CONBRACO FACTORY REPAIR INFORMATION

The following pages are excerpts from literature the manufacturers print to help repair their assemblies. This information is provided to assist in repairing their assemblies but should not be considered all the information needed to repair all situations.

MODELS FOR WHICH FACTORY REPAIR INFORMATION IS PROVIDED

40-100 Series	pg 5-141	4S-100/DC Series	pg 5-146
40-200 Series	pg 5-142	4S-200/RP Series	pg 5-147
40-500 Series	pg 5-144	4S-600/DCDA Serier	pg 5-147
40-600 Series	pg 5-141	4V-500/PVB Series	pg 5-145
40-700 Series	pg 5-143	4A100/DC4A Series	pg 5-150
4D-100 Series	pg 5-148	4A-200/RP4A Series	pg 5-151
4D-200 Series	pg 5-148	4A-500/PVB4A Series	pg 5-154
4D-600 Series	pg 5-148	4A-600/DCDA4A Series	pg 5-150
4D-700 Series	pg 5-148	4A-700/RPDA4A Series	pg 5-152
		4A-900/SVB Series	pg 5-155

PAGES 5-93 THROUGH 5-139 HAVE INTENTIONALLY BEEN OMITTED

IV MAINTENANCE INSTRUCTIONS

A. Disassembly — Check Valves

1. Close #2 shut-off valve, then close #1 shut-off valve.
2. Bleed pressure from the assembly by opening #2, #3, and #4 test cock.

CAUTION:

Caps are spring loaded and should be removed carefully to avoid personal injury.

3. Unscrew cap using hex head provided.
4. Remove spring and poppet assembly from the body.

B. Disassembly — Check Valve Poppet

CAUTION:

Do not use pliers or other tools which may damage or scratch the plastic stem.

1. Holding the poppet assembly in one hand, remove screw and retaining washer.
2. Remove the seat disc.
3. All parts should be carefully inspected for any damage or excessive wear and thoroughly rinsed in clean water prior to reassembly. Replace worn parts as necessary.

C. Assembly — Check Valve Poppet

1. Install new disc in poppet, secure disc with retaining washer and screw.

NOTE:

Due to symmetry of the disc, the old disc may be turned over to obtain an effective seal.

D. Assembly — Check Valve

1. Install the poppet assembly into the body.
2. Install the spring onto the poppet.
3. Apply a thin coat of silicone based lubricant on cap o-ring.
4. Guide cap over spring and poppet stem and tighten cap.

SERIES 40-100
SERIES 40-600

IV Maintenance Instructions

Sizes 2-1/2″ —10″

A. Disassembly — Check Valves

1. Close #2 shut-off valve, then close #1 shut-off valve.
2. Bleed pressure from the assembly by opening #2, #3, and #4 test cock.
3. Remove cover bolts and cover.

NOTE:

The spring load on the cover will be removed when the cover bolts are backed off approximately 3/8″

4. Remove the complete check assembly straight out of the valve body being careful not to damage the seat ring.
5. The check valve seat is threaded into the body and may be removed at this time if necessary (The seat is bolted into the body on the 10″ unit).
6. To remove the seat disc, remove the retaining plate nut (On the 8″ & 10″ units remove the retaining plate bolts) and retaining plate, remove disc.

WARNING:

The check valve spring is held in compression by the stem nut on top. This nut should not be removed unless the spring requires replacement.

B. Assembly — Check Valves

1. Install seat disc in holder and secure with retaining plate and retaining nut or bolts as applicable.

NOTE:

Due to the symmetry of the disc, the old disc may be turned over to obtain an effective seal.

2. Install the check valve assembly into the body.
3. Install the check valve cover and tighten bolts evenly.

IV MAINTENANCE INSTRUCTIONS

A. Disassembly — Check Valves

1. Close #2 shut off valve, then close #1 shut off valve.
2. Bleed pressure from the assembly by opening #2, #3, and #4 test cock.

CAUTION:

Caps are spring loaded and should be removed carefully to avoid personal injury.

3. Unscrew cap using hex head provided.
4. Remove spring and poppet assembly from the body.

B. Disassembly — Check Valve Poppet

CAUTION:

Do not use pliers or other tools which may damage or scratch the plastic stem.

1. Holding the poppet assembly in one hand, remove screw and retaining washer.
2. Remove the seat disc.
3. All parts should be carefully inspected for any damage or excessive wear and thoroughly rinsed in clean water prior to reassembly. Replace worn parts as necessary.

C. Assembly — Check Valve Poppet

1. Install new disc in poppet, secure disc with retaining washer and screw.

NOTE:

Due to symmetry of the disc, the old disc may be turned over to obtain an effective seal.

D. Assembly — Check Valve

1. Install the poppet assembly into the body.
2. Install the spring (heavy spring, larger diameter wire, goes into #1 check valve) onto the poppet.
3. Apply a thin coat of silicone based lubricant on cap o-ring.
4. Guide cap over spring and poppet stem and tighten cap.

E. Relief Valve Disassembly

1. Remove cover bolts, cover and diaphragm.
2. Grasp the diaphragm plate and pull the assembly straight out of the body.
3. Holding the relief valve assembly in one hand, remove the screw and retaining washer.
4. Remove the seat disc.
5. Turn the assembly over, keeping the spring compressed by holding down on the diaphragm plate, remove the screw.
6. Remove the diaphragm plate, spring and bushing from the mainstem.
7. Remove the o-ring from the mainstem.
8. All parts should be carefully inspected for any damage or excessive wear and thoroughly rinsed in clean water prior to reassembly. Replace worn parts as necessary.

F. Assembly — Relief Valve

1. Apply a thin coat of silicone base lubricant on o-rings before installing.
2. Install o-ring onto mainstem.
3. Slide bushing over mainstem and position spring onto bushing.
4. Position diaphragm plate and compress spring, install screw into mainstem.
5. Turn the assembly over and install seat disc, retaining washer and screw.
6. Install o-ring onto bushing.
7. Slide complete assembly into the body.
8. Position diaphragm over flange, install cover and tighten bolts evenly.
9. Open #1 shut-off valve & bleed air out of the unit through #2, #3 and #4 test cocks; then open #2 shut- off valve.
10. Test complete assembly to ensure proper operation.

SERIES 40-200 SERIES 40-700

2½" - 10"

IV MAINTENANCE INSTRUCTIONS

A. Disassembly — Check Valves

1. Close #2 shut-off valve, then close #1 shut-off valve.
2. Bleed pressure from the assembly by opening #2, #3, and #4 test cock.
3. Remove cover bolts and cover.

NOTE:

The spring load on the cover will be removed when the cover bolts are backed off approximately ⅜".

4. Remove the complete check assembly straight out of the valve body being careful not to damage the seat ring.
5. The check valve seat is threaded into the body and may be removed at this time if necessary (The seat is bolted into the body on the 10" unit).
6. To remove the seat disc, remove the retaining plate nut (On the 8" & 10" units remove the retaining plate bolts) and retaining plate, remove disc.

WARNING

The check valve spring is held in compression by the stem nut on top. This nut should not be removed unless the spring requires replacement.

B. Assembly — Check Valves

1. Install seat disc in holder and secure with retaining plate and retaining nut or bolts as applicable.

NOTE

Due to the symmetry of the disc, the old disc may be turned over to obtain an effective seal.

2. Install the check valve assembly into the body (assemble with the larger diameter spring into the first check valve).
3. Install the check valve cover and tighten bolts evenly.

C. Disassembly — Relief Valve

1. Remove cover bolts, cover and diaphragm.

NOTE

On the 8" & 10" units the diaphragm is an integral part of the relief valve assembly.

2. Grasp the diaphragm plate and pull the assembly straight out of the body.
3. Holding the relief valve assembly in one hand, remove the screw and retaining washer.
4. Remove the seat disc.
5. Turn the assembly over, keeping the spring compressed holding down on the diaphragm plate, remove the screw/bolt.
6. Remove the diaphragm plate(s), spring and bushing from the mainstem.
7. Remove the o-ring from the mainstem.
8. All parts should be carefully inspected for any damage or excessive wear and thoroughly rinsed in clean water prior to reassembly. Replace worn parts as necessary.

C. Assembly — Relief Valve

1. Apply a thin coat of silicone based lubricant on o-rings before installation.
2. Install o-ring onto mainstem.
3. Slide bushing over mainstem and position spring onto bushing.
4. Position diaphragm plate(s) and compress spring, install screw/bolt into mainstem.
5. Turn the assembly over and install seat disc, retaining washer and screw.
6. Install o-ring onto bushing.
7. Slide complete assembly into the body.
8. Position diaphragm over flange, install cover and tighten bolts evenly.
9. Open #1 shut-off valve and bleed air out of the unit through #2, #3, and #4 test cocks; then #2 shut-off valve.
10. Test complete assembly to ensure proper operation.

CONBRACO

SERIES 40-500

½"–2"

Pressure Type Vacuum Breaker

MAINTENANCE

A. DISASSEMBLY

1. Close No. 2 shut-off valve, then close No. 1 shut-off valve.
2. Bleed pressure from device by opening test cocks #1 and #2.
3. Remove the air inlet canopy.
4. Unscrew and remove the cap and float being careful not to damage sealing edge on underside of cap. Inspect float seat for damage or fouling debris.
   NOTE: Float guide stem is held in cap with high strength thread adhesive–do not remove unless necessary and a replacement stem is available.
5. Remove check spring retainer by pressing down and rotating to clear tabs on body.
6. Remove spring and check assembly. Inspect seat edge in body for damage or fouling debris.
7. Inspect seat disc for damage or fouling debris. If disassembly is necessary be careful not to bend the guide legs.

B. ASSEMBLY

1. Rinse all parts in clean water prior to assembly.
2. Reassemble check assembly if necessary. NOTE: Tighten seat retaining screw until just snug–overtightening may bend the guide legs and cause the check to drag in the body.
3. Carefully place the check assembly in the body with the guide legs inside the inlet bore. Check for free movement of the assembly.
4. Place large end of spring down into check assembly.
5. Place spring retainer with center boss facing spring into body. Press down and rotate retainer to line up ears with tabs in body and lock into position.
6. Place float seat disc into groove of float.
7. NOTE: If guide stem was removed the thread engagement of the new stem must be gaged. Screw the stem into the cap until a gap of approximately 3/32" between the float disc and the cap is achieved when the float rests against the spring washer.
8. Apply a thin coat of silicone based lubricant to the cap o-ring.
9. Place float inside body and lower cap carefully into body being sure guide stem is inserted into center of float and tighten cap.
10. Test device to ensure proper operation.
11. Apply thread adhesive to center hole in top of cap.
12. Install inlet canopy.

4V-500 Maintenance Instructions

(1/2" – 1 1/2" models)

A. DISASSEMBLY

1. Close #2 shut-off valve, then close #1 shut-off valve.
2. Bleed pressure from device by opening test cocks #1 and #2.
3. Remove the air inlet canopy.
4. Unscrew and remove the cap and float assembly. DO NOT USE CANOPY TO UNSCREW CAP! DAMAGE TO THE CAP MAY OCCUR. Inspect float and freeze plug seats for damage or fouling debris.
5. If fouling of check valve is suspected, unscrew check from valve body (or from check retainer on 1¼" and 1½" models), remove fouling debris, and reinstall.

B. ASSEMBLY

1. Apply a thin coat of silicone-based lubricant to the check valve o-ring. Press check valve assembly into body (or into check retainer on 1¼" and 1½" models) until it snaps into place.
2. Apply a thin coat of silicone- based lubricant to the cap o-ring. Screw cap and float assembly onto PVB body.
3. Test device to insure proper operation.
4. Install air inlet canopy.

MAINTENANCE (2" model)

A. DISASSEMBLY

1. Close #2 shut-off valve, then close #1 shut-off valve.
2. Bleed pressure from device by opening test cocks #1 and #2.
3. Remove the air inlet canopy.
4. Unscrew and remove the cap and float assembly. DO NOT USE CANOPY TO UNSCREW CAP!

   DAMAGE TO THE CAP MAY OCCUR. Inspect float and freeze plug seats for damage or fouling debris.
5. If fouling of check valve is suspected, unscrew disc-retaining guide from valve body, remove spring, and check valve assembly. Inspect seat disc for damage or fouling debris. Seat disc may be turned over for a temporary repair, but should be replaced if damaged. If check valve is not repairable, replace with repair kit. See parts list for repair kit part numbers.

B. ASSEMBLY

1. Install check valve into replaceable seat.
2. Replace spring and screw disc retaining guide into body (stem must point downward toward check valve).
3. Apply a thin coat of silicone-based lubricant to the cap o-ring. Screw cap and float assembly onto PVB body.
4. Test device to insure proper operation.
5. Install air inlet canopy.

4S-100/DC & 4S-600/DCDA Maintenance Instructions

½"

Disassembly:

1. Close by-pass inlet and outlet shut-off valves (Figure 5).
2. Bleed pressure from the by-pass assembly by opening test cock No. 2,3, and 4.
3. Unscrew and remove bronze cap.
4. Remove stainless steel spacer using lifting tab.
5. Remove first check module by pulling outward with fingers (A small screwdriver may aid removal). Be sure test cock No.2 is open so as to prevent hydraulic lock. Generally, the first check o-ring will remain in the bore.
6. Remove second check assembly by sliding the assembly out of its bore (A small flat screwdriver placed in the groove provided will aid removal). Be sure test cock No.4 is open so as to prevent hydraulic lock.

Inspection:

1. All parts should be carefully inspected for any damage or excessive wear and thoroughly rinsed in clean water prior to reassembly.
2. Replace all worn parts as necessary.

NOTE:

Check valve modules are not user serviceable. In the event of check failure, replacement modules are sold individually.

Assembly:

1. Replace check modules, second check first then first check. Make sure first check o-ring is installed. (Tip: Push o-ring to the bottom of the bore before installing check module.) Press check module into bore. A thin coat of synthetic based lubricant on o-ring will aid insertion.
2. Replace stainless steel spacer.
3. Apply a thin coat of synthetic based lubricant on cap o-ring. Replace cap.

2 ½-6"

A. Disassembly – Check Valves

1. Close #2 shut-off valve, then close #1 shut-off valve.
2. Bleed pressure from the assembly by opening #2, #3, and #4 test cocks.
3. Unscrew black plastic cap. Remove cover bolts, cover and gasket. Pry check assembly toward outlet to loosen check from its o-ring bore.
4. Remove complete check assembly from body.
5. Unscrew and remove spring assembly from seat housing by placing a wrench on the flats provided. DO NOT REMOVE THE SOCKET HEAD BOLT. Tension will be released from the check at this point.

WARNING:

The check valve spring is held in compression by the retainer bolt. <u>This assembly should not be disassembled</u> as serious injury could occur. The spring assembly is sold as a pre-loaded unit.

6. To remove the seat disc, remove the seat disc retaining screws and the disc retaining plate. Remove seat disc.

B. Inspection

1. All parts should be carefully inspected for any damage or excessive wear and thoroughly rinsed in clean water prior to reassembly. Replace worn parts as necessary.

C. Assembly – Check Valves

1. Install seat disc in seat disc retainer and secure with disc retaining plate and disc retaining screws.

NOTE:

Due to the symmetry of the seat disc, the old disc may be turned over to obtain an effective seal.

2. Install the spring assembly into the seat housing, making sure spring assembly is tight.
3. Install check assembly into body and push tight into place (toward inlet). To aid installation, liberally apply a non-toxic grease to o-ring surface. A pry-bar may be needed to aid in seating check assembly into o-ring bore. The test cock immediately upstream must be open to release the air in the chamber.
4. Replace gasket, cover plate and cover bolts. Tighten bolts evenly. Replace spring cap. Do not overtighten! Cap needs only to be snug.

8-10"

A. Disassembly – Check Valves

1. Close #2 shut-off valve, then close #1 shut-off valve.
2. Bleed pressure from the assembly by opening #2, #3, and #4 test cocks.
3. Remove cover bolts, cover, spring assembly, and gasket. Pry check assembly toward outlet to loosen check from its o-ring bore.
4. Remove check assembly from body.
5. To remove the seat disc, remove the seat disc retaining screws and disc retaining plate. Remove seat disc.

WARNING:

<u>Do not disassemble the spring assembly</u> as serious injury may occur. The spring assembly is sold as a pre-loaded unit.

6. All parts should be carefully inspected for damage or excessive wear and thoroughly rinsed in clean water prior to reassembly. Replace worn parts as necessary.

B. Assembly – Check Valves

1. Install seat disc in seat disc retainer and secure with disc retaining plate and disc retaining screws. Due to the symmetry of the disc, the old disc may be turned over to obtain an effective seal.
2. Install check assembly into body and push tight into place (toward inlet). To aid installation, liberally apply a non-toxic grease to o-ring surface. A pry-bar will be needed to aid in seating check assembly into the o-ring bore. The testcock immediately upstream must be open to release the air in the chamber.
3. Insure that cam positioner is flipped down on swingarm of check assembly. Replace spring assembly, gasket, and cover, making sure to place cam end of spring assembly on both cam rollers of the check assembly. The cover places approximately 1/4" of preload on the spring assembly. Replace cover bolts and tighten.

CONBRACO 4S-200 Series/ RP 2 ½-10"
Maintenance Instructions

IV. CHECK VALVE MAINTENANCE

TO REMOVE FIRST CHECK (2-1/2" – 10"): SEE FIGURES 4 & 6

1. Remove cover bolts, cover, and gasket. Remove spring assembly. CAUTION! DO NOT DISASSEMBLE SPRING ASSEMBLY.
2. Fold up roller/bracket assembly (8" & 10" first check assembly) or positioning bracket (2-1/2" – 6" first check assembly).
3. Pry out check with flat screwdriver or prybar and lift out.

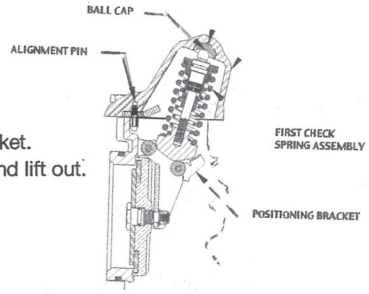
TO REMOVE SECOND CHECK (2-1/2" - 4"): SEE FIGURE 4

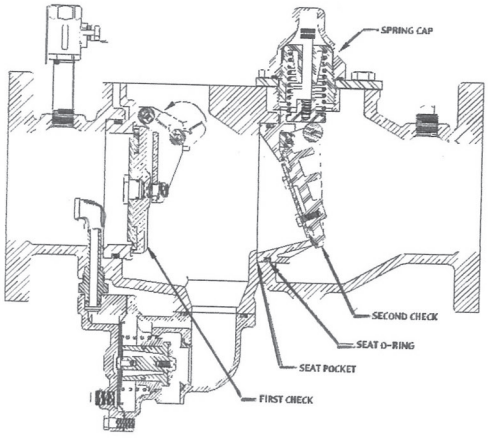
1. Remove spring cap, spring cap O-ring, cover bolts, cover, and gasket.
2. Pry out complete check assembly with flat screwdriver or prybar and lift out. CAUTION! DO NOT DISASSEMBLE SPRING MECHANISM!

TO REMOVE SECOND CHECK (6" - 10"): SEE FIGURE 6

1. Fold up positioning bracket.
2. Pry out check with flat screwdriver or prybar and lift out.

FIG. 5





2-/12" - 4" RP

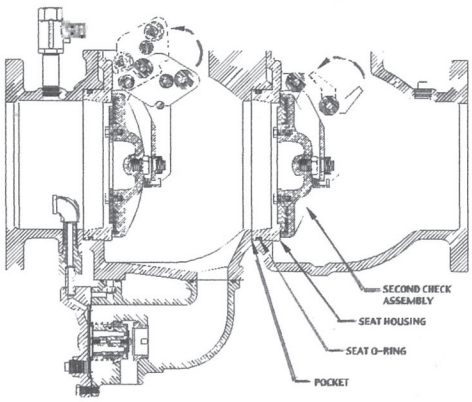
FIG. 4

TO REPAIR CHECKS: SEE FIGURES 7, 8, & 9

1. Remove center bolt (or screws).
2. Inspect seat disc for damage and replace, if necessary. The seat disc may be turned over for a temporary repair, but should be replaced as soon as possible.
3. Reinstall seat disc, disc washer, and center bolt (or screws).

TO INSTALL CHECKS: SEE FIGURES 4 & 6

1. Lubricate seat O-ring with FDA approved lubricant.
2. Slide seat into pocket until O-ring meets pocket edge.
3. Use a prybar to work the seat side to side until the seat bottoms out in pocket. Important! To prevent binding, keep the seat aligned as straight as possible during insertion.
4. FIRST CHECK (2-1/2" – 10") and SECOND CHECK (6" – 10"): Flip roller/bracket assembly or positioning bracket down. Place spring assembly cam on rollers. Reinstall gasket, cover, and tighten bolts. When replacing the cover, place the spring assembly ball cap in the plastic pocket provided in the cover. SEE FIGURE 5. The cover has an alignment pin that must install into the pocket provided in the top of the seat housing.
5. SECOND CHECK (2-1/2" – 4"): Reinstall gasket, cover, and tighten bolts. Lubricate cap O-ring and reinstall spring cap. CAUTION! DO NOT OVER-TIGHTEN CAP!



6" - 10" RP

FIG. 6

V. RELIEF VALVE MAINTENANCE

1. For sizes 2-1/2" – 6": Remove (2) 1/2" screws and remove relief valve body assembly by sliding off sensing tube.

   For sizes 8" & 10": Loosen all four mounting screws of relief valve body assembly. This will allow removal of the relief valve cover plate.
2. Remove cover screws, cover, and diaphragm.
3. Remove relief valve cartridge assembly.
4. Remove diaphragm plate retaining screws, and seat disc retaining screws.
5. Inspect seat disc, diaphragm, and O-rings for damage. Damaged seat disc may be turned over, but should be replaced as soon as possible. Replace damaged O-rings or diaphragm.
6. Lubricate stem and stem O-ring with FDA approved silicone lubricant and reassemble relief valve cartridge.
7. Insert relief valve cartridge into body.
8. Replace diaphragm, cover, and cover screws.
9. Inspect sensing tube O-ring for damage and replace, if necessary. Slide assembled relief valve over sensing tube, and re-attach relief valve body to valve body.

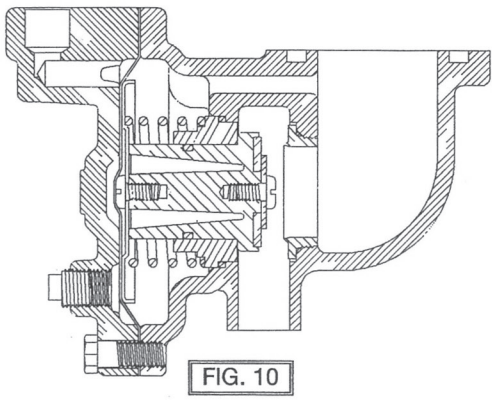


FIG. 10

2-1/2" - 4"
RELIEF VALVE BODY ASSEMBLY

IV. CHECK VALVE MAINTENANCE

If the valve experiences inadequate test readings, often it is a sign of foreign particles or debris collected on the seat disc of one of the check valves. The check assembly must be removed for inspection. Clean or replace the seat disc as necessary. Also inspect the sealing lip on the seat for damage. A deep scratch or knick can affect the check readings.

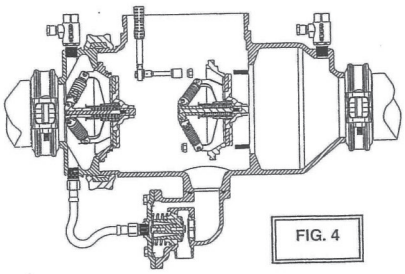


FIG. 4

CHECK ASSEMBLY REMOVAL See Figure 4:

Make sure there is no pressure on the valve by opening the test cock on the lid. Remove the upper groove connection coupling by removing the bolts and nuts.

Slide away the coupling clamps and remove the rubber gasket. Lift off the lid. The valve should be drained of water (the relief valve will open releasing the water in the zone when the source pressure is off).

Either check valve assembly can be removed without disturbing the other. Remove the nuts from the studs that are screwed into the body. The nuts can be removed using standard tools (socket wrench and extension shown).

2.5”-4” sizes: Remove the four (4) lock hex nuts holding each check assembly using ½” hex socket wrench. Lift out the check assembly.

6” size: Remove the six (6) lock hex nuts holding each check assembly using 9/16” hex socket wrench. Lift out the check assembly.

8” & 10” sizes: Remove the six (6) hex nuts holding each check assembly using 3/4” hex socket. Lift out the check assembly.

SEAT DISC INSPECTION OR REPLACEMENT See Figure 5:

To inspect or replace the seat disc remove the long socket head cap screw that holds the spring hub assembly in place. This will release the load from the spring and allow the disc holder to slide away from the front of the assembly.

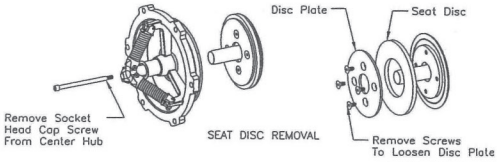


FIG. 5

2.5”-4” sizes: Remove the cap screw with a 3/16” hex drive (Allen wrench). With the disc holder loose, remove the three (3) screws that hold the disc plate with a 5/32” hex drive (Allen wrench). Remove the rubber disc and clean or replace.

6” size: Remove the cap screw with a 5/16” hex drive (Allen wrench). With the disc holder loose, remove the four (4) screws that hold the disc plate with a 7/32” hex drive (Allen wrench). Remove the rubber disc and clean or replace.

8” & 10” sizes: Remove the cap screw with a ½” hex drive (Allen wrench). With the disc holder loose, remove the six (6) screws that hold the disc plate. Use a 7/32” hex drive (Allen wrench). Remove the rubber disc and clean or replace.

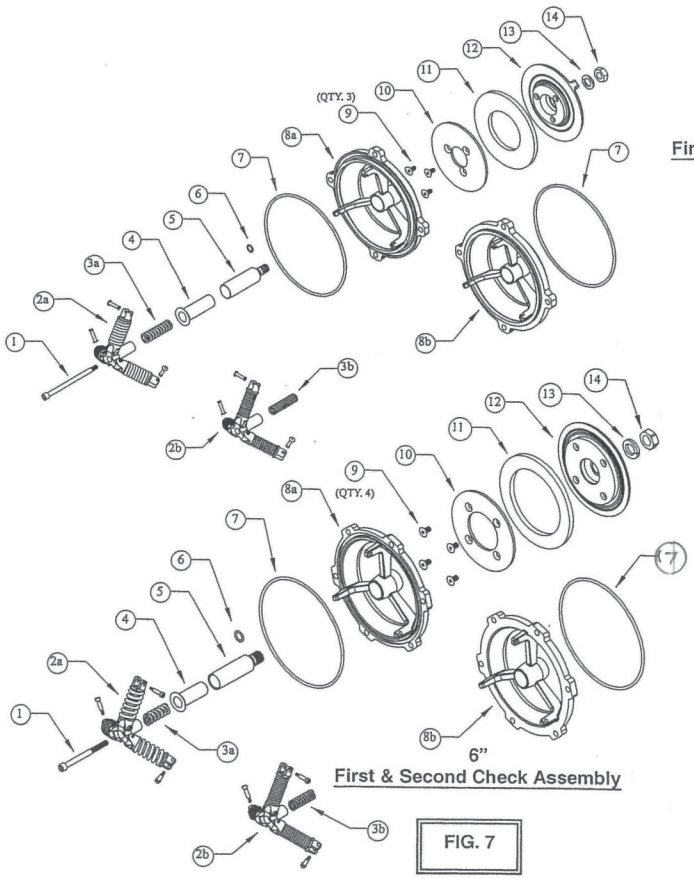
RE-ASSEMBLING THE CHECK ASSEMBLY:

Install the screws firmly. Use of a medium strength thread locking Loctite® is recommended on all threads. Re-install the cap screw that holds the assembly together and applies the spring load. This screw is designed to be screwed in all the way until it runs out of threads.

When re-installing the checks, make certain the o-ring is seated in its groove. Use a non-toxic grease to aid retention of the o-ring in its groove. Tighten the hex nuts to hold the check assembly in place. These should be tightened firmly and evenly for the o-ring to seal.

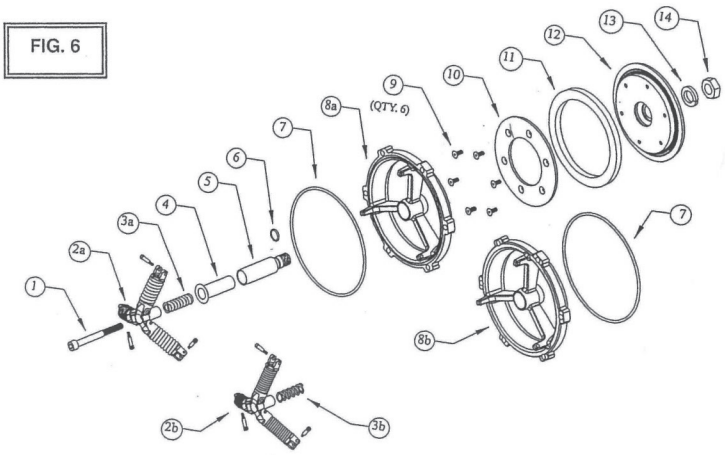
ITEM	DESCRIPTION
1	Screw, Socket Head Cap
2a	Kit, Joint Assembly, RP
2b	Kit, Joint Assembly, DC
3a	Spring, Center, RP
3b	Spring, Center, DC
4	Sleeve, Stem
5	Stem, Check
6	O-Ring (stem)
7	O-Ring (seat)
8a	Seat, First Check, Mach.
8b	Seat, Second Check, Mach.
9	Screw, Flat Head Hex Drive
10	Plate, Disc, Mach.
11	Disc, Seat
12	Retainer, Seal, Mach.
13	Washer
14	Nut, Jam

WARNING: Do not mix springs between first and second checks (item 2a & 2b or item 3a & 3b).



2 ½” – 4”
First & Second Check Assembly

FIG. 6



8” & 10”
First & Second Check Assembly

FIG. 8

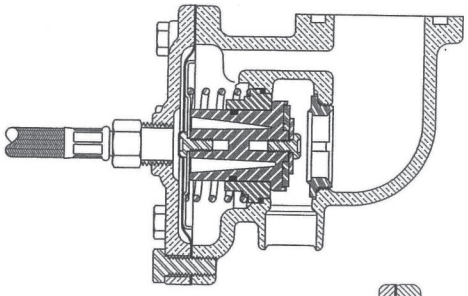
6”
First & Second Check Assembly

FIG. 7

V. RELIEF VALVE MAINTENANCE

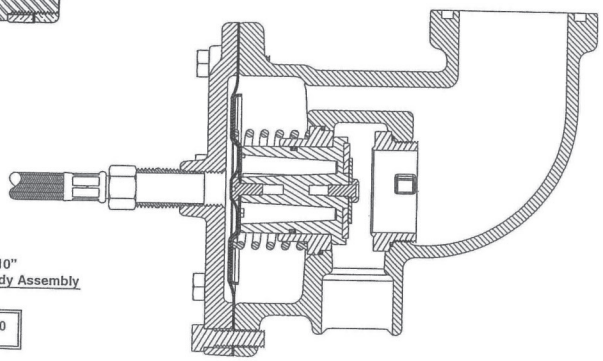
1. For all sizes (2 ½” – 10”): Disconnect the flexible hose from the RV cover by unscrewing the swivel nut. Remove (2) screws and remove relief valve body assembly.
2. Remove cover screws, cover, and diaphragm.
3. Remove relief valve cartridge assembly. The unit pulls straight out.
4. Remove diaphragm plate retaining screws, and seat disc retaining screws.
5. Inspect seat disc, diaphragm, and O-rings for damage. Damaged seat disc may be turned over, but should be replaced as soon as possible. Replace damaged O-rings or diaphragm.
6. Lubricate stem and stem O-ring with FDA approved silicone lubricant and reassemble relief valve cartridge.
7. The RV seat is replaceable, but normally does not need to be removed from the RV body. Inspect the RV seat sealing surface for defects. Replace if necessary with a new o-ring.
8. Insert relief valve cartridge into body.
9. Replace diaphragm, cover, and cover screws.
10. Replace flexible hose.

ITEM	DESCRIPTION
1	Screw, Hex Head Cap Screw
2	Cover, Relief Valve, Mach.
3	Diaphragm, 4D Series
4	Sub-Assembly, Relief Valve, 4D Series
5	O-Ring
6	Seat, Relief Valve
7	O-Ring
8	Screw, Hex Head Cap Screw
9	Body, Relief Valve, Mach.
10	O-Ring
11	Screw, Pan Head Machine Screw
12	Plate, Diaphragm, 40/4S/4D Series
13	Spring, Relief Valve, 4D Series
14	Bushing, Relief Valve, 4D Series
15	O-Ring
16	Stem, Relief Valve, 40/4S/4D Series
17	Washer
18	Disc Seat, Relief Valve, 40/4S/4D Series



2 ½” – 6”
Relief Valve Body Assembly

FIG. 9

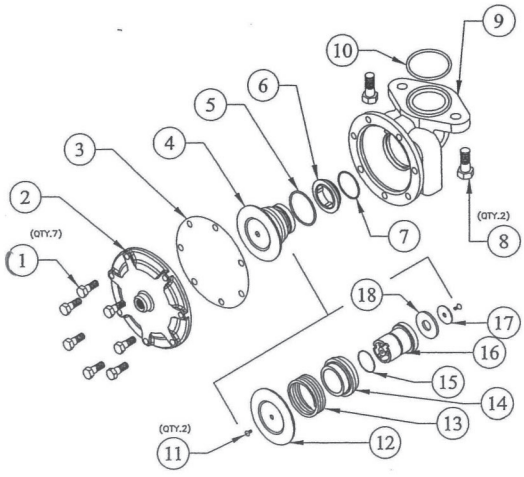


8” & 10”
Relief Valve Body Assembly

FIG. 10

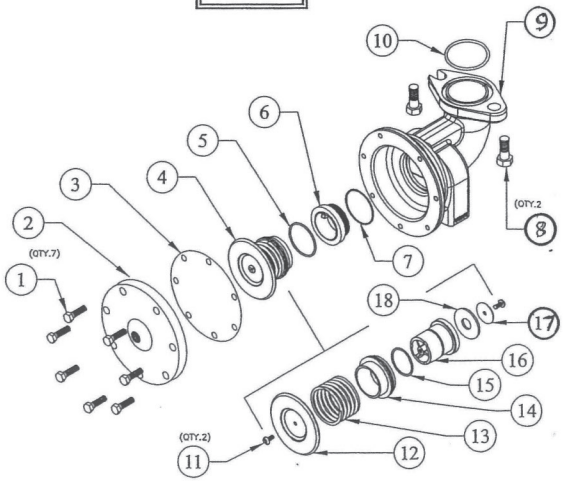
2 ½” – 6”
Relief Valve Body Assembly

FIG. 11



8” & 10”
Relief Valve Body Assembly

FIG. 12



4A-100 / DC4A Series

MAINTENANCE INSTRUCTIONS 1/2" – 2"

A. Disassembly – Check Valves

1. Close #2 shut-off valve, then close #1 shut-off valve.
2. Bleed pressure from the assembly by opening #2, #3, and #4 test cocks.
3. Unscrew cap using hex head provided.
4. Push down and turn the spring retainer 90 degrees to remove. Remove the spring. Remove the poppet from the check seat.
5. Normally, the check seat need not be removed. If removal is required, rock it back and forth while pulling outward.

B. Disassembly – Check Valve Poppet

CAUTION: Do not use pliers or other tools, which may damage or scratch the plastic stem.

1. Holding the poppet assembly in one hand, remove screw and retaining washer.
2. Remove the seat disc.
3. All parts should be carefully inspected for any damage or excessive wear and thoroughly rinsed in clean water prior to reassembly. Replace worn parts as necessary.

C. Assembly – Check Valve Poppet

1. Install new disc in poppet and secure with washer and screw.

D. Assembly – Check Valve

1. If the check seat was removed, install the new o-ring and lubricate. Line up the seat with the bore and push it firmly into place.
2. Place and center the poppet assembly in the check seat.
3. Install the spring onto the poppet.
4. Install the spring retainer onto the spring by pushing down into the grooves of the check seat and turning 90 degrees. Ensure spring retainer pops up about .1" and locks into the lugs. **CAUTION: Ensure the spring retainer orientation matches that in the parts list drawing or the device's flow will be significantly restricted.**
5. Apply a thin coat of Apollo supplied lubricant or DOW 111 or equal on cap o-ring.
6. Install cap.

MAINTENANCE INSTRUCTIONS

4A-100 / DC4A Series 2 ½ - 6"

Open test cocks #2, #3, and #4 to relieve pressure from the device. Both shut-off valves must be closed.

A. Check Removal

Note: If the first check seat disc needs only to be cleaned, it is not necessary to remove the entire check module from the valve body. See the next section, "Check Maintenance", for seat disc cleaning instructions. Note: The first check must be removed for maintenance of the second check.

1. Remove the cover clamp by backing off the nut until the latch can be disengaged from the T-bolt. Pull the clamp apart and slide away from the valve. See Figure 2.

2. Lift off the cover. A flat screwdriver will aid in lifting the cover out of the body. Screwdriver slots are provided on the perimeter of the cover. The first check must be removed first and then the second check may be removed.

4A Series — only

3. Remove the check-retaining clip by pinching the clip ears together. This will disengage the clip from its groove. Remove clip and check-retaining ring. Pull check module straight out of body. The check module is sealed in place with an o-ring. See Figure 3.

4AN Series only

3. Remove the check-retaining spacer from the body. Pull the check module straight out of body. The check module is sealed in place with an o-ring.

B. Check Maintenance

If only cleaning of the first check is necessary, simply remove the three (3) nuts for 2 1/2" & 3" valves / four (4) nuts for 4" & 6" valves on the black plastic disc retainer (See Figure 4). Remove the check handle and washer and lift the disc retainer and disc out of the body. Rinse the disc with clean water or replace if necessary. The disc may be flipped over for a temporary repair, but should be replaced if damaged. Replace the disc, disc retainer, washer, handle, and nuts. Do not over tighten locknuts.

NOTE: The springs are factory installed and should not be removed or adjusted. Serious injury could occur if springs are disassembled.

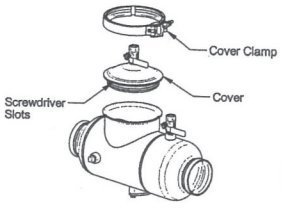


Figure 2

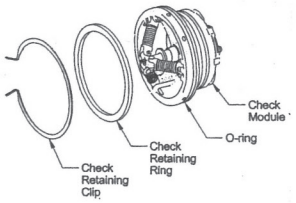


Figure 3

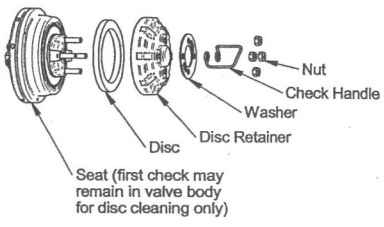
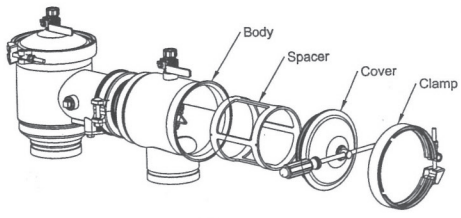
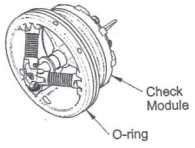


Figure 4

4A Series





4AN Series

4A-100 / DC4A Series 8 – 12"

Open test cocks #2, #3, and #4 to relieve pressure from the device. Both shut-off valves must be closed.

A. Check Removal

Note: If the first check disc needs only to be cleaned, it is not necessary to remove the entire check module from the valve body. See the next section, "Check Maintenance", for disc cleaning instructions.

1. Take off the cover coupling by removing the two bolts and nuts. The gasket may remain on the valve body.
2. Lift off the cover. See Figure 5.
3. Remove the six (6) nuts for 8" valves / eight (8) nuts for 10" & 12" valves with a 3/4" socket and ratchet.
4. Slide the entire check module off the body studs and remove from body (see Figure 6).

Either check may be removed without disturbing the other (8" – 12" sizes only).

B. Check Maintenance

If only cleaning of the first check is necessary, simply remove the six (6) nuts for 8" valves / eight (8) nuts for 10" & 12" valves on the black plastic disc retainer (See Figure 7). Remove the check handles and washers and lift the disc retainer and disc out of the body. Rinse the disc with clean water or replace if necessary. The disc may be flipped over for a temporary repair, but should be replaced if damaged. Replace the disc, disc retainer, washer, handle, and nuts. Do not over tighten locknuts.

NOTE: The springs are factory installed and should not be removed or adjusted. Serious injury could occur if springs are disassembled.

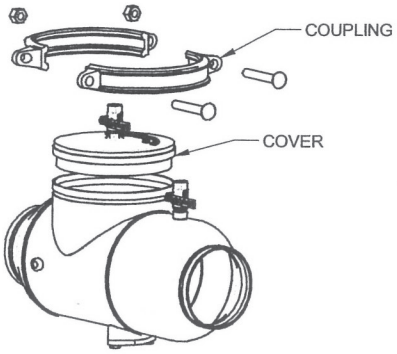


Figure 5

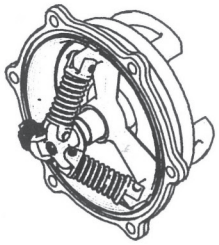


Figure 6

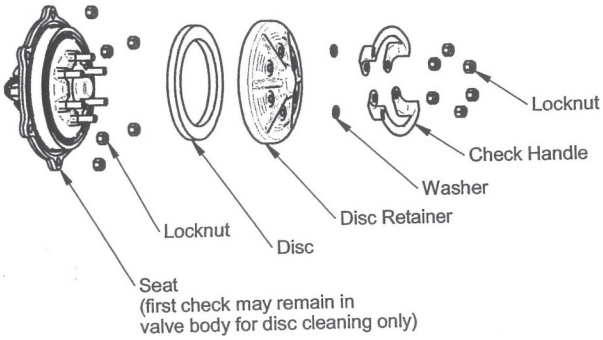


Figure 7

IV. MAINTENANCE INSTRUCTIONS 4A-200 / RP4A Series ½ - 2"

A. Disassembly – Check Valves

1. Close #2 shut-off valve, then close #1 shut-off valve.
2. Bleed pressure from the assembly by opening #2, #3, and #4 test cocks.
3. Unscrew cap using hex head provided.
4. Push down and turn the spring retainer 90 degrees to remove. Remove the spring. Remove the poppet from the check seat.
5. Normally, the check seat need not be removed. If removal is required, rock it back and forth while pulling outward.

B. Disassembly – Check Valve Poppet

CAUTION: Do not use pliers or other tools, which may damage or scratch the plastic stem.

1. Holding the poppet assembly in one hand, remove screw and retaining washer.
2. Remove the seat disc.
3. All parts should be carefully inspected for any damage or excessive wear and thoroughly rinsed in clean water prior to reassembly. Replace worn parts as necessary.

C. Assembly – Check Valve Poppet

1. Install new disc in poppet and secure with washer and screw.

D. Assembly – Check Valve

1. If the check seat was removed, install the new o-ring and lubricate using Apollo lubricant of DOW® 111 or equal. Line up the seat with the bore and push it firmly into place.
2. Place and center the poppet assembly in the check seat.
3. Install the spring onto the poppet.
4. Install the spring retainer onto the spring by pushing down into the grooves of the check seat and turning 90 degrees, ensure spring retainer pops up about .1" and locks into the lugs. Ensure spring retainer pops up about .1" and locks into the lugs. **CAUTION: Ensure the spring retainer orientation matches that in the parts list drawing or the device's flow will be significantly restricted.**
5. Apply a thin coat of Apollo lubricant of DOW® 111 or equal on cap o-ring.
6. Install cap.

E. Disassembly – Relief Valve

1. Remove cover bolts, cover, and diaphragm.
2. Grasp the diaphragm plate and pull the assembly straight out of the body.
3. Holding the relief valve assembly in one hand, remove the screw (and retaining washer on 1 ¼", 1 ½", & 2" models only).
4. Remove the seat disc.
5. Turn the assembly over, keeping the spring compressed by holding down on the diaphragm plate, remove the screw
6. Remove the diaphragm plate, spring, and bushing from the R.V. stem. Note the orientation of the bushing with respect to the spring.
7. Remove the o-ring from the R.V. stem.
8. Normally, the R.V. seat need not be removed. If removal is required, rock it back and forth while pulling outward.
9. All parts should be carefully inspected for any damage or excessive wear and thoroughly rinsed in clean water prior to reassembly. Replace worn parts as necessary.

F. Assembly – Relief Valve

1. Apply a thin coat of Apollo lubricant of DOW® 111 or equal on o-rings before installing.
2. Install o-ring on R.V. seat. Line up the seat with the bore and push firmly into place.
3. If the R.V. stem has been disassembled, install o-ring onto R.V. stem.
4. Slide bushing over R.V. stem and position spring onto bushing. Note the correct position of the bushing from step #6 in disassembly instructions. (Spring must fit over the smaller shoulder of the bushing upon reassembly.)
5. Position diaphragm plate and compress spring, install screw into R.V. stem.
6. Turn the assembly over and install seat disc, (and retaining washer on 1 ¼", 1 ½", & 2" models only), and screw.
7. Install o-ring onto bushing.
8. Slide complete assembly into the body.
9. Position diaphragm over flange, install cover, and tighten bolts evenly.
10. Open #1 shut-off valve and bleed air out of the unit through #2, #3, and #4 test cocks; then open #2 shut-off valve.
11. Test complete assembly to ensure proper operation.

MAINTENANCE INSTRUCTIONS

4A-200 / RP4A Series 2 ½ - 6"

Open test cocks #2, #3, and #4 to relieve pressure from the device. Both shut-off valves must be closed.

A. Check Removal

Note: If the first check seat disc needs only to be cleaned, it is not necessary to remove the entire check module from the valve body. See the next section, "Check Maintenance", for seat disc cleaning instructions. Note: The first check must be removed for maintenance of the second check.

1. Remove the cover clamp by backing off the nut until the latch can be disengaged from the T-bolt. Pull the clamp apart and slide away from the valve. See Figure 2.

2. Lift off the cover. A flat screwdriver will aid in lifting the cover out of the body. Screwdriver slots are provided on the perimeter of the cover. The first check must be removed first and then the second check may be removed.

4A Series only — 3. Remove the check-retaining clip by pinching the clip ears together. This will disengage the clip from its groove. Remove clip and check-retaining ring. Pull check module straight out of body. The check module is sealed in place with an o-ring. See Figure 3.

4AN Series only — 3. Remove the check-retaining spacer from the body. Pull the check module straight out of body. The check module is sealed in place with an o-ring.

B. Check Maintenance

If only cleaning of the first check is necessary, simply remove the three (3) nuts for 2 1/2" & 3" valves / four (4) nuts for 4" & 6" valves on the black plastic disc retainer (See Figure 4). Remove the check handle and washer and lift the disc retainer and disc out of the body. Rinse the disc with clean water or replace if necessary. The disc may be flipped over for a temporary repair, but should be replaced if damaged. Replace the disc, disc retainer, washer, handle, and nuts. Do not over tighten locknuts.

NOTE: The springs are factory installed and should not be removed or adjusted. Serious injury could occur if springs are disassembled.

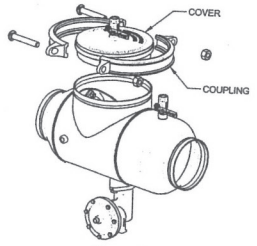


Figure 2

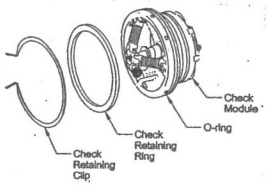


Figure 3 4A Series

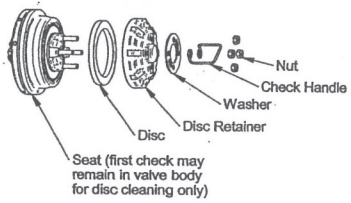
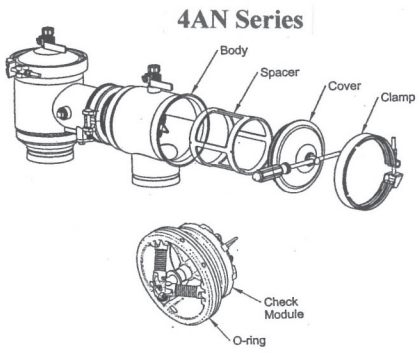


Figure 4



C. Relief Valve Maintenance 2 ½ - 6"

1. Unscrew the sensing hose from the nipple (sensing hose is not shown). See Figure 5.
2. The RV can be serviced while still attached to the valve or it can be removed (rarely needed).
3. Remove the clamp by backing off the nut until the latch can be disengaged from the T-bolt. Pull the clamp apart and slide away from the RV.
4. Remove the RV cover.
5. Remove the RV module by grasping the diaphragm plate and pulling straight out.
6. Inspect the RV seat disc for debris or damage. To clean or replace the RV seat disc, remove the 5/16" screw on the seat disc washer. The RV disc may be flipped over for a temporary repair, but should be replaced if damaged. Replace the seat disc, seat disc washer, and 5/16" screw.
7. Lubricate the bushing o-ring with Apollo supplied lubricant, Dow 111 or equal, and insert the RV module into the valve body. The RV diaphragm has a rubber bead that fits into a groove in the RV body. Ensure the diaphragm bead is seated properly in the RV body before installing the RV cover.

If it is necessary to disassemble the RV module and/or remove the RV seat:

1. Remove the RV module as described above.
2. Remove the 5/16" screw on the diaphragm plate. Use caution as this will disengage the spring.
3. Remove the 5/16" screw on the seat disc washer.
4. Inspect all components for damage, paying particular attention to the diaphragm, seat disc, o-rings, and stem. If any of these components are worn or damaged, they should be replaced.
5. Lubricate the stem, stem o-ring, and RV seat o-ring with Apollo supplied lubricant, Dow 111 or equal.
6. Reassemble RV module.
7. Remove the RV seat by grasping the cage and pulling straight out. A flat screwdriver may aid in removal.
8. Inspect the seat and seat o-ring for damage. If damaged, they should be replaced.
9. Insert the seat into the RV body. Ensure that it is fully seated.
10. Lubricate the bushing o-ring with Apollo supplied lubricant, Dow 111 or equal and insert the assembled RV module into the valve body. Ensure the diaphragm bead is seated properly before installing the RV cover.
11. Replace the cover and clamp.
12. Inspect the sensing hose and replace if damaged.
13. Reinstall the sensing hose to the nipple.

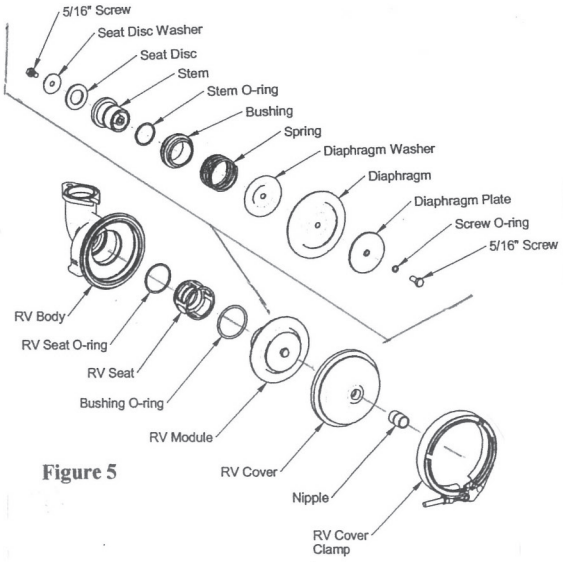
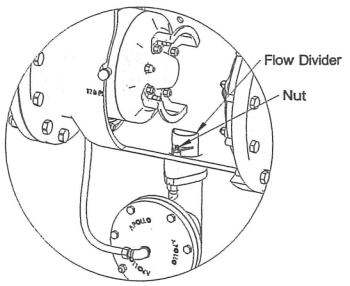


Figure 5

4A-200 / RP4A Series 8 – 12"

Open test cocks #2, #3, and #4 to relieve pressure from the device. Both shut-off valves must be closed.

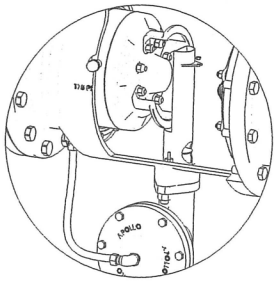


Note: On 10" & 12" models, the flow divider (FD) must be removed before the checks should be removed. To remove the FD, remove the ¼" nut holding it in place. Then rotate the FD 90° and lift up and out of th e valve body. Pay attention to which side of the body the FD is attached. The FD's tab should be oriented on the same side as the cover of the relief valve body. If the relief valve needs to be turned 180°, the FD must also be r otated 180°.

A. Check Removal

Note: If the first check disc needs only to be cleaned, it is not necessary to remove the entire check module from the valve body. See the next section, "Check Maintenance", for disc cleaning instructions.

1. Take off the cover coupling by removing the two bolts and nuts.
2. Lift off the cover. The gasket may remain on the valve body. See Figure 6.
   Note: The 10" & 12" valves are equipped with lifting tabs for cover lifting only. This tab should not be used to lift the entire valve.
3. Remove the six (6) reusable locknuts for 8" valves / eight (8) nuts for 10" & 12" valves on the check seat with a 3/4" socket and ratchet. *SUGGESTION: Place a rag over the relief valve opening inside the valve body to prevent the locknuts from falling into the relief valve.*



B. Check Maintenance

If only cleaning of the first check is necessary, simply remove the six (6) reusable locknuts for 8" valves / eight (8) nuts for 10" & 12" valves on the black plastic disc retainer (See Figure 8). Remove the check handles and washers and lift the disc retainer and disc out of the body. Rinse the disc with clean water or replace if necessary. The disc may be flipped over for a temporary repair, but should be replaced if damaged. Replace the disc, disc retainer, washer, handle, and nuts. Do not over tighten locknuts.

NOTE: The springs are factory installed and should not be removed or adjusted. Serious injury could occur if springs are disassembled.

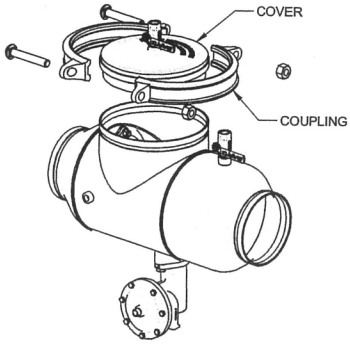


Figure 6

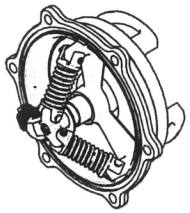


Figure 7

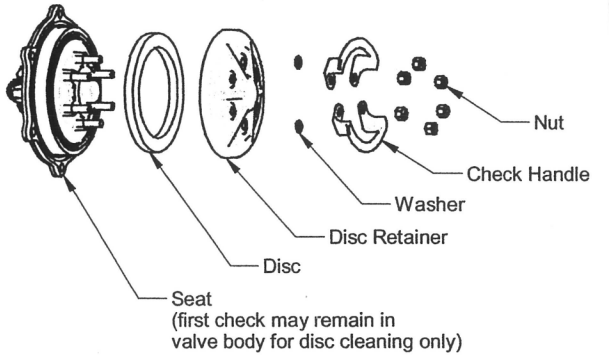


Figure 8

C. Relief Valve Maintenance 8" only

Note: See Figure 9.

1. Unscrew the sensing hose from the relief valve (RV) cover nipple (sensing hose is not shown).
2. The RV can be serviced while still attached to the valve or it can be removed (rarely needed). To remove the RV, unscrew the two ⅝" bolts securing the RV to the valve body.
3. Remove the RV cover by removing the seven (7) ⅜" bolts.
4. Remove the diaphragm.
5. Remove the RV cartridge by grasping the diaphragm plate and pulling straight out. A bushing o-ring may remain in the body. Ensure this o-ring is not damaged.
6. Inspect the RV seat disc for debris or damage. To clean or replace the RV seat disc, remove the ¼" screw on the seat disc washer. The RV disc may be flipped over for a temporary repair, but should be replaced if damaged. Replace the seat disc, seat disc washer, and ¼" screw.
8. Insert the RV module into the valve body.
9. Replace diaphragm, cover, and bolts.
10. Inspect sensing hose and replace if damaged.
11. Reinstall sensing hose to RV cover nipple.

If it is necessary to disassemble the RV module and/or remove the RV seat:

1. Remove the RV module as described above.
2. Remove the 1/4" screw on the diaphragm plate. Use caution as this will disengage the spring.
3. Remove the 1/4" screw on the seat disc washer.
4. Inspect all components for damage, paying particular attention to the diaphragm, seat disc, o-rings, and stem. If any of these components are worn or damaged, they should be replaced.
5. Lubricate the stem, stem o-ring, and RV seat o-ring with DOW 111 or equivalent lubricant. Reassemble RV cartridge.
6. Remove the RV seat by grasping the cage and pulling straight out. A flat screwdriver may be necessary to aid in removal.
7. Inspect the seat and seat o-ring for damage. If damaged, they should be replaced.
8. Insert the seat into the RV body. Ensure that it is fully seated.
9. Ensure the bushing o-ring is positioned in the RV body, then insert the assembled RV cartridge into the valve body.
10. Replace diaphragm, cover, and bolts.
11. Inspect sensing hose and replace if damaged.
12. Reinstall sensing hose to RV cover nipple.

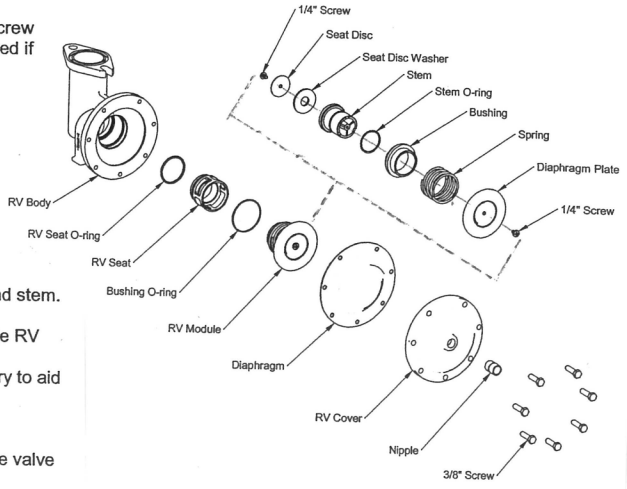


Figure 9

D. Relief Valve Maintenance 10 – 12"

NOTE: See Figure 10.

1. Unscrew the sensing hose from the relief valve (RV) cover nipple (sensing hose is not shown).
2. The RV can be serviced while still attached to the valve or it can be removed (rarely needed). To remove the RV, unscrew the two 3/4" bolts securing the RV to the valve body. NOTE: When removing the RV from the valve body, take care not to damage flow divider (See Figure 10). The shroud does not need to be removed to service the RV.
3. Remove the RV cover by removing the eight (8) 1/2" bolts.
4. Remove the RV cartridge by grasping the diaphragm plate and pulling straight out. A bushing o-ring may remain in the body. Ensure this o-ring is not damaged.
5. Inspect the RV seat disc for debris or damage. To clean or replace the RV seat disc, remove the 3/8" screw on the seat disc washer. The RV disc may be flipped over for a temporary repair, but should be replaced if damaged. Replace the seat disc, seat disc washer, and 3/8" screw.
6. Insert the RV module into the valve body.
7. Replace cover and bolts.
8. Inspect sensing hose and replace if damaged.
9. Reinstall sensing hose to RV cover nipple.

If it is necessary to disassemble the RV module and/or remove the RV seat:

1. Remove the RV module as described above.
2. Remove the 5/8" screw on the diaphragm plate. Use caution as this will disengage the spring.
3. Remove the 3/8" screw on the seat disc washer.
4. Inspect all components for damage, paying particular attention to the diaphragm, seat disc, o-rings, and stem. If any of these components are worn or damaged, they should be replaced.
5. Lubricate the stem, stem o-ring, and RV seat o-ring with Apollo supplied lubricant, DOW 111 or equal. Reassemble RV cartridge.
6. Remove the RV seat by grasping the cage and pulling straight out. A flat screwdriver may be necessary to aid in removal.
7. Inspect the seat and seat o-ring for damage. If damaged, they should be replaced.
8. Insert the seat into the RV body. Ensure that it is fully seated and that the seat's tab aligns with the notch in the RV body.
9. Ensure the bushing o-ring is positioned in the RV body, then insert the assembled RV cartridge into the valve body.
10. Replace cover and bolts.
11. Inspect sensing hose and replace if damaged.
12. Reinstall sensing hose to RV cover nipple.

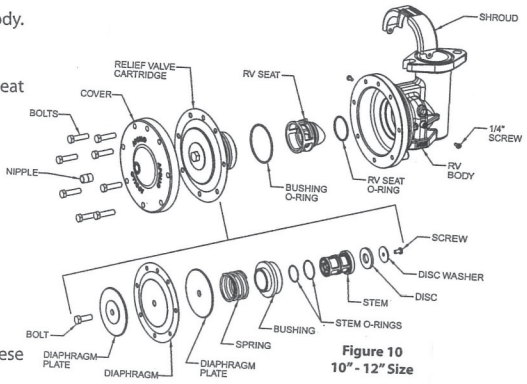


Figure 10
10" - 12" Size

4A-500 / PVB4A Series ½ - 2"

A. Disassembly

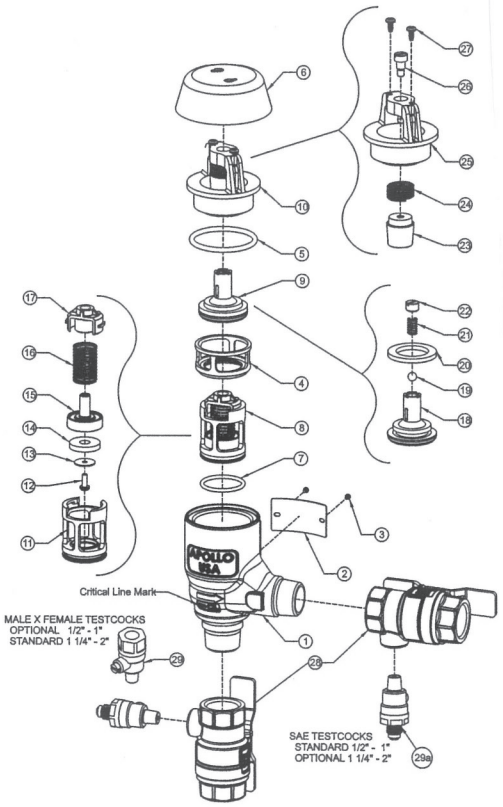
1. Close #2 shut-off valve, then close #1 shut-off valve.
2. Bleed pressure from device by opening test cocks #1 and #2.
3. Remove the air inlet canopy by loosening the two screws, rotating the canopy to the left, and lifting up.
4. Unscrew and remove the bonnet and float assembly. DO NOT USE CANOPY TO UNSCREW BONNET! DAMAGE TO THE CANOPY MAY OCCUR.
5. Remove float cage.
6. Push down and turn the spring retainer 90 degrees to remove. Remove the spring. Remove the poppet from the check seat.

CAUTION: Do not use pliers or other tools, which may damage or scratch the plastic stem.

7. Holding the poppet assembly in one hand, remove screw and retaining washer.
8. Remove the seat disc.
9. All parts should be carefully inspected for any damage or excessive wear and thoroughly rinsed in clean water prior to reassembly. Replace worn parts as necessary.
10. Normally, the check seat need not be removed. If removal is required, rock it back and forth while pulling outward.

B. Assembly

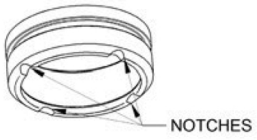
1. If the check seat was removed, install the new o-ring and lubricate with Apollo supplied lubricant, DOW 111, or equal. Line up the seat with the bore and push it firmly into place.
2. Install new disc in poppet and secure with washer and screw.
3. Place and center the poppet assembly in the check seat.
4. Install the spring onto the poppet, ensure that it is centered around the raised spring pad.
5. Install the spring retainer onto the spring by pushing down into the grooves of the check seat and turning 90 degrees. Ensure spring retainer pops up about .1" and locks into the lugs. **CAUTION: Ensure the spring retainer orientation matches that in the parts list drawing or the device's flow will be significantly restricted.**
6. Install float cage and float. See drawing for correct orientation.
7. Apply a thin coat of Apollo supplied lubricant, DOW 111, or equal onto o-ring, screw bonnet into body.
8. Test device to insure proper installation.
9. Install air inlet canopy.



IV. MAINTENANCE INSTRUCTIONS

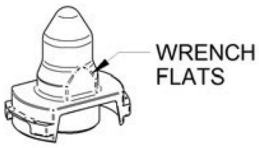
A. DISASSEMBLY

1. Shut the #2 shut-off valve, then the #1 shut-off valve.
2. Bleed pressure from the device by opening the test cock and the bleed screw.
3. Remove the air inlet canopy by loosening the two screws, rotating the canopy to the left, and lifting up.
4. Unscrew and remove the bonnet, float assembly and float spring. DO NOT USE THE CANOPY TO UNSCREW BONNET! DAMAGE TO THE CANOPY MAY OCCUR! If the float rubber disc appears worn or damaged peel it off of the float.
5. Remove the check guide and the check. The check may be grabbed with fingers and gently rocked back and forth to pull it out. DO NOT USE PLIERS OR OTHER TOOLS WHICH MAY DAMAGE OR SCRATCH PLASTIC COMPONENTS!
6. It is normally not necessary to remove the bushing. Should its removal be necessary there are 4 semi-circle notches in the bottom to place a hook under. Pull up a little bit under each notch going around to each one in turn until the bushing is free.



CAUTION: TAKE CARE TO NOT SCRATCH OR DAMAGE THE COATING OR THE INTERIOR SURFACE OF THE BUSHING!

7. To disassemble the check, hold the check in one hand and turn the spring retainer with an adjustable wrench using the two flats. Ensure the wrench is adjusted snugly to the flats to preclude rounding the edges of the post on the spring retainer. As the spring retainer rotation approaches 90°, its retaining tabs will lose engagement with the seat and if not constrained the spring retainer and spring will be ejected.

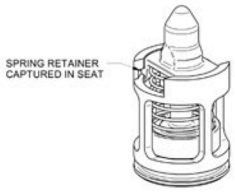


8. Remove the spring and poppet from the check seat.
9. Inspect the rubber seat disc in the poppet for wear or damage. To remove the seat disc, hold the poppet assembly in one hand and remove the screw, retaining washer and the seat disc.
10. Remove the vent screw and inspect the vent screw O-ring.
11. All parts should be carefully inspected for any damage or excessive wear and thoroughly rinsed in clean potable water prior to reassembly. Replace worn parts as necessary.

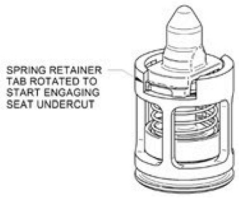
IV. MAINTENANCE INSTRUCTIONS

B. ASSEMBLY

1. If the bushing was removed, install the new O-ring and lubricate with Apollo supplied lubricant, DOW 111, or equal. Line up the bushing with the bore with the notches facing down and push into place.
2. If the rubber seat disc was removed, place a new disc in the poppet and secure with the washer and screw.
3. Place and center the poppet assembly in the seat.
4. Install the spring onto the poppet, ensure it is centered inside the pocket on top of the poppet.
5. Install the spring retainer onto the spring and push it compressing the spring until the spring retainer tabs butt up to the seat. Rotate the spring retainer until the tabs starts to engage the undercut of the seat and resistance to turning is felt.



6. While holding the spring retainer in the seat to prevent rotation, use an adjustable wrench to continue turning the spring retainer until it locks into the undercut in the seat, which is after about 90° of total rotation. Ensure the wrench is adjusted snugly to the flats to preclude rounding the edges of the post on the spring retainer. When properly locked into place the spring retainer will be able to rotate easily by hand several degrees before heavier resistance is felt.



7. Replace the O-ring on the check seat and lubricate with Apollo supplied lubricant, DOW 111, or equal. Insert the check module assembly into the bushing until it is fully inserted.
8. Install the check guide, ensure it is centered and sitting square on top of the bushing.
9. Install the new float rubber disc on the float and set the float on top of the post on the check spring retainer.
10. Apply a thin coat of Apollo supplied lubricant, DOW 111, or equal, to the bonnet O-ring, screw the bonnet into the valve body.
11. Apply a thin coat of Apollo supplied lubricant, DOW 111, or equal, to the vent screw O-ring and screw the vent screw into the body.
12. Test the device to ensure proper installation.
13. Install the air inlet canopy, tighten the screws.

PART NUMBER DIAGRAM

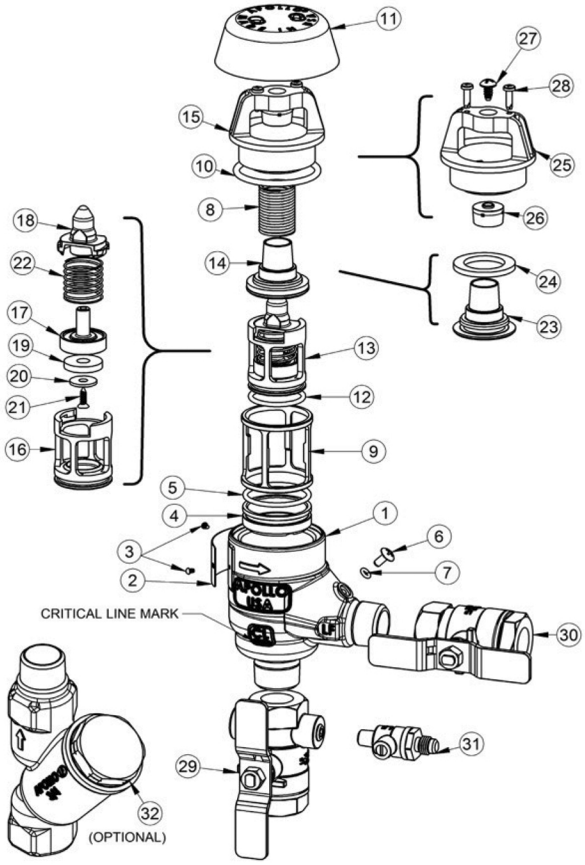



FIGURE 4