Ames model 4000 SS Reduced Pressure Backflow Preventer (¾" – 2")
General Installation, Maintenance, Testing, and Parts Information

MAINTENANCE INSTRUCTIONS

NOTE: Ames assemblies require minimum maintenance. All assemblies must be re-tested once maintenance has been performed prior to use. Before servicing be certain all water is turned off or shut off valves are closed.

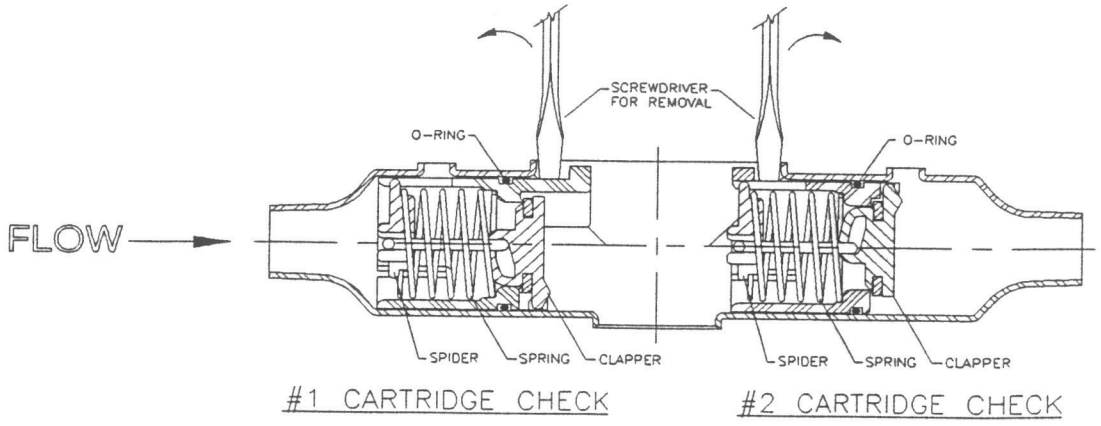
Removing and Installing Cartridge Check Assemblies Produced from 1992 – 1997

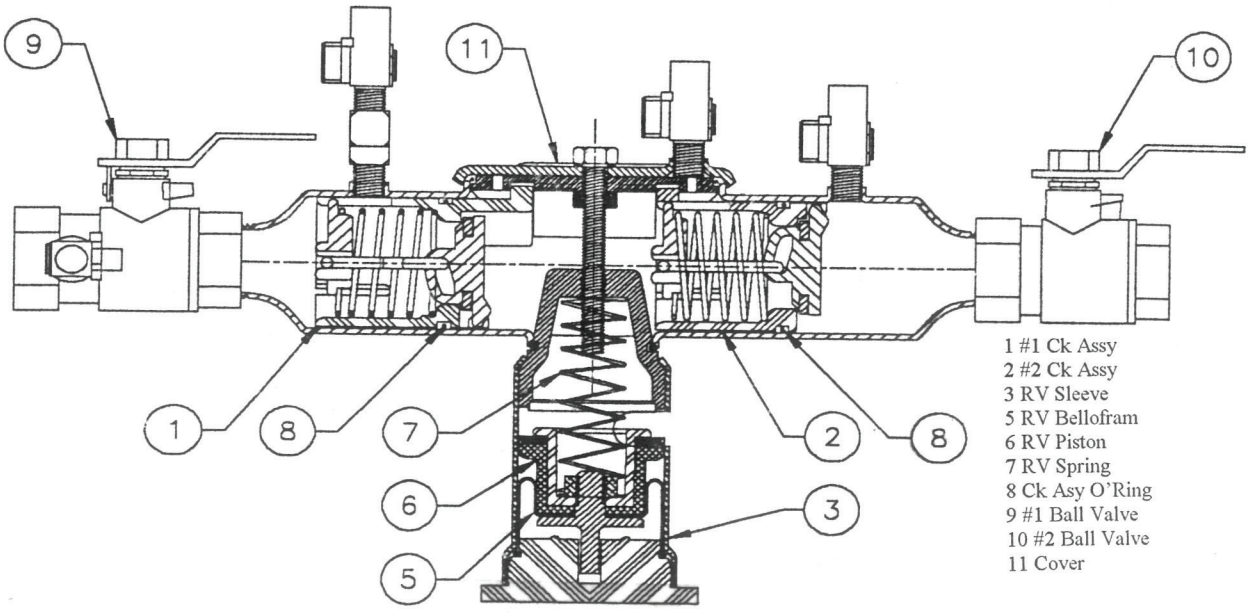
1. Shut down water system and lock out system if possible. Slowly open all test cocks to relieve air and water pressure. Loosen cover bolt, and relief valve tubing, then remove the relief valve. Next remove lid assembly.

2. Remove #2 cartridge check by using your hand to slide the assembly downstream and remove through the top access port. Remove #1 cartridge check by using your hand to slide the assembly upstream and remove through the top access port. **(Note: #2 cartridge check must be removed first in order to remove #1 cartridge check)** If the cartridge check is tight and resistant to sliding to the access port, insert a straight blade screwdriver (as shown below) between the cartridge check and the housing and gently pry it towards the access port.

3. To clean cartridge check, push spider towards clapper and hold in open position. Rinse cartridge check and o-rings thoroughly. Inspect clapper seats, housing, and o-ring for damage. If not damaged, clean clapper face and o-ring groove prior to re-assembly. If damaged install new cartridge check.

4. Re-install the cartridge check in the reverse order. **#1 cartridge check must be installed prior to installation of #2 cartridge check.** Be sure cartridge checks are installed with clapper downstream in the body. When installing, use a FDA approved lubricant. Be sure o-rings are securely in place and have not fish-mouthed. Insert cover lid *(making sure locating lip on cartridge checks mate with underside of lid)*, re-attach relief valve and relief valve tube. Tighten securely (5-7 lbs). **(Note: All test cocks must be in open position in order to install cartridge checks.)**





Ames Model 4000 SS and 5000 SS Reduced Pressure Backflow Preventer

2 1/2"-6"

1 #1 Ck Assy
2 #2 Ck Assy
3 #1 Ck Assy O'Rg
4 #2Ck Assy O'Rg
5 Cover
6 Test Cock
7 Groove Coupler
8 Groove Coupler Gasket
9 RV Assy
10 RV Sensing Line
11 RV Assy O'Rg

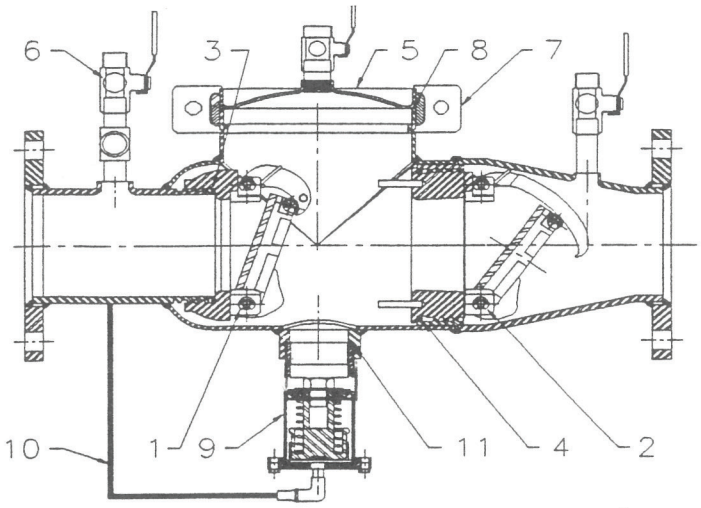


FIGURE 1

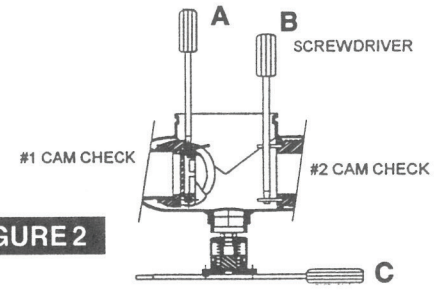


FIGURE 2

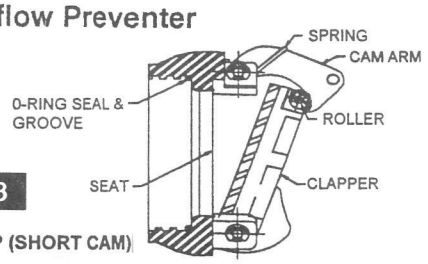


FIGURE 3

#1 CAM-CHECK 2 1/2- 6" RP (SHORT CAM)

FIGURE 4

#2 CAM-CHECK DC & RP

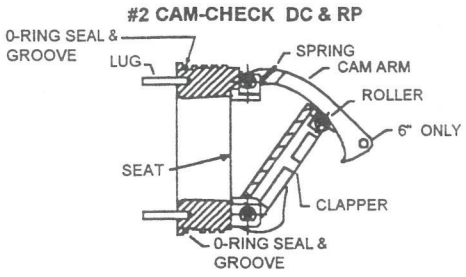


FIGURE 5A

CAM BAR OPEN PIN

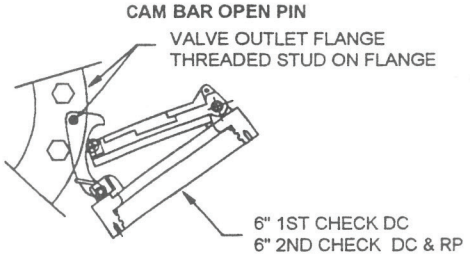
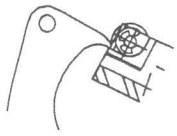


FIGURE 5B



CLEANING POSITION

MAINTENANCE INSTRUCTIONS

NOTE: Ames assemblies require minimum maintenance. All assemblies must be retested once maintenance has been performed. ***Before servicing be certain shut off valves are closed.***

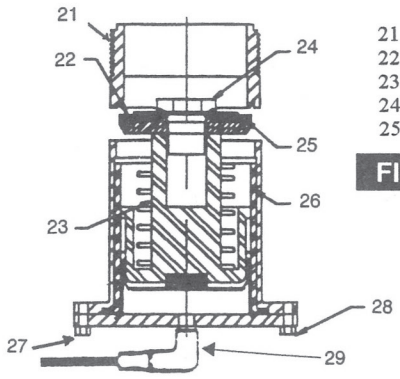
REMOVING CAM-CHECKS

1. Shut down water system and lock out system if possible. Slowly open all ball valves to relieve air and water pressure. Loosen bolts on groove coupler and remove groove couple and cover plate from valve body.

2. Remove #1 Cam-Check assembly by using your hands to unscrew (turn counter-clockwise) Cam-Check and remove through top access port. ***Do not use Cam Arm as a handle to unscrew Cam-Check.*** If Cam-Check cannot be loosened by hand, insert a long screwdriver between valve body and Cam-Check (see figure 2). Gently apply pressure against the Cam-Check until loosened. Finish unscrewing by hand. Unscrew #2 Cam-Check (turn counter-clockwise) by placing a long screwdriver across lugs and applying pressure to loosen #2 Cam-Check. Finish unscrewing by hand.

3. To clean #1 Cam-Check (except 2 1/2" - 4" DC Check), locate the Cam Arm opening stud on the outlet flange of the valve assembly. Slide the Cam Arm over the stud with the check threads facing downward (figure 5A). Tighten 1/4" nut on stud to secure cam bar. Slowly pull the assembly outward to open check allowing exposure of the seat and clapper contact area for cleaning. To clean #2 Cam-Check, lift Cam Arm and hold in open position. Raise clapper so that the end of the Cam Arm rests between roller and clapper (figure 5B). Thoroughly clean the seat area and clapper sealing surfaces of both Cam-Checks. Rinse Cam-Checks and O-rings thoroughly. Inspect seats, clapper sealing surfaces, Cam Arms, and O-rings for damage, nicks, and debris. If not damaged, gently close the clapper. If damaged, install a new Cam-Check assembly and/or O-ring.

4. Before reinstallation of Cam-Checks, thoroughly clean O-ring groove and lubricate O-ring with FDA approved lubricant. Insert and thread #2 Cam-Check first and then #1 Cam-Check. #2 Cam-Check should be tightened by inserting a long screwdriver between lugs to tighten firmly (see figure 2). Do not over tighten. Tighten #1 Cam-Check firmly by hand only. Replace cover plate, clean groove coupler gasket and groove. Replace groove coupler. Close ball valves. Repressurize and bleed air from all test cocks.



21 RV Body
22 RV Disc
23 Bfrm Piston Assy
24 RV Bolt
25 RV Disc Holder

FIGURE 6

26 RV Sleeve
27 RV Cover
28 Bolt
29 Fitting

RELIEF VALVE DIAPHRAGM →

FIGURE 7

FIGURE 8

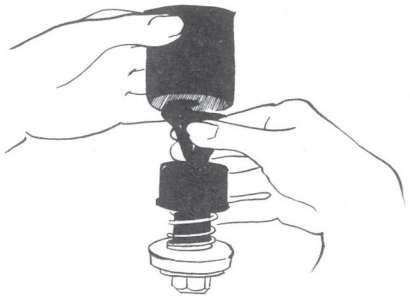
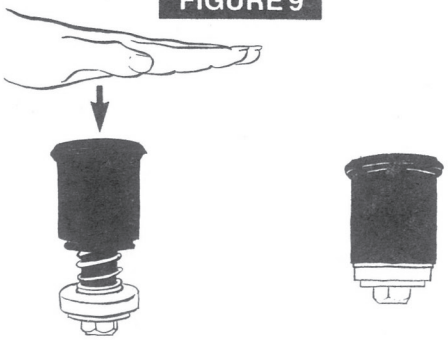
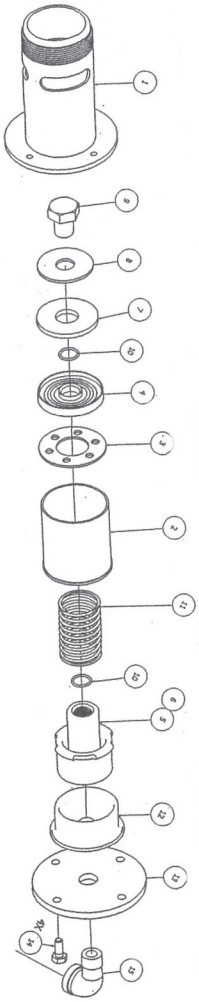


FIGURE 9





Item	Description
1	R V Body
2	Sleeve
3	Guide Washer
4	Disc Holder
5&6	R V Piston
7	R V Disc
8	Disc Retainer
9	Disc Ret Bolt
10	O'Ring
11	R V Spring
12	Rolling Diaph
13	R V Cover
14	Cover Bolt
15	St Elbow
16	R V Sensing Line

RELIEF VALVE SERVICE INSTRUCTIONS

1. The relief valve may be serviced while on or off the backflow preventer valve.

2. **NOTE: DO NOT USE A PIPE WRENCH TO REMOVE THE RELIEF VALVE ASSEMBLY FROM THE BACKFLOW PREVENTER.**

3. Shut down water system.

RELIEF VALVE DISASSEMBLY

1. Disconnect the relief valve hose from the elbow in the bottom flange cover at the swivel hose connection. Do not remove the elbow.

2. If the valve is to be removed from the backflow preventer for service, place a screw driver blade or flat bar across the edges of (2) of the hex head screws in the bottom flange cover and turn counter-clockwise to loosen the relief valve assembly. (See Figure 2.)

3. Remove the (4) bottom bolts from the bottom of the relief valve assembly with a 5/16" socket or open-end wrench. Remove the bottom flange cover.

4. Remove the piston assembly & sleeve from the relief valve body by placing your index fingers through the slots in the side of the body and pressing down on the top of the disc retainer in the top of the piston assembly. (See Figure 7.)

5. Pull the piston assembly free of the body by grasping the sleeve and pulling down.

6. Grip the sleeve and the piston assembly by the head of the hex head bolt. Pull up on the sleeve to extend the diaphragm. Slide the sleeve (Part #6-5222) completely off of the diaphragm and inspect the diaphragm for tears, holes or excessive wrinkles. If the diaphragm is damaged, order a new piston/diaphragm assembly.

RELIEF VALVE REASSEMBLY

1. Thoroughly clean all inside surfaces of the relief valve body.

2. Inspect the relief valve body seat surface located at the top edge of the (3) discharge slots near the top of the body by rubbing the end of the index finger around the entire seat surface; access the seat surface through the slots or the bottom of the body. The seat must be free of nicks. If nicks are discovered, remove the body & install a new relief valve assembly.

3. Position the diaphragm on the piston assembly so that it is facing up as shown in Figure 8.

4. Now fold the top (ribbed) edge of the diaphragm inward, grasp the sleeve with the ribbed edge up and slide the sleeve down over the piston assembly as shown in Figure 8.

5. While still holding the sleeve, slide it up over the diaphragm and, using your thumb & index finger, position the bead of the diaphragm so that it wraps over the outside of the rib on the top of the sleeve so that the sleeve is held by the diaphragm. Now place the piston assembly on a flat, firm surface with diaphragm facing up as shown in Figure 9.

6. Cup your hand slightly to form an air trap and force the sleeve down over the piston assembly with a rapid slap (hard) on the open end of the diaphragm with your cupped hand. The trapped air in the diaphragm will force the diaphragm between the inside of the sleeve and the outside of the piston. Ensure that the diaphragm is fully seated by running the end of a dull "butter" knife in the formed diaphragm. If diaphragm is wrinkled, repeat previous step.

7. Slide the piston assembly and sleeve into the relief valve body with the hex head bolt entering the flanged end of the body first. Slide the piston assembly in until the diaphragm lip is smoothly seated in the machined groove in the flanged end of the body. By running your index finger around the outside of the diaphragm bead, you will ensure it is seated smoothly.

8. Position the bottom flange cover on the bottom of the relief valve body and secure by hand tightening the (4) bottom bolts.

9. Now tighten the (4) bottom bolts to approximately 15 ft.-lbs. with a 5/16" socket or open-end wrench.

10. Reattach the relief valve hose to the elbow in the bottom flange cover.

Ames Model 4000SS and 5000SS Reduced Pressure Backflow Preventer

8" - 10"

MAINTENANCE INSTRUCTIONS

NOTE: Ames assemblies require minimum maintenance. All assemblies must be retested once maintenance has been performed. ***Before servicing be certain shut off valves are closed.***

REMOVING CAM-CHECKS

1. Shut down water system and lock out system if possible. Slowly open all ball valves to relieve air and water pressure. Loosen bolts on groove coupler and remove groove couple and cover plate from valve body.

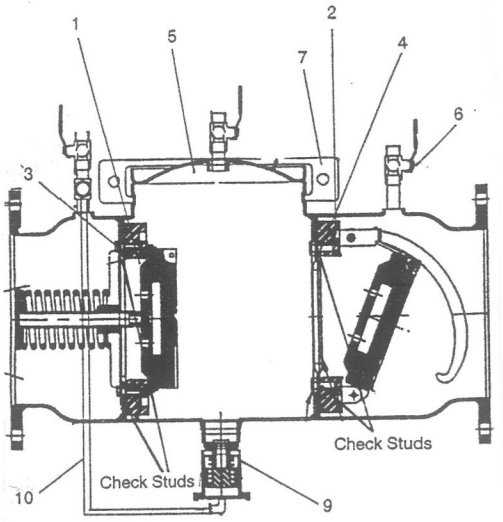
2. **#1 CHECK**
Using a 9/16" socket wrench or nut driver, remove the four nuts from the #1 check studs (See fig.1). Using two hands, place them at 12 o'clock and 6 o'clock, wiggle the check assembly free. Remove through access port with back of clappér first with spring end down. Pull check assembly out of main body. To inspect 1st check gear or to free 1st check of debris,

#2 CHECK
After loosening bolts with a 9/16" socket, remove bolts completely. Using the centerline access bar, spin the cam assembly from the 9 o'clock position to the 12 o'clock position, then (without letting go of the access bar) push the cam assembly slightly downstream so that the clapper is now parallel to the valve body. Now bring the cam assembly through the check retaining wall. Leave the cam assembly clapper parallel to the valve body. Pull the cam assembly through the access port.

3. Using a 3/8" nut driver or a piece of small diameter pipe, place on the cam arm torsion spring and move away from and around the torsion spring retaining bracket so as to relieve the torsion spring tension. This will allow the cam arm to move freely, enabling you to inspect the clapper face and cam seat. Thoroughly clean the seat area and clapper sealing surfaces, cam arms, and o-rings for damage, nicks, and debris. If damaged, install a new check assembly and or O-ring.

4. Before reinstallation of check assembly, thoroughly clean O-ring groove and lubricate O-ring with F.D.A. approved lubricant.

FIGURE 1



1 #1 Ck Assy
2 #2 Ck Assy
3 #1 Ck Assy O'rg
4 #2 Ck Assy O'rg
5 Cover
6 Test Cock
7 Groove Cplr
9 RV Assy
10 RV Sensing Line

FIGURE 2
#1 CAM-CHECK RP

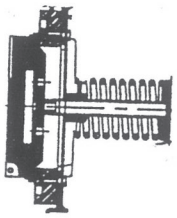


FIGURE 3
#2 CAM-CHECK DC & RP

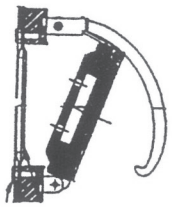
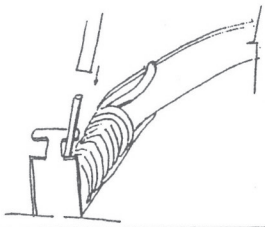


FIGURE 4



MAINTENANCE INSTRUCTIONS TO INSPECT SEAT & CLAPPER ON 1ST CHECK 8"-10" 4000SS and 5000SS

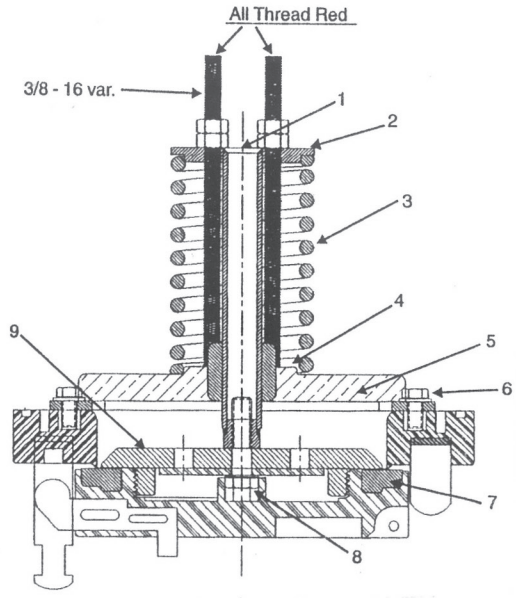
Please be advised, you must use extreme caution when servicing the first check.

To disassemble the first check, you will need the following:

- Two pieces of 3/8" all thread rod (approximately 14" long)
- Four 3/8" hex nuts
- Adjustable crescent wrench
- Pipe wrench or channel lock pliers

To inspect the seat and clean the seat and clapper washer:

1. After removing the first check from the backflow valve body, place on a flat surface with the coil spring facing up.
2. In order to gain access to the seat and clapper rubber ring, you must compress the spring (#3) that surrounds the clapper shaft (#1). To do so, you must place the 3/8" all thread rod through two holes of the spring retaining plate #2.
3. After placing the 3/8" all thread rod through the spring retaining plate, thread the all thread rod into the threaded holes (#4) at the base of spider (#5 next to shaft). Be sure to use two nuts on the all thread rod to tighten them into the thread holes. The depth of the threaded holes should be approximately 1/2". This operation will require you to use two pieces of all thread rod (see drawing on the right).
4. Compressing the spring. To do so you need to loosen the top 3/8" nut and back it off without unthreading the all thread rod from the spider. Place a box end wrench or crescent wrench on the 3/8" nut closest to the spring retaining plate and tighten (be sure to tighten both all thread and nut evenly; that is to say, put a few turns on one all thread rod nut and a few turns on the other).
5. During compression, the clapper will slowly move up, away from the seat. To examine the seat, continue spring compression until the clapper has moved approximately 1" from the seat. This should allow debris to be removed and or the seat to be examined.
6. To unload the spring compression, loosen the all thread and then double nut the all thread and unscrew the all thread rod from the spider and shaft base.



1. Shaft
2. Spring retaining plate
3. Spring
4. 3/8" threaded hole (maintenance)
5. Spider
6. Spider retaining bolt
7. Seat ring
8. Clapper to shaft bolt
9. Seat ring retainer