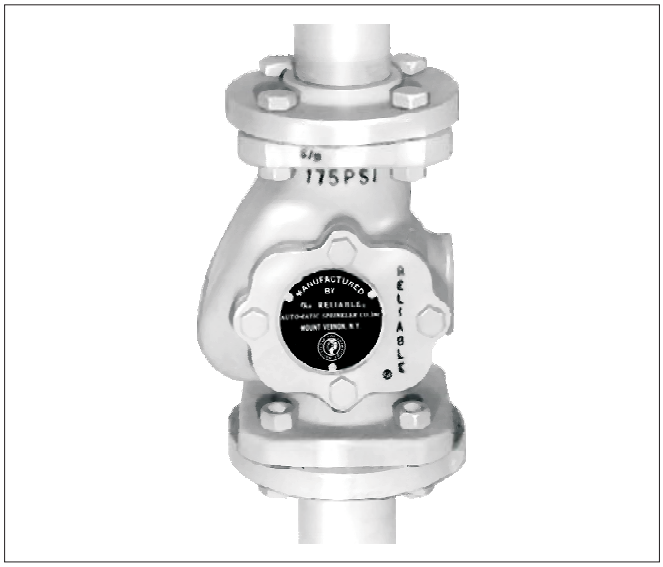
Model E
Alarm Check Valve
2½″ & 3″ and 65mm

Bulletin 418 Rev.K

Features

1. Made expressly for all wet pipe sprinkler systems.
2. Grooved seat design insures positive water flow alarm operation.
3. Precision retarding chamber prevents false alarms under variable pressure conditions.
4. External by-pass aids prevention of false alarms under all pressure conditions.
5. Installation in either vertical or horizontal positions.
6. Three connections styles available:
   - ANSI flanged inlet and outlet.
   - ANSI flanged inlet and grooved outlet.
   - Metric flanged inlet and outlet.
7. Three Trim Styles available:
   - Individual Part Trim
   - Pre-Assembled Trim
   - Factory Trimmed Valve



Listings & Approvals

A. Alarm Check Valve and Basic Trim

1. Listed by Underwriters Laboratories, Inc. (UL)
2. Listed by Underwriters' Laboratories of Canada. (ULC)
3. Approved by Factory Mutual (FM)
4. Loss Prevention Council (LPC, UK)
5. NYC BS&A No. 587-75-SA

B. Pressure Relief Trim

1. Listed by Underwriters Laboratories, Inc. (UL)
2. Approved by Factory Mutual (FM)

Description

Model E Alarm Valve acts as the water flow alarm device in wet pipe sprinkler systems. The design allows for installation under both variable and constant supply pressure conditions. When water flows in the sprinkler system due to the operation of one or more automatic fire sprinklers the alarm valve opens, allowing continuous flow of water into the system and a transmital of an alarm, both electrically and mechanically.

The Reliable Automatic Sprinkler Co., Inc., 103 Fairview Park Drive, Elmsford, New York 10523

Operation

Variable Pressure

Model E Alarm Valve in its closed and open positions is shown by Fig. 1 and Fig. 2. The closed position is maintained as long as the water pressure in the sprinkler system piping above the Alarm Valve is greater than, or equal to, the supply pressure. A flow of water in the system piping, resulting from the discharge through one or more fused automatic sprinklers, causes the clapper to rise off its grooved seat and permits water from the supply to enter the system of distribution on the fire.

Water now flows through the uncovered groove and alarm line into the retarding chamber, (Fig. 4). Once the retarding chamber is filled, the water flow then activates the mechanical and electrical alarms. (Fig. 4).

Virtually all sprinkler system piping contains confined air. If a water hammer or pressure surge occurs in the supply line, the increased pressure will compress the confined air and cause the Alarm Valve Clapper to lift intermittently which may result in false alarms, The Reliable Alarm Valve prevents false alarms under these conditions by two features:

a. The by-pass connection with check valve (Fig. 4) allows pressure surges from the supply to by-pass the alarm valve clapper. And excess system pressure is thus created which steadies the clapper. Should a heavy surge unseat the clapper and permit water to flow into the alarm line, the retarding chamber then comes into action.
b. The inlet & drain restriction to the retarding chamber allows intermittent flow to be drained before the chamber fills and activates the alarms.

Constant Pressure

The operation of the Model E Alarm Valve in installations where the water pressure is constant is the same as described above, with this exception: the retarding chamber is not required and water passing through the groove in the alarm valve seat flows directly to and activates them mechanical and electrical alarms.

Model E Alarm Valve

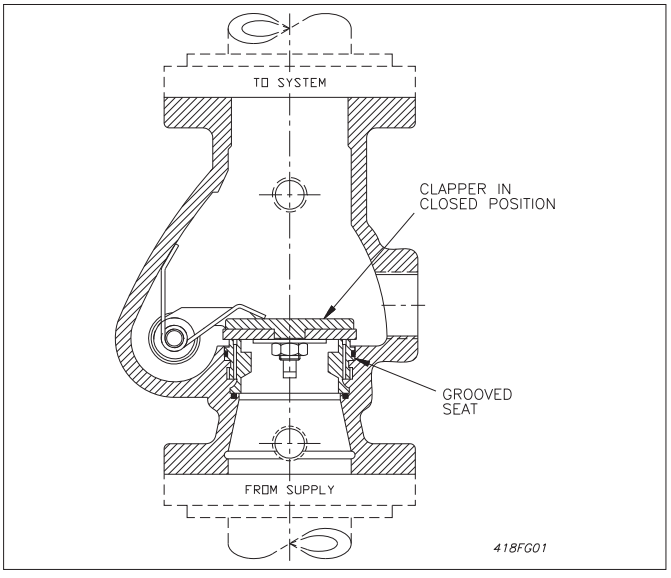


Fig. 1

Valve Description

1. Rated working pressure 175 psi (12 bar).
2. Factory hydrostatic test pressure 350 psi (24.1 bar).
3. End and trim connections – Three valve connection styles are available:
   a. US Standard Flanged Inlet and Outlet:
      - Flanges mate with ANSI B 16.1 (125 lb.) Flange.

Note: 1 bar = 100 kPa

U.S. Flange Dimensions In Inches					
Valve Size	**Bolt Circle Dia.**	**Bolt Hole Dia.**	**Square Flange Dim.**	**Flange Thickness**	**Number Bolts**
2½"	5½	¾	6⅛	¾	4
3"	6	¾	6⅛	¾	4

- Threaded openings per ANSI B 2.1
- Reliable's standard trim sets are compatible with US Flanged Valves.
- Color – Black

   b. US Standard Flanged Inlet and Grooved Outlet:
      - Inlet flange mates with ANSI B 16.1 (125 lb) Flange.
      - Outlet Groove per ANSI/AWWA C606.

U.S. Groove Dimensions In Inches				
Valve Size	**Outlet Dia.**	**Groove Dia.**	**Groove Width**	**Outlet Face to Groove**
3"	3.500	3.344	5/16	5/8

- Threaded openings per ANSI B 2.1.
- Reliable's standard trim sets are compatible with US Flanged and Grooved Valves.
- Color - Black

   c. Metric Flanged Inlet and Outlet:
      - Flanges mate with EN1092-2, NF-E-29-282 and BS 4504 PN 16 Flanges.

Metric Flange Dimension In Millimeters					
Valve Size	**Bolt Circle Dia.**	**Bolt Hole Dai.**	**Square Flange Dim.**	**Flange Thickness**	**Number Bolts**
65mm	145	18.23	155.57	19.05	4

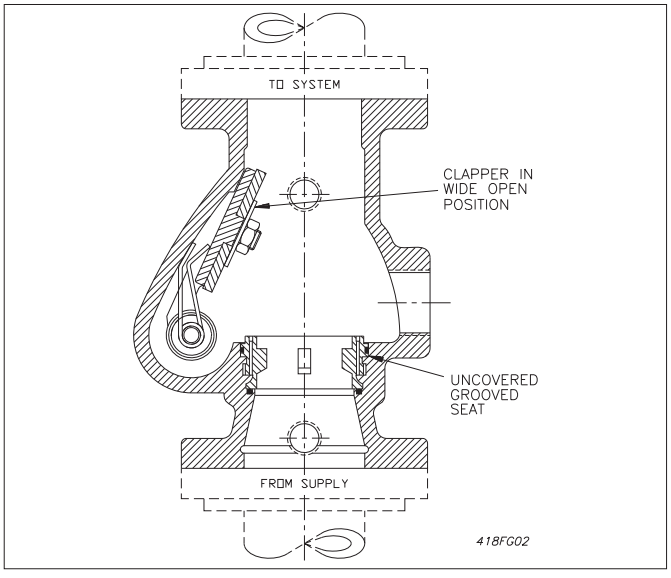


Fig. 2

- Threaded openings per ISO 7/1-Rp.
- Reliable's standard trim sets may be used with Metric Valves providing trim assembled carefully and extra thread sealant is applied to connections between valves and trim.
- Color – Red.

4. Face to Face Dimension:
   - For Models 2½″, 3″ & 65mm – 9 3/16" (233 mm).
5. Shipping Weight – for Models 2½″, 3″ & 65mm:

Flanged Inlet and Outlet	Flanged Inlet and Grooved Outlet
36 lb. (16.3kg)	31 lb. (14.06)

6. Friction Loss – Expressed in Equivalent Length of Pipe, Based on Hazen-Williams formula with C = 120:

Valve Size	Equiv. Length
2½″	7.7ft. (2.35m)
3″	21.5ft. (6.55m)

7. Installation position – All sizes may be installed either vertically or horizontally.

Trim Description

The basic trimming for the Model E Alarm Valve (Fig. 4) are arranged for rapid, easy and compact attachment, and serve as connection points to Reliable Alarm and other devices. They also act as a means for testing the operation of the alarm devices without causing the system to operate. Three basic Model E trim sets are available:

- **Constant Pressure** - Retard is not required. This trim set is used where water supply pressure does not vary, such as tank supplies. An open drip cup is provided to drain the mechanical sprinkler alarm line. This drain connection should be piped separately from the 1¼" main drain.
- **Variable Pressure with Open retard Drain** – Retard is required. This trim is used where water supply pressures vary. An open drip cup is provided to drain the retard chamber and the mechanical sprinkelr alarm line. This drain connection should be piped separately from the 1 ¼" main drain.
- **Variable Pressure with Closed Retard Drain** – Retard is required. This trim set is used where water supply pressures vary. The retard chamber and the mechanical sprinkler alarm line are drained thru a closed, checked connection to the 1¼" drain line. Only one drain connection is required.
  Each trim set permits either horizontal or vertical installation. All trim sets can be fitted with an optional pressure relieve trim kit (Fig. 3, closed retard drain type shown).
- **Pressure Relief Trim Kit** – Required with a wet pipe system when a rise in ambient temperature can cause system pressure to exceed 175 psi (12 bar) and a sprinkler piping elevation of 20 feet or more above the alarm valve, a 185 psi (12,7 bar) relief valve setting should be used.

  Pressure relief trim is not intended for use in relieving water hammer or fire pump surges.

NFPA 13 requires that all fitted wet pipe systems be installed with a relief valve not less than ¼" size, except when an auxiliary air reservoir is installed to absorb excessive pressure increases in the system.

Trim Kits are available, galvanized, in three trim styles:

- Individual Part Trim.
- Pre-Assembled Trim.
- Factory trimmed Valve.

Alarm valves are listed and approved by Underwriters Laboratories, Inc. and Factory Mutual Research Corp. only when used with the valve manufacturers trim sets.

Ordering Information

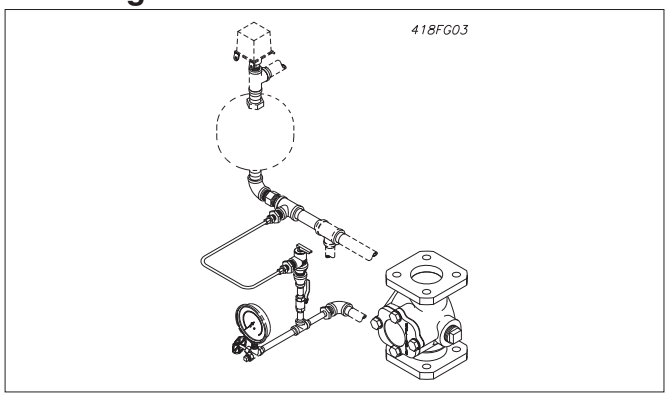


Fig. 3

Specify:

- Valve Size – 2½", 3", or 65mm. When size is specified in mm, a metric valve per 3(c) will be supplied.
- Inlet and Outlet Connection, 3 only – Either Flanged/Flanged or Flanged/Grooved.
- Type of Trim – Constant Pressure, Variable Pressure/Open Drain or Variable Pressure/Closed Drain.
- Style of Trim – Individual Part Trim or Pre-Assembled Trim or Factory Trimmed Valve. Specify vertical or horizontal installation.
- Additional Equipment – Retard Chamber, Mechanical Sprinkler Alarm, Pressure Relief Trim Kit and Pressure Switch must be separately ordered.

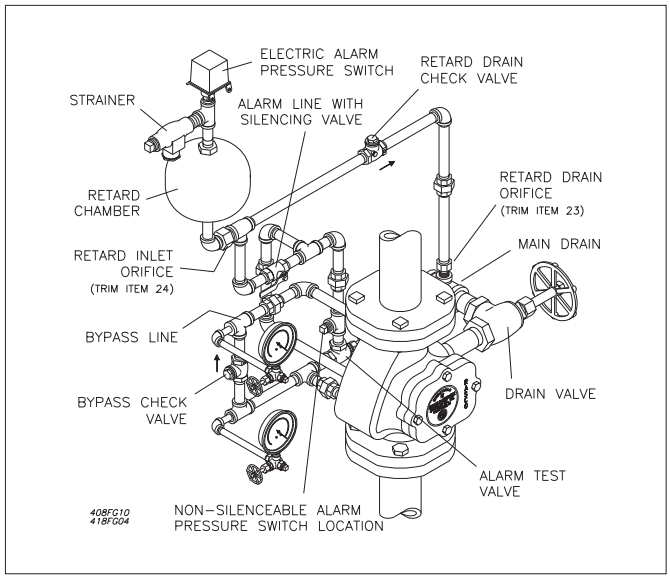
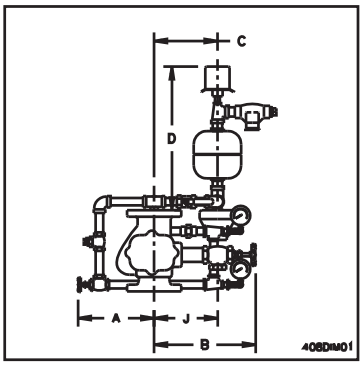
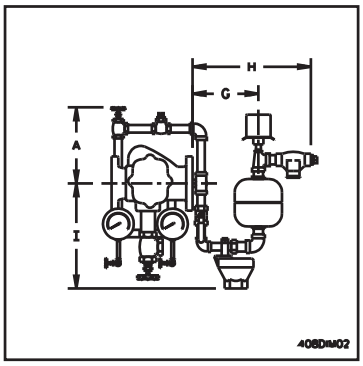


Fig. 4

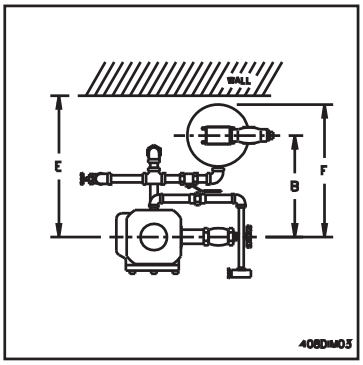
Installation Measurement in Inches (mm)																		
Valve	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**Q**	**R**
2½ & 3	7½	11	6	17¼	16	15	5¼	12¾	13½	6¼	14¾	20¼	7	14	8½	25	12¼	10
65mm	(190)	(279)	(152)	(438)	(406)	(381)	(133)	(324)	(343)	(159)	(375)	(514)	(178)	(356)	(216)	(635)	(311)	(254)



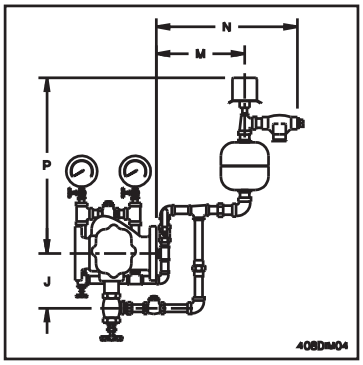
VERTICAL VARIABLE OPEN DRAIN TRIM
FRONT ELEVATION



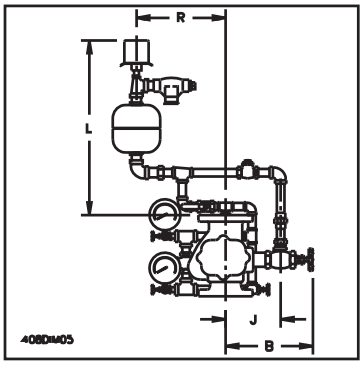
HORIZONTAL VARIABLE OPEN DRAIN TRIM
FRONT ELEVATION



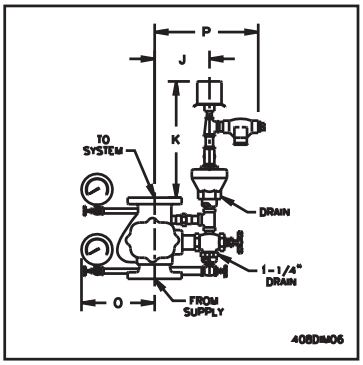
VERTICAL VARIABLE OPEN DRAIN TRIM
TOP VIEW



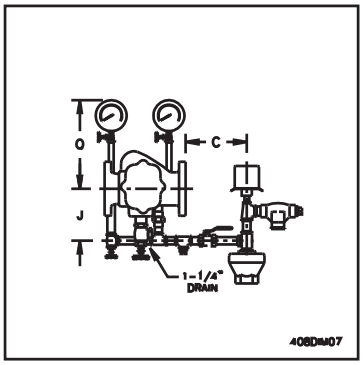
HORIZONTAL VARIABLE CLOSED DRAIN TRIM
FRONT ELEVATION



VERTICAL VARIABLE CLOSED DRAIN TRIM
FRONT ELEVATION



VERTICAL CONSTANT TRIM
FRONT ELEVATION



HORIZONTAL CONSTANT TRIM
FRONT ELEVATION

408DIM
418BKPG

The equipment presented in this bulletin is to be installed in accordance with the latest pertinent Standards of the National Fire Protection Association, Factory Mutual Research Corporation, or other similar organizations and also with the provisions of governmental codes or ordinances, whenever applicable.

Products manufactured and distributed by RELIABLE have been protecting life and property for over 80 years, and are installed and serviced by the most highly qualified and reputable sprinkler contractors located throughout the United States, Canada and foreign countries.

Manufactured by

Reliable®

The Reliable Automatic Sprinkler Co., Inc.
(800) 431-1588 Sales Offices
(800) 848-6051 Sales Fax
(914) 829-2042 Corporate Offices
www.reliablesprinkler.com Internet Address

Recycled Paper

Revision lines indicate updated or new data.

PG. Printed in U.S.A. 06/08 P/N 9999970051