

TROUBLE SHOOTING VIKING DRY PIPE VALVES

TROUBLESHOOTING THE VIKING MODEL C-2 DRY PIPE VALVE

C-2 dry pipe valves have a metal to metal water seat, and this makes them different than all of the later versions of Viking Dry Pipe Valve.

Symptom: I just replaced the clapper rubber on the C-2 Dry Pipe Valve, and it is still leaking water out through the drip check. Why?

Remedy: The customer must be advised that because this valve has a metal to metal water seat, that the top and bottom half of the clapper must be marked with a punch or something that will not wash or wear off, before he removes it from the clapper arm! It must be marked on the top of the clapper and the bottom, so that both halves can be re-assembled exactly as they were removed. Now that the pieces are both marked, remove the bottom half of the clapper, and get some jeweler's rouge, or auto rubbing compound, and put some of it on the water seat, and some on the clapper.

Place the clapper on the water seat in the same position it was removed from the upper half of the clapper assembly, and slowly turn the clapper back and fourth in a circular motion. This process is called "lapping" the clapper. What this does, is to remove some of the uneven spots from both the clapper and the seat, so they both "match up" to one another. This is why the clapper must be oriented with the upper half, or the face of the clapper and the water seat face will not align, and you have a good possibility of more leakage. Do this for a few minutes, or until you think that both faces match, then stop, clean both surfaces, and reinstall the bottom half of the clapper to the top half, **being sure to align both marks again.** Re-assembling the two halves, also holds the clapper rubber (air seat rubber) in place. Once the valve is back together, it should then hold air and water. If it does not hold water, then the clapper is warped, and the valve must be replaced.

TROUBLESHOOTING THE VIKING MODEL C-2 DRY PIPE VALVES

C-2 Dry Pipe Valves have small buttons or stoppers at the back of the valve, just above the clapper assembly ([Items 5 and 6 on the valve section](#)). They are there to help hold the clapper assembly in place, so the valve will trip when the floating member assembly begins to move upward from the loss of air pressure. The upward force of the water pressure pushes the floating member assembly against the two buttons. If these buttons or stoppers are rusted out or corroded, they may cause the valve to not operate, because the floating member assembly does not have a pivot point anymore, on which to operate from.

TROUBLESHOOTING THE VIKING MODEL D-1 DRY PIPE VALVE

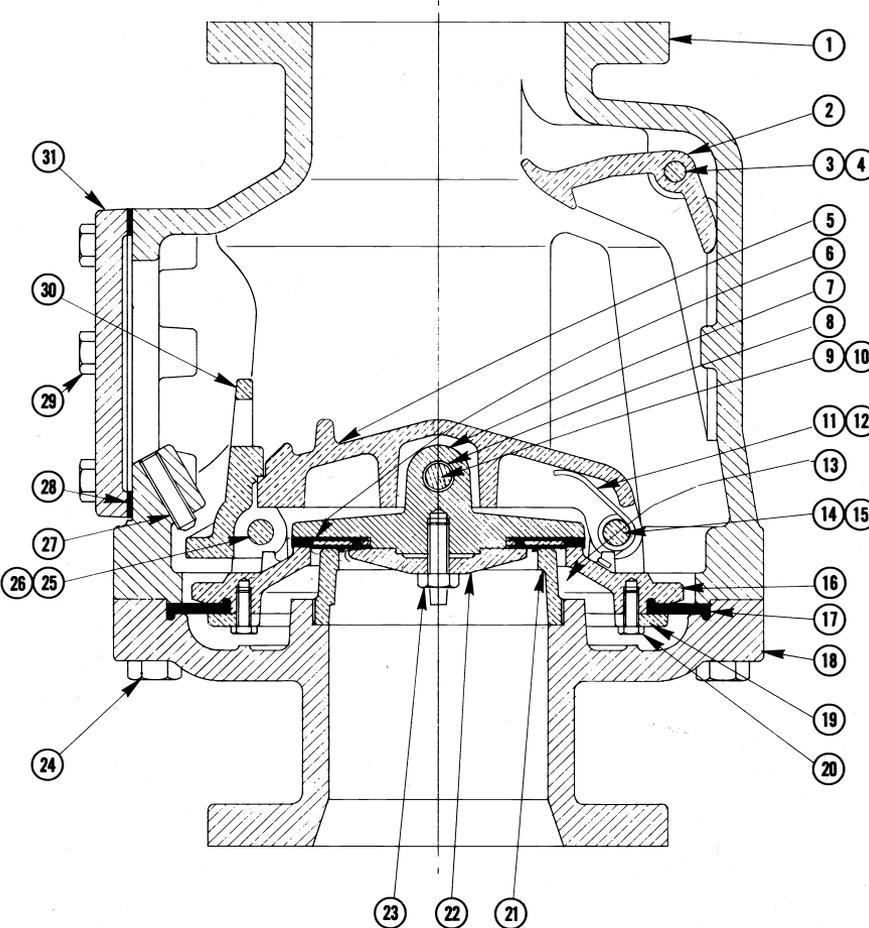
The Model D-1 Dry Pipe Valve is very similar to the current Model F Series Dry Pipe Valves. It operates on a pressure differential system. The clapper area is approx. 6 time larger than the area of the waterway, therefore, one psi of air pressure will hold back six psi of water pressure. The clapper is a latching type , and it was the first Viking Dry Pipe Valve to use a clapper rubber for both the water seat and the air seat. It was only available in the 6" size. it was manufactured from 1975-1984.

symptom: I just reset the valve, started putting air in the system, and water is coming out of the ball drip valve! Why?

Water running out of the ball drip valve when the system is pressurized usually means that there is a cut in the air plate rubber. Air pressure is then forcing the water through the air plate rubber cut, and it will only leak water once air pressure is applied.

Remedy: Check the clapper rubber for cuts, check the valve seat for nicks and or rocks, debris preventing the rubber from seating. Check for clapper alignment on the seats of the valve, make sure that the outline of the air seat and water seat on the clapper rubber are concentric with the clapper rubber itself. If they are not concentric, then try to align the clapper arm to center the clapper rubber with the seats. If this does not fix the problem, then fill the valve with water up to the face plate opening, button up the valve, and begin putting air pressure back into the valve. If water begins to leak out of the ball drip valve at this point, then there is a cut in the air plate rubber, and it will need to be replaced. (This will mean removing the valve from the riser, turning it upside down, and removing the bolts that hold the two halves of the valve body together, in order to separate the base from the housing.)

VIKING MODEL D-1 DRY PIPE VALVE (OBSOLETE)



TROUBLESHOOTING THE VIKING MODEL E DRY PIPE VALVE

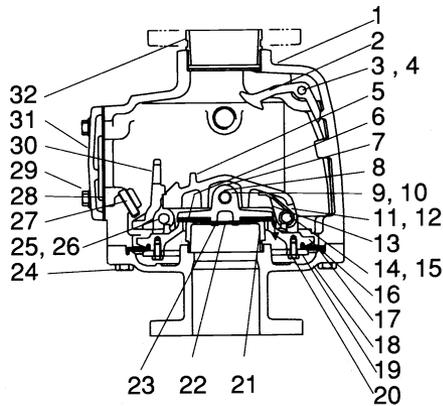
The Model E Dry Pipe Valve is a differential type dry pipe valve with a floating member assembly. It has an area above the clapper which is 6 times larger than the waterway, so 1 pound of air pressure can hold back 6 pounds of water pressure. It has a latching type clapper, and was available in 3", 4" and 6" sizes, and it had either a flanged outlet or a grooved outlet. It was manufactured from 1979-2000 with a grooved outlet, and from 1984-2000 with a flanged outlet.

Symptom: I just reset the valve, started putting air in the system, and water is coming out of the ball drip valve! why?

Water running out of the ball drip valve when the system is pressurized usually means that there is a cut in the air plate rubber. Air pressure is then forcing the water through the air plate rubber cut, and it will only leak water once air pressure is applied.

Remedy: Check the clapper rubber for cuts, check the valve seat for nicks and or rocks, debris preventing the rubber from seating. Check for clapper alignment on the seats of the valve, make sure that the outline of the air seat and water seat on the clapper rubber are concentric with the clapper rubber itself. If they are not concentric, then try to align the clapper arm to center the clapper rubber with the seats. If this does not fix the problem, then fill the valve with water up to the face plate opening, button up the valve, and begin putting air pressure back into the valve. If water begins to leak out of the ball drip valve at this point, then there is a cut in the air plate rubber, and it will need to be replaced. (This will mean removing the valve from the riser, turning it upside down, and removing the bolts that hold the two halves of the valve body together, in order to separate the base from the housing.)

VIKING MODEL E DRY PIPE VALVE



MANUFACTURE DATES			
3" (80MM)	4" (100MM)	6" (150MM)	
1979	1979	1981	Groove Outlet
1984	1984	1984	Flange Outlet

ITEM No.	PART NUMBER			DESCRIPTION	MATERIAL	NO. REQ.		
	3" E-2	4" E-2	6" E-1			3"	4"	6"
1	-	-	-	Housing	Cast Iron	1	1	1
2	02000B	02000B	02000B	Latch	Cast Brass	1	1	1
3	04000A	04000A	02001A	Latch Pin	Brass	1	1	1
4	02545S	02545S	02545S	3/8" NPT Pipe Plug	Brass	2	2	2
5	03750C	03750C	01987C	Clapper Arm	Cast Manganese Bronze	1	1	1
6	04188B	04188B	04622C	Clapper Rubber	EPDM/Brass	1	1	1
7	*	*	*	Clapper	Cast Ductile Iron	1	1	1
8	*	*	*	Clapper Bushing	Bronze	2	2	2
9	01991A	01991A	01991A	Hinge Pin	Brass	1	1	1
10	02008A	02008A	02008A	Cotter Pin	Brass	2	2	2
11	02002A	02002A	02002A	Right-Hand Spring	Stainless Steel	1	1	1
12	02003A	02003A	02003A	Left-Hand Spring	Stainless Steel	1	1	1
13	*	*	*	Side Stop Pin	Brass	2	2	2
14	02008A	02008A	02008A	Cotter Pin	Brass	2	2	2
15	01993B	01993B	01993B	Clapper Shaft	Brass	1	1	1
16	*	*	*	Air Plate	Cast Brass	1	1	1
17	03756B	03756B	01994B	Air Plate Rubber	Neoprene	1	1	1
18	-	-	-	Base	Cast Iron	1	1	1
19	03757B	03757B	01995B	Clamp Ring	Cast Brass	1	1	1
20	01517A	01517A	01517A	3/8-16x3/4" H.H.C. Screw	Zinc Plated Steel	10	10	12
21	-	-	-	Seat	Cast Brass	1	1	1
22	04873A	04873A	04297B	Clamp Plate	Stainless Steel	1	1	1
23	None	None	02383A	5/16-18x1/2" H.H.C. Screw	Stainless Steel	0	0	3
	04874A	04874A	None	#10-24x1/2" H.H.C. Screw	Stainless Steel	3	3	0
24	02079A	02079A	None	5/8-11x2" H.H.C. Screw	Steel	10	10	0
	None	None	02101A	3/4-10x2-1/4" H.H.C. Screw	Steel	0	0	12
25	02008A	02008A	02008A	Cotter Pin	Brass	2	2	2
26	01993B	01993B	01993B	Clapper Shaft	Brass	1	1	1
27	07029A	07029A	07029A	1/2-13x1-3/4" Set Screw	Nylok/Brass	1	1	1
28	04187B	04187B	04187B	Hand Hole Cover Gasket	SBR Rubber	1	1	1
29	02079A	02079A	02079A	5/8-11x2" H.H.C. Screw	Steel	4	4	4
30	01986C	01986C	01986C	Hook	Cast Manganese Bronze	1	1	1
31	05436C	05436C	05436C	Hand Hole Cover	Cast Ductile Iron	1	1	1
32	-	-	-	Adapter	Cast Ductile Iron	1	1	1

* SUB-ASSEMBLIES AVAILABLE

ITEM No.	3" E-2	4" E-2	6" E-1	DESCRIPTION	MATERIAL	3"	4"	6"
5-12, 14-17, 19, 20, 22, 23, 25, 26, 30,	03748C	03748C	04617C	Member Assembly	Various	1	1	1
6-8, 22, 23, 16, 17, 19, 20	04871B	04871B	04619B	Clapper Assembly	Various	1	1	1
	03761B	03761B	01998B	Air Plate Assembly	Various	1	1	1

TROUBLESHOOTING THE VIKING MODEL E DRY PIPE VALVE (CONTINUED)

Symptom: There is air pressure coming out of the drip check when I press on the black knob at the drip check (velocity check).

Air pressure running out of the drip check usually means that there is either a cut in the clapper rubber, some debris between the air seat and the clapper rubber, or a nick in the valve seat.

Remedy: Shut the system down, and bleed the air pressure off the system. Undo the faceplate bolts and remove the cover. Check the clapper for cuts, debris, etc, which may cause the clapper not to seat. Check the clapper for alignment with the air seat and water seat. There should be two concentric "grooves" formed into the clapper rubber, one from the water seat, and the outer one from the air seat. If the clapper rubber shows signs of nicks and or cuts, etc, replace it with a new clapper rubber. If it looks like the clapper rubber is off-center, or that part of the clapper rubber is folded and does not seal with the air seat, it may be that the clapper arm has moved to one side or the other. You can re-align the clapper arm by using a large slotted screwdriver to move the clapper arm back towards its centered position. Insert the large slotted screwdriver in between the clapper arm and the pivot support for the clapper arm pin, and move the entire clapper arm assembly to the left or right as required, until the assembly is centered.

TROUBLESHOOTING THE VIKING MODEL E DRY PIPE VALVE (CONTINUED)

Symptom: Water is running out of the drip check, but the valve clapper rubber is not leaking, nor is the Air Plate Rubber cut. This valve has the older trim with a ½” 3 way alarm-test valve on it.

If, after doing the previous tests on the valve, and it has been determined that the clapper rubber and air plate rubber are not leaking, then check the discharge side of the 3-way alarm test valve. The valve seal may be leaking by, and it will not seal off the water pressure on the pressurized side of the valve. Water will be running out of the drip check, through the drain check valve. This can be checked by removing the drip check and then using a flashlight to look into the trim piping back towards the drain check. If the water is not coming out of the intermediate chamber, but from the drip check instead, then the three way alarm test valve seal is leaking.

Sometimes the seal can be tightened by putting a wrench on the hex head side of the valve and tightening the hex head nut which will push on the ball valve seal. If it still leaks, then it must be replaced with a new 3 way alarm test valve.

NOTE: SOME OLDER DRY VALVE TRIM CAME WITH A 3 WAY PLUG TYPE VALVE (NOT A BALL VALVE STYLE VALVE) IN THE TRIM. THIS VALVE IS NO LONGER AVAILABLE, AND THE TRIM MUST BE REFITTED WITH TWO BALL VALVES INSTEAD.

TROUBLESHOOTING THE VIKING MODEL D-1 ACCELERATOR

The Model D-1 accelerator was installed between two ½" ball valves, and had a built-in anti flood device which was integral with the body of the Accelerator. It operates on the principal of unbalanced pressures. There is a gauge on top of the accelerator which should read the same pressure as the system air pressure. When there is a sudden drop in air pressure, the lower portion of the accelerator has a lower pressure than the upper chamber, and that pressure differential causes the upper diaphragm to push down on the operating rod. The operating rod is tapered, and the tapered part of it passes through the clapper, causing the chamber behind the clapper to vent to atmosphere. When the chamber behind the clapper is vented, air pressure from the underside of the clapper diaphragm pushes the clapper open, allowing system air pressure to be redirected into the intermediate chamber of the dry valve. This rapid addition of air pressure in the intermediate chamber of the dry valve, causes the valve to trip much faster, thereby accelerating the valve tripping process.

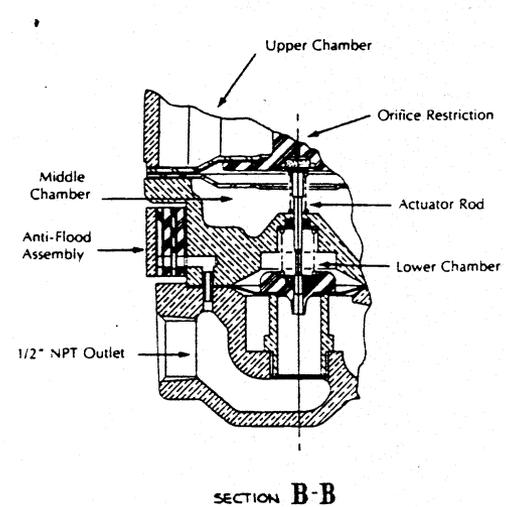
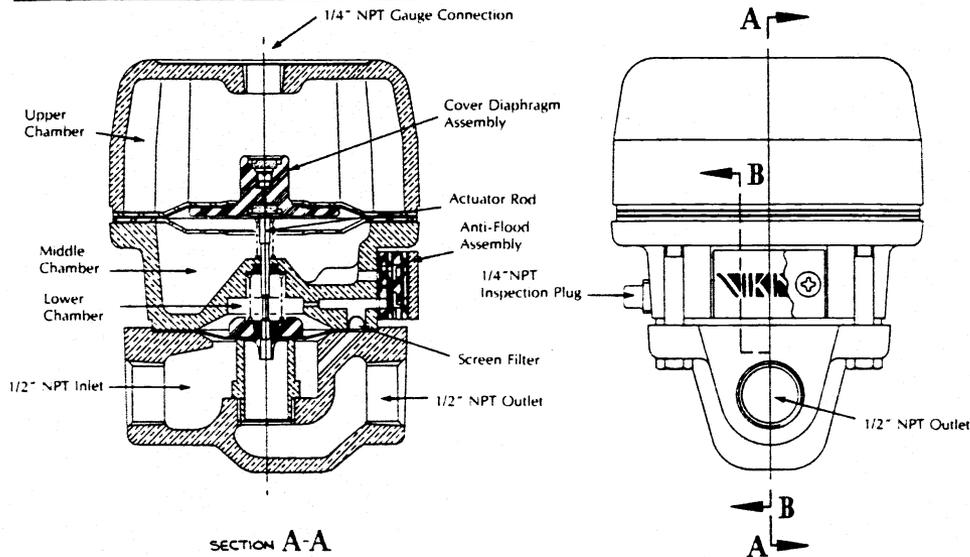
The two ball valves were installed on either side of the accelerator to isolate the accelerator for maintenance purposes. It is a very good idea to leave those ball valves open all the time, even after operation of the system. If the two valves are closed after system operation, then water is trapped in the piping between the accelerator and the valve. Should the wrong ball valve be opened first, once system air pressure is being reestablished, the air pressure will force the trapped water right up inside the accelerator and flood it. This makes it necessary to rebuild the accelerator. A sign that the accelerator has been flooded, is to remove the inspection plug at the side of the accelerator, while the system is being repressurized, to see if there is water or bubbles that are present once the plug is removed. Also, check the plug end for rust. Any of these signs mean that the accelerator has been plugged and must be rebuilt. This also means replacing the cover diaphragm assembly because there is a jeweled orifice in it that is probably plugged and causes the accelerator to malfunction. The gauge on top of the accelerator will not register any pressure if the jeweled orifice in the cover diaphragm is plugged.

VIKING MODEL D-1 ACCELERATOR

November 1987

113

	<h2>TECHNICAL DATA</h2>	<h2>ACCELERATOR MODEL D - 1</h2>
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10. INSTALLATION

TROUBLESHOOTING THE VIKING MODEL D-1 ACCELERATOR

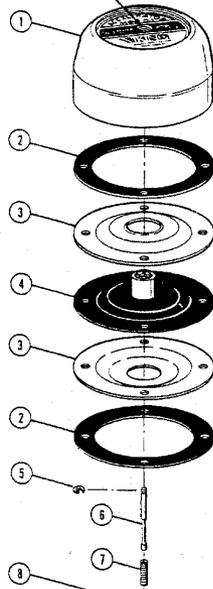
Symptom: The gauge on the top of the Accelerator does not register system air pressure.

When this happens, it usually means that the jeweled orifice in the top chamber of the Accelerator has been flooded, and it is not allowing air pressure up into the upper chamber of the Accelerator. To check for flooded Accelerators while air is refilling the system, remove the ¼" plug from the side of the Accelerator. If water runs out of the Accelerator, or if there is rust on the end of the plug, or if bubbles run out of the hole, then the upper chamber has probably been flooded.

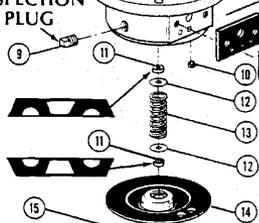
Shut off the two ball valves in the air line to the Accelerator, and break the ½" union. Take the Accelerator and the ½" galvanized piping off the valve, to a workbench. Turn the Accelerator upside down, remove the 4 bolts, then disassemble the cover or top from the accelerator. Once the cover is off, the cover diaphragm assembly (Viking Part Number 05480B) can be seen. If the accelerator shows any signs of having been flooded, then the cover diaphragm assembly has to be removed and replaced. If time permits, you may also want to rebuild the rest of the accelerator. Order a repair kit, Viking Part Number 06091A. This kit replaces essentially all of the moving parts inside the accelerator. This should only be done if there was corrosion on any of the parts, or if any of the pieces were bent, broken, or damaged in any way.

The built in antiflood assembly can also be removed and either taken apart and dried out, or the entire unit can be replaced. If you take it apart to dry it out, be very careful to follow the exact reinstallation and direction of reassembly for each piece. The plastic pieces are numbered, but the rubber pieces in between are not.

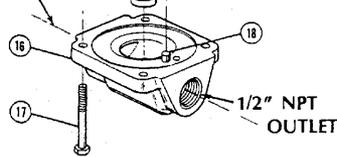
**GUAGE CONNECTION
1/4 NPT**



**INSPECTION
PLUG**



1/2" NPT INLET



ACCELERATOR MODEL D-1 MANUFACTURED 1984 —

ITEM NO.	PART NUMBERS	DESCRIPTION	MATERIAL	NO. REQ'D.
1	—	Cover	Brass Casting	1
2	05479A	Cover Gasket	Buna-N	2
3	05018B	Diaphragm Support	Stainless Steel 304	2
4	05480B	Cover Diaphragm Ass'y.	Various, Nitrile	1
5	*	Retaining Ring	Stainless Steel 157	1
6	*	Actuator Rod	Brass Rod	1
7	*	Actuator Rod Spring	Stainless Steel 302	1
8	—	Housing	Brass Casting	1
9	05105S	1/8" Pipe Plug	Steel	1
10	*	Screen Filter	Stainless Steel 304	1
11	*	U-Cup	Buna-N	2
12	*	U-Cup Retainer	Stainless Steel 302/304	2
13	*	Housing Spring	Stainless Steel 302	1
14	*	Clapper Diaphragm	Polyethersulfone/EPDM	1
15	05344A	Seat	Brass Rod	1
16	—	Base	Brass Casting	1
17	05478A	Hex Head Cap Screw	Steel 1/4-20 UNC x 2-1/4	4
18	05472A	Locating Pin	Stainless Steel 304	1
19	05486A	Anti-flood Cover	Brass Bar	1
20	07048A	Anti-Flood Cover Screw	Stainless #8-32 UNC x 7/8	2
21	06057A	Anti-flood Kit	Various	1

*Sub-Assemblies

10, 11, 12, 14	06058A	Clapper Diaphragm Kit	Various	
5, 6, 7, 10-13	06091A	Repair Kit	Various	



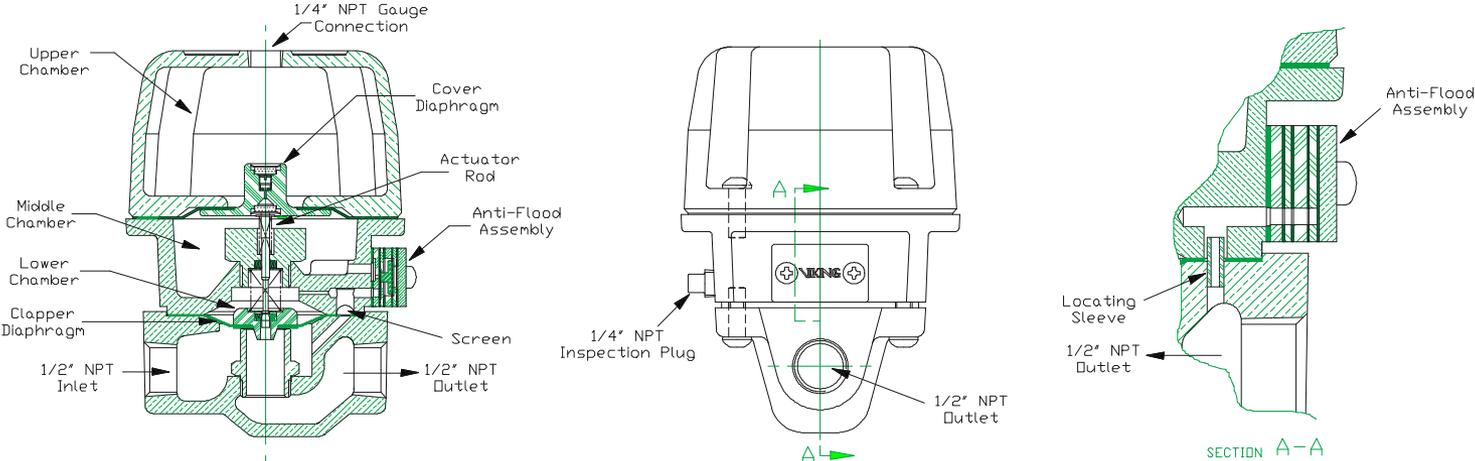
⬡ *DENOTES ASSEMBLY SEQUENCE NUMBERS IMPRINTED ON PART NOTE THAT THE PLASTIC PARTS AND RUBBER DIAPHRAGMS ARE NOTCHED FOR PROPER ASSEMBLY.

TROUBLESHOOTING THE VIKING MODEL D-2 ACCELERATOR

The Model D-2 accelerator is very similar to the Model D-1 accelerator. Several changes were made to the body of the accelerator, in order to make it easier to service. It was installed between two ½" ball valves, and has a built-in anti flood device which is integral with the body of the Accelerator. It operates on the principal of unbalanced pressures. There is a gauge on top of the accelerator which should read the same pressure as the system air pressure. When there is a sudden drop in air pressure, the lower portion of the accelerator has a lower pressure than the upper chamber, and that pressure differential causes the upper diaphragm to push down on the operating rod. The operating rod is tapered, and the tapered part of it passes through the clapper, causing the chamber behind the clapper to vent to atmosphere. When the chamber behind the clapper is vented, air pressure from the underside of the clapper diaphragm pushes the clapper open, allowing system air pressure to be redirected into the intermediate chamber of the dry valve. This rapid addition of air pressure in the intermediate chamber of the dry valve, causes the valve to trip much faster, thereby accelerating the valve tripping process.

The two ball valves were installed on either side of the accelerator to isolate the accelerator for maintenance purposes. It is a very good idea to leave those ball valves open all the time, even after operation of the system. If the two valves are closed after system operation, then water is trapped in the piping between the accelerator and the valve. Should the wrong ball valve be opened first, once system air pressure is being reestablished, the air pressure will force the trapped water up inside the accelerator and flood it. This makes it necessary to rebuild the accelerator. A sign that the accelerator has been flooded, is to remove the inspection plug at the side of the accelerator, while the system is being repressurized, to see if there is water or bubbles that are present once the plug is removed. Also, check the plug end for rust. Any of these signs mean that the accelerator has been plugged and must be rebuilt. This also means replacing the cover diaphragm assembly because there is a jeweled orifice in it that is probably plugged and causes the accelerator to malfunction. The gauge on top of the accelerator will not register any pressure if the jeweled orifice in the cover diaphragm is plugged.

VIKING MODEL D-2 ACCELERATOR



TROUBLESHOOTING THE VIKING MODEL D-2 ACCELERATOR

Symptom: The gauge on the top of the Accelerator does not register system air pressure.

When this happens, it usually means that the jeweled orifice in the top chamber of the Accelerator has been flooded, and it is not allowing air pressure up into the upper chamber of the Accelerator. To check for flooded Accelerators while air is refilling the system, remove the ¼" plug from the side of the Accelerator. If water runs out of the Accelerator, or if there is rust on the end of the plug, or if bubbles run out of the hole, then the upper chamber has probably been flooded.

Shut off the two ball valves in the air line to the Accelerator, and break the ½" union. Take the Accelerator and the ½" galvanized piping off the valve, to a workbench. Turn the Accelerator upside down, remove the 4 bolts, then disassemble the cover or top from the accelerator. Once the cover is off, the cover diaphragm assembly (Viking Part Number 05480B) can be seen. If the accelerator shows any signs of having been flooded, then the cover diaphragm assembly has to be removed and replaced. If time permits, you may also want to rebuild the rest of the accelerator. Order a repair kit, Viking Part Number 06091A. This kit replaces essentially all of the moving parts inside the accelerator. This should only be done if there was corrosion on any of the parts, or if any of the pieces were bent, broken, or damaged in any way.

The built in antiflood assembly can also be removed and either taken apart and dried out, or the entire unit can be replaced. If you take it apart to dry it out, be very careful to follow the exact reinstallation and direction of reassembly for each piece. The plastic pieces are numbered, but the rubber pieces in between are not.

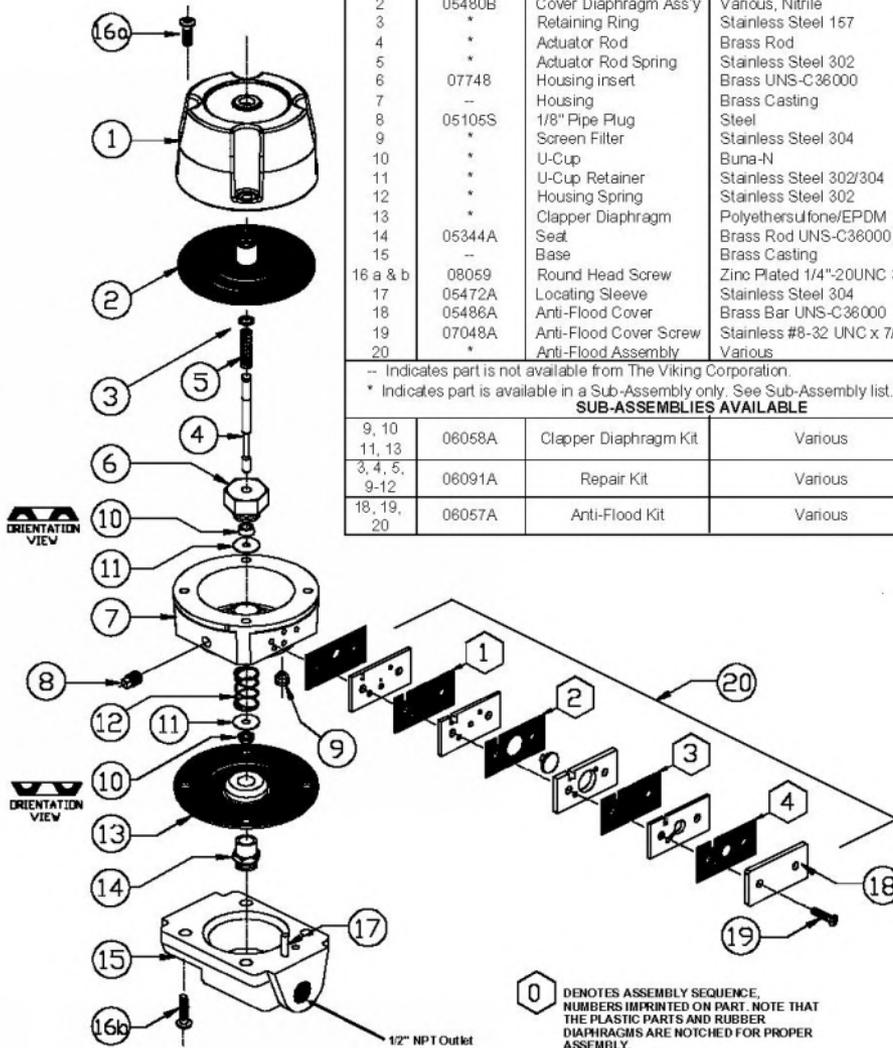
VIKING MODEL D-2 ACCELERATOR

ITEM NO.	PART NUMBERS	DESCRIPTION	MATERIAL	NO. REQ'D
1	—	Cover	Brass Casting	1
2	05480B	Cover Diaphragm Ass'y	Various, Nitrile	1
3	*	Retaining Ring	Stainless Steel 157	1
4	*	Actuator Rod	Brass Rod	1
5	*	Actuator Rod Spring	Stainless Steel 302	1
6	07748	Housing insert	Brass UNS-C38000	1
7	—	Housing	Brass Casting	1
8	05106S	1/8" Pipe Plug	Steel	1
9	*	Screen Filter	Stainless Steel 304	1
10	*	U-Cup	Buna-N	2
11	*	U-Cup Retainer	Stainless Steel 302/304	2
12	*	Housing Spring	Stainless Steel 302	1
13	*	Clapper Diaphragm	Polyethersulfone/EPDM	1
14	05344A	Seat	Brass Rod UNS-C38000	1
15	—	Base	Brass Casting	1
16 a & b	08059	Round Head Screw	Zinc Plated 1/4"-20UNC 3/4"	8
17	05472A	Locating Sleeve	Stainless Steel 304	1
18	05486A	Anti-Flood Cover	Brass Bar UNS-C38000	1
19	07048A	Anti-Flood Cover Screw	Stainless #8-32 UNC x 7/8"	2
20	*	Anti-Flood Assembly	Various	1

— Indicates part is not available from The Viking Corporation.
* Indicates part is available in a Sub-Assembly only. See Sub-Assembly list.

SUB-ASSEMBLIES AVAILABLE

9, 10	06058A	Clapper Diaphragm Kit	Various	—
11, 13				
3, 4, 5, 9-12	06091A	Repair Kit	Various	—
18, 19, 20	06057A	Anti-Flood Kit	Various	—



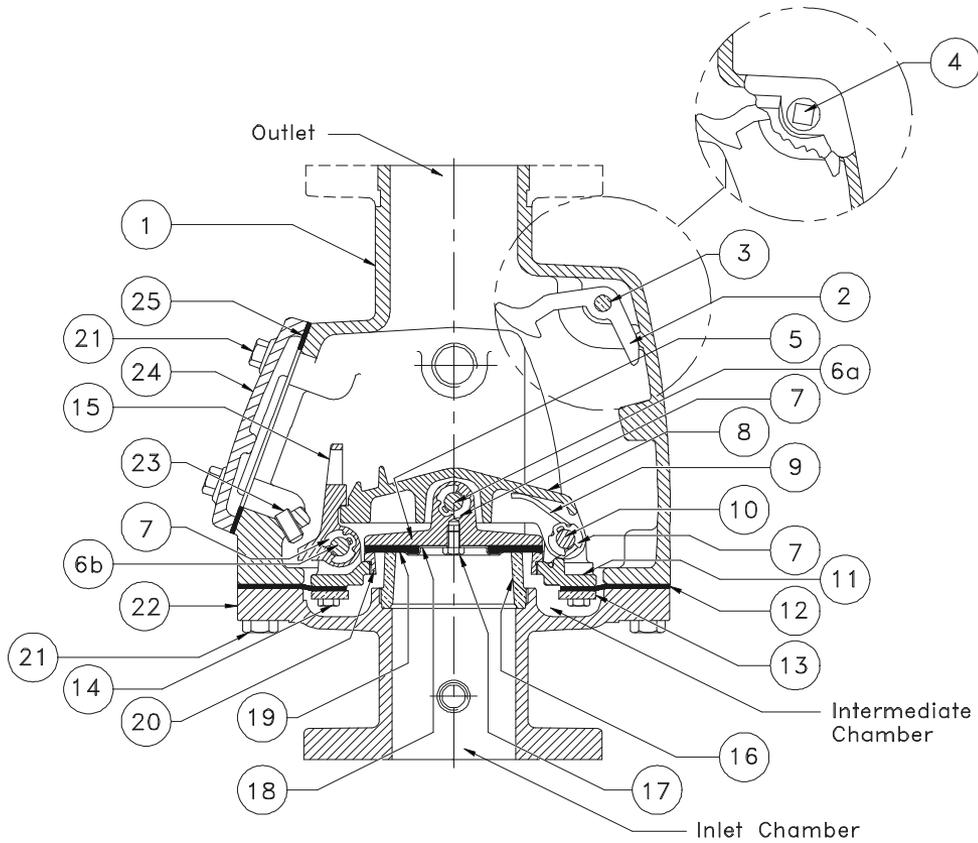
TROUBLESHOOTING THE VIKING MODEL F-1 DRY PIPE VALVE

The Model F-1 Dry Pipe Valve is a differential type dry pipe valve with a floating member assembly. It has an area above the clapper which is 6 times larger than the waterway, so 1 pound of air pressure can hold back 6 pounds of water pressure. It has a latching type clapper, and is available in 3", 4" and 6" sizes, and it has either a flanged outlet or a grooved outlet. The body is Ductile Iron, as are the clapper and clapper arm. The Mode F-1 Dry Pipe Valve is about 33% lighter than previous versions.

Symptom: I just reset the valve, started putting air in the system, and water is coming out of the ball drip valve! why?

Water running out of the ball drip valve when the system is pressurized usually means that there is a cut in the air plate rubber. Air pressure is then forcing the water through the air plate rubber cut, and it will only leak water once air pressure is applied.

Remedy: Check the clapper rubber for cuts, check the valve seat for nicks and or rocks, debris preventing the rubber from seating. Check for clapper alignment on the seats of the valve, make sure that the outline of the air seat and water seat on the clapper rubber are concentric with the clapper rubber itself. If they are not concentric, then try to align the clapper arm to center the clapper rubber with the seats. If this does not fix the problem, then fill the valve with water up to the face plate opening, button up the valve, and begin putting air pressure back into the valve. If water begins to leak out of the ball drip valve at this point, then there is a cut in the air plate rubber, and it will need to be replaced. (This will mean removing the valve from the riser, turning it upside down, and removing the bolts that hold the two halves of the valve body together, in order to separate the base from the housing.)



VIKING MODEL F-1 DRY PIPE VALVE AND COMPONENTS

**Table 2
For use with Figure 2**

Item No.	Part Number			Description	Material	No. Req'd		
	3" F-1	4" F-1	6" F-1			3"	4"	6"
1	-	-	-	Housing	Ductile iron 65-45-12	1	1	1
2	07641	07641	07641	Latch	Brass: UNS-C84400	1	1	1
3	08449	08449	08449	Latch Pin	Brass: UNS-C36000	1	1	1
4	-	-	-	½" NPT Pipe Plug	Steel	1	1	1
5	*	*	*	Clapper Assembly (includes bushings)	Ductile iron 65-45-12 Teflon [®] Coated Steel	1	1	2
6a	07654	07654	07654	Clapper Rod	Brass: UNS-C36000	1	1	1
6b	07654	07654	07654	Hook Rod	Brass: UNS-C36000	1	1	1
7	05369A	05369A	05369A	Retaining Ring	Stn. Stl.: UNS-S15700	6	6	6
8	07934	07934	08480	Clapper Arm Assy (includes bushings)	Ductile iron 65-45-12 Teflon [®] Coated Steel	1	1	1
9	07858	07658	07658	Spring	Type 302 St. St. Wire	1	1	1
10	07855	07655	07655	Clapper Arm Rod	Brass: UNS-C36000	1	1	1
11	*	*	*	Air Plate Assy (includes bushings)	Ductile iron 65-45-12 Teflon [®] Coated Steel	1	1	1
12	07850	07650	08477	Diaphragm	Nylon Reinforced Neoprene	1	1	1
13	07849	07649	08478	Diaphragm Retainer	Ductile iron 65-45-12	1	1	1
14	-	-	-	H.H.C. Screw 3/8" - 15 x 3/4" (19.0 mm) Lg.	Steel: Zn; Plated	10	10	12
15	07935	07935	07935	Hook Assy (includes bushings)	Ductile iron 65-45-12 Teflon [®] Coated Steel	1	1	1
16	-	-	-	Water Seat	Brass: UNS-C84400	1	1	1
17	-	-	-	H.H.C. Screw 3/8" - 6 x ½" (12.7 mm) Lg.	Stn. Stl.: UNS-S30400	1	1	1
18	07850	07650	07650	Rubber Retainer	Stn. Stl.: UNS-S30400	1	1	1
19	07851	07651	08487	Clapper Rubber	Ethylene Propylene	1	1	1
20	*	*	*	Air Seat	Brass: UNS-C84400	1	1	1
21	02079A	02079A	02079A	5/8" - 11 x 2" (50.8 mm) Lg. H.H.C. Screw	Steel	14	14	16
22	-	-	-	Base	Ductile iron 65-45-12	1	1	1
23	08056	08056	08056	Occ. Oct Core Assy ½" - 13 x 1" (25.4 mm) Lg.	Brass: UNS-C36000	1	1	1
24	05436C	05436C	05436C	Cover	Ductile iron 65-45-12	1	1	1
25	0418/B	0418/B	0418/B	Cover Gasket	SBR Garok 181	1	1	1

- Indicates part is not available from Viking.
* Indicates part is available in a Sub-Assembly. See Sub-Assembly List

SUB-ASSEMBLIES

Item No. Included	Part Number			Sub-Assembly Description	No. Req'd		
	3"	4"	6"		3"	4"	6"
5-15 17-20	08230	08230	08473	Replacement Member Sub-Assembly	1	1	1
11-14, 20	08323	08323	08486	Replacement Air Plate Sub-Assembly	1	1	1

TROUBLESHOOTING THE VIKING MODEL F-1 DRY PIPE VALVE (CONTINUED)

Symptom: There is air pressure coming out of the drip check when I press on the black knob at the drip check (velocity check).

Air pressure running out of the drip check usually means that there is either a cut in the clapper rubber, some debris between the air seat and the clapper rubber, or a nick in the valve seat.

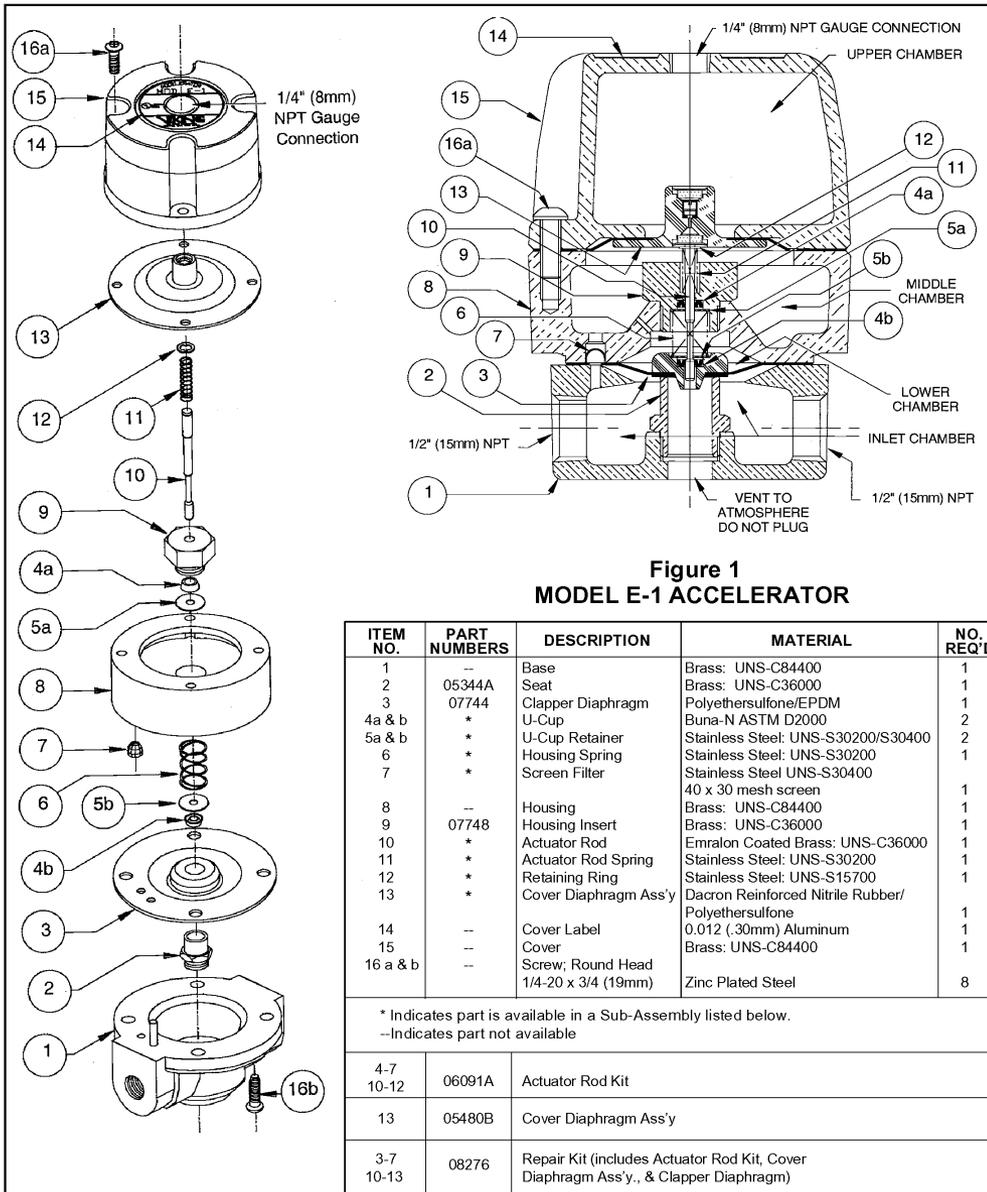
Remedy: Shut the system down, and bleed the air pressure off the system. Undo the faceplate bolts and remove the cover. Check the clapper for cuts, debris, etc, which may cause the clapper not to seat. Check the clapper for alignment with the air seat and water seat. There should be two concentric "grooves" formed into the clapper rubber, one from the water seat, and the outer one from the air seat. If the clapper rubber shows signs of nicks and or cuts, etc, replace it with a new clapper rubber. If it looks like the clapper rubber is off-center, or that part of the clapper rubber is folded and does not seal with the air seat, it may be that the clapper arm has moved to one side or the other. You can re-align the clapper arm by using a large slotted screwdriver to move the clapper arm back towards its centered position. Insert the large slotted screwdriver in between the clapper arm and the pivot support for the clapper arm pin, and move the entire clapper arm assembly to the left or right as required, until the assembly is centered.

TROUBLESHOOTING THE VIKING MODEL E ACCELERATOR AND B-1 ANTI-FLOOD DEVICE

The Model E accelerator is fairly similar to the Model D-2 accelerator. However, it does not have a built-in Antiflood device, because it uses a separate B-1 Antiflood Device instead. It also has an isolation ball valve installed in the air line which feeds the A-1 Float Check valve and Accelerator. It operates on the principle of unbalanced pressures. There is a gauge on top of the Accelerator which should read the same pressure as the system air pressure. When there is a sudden drop in air pressure, the lower portion of the Accelerator has a lower pressure than the upper chamber, and that pressure differential causes the upper diaphragm to push down on the operating rod. The operating rod is tapered, and the tapered part of it passes through the clapper, causing the chamber behind the clapper to vent to atmosphere. When the chamber behind the clapper is vented, air pressure from the underside of the clapper diaphragm pushes the clapper open, allowing system air pressure to be redirected to atmosphere. This rapid drop of air pressure in the trim piping also causes a sudden drop in air pressure to the upper chamber of the B-1 Antiflood device. When the air pressure in the upper chamber of the Antiflood device drops quickly, it destroys the differential in the B-1 Antiflood device, causing it to trip. When the Antiflood device trips, it allows the system air pressure to proceed into the intermediate chamber of the Dry Pipe valve, destroying the differential of the Valve, causing it to trip.

The A-1 Float Check valve is located in the air supply piping to the Model E Accelerator, and it allows air pressure to pass by the device, but when the valve trips, it prevents water from ever reaching the Model E Accelerator. If the A-1 Float Check Valve does not function properly (dirt or debris in the device at the ball seat), then water may reach the Model E Accelerator and flood it. At that point, water will be seen running out the bottom of the Accelerator. Should this occur, then the Accelerator must be rebuilt. This also means replacing the cover diaphragm assembly because there is a jeweled orifice in it that is probably plugged and it causes the Accelerator to malfunction. The gauge on top of the Accelerator will not register any pressure if the jeweled orifice in the cover diaphragm is plugged. That is another sure sign that the Accelerator has to be rebuilt.

VIKING MODEL E-1 ACCELERATOR AND COMPONENTS



ITEM NO.	PART NUMBERS	DESCRIPTION	MATERIAL	NO. REQ'D
1		Base	Brass: UNS-C84400	1
2	05344A	Seat	Brass: UNS-C36000	1
3	07744	Clapper Diaphragm	Polyethersulfone/EPDM	1
4a & b	*	U-Cup	Buna-N ASTM D2000	2
5a & b	*	U-Cup Retainer	Stainless Steel: UNS-S30200/S30400	2
6	*	Housing Spring	Stainless Steel: UNS-S30200	1
7	*	Screen Filter	Stainless Steel UNS-S30400	1
8	—	Housing	Brass: UNS-C84400	1
9	07748	Housing Insert	Brass: UNS-C36000	1
10	*	Actuator Rod	Emralon Coated Brass: UNS-C36000	1
11	*	Actuator Rod Spring	Stainless Steel: UNS-S30200	1
12	*	Retaining Ring	Stainless Steel: UNS-S15700	1
13	*	Cover Diaphragm Ass'y	Dacron Reinforced Nitrile Rubber/ Polyethersulfone	1
14	—	Cover Label	0.012 (.30mm) Aluminum	1
15	—	Cover	Brass: UNS-C84400	1
16 a & b	—	Screw; Round Head	1/4-20 x 3/4 (19mm)	8
* Indicates part is available in a Sub-Assembly listed below. —Indicates part not available				
4-7 10-12	06091A	Actuator Rod Kit		
13	05480B	Cover Diaphragm Ass'y		
3-7 10-13	08276	Repair Kit (includes Actuator Rod Kit, Cover Diaphragm Ass'y., & Clapper Diaphragm)		

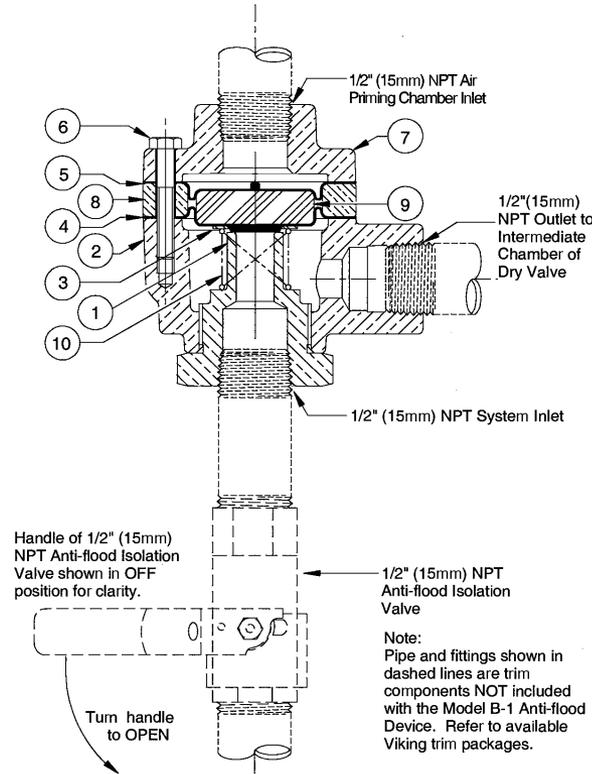
VIKING MODEL B-1 ANTI-FLOOD DEVICE AND COMPONENTS

Disassembly

- Using a 5/16" (8mm) wrench, loosen the three #10-24 hex head screws (6). Hold cover (7) down to overcome the internal spring pressure to remove screws.
- With the cover (7) removed, upper diaphragm (5), spacer (8), piston (9), lower diaphragm (4), spring pad (3), and spring (10) can be removed for inspection and cleaning.
- Check the sealing surface of brass seat (1). If foreign matter, pitting or roughness is present, clean or replace the seat as required.
- If it is necessary to remove the seat:
 - Place the body (2) in a vice.
 - Use a wrench applied to the 1-1/2" (38mm) hex flats of seat (1) to turn seat (1) counterclockwise to remove it from body (2).

Reassembly

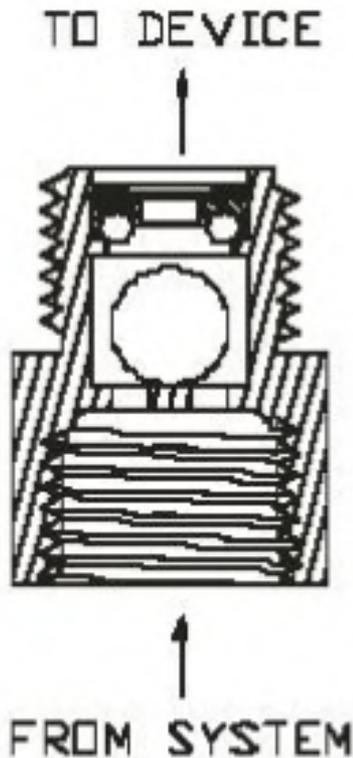
- Re-install spring (10) sliding it over the internal waterway of brass seat (1).
- Drop the three screws (6) into the screw openings in cover (7) and turn the cover (with screws) upside-down on a smooth surface.
- Locate Upper Diaphragm (5). Position the surface of Upper Diaphragm (5), containing the small 1/8" (3mm) diameter projection in the center, down (toward threaded opening of cover) on inverted cover (7), taking care to align the screw openings over screws (6).
- Place piston (9) into the 1-5/16" (33.3mm) diameter depression molded into the surface of upper diaphragm (5). [After completing step 3 above, this surface is facing up, away from the threaded opening of inverted cover (7)].
- Align screw openings of spacer (8) over the screws and slide the spacer down against upper diaphragm (5).
- Locate Lower Diaphragm (4). Position the surface with the 1-5/16" (33.3mm) diameter depression, onto piston (9), taking care to align the screw openings over screws (6).
- Place spring pad (3) over the 9/16" (14.3mm) diameter boss on lower diaphragm (4) with burr (rough edge) away from lower diaphragm (4).
- While holding the pieces assembled in steps 2 through 7 together, invert the assembly, aligning screws (6) with the screw openings in body (2).
- Using a 5/16" (8mm) wrench, tighten the three #10-24 hex head screws (6). Do not over tighten.
- To replace seat (1) into body (2):
 - Place body (2) in a vice.
 - Apply a small amount of pipe dope to the external threads of the seat.
 - Thread seat (1) into the internal threads of body (2) finger tight.
 - Using a wrench applied to the 1-1/2" (38mm) hex flats of seat (1), turn seat (1) clockwise until tight (2). Do



ITEM NO.	PART NUMBER	DESCRIPTION	MATERIAL	NO. REQ'D
1	08062	Seat	Brass: UNS-C36000	1
2	--	Body	Brass: UNS-C84400	1
3	04739A	Spring Pad	Stainless Steel UNS-S30400	1
4	04861A	Lower Diaphragm	Polyester/EPDM Fabric	1
5	04735A	Upper Diaphragm	Polyester/NBR Fabric	1
6	--	Screw; M.H.H.#10-24 X 1-1/4" (32mm)	Steel, Zinc plated	3
7	06460B	Cover	Brass: UNS-C84400	1
8	04740B	Spacer	Brass: UNS-C84400	1
9	04736A	Piston	Polycarbonate	1
10	04741A	Spring	Stainless Steel: UNS-S30200	1

Note: -- Indicates replacement part not available.

The Viking Model B-1 anti-flood device is very rugged, and does not require service very often. There is a weep hole in the side of the device, approximately where number 8 is on the section to the left. If air or water is coming out of that weep hole, it usually indicates that the diaphragms have been damaged, and replacement is required. See the disassembly and Reassembly instructions to the left for replacement of parts, etc.



**MUST BE INSTALLED IN
VERTICAL POSITION ONLY**

VIKING MODEL A-1 FLOAT CHECK VALVE

No serviceable Components. To service,
replace with new device P/N 10883

NOTE; On some **dry pipe** systems, the float check may be installed in the air supply with the air pressure pushing on top of the ball, instead of the air pressure coming up from the underside of the device. Either installation is correct, as the device will still prevent the accelerator from flooding when the system trips, because water will rise from below the ball, and float it up to the seat, sealing off the device.