Powering Business Worldwide

Aerospace Group
Conveyance Systems Division
Carter® Brand Ground Fueling Equipment

SM61445
September 1993

Applicable additional manuals:

SM40679 Quick Disconnect
SM61154 Dry Break Disconnect
SM427MIS Misc. Accessories
SM64001 Quick Disconnect Swivel

Maintenance & Repair Manual

Hydrant Coupler

Model 61445

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MAINTENANCE, OVERHAUL & TEST INSTRUCTIONS

CARTER PART NUMBER 61445

1.0 INTRODUCTION

This manual furnishes detailed instructions covering the maintenance and overhaul of Carter Part Number 61445, Hydrant Coupler and its various options. For the maintenance of options to the basic 61445 Coupler, refer to Options Table, Section 3.0. This table will reference the service manual that should be used in the maintenance of each option.

The 61445 Coupler is designed to mate all international standard aircraft adapters made in accordance with MS29514 or equivalent.

2.0 EQUIPMENT DESCRIPTION

The Carter Part Number, 61445, Coupler is a 2-1/2 inch hydrant coupler. The basic coupler would be procured under the part number 61445. Other options that are available to build a coupler to specific specifications are listed in the table shown in Section 3.0. The exploded view, Figure 2, includes all available options.

3.0 TABLE OF OPTIONS & ORDERING INFORMATION

SERVICE MANUAL REQUIREMENTS:

The following table should be used to determine the service manual to be used in the maintenance, repair or replacement of parts designated by option letters to the basic 61445 coupler.

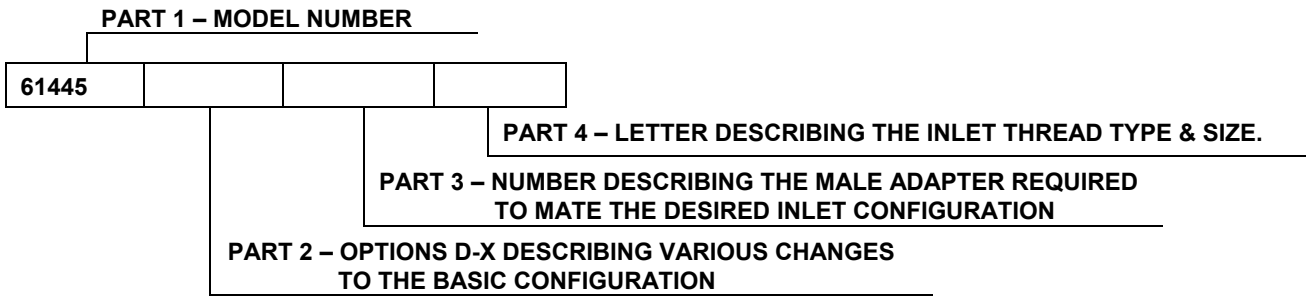
Option Letter	Part Number	Service Manual
D	44796	SM61445
H	44797-3	SM61445
P	44797-2	SM61445
R	44812	SM61445
T	44805	SM427MISC
4	44185	SM64001
4H, K-P	64001H, K-P	SM64001
5	44700	SM64001
5H, K-P	64001H, K-P	SM64001
6	43046	SM40679
6H, K-P	40679-*	SM40679
7	44185	SM61154
7H, K-P	61154H, K-P	SM61154
8	44700	SM61154
8H, K-P	61154H, K-P	SM61154

* All dash numbers

TABLE OF OPTIONS - ORDERING INFORMATION

The following information will assist in reordering new couplers to assure one receives the correct item:

The part number of a complete coupler consists of four basic parts as illustrated below.



PART 2

The following options may be added as Part 2 of the part number as indicated above to order a unit to meet your requirements:

OPTION LETTER	DESCRIPTION
D	Adds Outlet Elbow (44796)
H	Adds Avery Hardoll Product Selection (44797-3)
P	Adds Standard U.S. Product Selection (44797-2)
R	Adds Male Adapter Half (To Coupler Only) To Mate 60445 Elbow (44812)
T	Adds Male Adapter Half To Mate Thiem F577 or F382 Elbow or Female QD (44805)
X	Adds Safety Clip To Dry Break (Use with option 4, 5, 7 & 8 from Part 3) (210641)

PART 3

One of the numbers In the following table must be included as Part 3, as indicated above, to specify the type of inlet configuration desired. The coupler may be ordered with the inlet terminating in an adapter half only, if desired. In this case leave Part 4 blank. If a female half, either quick disconnect or dry break of some configuration is desired, Part 4 must be completed.

OPTION LETTER	DESCRIPTION
4	Adds standard male adapter half to mate 64001 Swivel Quick Disconnect (44185)
5	Adds long male adapter half to mate 64001 Swivel Quick Disconnect (44700)
6	Adds male adapter half (43046) to mate standard female quick disconnect (43108)
7	Adds standard male adapter half to mate 61154 Dry Break (44185)
8	Adds long male adapter half to mate 61154 Dry Break (44700)

PART 4

One of the following letters must be included as Part 4 as indicated above to specify the inlet thread and size:

OPTION LETTER	DESCRIPTION	OPTION LETTER	DESCRIPTION
H	Inlet thread – 2-1/2" NPT	M	Inlet thread - 3" BSPP
K	Inlet thread - 2-1/2" BSPP	N	Inlet thread - 2" BSPP
L	Inlet thread - 3" NPT	P	Inlet thread - 2" NPT

EXAMPLES

Examples: 61445D6H - Coupler with 90° Elbow and 2-1/2" NPT 40679-1 QD.
Examples: (Continued)

61445DH7K - Coupler with 90° Elbow, Avery Hardoll product selection and 2-1/2" BSPP 61154JK dry break QD.

61445D4L - Coupler with 90° Elbow and 3" NPT 64001JL QD.

4.0 SAFETY INSTRUCTIONS

There are several safety interlock features designed into the 61445 Coupler that must be functioning to prevent an accident that would result in a spill of flammable liquids with the consequential risk of fire, personal injury or death, and property damage. Refer to Table 1.0, paragraph 10.0, to identify individual parts during the following discussion.

4.1 COLLAR ASSY LOCK AND INDEX PINS

Examination of the connection end of a disengaged coupler (coupler not connected to an adapter) discloses the three Collar Lock Pins (15) and three Index Pins (17) installed between the Collar (9) and the Coupler Seal (12). The three spring loaded Collar Lock Pins (15) engage three cutouts (arched shaped windows) in the flange of the Collar (9) when the Collar is in the fully disengaged position. These Collar Lock Pins (15) prevent accidental rotation of the Collar of the disengaged coupler. Two of the three cutouts in Collar (9) are normally elongated more than the other one.

With the Collar (9) locked in the disengaged position, the flat portion of a ramp integral to the Collar (9) is positioned over a flat on the Lever (21) in a manner that prevents opening the Poppet (11).

When connecting to a hydrant adapter, the three Index Pins (17) mate with three slots in a serviceable MS29514 Adapter Flange to index the coupler to the flange so the Collar (9) mates with the flange lugs during engagement and prevents disengagement of the Collar (9) from the flange without releasing the three spring loaded Collar Lock Pins (15) to the Collar (9) lock positions.

4.2 LEVER/COLLAR INTERLOCK AND OVER CENTER LINKAGE

Examination of the center portion of the Lever (21) on a disengaged coupler discloses the fact that a flat edge of the Lever (21) is beneath the flat portion of a ramp that is integral to the Collar (9). With the Collar (9) locked by the Collar Lock Pins (15), the Collar (9) ramp prevents rotation of the Lever (21) to the poppet open position.

When the Collar (9) is fully engaged to a serviceable MS29514 Adapter the Collar ramp clears the Lever (21) and permits Lever (21) rotation to the open position.

With the Lever (21) fully open, the round portion of the Lever (21) prevents rotation of the Collar (9) in the disengage direction until the Lever (21) has been fully closed.

These interlocks are designed to prevent accidental opening of the poppet of a disengaged coupler or accidentally disengaging a coupler with the poppet open.

The poppet operating internal linkage design is such that the linkage is "over center" at each

extreme of travel (Lever (21) fully open against internal mechanical stop or fully closed against internal mechanical stop).

Thus, internal pressure against a closed poppet, when the linkage is against the closed mechanical stop, provides a force only in the closed direction.

In a similar manner, with the Lever (21) in the fully open/mechanical stop position, the 50 lb. force applied by the MS29514 Adapter Poppet Spring provides a force to maintain the open direction.

4.3 SAFETY INSPECTIONS

Note: The frequencies recommended for the following inspections are our recommendations based on couplers that have been in daily service for at least a year. The frequency that is required will depend upon the degree of maintenance extended to the equipment and to the age of the equipment. It is not possible for Carter to recommend other than the safest possible frequencies.

4.3.1 COUPLER INSPECTIONS - AT EACH REFUELING OPERATION

The following inspections of the Coupler are recommended at each refueling operation:

A. Inspect the connection end and verify that the Index Pins (17) are intact, in place, and not excessively worn or damaged. Verify that all three Collar Lock Pins (15) are intact, undamaged and **are extended and engage all three cutouts in the Collar (9) and physically prevent Collar (9) rotation.**

This inspection can be accomplished without interruption of the normal operating procedure and without adding appreciably to the operation time by training the operator to automatically observe the connection end of the coupler upon disconnection from the aircraft. If the Collar Lock Pins (15) are not extended and engaged in all three cutouts in the Collar (9), the operator should squeeze the Lever (21) and Handle (6) together while observing the connecting end of the coupler. This should cause the Collar Lock Pins (15) to "spring" into the cutouts in the Collar (9). If not, then the coupler should be taken out of service. If the Collar Lock Pins (15) do not spring into their correct position, it could mean that the hydrant adapter is defective and should be inspected (see paragraph 4.3.3) and reported as possibly being defective.

B. Upon engagement to a hydrant adapter and opening the coupler, but before operating the deadman control, it is recommended that the operator attempt to remove the coupler from the adapter. This should not be possible. If it can be removed, either the coupler was never fully engaged onto the adapter or needs repair, or the adapter is in need of repair.

4.3.2 COUPLER INSPECTIONS - MONTHLY BASIS

The following inspections of the Coupler are recommended to be conducted on a monthly basis as a minimum:

A. Inspect the connection end and verify that the three Index Pins (17) are intact and in place. Verify that the three Collar Lock Pins (15) are intact and in place and extended and engaging all three cutouts in the Collar (9) and physically preventing Collar (9) rotation. Check the Bearing Plate (14) containing the pins for possible cracks.

B. Hold the coupler with the outlet or connecting end facing such that it can be observed. Apply pressure on the Collar (9) in the direction to connect the coupler to an adapter, counterclockwise, to take up the slack and inspect the relative location of the three Lock Pins (15) with respect to the cutouts in the Collar (9). The Lock Pin (15) that is engaged in the normally narrower cutout should be resting against the edge of its respective cutout. If there is a space between the other two Lock Pins (15) and the edge of the normally larger cutouts, the collar is still in functional condition. If all three Lock Pins (15) are resting against the edge of their respective cutouts (there is no space), the Collar (9) may no longer be in a functional condition and should be replaced if it fails the next step.

C. With the coupler being held in the position described above, attempt to open the coupler with the Lever (21). The coupler should be prevented from opening by the interference between the Collar (9) and the Lever (21). If the coupler is openable, it should be removed from service and repaired.

D. Inspect the Lever (21) and the adjacent ramp surface of the Collar (9) and verify that neither part is damaged or has

missing pieces that permit the Lever (21) to be rotated to the open position with the coupler disengaged or that will allow the Collar (9) to rotate to the disengaged position when the Lever (21) is open. Broken or missing parts can result in dangerous fuel spills while refueling aircraft.

E. Verify that the Lever (21) is in the fully closed (against internal mechanical stop) position. (This is necessary to assure that the linkage is over center so internal pressure can not force the poppet open during the Collar (9) engagement).

4.3.3 HYDRANT ADAPTER INSPECTIONS

The following inspections of the adapter are recommended to be carried out at each refueling operation to assure that one is connecting to a safe adapter:

A. Visually check for bent, broken, missing or excessively worn lugs or slots. Worn slots are easily detected. A normal slot will have a slight machine broken edge (chamfer of .030 inch (0.762 mm)). If the edge is worn such that the corner is badly distorted and enlarged it should be inspected more closely and accurately. Carter Adapter Wear Gauge, 61657-2, should be utilized to check the width and thickness of the lugs if they appear to be worn. Wear of the thickness dimension of the lug will promote premature nose seal leakage. Wear of the width of the lug combines with slot wear in defeating the coupler interlock.

B. Visually check the three slots for excessive wear. Excessive wear can permit disengagement of a coupler without release of the three Collar Lock Pins (15) and may permit accidental poppet opening on the disconnected coupler. The use of Carter Gauge 61657-2 will provide a "no-go" check for the slots.

C. **If any of the above conditions are observed, and or the gauge proves the adapter to be defective, the refueling operation should be continued only with extreme caution. The coupler, upon disconnection, should be checked in accordance with paragraph 4.3.1.A.**

4.3.4 POPPET-SHAFT RETENTION INSPECTION

This inspection procedure must be conducted following the removal and reinstallation of the Poppet (11) from the Shaft (38).

- Using Carter S204451 three lug adapter flange (or any standard flange that is a separate loose part and not a part of some other adapter housing) open the coupler being careful to drain all trapped fluid into a sump. Even if a dry-break disconnect is utilized, there will be a small quantity of trapped fuel in the coupler.

- Check to see if there is a Cotter Pin (10) installed through the slotted poppet and the hole in the shaft. The pin must be installed in the hole that is completely within the slotted area of the poppet and the hole that allows for proper poppet nose seal adjustment

- Grasp the Poppet (11) with one hand and holding the coupler with the other attempt to un-screw the Poppet (11) from the Shaft (38). The Poppet (11) will move a slight amount taking up the slack between the slot in the Poppet (11) , the hole in the Shaft (38) and the Cotter Pin (10).

- If all is correct close the coupler and remove the adapter flange. Put the coupler back in service.

5.0 SPECIAL TOOLS

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

- 6958CG or 6958CH Adapter or equivalent.
- 61657-2 Adapter Wear Gauge (for inspection of the mating hydrant valve only).
- 210367 Race Ring (66) removal tool.
- 44752 Race Ring (66) installation tool.

The above items are available from your Carter distributor.

6.0 DISASSEMBLY

6.1 Remove coupler from end of hose at quick disconnect. Refer to the appropriate service manual depending upon type of swivel disconnect utilized.

SM40679	40679 Type Coupler Disconnect.
SM61154	61154 Type Dry Break Disconnect.
SM64001	64001 Type Coupler Disconnect.
SM427MISC	Miscellaneous Male Half Adapters not associated with a complete disconnect.

If option D, R or T are present, remove them from the main coupler by removing Screws (50) and Washers (49). Set them aside for later disassembly. Discard O-ring (51).

6.2 Before proceeding further it is recommended that the inspections detailed in paragraph 4.3.2 be conducted to get an overall picture of the condition of the coupler. Take especial note of the wear check of the Collar (9) detailed in 4.3.2.B. If all three cutouts of the Collar (9) are touching the Lock Pins (15), the Collar (9) should be replaced during overhaul.

If the Handles (6) are to be replaced, remove hardware items (2-5). If they do not need replacing, remove only that Handle (6) that is farthest away from the Lever (21) to allow the indexing lug on the Body (39) to pass through the slot in the Collar (9).

6.3 Remove Screws (7D) and Washers (7E) which retain Shroud (7A, 7B or 7C) in place. This will uncover the slot in which Bearing (8) is installed. If the product selection pins need replacing it is necessary to remove Clamp (7G) to replace Pins (7F).

6.4 Push at one end of the collar Bearing (8) to cause the other end to protrude from groove. Using pliers, pull the collar bearing out of groove. On parts where the Bearing (8) is difficult to remove it is suggested that the outlet end of the coupler be soaked in light motor oil over night to assist in removing it.

NOTE: Do not engage coupler onto an adapter. This will create a load on Bearing (8).

6.5 Remove coupler Collar (9) from Body (39) by aligning the groove in the Collar (9) with square boss on the side of the Body (39).

6.6 Turn Lever (21) to open Poppet (11).

6.7 Remove Cotter Pin (10) and unscrew the Poppet (11) from the Shaft Assembly (38). Note: Although Shaft Assembly (38) looks like and is dimensionally interchangeable with 40006 Shaft Assembly used in the 60427 Nozzle, the strength of the one used in the coupler is quite higher and the 40006 should not be substituted.

6.8 The Nose Seal (12) may be removed. Remove Retaining Ring (13) from Seal (12). Lift off Plate (14).

6.9 The three Lock Pins (15), three lock pin Springs (16), three Index Pins (17) and O-ring (18) may now be removed.

6.10 Using a 0.140 inch (3.6 mm) drift pin, remove the Pin (19) retaining the Lever (21). The Lever (21) may be removed.

6.11 Remove the Lockwire (29), if present, from the Bushing (30). Holes for installing the Lockwire (29) are provided but no Lockwire (29) is installed at the factory. Note method of lockwiring so that it may be duplicated on reassembly.

6.12 Using needle-nose pliers, remove the Cotter Pin (36).

6.13 Remove the Bushing (30), o-ring Spacer (31), O-ring (32), two Washers (34), two Wave Washers (33), Washer (28) and Gasket (35). Discard O-ring (32) and Gasket (35).

6.14 The Crank (37) and Shaft Assembly (38) may now be removed from flange end of Body (39). It is not recommended that the Shaft Assembly (38) be disassembled further. If replacement is required, replace as an assembly.

6.15 The plugs (40) do not have to be removed unless replacement is necessary.

6.16 Elbow, option D, if present, is to be disassembled as follows, only if it is to be repaired. If there is no evidence of binding or leakage, this unit need not be disassembled.:

- Remove Cotter Pin (58) and Ball Retainer (57).
- Holding the opening from which Ball Retainer (57) was removed over a container rotate the Male Half Adapter (64) to cause the Balls (56) to drop out of the hole. There should be a total of 26 Balls (56).
- The Male Half Adapter (64) can then be removed from the Elbow Assembly (53). Put the Male Half Adapter (64) aside for later disassembly.
- The Wear Band (54) should not be removed from inside of the Elbow (63) until the inspection in accordance with paragraph 7.2 is accomplished. If replacement is necessary, it can be removed by use of a small blade screwdriver to pry one end out of the groove. Then carefully remove the entire band.
- The two Ball Races (55) located within the Elbow (63) should not be removed unless evidence of wear or brinelling is apparent. Removal requires the careful use of a small blade screwdriver to pry one end from the groove to start the rings removal.
- Remove and discard Seal (68) from Adapter (65). Do not remove Wear Band (67) from Adapter (65) until the outside diameter has been inspected in accordance with paragraph 7.2 below. If necessary to replace, carefully, using a small blade screwdriver, pry the Wear Band (67) from its groove and peal it from the part and discard.
- The Ball races (66) need not be disassembled from the Adapter (65) unless evidence of wear or brinelling is apparent. Removal requires the use of tool number 210367 to prevent damage to the Adapter (65). The tool is slipped onto the Adapter (65) and one end of the Race Ring (66) is then carefully unwound from the Adapter (65) onto the tool. The tool is then removed from the Adapter (65). Refer to Figure 5 for further information.

6.17 Option R, Male Adapter Half, if present, can be disassembled as follows:

- Remove O-ring (47) and discard.
- Do not remove Race Rings (48) unless evidence of wear or brinelling is apparent. If removal is needed, carefully, using a small blade screwdriver, pry one end of the Race Ring (48) out of its groove to remove.

7.0 INSPECTION

7.1 It is recommended that all O-rings (18) and (32), Cotter Pin (10), Gasket (35) and Nose Seal (21) be replaced upon every overhaul.

7.2 Inspect all metal parts for dings, gouges, abrasions, etc. Use 320 grit paper to smooth and remove sharp edges. Replace any part with damage exceeding 15% of local wall thickness. Use alodine 1200 to touch up bared aluminum. Precisely measure the following items. Replace any part that exceeds the identified maximum or minimum wear limits:

- The hole in Shaft Assembly (38) shall not exceed 0.317 inches (8.052 mm) in diameter.

- Check the looseness in the riveted attachment of the Shaft Assembly (38). Maximum looseness of this joint shall not exceed 0.013 inches (.330 mm). Check looseness by holding threaded end in a vise, push link end toward threaded end to its stop and lightly scribe a line on the link along the clevis end of the rod. Pull the link directly away from the rod and scribe another line. Measure the distance between the scribed lines with a vernier caliper to determine the looseness.

- Measure the diameter of the boss on the Crank (37) that mates with Shaft Assembly (38). It shall not exceed 0.313.

- Measure the small hole through the boss of the Crank (37) through which Cotter Pin (36) is inserted. If the hole is 0.115 or larger, it is recommended that Cotter Pin (36) part number be revised to the oversized one, 82267-2 be used to prolong the life of the Crank (37).

- Check Bearing (8) to be sure it is not worn below 0.245 inches (6.223 mm) diameter over more than 50% of its length. The ends may be chamfered to remove any tool marks caused by the removal operation. The chamfering should not extend for a length of more than 0.250 inches (6.350 mm).

- Check Pin (17) for damage or cracks. Roll on a flat surface to check for straightness. Replace any suspect pin.

- Measure diameter of the three round holes in Plate (14). If holes are elongated or exceed 0.222 inches (5.639 mm) the Plate (14) should be replaced. Measure the width and diameter of the other three holes. If the diameter exceeds 0.330 (8.382 mm) or the width across the flats exceeds 0.253 inches (6.426 mm), the Plate (14) should be replaced.

- Measure the main diameter of the Crank (37). It shall not be less than .493 inches (12.560 mm).

- Measure the through bore of the Bushing (30). It shall not exceed 0.499 inches (12.675 mm).

- If Shroud (7J, H, or K) are worn such that they no longer serve their intended purpose replace them.

- Measure the inside diameter of the Wear Band (54) located within the Elbow (63). The maximum diameter of this part shall not exceed 3.007 inches (76.378 mm). If more than this dimension, replace it.

- Measure the outside diameter of the Wear Band (67) on the Adapter (65). The minimum diameter shall be 3.037 inches (77.140 mm). If less than this dimension, replace it.

8.0 REASSEMBLY

Reassemble in reverse order of disassembly, noting the following:

8.1 Make certain all components are clean and free from oil, grease, or any other corrosion resistant compound on all interior or exterior surfaces. Wash all parts with cleaning solvent, Federal Specification P-D-680 or equivalent, and dry thoroughly with a clean, lint-free cloth or compressed air.

WARNING:
Use cleaning solvent in a well-ventilated area. Avoid breathing of fumes and excessive solvent contact with skin. Keep away from open flame

NOTE: A light coat of petrolatum, Federal Specification VV-P-236 or equivalent commercial quality, can be applied to all o-rings, springs, and screws for ease of installation.

8.2 The Crank (37) and Shaft Assembly (38) may now be inserted in the coupler body (39) with the shaft portion of the Crank (37) extending from the boss on the side of the coupler Body (39). The Cotter Pin (36) may be installed with the use of needle nose pliers taking care to bend both ends over to secure it.

8.3 Install the Gasket (35) onto the Bushing (30).

8.4 Install and tighten the Bushing (30). The use of Lockwire (29) to further secure the Bushing (30) is optional. Insert the two Wave Washers (33) and two Washers (34) alternately, the O-ring (32), the o-ring Spacer (31), and the Washer (28).

8.5 Install the three lock pin Springs (16), three Lock Pins (15), three Index Pins (17) and O-ring (18).

8.6 Install the Plate (14) onto the Seal (12). Install Ring (13). The installation of the Ring (13) is optional. Couplers coming from the factory will continue to contain this part. If the Ring (13) is not used, it is possible to replace the Nose Seal (12) without removing the Collar (9). One will have to be careful when opening the coupler without it being installed to an adapter. A standard three lug adapter flange with the three lugs removed will serve nicely for this application. It should be noted that when the coupler is opened in this manner, the Nose Seal (12) may follow the Poppet (11) out of the coupler. If this is not acceptable, either use the Ring (13) or simply apply pressure by hand to the Nose Seal (12) as the coupler is opened to keep it in place.

8.7 Install the Seal (12), Plate (14) and Ring (13), if used, into the coupler Body (39), being careful not to displace O-ring (18). Install this assembly of parts so the three Index Pins (17) and three Lock Pins (15) pass through their appropriate holes in the Plate (14).

8.8 Install the Collar (9) on the Body (39) matching the groove in the Collar (9) with the square boss on the body. Secure by inserting Bearing (8) into the Collar (9) bearing groove. The Lever (21) may now be installed. Place the Lever (21) onto Crank (37) such that the two holes align. Drive Pin (19) into the hole in the Lever (21) from the end with the larger diameter until the Pin (19) is flush with the step in the pin hole.

8.9 Use the Lever (21) and turn the Crank (37) position to install the Poppet (11).
Before inserting the Cotter Pin (10), adjust the Poppet (11) to .100 - .120 inch (2.54 - 4.05 mm) above the top of the face of the collar.

With the Crank (37) rotated to the full closed position, the top of the Poppet (11) should be approximately in the middle of the concave surface area of the nose seal.

8.10 Install the Cotter Pin (10) in the Shaft Assembly (38) as shown in Figure 6. Be sure that both legs of the Cotter Pin (10) are bent. Turn Lever (21) to closed position. Make sure the Cotter Pin (10) ends are securely bent over to retain in place.

8.11 Install Shroud (7J), (7H) or (7K) using Screws (7D) and Washers (7E). If Clamp (7F) and Pins (7F) were removed replace them and tighten Clamp (7G) to retain.

8.12 Install Handle (6) being sure to first insert it through the loop which is a part of the Cover (1) to retain it. Use the appropriate hardware items (2,3,4 & 5) to secure the Handle (6) in place. Cover (1) can now be placed over outlet of unit.

8.13 Option D, Elbow Assy, can be reassembled noting the following:

- If the Wear Band (54) was removed, replace it with a new part. Do not try to reuse the old one. Be careful in installing it not to break the part. Overlap the ends only sufficiently to install the Wear Band (54) within its groove.
- If the Race Rings (55) were removed, they should be replaced in their respective grooves being sure that the gap between the ends of the Race Rings (55) are lined up with the hole through the side wall of the Elbow (63). This gap allows the Balls (56) to be installed later. To assure that the gap is corrected located, temporarily install the

Ball Retainer (57) in the hole in the Elbow (63) and check to see that the small end fits into the gaps.

- If the Race Rings (66) were removed from the Adapter (65), use tool 44752 for the installation of the new ones. Refer to Figure 6 for further information.
- If the Wear Band (67) was removed do not attempt to reuse. Replace it with a new one.
- When installing Seal (68), be sure that the open portion of the seal that contains the small diameter O-ring is pointed away from the Wear Band (67). This seal is pressure sensitive and will not function properly if installed backwards. Note that the Seal (68), although consisting of two pieces, is sold as a set. Do not attempt to replace the small O-ring (it acts as a spring) with another O-ring of any type.
- Install the Dust Protector (62) between the Male Adapter Half (64) and the Elbow (63) with the flanged end of the Dust Protector (62) facing the Elbow (63).
- Carefully install the Male Adapter Half (64) into the Elbow (63). Install the 26 Balls (56) through the hole in the Elbow (63). Reinstall the Ball Retainer (57) and secure with the Cotter Pin (58) bending both ends of the Cotter Pin (58) to retain.
- Assemble completed Elbow, Option D, to the coupler using O-ring (51).

8.14 Option R, Male Adapter Half can be assembled noting the following:

- If the Race Rings (48) were removed, carefully replace them in their grooves.
- Replace O-ring (47).
- Assemble completed Male Adapter Half (45) to coupler using O-ring (51).

8.15 Accessories, such as Quick Disconnects, Dry Break Quick Disconnects and Hose End Regulators can be installed with the hardware and o-ring provided with each.

9.0 TEST

The coupler should be tested as a complete unit, including the appropriate quick disconnect, dry break and/or regulator.

9.1 Test conditions

Test media shall be Stoddard Solvent (Federal Specification P-D-680), JP-4 per MIL-J-5624D at 75° ± 15°F, Jet A or equivalent.

9.3 Functional Test

9.3.1 The coupler shall be inserted and locked into a test adapter, Carter 6958CG or CH or equivalent and the coupler valve actuated by use of the Lever (21) from the fully closed to fully open position a minimum of five times. There shall be no evidence of binding or excessive force required for valve actuation.

9.4 Leakage Test

9.4.1 With the coupler outlet in the normal open position, and the test adapter outlet closed, pressurize the inlet to five (5) PSIG and hold for one minute minimum. There shall be no evidence of external leakage from the coupler.

9.4.2 Repeat the leakage test at 60 PSIG and 120 PSIG.

9.4.3 Close and disengage the coupler and repeat 9.4.1 and 9.4.2.

10.0 ILLUSTRATED PARTS CATALOG

Table 1.0 tabulates the parts and sub-assemblies comprising the 61445 Coupler. The item numbers of the table are keyed to the exploded views of the regulator diagrammed in Figures 1, 2, 3 and 4.

TABLE 1.0

Item	Part Number	Description	Units Per Assembly	Coupler Option	Spares/10 Units/Yr
2-1	220021	Cover Assembly	1	All	10
No Number	43003-3	Handle Assy Set, Stirrup	1	All	2
2	GF21042-4	Nut, self-locking	2	All	-
3	GF960-416	Washer	2	All	-
4	GF4-13A	Bolt, hex head	2	All	-
5	GF960-416	Washer	2	All	-
6	200479	Handle, Stirrup	2	All	-
7A	44797-1	Shroud Assy	1	Standard	-
7J	210569-1	Shroud	1	Standard	1
7D	GF16996-12	Screw	3	All	-
7E	GF960C10L	Washer	3	All	-
7B	44797-2	Shroud Assy	1	P	-
7H	210569-2	Shroud	1	P	1
7D	GF16996-12	Screw	3	All	-
7E	GF960C10L	Washer	3	All	-
7F	11-005	Pin	3	P	-
7G	6380	Clamp	1	P	-
7C	44797-3	Shroud Assy	1	H	-
7K	210569-3	Shroud	1	H	1
7D	GF16996-12	Screw	3	All	-
7E	GF960C10L	Washer	3	All	-
7F	11-005	Pin	3	P	-
7G	6380	Clamp	1	P	-
8	23620	Bearing	1	All	3
9	210595	Collar	1	All	2
10	GF24665-302	Cotter Pin	1	All	10
11	220041	Poppet	1	All	1
12	210477	Nose seal	1	All	10
13	24636	Ring, Retaining	1	All	-
14	220271	Plate	1	All	-
15	220272	Lock Pin	3	All	3
16	20909	Spring	3	All	3
17	24780	Index Pin	3	All	3
18	201201-145	O-ring	1	All	10
19	.156-1.000MDP	Pin	1	All	10
20	Left intentionally blank				
21	209869	Lever	1	All	-
28	21706	Washer	1	All	2

Item	Part Number	Description	Units Per Assembly	Coupler Option	Spares/10 Units/Yr
29	GF20995C32	Wire, lock	A/R	All	1 Roll
30	20914	Bushing	1	All	1
31	20910	Spacer	1	All	2
32	201201-014	O-ring	1	All	10
33	22291	Washer wave	2	All	8
34	22290	Washer	2	All	6
35	MS29512-10	Gasket	1	All	10
36	82267-1	Cotter Pin (Note 3)	1	All	2
37	210588	Crank	1	All	-
38	47071	Shaft	1	All	-
39	41427	Body	1	All	-
40	210388	Plug	2	All	-
41	64001*	Swivel Quick Disconnect (Note 7)	1	4 & 5H, K-N, P	-
42	40679-*	Quick Disconnect (Note 5)	1	6H, 6K-N, 6P	-
43	61154*	Dry Break QD (Note 6)	1	7 & 8H, K-N, P	-
44	210641	Safety Clip	1	X	-
45	44812	Male Half Adapter	1	R	-
46	203522	Adapter	1	R	-
47	201201-231	O-ring	1	R	10
48	28702	Ball Race	2	R	2
49	5710-63-30	Washer	6	R	-
50	GF16995-49	Screw	6	R	-
51	201201-151	O-ring	1	R	10
52	44805	Male Half Adapter (Note 4)	1	T	-
53	44796	Elbow Assy	1	D	-
54	209976-2	Wear Ring	1	D	2
55	210692	Ball Race	2	D	2
56	GF19060-4818	Ball	26	D	-
57	220014	Retainer	1	D	-
58	GF24665-302	Cotter Pin	1	D	5
59	GF16996-25	Screw	6	D	-
60	GF960C416	Washer	12	D	-
61	GF21083C4	Nut	6	D	-
62	220119	Dust Protector	1	D	4
63	210475	Elbow	1	D	-
64	44185	Male Half Adapter	1	D	-
65	207363	Adapter	1	D	-
66	207364	Ball Race	2	D	2
67	209976-1	Wear Ring	1	D	2
68	209988	Seal	1	D	10
49	5710-63-30	Washer	6	D	-
50	GF16995-4	Screw	6	D	-
51	201201-151	O-ring	1	R	10

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. The recommended spare parts shown above are the number required to support 10 Units for one year or each overhaul whichever is sooner. These quantities do not include replacement spares for intermediate replacement of parts required by abuse or misuse of the equipment. The recommended quantities are based on the ratio of spare parts sold for each unit during a one year period of time. The actual quantity required will vary from location to location.
3. 82267-2 replaces 82267-1 for oversize hole applications.
4. Refer to SM427MISC for parts listing.
5. Refer to SM40679 for parts listing. * means that there is additional information required to complete the part number.
6. Refer to SM61154 for parts listing. * means that there is additional information required to complete the part number.
7. Refer to SM64001 for parts listing. * means that there is additional information required to compete the part number.

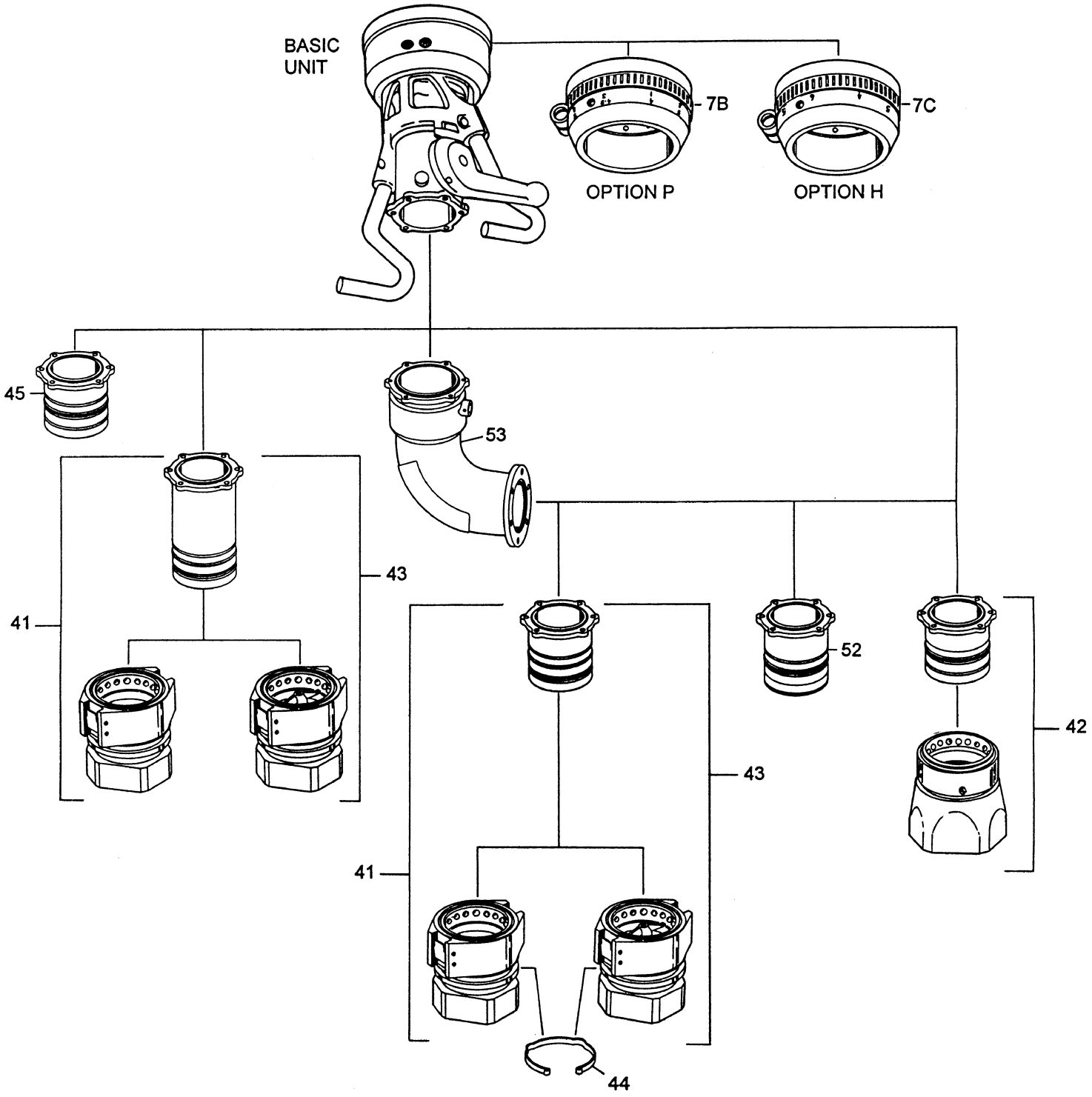
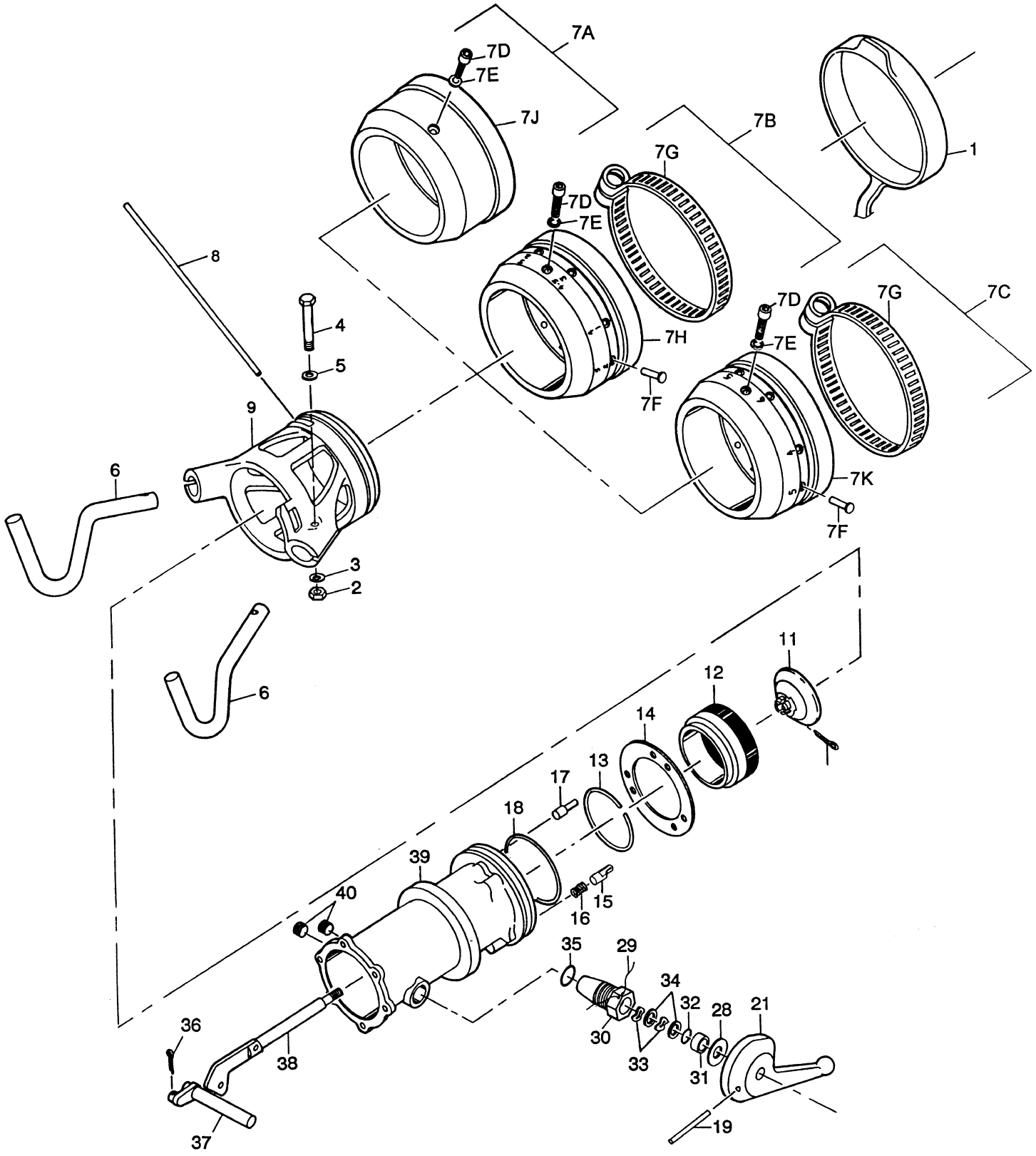


FIGURE 1


7A
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7E
7J
7B
7G
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7H
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7C
7D
7G
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7K
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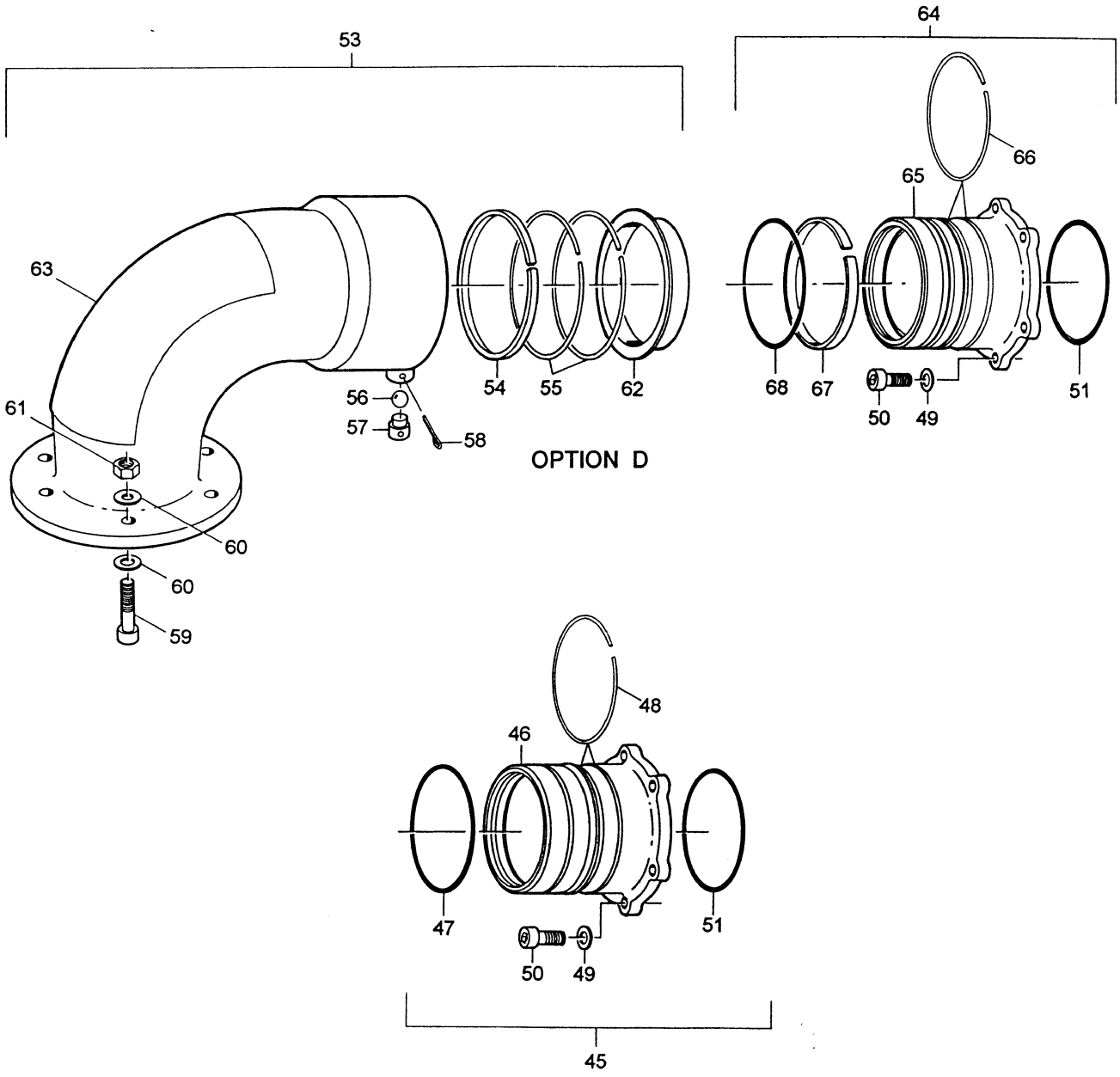
FIGURE 2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54
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OPTION D
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51
45
OPTION R

FIGURE 3

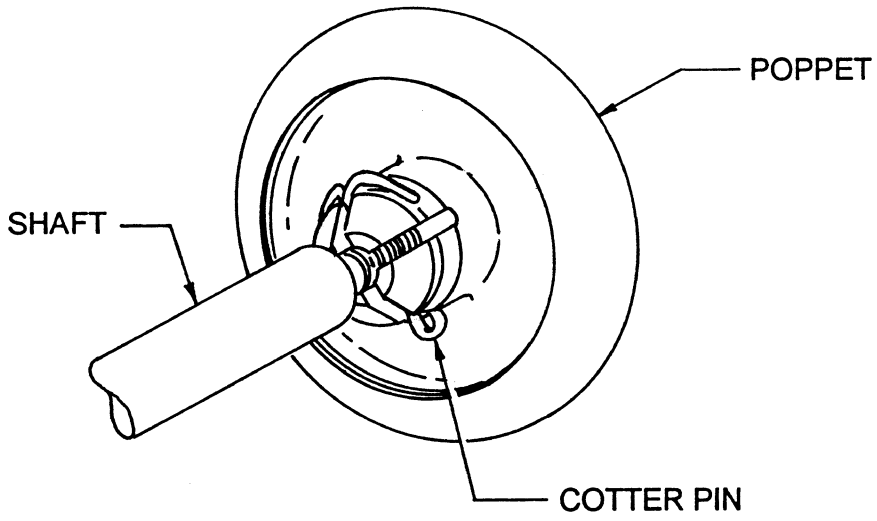
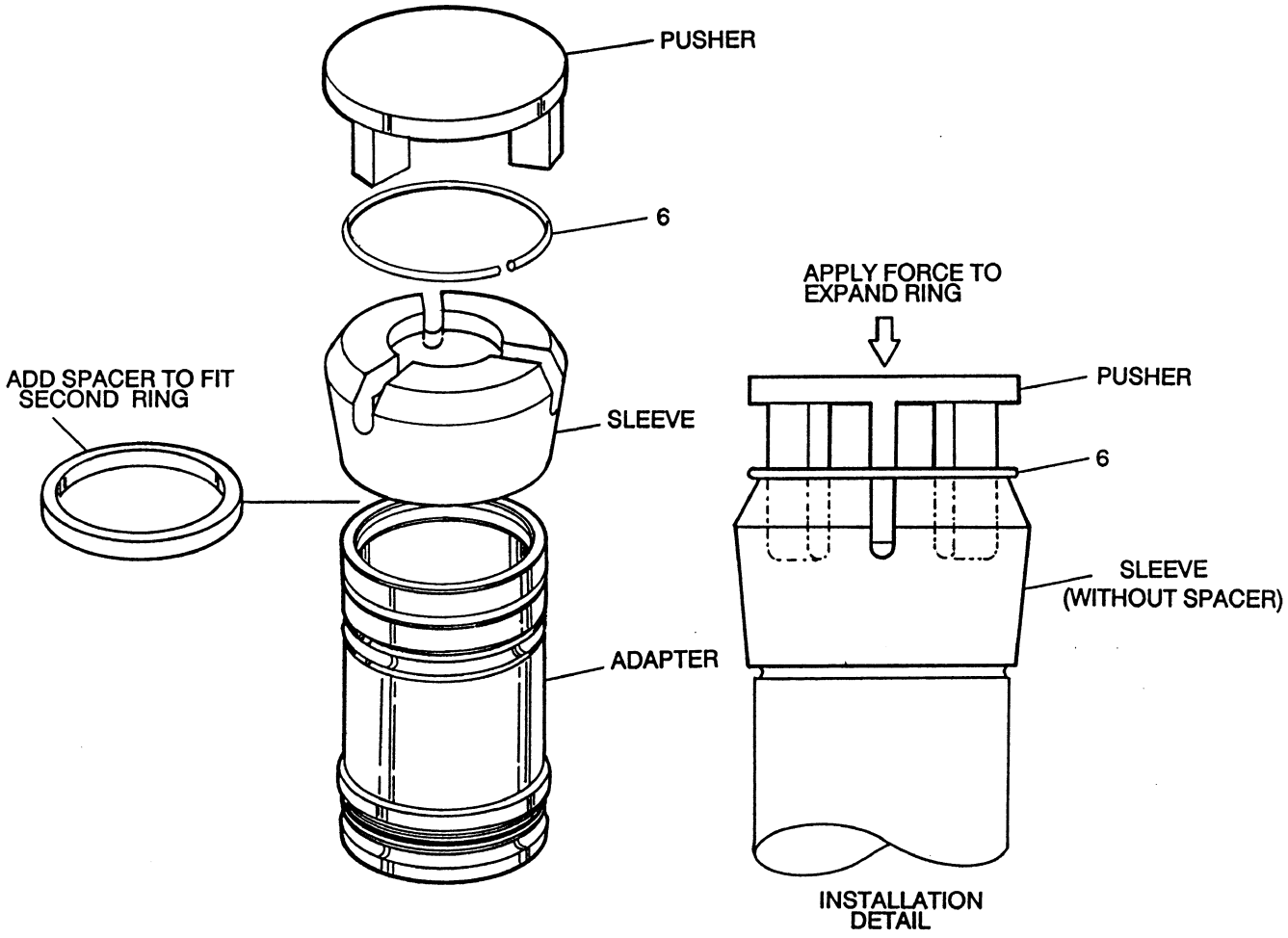


FIGURE 4



44752
RING INSTALLATION TOOL

FIGURE 5

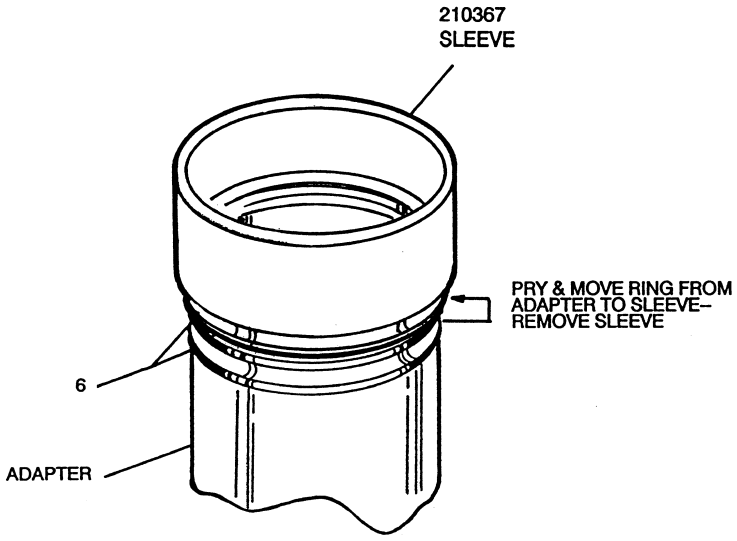


FIGURE 6

210367
RING REMOVAL TOOL

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