA 91746 USA
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Fax: 626.369.3416

Conches

Mecaero
Zone Industrielle - BP 9
27910 Conches, France
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Fax: 33.32.30.98.06

Integrated Product Service Solutions

Fairchild Fasteners Direct

20660 Nordhoff Street
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Fax: 818.407.5945

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Robert-Bosch
Straße 4
D-86551 Aichach Germany
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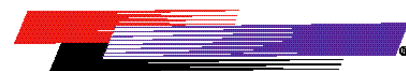
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