Powering Business Worldwide

UP64017

February 2002

Applicable additional manuals:

SM64017 - CCR Nozzle
SM64019 - Unisex Coupling, Non-Valved
SM64020 - Unisex Coupling, Valved
SM61154 - Dry Break Disconnect

Aerospace Group
Conveyance Systems Division
Carter® Brand Ground Fueling Equipment

Upgrade Instructions

Closed Circuit Refueling Nozzle - Arctic Nozzle NSN 4930-01-370-3061

Model 64017Z

TABLE OF CONTENTS

1.0 INTRODUCTION

This instruction manual provides the necessary instructions covering the upgrading of Eaton's Carter brand Model 64017 Closed Circuit Refueling (CCR) Nozzle to the latest configuration that utilizes a piston actuator instead of the original Piston and a pressure energized Teflon sleeve seal in lieu of the original rubber one. It is designed in accordance with MIL-N-52747D(ME), Type I. The Arctic version, 64017Z, is designed in accordance with MIL-N-52747, Type II, Class A and MIL-N-53094. There are several options available when purchasing a unit as explained in SM64017 and Bulletin 64017 both available from Eaton or a local distributor.

2.0 EQUIPMENT DESCRIPTION AND OPERATION

2.1 DESCRIPTION

Model 64017 CCR Nozzle and a closed circuit refueling receiver mounted in a vehicle fuel tank comprise a closed circuit refueling system. It is designed for fueling under pressure with optimum speed, minimum loss of fuel and maximum safety. The refueling system is grounded and bonded and allows the vehicle to be refueled while engines are in operation without danger.

The CCR Nozzle is capable of functioning as an on-off valve, in addition to its pressure regulator capabilities. The CCR Nozzle pressure regulator device performs in conjunction with a closed circuit receiver orifice to comprise a flow control unit. This unit allows fuel to enter the vehicle at a specified flow rate. A bonding cable is provided for discharge of any static electric charge. A strainer assembly is a part of CCR nozzle inlet. The CCR Nozzle is designed to mate, also, with a gravity fill adapter assembly, GFA, Carter brand Model 64014 (MIL-N-52748) for standard service or 64033 (MIL-N-53093) for Arctic service, for use in refueling vehicles that do not have the appropriate receiver.

2.2 OPTIONS AVAILABLE

The 64017 CCR is available with the options listed in SM64017 or Bulletin 64017.

3.0 UPGRADE INSTRUCTIONS - DISASSEMBLY

Refer to paragraph 3.0 of SM64017 for instructions covering disassembly of the unit. Note if Diaphragm Assembly Carrier Wrench is not available use a piece of steel stock .125” thick by 2” wide by 2” long to hold diaphragm assembly during disassembly. If the nozzle being overhauled already has the piston assembly, then do not proceed with this manual, use SM64017.

4.0 INSPECTION

4.1 PARTS REPLACEMENT

Use the appropriate Kit KD64017-* (as listed in a later section of this document) to replace the parts needed to accomplish the upgrade. The following parts should be discarded (item numbers refer to those listed in SM64017) and replaced by the new parts furnished in the kit used.

ITEM NO.	PART NO.	NAME	QUANTITY	USED ON
2-6	220094-1	Seal	2	All
2-13	48060-1	Piston	1	All
2-20	220101	Bushing	2	All
2-26	220098	Ring	1	All
2-30	220083-1	Seal	1	All but Z
2-30	220083-2	Seal	1	Z
2-41	MS29513-136	Packing	1	All
2-43	MS29513-226	Packing	1	All
2-47	MS27030-6	Gasket	1	All but Z
2-47	220126-6	Gasket, Arctic	1	Z
*	200146	Seal, Unisex	2	B, E
*	MS29513-010	O-ring	1	B, E
*	MS29513-136	O-ring	1	B, E
*	MS29513-226	O-ring	1	B, E
*	MS29513-228	O-ring	1	B, E
*	220157	Seal, Upstream	1	E
*	220158	Seal, Downstream	1	E
*	MS29513-014	O-ring	1	E
*	MS29513-133	O-ring	1	E
*	MS29513-134	O-ring	1	E
**	220709-232	O-ring	1	D

***** Items from SM64019 or SM64020 that are not shown in this manual.

** Item from SM61154 that is not shown in this manual.

4.2 GENERAL INSPECTION

Inspect all parts in accordance with paragraphs 4.2 and 4.3 of SM64017.

5.0 SPECIAL TOOLS

The following special tools are recommended for proper repair and or overhaul of the nozzle:

- 220281 Body Wrench
- 220283 Piston Compression Tool
- 220284 Locking Lug Assembly Tool
- 220329 Poppet Tool

The above tools are available on special order from a Carter distributor or directly from the factory. All four tools can be ordered as a single kit under part number KD64017-1.

6.0 REASSEMBLY

Reassemble the nozzle in the reverse order of disassembly taking note of the following items:

6.1 INLET FITTINGS

Refer to the appropriate Service Manuals, listed on the front cover for information regarding the assembly of the various inlets, if the unit is other than the basic 64017 or option C.

If the Strainer Housing (2-42), Coupling Half (2-48), Underwing Nozzle Interchange Adapter (1-5), Unisex Couplings (1-4) or (1-10) were removed for replacement or repair they must be reinstalled with a thread seal. If Teflon tape is utilized, **no more than one and on-half wraps** of tape should be used otherwise damage to the mating parts may occur. Any fuel resistant paste seal is acceptable.

Although available as a separate spare part, Gasket (2-47) is also furnished as a part of the Coupling Half Assembly (2-48).

6.2 FLOW CONTROL LATCH END OF NOZZLE

Place O-ring (2-28A) into the groove in Sleeve (2-28) and assemble into Housing (2-15) using Screws (2-27). Torque the Screws (2-27) to 23 in-lbs.

Screw Position Indicator (2-29) into the Piston (2-13). Place Seal (2-13A) onto threaded end of Piston (2-13) with the open end (spring shows through it) facing toward the treaded end. Screw Nut (2-13B) onto Piston (2-13) and torque in place to 125 in-lbs.

Slip Valve Actuating Ring (2-26) over small end of Piston (2-13) and attach to the flanged end with four Screws (2-16A). Tighten screws sufficiently to seat the Ring (2-26) only, do not over tighten.

Using a soft jaw chuck or vise, assemble the Actuating Cam (2-23) on one of the Handle Side Plates (2-21). Affix in place with Screw (2-22) and torque to 100 $\pm$ 10 in-lb. Repeat with the other set of similar parts. Start with the side of the Housing (2-15) that does not include the Valve Actuator Latch (2-24). Position Actuating Cam (2-23) into banana shaped slot in Housing (2-15) such that the Actuating Cam (2-23) is positioned between the Valve Actuating Ring (2-26) and the Sleeve (2-28). It will be necessary to attempt assembly with the Handle Side Plate (2-21) positioned in nozzle open position to achieve proper assembly. Place a Washer (2-19) between the Handle Side Plate (2-21) and the Housing (2-15). Insert Bushing (2-20) into the Handle Side Plate (2-21). Place a Washer (2-19) on the outside of the Handle Side Plate (2-21) and affix parts to unit using Screw (2-18). Torque to 125 ± 10 in.-lb.

Insert Spring (2-25) into cavity of Housing (2-15) followed by the Valve Latch Actuator (2-24). Holding this in the approximate position, repeat the assembly of the Handle Side Plate (2-21), Washer (2-19), Bushing (2-20), second Washer (2-19) and Screw (2-18). Torque to 125 ± 10 in.-lb.

Place Valve Actuator Handle (2-17) between the two Handle Side Plates (2-21) and secure

with four Screws (2-16). Torque to 35 ± 5 in.-lb.

If the Lock Pin (2-10) was disassembled from the End Cover (2-9) use a soft jaw chuck or vise to reinstall using Screw (2-7). The Lock Pin (2-10) will be assembled into one of the two holes provided in Sleeve (2-28). It will be necessary to rotate Sleeve (2-28) to position one of the holes into the proper position. Place End Cover (2-9) temporarily in place to check the location of the hole in the Sleeve (2-28) with respect to the Lock Pin (2-10).

Install the Spring (2-12) and position the Reducer Spring Retainer (2-11) over the Position Indicator (2-29). Install the End Cover (2-9) and Lock Pin (2-10) assembly such that the hole in the Sleeve (2-28) accepts the Lock Pin (2-10). Tighten in place using the four Screws (2-8), torquing sufficiently to retain in place.

Rotate handle to closed position to check that everything was assembled correctly. Leave the handle in this position for the next assembly operation. Note: Moving the handle to the open position while performing the next operation may result in damage to the Lock Pin (2-10).

Insert Flow Guide (2-50), Spring (2-31) and Sleeve Seal (2-30) into the opposite end of the Housing (2-15). Insert the Piston Compression Tool, 220283, into the unit to hold the Sleeve Seal (2-30) away from the Poppet (2-14) when it is installed.

With the Piston (2-13) held in place by the Lock Pin (2-10); thread Poppet (2-14) into the opposite end of the Housing (2-15) and tighten securely in place using Poppet Tool 220329.

NOTE: Do not remove the Piston Compression Tool, 220283, until the nozzle is fully reassembled.

At this point, the Piston Compression Tool, 220283, can be removed from the nozzle by pulling back on the Collar (2-32).

6.3 COUPLING END OF NOZZLE

Install a Backup (2-6A) into the inside groove closest to the threaded end of the Body (2-34). The Backup (2-6A) is split to facilitate installation. Note that the thin lip part of the Backup (2-6A) faces the threaded portion of the Body (2-34). Then install the Seal (2-6B) into the groove left adjacent to the Backup (2-6A). The open end containing the spring must face the threaded end of the Body (2-34). Smooth the Seal (2-6B) with a finger to assure that it is fully installed and to remove any wrinkles.

Install Packing (2-41) into groove in Housing (2-15) making sure that it is smoothly installed.

Referring to Figure 4, install Lug Wire (2-35) onto the groove in the nose of the Body (2-34). Insert this assembly into the Lug Assembly Tool, 220284. The Lug Assembly Tool should be placed into a vice during this operation. Insert the three Stayback Detents (2-33) into the spaces in the Body (2-34) being sure to space the Stayback Detents (2-33) into every fourth space. Referring to Figure 5, insert the nine Locking Lugs (2-36) with three Locking Lugs (2-36) between each pair of Stayback Detents (2-33). Slide Lug Retainer Ring (2-37) and Spring (2-38) onto the Body (2-34) being sure that the chamfered end of Lug Retainer Ring (2-37) is placed downward toward the Locking Lugs (2-36). Slide the Collar (2-32) over the assembly and work it down over the Locking Lugs (2-36) and Stayback Detents (2-33).

Install Spring Retainer Ring (2-39) and Spring (2-40) into the above assembly.

Slide the Housing (2-15) onto the above assembly. Push down on the Housing and rotate the Housing clockwise about one turn to start the threads between the Body (2-34) and Housing (2-15) and make sure that the notch in the Collar (2-32) lines up with the protrusion on the Housing (2-15) after the one turn. Remove nozzle assembly from the Lug Assembly Tool, 220284, and place Housing (2-15) in a vise so that the nozzle assembly is facing upward. Using Body Wrench, 220281, tighten the assembly to 250 in.-lb. torque to seat the unit snugly. When turning the Body Wrench 220281, lightly pull back on the Collar (2-32) such that the Body (2-34) can rotate easily relative to the Collar (2-32).

Install the blue rubber Wiper Seal (2-6) into the groove near the non-threaded end of Body (2-34). The open end of the “V” of the

Seal (2-6) must face toward the treaded end of the Body (2-34). Smooth with a finger to assure it is properly seated in the groove.

6.4 BONDING CABLE ASSEMBLY (2-1) & DUST CAP ASSEMBLY (2-5)

Attach the Bonding cable Assembly (2-1) and Dust Cap (2-5) to the Housing (2-15) using Screw (2-2). It is recommended that the Bonding cable (2-1) be placed next to the Housing (2-15) to gain better electrical conductivity.

7.0 TEST

7.1 Test in accordance with Paragraph 7.0 of SM64017.

8.0 ILLUSTRATED PARTS CATALOG

Table 1.0 tabulates the parts and sub-assemblies comprising the 64017 CCR Nozzle. The item numbers of the table are keyed to the exploded view of the nozzle diagrammed in Figures 1 and 2.

TABLE 1.0

Fig.	Item	Part Number	Description	Units per Assembly	Used on Option	Spares/10 units/Yr
1	- 64017		CCR Nozzle, Basic, Type I, Class A, Tan	1	Basic	-
	1	No Part Number	Nozzle Sub-assembly, Tan	1	All but G,Z	-
	2	No Part Number	Strainer Housing Sub-assembly, Tan	1	All but G,Z	-
	3	GF27026-11-TN	2" Camlock Fitting - Tan	1	Basic	-
	-	64017B	CCR Nozzle, Type I, Class B, Tan	1	B	-
	1	No Part Number	Nozzle Sub-assembly, Tan	1	All but G,Z	-
	2	No Part Number	Strainer Housing Sub-assembly, Tan	1	All but G,Z	-
	4	64019J	Unisex Non-valved Coupling, Tan	1	B	-
	-	64017C	CCR Nozzle less Inlet Coupling, Tan	1	C	-
	1	No Part Number	Nozzle Sub-assembly, Tan	1	All but G,Z	-
	2	No Part Number	Strainer Housing Sub-assembly, Tan	1	All but G,Z	-
	-	64017D	CCR Nozzle with Underwing Interchg Adapter	1	D	-
	1	No Part Number	Nozzle Sub-assembly, Tan	1	All but G,Z	-
	6	44698	Interchange Adapter	1	D	-
	7	44373-100	Screen Assembly	1	D	-
	8	28092-100	Screen, 100-mesh	1	D	-
	9	208091	Retainer	1	D	-
	-	64017E	CCR Nozzle with Valved Unisex Coupling	1	E	-
	1	No Part Number	Nozzle Sub-assembly, Tan	1	All but G,Z	-
	2	No Part Number	Strainer Housing Sub-assembly, Tan	1	All but G,Z	-
	10	64020J	Unisex Valved Coupling, Tan	1	E	-
	-	64017G	CCR Nozzle, Basic, Type I, Class A, Green	1	G	-

Fig.	Item	Part Number	Description	Units per Assembly	Used on Option	Spares/10 units/Yr
1	1	No Part Number	Nozzle Sub-assembly, Green	1	G	-
	2	No Part Number	Strainer Housing Sub-assembly, Green	1	G	-
	3	GF27026-11-GR	2" Camlock Fitting - Green	1	G	-
	-	64017BG	CCR Nozzle, Type I, Class B, Green	1	BG	-
	1	No Part Number	Nozzle Sub-assembly, Green	1	BG	-
	2	No Part Number	Strainer Housing Sub-assembly, Green	1	BG	-
	4	64019JV	Unisex Non-valved Coupling, Green	1	BG	-
	-	64017EG	CCR Nozzle with Valved Unisex Coupling, Green	1	EG	-
	1	No Part Number	Nozzle Sub-assembly, Green	1	EG	-
	2	No Part Number	Strainer Housing Sub-assembly, Green	1	EG	-
	10	64020JV	Unisex Coupling, Green	1	EG	-
	_	64017Z	CCR Nozzle for Arctic Service, Green	1	Z	-
	1	No Part Number	Nozzle Sub-assembly, Green	1	G,Z	-
	2	No Part Number	Strainer Housing Sub-assembly, Green	1	G,Z	-
	3	GF27026-11-GR	2" Camlock Fitting - Green	1	G,Z	-
2	1	47028	Bonding cable Assembly	1	All	-
	2	GF16998-42	Screw	1	All	-
	3	47029	Clip Cable Assembly	1	All	-
	4	47030	Plug Cable Assembly	1	All	-
	5	47025-1	Dust Cap Assembly, Tan	1	All but G, Z	-
		47025-2	Dust Cap Assembly, Green	1	G, Z	-
	6	201201-134	Wiper Seal	1	All	20
	6A	220778	Ring, Backup	1	All	20
	6B	220779	Seal, Teflon	1	All	20
	7	LP51958-64	Screw	1	All	-
	8	LP51958-64	Screw	4	All	-
	9	220086-1	End Cover, Tan	1	All but G, Z	-
		220086-2	End Cover, Green	1	G,Z	-
	10	220111	Lock Pin	1	All	-
	11	220097	Reducer Spring Retainer	1	All	-
	12	220113	Spring	1	All	-
	13	220768	Piston	1	All	-
	13A	221567	Seal	1	All	10
	13B	220777	Nut	1	All	-
	14	220088	Poppet	1	All	10
	15	220078-1	Housing, Tan	1	All but G, Z	-
		220078-2	Housing, Green	1	G,Z	-
	16	LP51958-64	Screw	4	All	-
	17	220095-1	Handle, Tan	1	All but G, Z	-
		220095-2	Handle, Green	1	G, Z	
	18	LP51957-108	Screw	2	All	-
	19	5710-179-60	Washer	4	All	-
	20	220101	Bushing	2	All	10
	21	220090-1	Side Plate Handle, Tan	2	All but G, Z	-
		220090-2	Side Plate Handle, Green	2	G,Z	-
	22	GF16998-42L	Screw	2	All	-
	23	220109	Actuating Cam	2	All	-
	24	220202	Valve Latch Actuator	1	All	-
	25	C0180-026-1000S	Spring	1	All	-

Fig.	Item	Part Number	Description	Units per Assembly	Used on Option	Spares/10 units/Yr
	26	220769	Valve Actuating Ring	1	All	-
	26A	GF16997-20L	Screw	4	All	-
2	27	GF16997-21L	Screw	6	All	-
	28	220767	Sleeve	1	All	-
	28A	MS29513-125	O-ring	1	All	10
	29	220160	Position Indicator	1	All	-
	30	220083-1	Sleeve Seal	1	All but Z	10
		220083-2	Sleeve Seal, Arctic	1	Z	10
	31	220112	Spring	1	All	-
	32	220081-1	Collar, Tan	1	All but G, Z	-
		220081-2	Collar, Green	1	G, Z	1
	33	220104	Stayback Detent	3	All	-
	34	220080	Body	1	All	-
	35	220100	Lug Wire	1	All	-
	36	220093	Locking Lug	9	All	-
	37	220099	Lug Retainer Ring	1	All	-
	38	220103	Spring	1	All	-
	39	220096	Spring Retainer Ring	1	All	-
	40	220114	Spring	1	All	-
	41	MS29513-136	Packing	1	All	10
	42	220120-1	Strainer Housing, Tan	1	All but G, Z	-
		220120-2	Strainer Housing, Green	1	G, Z	-
	43	MS29513-226	Packing	1	All	10
	44	220122-100	Strainer	1	All	-
	45	220121-1	Strainer Body, Tan	1	All but G, Z	-
		220121-2	Strainer Body, Green	1	G, Z	-
	46	GF27026-11-TN	Coupling Assembly, Tan	1	All but G, Z	-
		GF27026-11-GR	Coupling Assembly, Green	1	G, Z	-
	47	MS27030-6	Gasket	1	All	10
		220126-6	Gasket, Arctic	1	Z	10
	48	No Part Number	Coupling Half, Tan (Not sold separately)	1	All But G, Z	-
		No Part Number	Coupling Half, Green (Not sold separately)	1	G, Z	-
	49	GF27029-11-TN	Dust Plug, Tan	1	All but G, Z	-
		GF27029-11-GR	Dust Plug, Green	1	G,Z	-
	50	220326	Flow Guide	1	All	-
	-	KD64017-1	Special Tool Kit - contains all four special assembly/disassembly tools needed as shown in Figure 3 of SM64017. (Note: The Diaphragm Carrier Wrench, 220282, is no longer needed).			
	-	KD64017-2	Kit of parts to upgrade Piston to piston assembly and changes main sleeve seal to Teflon in basic 64017 Nozzle - contains items 6, 6A, 6B, 13, 13A, 13B, 20, 26A, 28, 28A, 30, 41, 43 & 47 (normal temperature items only).			
	-	KD64017-3	Kit of parts to upgrade Piston to piston assembly and changes main sleeve seal to Teflon in 64017Z Nozzle - contains items 6, 6A, 6B, 13, 13A, 13B, 20, 26A, 28, 28A, 30, 41, 43 & 47 (low temperature items only).			
	-	KD64017-4	Kit of parts to upgrade Piston to piston assembly and changes main sleeve seal to Teflon in 64017B Nozzle - contains appropriate items 6, 6A, 6B, 13, 13A, 13B, 20, 26A, 28, 28A, 30, 41, 43 & 47 plus soft goods to replace the parts in the unisex coupling, 64019J.			

Fig.	Item	Part Number	Description	Units per Assembly	Used on Option	Spares/10 units/Yr
	-	KD64017-5	Kit of parts to upgrade Piston to piston assembly and changes main sleeve seal to Teflon in 64017D Nozzle - contains items 6, 6A, 6B, 13, 13A, 13B, 20, 26A, 28, 28A, 30, 41, 43 & 47 plus 220767 Seal for the D option.			
	-	KD64017-6	Kit of parts to upgrade Piston to piston assembly and changes main sleeve seal to Teflon in 64017E Nozzle - contains items 6, 6A, 6B, 13A, 13A, 13B, 20, 26A, 28, 28A, 30, 41, 43 & 47 plus soft goods to replace the parts in the unisex coupling, 64020J.			
	-	KD64017-7	Kit of parts to replace the soft goods in the basic 64017 Nozzle that has already been upgraded - contains items 6, 6A, 6B, 13A, 20, 28A, 30, 41, 43 & 47 (normal temperature items only).			
	-	KD64017-8	Kit of parts to replace the soft goods in the basic 64017Z Nozzle that has already been upgraded - contains items 6, 6A, 6B, 13A, 20, 28A, 30, 41, 43 & 47 (low temperature items only).			
	-	KD64017-9	Kit of parts to replace the soft goods in the basic 64017 Nozzle that has already been upgraded - contains items 6, 6A, 6B, 13A, 20, 28A, 30, 41, 43 & 47 plus soft goods to replace the parts in the unisex coupling, 64019J.			
	-	KD64017-10	Kit of parts to replace the soft goods in the basic 64017 Nozzle that has already been upgraded - contains items 6, 6A, 6B, 13A, 20, 28A, 30, 41, 43 & 47 plus 220709-232 Seal.			
	-	KD64017-11	Kit of parts to replace the soft goods in the basic 64017 Nozzle that has already been upgraded - contains items 6, 6A, 6B, 13A, 20, 28A, 30, 41, 43 & 47 plus soft goods to replace the parts in the unisex coupling, 64020J.			

Notes: 1. All part numbers beginning with "GF" are interchangeable with those beginning with either "AN" or "MS". If the "GF" is followed by three numbers, it is interchangeable with and "AN" part, otherwise it is interchangeable with an "MS" part of the same number.

2. Spare parts recommended are for a set of ten nozzles being overhauled at a frequency of once each year. The actual frequency of overhaul may be longer or shorted depending upon the number of refueling cycles used. This is intended as a guide only.

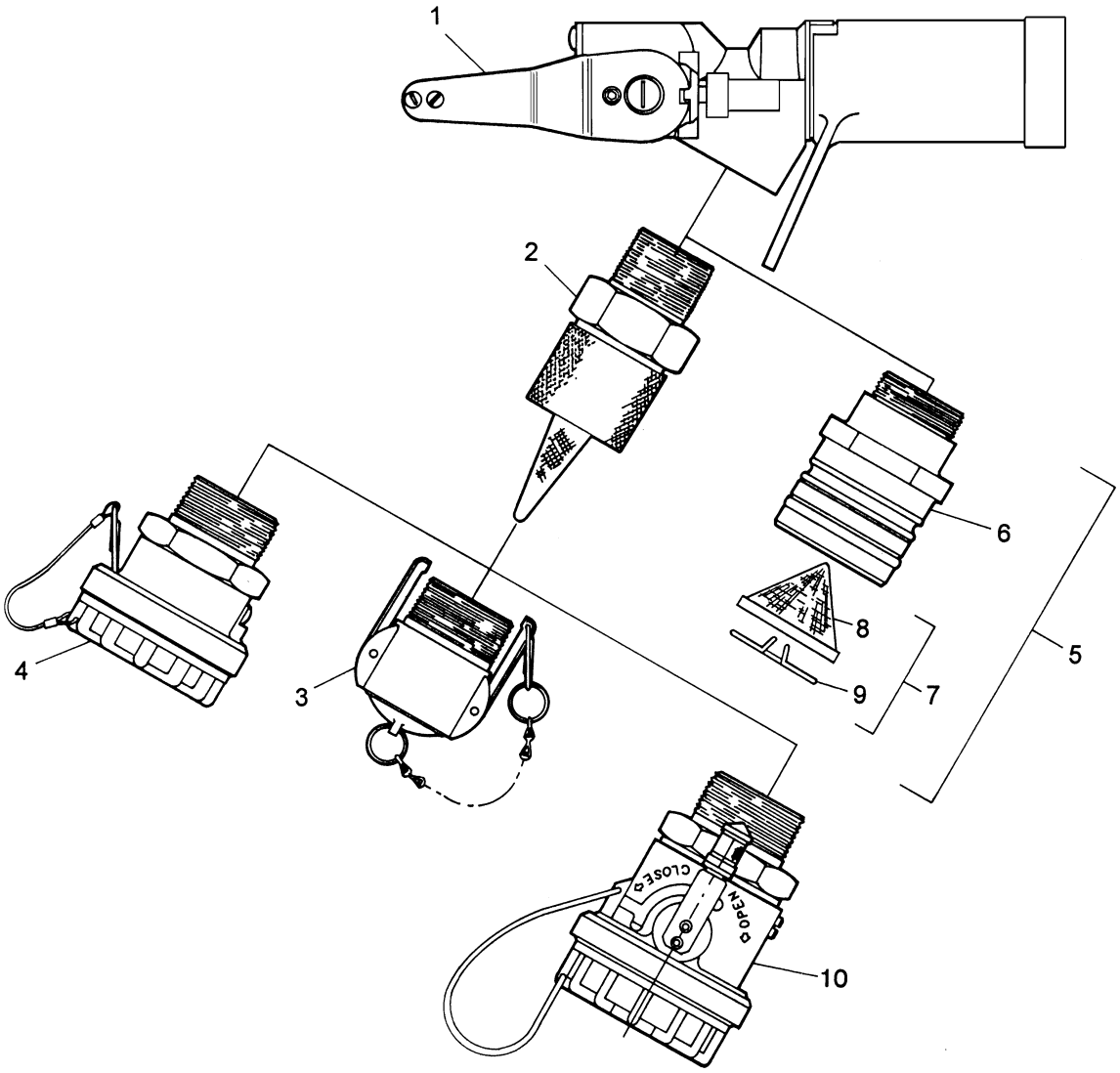


FIGURE 1 - OPTIONS VIEW

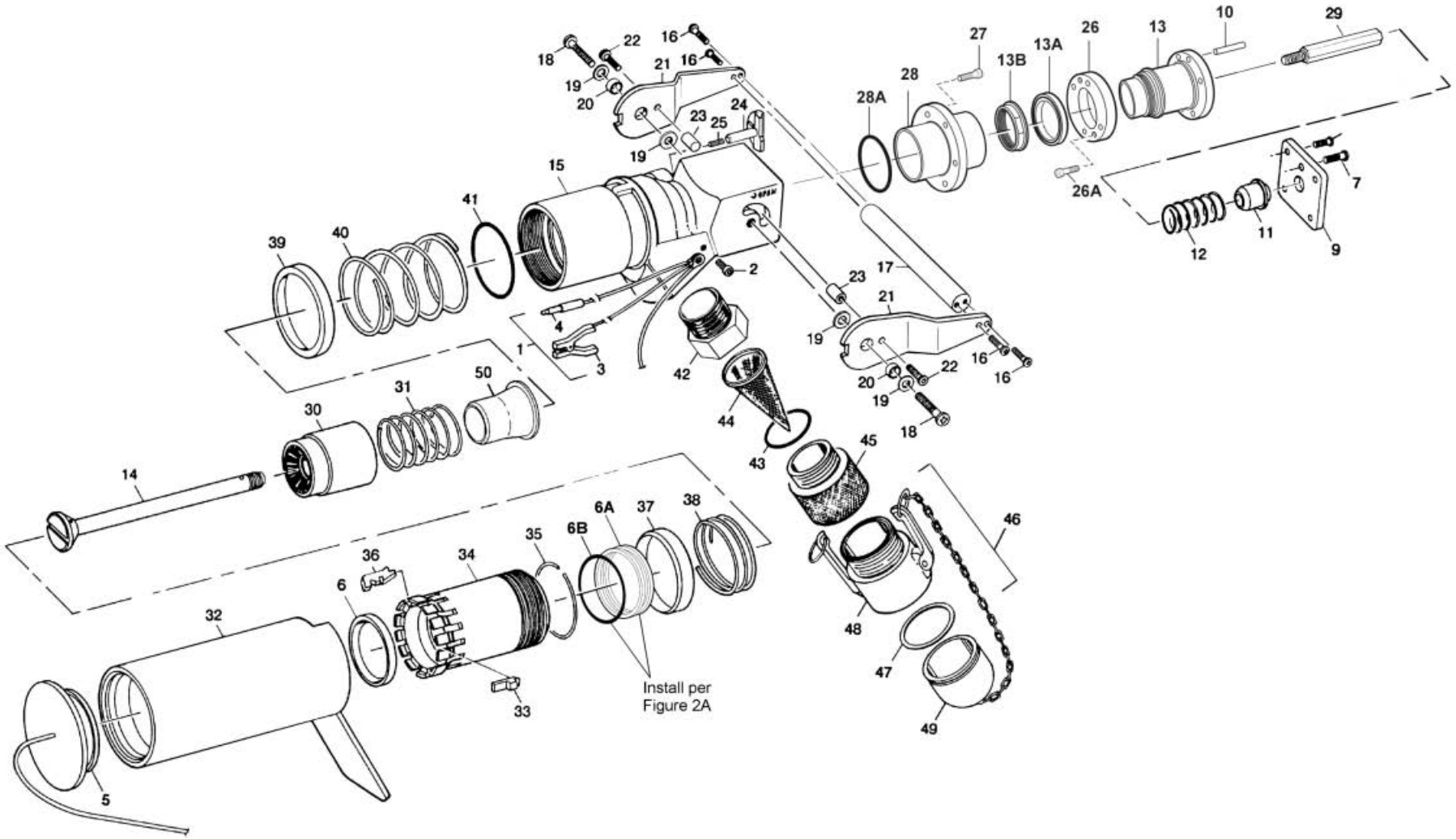
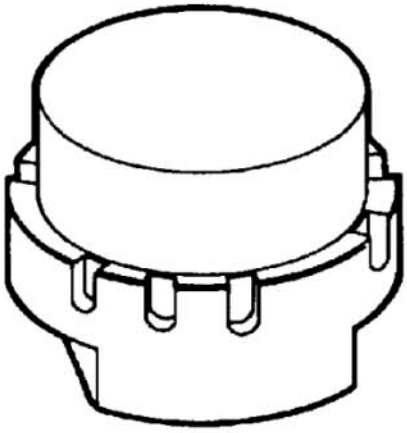
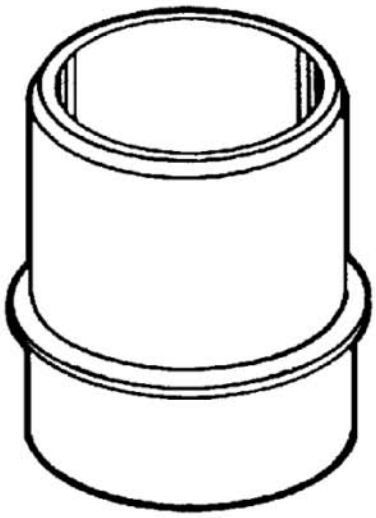


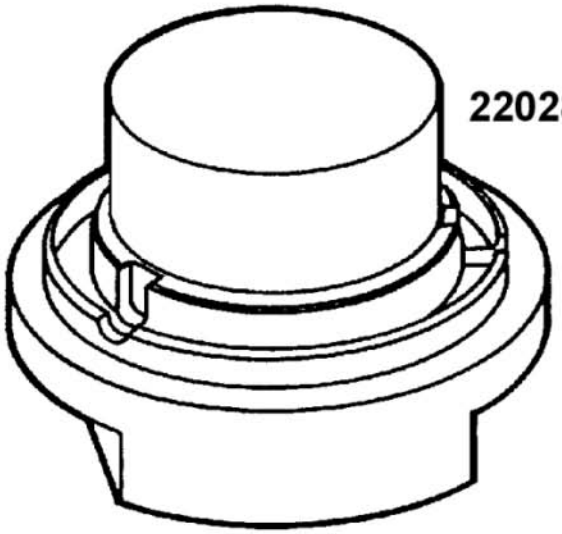
FIGURE 2 - PARTS BREAKDOWN



220281



220283



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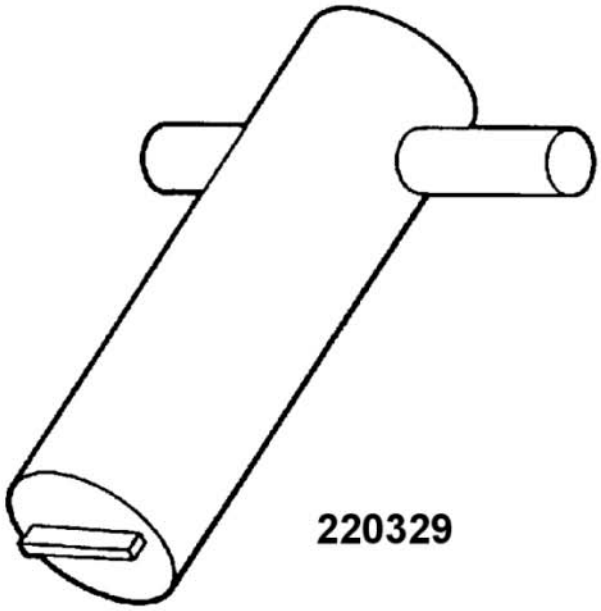

220329

FIGURE 3 - ASSEMBLY TOOLS

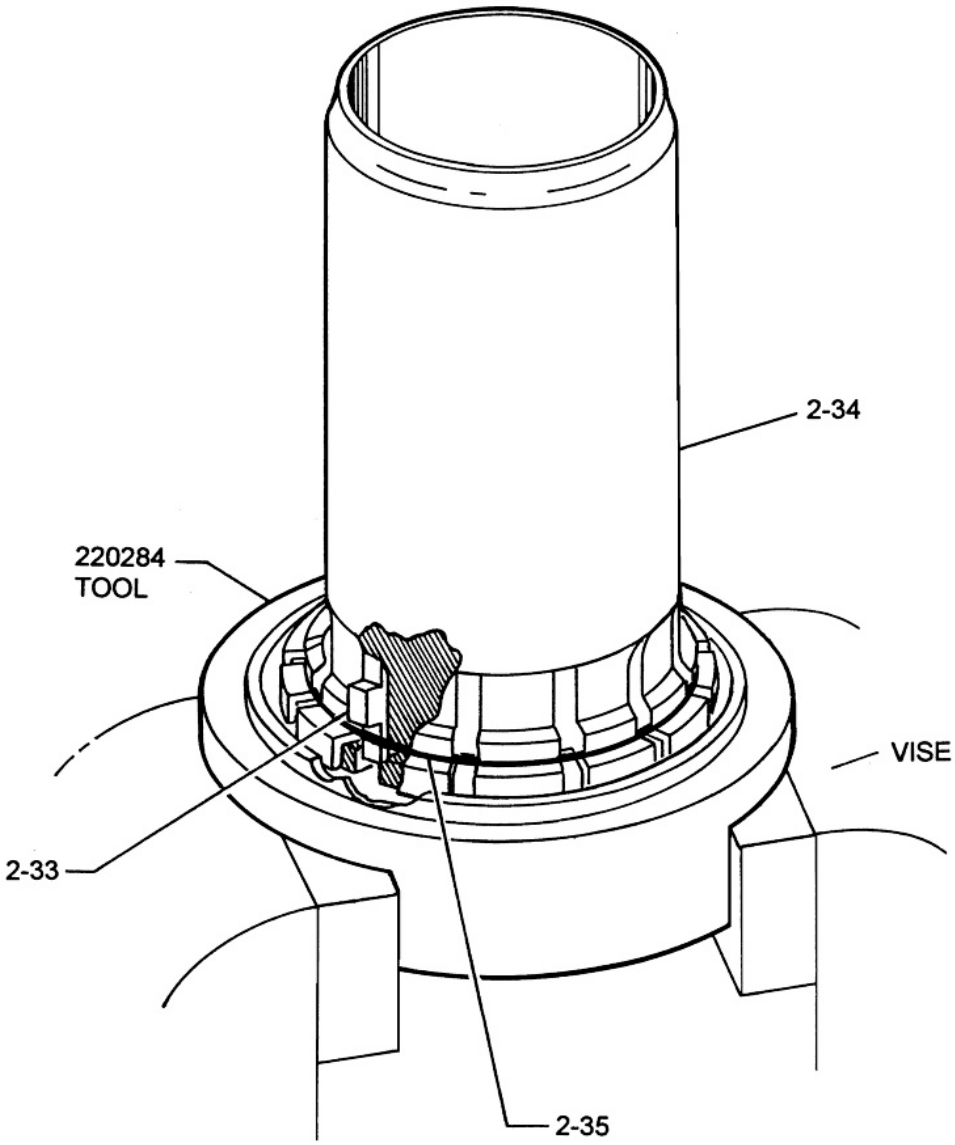

FIGURE 4 - USE OF 220284 TOOL
TO INSTALL STAY BACK DETENTS (33)

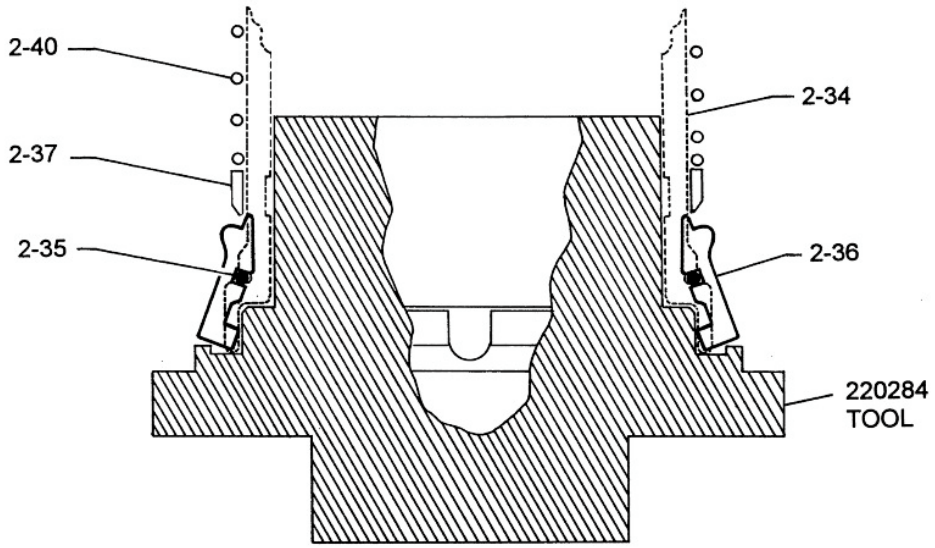

FIGURE 5 - USE OF 220284 TOOL
TO INSTALL LOCKING LUGS (36)

Aerospace Group
Conveyance Systems Division
9650 Jeronimo Rd
Irvine, CA 92618
Ph (949) 452-9500
Fax (949) 452-9992