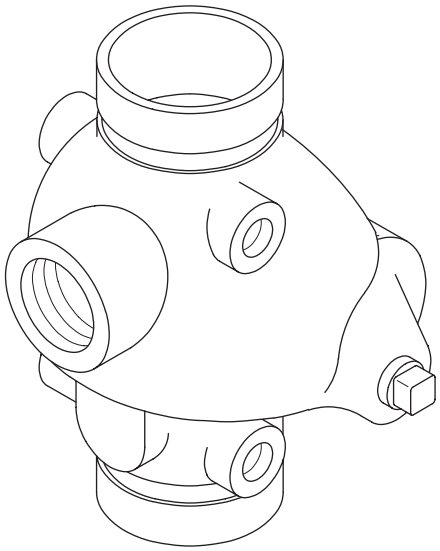
Riser Check Valve, 250 psi (17.2 bar), 2 - 8 Inch (50 - 200 mm) Model S380



GENERAL DESCRIPTION

The 2 - 8 inch (50 - 200 mm) Model S380 Grooved End Riser Check Valves are designed for installation in the risers of wet pipe (automatic sprinkler) fire protection systems and for use in conjunction with vane-type waterflow alarm detectors. The combination of the Star Riser Check Valve with Riser Check Valve Trim, vane-type waterflow alarm detector, and grooved end butterfly valve illustrated in Figure 1 provides an economical means for actuating electrical alarms in installations not requiring a mechanical alarm.

The S380 Riser Check Valve performs as a single check valve for the water supply connection to a wet pipe sprinkler system. It also serves to reduce the possibility of false alarms by trapping a portion of transient surges in supply pressure within the system. This reduces the possibility of subsequent surges actuating the waterflow detector and its associated alarms.

The S380 may be installed in either a vertically upward or horizontal flow direction. It has cut groove inlet and outlet connections which are suitable for use with grooved end pipe couplings that are listed or approved for fire protection system service.

The Riser Check Valve Trim includes approved water supply and system pressure gauges, as well as a main drain valve appropriately sized to meet the requirements of the National Fire Protection Association for wet pipe automatic sprinkler systems.

WARNING

The Model S380 Riser Check Valve described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the National Fire Protection Association, in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the integrity of this device.

The owner is responsible for maintaining his fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted relative to any questions.

TECHNICAL DATA

Approvals
UL and ULC Listed. FM Approved.

Maximum Working Water Pressure
250 psi (17.2 bar).

Friction Loss
Refer to Figure 4.

Physical Characteristics
The body is ductile iron, the seat ring and spring are stainless steel, and the clapper facing is EPDM. The clapper for the 2 - 4 inch (50 - 100 mm) size valves is stainless steel, and for the 6 and 8 inch (150 and 200 mm) size valves is ductile iron.

DESIGN CRITERIA

In accordance with the requirements of NFPA 13, an Inspector's Test Connection must be provided. It is also recommended that a vent connection be provided to bleed trapped air from the system. The Inspector's Test Connection may serve as the vent connection. However, in order to be used as a vent connection, it should be piped from the top of a cross main or the end of a branch line and be located at the highest level of a multi-level installation. Additional vents should be provided, as necessary, to bleed air from all trapped sections of the sprinkler system piping.

Vent connections are used to bleed air from the system when it is initially filled with water. Bleeding trapped air pockets minimizes the possibility of a false alarm due to a transient surge in supply pressure. Also, bleeding air pockets can eliminate the contraction/expansion associated with an excessive volume of trapped air and, therefore, help to prevent the vane-type waterflow alarm detector from cycling on-off during an inspector's test or during a discharge by a single sprinkler.

INSTALLATION

The Model S380 Riser Check Valve must be installed in accordance with the following instructions:

1. The arrow cast on the Body must point in the direction of flow.
2. When installed vertically, the flow direction arrow must point upwards.
3. When installed horizontally, the Hinge Pin must be located on the top of the Body as shown in Figure 5.
4. Grooved end pipe couplings used with the S380 Riser Check Valves must be listed or approved for fire protection service and installed in accordance with the manufacturer's instructions.

NOTE

It is recommended that a rigid type coupling be used at the inlet to 4 - 8 inch (100 - 200 mm) Riser Check Valves when the risers are greater than 7 feet (2.1 m) in length. This prevents the possibility of excessive movement within the piping system due to a seismic disturbance.

5. Install the Riser Check Valve Trim in accordance with Figure 2. Apply pipe thread sealant sparingly to male pipe threads only.
6. Complete the drain connection from the Main Drain Valve as necessary.

SETTING PROCEDURE

Steps 1 through 7 are to be performed when initially setting the Model S380 Riser Check Valve or after system operation due to a fire.

1. Open the 1/4 inch Gauge Test Valves for the Supply and System Pressure Gauges.
2. Open the Inspector's Test Connection and any other vent connections (Ref. System Design Considerations).
3. Slowly open the Main Control Valve until the sound of flowing water just begins, and then open the Valve one more turn to allow the system to fill slowly, so that the Waterflow Detector will not be damaged and to allow the air in the system piping to be vented.
4. Close the Inspector's Test Connection and any other vent connections after the discharge of aerated water has ceased for at least 15 seconds.
5. Fully open the Main Control Valve.
6. After the Supply and System Pressure Gauge readings stabilize, open the Inspector's Test Connection and verify that the alarms operate in accordance with the requirements of the authority having jurisdiction.

NOTE

When testing alarms, notification must be given to the owner and the fire department, central control station, or other signal station to which the alarms are connected.

7. Close the Inspector's Test Connection. The system is now set for service.

NOTE

After placing a fire protection system in service, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.

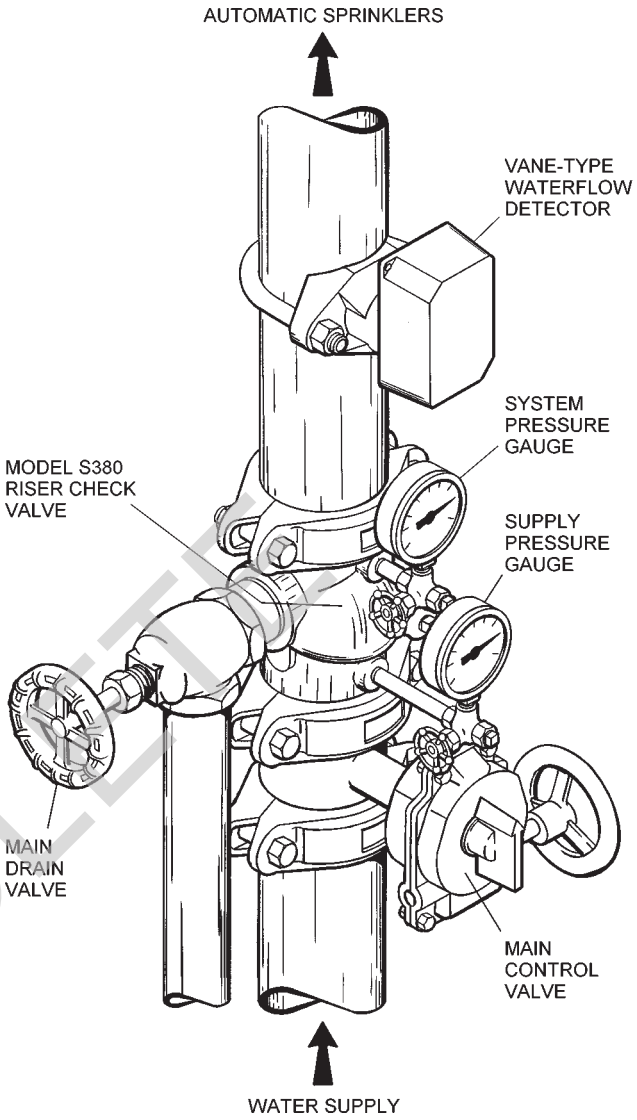


FIGURE 1
TYPICAL INSTALLATION OF
MODEL S380 RISER CHECK VALVE
WITH RISER CHECK VALVE TRIM

MAINTENANCE AND SERVICE

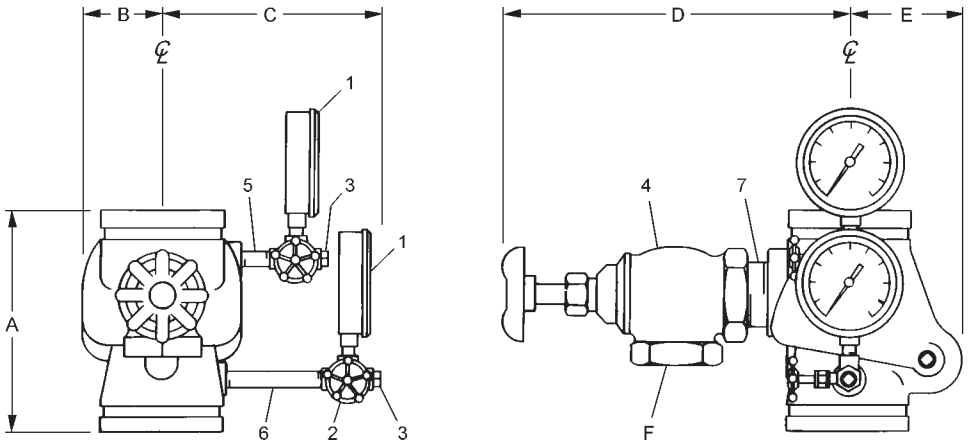
The Model S380 Grooved End Riser Check Valves do not require any regularly scheduled maintenance. It is recommended, however, that proper operation of the alarms be periodically verified in accordance with a procedure which is acceptable to the authority having jurisdiction, and that the Valves be inspected annually in accordance with the following inspection procedure. Any impairment must be immediately corrected.

It is also recommended that fire protection systems be inspected by a qualified Inspection Service.

NOTES

When testing alarms, notification must be given to the owner and the fire department, central control station, or other signal station to which the alarms are connected.

Before closing a fire protection system main control valve for maintenance work on the fire protection system which



2 INCH VALVES

NO.	DESCRIPTION	QTY.	PART
1	300 lb. Water Pressure Gauge	2	923001003
2	1/4" Gauge Test Valve	2	460051002
3	1/4" Plug	2	CH
4	1" Angle Valve	1	460481006
5	1/4" x 1-1/2" Nipple	1	CH
6	1/4" x 4 " Nipple	1	CH
7	1" x close Nipple	1	CH

2-1/2 and 3 INCH VALVES

NO.	DESCRIPTION	QTY.	PART
1	300 lb. Water Pressure Gauge	2	923001003
2	1/4" Gauge Test Valve	2	460051002
3	1/4" Plug	2	CH
4	1-1/4" Angle Valve	1	460481007
5	1/4" x 1-1/2" Nipple	1	CH
6	1/4" x 4 " Nipple	1	CH
7	1-1/4" x close Nipple	1	CH

4, 6, and 8 INCH VALVES

NO.	DESCRIPTION	QTY.	PART
1	300 lb. Water Pressure Gauge	2	923001003
2	1/4" Gauge Test Valve	2	460051002
3	1/4" Plug	2	CH
4	2" Angle Valve	1	460481009
5	1/4" x 1-1/2" Nipple	1	CH
6	1/4" x 4 " Nipple	1	CH
7	2" x close Nipple	1	CH

CH: Common Hardware

VALVE PIPE SIZE			NOMINAL DIMENSIONS IN INCHES AND (MILLIMETERS)						WEIGHT LBS. (kg)
INCHES	MILLIMETERS		A	B	C	D	E	F NPT	
ANSI	DN	PIPE O.D.							
2	50	60.3	6-3/4 (171.5)	2-3/16 (56)	5-3/4	8-7/8 (225)	3-3/16 (81)	1	7.5 (3.4)
2-1/2	65	73.0	7-1/4 (184.2)	2-1/4	7	9-11/16 (246)	3-3/8 (86)	1-1/4	10.5 (4.8)
—	65	76.1	7-1/4 (184.2)	2-1/4 (57)	7	9-11/16 (246)	3-3/8 (86)	1-1/4	10.5 (4.8)
3	80	88.9	7-3/4 (196.9)	2-1/2 (64)	7-1/4	9-7/8	3-11/16	1-1/4	11.5 (5.2)
4	100	114.3	8-1/4 (209.6)	3 (76)	7-7/8	13 (330)	4-1/4 (108)	2	13.5 (6.1)
—	150	165.1	12-3/4 (323.9)	4-1/4 (108)	8-5/16 (227)	14-1/8 (359)	6-3/4 (172)	2	33.5 (15.2)
6	150	168.3	12-3/4 (323.9)	4-1/4 (108)	8-5/16 (227)	14-1/8 (359)	6-3/4 (172)	2	33.5 (15.2)
8	200	219.1	14-5/8 (371.5)	5-1/4 (133)	9-15/16 (253)	15-1/4	8	2	59.0 (26.8)

FIGURE 2
RISER CHECK VALVE TRIM AND NOMINAL INSTALLATION DIMENSIONS

it controls, permission to shut down the affected fire protection system must first be obtained from the proper authorities and all personnel who may be affected by this decision must be notified.

Inspection Procedure:

Before verifying proper operation of the system alarms, observe the System and Supply Pressure Gauges. If the System Gauge indicates a higher pressure reading than the Supply Gauge, as may be the case for a variable pressure water suppy, a further inspection is not required. Otherwise, proceed as follows to inspect the riser check valve installation.

1. Close the Main Control Valve and make note of the System Pressure Gauge reading.
2. Close the Supply Pressure Gauge Test Valve and then remove the 1/4 inch plug.
3. Open the Supply Pressure Gauge Test Valve to relieve the supply pressure. If necessary, be prepared to collect

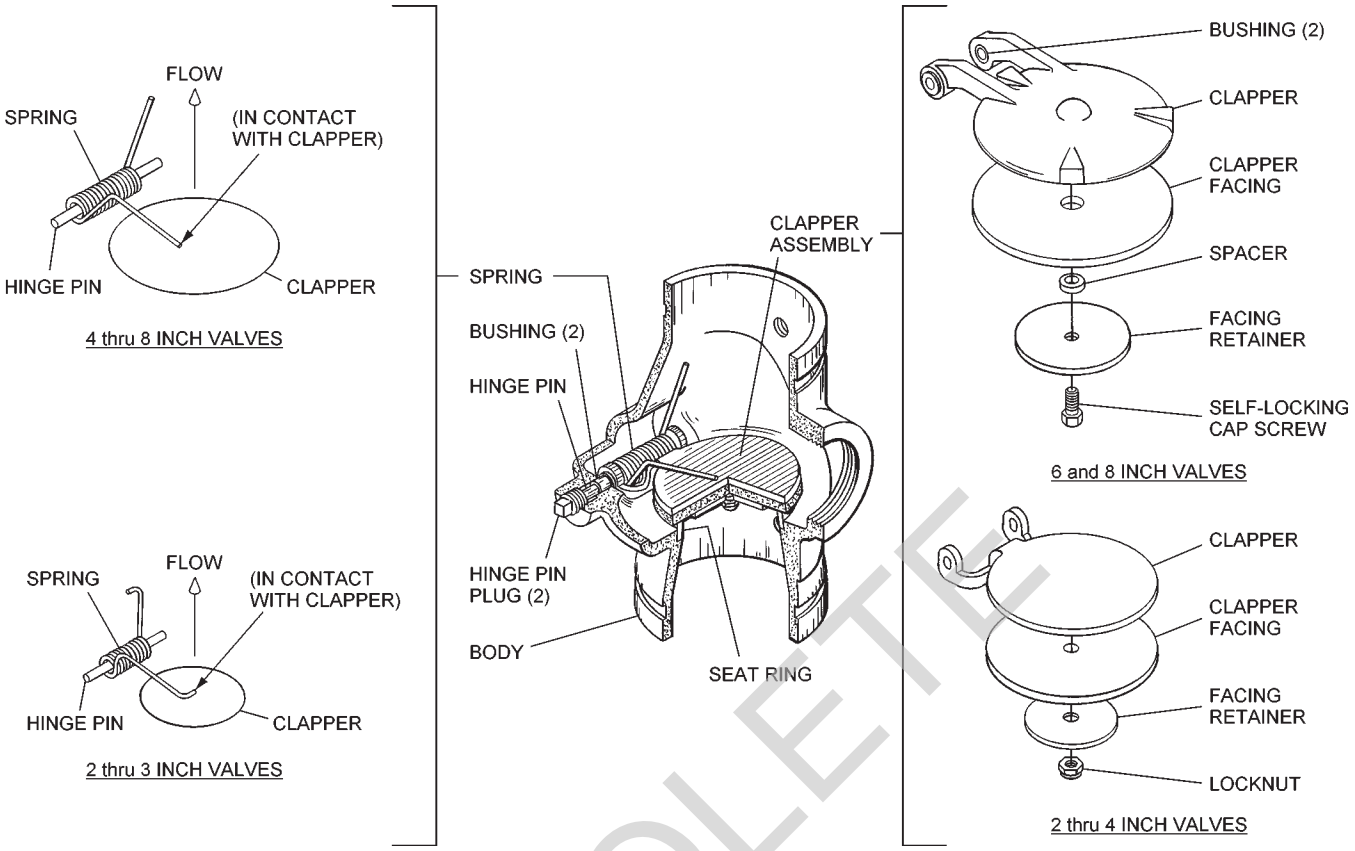


FIGURE 3
MODEL S380 RISER CHECK VALVE ASSEMBLY

the small amount of water that will discharge from the Gauge Test Valve.

Determine whether any one of the following conditions are present and correct any impairments:

- If water continues to discharge from the open Gauge Test Valve, verify that the Main Control Valve is completely closed. If water still continues to discharge and the System Pressure Gauge remains unchanged, there is leakage past the Main Control Valve and the Main Control Valve must be either repaired or replaced.
- If water continues to discharge from the open Gauge Test Valve and the System Pressure Gauge indicates loss of pressure, the Riser Check Valve is not holding back pressure. Close the Gauge Test Valve, open the Main Control Valve, and then open the Main Drain Valve. This procedure may flush out any debris that is lodged between the Clapper Facing and the Seat Ring. After flushing, close the Main Drain Valve and repeat the Inspection Procedure. If there is an indication that the Check Valve is still not holding back pressure then it should be serviced in accordance with the Service Procedure.
- If there are no indications of leakage past either the Main Control Valve or the Riser Check Valve then the valves are considered to be functionally acceptable. Replace the 1/4 inch plug in the drain port of the Gauge Test Valve and refer to the Setting Procedure section for returning the system to service.

Service Procedure:

1. Close the Main Control Valve.
2. Open the Main Drain Valve.

   Verify that the drainage water is being properly disposed of and that it will not cause damage or result in dangerous conditions.
3. Wait until the sound of draining water has stopped and/or the inlet and outlet pressure gauges read zero pressure before performing any maintenance work on the fire protection system.
4. Remove the S380 Valve from the pipeline, and thoroughly clean all interior parts of the Valve.
5. Raise the Clapper and remove any debris that may have become lodged on top of the Seat Ring. Inspect the Seat Ring for any damage. If the Seat Ring has become dented across the seat then the valve will have to be replaced. It is impractical to re-face a Seat Ring in the field.
6. Inspect the internal parts of the Valve for any sign of damage, and replace all worn or damaged parts. The Clapper Facing should also be carefully inspected and replaced if there is any sign of deterioration due to age or chemicals in the water.

   The Clapper Facing may be turned over and reused if there are only minor imperfections in the Facing due to any debris that may have become lodged between it and the Seat Ring. Remove the Facing, thoroughly

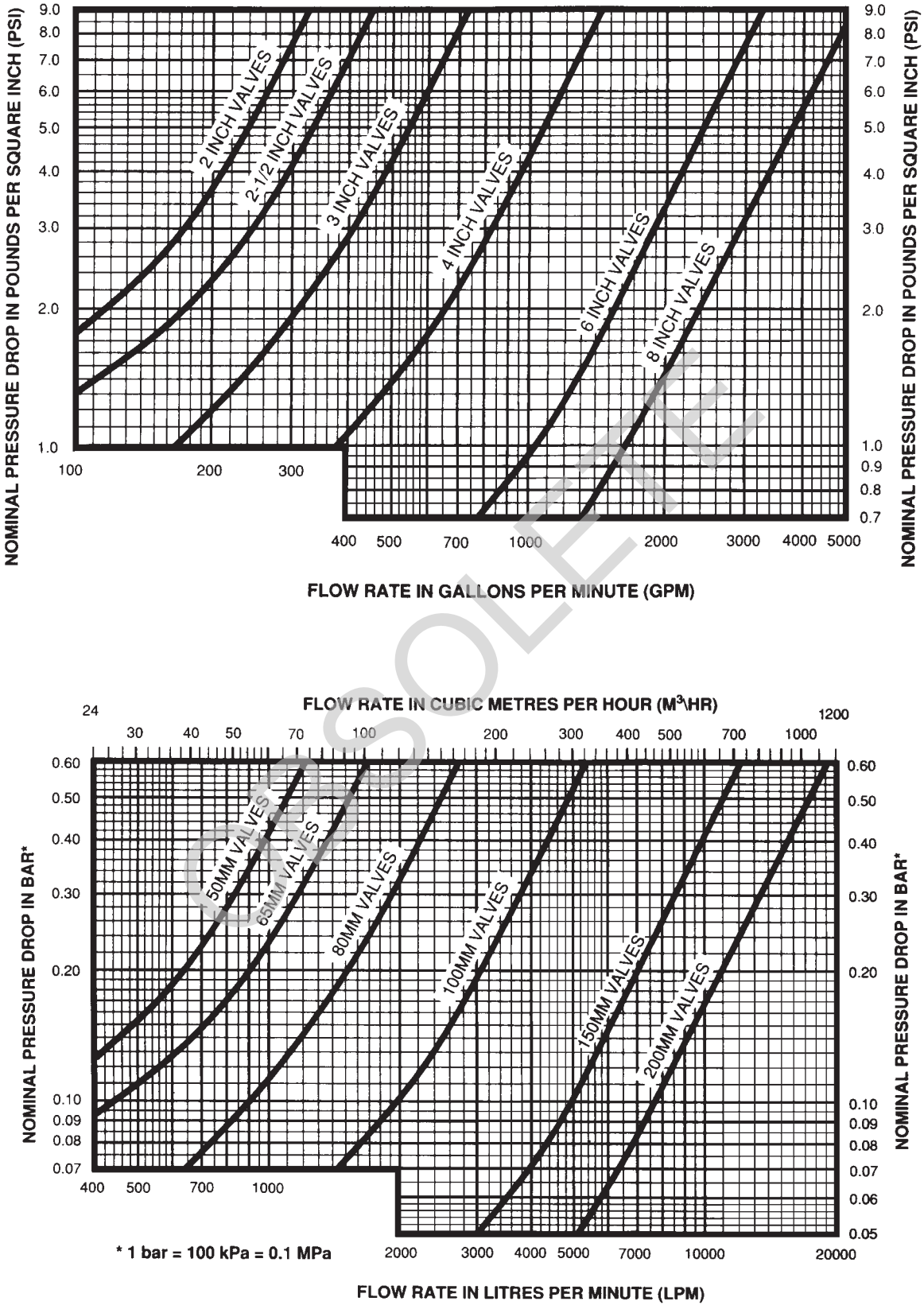


FIGURE 4 - NOMINAL FRICTION LOSS

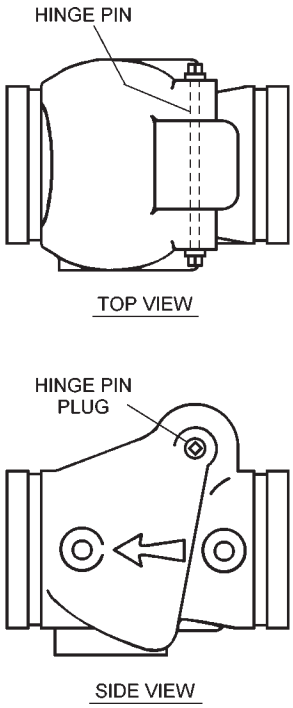


FIGURE 5
MODEL S380 RISER CHECK VALVE
HORIZONTAL INSTALLATION

clean both surfaces with a clean cloth and then reassemble with the Facing reversed.

NOTE

If the Clapper Facing is turned over or replaced, be sure to securely re-tighten the fastener for the Facing Retainer (Locknut for 2 thru 4 inch (50 thru 100 mm) Valves; Self-locking Cap Screw for 6 and 8 inch (150 and 200 mm) Valves).

If the Clapper Assembly or Spring requires replacement, proceed as follows:

a. Remove the Hinge Pin Plugs.

b. Refer to Figure 3 and then note the Spring position within the Valve Body.

c. Place the Valve with its outlet close to and towards a wall or place a covering over the Valve outlet, and then remove the Hinge Pin.

NOTE

The Valve outlet must be covered in order to prevent the possibility of injury when the Spring is released.

d. Remove the Spring and the Clapper Assembly from within the Valve Body.

e. Refer to Figure 3 to determine the appropriate Spring positioning. Replace the Spring and Clapper Assembly within the Valve Body and then while holding the coils of the Spring down, re-insert the Hinge Pin.

NOTES

Care must be taken to avoid releasing a compressed Spring before the Hinge Pin is replaced in order to prevent the possibility of injury.

In order to be properly positioned within the Valve, the Spring must be wound approximately one-quarter turn.

When the Spring is properly installed, one end of the Spring will be in direct contact with the Clapper and one end will be in contact with the Body, as shown in Figure 3. If the end of the Spring does not contact the Clapper or if the Spring unwinds as the Clapper Assembly is opened, then it has been installed backwards and it must be reassembled in the proper orientation. Incorrect reassembly of the Spring can prevent the Clapper Assembly from opening and closing properly.

f. Replace the Hinge Pin Plugs after applying a non-hardening type of pipe thread sealant sparingly to the male threads only.

7. Install the reassembled Valve in the pipeline in accordance with the Installation section.
8. Return the fire protection system to service in accordance with the Operating Procedure and then perform the Inspection Procedure.

ORDERING PROCEDURE

Please Specify:

1 Model S380 Riser Check Valve
2 Inch (#6051)
2-1/2 Inch (#6052)
3 Inch (#6053)
4 Inch (#6054
6 Inch (#6055)
8 Inch (#6056)
76.1 mm (#6057)
165.1 mm (#6058)

2. Model S380 Riser Check Valve Trim,
2 Inch (#3996)
2-1/2 & 3 Inch (#3997)
4, 6 & 8 Inch (#3998)

Refer to Price List for for complete listing of Part Numbers with respect to sizes, replacement parts, etc.

AVAILABILITY AND SERVICE

Star Sprinkler Inc. products and devices are available worldwide through a network of independent distributors. Please contact Star Sprinkler Inc. for information and the name and address of the Star distributor in your area.

LIMITED WARRANTY

Seller warrants for a period of one year from date of shipment (warranty period) that the products furnished hereunder will be free of defects in material and workmanship.

For further details on Warranty, contact Star Sprinkler, Inc.