TECHNICAL DATA

ALARM CHECK VALVE MODEL J-1

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

1. DESCRIPTION



The Viking Model J-1 Alarm Check Valve serves as a check valve by trapping pressurized water above the clapper and preventing reverse flow from sprinkler piping.
The valve is designed to initiate an alarm during a sustained flow of water (such as the flow required by an open sprinkler) by operating an optional water motor alarm and/or alarm pressure switch. The valve is made suitable for use on variable pressure water supplies by adding the optional retard chamber to the standard trim.

Features

- Ductile iron body for less weight and extra strength.
- 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.
- With the cover/clapper assembly removed, clapper rubber replacement requires removal of only one screw.
- External by-pass trim to minimize clapper movement and false alarm.
- Trim allows installation of optional non-interruptible pressure switch to activate an electric alarm panel and/or remote alarm.
- Can be installed on constant or variable pressure water supplies.
- Can be installed vertically or horizontally, with the access cover facing up.
- Valve housing tapped for inlet and outlet pressure gauges, alarm devices, and system main drain.
- Trim includes alarm test valve for testing alarms without reducing system pressure.

Viking Technical Data may be found on The Viking Corporation's Web site at http://www.vikinggroupinc.com. The Web site may include a more recent edition of this Technical Data Page.

2. LISTINGS AND APPROVALS

cULus Listed: Guide VPLX - 300 psi (20.7 bar) MWP

FM Approved: Waterflow Alarm Valves - 300 psi (20.7 bar) MWP

American Bureau of Shipping (ABS): Certificate No. 03-HS405911A/1-PDA

NYC Department of Buildings: MEA 89-92-E Vol. XI - 250 psi (17.2 bar) MWP

LPCB: 300 psi (20.7 bar) MWP

VdS: DN80 - G 4960086, DN100 - G 4960087, DN150 - G 4960088, DN200 - G 4960089 - 250 psi (17.2 bar) MWP

CE Certified: Standard EN-12259-2, EC-certificate of conformity 0832-CPD-2010 - 250 psi (17.2 bar) MWP

3. TECHNICAL DATA

Specifications

Friction Loss - Refer to Table 1
Pressure Rating - 300 psi (20.7 bar) water working pressure.
Factory tested hydrostatically to 600 psi (41.4 bar).
The valve may be hydrostatically tested at 350 psi (24.1 bar) and/or 50 psi (3.4 bar) above the normal water working pressure, for limited periods of time (two hours), for the purpose of acceptance by the AHJ. If air testing is required, DO NOT exceed 40 psi (2.8 bar) air pressure.

$$Q = C_V \sqrt{\frac{\Delta P}{S}}$$

Q = Flow
C_V = Flow Factor (GPM/1 PSI ΔP)
ΔP = Pressure Loss through Valve
S = Specific Gravity of Fluid

Material Standards

Refer to Table 1.

Ordering Information

The valve is listed and/or approved with specific trim for use up to 300 psi (20.7 bar). No substitutions or omissions, in part or in full, are allowed. Additional accessories to the standard trim packages are required for a complete system meeting the requirements of the applicable rules and codes. See appropriate technical data for additional information.

Part Numbers - Refer to Table 1.

Accessories -

a. Retard Chamber: Required when the Model J-1 Alarm Check Valve is installed on systems with a variable pressure water supply to minimize unwanted (false) alarms.
b. Water Motor Alarm: The J-1 Alarm Check Valve is designed to operate a mechanical alarm during a sustained flow of water (such as the flow required by an open sprinkler). Refer to the water motor alarm technical data.

Replaces page 26a-g, dated June 12, 2013.
(Changed LPCB to 300 PSI)

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Table 1 - Specifications

	Nominal Size	Part Number	Friction Loss*	Shipping Weight
Flange/Flange Flange Drilling	Model J-1			
ANSI	3"	08235	10 ft. (3.1 m)	35 lbs. (16 kg)
ANSI	4"	08238	13 ft. (4.0 m)	47 lbs. (21 kg)
ANSI	6"	08241	20 ft. (6.0 m)	75 lbs. (34 kg)
ANSI	8"	08244	23 ft. (7.0 m)	135 lbs. (61 kg)
PN10/16	DN80	09108	10 ft. (3.1 m)	35 lbs. (16 kg)
PN10/16	DN100	09109	13 ft. (4.0 m)	47 lbs. (21 kg)
PN10/16	DN150	09110	20 ft. (6.0 m)	75 lbs. (34 kg)
PN10	DN200	09111	23 ft. (7.0 m)	135 lbs. (61 kg)
PN16	DN200	12388	23 ft. (7.0 m)	135 lbs. (61 kg)

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

	Nominal Size	Part Number	Friction Loss*	Shipping Weight
Flange/Groove Flange Drilling / Pipe O.D.	Model J-1			
ANSI / 89 mm	3"	08236	10 ft. (3.1 m)	27 lbs. (12 kg)
ANSI / 114 mm	4"	08239	13 ft. (4.0 m)	37 lbs. (17 kg)
ANSI / 168 mm	6"	08242	20 ft. (6.0 m)	64 lbs. (29 kg)
ANSI / 219 mm	8"	08245	23 ft. (7.0 m)	119 lbs. (54 kg)
PN10/16 / 89 mm	DN80	09535	10 ft. (3.1 m)	27 lbs. (12 kg)
PN10/16 / 114 mm	DN100	09536	13 ft. (4.0 m)	37 lbs. (17 kg)
PN10/16 / 168 mm	DN150	09874	20 ft. (6.0 m)	64 lbs. (29 kg)
PN10 / 219 mm	DN200	09877	23 ft. (7.0 m)	119 lbs. (54 kg)
PN16 / 219 mm	DN200	12389	23 ft. (7.0 m)	119 lbs. (54 kg)
Groove/Groove Pipe O.D.	Model J-1			
89 mm	3" / DN80	08237	10 ft. (3.1 m)	20 lbs. (9 kg)
114 mm	4" / DN100	08240	13 ft. (4.0 m)	27 lbs. (12 kg)
165 mm	DN150	09405	20 ft. (6.0 m)	51 lbs. (23 kg)
168 mm	6" / DN150	08243	20 ft. (6.0 m)	51 lbs. (23 kg)
219 mm	8" / DN200	08246	23 ft. (7.0 m)	106 lbs. (48 kg)

Systems with water working pressures above 175 psi (12.1 bar) may require extra-heavy pattern fittings. Model J-1 Alarm Valve flanges are Ductile Iron ANSI B16.42 Class 150 with a maximum water working pressure of 300 psi (20.7 bar). ANSI B16.42 Class 150 flanges are NOT compatible with ANSI Class 250 or Class 300 flanges. To mate the Model J-1 Alarm 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 Model J-1 Alarm Check Valve may be installed with listed grooved couplings of the appropriate pressure rating.

c. Alarm Pressure Switch: The J-1 Alarm Check Valve trim allows installation of pressure switches to operate local electric alarms and/or remote electric alarms during a sustained flow of water (such as the flow required by an open sprinkler).

Additional accessories are available and may be required for operation or supervision. Refer to the system description for complete operating trim requirements.

Trim Packages - Viking 300 psi (20.7 bar) trim is required to maintain cULus Listings and FM Approvals. Trim packages include all necessary nipples, fittings, standard trim accessories and necessary gauges.

a. 300 psi (20.7 bar) vertical trim* for use when the J-1 Alarm Check Valve is installed vertically.
b. 300 psi (20.7 bar) horizontal trim* for use when the J-1 Alarm Check Valve is installed horizontally.

*For optional pre-trimmed Model J-1 Alarm Check Valves, refer to the current Viking Price List or contact the manufacturer.

4. INSTALLATION

The Model J-1 Alarm 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 Model J-1 Alarm 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 Model J-1 Alarm 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. Verify that the appropriate trim chart and technical data for the Alarm Check Valve and associated equipment are available.
2. Remove all plastic thread protectors from the openings of the Alarm Check Valve.

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3. 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 nipples or openings of the valve or trim components.
4. Install the Model J-1 Alarm Check Valve and trim according to current Viking Trim Charts for the valve used. Trim charts are provided with trim package and can be found in the *Viking Engineering and Design Data* book.
5. Verify that all system components are rated for the water working pressure of the system.

Placing the System in Service

When the wet-pipe system is ready to be placed in service, verify that all equipment is adequately heated and protected to prevent freezing and physical damage.

NOTE: FOR PROPER OPERATION OF THE WET SYSTEM AND TO MINIMIZE UNWANTED (FALSE) ALARMS, IT IS IMPORTANT TO REMOVE TRAPPED AIR FROM THE SYSTEM WHEN FILLING IT WITH WATER. AIR TRAPPED IN THE SYSTEM MAY ALSO CAUSE INTERMITTENT OPERATION OF THE WATER MOTOR ALARM DURING A SUSTAINED FLOW OF WATER (SUCH AS THE FLOW REQUIRED BY AN OPEN SPRINKLER OR THE SYSTEM TEST VALVE). CONSIDER INSTALLATION OF AUXILIARY VENTS TO FACILITATE VENTING.

CAUTION: OPENING OF THE WATER SUPPLY MAIN CONTROL VALVE WILL RESULT IN WATER FLOW FROM ANY OPENINGS IN THE SYSTEM.

1. Verify that auxiliary drains are closed and that the system is free of leaks.
2. Open the system test valve (and any auxiliary vents provided to facilitate removal of air from the system) to allow air to escape from the system while it is filling with water.
3. If desired, close the alarm shut-off valve to prevent local alarms from operating while filling the system.

NOTE: ALARMS AND ELECTRIC PANELS CONTROLLED BY AN ALARM PRESSURE SWITCH INSTALLED IN THE "ELECTRIC ALARM PANEL" CONNECTION PROVIDED IN THE TRIM CANNOT BE INTERRUPTED. (SEE TRIM CHART.)

4. Slowly open the water supply main control valve.
5. Allow the system to completely fill with water. Allow water to flow from the system test valve, and any other open vents provided, until all air is exhausted from the system.
6. After all air is exhausted from the system, close the system test valve and all other open vents.
7. The pressure gauge on the system side of the Alarm Check Valve Clapper should indicate water pressure equal to or greater than the water pressure indicated on the gauge located on the supply side of the clapper.
8. OPEN the Alarm Shut-Off Valve in the Alarm Valve trim, and verify that all other valves are in their normal operating position.
9. Secure all valves in their normal operating position.
10. Notify the Authority Having Jurisdiction, remote station alarm monitors, and those in the affected area that the system is in service.

5. OPERATION (Refer to Figures 1 & 2)

The Model J-1 Alarm Check Valve is manufactured with a hinged clapper (9) equipped with a torsion spring (6) to assure proper operation when the valve is installed in the horizontal position.

Minor flows, resulting from small surges, travel around the clapper through external by-pass trim to minimize false alarms. Rubber gasket (10) forms a tight seal against brass water seat (13). This seal, and the check valve installed in the external by-pass trim, serve to trap higher pressurized water in the sprinkler piping and prevent reverse flow.

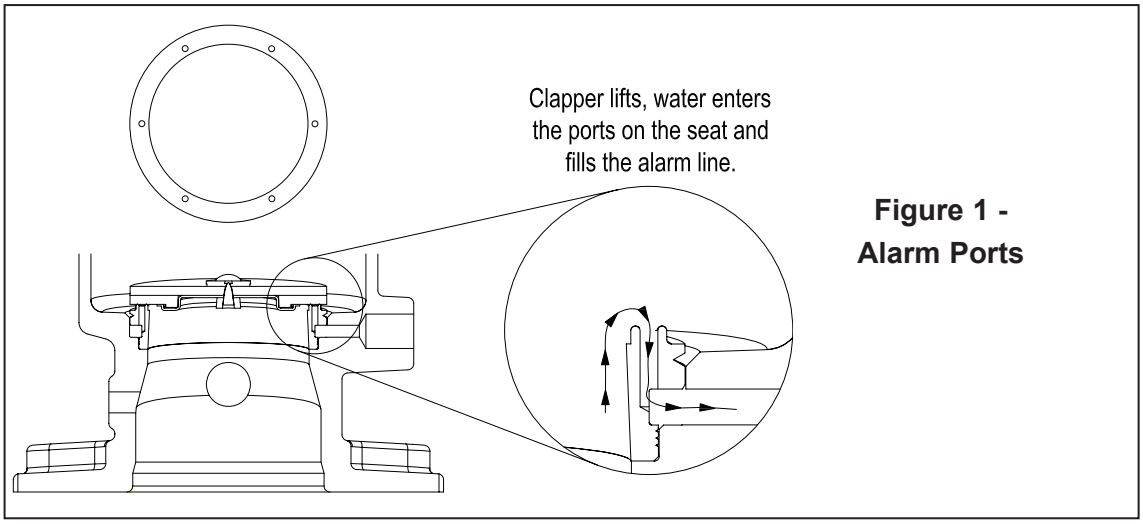


Figure 1 - Alarm Ports

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During a sustained flow of water, such as the flow required by an open sprinkler, hinged clapper (9) moves off seat (13) to the open position. Water flows through ports in grooved seat (13), and enters the alarm port to activate alarm devices connected to the system.

Operation with Retard Chamber:

When the optional retarding chamber is used, water entering the grooved seat alarm port is directed into the retarding chamber. Temporary pressure surges or fluctuations, large enough to move the valve clapper, are automatically drained through the restricted drain. During a sustained flow of water, such as the flow required by an open sprinkler, the clapper will be held off its seat. The retarding chamber will fill faster than water can drain through the restricted drain of the alarm valve trim. Alarm devices will be pressurized. Refer to technical data describing the Viking Retarding Chamber and alarm devices.

6. INSPECTIONS, TESTS AND MAINTENANCE

NOTICE: THE OWNER IS RESPONSIBLE FOR MAINTAINING THE FIRE-PROTECTION SYSTEM AND DEVICES IN PROPER OPERATING CONDITION.

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 NFPA 25. In addition, the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

WARNING: ANY SYSTEM MAINTENANCE THAT 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 EMPLOYMENT OF A FIRE PATROL IN THE AFFECTED AREAS.

INSPECTION

Monthly visual external inspection of Alarm Check Valves is recommended.

1. Verify that pressure gauges indicate normal water supply pressures. It is normal for the gauge on the system side of the clapper to register a higher pressure than the gauge on the supply side of the clapper because pressure surges are trapped above the clapper.
2. Check for signs of mechanical damage and/or corrosive activity. If detected, perform maintenance as required or, if necessary, replace the device.
3. Verify that valve and trim are adequately heated and protected from freezing and physical damage.
4. When equipped with variable pressure trim, verify that there is no unwanted leakage from the restricted drain of the retard chamber. It is normal for drainage to occur during pressure surges that exceed the capacity allowed through the by-pass trim.
5. Verify that the water supply main control valve is open, and that all valves are in their normal operating position and appropriately secured.

QUARTERLY TESTS

Water Flow Alarm Test

Quarterly testing of water flow alarms is recommended and may be required by the Authority Having Jurisdiction and NFPA 25.

1. Notify the Authority Having Jurisdiction, remote station alarm monitors, and those in the area affected by the test.

NOTE: AN ALARM SHUT-OFF VALVE IS PROVIDED TO SILENCE LOCAL ALARMS. NO SHUT-OFF VALVE IS PROVIDED FOR THE PRESSURE SWITCH CONNECTION INTENDED TO ACTIVATE ELECTRIC ALARM PANELS. (REFER TO J-1 ALARM CHECK VALVE TRIM CHART.)

2. To test electric alarms (if provided) and/or mechanical water motor gong (if provided), OPEN the system test valve. If freezing weather or other conditions prohibit use of the system test valve, OPEN the alarm test valve in the alarm check valve trim.

NOTE: USE OF THE ALARM TEST VALVE ALLOWS TESTING OF ALARMS WITHOUT REDUCING THE SYSTEM PRESSURE.

   a. Electric alarm pressure switches should activate.
   b. Electric local alarms should be audible.
   c. The local water motor alarm should be audible.

NOTE: WHEN USING THE SYSTEM TEST VALVE FOR THE WATER FLOW ALARM TEST, INTERMITTENT OPERATION OF THE WATER MOTOR ALARM MAY INDICATE AIR IS TRAPPED IN THE SYSTEM (REFER TO THE PLACING THE SYSTEM IN SERVICE PARAGRAPH OF SECTION 4).

   d. Verify that remote station alarm signals (if provided) were received.
3. When testing is complete, close the test valve used.
4. Verify:
   a. All local alarms stop sounding and electric panels (if provided) reset.
   b. All remote station alarms reset.
   c. Retard chamber and water motor alarm supply piping has drained properly.
5. Verify that the alarm shut-off valve in the Alarm Check Valve trim is OPEN, the alarm test valve is CLOSED, and all valves are in

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their normal operating position and appropriately secured.

6. Notify the Authority Having Jurisdiction, remote station alarm monitors, and those in the affected area that testing is complete.

Main Drain Test

Semi Annual performance of the Main Drain Test is recommended and may be required by the authority having jurisdiction to verify integrity of the water supply.

1. Notify the authority having jurisdiction, remote station alarm monitors, and those in the area affected by the test.
2. Perform monthly visual inspection.
3. Verify that adequate drainage is provided for full flow from Main Drain outlet.
4. Record pressure reading from the water supply pressure gauge.
5. Fully OPEN the main drain located on the Alarm Check Valve.
6. When a full flow is developed from the main drain, record the residual pressure from the water supply pressure gauge.
7. When the test is complete, SLOWLY CLOSE the main drain.
8. Compare test results with previous flow information. If deterioration of the water supply is detected, take appropriate steps to restore adequate water supply.
9. Verify that normal water supply pressure has been restored, and that all alarm devices and valves are secured in normal operating position.
10. Notify the Authority Having Jurisdiction, remote station alarm monitors, and those in the area affected by the test that the test is complete. Record and/or provide notification of test results as required by the Authority Having Jurisdiction.

Five-Year Internal Inspection (Refer to Figure 2)

Internal inspection of Alarm Check Valves is recommended every five years unless inspections and tests indicate more frequent internal inspections are required.

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 appropriate wrench to loosen and remove cover screws (15), and remove Cover/Clapper assembly (2-12).
5. Inspect water seat (13). Wipe away all contaminants, dirt, and mineral deposits. Clean any orifices in the seat that are restricted or plugged by mineral deposits. DO NOT use solvents or abrasives.
6. Inspect cover/clapper assembly (2-12) and cover gasket (14). Test hinged clapper (9) for freedom of movement and spring (6) for tension retention. Spring (6) tension should engage when the top of hinged clapper (9) is moved from perpendicular to cover (2) toward the open (flow) position. 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 alarm check valve is complete, perform step 6 of the Maintenance paragraph in section 5 to re-install Cover/Clapper Assembly (2-12).
8. Place the wet system back in service, Refer to the Placing the System in Service paragraph in section 4.

Maintenance (Refer to Figure 2)

1. Perform steps 1 through 6 of the Five Year Internal Inspection paragraph in Section 6.
2. To remove clapper rubber (10):
   a. Use the appropriate wrench to loosen and remove the button-head socket screw (12), hex nut (7), sealing washer (8), and rubber retainer (11).
   b. Remove the clapper rubber (10) 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 (10):
   a. Place clapper rubber (10) over the center hub of the rubber retainer (11).
   b. Position the retainer (11) (with rubber in place) against clapper (9) as shown in Figure 2.
   c. Replace and tighten the button-head socket screw (12), sealing washer (8), and hex nut (7), as shown in Figure 2. DO NOT over-tighten.
4. To remove the clapper (9), spring (6), and/or hinge pin (4), remove hinge pin retaining rings (5), to free the hinge pin (4) for removal. After the hinge pin (4) is removed, the clapper (9) and spring (6) can be removed.
5. To re-install the clapper (9), spring (6), and/or hinge pin (4):
   a. Verify that the clapper rubber (10) is in good condition and that it is properly installed.
   b. Position the clapper (9) 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 (9) 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. Before continuing, re-install the spring (6), using care to orient the spring as shown in Figure 2. Continue to push the hinge pin (4) through the holes at the remaining end of

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the hinge assembly.

d. Re-install the hinge pin retaining rings (5).

6. To re-install cover/clapper assembly (2-12):
   a. Verify that the cover gasket (14) is in position and that it is in good condition.
   b. Slide the cover/clapper assembly (2-12) into the Alarm Valve so that the clapper rubber (10) contacts the grooved water seat (13).
   c. Replace cover screws (15). Use the appropriate wrench to evenly cross-tighten all screws to the torque values listed in Table 2 for the valve used. DO NOT over-tighten.
7. To place the wet system back in service, refer to the Placing the System in Service paragraph in section 4.

7. AVAILABILITY

The Viking J-1 Alarm Check Valve is available through a network of domestic and international distributors. See the Viking Corp. Web site for closest distributor or contact The Viking Corporation.

8. GUARANTEES

Table 2 - Torque Values for Model J-1 Alarm Valve Cover Screws

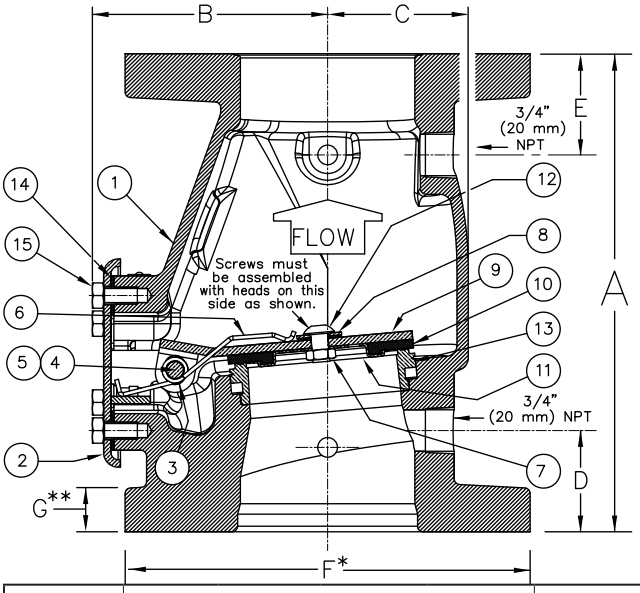
Valve Size	Screw Size	Torque Values
3” (DN80)	3/8” - 16 H.H.C	19 ft. lbs. (2.63 kg m)
4” (DN100)	3/8” - 16 H.H.C	19 ft. lbs. (2.63 kg m)
6” (DN150)	½” - 13 H.H.C	45 ft. lbs. (6.23 kg m)
8” (DN200)	5/8” - 11 H.H.C	93 ft. lbs. (12.9 kg m)

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

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SIZE	A	B	C	D	E	F*	G**
3" (DN80)	10–1/8" (257)	4–13/16" (122.2)	2–11/16" (68.3)	2–9/32" (58.1)	2–9/32" (58.1)	7–7/8" (200)	25/32" (20)
4" (DN100)	10–5/8" (269.9)	5–3/16" (131.8)	3–1/8" (79.4)	2–1/4" (57.2)	2–1/4" (57.2)	9" (228.6)	15/16" (23.81)
6" (DN150)	13–3/8" (340)	6–13/16" (173.3)	4–1/16" (103.2)	2–1/4" (57.2)	2–1/4" (57.2)	11" (279.4)	1" (25.4)
8" (DN200)	17" (431.8)	8–13/16" (223.4)	5" (127)	2–1/2" (63.4)	2–7/8" (73.0)	13–1/2" (342.9)	1–1/8" (28.58)

Dimensions shown in parentheses are millimeters.

* Flanges are optional.
Valve is available Flg X Flg, Flg X Grv, or Grv X Grv.

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

Figure 2 - Replacement Parts

ITEM NO.	PART NUMBERS 3" (DN80)	4" (DN100)	6" (DN150)	8" (DN200)	DESCRIPTION	MATERIAL	NO. REQ'D 3"	4"	6"	8"
1	--	--	--	--	Body	Ductile Iron, ASTM A536 (65-45-12)	1	1	1	1
2	--	--	--	--	Cover Assembly	E-Coated HSLA Steel A715 and Stainless Steel UNS-S30400	1	1	1	1
3	07576	07576	07576		Bushing	Lubricomp 189 Ryton	2	2	2	
4	05355A	04900A	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	08159	08159			Clapper Hex Nut 3/8"-24 UNF	Stainless Steel UNS-S30400	1	1		
			08144	08144	Clapper Hex Nut ½"-20 UNF	Stainless Steel UNS-S30400			1	1
8	08158	08158			Sealing Washer 3/8" x 1" O.D.	EPDM and Stainless Steel	1	1		
			08143	08143	Sealing Washer ½" x 1-1/8" O.D.	EPDM and Stainless Steel			1	1
9	*	*	*	*	Clapper	Teflon® Coated HR Steel UNS-G10180	1	1	1	1
10	*	*	*	*	Clapper Rubber	EPDM	1	1	1	1
11	*	*	*	*	Clapper Rubber Retainer	Stainless Steel UNS-S30400	1	1	1	1
12	10194	10194			Screw, Button Head, Socket 3/8"-24 x ½" (12.7 mm) lg.	Stainless Steel UNS-S30400	1	1		
			10308		Screw, Button Head, Socket 1/4"-20 x 3/4" (19.0 mm) lg.	Stainless Steel UNS-S30400			1	
				10686	Screw, Button Head, Socket 1/2"-20 x 7/8" (22.2 mm) lg.	Stainless Steel UNS-S30400				1
13	--	--	--	--	Seat	Brass UNS-C84400	1	1	1	1
14	05354B	04649B	04992B	05339C	Cover Gasket	EPDM, ASTM D2000	1	1	1	1
15	01517A	01517A			H.H.C. Screw 3/8"-16 x 3/4" (19.0 mm) lg.	Steel, Zinc Plated	4	6		
			04993A		H.H.C. Screw ½"-13 x 7/8" (22.2 mm) lg.	Steel			6	
				01922A	H.H.C. Screw 5/8"-11 x 1-1/4" (31.8 mm) lg.	Steel, Zinc Plated				6

-- Indicates replacement part not available

* Indicates replacement part only available in a Sub-Assembly listed below.

SUB-ASSEMBLIES

3, 7-12	08518	08519	08520	08521	Clapper Assembly
7, 8, 10-12, 14	08522	08523	08524	08525	Replacement Rubber Kit

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