

# **TROUBLE SHOOTING VIKING ALARM VALVES**

# TROUBLESHOOTING THE VIKING MODEL E, F, AND G ALARM VALVES

What are the symptoms of the system?

## **1) Are alarms ringing intermittently?**

a) It is probably the auxiliary valve clapper rubber that has worn out, and now you have a metal to metal seat, and water is leaking by and out to the water motor gong. Suggest inspecting the auxiliary valve clapper and replacing it if the rubber face is worn or gone. The customer must use an auxiliary valve setting tool to adjust the aux. valve clapper.

## **b) Air is trapped in the system piping**

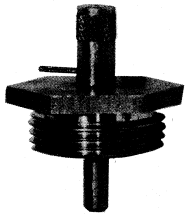
1) Has the system recently been drained down and refilled? If so, it may have been filled too quickly, and air was trapped inside. The air can be compressed when a surge in pressure happens, then the air compresses, causes the clapper to re-close, and it will continue to cycle this way, each time there is a surge, and it will fill the retard chamber, then cause intermittent alarms.

## **2) Does the valve have a retard chamber?**

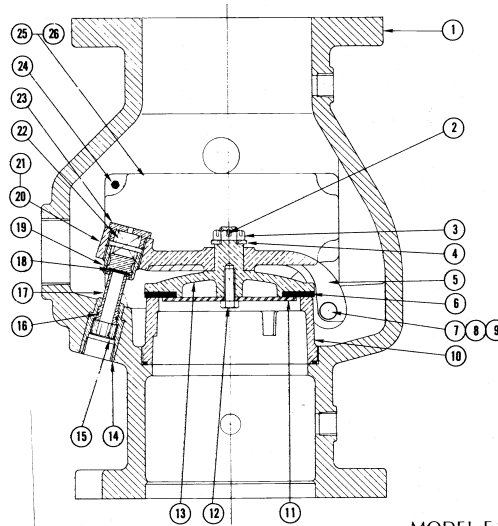
If yes, then does it have a circuit closer vent trim if there is no water motor gong on the retard chamber?

A circuit closer vent trim is used to vent the pressure switch mounted on top of the retard chamber. Without the circuit closer vent trim, it acts the same as when a straw is put into a glass of water and your thumb is held on top. When you remove the straw from the glass, the water stays in the straw until you remove your thumb. The circuit closer vent trim does the same thing by breaking the vacuum in the retard chamber.

# VIKING MODEL E ALARM VALVE



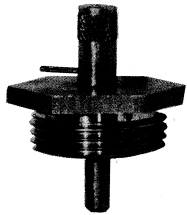
Auxiliary Valve  
Setting Tool  
Part No. 02039B



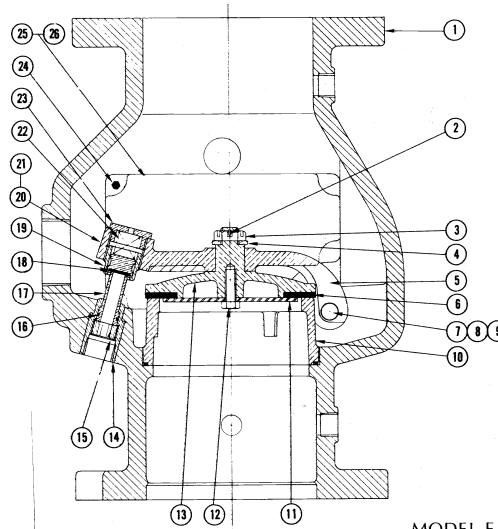
— MODEL F-1 —

ITEM NO.	2.5" 65mm PART NO.	4" 100mm PART NO.	6" 150mm PART NO.	8" 200mm PART NO.	DESCRIPTION	REQ.	MATERIAL
1	*	*	*	*	Body	1	Gray Iron Casting
2	01721A	01721A	01721A	01721A	Cotter Pin	1	Brass
3	01720A	01720A	01720A	01720A	5/8 -11 Slotted Hex Nut	1	Brass
4	01707A	01707A	01707A	01707A	Washer	1	Brass
5	02752C	02193C	01231C	02297C	Clapper Arm	1	Bronze Casting
6	02754A	02194A	01232A	02298A	Clapper Rubber	1	EPDM
7	None	01246B	01246B	None	Pivot Shaft	2	Brass
8	02756A	None	None	02306A	Clapper Arm Shaft	1	Brass
9	02749A	None	None	02566A	Bushing	2	Brass
10	*	*	*	*	Seat	1	Brass
11	02755A	02196A	01234A	02300A	Clamp Plate	1	Stainless Steel
12	02078A				5/16-18x1/2 Lg. Nylok Hex-Head Screw	1	Stainless Steel
		02195A			5/16-18x3/4 Lg. Nylok Hex-Head Screw	1	Stainless Steel
			01233A		3/8-16x1" Lg. Nylok Hex-Head Screw	1	Stainless Steel
				02299A	1/2-13x1" Lg. Nylok Hex-Head Screw	1	Stainless Steel
13	02753B	02197C	01235C	02301C	Clapper	1	Bronze Casting
14	*	*	*	*	Body Insert	1	Brass
15	01236A	01236A	01236A	01236A	Auxiliary Valve Clapper	1	Brass & EPDM
16	01237A	01237A	01237A	01237A	Auxiliary Valve Sleeve	1	Brass
17	01238A	01238A	01238A	01238A	Lead Ball (Not Shown)	1	Lead
18	01274A	01274A	01274A	01274A	3/8-16x3/8 Lg. Socket Set Screw (Not Shown)	1	Brass
19	01239A	01239A	01239A	01239A	Spring	1	Stainless Steel
20	01240A	01240A	01240A	01240A	Auxiliary Valve Cap	1	Brass
21	03717A	02200A	01275A		1/2 - 13 x 1 - 3/4 Lg. Hex-Hd. Cap Screw	6	Steel
					1/2 - 13 x 1 - 1/2 Lg. Hex-Hd. Cap Screw	5	Steel
					5/8 - 11 x 1 - 1/2 Lg. Hex-Hd. Cap Screw	6	Steel
				02101A	3/4 - 10 x 2 - 1/4 Lg. Hex-Hd. Cap Screw	7	Steel
22	02758C	02199B	01229C	02303D	Hand Hole Cover	1	Gray Iron Casting
23	02757B	02198A	01228A	02302C	Cover Gasket	1	Rubber Fabric
*Sub-Assemblies Available							
				2.5" PART NO.	4" PART NO.	6" PART NO.	8" PART NO.
1, 9, 10, 14		Body Ass'y.	02760C	02487C	01222C	02741C	
2, 3, 4, 6, 11, 12, 13		Clapper Ass'y.	02761B	02649B	01835B	02742B	
2, 3, 4, 5, 6, 11, 12		Member					
13, 15, 16, 17, 18, 19, 20		Ass'y.	02751B	02192B	01230B	02296B	

# VIKING MODEL F-1 ALARM VALVE

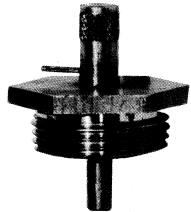
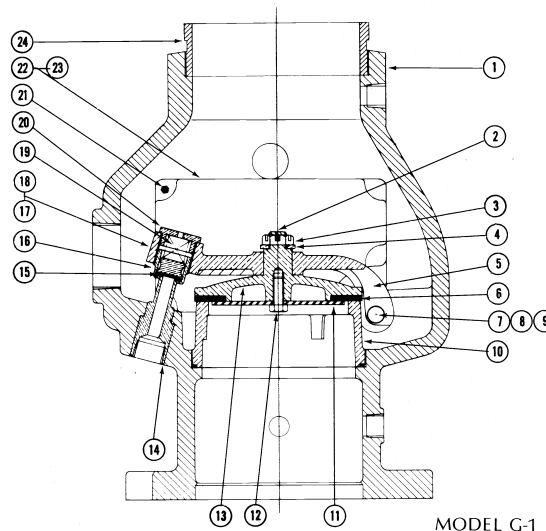


Auxiliary Valve  
Setting Tool  
Part No. 02039B



ITEM NO.	2.5" 65mm PART NO.	4" 100mm PART NO.	6" 150mm PART NO.	8" 200mm PART NO.	DESCRIPTION	REQ.	MATERIAL	
1	*	*	*	*	Body	1	Gray Iron Casting	
2	01721A	01721A	01721A	01721A	Cotter Pin	1	Brass	
3	01720A	01720A	01720A	01720A	5/8 -11 Slotted Hex Nut	1	Brass	
4	01707A	01707A	01707A	01707A	Washer	1	Brass	
5	02752C	02193C	01231C	02297C	Clapper Arm	1	Bronze Casting	
6	02754A	02194A	01232A	02298A	Clapper Rubber	1	EPDM	
7	None	01246B	01246B	None	Pivot Shaft	2	Brass	
8	02756A	None	None	02306A	Clapper Arm Shaft	1	Brass	
9	02749A	None	None	02566A	Bushing	2	Brass	
10	*	*	*	*	Seat	1	Brass	
11	02755A	02196A	01234A	02300A	Clamp Plate	1	Stainless Steel	
12	02078A	02195A			5/16-18x1/2 Lg. Nylok Hex-Head Screw	1	Stainless Steel	
			01233A		5/16-18x3/4 Lg. Nylok Hex-Head Screw	1	Stainless Steel	
				02299A	3/8-16x1" Lg. Nylok Hex-Head Screw	1	Stainless Steel	
				02301C	1/2-13x1" Lg. Nylok Hex-Head Screw	1	Stainless Steel	
13	02753B	02197C	01235C	02301C	Clapper	1	Bronze Casting	
14	*	*	*	*	Body Insert	1	Brass	
15	01236A	01236A	01236A	01236A	Auxiliary Valve Clapper	1	Brass & EPDM	
16	01237A	01237A	01237A	01237A	Auxiliary Valve Sleeve	1	Brass	
17	01238A	01238A	01238A	01238A	Lead Ball (Not Shown)	1	Lead	
18	01274A	01274A	01274A	01274A	3/8-16x3/8 Lg. Socket Set Screw (Not Shown)	1	Brass	
19	01239A	01239A	01239A	01239A	Spring	1	Stainless Steel	
20	01240A	01240A	01240A	01240A	Auxiliary Valve Cap	1	Brass	
21	03717A	02200A	01275A		1/2 - 13 x 1 - 3/4 Lg. Hex-Hd. Cap Screw	6	Steel	
					1/2 - 13 x 1 - 1/2 Lg. Hex-Hd. Cap Screw	5	Steel	
					5/8 - 11 x 1 - 1/2 Lg. Hex-Hd. Cap Screw	6	Steel	
				02101A	3/4 - 10 x 2 - 1/4 Lg. Hex-Hd. Cap Screw	7	Steel	
22	02758C	02199B	01229C	02303D	Hand Hole Cover	1	Gray Iron Casting	
23	02757B	02198A	01228A	02302C	Cover Gasket	1	Rubber Fabric	
*Sub-Assemblies Available								
					2.5" PART NO.	4" PART NO.	6" PART NO.	8" PART NO.
1, 9, 10, 14		Body Ass'y. Clapper Ass'y.			02760C	02487C	01222C	02741C
2, 3, 4, 6, 11, 12, 13			Member			02761B	02649B	01835B
2, 3, 4, 5, 6, 11, 12		Ass'y.						
13, 15, 16, 17, 18, 19, 20						02751B	02192B	01230B

# VIKING MODEL G-1 ALARM VALVE

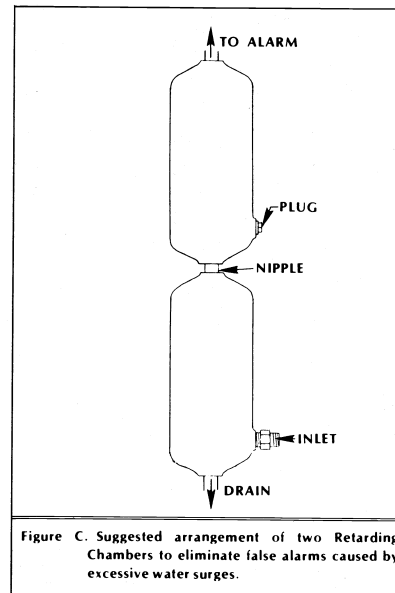
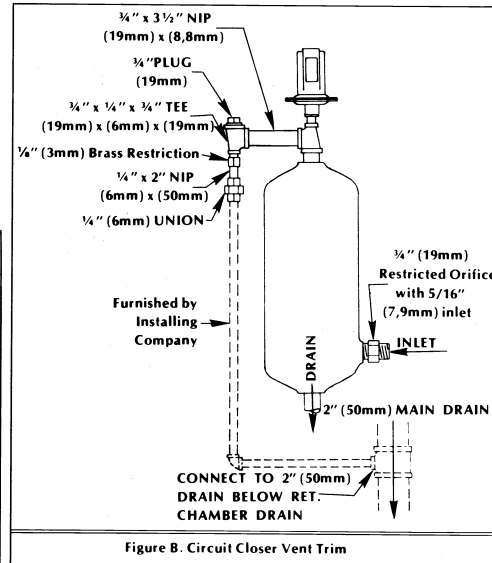
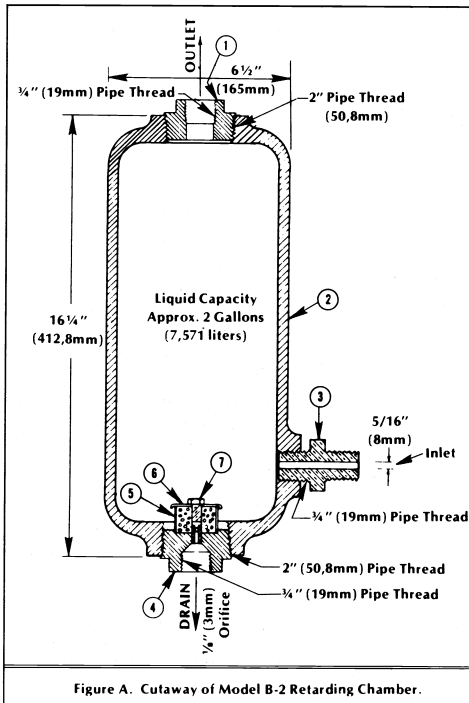


Auxiliary Valve  
Setting Tool  
Part No. 02039B

MODEL G-1

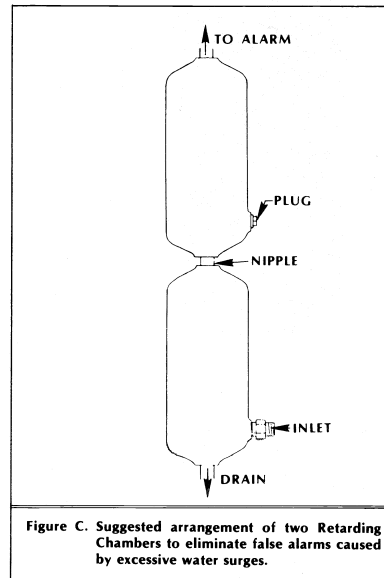
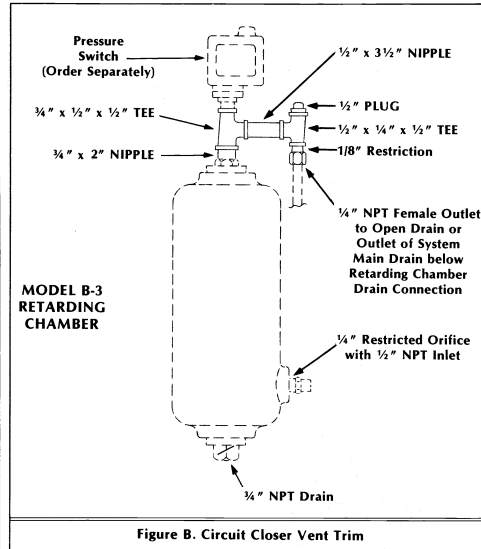
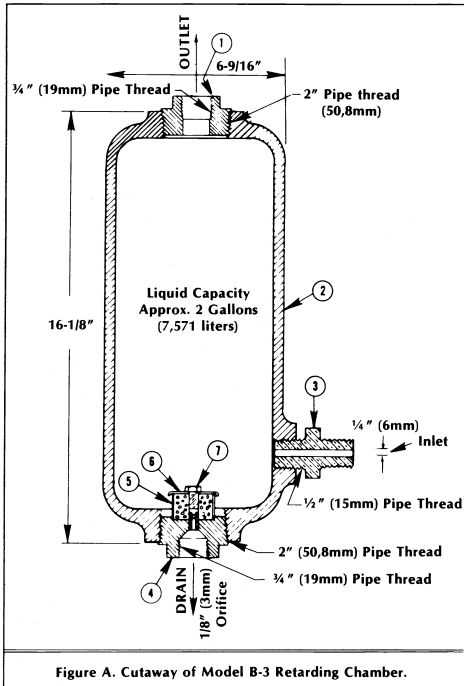
ITEM NO.	2.5"	4"	6"	8"	DESCRIPTION	REQ.	MATERIAL
	65mm PART NO.	100mm PART NO.	150mm PART NO.	200mm PART NO.			
1	*	*	*	*	Body	1	Gray Iron Casting
2	01721A	01721A	01721A	01721A	Cotter Pin	1	Brass
3	01720A	01720A	01720A	01720A	5/8 -11 Slotted Hex Nut	1	Brass
4	01707A	01707A	01707A	01707A	Washer	1	Brass
5	02752C	02193C	01231C	02297C	Clapper Arm	1	Bronze Casting
6	02754A	02194A	01232A	02298A	Clapper Rubber	1	EPDM
7	None	01246B	None	None	Pivot Shaft	2	Brass
8	02756A	None	None	02306A	Clapper Arm Shaft	1	Brass
9	02749A	None	None	02566A	Bushing	2	Brass
10	*	*	*	*	Seat	1	Brass
11	02755A	02196A	01234A	02300A	Clamp Plate	1	Stainless Steel
12	02078A				5/16-18x1/2 Lg. Nylok Hex-Head Screw	1	Stainless Steel
		02195A			5/16-18x3/4 Lg. Nylok Hex-Head Screw	1	Stainless Steel
			01233A		3/8-16x1" Lg. Nylok Hex-Head Screw	1	Stainless Steel
				02299A	1/2-13x1" Lg. Nylok Hex-Head Screw	1	Stainless Steel
13	02753B	02197C	01235C	02301C	Clapper	1	Bronze Casting
14	*	*	*	*	Body Insert	1	Brass
15	01236A	01236A	01236A	01236A	Auxiliary Valve Clapper	1	Brass & EPDM
16	01237A	01237A	01237A	01237A	Auxiliary Valve Sleeve	1	Brass
17	01238A	01238A	01238A	01238A	Lead Ball (Not Shown)	1	Lead
18	01274A	01274A	01274A	01274A	3/8-16x3/8 Lg. Socket Set Screw (Not Shown)	1	Brass
19	01239A	01239A	01239A	01239A	Spring	1	Stainless Steel
20	01240A	01240A	01240A	01240A	Auxiliary Valve Cap	1	Brass
					1/2 - 13 x 1 - 3/4 Lg. Hex-Hd. Cap Screw	6	Steel
		02200A			1/2 - 13 x 1 - 1/2 Lg. Hex-Hd. Cap Screw	5	Steel
			01275A		5/8 - 11 x 1 - 1/2 Lg. Hex-Hd. Cap Screw	6	Steel
				01924A	3/4 - 10 x 1 - 3/4 Lg. Hex-Hd. Cap Screw	7	Steel
22	02758C	02199B	01229C	04185D	Hand Hole Cover	1	Gray Iron Casting
23	02757B	02198A	01228A	02302C	Cover Gasket	1	Rubber Fabric
24	04590B	04110B	04589B	04591B	Grooved Adapter	1	Steel
				2.5"	4"	6"	8"
				PART NO.	PART NO.	PART NO.	PART NO.
1, 9, 10, 14	Body Ass'y.			04607C	04610C	04613C	04616C
2, 3, 4, 6, 11, 12, 13	Clapper Ass'y.			02761B	02649B	01835B	02742B
2, 3, 4, 5, 6, 11, 12	Member						
13, 15, 16, 17, 18, 19, 20	Ass'y.			02751B	02192B	01230B	02296B

# VIKING MODEL B-2 RETARDING CHAMBER (OBSOLETE)



Item No.	Parts No.	Description	Material	No. Req.
1	01590	2 x 1/4" Outlet Bushing	Cast Iron	1
2	01591	Body	Cast Iron	1
3	01278	1/4" Restricted Orifice	Brass	1
4	01595	Drain Plug	Cast Iron	1
5	01521*	Screen	Brass	1
6	01594*	Cap	Brass	1
7	01593*	Orifice	Brass	1
*Sub-Assembly Available				
	01592	Drain Plug Assembly		

# VIKING MODEL B-2 RETARDING CHAMBER (OBSOLETE)



Item No.	Parts No.	Description	Material	No. Req.
1	01590S	2 x 3/4" Outlet Bushing	Cast Iron	1
2	01591C	Body	Cast Iron	1
3	04095A	1/2" Restricted Orifice	Brass	1
4	*	Drain Plug	Cast Iron	1
5	*	Screen	Brass	1
6	*	Cap	Brass	1
7	*	Orifice	Brass	1
*Sub-Assembly Available				
4-7	01592B	Drain Plug Assembly		

# TROUBLESHOOTING THE VIKING MODEL E, F, AND G ALARM VALVES, CONTINUED

What are the symptoms of the system

## 3) Retarding Chamber (continued)

**Have the orifices in the Model B Retarding Chamber been checked to see if they are open?**

Plugged orifices will also create a vacuum in the retard chamber trim and cause the alarms to ring either intermittently or constantly, as the vacuum cannot be broken if the drain orifice is plugged at the bottom of the retard chamber.

Note: The orifice at the bottom of the model B Retard Chamber is part of the drain plug assembly. To replace this orifice, the complete drain plug assembly must be removed and replaced. The retard chamber must be heated up, so that the drain plug assembly can be removed. (The heat expands the retard chamber, and then the drain plug assembly can be “broken away” from the retard chamber. Remember that these retard chambers have been in service for a long time, and they are probably quite rusted.)

Note: Model E Alarm Valves have a very small hand hole cover which makes it difficult to access the auxiliary valve clapper. Therefore, unless the customer only needs to remove the aux. valve clapper or clapper rubber, the valve would need to be removed from the riser and disassembled. There is no reason today to do this, as there are no other serviceable parts available. Replacing the valve with a current model is the best fix for this situation.



# TROUBLESHOOTING THE VIKING MODEL H, H2, AND J-1 ALARM VALVES

What are the symptoms of the system?

## 1) Are the alarms ringing intermittently?

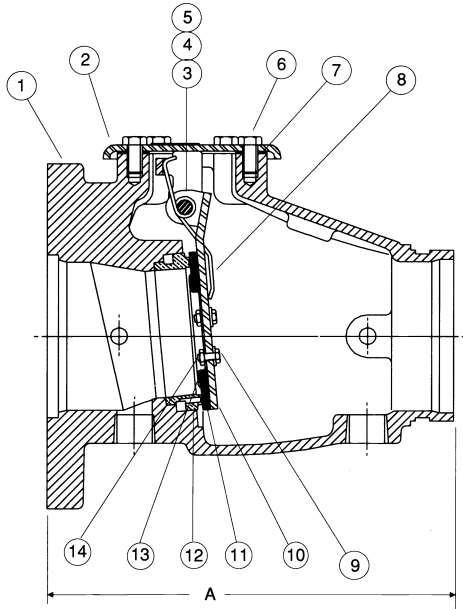
Once again, intermittent alarms are usually caused by air being trapped in the system. If the system is a new installation or has recently been added on to or revised, then it is very likely that air is trapped in the system, and it causes the clapper on the EZ Riser or H, H2 or J-1 to open and close (cycle), thereby causing intermittent alarming. The contractor will have to go back, drain down the system, open all auxiliary drains, then re-fill it, shutting off each low point drain when a steady stream of water flows from it.

Stacking another C-1 retard chamber on top of the original one may also help to absorb the cycling alarm water, allowing it to run to drain before it can ring the alarm.

### **When does the cycling occur?**

There may be a fire pump test going on at the time of the cycling, and the pump could be causing surges in the water pressure. There also may not be a circuit closer vent trim on the retard chamber, if there is no water motor alarm gong. Therefore, a circuit closer vent trim would break the vacuum in the retard chamber, relieving the trapped pressure on the pressure switch.

# VIKING MODEL H-2 ALARM VALVE



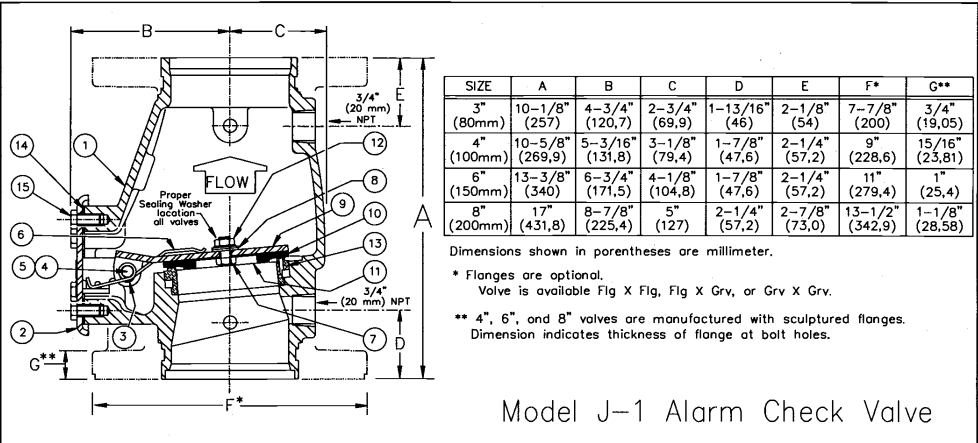
MFG.: 3", 4", 6" & 8" 1987-

VALVE SIZE	"A"
3" (75mm)	10-1/8" (257mm)
4" (100mm)	10-5/8" (270mm)
6" (150mm)	13-3/8" (340mm)
8" (200mm)	17" (432mm)

ITEM NO.	PART NUMBERS				Description	Material	NO. REQ'D			
	3" 80mm	4" 100mm	6" 150mm	8" 200mm			3"	4"	6"	8"
1	-	-	-	-	Body	Cast Ductile Iron	1	1	1	1
2	06051B	05796B	06013B	06016B	Cover Assembly	HSLA Stl./St.	1	1	1	1
3	05355A	04900A	04991A	05334A	Hinge Pin	Stainless Steel	1	1	1	1
4	05445A	05445A	05445A	05369A	Retaining Ring	Stainless Steel	2	2	2	2
5	NONE	06584A	06584A	NONE	Pin Washer	Stainless Steel	0	2	2	0
6	01517A	01517A			3/8-16x3/4 Lg. H.H.C. Screw	Zinc Plated Steel	4	6	0	0
			04993A		1/2-13x7/8 Lg. H.H.C.Screw	Zinc Plated Steel	0	0	6	0
				01922A	5/8-11x1-1/4 H.H.C. Screw	Zinc Plated Steel	0	0	0	6
7	05354B	04649B	04992B	05339C	Cover Gasket	SBR Rubber	1	1	1	1
8	06021B	05939B	05940B	05952B	Torsion Spring	Stainless Steel	1	1	1	1
9	06595A	06595A	06597A	06597A	Washer-Screw Ass'y	Stainless Steel	1	3	5	7
10	05350C	04640C	06366C	06381C	Clapper	Stainless Steel	1	1	1	1
11	*	*	*	*	Clapper Rubber	EPDM/St. Stl.	1	1	1	1
12	-	-	-	-	Seat	Cast Brass	1	1	1	1
13	06849B	06831B	06839B	06896B	Rubber Retainer	Stainless Steel	1	1	1	1
14	01755A	01755A	01755A	01755A	Clapper Nut	Stainless Steel	1	3	5	7
SUB-ASSEMBLIES AVAILABLE										
9,10,11 13,14	06850B	06832B	06840B	06897B	Clapper Assembly					
9,11 13,14	-	06833A	06841A		Clapper Rubber Kit					
9,11 14	06851A	-	-	06898A	Clapper Rubber Kit					

All Model H-2 Valve Parts are interchangeable with Model H-1 Alarm Check Valves.

# VIKING MODEL J-1 ALARM VALVE



SIZE	A	B	C	D	E	F*	G**
3" (80mm)	10-1/8" (257)	4-3/4" (120,7)	2-3/4" (69,9)	1-13/16" (46)	2-1/8" (54)	7-7/8" (200)	3/4" (19,05)
4" (100mm)	10-5/8" (269,9)	5-3/16" (131,8)	3-1/8" (79,4)	1-7/8" (47,6)	2-1/4" (57,2)	9" (228,6)	15/16" (23,81)
6" (150mm)	13-3/8" (340)	6-3/4" (171,5)	4-1/8" (104,8)	1-7/8" (47,6)	2-1/4" (57,2)	11" (279,4)	1" (25,4)
8" (200mm)	17" (431,8)	8-7/8" (225,4)	5" (127)	2-1/4" (57,2)	2-7/8" (73,0)	13-1/2" (342,9)	1-1/8" (28,58)

Dimensions shown in parentheses are millimeter.  
 \* Flanges are optional.  
 Valve is available Fig X Flg, Fig X Grv, or Grv X Grv.  
 \*\* 4", 6", and 8" valves are manufactured with sculptured flanges.  
 Dimension indicates thickness of flange at bolt holes.

Item No.	Part Numbers				Description	Material	No. Req'd			
	3" (80 mm)	4" (100 mm)	6" (150 mm)	8" (200 mm)			3"	4"	6"	8"
1	-	-	-	-	Body	Ductile Iron, ASTM A536 (65-45-12)	1	1	1	1
2	09922	09923	09924	09925	Cover Assembly	E-Coated HSLA Steel, A715 and Stainless Steel, UNS-S30400	1	1	1	1
3	*	*	*	*	Bushing	Lubricomp 189 Ryton	2	2	2	0
4	05355A	04990A	04991A	05334A	Clapper Hinge Pin	Stainless Steel, UNS-S30400	1	1	1	1
5	05445A	05445A	05445A	05369A	Hinge Pin Retaining Ring	Stainless Steel, UNS-S15700	2	2	2	2
6	06021B	05939B	05940B	05952B	Spring	Stainless Steel, UNS-S30200	1	1	1	1
7	*	*	*	*	Clapper Hex Nut 3/8"-16 UNC	Stainless Steel, UNS-S30400	1	1	0	0
8	*	*	*	*	Clapper Hex Nut 1/2"-13 UNC	Stainless Steel, UNS-S30400	0	0	1	1
9	*	*	*	*	Sealing Washer 3/8" x 1" O.D.	EPDM and Stainless Steel	1	1	0	0
10	08070	08072	08073	08075	Sealing Washer 1/2" x 1-1/8" O.D.	EPDM and Stainless Steel	0	0	1	1
11	08071	07659	08074	08076	Clapper	Teflon® Coated HR Steel UNS-G10180	1	1	1	1
12	*	*	*	*	Clapper Rubber	EPDM	1	1	1	1
13	*	*	*	*	Clapper Rubber Retainer	Stainless Steel, UNS-S30400	1	1	1	1
14	05354B	04649B	04992B	05339C	Screw, Button Head, Socket 3/8"-24 UNF x 1/2" (12,7 mm) lg.	Stainless Steel, UNS-S30400	1	1	1	1
15	01517A	01517A	04993A	01922A	Screw, Button Head, Socket 1/2"-20 UNF x 3/8" (19,0 mm) lg.	Stainless Steel, UNS-S30400	0	0	1	0
					Screw, Button Head, Socket 1/2"-20 UNF x 7/8" (22,2 mm) lg.	Stainless Steel, UNS-S30400	0	0	0	1
					Seat	Brass, UNS-C84400	1	1	1	1
					Cover Gasket	SBR Rubber	1	1	1	1
					H.H.C. Screw 3/8"-16 UNC x 3/4" (19,0 mm) lg.	Steel, Zinc Plated	4	6	0	0
					H.H.C. Screw 1/2"-13 UNC x 7/8" (22,2 mm) lg.	Steel, Zinc Plated	0	0	6	0
					H.H.C. Screw 5/8"-11 UNC x 1-1/4" (31,8 mm) lg.	Steel, Zinc Plated	0	0	0	6

-- 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**

Item Nos.	Sub-Assembly Part Numbers				Sub-Assembly Name
	3"	4"	6"	8"	
2-12	09918	09919	09920	09921	Cover/Clapper Assembly
3, 7-12	08518	08519	08520	08521	Clapper Assembly
7, 8, 10-12	08522	08523	08524	08525	Clapper Rubber Kit
7, 8, 12	08735	08735	08736	10309	Clapper Screw, Sealing Washer, Nut Assembly

# TROUBLESHOOTING THE VIKING MODEL H, H2, AND J-1 ALARM VALVES, CONTINUED

## 2) Is there an intermittent alarm when the inspector's test valve is opened?

There may be some air trapped in the system, causing air compression in the piping, and the clapper of the alarm valve will cycle open and closed when there is a flow equivalent to only one sprinkler. One way to try and alleviate this problem is to suggest that the contractor install a ball valve in the inspector's test line, rather than a globe valve, as the ball valve does not restrict the water flow like a globe valve would. Make the piping 1" all the way out to the sprinkler test orifice can also help the situation, as NFPA does not allow for piping smaller than 1" on sprinkler systems other than for residential. NFPA 13 does allow for an intermittent alarm anyway, (see NFPA 13, 1996 Edition, Para. 2-9.1, this paragraph. does not state that a constant alarm is required, only that it results in an audible alarm within 5 minutes after the flow begins, and until such flow stops.)