



TECHNICAL DATA

**EASY RISER™
SWING CHECK VALVE**



1. PRODUCT NAME

Viking Easy Riser™ Swing Check Valve
 Model E-1: 2-1/2" (65 mm)
 Available since 1992
 Model F-1: 3" (80 mm), 4" (100 mm),
 6" (150 mm), and 8" (200 mm)
 Available since 1994

2. MANUFACTURER

The Viking Corporation
 210 N. Industrial Park Road
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 Telephone: (269) 945-9501
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3. PRODUCT DESCRIPTION

The Viking Easy Riser™ Swing Check Valve is a general purpose rubber-faced check valve approved for use in fire service systems. The valve is for use in wet system risers, preaction system risers and wherever a check valve with a drain connection and gauge connections can be utilized. When used with a flow switch on wet pipe systems not requiring a mechanical alarm, the Easy Riser™ Swing Check Valve may replace an alarm check valve.

4. TECHNICAL DATA

For listings and approvals, see the approval chart below.
 Standard Flanged Connections: ANSI B16.42 Class 150 (mates with ANSI Class 125 and Class 150 flanges). Standard Grooved Connections: ANSI/AWWA C606

Tapped Bosses:

For 2-1/2" (65 mm) Model E-1 and 3" (80 mm) Model F-1:

Drain outlet: one 1-1/4" (32 mm) NPT

Gauge: two 1/4" (8 mm) NPT
 Other: two 1/2" (15 mm) NPT

For 4" (100 mm) 6" (150 mm) and 8" (200 mm) Model F-1:

Drain outlet: one 2" (50 mm) NPT

Gauge: two 1/4" (8 mm) NPT
 Other: two 1/2" (15 mm) NPT

Material Standards:

Approval Chart Easy Riser™ Check Valves			
UL ¹	C-UL ²	FM	NYC ³
Yes	Yes	Yes	Yes

¹ UL Listed, Guide No. HMER
² Listed by Underwriters Laboratories, Inc. for use in Canada.
³ Accepted for use, City of New York Department of Buildings, MEA 89-92-E, Vol. XI.

To maintain listings and approvals when valve trim is used, trim must be installed according to Viking Easy Riser™ Trim Charts specifically labeled "Maximum 250 psi water working pressure". See page 815e, order 250 psi (1 724 kPa) trim separately. For Cold Storage application, use Easy Riser Preprimed Preaction Trim and Bypass and Drain Trim, see page 48a-d.

Systems with water working pressures above 175 psi (1 207 kPa) may require extra-heavy pattern fittings. Viking Easy Riser™ Swing Check Valve flanges are Ductile Iron ANSI B16.42, Class 150, with a maximum water working pressure of 250 psi. ANSI B16.42, Class 150 flanges are NOT compatible with ANSI Class 250 or Class 300 flanges. To mate the Easy Riser™ Swing Check Valve with ANSI Class 250 or Class 300 flanges, use the grooved-inlet/grooved-outlet style installed with listed grooved/flanged adapters of the appropriate pressure rating. For piping with grooved connections, the grooved-inlet and/or grooved-outlet style Easy Riser™ Swing Check Valve may be installed with listed grooved couplings of the appropriate pressure rating.

Table 1

Size Valve	Inlet Type	Outlet Type	Friction Loss*	Shipping Weight	Part No.
2-1/2" (65 mm)	Groove	Groove	6 ft. (1,8 m)	16 lbs. (7 kg)	07929
3" (80 mm)	Flange	Flange	10 ft. (3,1 m)	35 lbs. (16 kg)	08505
3" (80 mm)	Flange	Groove	10 ft. (3,1 m)	27 lbs. (12 kg)	08506
3" (80 mm)	Groove	Groove	10 ft. (3,1 m)	20 lbs. (9 kg)	08507
4" (100 mm)	Flange	Flange	13 ft. (4,0 m)	47 lbs. (21 kg)	08508
4" (100 mm)	Flange	Groove	13 ft. (4,0 m)	37 lbs. (17 kg)	08509
4" (100 mm)	Groove	Groove	13 ft. (4,0 m)	27 lbs. (12 kg)	08510
6" (150 mm)	Flange	Flange	20 ft. (6,0 m)	75 lbs. (34 kg)	08511
6" (150 mm)	Flange	Groove	20 ft. (6,0 m)	64 lbs. (29 kg)	08512
6" (150 mm)	Groove	Groove	20 ft. (6,0 m)	51 lbs. (23 kg)	08513
8" (200 mm)	Flange	Groove	23 ft. (7,0 m)	119 lbs. (54 kg)	08515
8" (200 mm)	Groove	Groove	23 ft. (7,0 m)	106 lbs. (48 kg)	08516

*Expressed in equivalent length of Schedule 40 pipe based on Hazen & Williams formula: C = 120.

Viking Easy Riser™ Swing Check Valves are available outside of North America with flanges drilled according to European PN10 specifications or Table E specifications. Contact manufacturer for availability.

Refer to Figure 1 on page 815 c.

5-A. FEATURES

1. Ductile iron body for less weight and extra strength.

FOR THE VIKING ESFR COLD STORAGE SYSTEM:

- Uses only 4", 6", or 8" size Model F-1 Easy Riser Check Valve
- Uses Easy Riser Preprimed Preaction Trim and Bypass and Drain Trim (refer to data page 48 a-d for trim sets used in this application).
- Uses a 1/2" pressure relief valve
- System is designed so maximum operating pressures of the system do not exceed 175 PSI (1 207 kPa).

Refer to technical data pages 45 a-j (system) and 48 a-d (trim).



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2. Rated to 250 psi (1 724 kPa) water working pressure.
3. Rubber-faced clapper hinged to access cover for quick removal and easy servicing. All moving parts can be serviced without removing the valve from the installed position.
4. With the cover/clapper assembly removed, clapper rubber replacement requires removal of only one screw.
5. Valve housing tapped for inlet and outlet pressure gauges, and system main drain.

5-B. ACCESSORIES

1. 250 PSI (1 724 kPa) Trim Packages
2. 175 psi (1 207 kPa) ESFR Preprimed Preaction System Trim for use when the F-1 Easy Riser Check Valve is installed with the ESFR Cold Storage System.
3. 175 psi (1 207 kPa) ESFR Bypass and Drain Trim for use when the F-1 Easy Riser Check Valve is installed with the ESFR Cold Storage System.

Trim Packages include:

- A. All necessary nipples and fittings
- B. Main Drain Ball Valve
- C. Necessary gauges

6. AVAILABILITY AND SERVICE

The Viking Easy Riser™ Swing Check Valve and accessories are available through a network of domestic, Canadian, and international distributors. See the Viking web site for a local distributor or contact The Viking Corporation.

Viking technical data may be found on The Viking Corporation's Web site at <http://www.vikingcorp.com>. The Web site may include a more recent edition of this technical data page.

7. GUARANTEES

For details of warranty, refer to Viking's current list price schedule or contact The Viking Corporation directly.

8. OPERATION

(Refer to Figure 1 on page 815 c).

Water flowing through the Viking Easy Riser™ Swing Check Valve

lifts rubber-gasketed clapper (8 and 9) off the seat (12) and flows into the sprinkler piping. When flow through the valve stops, the clapper (8) closes quickly. Rubber gasket (9) forms a tight seal against brass water seat (12), trapping pressurized water above the clapper and preventing reverse flow from the sprinkler piping.

9. INSTALLATION

FOR THE VIKING ESFR COLD STORAGE SYSTEM, REFER TO DATA PAGE 45 a-j FOR INSTRUCTIONS ON PLACING THE SYSTEM IN SERVICE.

The Easy Riser™ Swing Check Valve must be installed in an area not subject to freezing temperatures or physical damage. When corrosive atmospheres and/or contaminated water supplies are present, it is the owner's responsibility to verify compatibility with the Easy Riser™ Swing Check Valve, trim, and associated equipment.

Prior to installing the valve, thoroughly flush the water supply piping to verify that no foreign matter is present.

The Easy Riser™ Swing Check Valve may be installed in the vertical position with direction of flow up, or in the horizontal position with the access cover up.

1. Remove all plastic thread protectors from the openings of the Easy Riser™ Swing Check Valve.
2. Apply a small amount of pipe-joint compound or tape to the external threads of all pipe connections required. Take care not to allow any compound, tape, or other foreign matter inside any of the nipples or openings of the valve or trim components.
3. Easy Riser™ Swing Check Valve Trim Charts are provided with Trim Packages and in the *Viking Engineering and Design Data* book.
4. Verify that all system components are rated for the water working pressure of the system.

Hydrostatic Test:

The Easy Riser™ Swing Check Valve is manufactured and listed for use at a maximum water working pressure of 250 psi (1 724 kPa). The valve is factory tested at 500 psi (3 447 kPa). Easy Riser™ Swing Check Valves may be hydrostatically tested at 300 psi (2 069 kPa) and/or 50 psi (345 kPa) above the normal water working pressure for limited periods of time (two hours) for the purpose of acceptance by the Authority Having Jurisdiction. If air testing is required, do not exceed 40 psi (276 kPa) air pressure.

10. INSPECTIONS and TESTS

FOR THE VIKING ESFR COLD STORAGE SYSTEM, REFER TO DATA PAGE 45 a-j FOR INSPECTIONS AND TESTS

NOTICE: The owner is responsible for maintaining the fire-protection system and devices in proper operating condition.

The Viking Easy Riser™ Swing Check Valve and trim must be kept free of foreign matter, freezing conditions, corrosive atmospheres, contaminated water supplies, and any condition that could impair its operation or damage the device.

It is imperative that the system be inspected and tested on a regular basis. The frequency of the inspections may vary due to contaminated water supplies, corrosive water supplies, and corrosive atmospheres. For minimum maintenance and inspection requirements, refer to the National Fire Protection Association's NFPA 25 that describes care and maintenance of sprinkler systems. In addition, the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

WARNING: Any system maintenance which involves placing a control valve or detection system out of service may eliminate the fire-protection capabilities of that system. Prior to proceeding, notify all the Authority Having Jurisdiction. Consideration should be given to employ-



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ment of a fire patrol in the affected areas.

10-A. Five-Year Internal Inspection
Internal inspection of check valves is recommended every five years unless inspections and tests indicate more frequent inspections are required.

(Refer to Figure 1 on page 815 c.)

1. Notify the Authority Having Jurisdiction, remote station alarm monitors, and those in the area affected that the system will be taken out of service. Consideration should be given to employment of a fire patrol in the affected areas.

2. Close the water supply main control valve, placing the system out of service.
3. Open the main drain. If necessary, open the system test valve to vent and completely drain the system.
4. Use the appropriate wrench to loosen and remove cover screws (14), and remove cover/clapper assembly (2-11).
5. Inspect water seat (12). Wipe away all contaminants, dirt, and mineral deposits. Do not use solvents or abrasives.
6. Inspect cover/clapper assembly (2-11) and cover gasket (13). Test hinged clapper (8) for freedom of movement.

Renew or replace damaged or worn parts as required. **CAUTION:** NEVER apply any lubricant to seats, gaskets, or any internal operating parts of the valve. Petroleum-based grease or oil will damage rubber components and may prevent proper operation.

7. When internal inspection of the Easy Riser™ Swing Check Valve is complete, perform step 6 of paragraph 11. MAINTENANCE to re-install cover/clapper assembly (2-11).

11. EASY RISER™ VALVE MAINTENANCE

FOR THE VIKING ESFR COLD STORAGE SYSTEM, REFER TO DATA PAGE 45 a-j FOR MAINTENANCE INSTRUCTIONS.

Refer to Figure 1 on page 815 c.

1. Perform steps 1 through 5 of paragraph 10-A FIVE-YEAR INTERNAL INSPECTION.

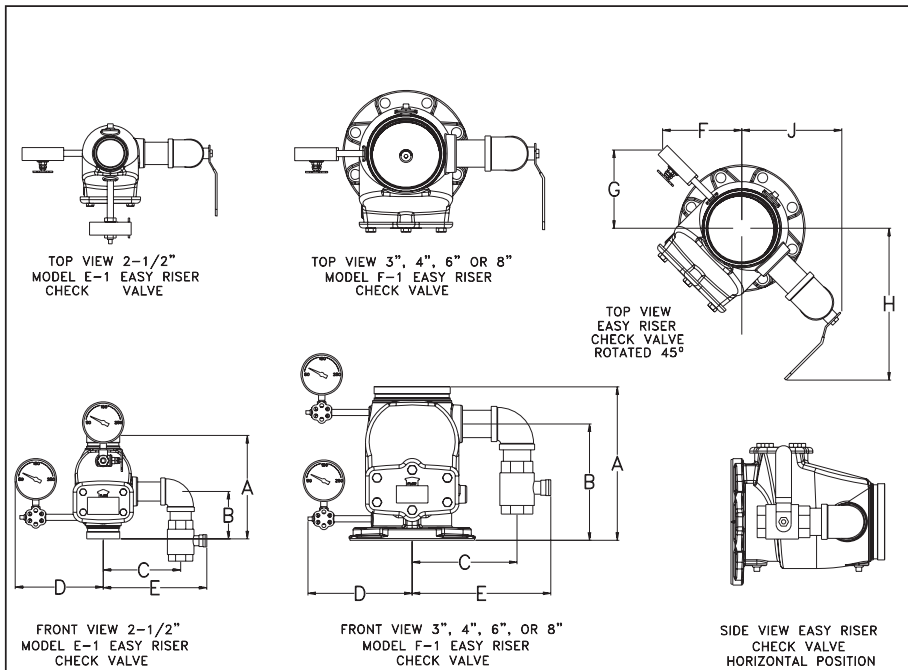
2. To remove clapper rubber (9):

A. Use the appropriate wrenches to loosen and remove button-head socket screw (11), hex nut (6), sealing washer (7), and rubber retainer (10).

B. Remove the clapper rubber (9) for inspection. If the clapper rubber shows signs of wear, such as cracking, cuts, or excessively deep grooves where the rubber contacts the water seat, replace the rubber.

3. To re-install clapper rubber (9):

A. Place the clapper rubber (9) over the center hub of the rubber retainer (10).



SIZE	A	B	C	D	E	F	G	H	J
2-1/2" (65mm)	9" (228,6)	4-1/8" (105)	6-3/4" (171)	7-5/8" (194)	9" (229)	5-1/2" (139)	5-3/8" (137)	10-7/16" (265)	6-5/8" (169)
3" (80mm)	10-1/8" (257)	7-1/4" (184)	6-3/4" (171)	7-7/8" (200)	8-7/8" (226)	5-15/16" (150)	5-7/8" (149)	9-7/8" (251)	6-7/16" (163)
4" (100mm)	10-5/8" (270)	7-3/8" (187)	8-3/8" (213)	8-7/16" (214)	11-5/16" (287)	6-3/16" (157)	6-1/8" (155)	12-11/16" (322)	8-1/16" (205)
6" (150mm)	13-3/8" (340)	10-1/8" (257)	9-1/8" (232)	9-1/2" (241)	12-1/16" (306)	6-7/8" (175)	6-13/16" (173)	13-3/16" (336)	8-5/8" (219)
8" (200mm)	17" (432)	13-1/8" (333)	9-15/16" (253)	10-3/4" (273)	13-1/16" (332)	7-5/8" (193)	7-1/2" (191)	13-15/16" (354)	9-5/16" (237)

Dimensions in parentheses are millimeter.
Dimensions are approximate.

For ESFR Cold Storage, see Easy Riser Preprimed Preaction Trim and Bypass and Drain Trim, page 48a-d.

**Table 2
Torque Values for Easy Riser™ Swing Check Valve Cover Screws**

Valve Size	Screw Size	Torque Value
2-1/2" (65 mm)	3/8"-16 H.H.C.	19 ft-lb 2,63 kg-m
3" (80 mm)	3/8"-16 H.H.C.	19 ft-lb 2,63 kg-m
4" (100 mm)	3/8"-16 H.H.C.	19 ft-lb 2,63 kg-m
6" (150 mm)	1/2"-13 H.H.C.	45 ft-lb 6,23 kg-m
8" (200 mm)	5/8"-11 H.H.C.	93 ft-lb 12,9 kg-m

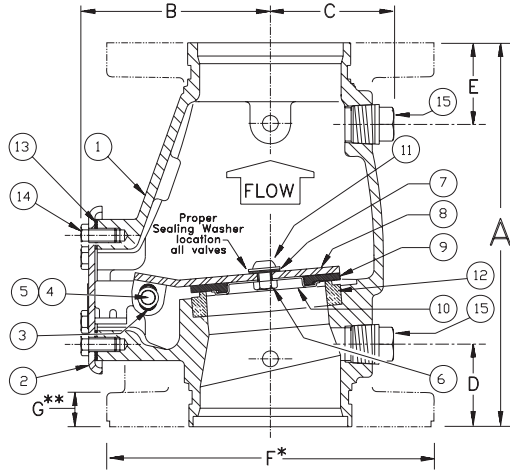
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- B. Position the retainer (10) (with rubber in place) against the clapper (8) as shown in Figure 1.
- C. Replace and tighten the button-head socket screw (11), sealing washer (7), and hex nut (6). The sealing washer (7) must be located on the top side of the clapper (8) as shown in Figure 1. DO NOT over-tighten.
- 4. To remove clapper (8), and/or hinge pin (4):**
- A. Remove the hinge pin retaining rings (5) to free the hinge pin (4) for removal. After the hinge pin (4) is removed, the clapper (8) can be removed.
- 5. To re-install clapper (8) and/or hinge pin (4):**
- A. Verify that the clapper rubber (9) is in good condition and that it is properly installed.
- B. Position the clapper (8) with the elongated hinge holes aligned between the holes of the hinge bracket welded inside the cover (2). The system (top) side of the clapper (8) must face the direction indicated by the flow arrow stamped inside the cover (2).
- C. Insert the hinge pin (4) through the holes at one end of the hinge assembly. Continue to push the hinge pin (4) through the holes at the remaining end of the hinge assembly.
- D. Re-install the hinge pin retaining rings (5).
- 6. To re-install cover/clapper assembly (2-11):**
- A. Verify that the cover gasket (13) is in position and that it is in good condition.
- B. Slide the cover/clapper assembly (2-11) into the Easy Riser™ Swing Check Valve so the clapper rubber (9) contacts the water seat (12).
- C. Replace cover screws (14). Use the appropriate wrench to cross-tighten all cover screws to the torque values shown in Table 2 for the valve used. DO NOT over-tighten.



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SIZE	A	B	C	D	E	F*	G**
2-1/2" (65mm)	9" (228,6)	4-1/2" (114,3)	2-5/8" (66,7)	2" (50,8)	2" (50,8)	Flag/Flg & Flg/Grv Not Available	Flag/Grv Not Available
3" (80mm)	10-1/8" (257)	4-3/4" (120,7)	2-3/4" (69,9)	2" (50,8)	2" (50,8)	7-1/2" (190,5)	3/4" (19,05)
4" (100mm)	10-5/8" (269,9)	5-3/16" (131,8)	3-3/8" (85,7)	2-1/8" (54,0)	2-1/4" (57,2)	9" (228,6)	15/16" (23,81)
6" (150mm)	13-3/8" (346,1)	6-3/4" (171,5)	4-3/8" (111,1)	2-1/4" (57,2)	2-1/4" (57,2)	11" (279,4)	1" (25,4)
8" (200mm)	17" (431,8)	8-3/4" (222,3)	5-3/8" (136,5)	2-1/2" (63,5)	2-7/8" (73,0)	13-1/2" (342,9)	1-1/8" (28,58)

Dimensions shown in parentheses are millimeter.

* For availability of Flg X Flg, Flg X Grv, or Grv X Grv options refer to Table 1.

** 4", 6", and 8" valves are manufactured with sculptured flanges. Dimension indicates thickness of flange at bolt holes.

Figure 1

Item No.	Part Numbers					Description	Material	No. Req'd				
	2-1/2" (65 mm)	3" (80 mm)	4" (100 mm)	6" (150 mm)	8" (200 mm)			2-1/2"	3"	4"	6"	8"
1	--	--	--	--	--	Body	Ductile Iron, ASTM A536 (65-45-12)	1	1	1	1	1
2	09932	09933	09934	09935	09936	Cover Assembly	E-Coated HSLA Steel, A715 and Stainless Steel, UNS-S3040	1	1	1	1	1
3	*	*	*	*	None	Bushing	Lubricomp 189 Ryton	2	2	2	2	0
4	05355A	05355A	04990A	04991A	05334A	Clapper Hinge Pin	Stainless Steel, UNS-S30400	1	1	1	1	1
5	05445A	05445A	05445A	05445A	05369A	Hinge Pin Retaining Ring	Stainless Steel, UNS-S15700	2	2	2	2	2
6	*					Clapper Hex Jam Nut, #10-24 UNC	Stainless Steel, UNS-S30400	1	0	0	0	0
		*	*			Clapper Hex Jam Nut, 3/8"-16 UNC	Stainless Steel, UNS-S30400	0	1	1	0	0
				*	*	Clapper Hex Jam Nut 1/2"-13 UNC	Stainless Steel, UNS-S30400	0	0	0	1	1
7	*	*	*	*	*	Sealing Washer	EPDM and Stainless Steel	1	1	1	1	1
8	*	*	*	*	*	Clapper	Teflon® Coated HR Steel, UNS-G10180	1	1	1	1	1
9	05360B	08070	08072	08073	08075	Clapper Rubber	EPDM, ASTM D2000	1	1	1	1	1
10	05361B	08071	07659	08074	08076	Clapper Rubber Retainer	Stainless Steel, UNS-S30400	1	1	1	1	1
11	*					H.C. Screw #10-24 UNC x 1/2" (12,7 mm) Lg.	Stainless Steel, UNS-S30400	1	0	0	0	0
		*	*			Screw, Button Head, Socket 3/8"-24 UNF x 1/2" (12,7 mm) Lg.	Stainless Steel, UNS-S30400	0	1	1	0	0
				10308		Screw, Button Head, Screw 1/2"-20 UNF x 3/4 (19,0 mm) Lg.	Stainless Steel, UNS-S30400	0	0	0	1	0
					10686	Screw, Button Head, Screw 1/2"-20 UNF x 7/8" (22,2 mm) Lg.	Stainless Steel, UNS-S30400	0	0	0	0	1
12	--	--	--	--	--	Seat	Brass, UNS-C84400	1	1	1	1	1
13	05354B	05354B	04649B	04992B	05339C	Cover Gasket	SBR Rubber	1	1	1	1	1
14	01517A	01517A	01517A			H.C. Screw 3/8"-16 UNC x 3/4" (19,0 mm) Lg.	Steel, Zinc Plated	4	4	6	0	0
				04993A		H.C. Screw 3/8"-13 UNC x 7/8" (22,2 mm) Lg.	Steel, Zinc Plated	0	0	0	6	0
					01922A	H.C. Screw 5/8"-11 UNC x 1-1/4" (31,8 mm) Lg.	Steel, Zinc Plated	0	0	0	0	6
15	--	--	--	--	--	1/2" (15 mm) NPT Pipe Plug	Steel	2	2	2	2	2

-- Indicates part is not available

* Indicates part is available in a Sub-Assembly only--see Sub-Assembly list.

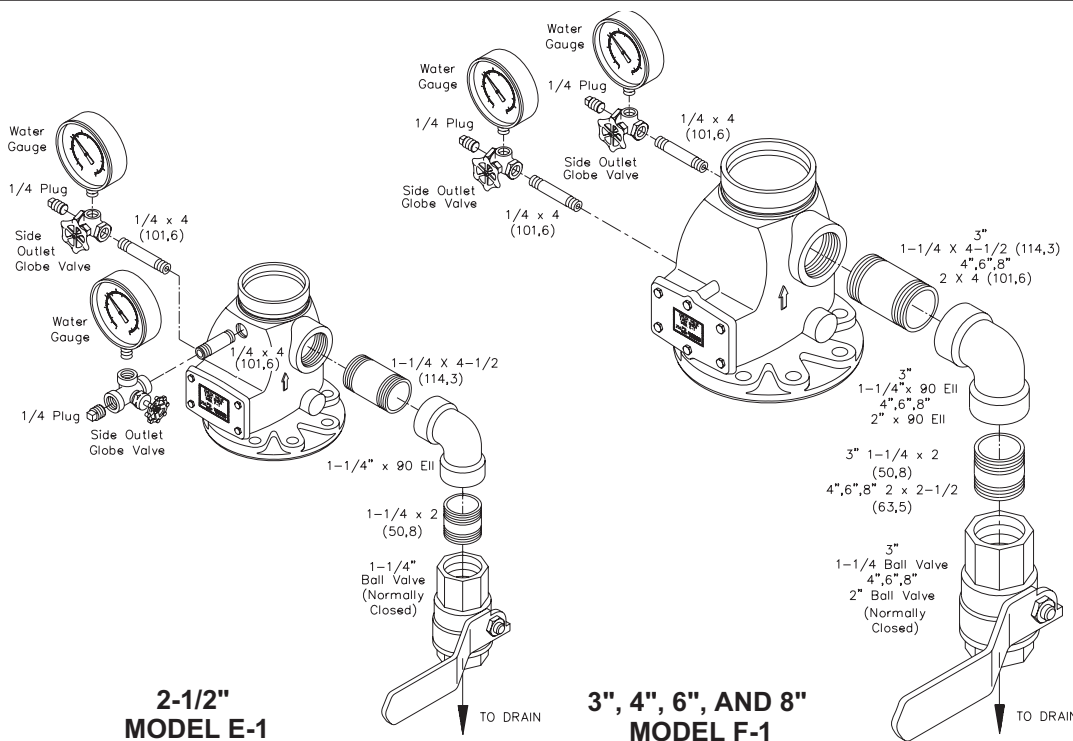
SUB-ASSEMBLIES AVAILABLE

2-11	09927	09928	09929	09930	09931	Cover/Clapper Assembly
3, 6-11	05499B	08518	08519	08520	08521	Clapper Assembly
6, 7, 9-11	06343A	08522	08523	08524	08525	Clapper Rubber Kit
6, 7, 11	08819					Clapper Screw, Sealing Washer, Nut Assembly
6, 7, 11		08735	08735	08736	10309	Clapper Screw, Sealing Washer, Nut Assembly



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2-1/2" MODEL E-1 EASY RISER CHECK VALVE TRIM CHART
Maximum 250 PSI Water Working Pressure

3", 4", 6", AND 8" MODEL F-1 EASY RISER CHECK VALVE TRIM CHART
Maximum 250 PSI Water Working Pressure

For ESFR Cold Storage Systems, use Preprimed Praction Trim and Bypass and Drain Trim. See page 48a-d for trim arrangements.

Note 1: 300 psi (7 620 kPa) water pressure gauges are provided with trim. 600 psi (15 240 kPa) water pressure gauges are available. Order separately when needed*. Refer to Viking's current price schedule.

* NFPA 13 requires gauges to have a minimum limit not less than twice the normal water working pressure at the point where the gauges are installed. When normal water working pressure exceeds 150 psi (3 810 kPa), order 600 psi (15 240 kPa) water pressure gauges separately.

Note 2: System Drain Ball Valve is UL Listed and FM Approved for 250 psi (1 724 kPa) water working pressure.