
Maintenance Manual

PRESSURE CONTROL COUPLER

F239 Series

MMF239
Revision 2.1
23 April 2014



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REVISION RECORD

Keep this record in the front of the manual. When you get the revisions, put the revised pages in the manual. Write the revision number, date issued and your initials on this page.

REV NO.	PAGES AFFECTED	DESCRIPTION OF CHANGE	DATE	APPROVED BY
1.0	ALL	Initial Release	11/01/2001	
1.1	ALL	-	12/15/2002	
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IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS!

This manual contains important instructions that shall be followed during installation and maintenance of the Pressure Control Coupler. The following are general safety precautions that are not related to specific procedures and therefore do not appear elsewhere in this publication. These are recommended precautions that personnel must understand and apply during maintenance.

The Coupler is a mechanical device and can be dangerous if not correctly operated or maintained.

Safety Alert Symbols

Safety alert symbols are used in this manual to identify potential or immediate personal injury hazards. The safety alert symbol words are explained as follows:



- indicates an imminently hazardous situation which, if not avoided, will result in injury or serious injury.



- indicates a potentially hazardous situation which, if not avoided, could result in injury or serious injury.



- indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



- used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

WEAR PROTECTIVE CLOTHING

- Wear protective clothing (gloves, apron, etc.) approved for the materials and tools being used.

USE APPROVED SAFETY EQUIPMENT

- Use only approved equipment and make sure firefighting equipment is readily available.

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GIVE CLEANERS SPECIAL CARE

- When cleaners are being used read and follow the material safety data sheet (MSDS) instructions for correct handling.

Equipment Safety Information

The following safety information briefly discusses hazards peculiar to the equipment, which are likely to be encountered during maintenance activity.

COUPLER INSTALLATION AND OPERATION PRECAUTIONS

- The design of the piping system must provide adequate pressure to prevent exceeding the limits of the coupler.
- Make sure the coupler orientation is correct and install the coupler in-line with the flanges. Make sure the piping flanges are correctly positioned and spaced. Do not force the piping in order to fit the coupler.
- Make sure the coupler operates correctly after installation.
- Do not exceed the pressure limits of the coupler.
- Do not exceed the coupler body ribs wear limit indicators. The pressure control elbow ribs on the coupler body are made of sacrificial material. Do not allow the ribs to wear beyond the limit indicators.

COUPLER MAINTENANCE PRECAUTIONS

- Do not loosen any fasteners or attempt to remove the coupler from the line until all pressure is isolated and released from the system.
- Use only authorized replacement parts or hardware.

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INTRODUCTION

1. General

The information and procedures contained in this manual have been prepared to assist qualified repair personnel in off-aircraft maintenance of the Pressure Control Coupler. The instructions provide information necessary to perform maintenance functions. The Coupler is manufactured by Meggitt (North Hollywood), Inc., 12838 Saticoy Street, North Hollywood, California 91605.

2. Scope

The instructions contained in this manual do not claim to cover all details or variations in equipment. They do not provide for every problem that could occur during installation, operation, or maintenance. If further information is required, contact Meggitt (North Hollywood), Inc., Product Support Department.

3. Standard Shop Practices

Use approved procedures and safety precautions to prevent damage to the equipment and injury to personnel.

4. Weights and Measurements

Weights and measurements in this manual are expressed in both English (U.S. customary) and Metric (SI) units.

5. Revision Service

This manual will be revised, as necessary, to reflect current information.

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DESCRIPTION AND OPERATION

1. Description

The Pressure Control Coupler (coupler) (see [Figure 1](#)) is designed to mate with Institute of Petroleum standard hydrants, or hydrants and adapters manufactured in accordance with API Bulletin 1584. Control pressure is from regulated reference air and remote fuel sense pressure. Available options include air deadman only (without pressure control), and local or remote sensing. Outlet options allow the use of various hose thread types and sizes.

2. Operation (See [Figure 2](#))

A. Attaching the Coupler to the Hydrant Valve

Attach the coupler to an F353 (or equivalent) hydrant valve. Connect the reference air and fuel sense lines to the coupler. Rotate the hydrant valve operating handle to its OPEN position. Rotate the coupler operating handle to its OPEN position.

B. Starting Flow

To open the pressure controller in the coupler and begin flow, activate the hydrant servo and actuate the air deadman.

C. Stopping Flow

To stop flow, release the deadman. This will vent the reference air pressure from the pressure controller in the coupler, allowing it to close.

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Figure 1. Pressure Control Coupler

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3. Leading Particulars

For the leading particulars refer to [Table 1](#).

Table 1. Leading Particulars

Service	Automotive and Aviation Fuels
Operating Pressures	
Hydrant Pressure.....	0 to 200 psi (0 to 13.78 bar)
Peak Surge Pressure	300 psi (20.68 bar)
Regulated Outlet Pressure	25 psi (1.72 bar) below reference air pressure
Pressure Drop (approximate)	12 psi at 1200 gpm (83 kPa at 4542.5 lpm) (coupled to F353 hydrant valve)
Operating Times (adjustable, except Mod J)	
Opening	2 to 30 seconds
Closing.....	2 to 15 seconds
Note: Since the opening and closing times are interdependent, the maximum closing and minimum opening times cannot be obtained simultaneously.	
Fluid Temperature	–40 to 165°F (–40 to 74°C)
Ambient Temperature	–40 to 165°F (–40 to 74°C)
Associated Hydrant Shutoff Valve	F352/F353
Weight (basic model) (approximate).....	26 pounds (11.8 kg)
Envelope Dimensions	See Figure 4
Installation Dimensions	See Figure 5

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4. Model Variations

The basic F239 series coupler is a 90-degree elbow coupler with a choice swivel outlet to mate with various hose fittings. It is available with several options including various sensing arrangements (see [Figure 6](#)), product selection, fixed or adjustable operating speed control orifices, fixed or folding lifting handles, a protective rubber skid blanket, and a two-wheel transport trolley. Refer to [Table 2](#) for the available F239 series coupler variations. [Figure 3](#) is a cutaway view illustration of a Mod K (remote sensing) coupler. Refer to the ILLUSTRATED PARTS LIST section for additional details.

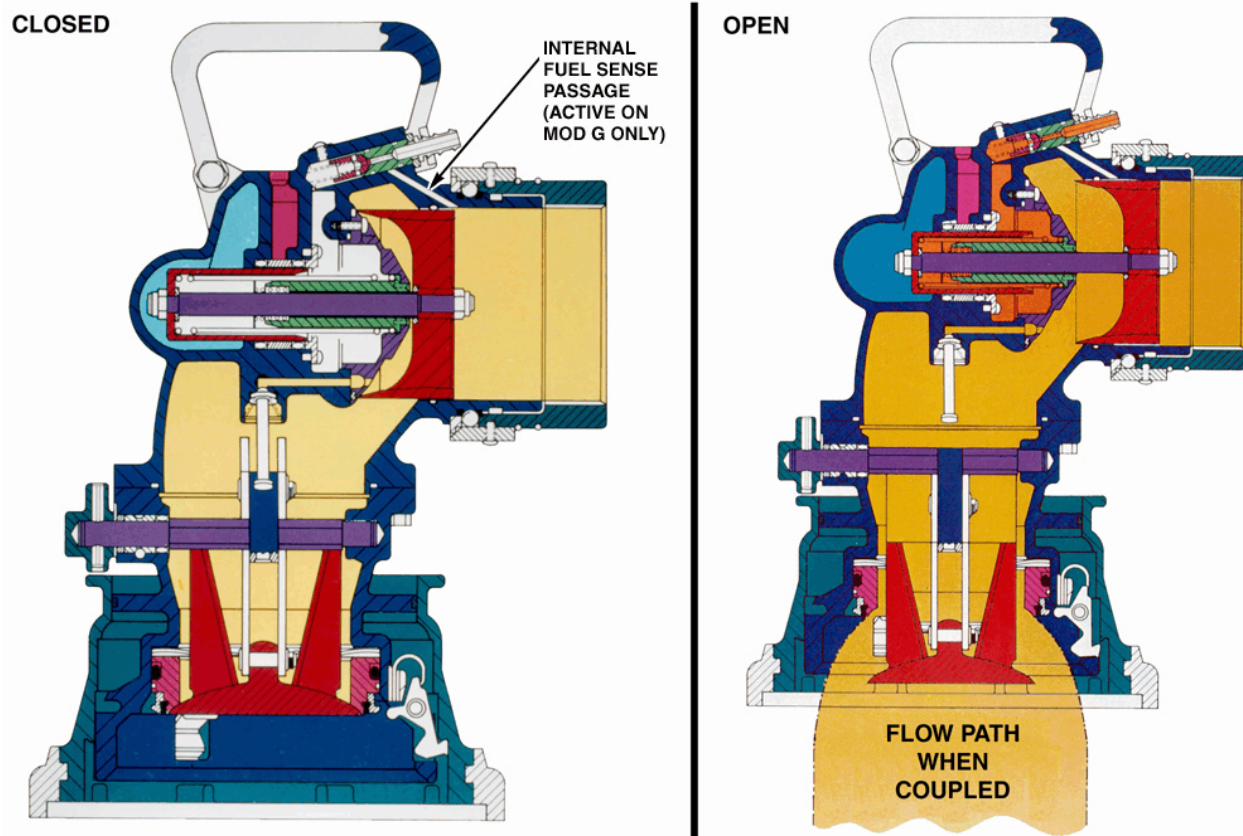


Figure 2. Flow Diagram

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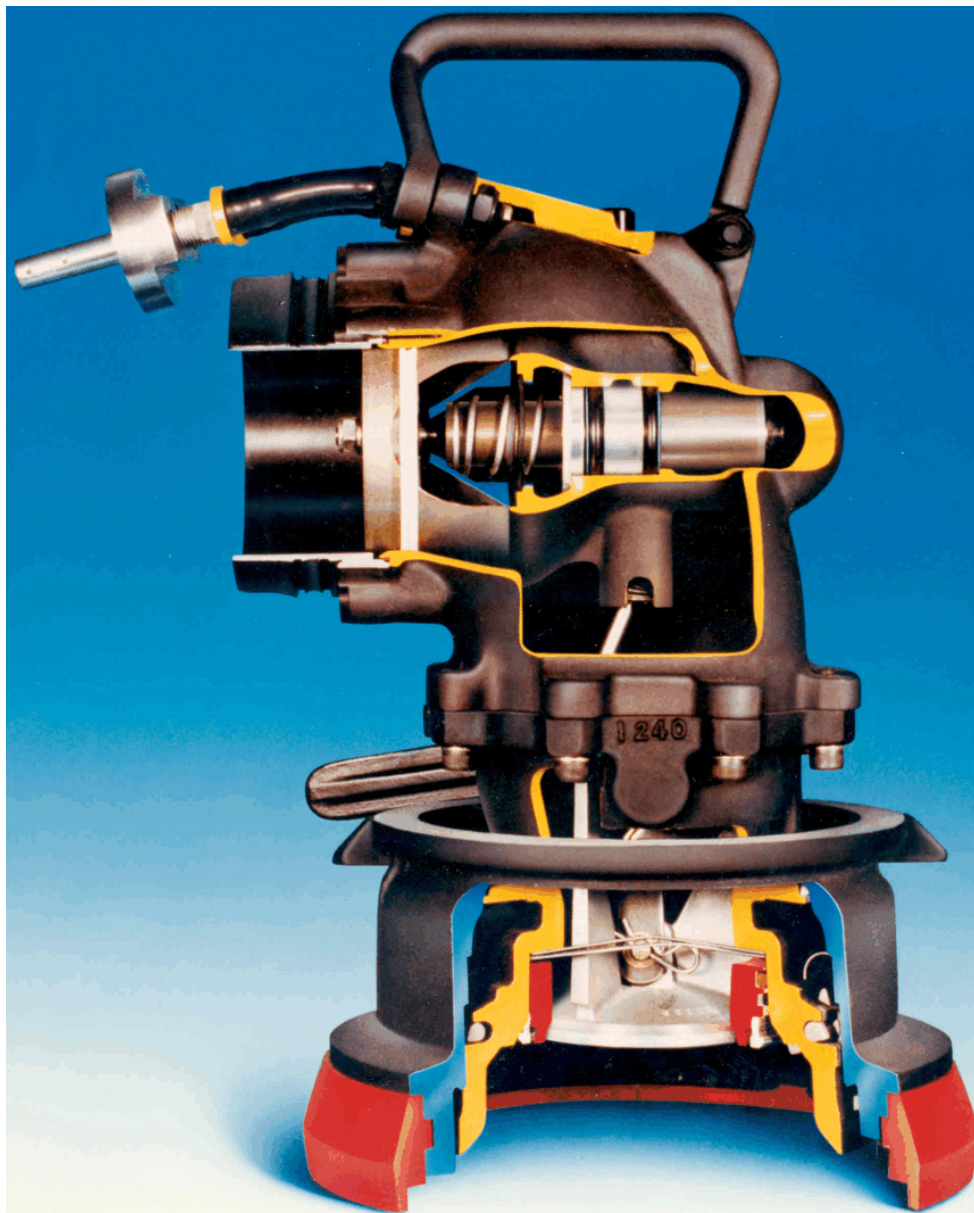


Figure 3. Pressure Control Coupler – Cutaway View – Mod K

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Table 2. Model Variations

COUPLER MOD LETTER	DESCRIPTION
(Basic)	Air set and remote pressure control, F240 hydrant coupler, 4-inch NPT outlet (F597A).
A	Air deadman only (without pressure control). Available with Mods B, C and D.
B	4-inch BSPPL outlet (F597B).
C	3-inch NPT outlet (F597C).
D	3-inch BSPPL outlet (F597D).
E	Without swivel outlet.
F	Adds product selection (position 4 unless specified otherwise).
G	With local sensing only. Not available for Mod A.
H	With F250 hydrant coupler.
J	With fixed orifices replacing the operating speed adjustment needle valve screws.
K	Adds F554 air/fuel sense plug.
L	Adds skid plate assembly.
M	2.5-inch NPT outlet (F597E).
N	2.5-inch BSPPL outlet (F579F).
P	Adds F554 air/fuel sense plug and support bracket. Not available with Mod K.
R	Adds bracket for air and sense hoses (¼-inch BSP, female connectors). (Similar to Mod P, without F554 air/fuel sense plug.)
S	Adds folding lifting handle.
T	Adds tilt valve orifice.
U	Adds coupler transport trolley.
V	Without air adjustment needle valve screw (for systems with external air control).
Y	With F251 3 rd Edition hydrant coupler.

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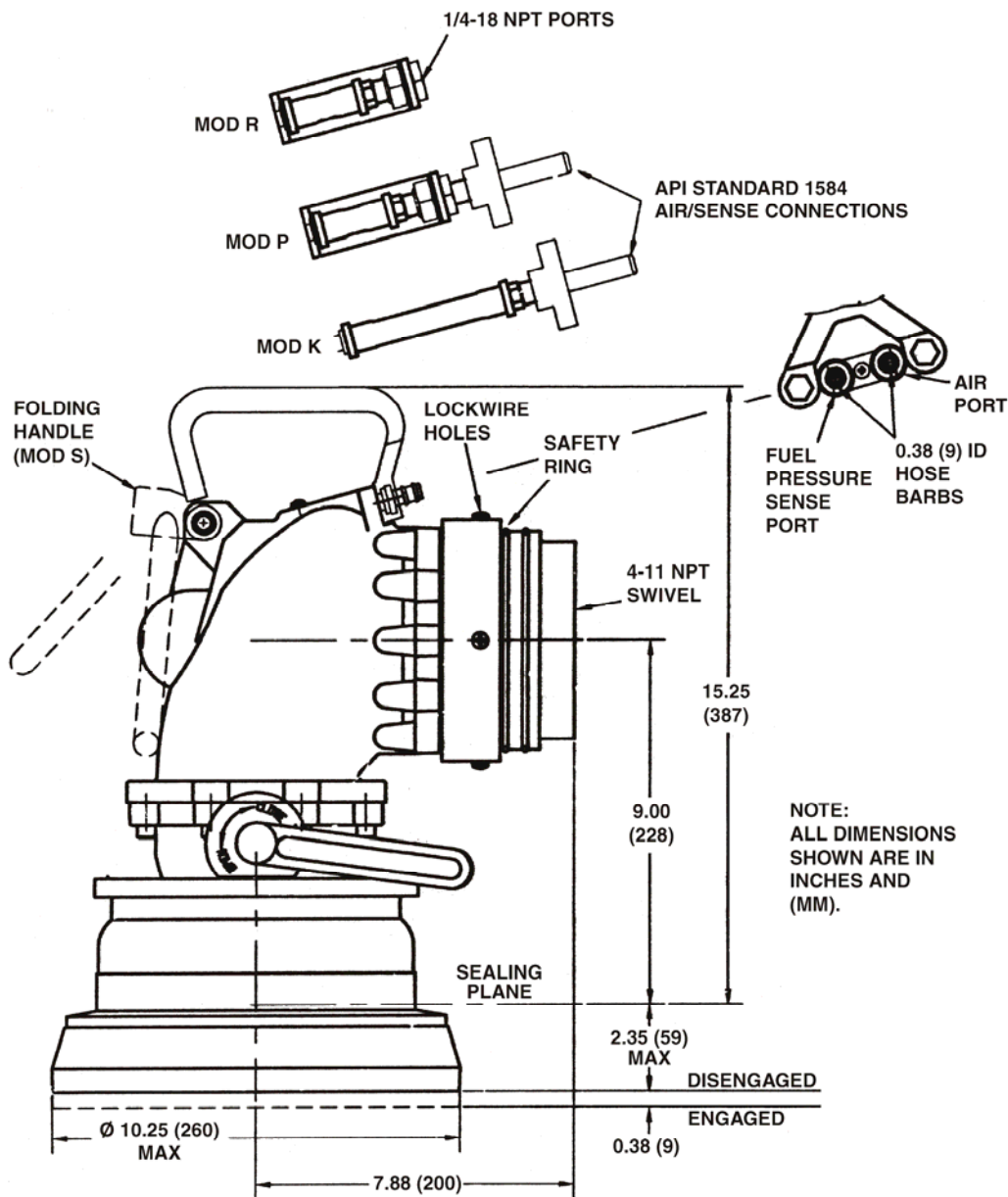


Figure 4. Envelope Dimensions

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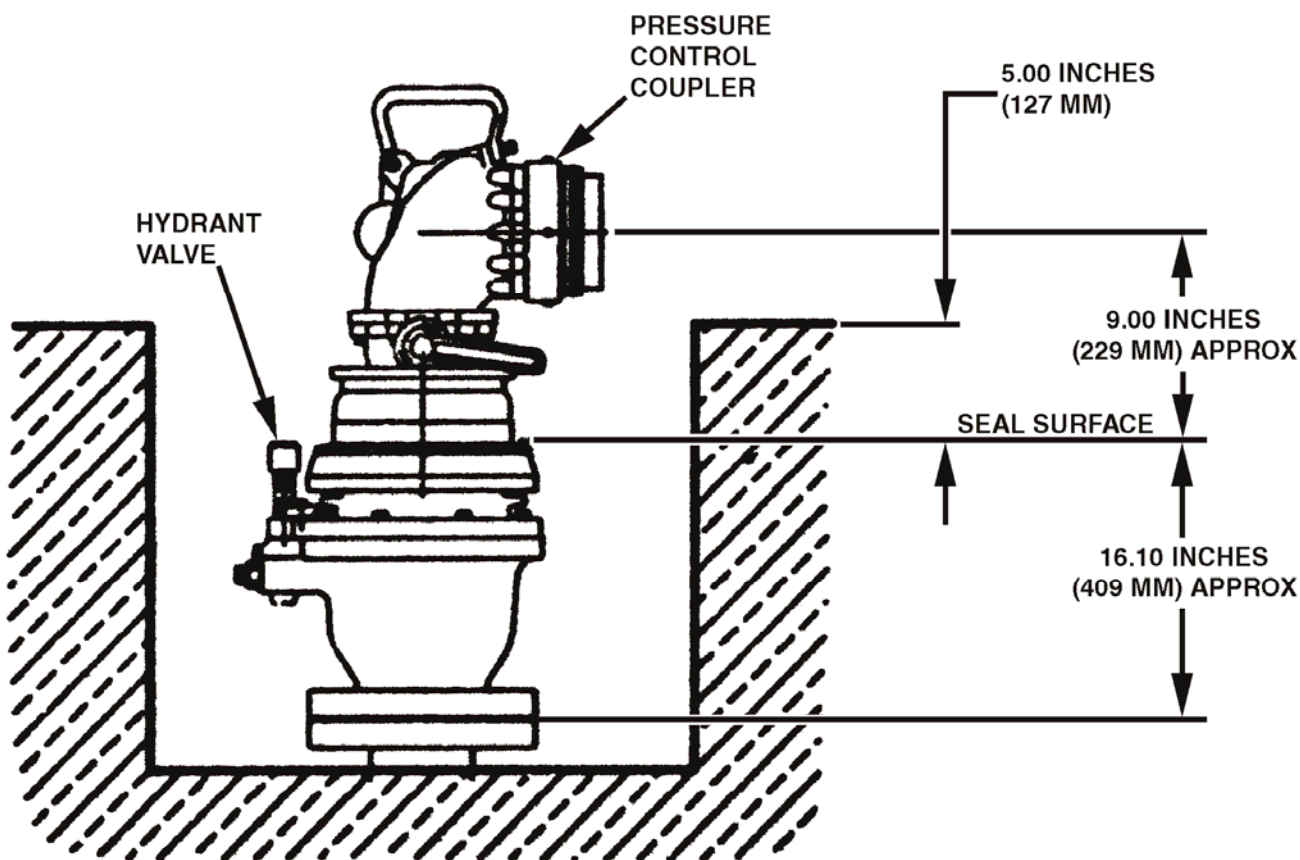


Figure 5. Installation Dimensions

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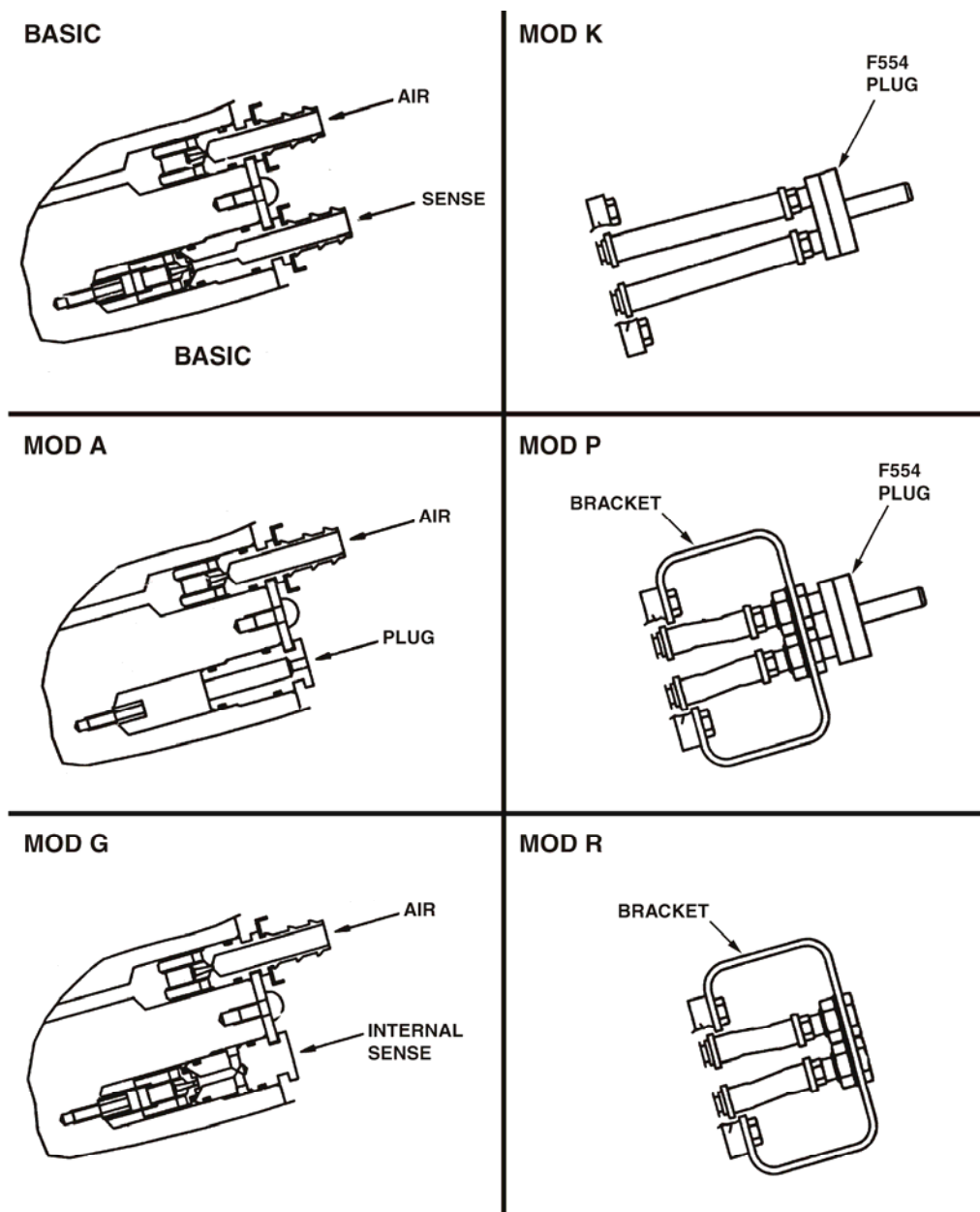


Figure 6. Sensing Variations

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SPECIAL TOOLS AND TEST EQUIPMENT

1. General

For special tools and test equipment recommended for maintenance of the coupler refer to [Table 3](#).

Table 3. Special Tools and Test Equipment

PART NUMBER	DESCRIPTION	APPLICATION
2702058	Adapter Flange	To aid in maintenance of the hydrant coupler
2878008	Assembly/ Disassembly Holding Fixture	To aid in replacing the piston and poppet cartridge (see Figure 7)

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TESTING

1. General

Note: Adjusting the needle valve screw (IPL Figure 1, 46) in the poppet (17) under the fuel sense port, controls opening time. Adjusting the needle valve screw (46) in the hose fitting (36) under the reference airport controls the opening and closing times.

- A. Hydrostatic test the coupler after reassembly to a maximum of 150 psi (10 bar).
- B. Flow test the coupler under fueling conditions to check:
 - 1. Opening time.
 - 2. Closing time.
 - 3. Deadman function.
 - 4. Pressure control function. (The air pressure will be approximately 25 psi (1.72 bar) higher than fuel sense pressure.)

Note: The coupler is factory set to open in 6 seconds with 120 psi (8.27 bar) inlet pressure and 700 gpm (3785.4 lpm) flow. Lower inlet pressures will increase the opening time. Higher inlet pressures will decrease it.

- C. Adjust the closing time first to desired time (refer to ASSEMBLY section paragraph 6B2 for the starting point). If the closing time is as desired, DO NOT CHANGE THE AIR PORT ADJUSTMENT.
- D. When the closing time is set as desired, adjust the opening time (refer to ASSEMBLY section paragraph 6B3 for the starting point).

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FAULT ISOLATION

1. General

Refer to [Table 4](#) for fault isolation information. Locate probable cause of faulty component and take corrective action.

Table 4. Fault Isolation

FAULT	PROBABLE CAUSE	CORRECTIVE ACTION
PRESSURE CONTROL ELBOW		
Leakage through the main valve	Damaged poppet seal-seat or sleeve seal	Replace the seals.
Leakage from vent	Damaged piston or piston seals	Replace the seals, and the piston if damaged.
Relief valve malfunction	Damaged seal on the poppet (IPL Figure 1, 1)	Replace the poppet.
	Bent shaft on the poppet (1)	Replace the poppet.
Coupler opens too fast or too slow	Incorrectly adjusted	Adjust the coupler (refer to the TESTING section).
Leakage from the split line	Damaged packing (30)	Replace the packing.
HYDRANT COUPLER		
Leakage past the poppet seal	Bonded seat on sleeve (IPL Figure 3, 6) damaged	Replace the sleeve.
Leakage past the nose seal	Damaged nose seal (4)	Replace the nose seal.
Leakage past the sleeve	Damaged packing (7)	Replace the packing.
Leakage past the handle shaft	Damaged packing (16)	Replace the packing.

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DISASSEMBLY

1. Disassembly of the Pressure Control Coupler

A. Removing the Coupler from the Hose (See [IPL Figure 2](#))

Note: Removal of both safety rings (7) will cause the ball bearings (2) to fall out of the body (3) when the lock ring (4) is removed from the body (3).

1. Pull the safety ring (7) which is nearest to the lock ring (4) out of its groove.
2. Back out the screws (6), pull back on the lock ring (4), and disconnect the hose.

B. Removing the Pressure Control Elbow from the Hydrant Coupler (See [IPL Figure 1](#))

1. Remove the screws (40) and the washers (45).
2. Remove the pressure control elbow from the hydrant coupler.

Note: Unless required; it is not necessary to remove the adapter from the body.

3. Remove the screws (41) and separate the adapter (35) from the body (27). Remove the packing (42).

2. Disassembly of the Pressure Control Elbow

A. Removing the Main Valve Components (See [IPL Figure 1](#))

1. Remove the screws (21) and the washers (4).

Note: Air pressure (10 psi (0.69 bar) maximum) can be applied to the reference air hose fitting as an aid to removing the piston assembly.

CAUTION

THE SEALING SURFACES OF THE PISTON (10) AND THE POPPET (60) MUST BE PROTECTED DURING MAINTENANCE.

2. Pull the piston assembly out of the body (27).

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3. Remove the seal (39) and the packing (26) from the body (27).
4. Remove the seat (29) from the body (27).
5. Remove the packing (25) from the piston assembly.
6. Remove the screws (57) and the retainer (56) from the body (27).
7. Remove the seals (37), the packings (11) and the spacer (55) from the body (27).
8. For disassembly of the piston cartridge assembly, refer to paragraph 2B as follows.

Note: Unless required; it is not necessary to disassemble the piston cartridge assembly.

B. Disassembling the Piston Cartridge Assembly (See IPL Figure 1)



THE PISTON CARTRIDGE ASSEMBLY IS HEAVILY SPRING LOADED.

1. Install the piston cartridge assembly in the assembly/disassembly holding fixture (p/n 2878008) as shown in Figure 7. Slide the handle over the piston (10). Rotate handle to lock handle to the posts of the base.



DURING MAINTENANCE, THE SEALING SURFACES OF PISTON (IPL Figure 1, 10) AND POPPET (60) MUST BE PROTECTED.

2. Remove the nut (IPL Figure 1, 6) and the washer (8) from the piston cartridge assembly.
3. Using two hands on the handle compress the spring (9) of the piston cartridge assembly and then rotate and release the pressure until the spring is fully extended.
4. Separate the piston (10), the packing (7), the washer (8), the spring (9), the washer (50) and the spring (51) from the poppet (60).
5. Remove the screws (49) and separate the cap (22) and the bushing (12). Remove the seal (24) and the packing (23).

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3. Disassembling the Hydrant Coupler (See IPL Figure 3) (Mod Y: Refer to MMF251: and Mod H: Refer to MMF250)

- A. Engage the hydrant coupler with the adapter flange (p/n 2702058) or similar adapter.

Note: The stop (29) shall be removed only if the hydrant coupler is to be completely disassembled.

- B. Using a suitable punch, drive the spring pin (30) out through the stop (29). Remove the stop. The pin will remain in the body.
- C. Manually release the locking lugs (25) and slide the shroud (3) forward.
- D. Rotate the operating handle to its OPEN position to release the spring pressure on the sleeve (6).



THE SLEEVE (6) IS UNDER HEAVY SPRING PRESSURE. YOU MUST BE CAREFUL TO AVOID LETTING THE SLEEVE POP OUT OF HYDRANT COUPLER.

- E. Remove the pin (24), the washer (21), and the clevis pin (22). Slide the poppet out of the coupler body (2).
- F. If the sleeve (6) did not come out of the coupler body (2), put the hydrant coupler with its coupling face down, and gently tap out the sleeve from the outlet side.
- G. Inspect the nose seal (4) and the bonded seal on the sleeve (6) for damage.
- Note: If the bonded seal on sleeve (6) is damaged, the sleeve must be replaced.
- H. Pry the seal retainer (5) off of the sleeve (6). Remove the nose seal (4).
- I. Remove the packing (7).
- J. Rotate the operating handle (11) to its CLOSED position. Loosen the setscrew (26).
- K. Drive out the spring pin (9) and pull the handle assembly out of the coupler body (2) Note the position of the operating handle (11) relative to the crank (17).
- L. Drive the pin (12) out of the handle assembly. Remove the wiper (13), the bushing (14), the washers (15) and the packing (16).

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- M. Remove the pin (24), the washer (21), and the cotter pin (28) from the crank and link assembly. Remove and inspect the pins (22) for excessive wear. Note that the bow of the links is on the same side as the recess in the body (2).
- N. Lift the shroud (3) off of the body (2). Remove the pin (30) from the body.
- O. Remove the locking lugs (25), the springs (23) and the felt wiper (20) from the body (2).

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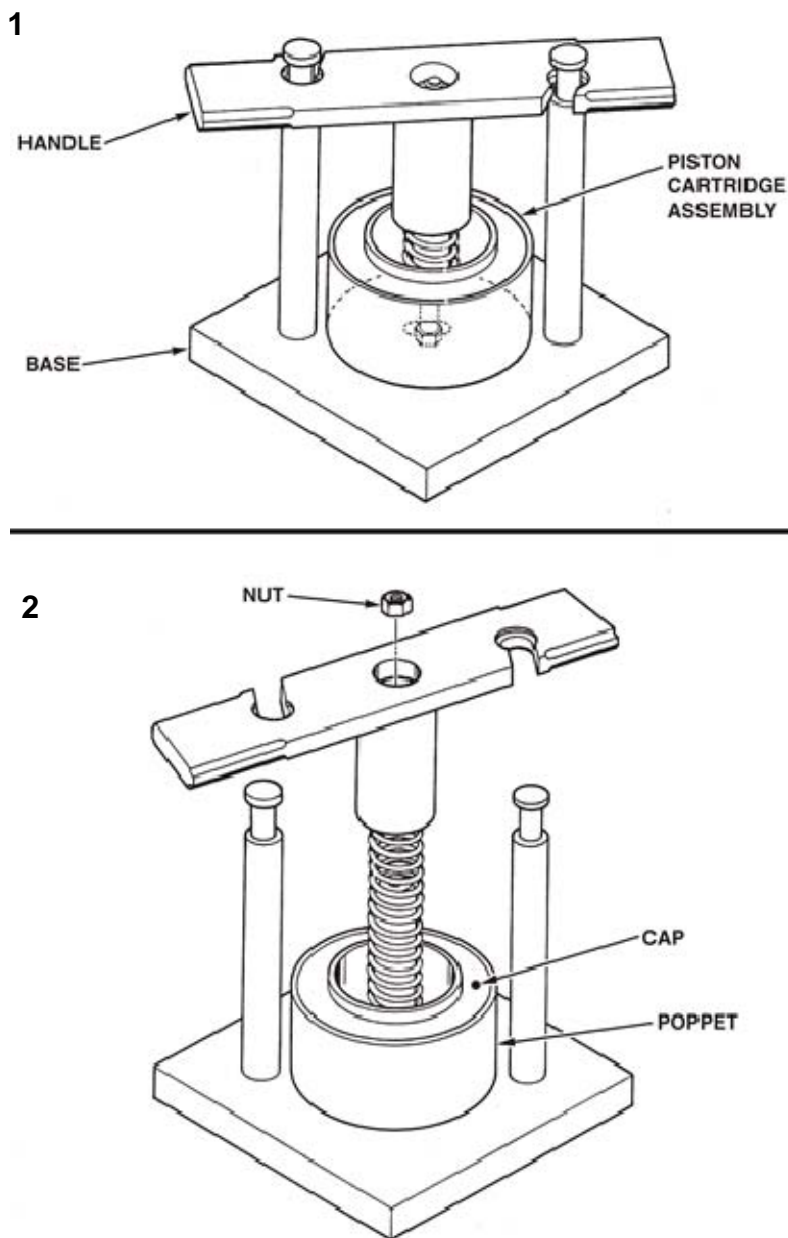


Figure 7. Assembly/Disassembly Holding Fixture

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CLEANING

1. Cleaning Materials

Refer to [Table 5](#) for recommended cleaning materials. Suitable equivalent cleaning materials may be substituted for the items listed.

Table 5. Recommended Cleaning Materials

DESCRIPTION	SPECIFICATION	SOURCE
Alcohol, Isopropyl	ASTM D770	Commercially available
Bags, Plastic	-	Commercially available
Brush, Bristle, Stiff, Non-metallic	-	Commercially available
Pick, Teflon	-	Commercially available
Solvent, Dry Cleaning	P-D-680, Type 2	Commercially available
Tissues, Lint-free	-	Commercially available

2. Cleaning Procedures



DRY CLEANING SOLVENT AND ISOPROPYL ALCOHOL ARE HARZARDOUS MATERIALS. BEFORE USE, READ AND OBEY THE MATERIAL SAFETY DATA SHEET (MSDS) INSTRUCTIONS FOR CORRECT HANDLING. FAILURE TO OBEY THIS WARNING MAY RESULT IN PERSONAL INJURY, LONG TERM HEALTH HAZARDS OR DEATH.

- A. Clean all metal parts by washing thoroughly in dry cleaning solvent. Remove stubborn deposits by scrubbing with a nonmetallic stiff bristle brush. Brush all threaded areas. Use a Teflon pick to remove obstructions from the ports, the seal or packing grooves and the flow passages.
- B. Clean all of the non-metallic parts by wiping them with clean lint-free tissues slightly moistened with isopropyl alcohol.

Note: All parts must be free of corrosion, dirt, grease, oil or any other foreign matter.

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WEAR EYE PROTECTION WHEN DRYING PARTS WITH COMPRESSED AIR. DO NOT DIRECT AIRSTREAM AT PERSONNEL OR LIGHT METAL PARTS.

- C. Dry the parts with clean lint-free tissues or clean, dry, compressed air.
- D. Package all of the clean parts in plastic bags.

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CHECK/INSPECTION

1. General

- A. Under strong light and magnification, look at all the parts in accordance with the general criteria specified in paragraph 2.
- B. Repair minor damage in accordance with instructions presented in the REPAIR section. If damage is major or beyond simple repair, replace the part rather than attempt extensive repairs.

2. Component Checks (Refer to Table 6)

Table 6. Component Checks

DESCRIPTION	INSPECTION CRITERIA
General	<p>Look at all parts as applicable for; nicks, cracks, cuts, burrs, corrosion, breaks, scoring, deformation, dents, thread damage or any other obvious defects.</p> <p>Make sure the ports, passages, recesses and sealing grooves are clean and not blocked.</p> <p>Make sure all sealing and seating surfaces are free from damage or corrosion.</p>

3. Body Wear Limit (See [Figure 1](#))

- A. Do not allow the pressure control elbow ribs (body wear limit indicators) on the coupler body to wear beyond the wear limit indicators. Make sure the ribs on the pressure control elbow are not smooth or level with the surface of the coupler body. Replace as required.

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ASSEMBLY

1. Replacement Parts Kits

Refer to the ILLUSTRATED PARTS LIST section for recommended replacements parts kit information.

2. Materials

Refer to [Table 7](#) for recommended assembly materials. Suitable equivalent materials may be substituted for the items listed.

Table 7. Recommended Assembly Materials

DESCRIPTION	SPECIFICATION	SOURCE
Petroleum Jelly	-	Commercially available
Thread Locking Compound	Loctite, Grade 262	Commercially available

3. Hydrant Coupler Assembly

A. Lubrication

Before assembly, lightly lubricate all of the packings, seals and screw threads with petroleum jelly.

B. Assembly Procedure (See IPL Figure 3)

1. If the bushing (14) was removed, press the new bushing into the bore of the body (2), until it bottoms out.
2. If the guard (1) was removed from the shroud (3), use tire levers to install a new guard on the shroud.
3. See [Figure 8](#) and install the springs (23) and the locking lugs (25) in the body (2) as follows:

Note: Long nose pliers can be used to close the spring loop during installation of a spring in the body, but be careful to avoid damaging the spring. The wire shall not be marked or scratched.

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- a. Push the loop of the spring (23) into the hole in the body (2), with the two tangs resting on the top surface. Push the spring in as far as possible, so that the two tangs contact the body surface. The loop of the spring shall be a tight press fit in the hole.
- b. Position the locking lug (25) in its groove of the body (2), spring anchor end inward to contact the ends of the two tangs of the spring (23). Lift and place the ends of the spring tangs into the groove of the locking lug. Press the locking lug inward and rotate it into position. Make sure both of the spring tangs are still in their correct positions and that the locking lug rotates freely.

Note: Repeat steps a, and b for all springs (23) and locking lugs (25).

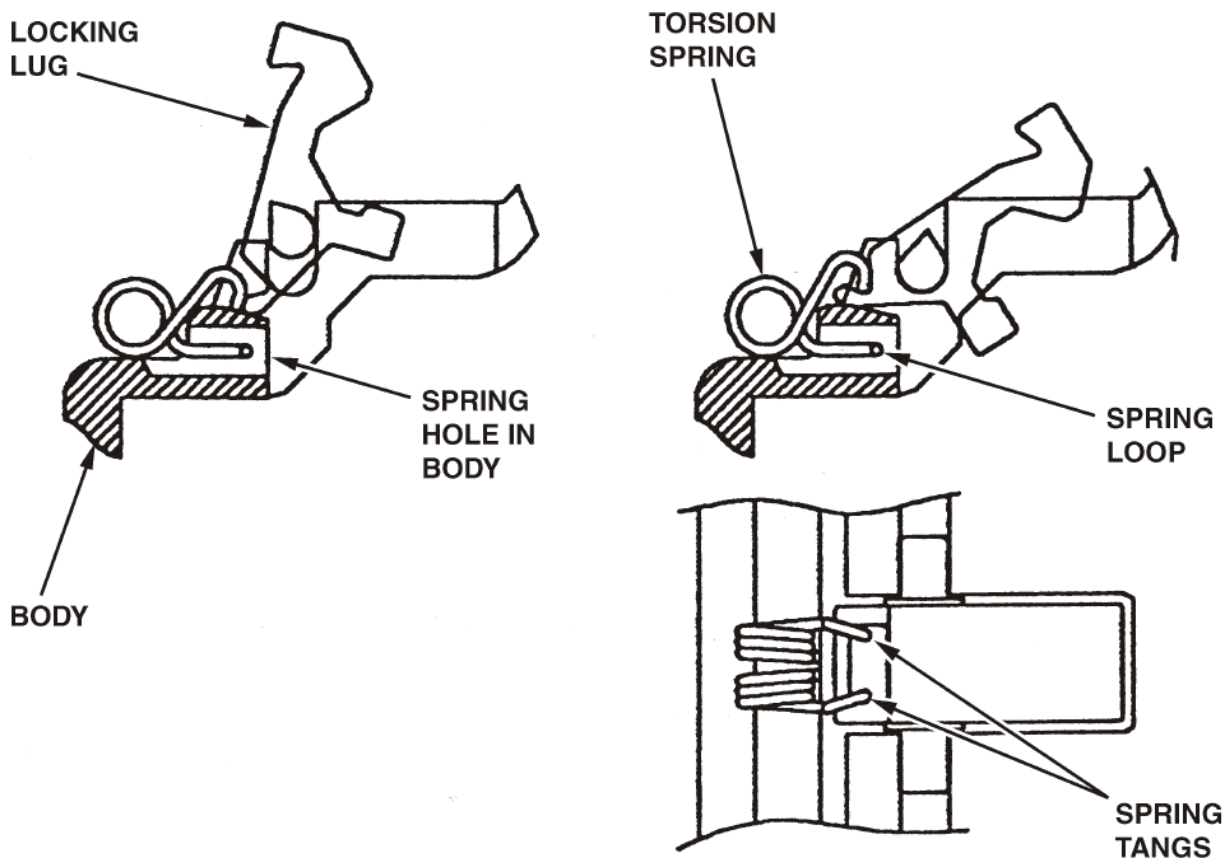


Figure 8. Installing the Springs and the Locking Lugs

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4. Install the felt wiper (20) in the wiper groove of the shroud (3).
5. Put the body (2) on the adapter flange (p/n 2702058) or similar adapter you used during disassembly of the coupler. Install the shroud (3) on the body.
6. Install the nose seal (4) in the nose seal of the sleeve (6) and secure it with the retainer (5). Install the packing (7) in the packing groove of the sleeve.
7. Assemble the links (19), the lower clevis pin (22), the washer (21) and the cotter pin (24) on the poppet (18). Make sure the bow of the links is away from the central leg of the poppet.
8. Assemble the packing (16), the washers (15), the felt wiper (13) and the operating handle (11) on the shaft (10). Secure the handle to the shaft with the pin (12). The pin must be flush or below surface of the handle.
9. Install shaft assembly in the body (2) and through the crank (17). The crank must be oriented opposite the flat on the operating handle (11).
10. Drive the pin (9) into the pin bore of the body (2) to secure the shaft assembly.
11. Install the two wave washers (8), the sleeve assembly and the poppet (18) in the body (2).
12. Rotate the operating handle assembly to its CLOSED position. Orient the bow of the links on the poppet assembly opposite to the handle.
13. Install the setscrew (26) in the crank (17).
14. Rotate the handle approximately 45 degrees towards OPEN. Install the upper clevis pin (22), the washer (21) and the cotter pin (24).
15. Rotate handle to its CLOSED position. Slide the shroud up to the handle until the locking lugs engage.

4. Poppet Cartridge Assembly

A. Lubrication

Before assembly, lightly lubricate all of the packings, seals and screw threads with petroleum jelly.

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B. Assembly Procedure (See IPL Figure 1)

CAUTION

BE VERY CAREFUL WHEN HANDLING THE POPPET (60) AND THE PISTON (10), TO AVOID DAMAGING THE SEALING SURFACES AND EDGES.

1. Install the packing (23) and the seal (24) in the cap (22).
2. Apply thread locking compound (Loctite 262) to the threads and the undersides of the heads of the screws (49). Secure the cap assembly to the bushing (12) with the screws.
3. Assemble the piston assembly as follows:
 - a. Install the poppet (60) and the cap assembly (22) in the assembly/disassembly holding fixture (p/n 2878008) as shown in [Figure 7](#).
 - b. Install the spring (51), the washer (50), the washer (8), the packing (7), the spring (9) and the piston (10).
 - c. Compress the assembled parts in the holding fixture then engage and lock the handle to the posts of the base.

CAUTION

THE TIGHTENING TORQUE REQUIREMENT FOR THE NUT (6) IS CRITICAL.

- d. Install the washer (8) and the nut (6). Torque the nut to 276 to 324 pound-inches (31 to 36 Nm).

5. Installing the Main Valve Components in the Pressure Control Elbow (See IPL Figure 1)

A. Lubrication

Before assembly, lightly lubricate all of the packings, seals and screw threads with petroleum jelly.

B. Installation Procedure

1. Gently guide the seals (37) between your thumb and forefinger so that they form to the inside diameters of the packings (11).

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2. Install the formed seal assemblies and the spacer (55) in the body (27).
3. Apply thread locking compound (Loctite 262) to the threads of the screws (57). Install the retainer (56) and secure it with the screws (57).
4. Install the seal (29) in the body (27).
Note: Slight stretching of the seal (29) will aid in assembly.
5. Install the packing (26) and the seal (39).
Note: Make sure the seal (39) and the packing (26) are fully seated. See [IPL Figure 1](#) for the correct orientation.
6. Install the packing (25) on the cap (22).
7. Lightly lubricate the surfaces of the poppet cartridge assembly with petroleum jelly. Install the poppet cartridge assembly in the body (27).
Note: Excessive force is not required to install the poppet cartridge assembly if the seals are installed correctly.
8. Apply a small amount of thread locking compound (Loctite 262) on the threads of the screws (21). Install the screws and the washers (4) to secure the poppet cartridge assembly in the body (27). Using shop air, pressurize the hose fitting (36) on the air side to 15 to 20 psi (103.42 to 137.89 kPa) to Make sure the cap (22) is correctly seated. Torque the screws to 25 pound-inches (2.8 Nm).
9. Using shop air, pressurize the hose fitting (36) on the air side to 50 to 80 psi (344.73 to 551.58 kPa), to actuate the piston several times. This will assist in running in the seals. The piston must slide smoothly. Vent the air pressure.
10. Install the packing (42), the swivel adapter (35) and the screws (41).
11. Install the poppet (1) in the body (27). Install the retaining ring (3) to secure the poppet.

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6. Installing the Sensing Components in the Pressure Control Elbow (See [IPL Figure 1](#))

A. Lubrication

Before assembly, lightly lubricate all of the packings, seals and screw threads with petroleum jelly.

B. Installation and Adjustment Procedure

1. Install the packings (18, 47 and 59) on the hose fittings (33 and 36).

Note: If packing replacement was the only reason for disassembly, adjustment of the needle valve screws (46) usually is not necessary. If the opening time and closing time must be adjusted, perform the initial adjustment as follows:

2. Closing Time (Starting Point)

Install the screw (46) in the hose fitting (36). Turn the screw until it bottoms out, and then back it out (counterclockwise) 3/4 turn.

3. Opening Time (Starting Point)

Install the screw (46) in the poppet (17). Turn the screw until it bottoms out, and then back it out (counterclockwise) 1/4-turn.

4. Make sure the spring (16) is in place, and install the poppet (17).

5. Assemble the retainer (19) and the hose fittings (33 and 36). Install the retainer and the hose fittings in the body (27).

7. Assembling the Pressure Control Elbow and the Hydrant Coupler

A. Lubrication

Before assembly, lightly lubricate all of the packings, seals and screw threads with petroleum jelly.

B. Installation Procedure

1. Lightly lubricate the packing (30) and the threads of the screws (40) with petroleum jelly.
2. Install the packing (30) in the packing groove of the body (27).

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CAUTION

TO PREVENT DAMAGING THE PRESSURE RELIEF VALVE, THE HYDRANT COUPLER MUST BE IN ITS OPEN POSITION WHEN THE PRESSURE CONTROL ELBOW IS INSTALLED.

3. Rotate the operating handle of the hydrant coupler to its OPEN position. Install the pressure control elbow and secure it with the screws (40).
4. Make sure the operating handle is free to rotate to the OPEN and CLOSED positions.

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CONVERSIONS

1. ADJUSTABLE TO FIXED ORIFICES – F239 TO F239J

A conversion kit is available that allows users to convert their adjustable couplers to Mod J fixed orifice operation. The fixed orifices provide greater contamination tolerance, but limit the opening and closing times. The fixed orifices give nominal operation times of 10 to 15 seconds for full opening and 2 to 5 seconds for closing. This conversion can be reversed if necessary to meet system operating requirements.

A. Conversion Kit – Part Number 1KITF239

[Table 8](#) provides a complete listing of the conversion kit contents.

B. Conversion Procedure (See [Figure 9](#) and [IPL Figure 1](#), Sheet 2 and Detail J)

1. Remove the screw (34) from the body (27).
2. Remove the hose fittings (33 and 36) and the retainer (19) from the body (27).
3. Using a 1/8-inch hex wrench, remove the needle valve screw (46) from the hose fitting (36).
4. Install the air orifice (63) (red dot) in the hose fitting (33). Tighten the orifice until it is fully seated in the hose fitting.
5. Remove the poppet (17) from the body (27). Long nose pliers can be used if necessary.
6. Using a 1/8-inch hex wrench, remove the needle valve screw (46) from the poppet (17).
7. Install the fuel orifice (64) (green dot) in the poppet (17). Tighten the orifice until it is fully seated in the poppet.
8. Remove the packings (18, 47 and 59) from the hose fittings (33 and 36).
9. Lightly lubricate the new packings (18, 47 and 59) with petroleum jelly and install them in the packing grooves of the hose fittings (33 and 36).
10. Make sure the spring (16) is installed in the body (27). Install the poppet (17) in the body.

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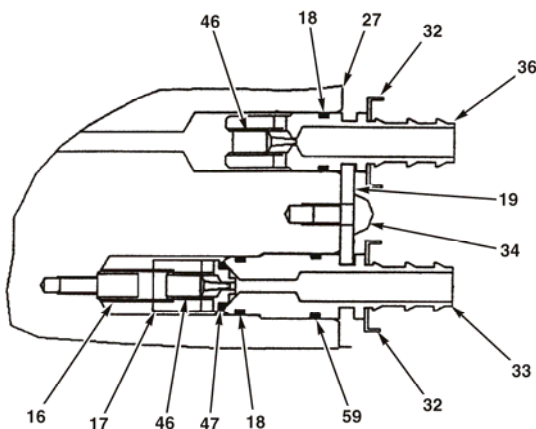
11. Install the hose fittings (33 and 36) in the body (27), with the retainer (19) and the collars (32). Secure the retainer with the screw (34).

Note: Before putting the system back into service, Make sure all of the air has been bled from the body via the vent screw (43).

1 – BEFORE CONVERSION

LEGEND

- 16. SPRING
- 17. POPPET
- 18. PACKINGS
- 19. RETAINER
- 27. BODY
- 32. COLLARS
- 33. HOSE FITTING (FUEL)
- 34. SCREW
- 36. HOSE FITTING (AIR)
- 46. NEEDLE VALVE SCREWS
- 59. PACKING



2 – AFTER CONVERSION

LEGEND

- 16. SPRING
- 17. POPPET
- 18. PACKINGS
- 19. RETAINER
- 27. BODY
- 32. COLLARS
- 33. HOSE FITTING (FUEL)
- 34. SCREW
- 36. HOSE FITTING (AIR)
- 59. PACKING
- 63. ORIFICE, AIR (RED)
- 64. ORIFICE, FUEL (GREEN)

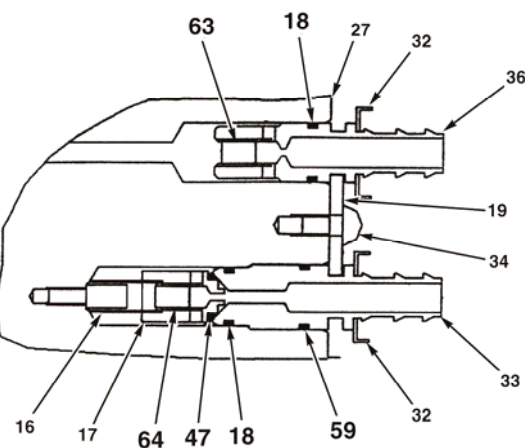


Figure 9. Adjustable to Fixed Orifice Conversion (Mod J)

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Table 8. Conversion Kit, P/N 1KIT239 – F239 to F239J

ITEM NUMBER (IPL Figure 1)	PART NUMBER	DESCRIPTION	QUANTITY
18	2661058BD013	Packing, Preformed	2
47	2661058BD010	Packing, Preformed	1
59	2661058BD014	Packing, Preformed	1
63	981040-102	Orifice, Air (Red Dot)	1
64	981040-105	Orifice Fuel (Green Dot)	1

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ILLUSTRATED PARTS LIST

1. General

This section lists, describes, and illustrates all detail parts required for maintenance support of the Pressure Control Coupler.

2. Scope of Information

The parts list is arranged in the general order of disassembly. The listing is indented to show the relationship between each part and its next higher assembly. Item numbers used in the parts list are keyed to the corresponding numbers of the accompanying illustration.

A. MODIFICATION CODE

The modification code indicates the parts usage with respect to the end item. When the MOD column is blank, the part usage is applicable to all versions unless otherwise specified in the DESCRIPTION column. Modification codes used in this manual are listed in the following table.

B. How to Identify a Part

When the part number is known: Refer to the parts list for the item number, description, modification codes, and quantity. Refer to the illustration to make sure of the physical appearance and location of the part.

When the part number is not known: Examine the illustrations to identify the part by physical appearance and location. Refer to the accompanying parts list to get the part number, nomenclature, modification codes, quantity, etc.

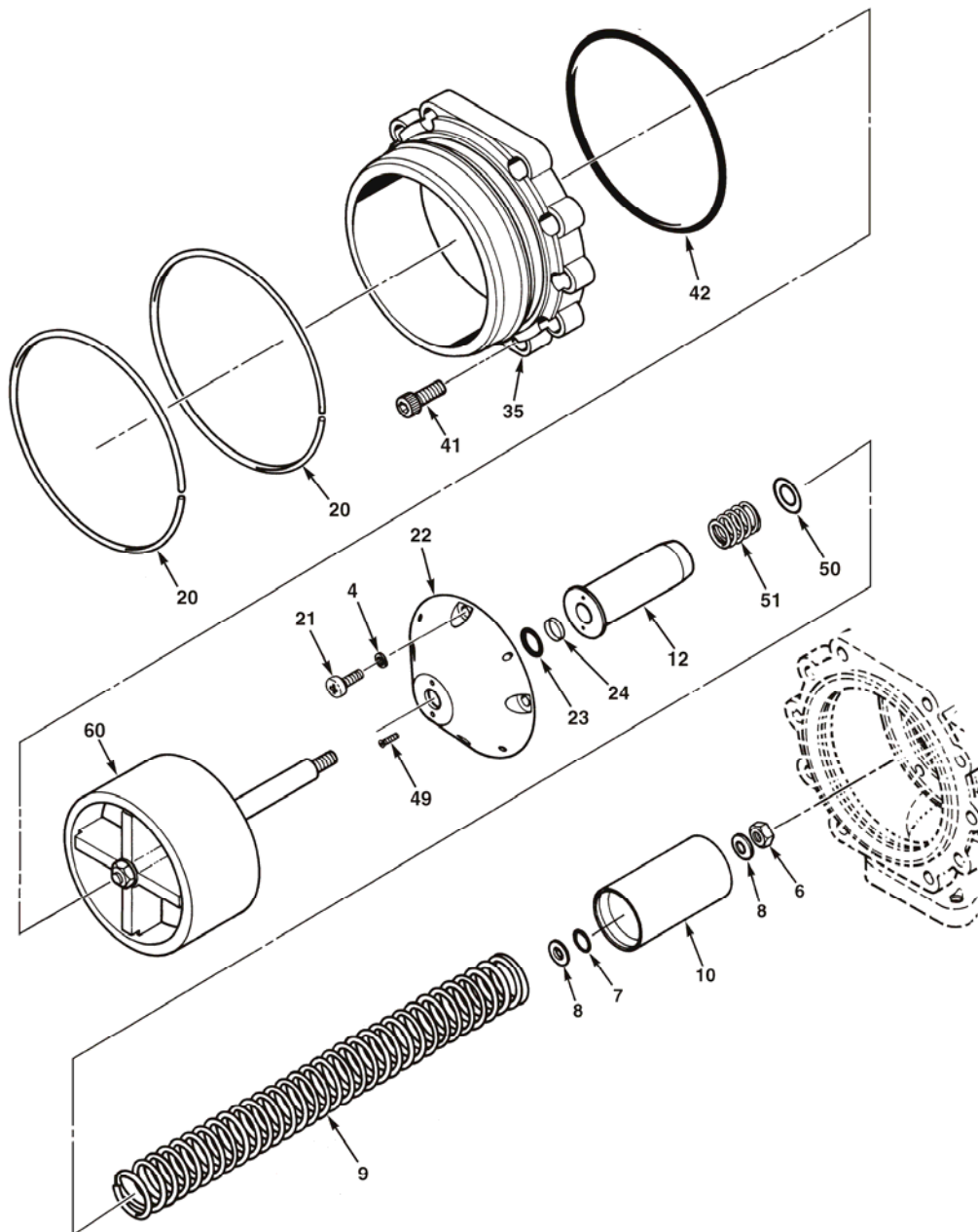
C. Abbreviations

ASSY	Assembly
FIG.	Figure
GPM	Gallons Per Minute
IPL	Illustrated Parts List
LPM	Liters Per Minute
MOD	Modification

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IPL Figure 1. Pressure Control Elbow (Sheet 1 of 4)

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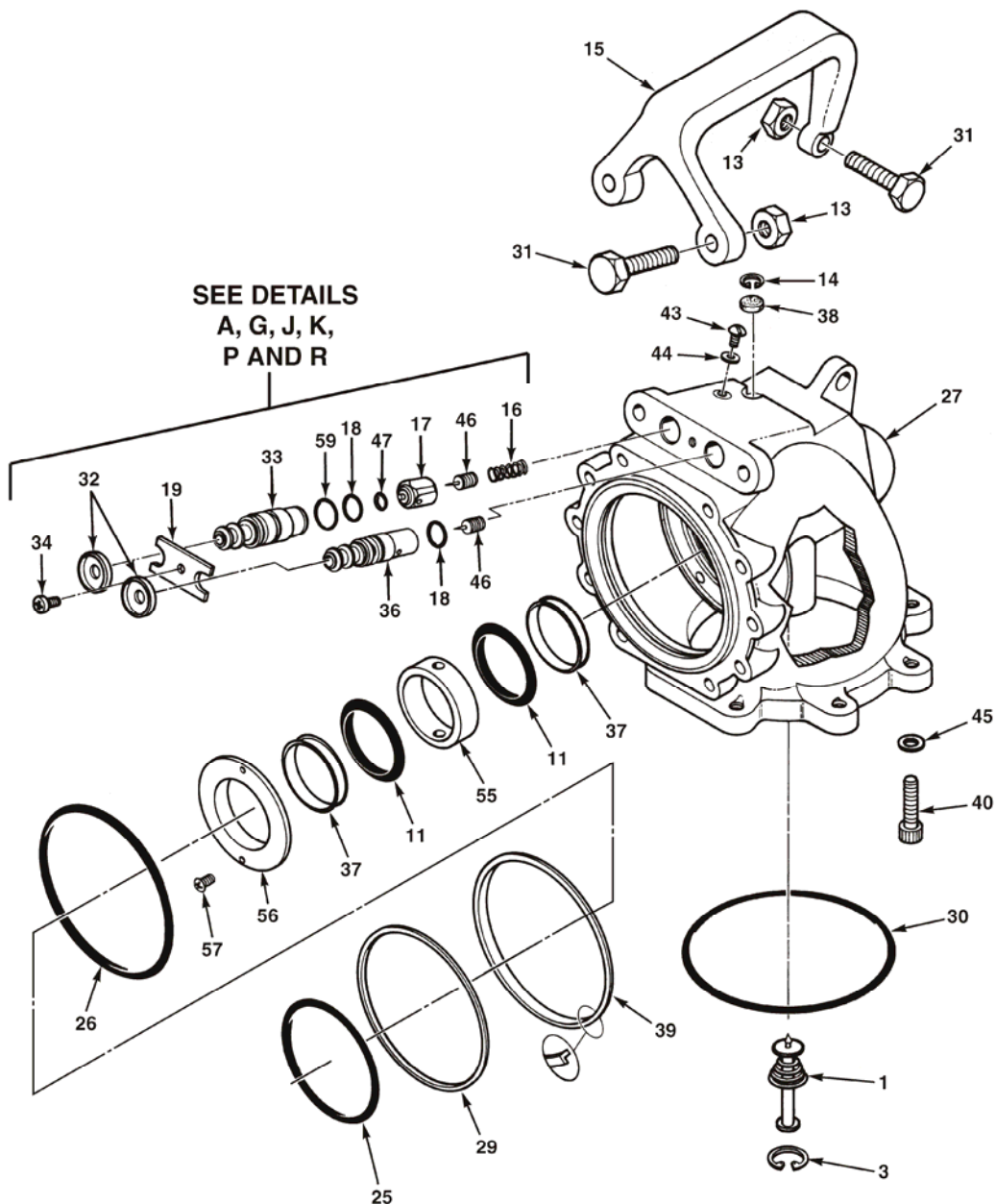
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IPL Figure 1. Pressure Control Elbow (Sheet 2)

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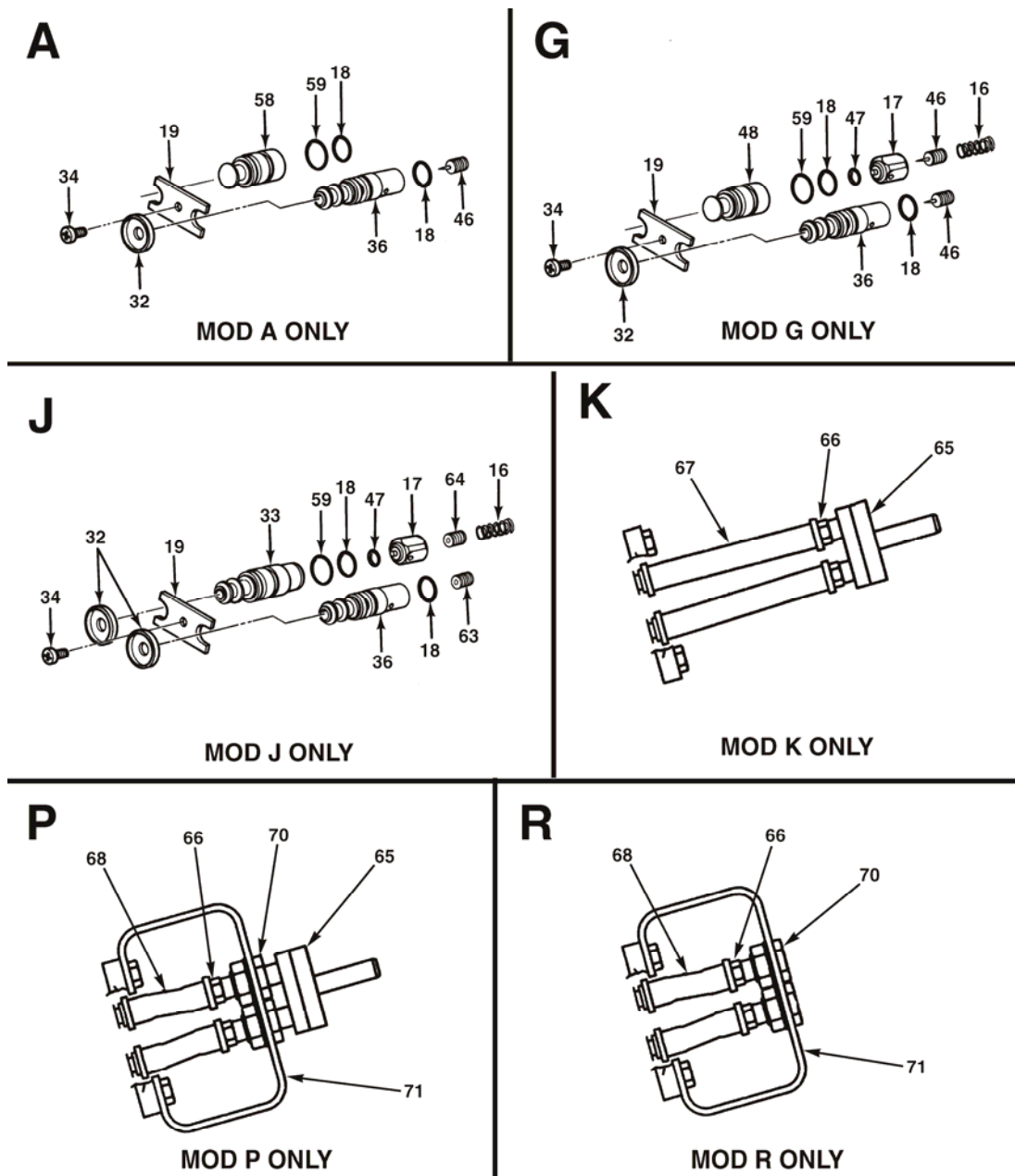
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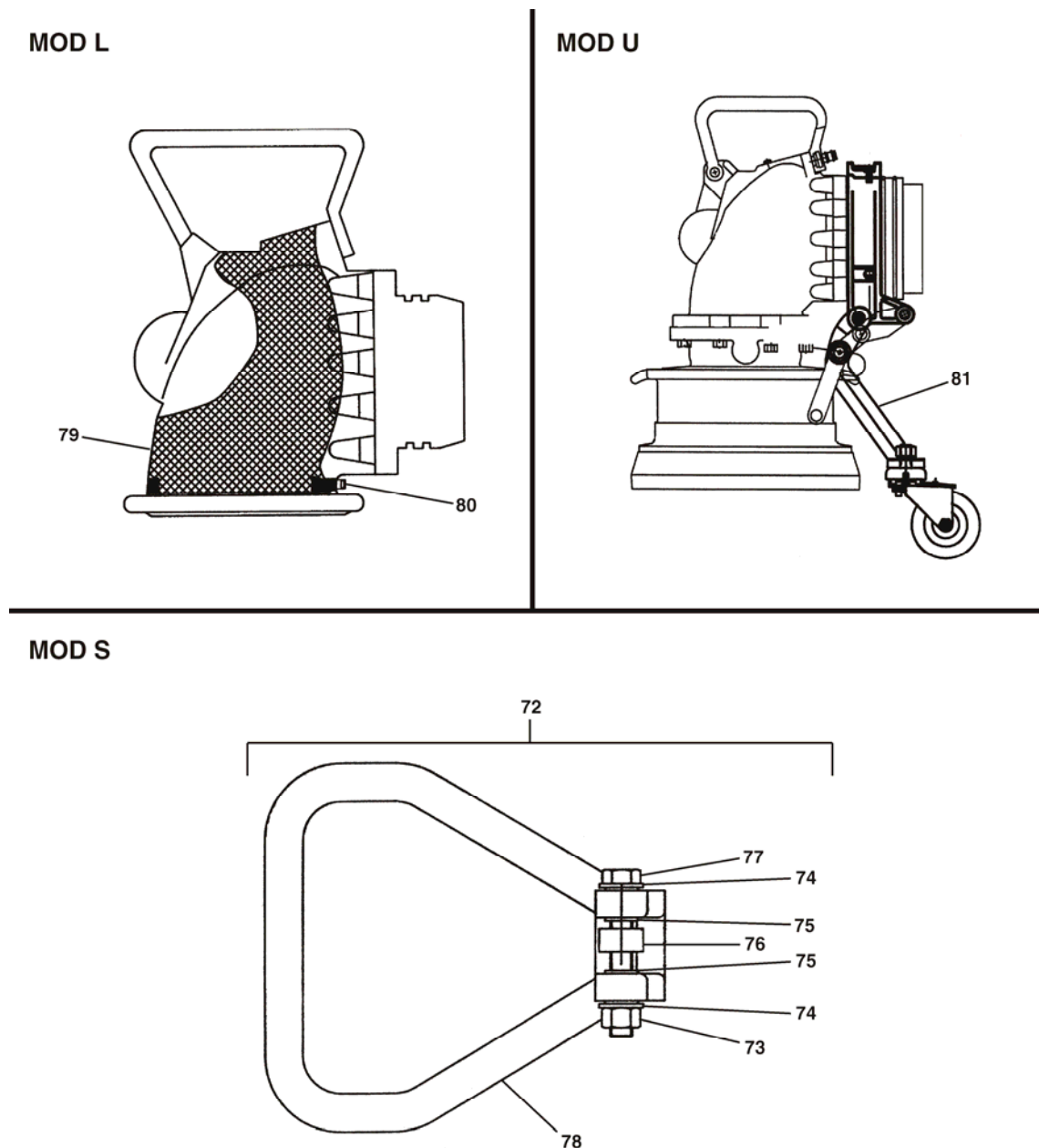


IPL Figure 1. Pressure Control Elbow (Sheet 3)

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IPL Figure 1. Pressure Control Elbow (Sheet 4)

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FIG. ITEM	PART NUMBER	DESCRIPTION	MOD CODES	UNITS PER ASSY
PRESSURE CONTROL ELBOW, F239 SERIES				
1	2860005	PRESSURE CONTROL ELBOW		RF
1	2880002-101	. POPPET, PRESSURE RELIEF VALVE.....		1
3	N5000-81	. RING, RETAINING		1
4	CMS35338-138	. WASHER, LOCK.....		4
6	2706540SCB28	. NUT, PLAIN HEX		1
7	2661058A011	. PACKING, PREFORMED		1
8	2763531-101	. WASHER, FLAT		2
9	2763525-101	. SPRING, COMPRESSION.....		1
10	2763519-101	. PISTON		1
11	2661058BD326	. PACKING, PREFORMED (Quantity 1 on MOD A)		2
12	2763521-101	. BUSHING		1
13	2706540SCC210	. NUT, PLAIN HEX		3
		(NOT USED ON MOD S)		
14	N5000-50	. RING, RETAINING		2
15	2763518-101	. HANDLE, LIFTING		1
		(NOT USED ON MOD S)		
16	LC022D6SS	. SPRING, COMPRESSION.....		1
17	2763527-101	. POPPET		1
18	2661058BD013	. PACKING, PREFORMED		2
19	2763530-101	. RETAINER		1
20	2763537-101	. RING, BEARING		2
21	2706510S05016	. SCREW, MACHINE		4
22	2763586-101	. CAP		1
23	2661058BD112	. PACKING, PREFORMED		1
24	S30650-112	. SEAL		1
25	2661058BD149	. PACKING, PREFORMED		1
26	2661058BD156	. PACKING, PREFORMED		1

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FIG. ITEM	PART NUMBER	DESCRIPTION	MOD CODES	UNITS PER ASSY
1 27	2763514-101	. BODY, ELBOW	T	1
	2763514-102	. BODY, ELBOW		1
29	2773323-103	. SEAT		1
30	2661058BD157	. PACKING, PREFORMED		1
31	2706500DC10040	. SCREW, MACHINE		3
		(NOT USED ON MOD S)		
32	2763532-101	. COLLAR (QUANTITY 1 ON MODS A AND G)		2
33	2861023-101	. FITTING, HOSE (FUEL)		1
		(NOT USED ON MOD G)		
34	2706510DC05010	. SCREW, MACHINE		1
35	2861011-101	. ADAPTER, SWIVEL		1
36	2804082-101	. FITTING, HOSE (AIR)		1
37	S30650-326	. SEAL (QUANTITY 1 ON MOD A)		2
38	2706152-101	. FILTER		1
39	2763613-101	. SEAL		1
40	2706525C08030	. SCREW, MACHINE		8
	2706525S08030	. SCREW, MACHINE	B	8
	2706500DA08020	. SCREW, MACHINE	H	8
41	2706525C08020	. SCREW, MACHINE		10
	2706525S08020	. SCREW, MACHINE	B	10
42	2661058A158	. PACKING, PREFORMED		1
43	2706510CC04006	. SCREW, MACHINE		1
44	2706580-105	. WASHER, FLAT		1
45	CAN960-516	. WASHER, FLAT		8
	CAN960C516	. WASHER, FLAT	B	8
46	2783486-101	. SCREW, NEEDLE VALVE (Adjustment)		2
		(Quantity 1 on Mod A)		
		(NOT USED ON MODS J OR V)		
47	2661058BD010	. PACKING, PREFORMED		1

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FIG. ITEM	PART NUMBER	DESCRIPTION	MOD CODES							UNITS PER ASSY
			1	2	3	4	5	6	7	
1 48	2861025-101	. PLUG, SENSE							G	1
49	2706520EC2-5012	. SCREW, MACHINE								2
50	CAN960C816L	. WASHER, FLAT								1
51	2793126-101	. SPRING, COMPRESSION.....								1
54	2803177-101	. PIN.....								1
54	2803177-101	. PIN.....								1
55	2813019-101	. SPACER								1
		(NOT USED ON MOD A)								
56	2813018-101	. RETAINER								1
	2813018-102	. RETAINER							A	1
57	CMS51957-28	. SCREW, MACHINE								2
58	2861024-101	. PLUG, SENSE							A	1
59	2661058BD014	. PACKING, PREFORMED								1
60	2870001-101	. POPPET								1
63	981040-102	. ORIFICE							J	1
		(NOT USED ON MOD V)								
64	981040-105	. ORIFICE							J	1
		(NOT USED ON MOD A, J)								
65	F554	. PLUG, AIR/FUEL SENSE							K, P	1
66	30182-4-6	. CONNECTOR, HOSE BARB							K	2
	30182-4-6B	. CONNECTOR, HOSE BARB							P	1
	30182-4-6B	. CONNECTOR, HOSE BARB							R	2
67	421-6	. HOSE (4.8 IN. LONG)							K	2
68	831-6	. HOSE (2.3 IN. LONG)							P, R	2
69	215PN	. NIPPLE, CLOSE							P, R	2
70	4207ACBHS4	. FITTING, BULKHEAD							P, R	2
71	951064-101	. BRACKET.....							P, R	1
72	950001-101	. HANDLE ASSEMBLY, FOLDING							S	1
73	CMS51472-38	. NUT, PLAIN HEX							S	1

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FIG. ITEM	PART NUMBER	DESCRIPTION	MOD CODES	UNITS PER ASSY
1 74	CAN960-616	. . WASHER, FLAT	S	2
75	951007-101	. . BUSHING	S	2
76	951066-101	. . BUSHING	S	1
77	CMS90725-68	. . BOLT, MACHINE	S	1
78	951008-101	. . HANDLE, FOLDING	S	1
	951006-101	. . HANDLE, FOLDING (ALTERNATE)	S	1
79	900002-101	. SKID BLANKET	L	1
80	PRT6EH	. . STRAP, TIE (PANDUIT)	L	1
81	CCMY8560-1	. TROLLEY ASSEMBLY	U	1
		(Shipped Separately, Unassembled)		

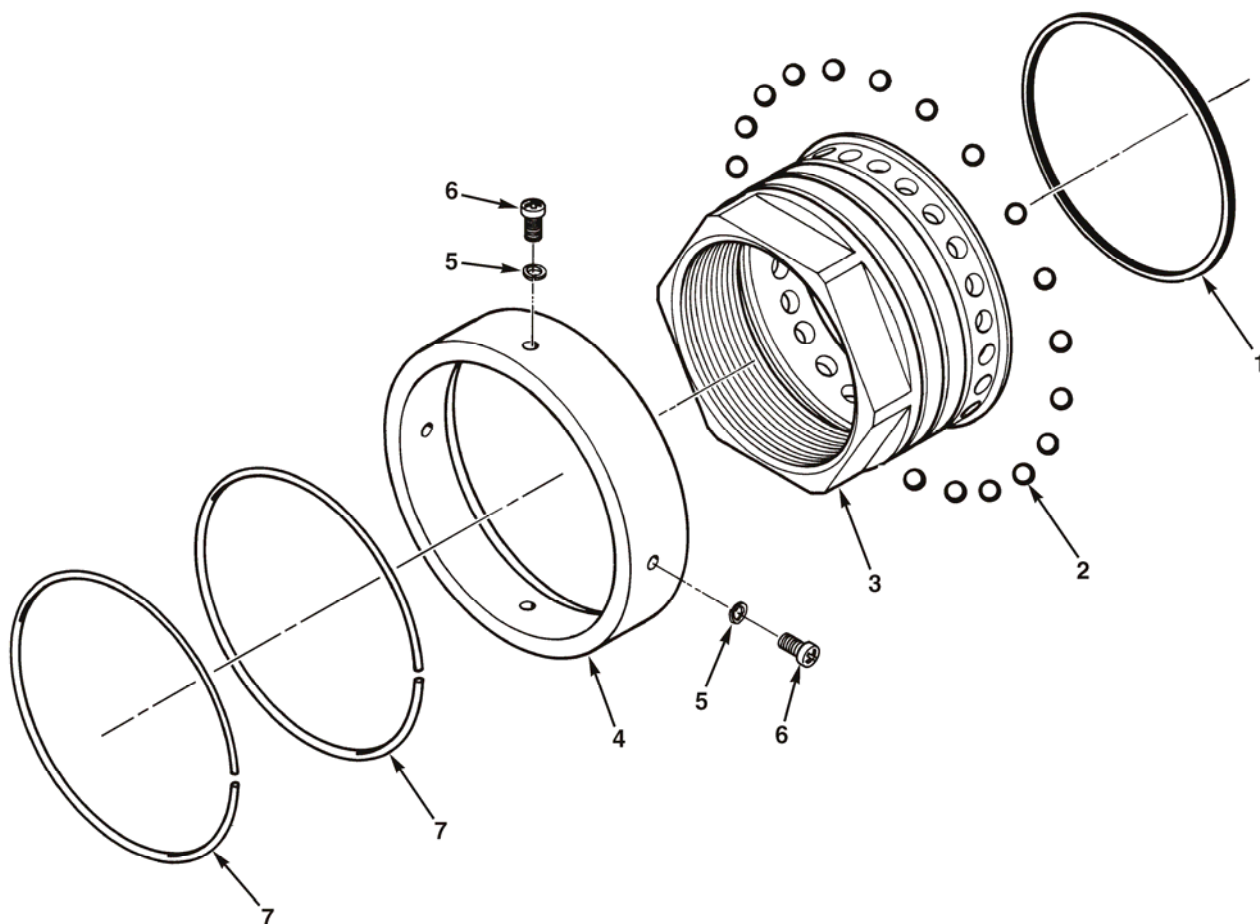
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ELBOW OVERHAUL PARTS KITS AVAILABLE	
KIT PART NUMBER	ITEMS IN KIT
KITF239-101	IPL Figure 1 : Items 2, 7, 11, 18, 23, 24, 25, 26, 29, 30, 37, 39, 42, 47, 49 and 59. IPL Figure 2 : Item 1.

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IPL Figure 2. Swivel Assembly

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FIG. ITEM	PART NUMBER	DESCRIPTION	MOD CODES	UNITS PER ASSY
SWIVEL ASSEMBLY, F239 SERIES				
2	F597	. SWIVEL ASSEMBLY		RF
1	Q4248-366Y	. SEAL		1
2	2706786-26	. BALL, BEARING.....		24
3	2861015-101	. BODY, COUPLER (4 IN. FEMALE NPT)		1
	2861015-102	. BODY, COUPLER (4 IN. FEMALE BSPPL).....	B	1
	2861015-103	. BODY, COUPLER (3 IN. FEMALE NPT)	C	1
	2861015-104	. BODY, COUPLER (3 IN. FEMALE BSPPL).....	D	1
	2861015-105	. BODY, COUPLER (2.5 IN. FEMALE NPT)	M	1
	2861015-106	. BODY, COUPLER (2.5 IN. FEMALE BSPPL).....	N	1
4	2803018-101	. RING, LOCK.....		1
5	CAN935-10L	. WASHER, LOCK.....		4
6	2706511CC05012	. SCREW, MACHINE		4
7	2763539-101	. RING, SAFETY.....		2

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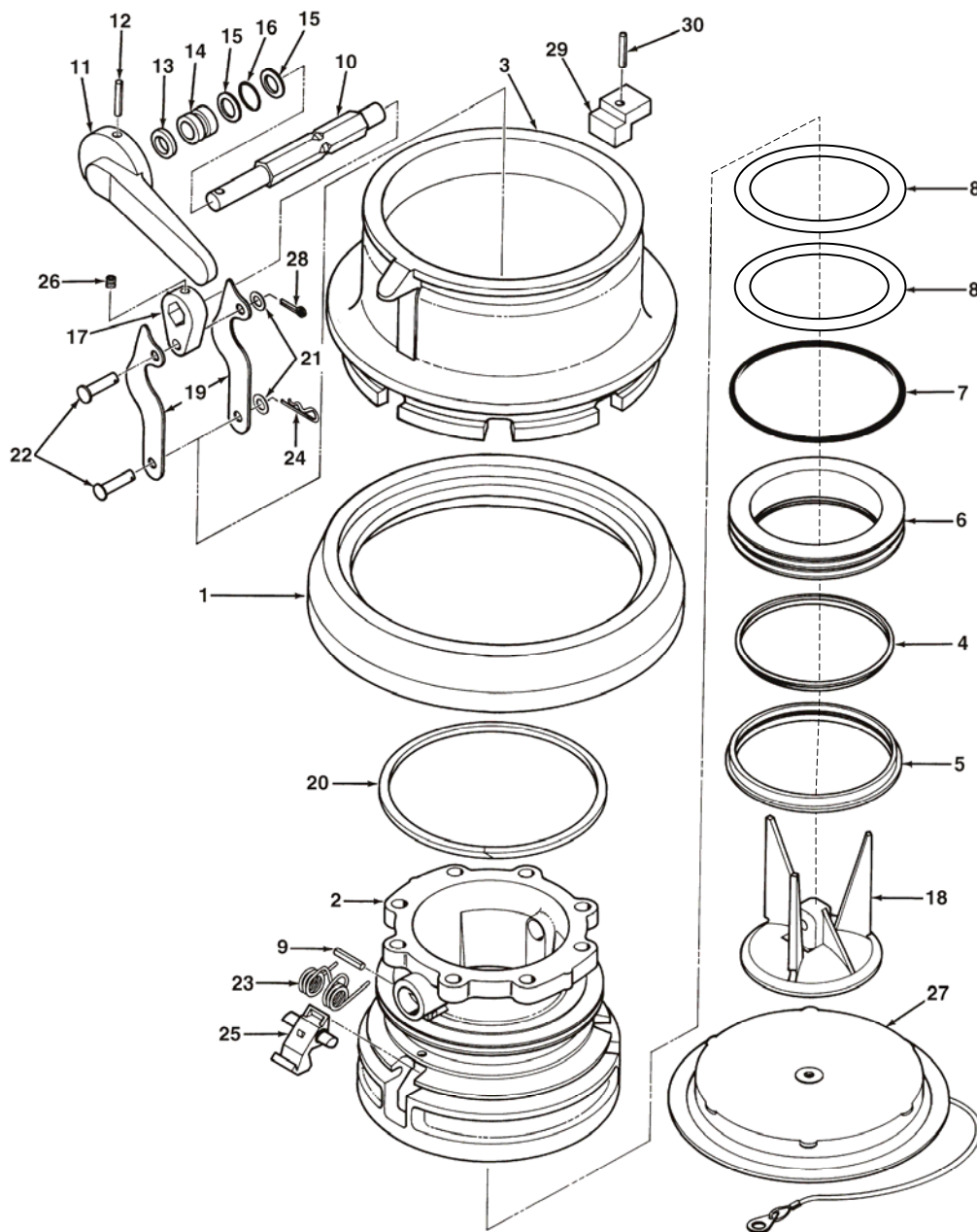
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IPL Figure 3. Coupler

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FIG. ITEM	PART NUMBER	DESCRIPTION	MOD CODES	UNITS PER ASSY
COUPLER, F239 SERIES				
3	F248	. HYDRANT COUPLER.....		RF
	F250	. HYDRANT COUPLER..... (See Maintenance Manual MMF250)	H	RF
	F251	. HYDRANT COUPLER..... (See Maintenance Manual MMF251)	Y	RF
1	2763486-101	. GUARD.....		1
2	2763479-101	. BODY, COUPLER.....		1
3	2763481-101	. SHROUD.....		1
4	2672292-1	. SEAL.....		1
5	2672293	. RETAINER.....		1
6	2763489-101	. SLEEVE.....		1
7	2661058BD350	. PACKING, PREFORMED.....		1
8	W4997-050	. WASHER, WAVE.....		2
9	CMS171594	. PIN, SPRING.....		1
10	2763496-101	. SHAFT, HANDLE.....		1
11	2763484-101	. HANDLE, OPERATING.....		1
12	CMS171660	. PIN, SPRING.....		1
13	2763494-101	. WIPER, FELT.....		1
14	2763492-101	. BUSHING.....		1
15	2763493-101	. WASHER, FLAT.....		2
16	2661058A207	. PACKING, PREFORMED.....		1
17	2733269-2	. CRANK.....		1
18	2763483-102	. POPPET.....		1
19	2763497-103	. LINK.....		2
20	CMS28932C20-8	. WIPER.....		1
21	CAN960-516L	. WASHER, FLAT.....		2
22	CMS20392-4C33	. PIN, CLEVIS.....		2

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FIG. ITEM	PART NUMBER	DESCRIPTION	MOD CODES	UNITS PER ASSY
3 23	941016-101	. SPRING, TORSION		3
24	98335A054	. PIN.....		1
25	2763487-101	. LUG, LOCKING		3
26	LP565A428H4	. SETSCREW		1
27	2672300	. COVER, DUST		1
28	CMS25665-300	. PIN, COTTER.....		1
29	2823499-102	. STOP.....		1
30	CMS171656	. PIN, SPRING.....		1

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COUPLER PARTS KITS AVAILABLE		
KIT PART NUMBER	DESCRIPTION	ITEMS IN KIT (IPL Figure 3)
KITF230-101	Seals	4, 6, 7 and 16
KITF230-103	Overhaul	1, 4, 5, 6, 7, 9, 12, 13, 14, 16, 20, 23 and 27

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