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Model CV-1FR Grooved-End Riser Check Valves 2 Inch to 12 Inch (DN50 to DN300)

IMPORTANT

Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.

Scan the QR code or enter the URL in a web browser to access the most up-to-date electronic version of this document. Data rates may apply.



docs.jci.com/tycofire/tfp950

General Description

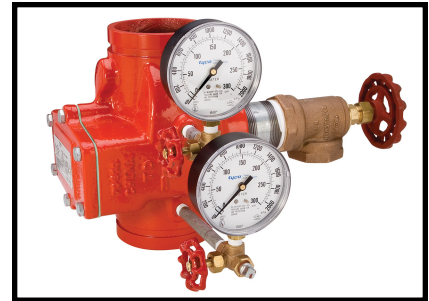
The Tyco Model CV-1FR Grooved-End Riser Check Valve is a compact and rugged swing-type unit that allows water flow in one direction and prevents flow in the opposite direction. A resilient elastomer seal facing on the spring-loaded clapper ensures a leak-tight seal and non-sticking operation. The Model CV-1FR Riser Check Valves are designed to minimize water hammer caused by flow reversal.

The Model CV-1FR Riser Check Valve is furnished with grooved ends and can be installed using Grinnell Grooved Couplings or Grinnell Figure 71 Flange Adapters. The Model CV-1FR Riser Check Valves have been designed with a removable cover for ease of field maintenance. These valves can be installed horizontally (with cover in the upward position) or vertically with the flow in the upward direction. Refer to Figure 6.

To facilitate their use in wet-type automatic sprinkler system risers, the Model CV-1FR Riser Check Valves are provided with threaded outlets for pressure gauges and a drain connection. They provide a more compact and economical alternative to an alarm check valve where a water motor alarm is not required. Provisions must be made for a local alarm using an approved flow switch (not included).

The Model CV-1FR Riser Check Valve is also Listed for use in conjunction with the TYCO DV-5 Deluge Valve in Preaction Systems under air pressure without the use of prime water.

The Model CV-1FR Riser Check Valves are a redesign for the Central Figure 590FR and Grinnell Figure 590FR.



NOTICE

The Model CV-1FR Riser Check Valve described herein must be installed and maintained in compliance with this document and with the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of this device.

Never remove any piping component nor correct or modify any piping deficiencies without first de-pressurizing and draining the system. Failure to do so may result in serious personal injury, property damage, and/or impaired device performance.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or manufacturer with any questions.

Technical Data

Approvals

UL, C-UL Listed
FM Approved

Sizes

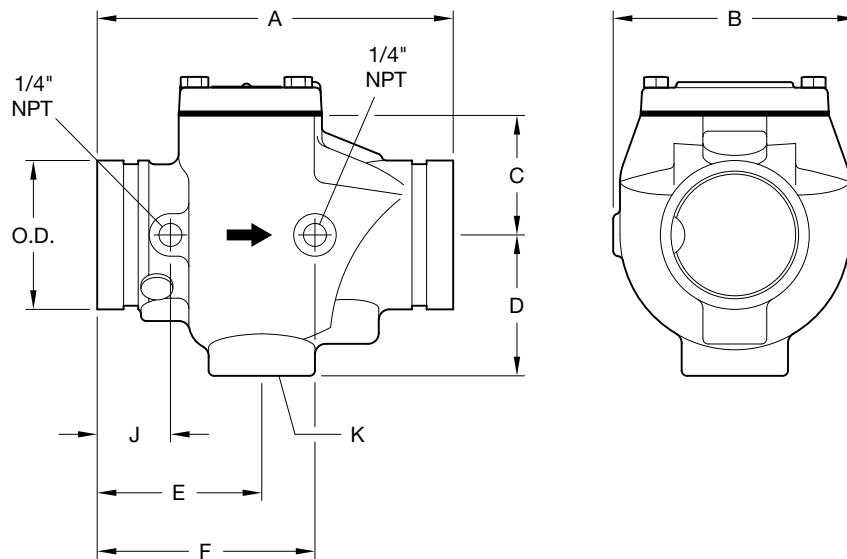
2 in. to 12 in. (DN50 to DN300)

Maximum Working Pressure

300 psi (20,7 bar)

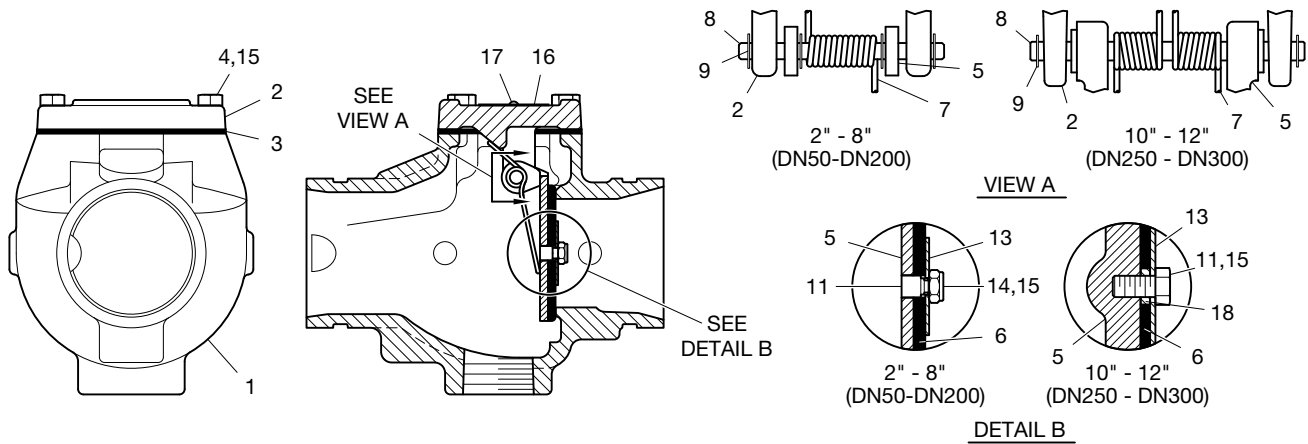
Valve Assembly Finish

Red, non-lead paint



| Nominal Pipe Size | | Nominal Dimensions Inches (mm) | | | | | | | | Cover Bolt Torque lb-ft (N·m) | Approx. Weight lb (kg) |
|----------------------|------------------------|--------------------------------------|------------------|-----------------|-----------------|-----------------|------------------|----------------|--------------------|---|---------------------------------|
| ANSI Inches DN | O.D. Inches (mm) | A | B | C | D | E | F | J | K Inches NPT | | |
| 2 DN50 | 2.375 (60,3) | 6.75 (171,5) | 4.38 (111,3) | 1.96 (49,8) | 2.57 (65,3) | 3.25 (82,3) | 4.37 (111,0) | 1.56 (39,6) | 1 | 7 (10) | 9.0 (4,5) |
| 2-1/2 DN65 | 2.875 (73,0) | 8.00 (203,2) | 5.38 (136,7) | 2.63 (66,8) | 3.09 (78,5) | 3.87 (98,3) | 5.12 (130,0) | 1.73 (43,9) | 1-1/4 | 10 (14) | 10.0 (4,5) |
| 76,1 DN65 | - (76,1) | 8.00 (203,2) | 5.38 (136,7) | 2.63 (66,8) | 3.09 (78,5) | 3.87 (98,3) | 5.12 (130,0) | 1.72 (43,7) | 1-1/4 | 10 (14) | 10.0 (4,5) |
| 3 DN80 | 3.500 (88,9) | 8.37 (212,6) | 5.72 (145,3) | 2.81 (71,4) | 3.31 (84,1) | 3.87 (98,3) | 5.12 (130,0) | 1.72 (43,7) | 1-1/4 | 10 (14) | 11.0 (5,0) |
| 4 DN100 | 4.500 (114,3) | 9.63 (245,6) | 6.68 (169,7) | 3.80 (96,5) | 3.63 (92,2) | 4.53 (115,4) | 5.78 (146,8) | 2.12 (53,8) | 2 | 10 (14) | 25.0 (11,3) |
| 139.7 DN125 | - (139,7) | 10.50 (266,7) | 7.40 (188,0) | 4.46 (113,2) | 4.13 (104,9) | 4.90 (124,5) | 7.00 (177,8) | 2.09 (53,1) | 2 | 10 (14) | 29.0 (13,2) |
| 5 DN125 | 5.563 (141,3) | 10.50 (266,7) | 7.40 (188,0) | 4.46 (113,2) | 4.13 (104,9) | 4.90 (124,5) | 7.00 (177,8) | 2.09 (53,1) | 2 | 10 (14) | 29.0 (13,2) |
| 165.1 DN150 | - (165,1) | 11.50 (292,1) | 8.00 (203,2) | 4.62 (117,4) | 4.50 (114,3) | 5.00 (127,0) | 7.25 (184,2) | 2.00 (50,8) | 2 | 30 (40) | 47.0 (21,3) |
| 6 DN150 | 6.625 (168,3) | 11.50 (292,1) | 8.00 (203,2) | 4.62 (117,4) | 4.50 (114,3) | 5.00 (127,0) | 7.25 (184,2) | 2.00 (50,8) | 2 | 30 (40) | 47.0 (21,3) |
| 8 DN200 | 8.625 (219,1) | 14.00 (355,6) | 10.14 (257,6) | 6.67 (169,4) | 5.52 (140,2) | 5.46 (138,7) | 10.50 (266,7) | 2.43 (61,7) | 2 | 50 (68) | 66.0 (30,0) |
| 10 DN250 | 10.750 (273,1) | 18.00 (457,2) | 12.38 (314,5) | 8.62 (218,9) | 6.41 (162,8) | 7.50 (190,5) | 10.75 (273,1) | 3.38 (85,9) | 2 | 70 (95) | 109.7 (49,4) |
| 12 DN300 | 12.750 (323,9) | 21.0 (533,4) | 14.28 (362,7) | 9.93 (252,2) | 7.27 (184,7) | 7.62 (193,5) | 10.00 (254,0) | 3.13 (79,5) | 2 | 80 (108) | 151.0 (68,0) |

FIGURE 1
MODEL CV-1FR RISER CHECK VALVES
NOMINAL DIMENSIONS



| Detail | Part | Material | Qty. | Detail | Part | Material | Qty. | Detail | Part | Material | Qty. |
|--------|-------------------------------|--------------------|------|--------|----------------|-----------------|------|--------|-----------|-----------------|------|
| 1 | Body | Ductile Iron | 1 | 6 | Clapper Facing | EPDM Grade "E" | 1 | 14 | Locknut | Stainless Steel | 1 |
| 2 | Cover | Ductile Iron | 1 | 7 | Spring | Stainless Steel | 1 | 15 | Adhesive | Thread Sealer | AR |
| 3 | Cover Gasket | Nitrile Rubber | 1 | 8 | Hinge Shaft | Stainless Steel | 1 | 16 | Nameplate | Aluminum | 1 |
| 4 | Hex Cap Screw | Steel, Zinc Plated | AR | 9 | Retaining Ring | Stainless Steel | AR | 17 | Rivet | Steel | 2 |
| 5 | Clapper 2" - 8" (DN50-200) | Stainless Steel | 1 | 11 | Retention Bolt | Stainless Steel | 1 | 18 | Spacer | Stainless Steel | 1 |
| | Clapper 10" - 12" (DN250-300) | Ductile Iron | | 13 | Retaining Disc | Stainless Steel | 1 | | | | |

FIGURE 2
MODEL CV-1FR RISER CHECK VALVES
ASSEMBLY

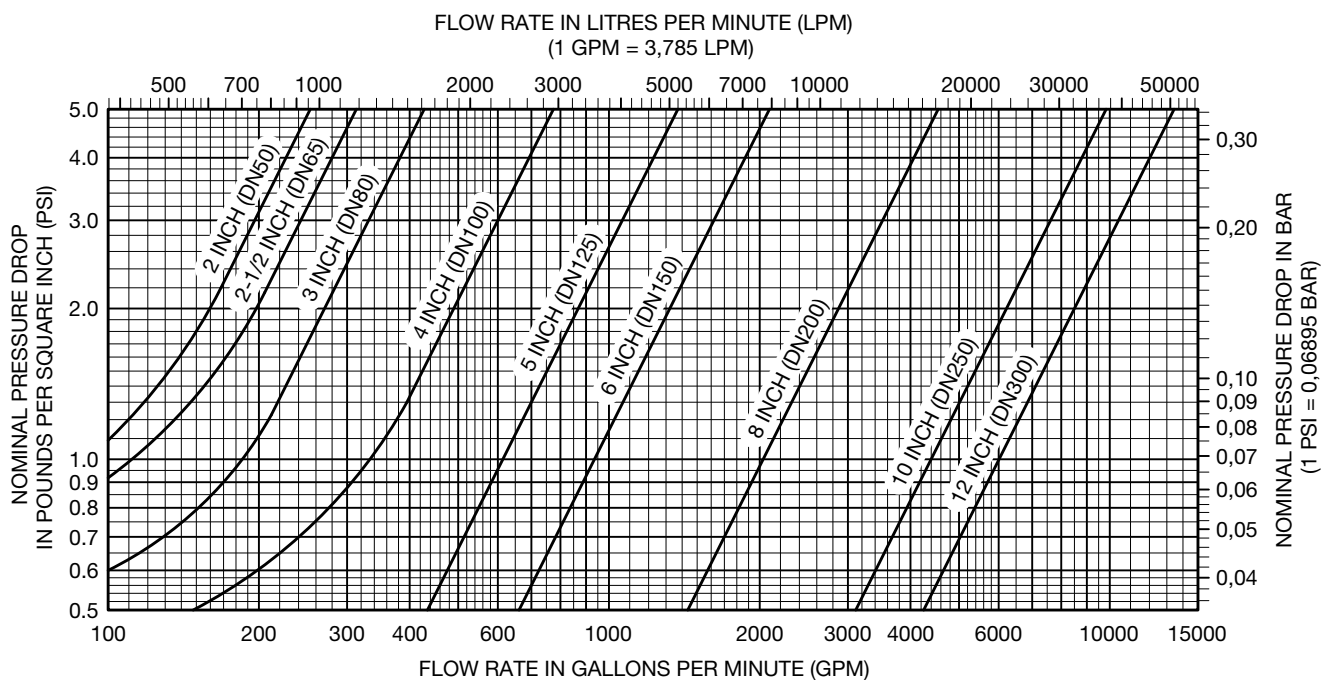
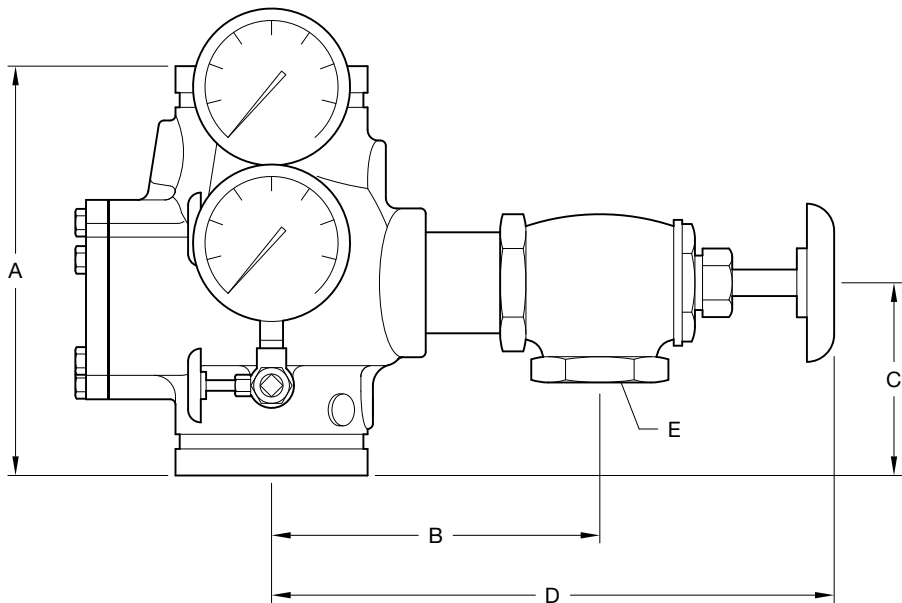


FIGURE 3
MODEL CV-1FR RISER CHECK VALVES
PRESSURE LOSS DATA



| Nominal Pipe Size | | Nominal Dimensions Inches (mm) | | | | |
|----------------------|------------------------|--------------------------------------|------------------|-----------------|------------------|--------------------|
| ANSI Inches DN | O.D. Inches (mm) | A | B | C | D | E Inches NPT |
| 2 DN50 | 2.375 (60,3) | 6.75 (171,5) | 5.87 (149,1) | 3.25 (82,6) | 9.52 (241,9) | 1 |
| 2-1/2 DN65 | 2.875 (73,0) | 8.00 (203,2) | 6.66 (169,2) | 3.87 (98,3) | 10.80 (274,3) | 1-1/4 |
| 76,1 DN65 | – (76,1) | 8.00 (203,2) | 6.66 (169,2) | 3.87 (98,3) | 10.80 (274,3) | 1-1/4 |
| 3 DN80 | 3.500 (88,9) | 8.37 (212,6) | 6.88 (174,8) | 3.87 (98,3) | 11.02 (279,9) | 1-1/4 |
| 4 DN100 | 4.500 (114,3) | 9.63 (244,6) | 7.63 (193,7) | 4.53 (115,1) | 11.92 (302,7) | 2 |
| 139,7 DN125 | – (139,7) | 10.50 (266,7) | 8.13 (206,4) | 4.90 (124,5) | 12.42 (315,4) | 2 |
| 5 DN125 | 5.563 (141,3) | 10.50 (266,7) | 8.13 (206,4) | 4.90 (124,5) | 12.42 (315,4) | 2 |
| 165,1 DN150 | – (165,1) | 11.50 (292,1) | 8.50 (215,8) | 5.00 (127,0) | 12.79 (324,8) | 2 |
| 6 DN150 | 6.625 (168,3) | 11.50 (292,1) | 8.50 (215,8) | 5.00 (127,0) | 12.79 (324,8) | 2 |
| 8 DN200 | 8.625 (219,1) | 14.00 (355,6) | 9.52 (241,7) | 5.46 (138,7) | 13.81 (350,7) | 2 |
| 10 DN250 | 10.750 (273,1) | 18.00 (457,2) | 10.41 (264,3) | 7.50 (190,5) | 14.70 (373,3) | 2 |
| 12 DN300 | 12.750 (323,9) | 21.00 (533,4) | 11.27 (286,1) | 7.62 (193,5) | 15.56 (395,2) | 2 |

FIGURE 4
MODEL CV-1FR RISER CHECK VALVE WITH TRIM COMPONENTS
NOMINAL DIMENSIONS

| P/N 59-591-1-020 | | | |
|------------------|---|------|--------------|
| 2 Inch (DN50) | | | |
| NO. | DESCRIPTION | QTY. | P/N. |
| 1 | 300 psi/ 2000 kPa Water Pressure Gauge . . | 2 | 92-343-1-005 |
| 2 | 1/4" Gauge Test Valve . . | 2 | 46-005-1-003 |
| 3 | 1/4" Plug | 2 | CH |
| 4 | 1" Angle Valve | 1 | 46-048-1-006 |
| 5 | 1/4" x 2" Nipple | 1 | CH |
| 6 | 1/4" x 5" Nipple | 1 | CH |
| 7 | 1" x 3" Nipple | 1 | CH |

| P/N 59-591-1-030 | | | |
|---------------------------------------|---|------|--------------|
| 2-1/2 in. (DN65) through 3 in. (DN80) | | | |
| NO. | DESCRIPTION | QTY. | P/N. |
| 1 | 300 psi/ 2000 kPa Water Pressure Gauge . . | 2 | 92-343-1-005 |
| 2 | 1/4" Gauge Test Valve . . | 2 | 46-005-1-003 |
| 3 | 1/4" Plug | 2 | CH |
| 4 | 1-1/4" Angle Valve | 1 | 46-048-1-007 |
| 5 | 1/4" x 2" Nipple | 1 | CH |
| 6 | 1/4" x 5" Nipple | 1 | CH |
| 7 | 1-1/4" x 3" Nipple | 1 | CH |

| P/N 59-591-1-080 | | | |
|--------------------------------------|---|------|--------------|
| 4 in. (DN100) through 12 in. (DN300) | | | |
| NO. | DESCRIPTION | QTY. | P/N. |
| 1 | 300 psi/ 2000 kPa Water Pressure Gauge . . | 2 | 92-343-1-005 |
| 2 | 1/4" Gauge Test Valve . . | 2 | 46-005-1-003 |
| 3 | 1/4" Plug | 2 | CH |
| 4 | 2" Angle Valve | 1 | 46-048-1-009 |
| 5 | 1/4" x 2" Nipple | 1 | CH |
| 6 | 1/4" x 5" Nipple | 1 | CH |
| 7 | 2" x 3" Nipple | 1 | CH |

Notes:

1. All fittings and nipples are galvanized (Standard Order)
2. CH = Common Hardware

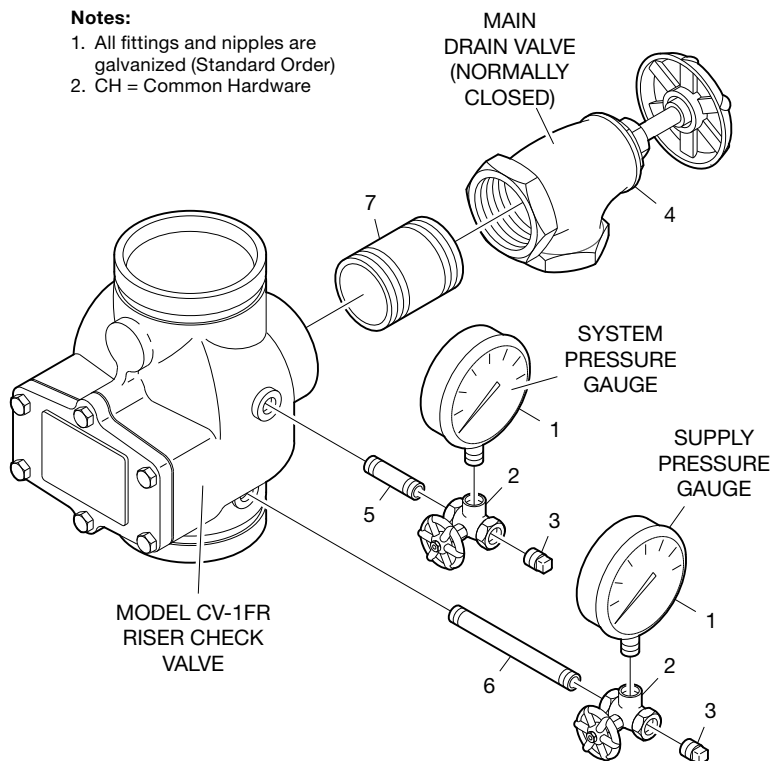


FIGURE 5
MODEL CV-1FR RISER CHECK VALVES
TRIM PARTS LIST

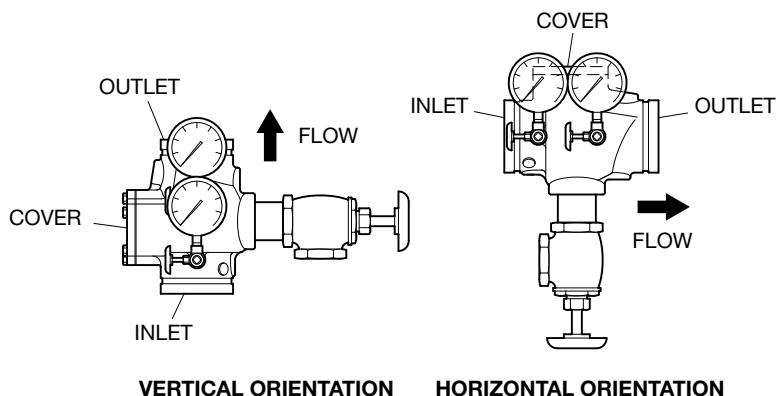


FIGURE 6
MODEL CV-1FR RISER CHECK VALVES
INSTALLATION

Installation

The Model CV-1FR Riser Check Valves are to be installed in accordance with this section:

1. The arrow cast on the Body must point in the direction of the flow.
2. Valves installed vertically must be positioned with the flow in the upward direction.
3. Valves installed horizontally must be positioned with the Cover facing up. Refer to Figure 6.
4. Grooved-end pipe couplings used with the Model CV-1FR Riser Check Valve must be installed in accordance with manufacturer's instructions.

Note: Valves should be installed a reasonable distance downstream from pumps, elbows, expanders, reducers, or other similar devices to extend the valve life. Standard piping practices call for a minimum of five times the pipe diameter for general use.

When installing the valve in a corrosive environment, including outdoor locations, protection from moisture, chemicals or fumes is highly recommended. Galvanic corrosion can result from joining unprotected dissimilar metals. For example, exposed steel pipe threads can become corroded if unprotected by painting or other coating methods. Where coating such exposed surfaces is impractical or unwanted, construct a rain-resistant roof or enclosure over the valve and trim.

Care and Maintenance

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection system from the proper authorities and notify all personnel who may be affected by this decision.

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

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION such as NFPA 25, in addition to the standards of any authority having jurisdiction. Contact the installing contractor or product manufacturer with any questions. Any impairments must be immediately corrected.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

Model CV-1FR Check Valves

Specify: Size and P/N:

| | |
|----------------------------|--------------|
| 2 in. (DN50) | 59-590-1-020 |
| 2-1/2 in. (DN65) | 59-590-1-025 |
| 76,1 mm (DN65) | 59-590-1-076 |
| 3 in. (DN80) | 59-590-1-030 |
| 4 in. (DN100) | 59-590-1-040 |
| 139,7 mm (DN125) | 59-590-1-139 |
| 5 in. (DN125) | 59-590-1-050 |
| 165,1 mm (DN150) | 59-590-1-165 |
| 6 in. (DN150) | 59-590-1-060 |
| 8 in. (DN200) | 59-590-1-080 |
| 10 in. (DN250) | 59-590-1-100 |
| 12 in. (DN300) | 59-590-1-120 |

Model CV-1FR Riser Check Valve Trim Assembly

Specify: Size and P/N:

| | |
|----------------------------|--------------|
| 2 in. (DN50) | 59-591-1-020 |
| 2-1/2 in. (DN65) | 59-591-1-030 |
| 76,1 mm (DN65) | 59-591-1-030 |
| 3 in. (DN80) | 59-591-1-030 |
| 4 in. (DN100) | 59-591-1-080 |
| 139,7 mm (DN125) | 59-591-1-080 |
| 5 in. (DN125) | 59-591-1-080 |
| 165,1 mm (DN150) | 59-591-1-080 |
| 6 in. (DN150) | 59-591-1-080 |
| 8 in. (DN200) | 59-591-1-080 |
| 10 in. (DN250) | 59-591-1-080 |
| 12 in. (DN300) | 59-591-1-080 |