

# Reliable®

## Model D Dry Pipe Valve 4" (100mm) & 6" (150mm)

### Features

1. Differential Type Dry-pipe Valve.
2. Threaded in one piece air and water seat — eases maintenance.
3. Bronze seat with “O”-Ring seals — minimizes corrosion and leakage.
4. Single hinge pin and latch design —no complicated levers.
5. Simple to reset — no special tools required.
6. One piece rubber facing — provides more reliable rubber-to-metal water seal.
7. Three connections styles available:
  - ANSI flanged inlet and outlet
  - ANSI flanged inlet and grooved outlet
  - Metric flanged inlet and outlet



### Listings & Approvals

1. Listed by Underwriters Laboratories, Inc. (UL)
2. Listed by Underwriters Laboratories of Canada (ULC)
3. Certified by FM Approvals
4. Loss Prevention Council. (LPC, UK)
5. Scientific Services Laboratories (SSL, Australia)
6. Conforms to EN 12259-3 (CE)
7. UKCA: 0832-UKCA-CPR-S5046

The Reliable Model D Dry Pipe Valve makes possible the installation of automatic sprinkler systems in buildings in which freezing temperatures prevail. This type of system, called a Dry Pipe System, has air under pressure instead of water in the piping above the dry pipe valve. When one or more automatic sprinklers operate due to fire, the air pressure in the system is reduced — the dry pipe valve opens and water under pressure flows in the activated sprinkler(s) and is then distributed on the fire.

### Operation

The Reliable Model D Dry Pipe Valve in its closed and open positions is shown in Figures 1 and 2. The closed position is maintained as long as the air pressure in the system piping above the dry pipe valve is sufficient to exert a greater force on the top side of the clapper than is exerted on its underside by the pressure of the water supply. Since the area included by the air seat is approximately six times that of the water seat (The Differential Principle) the air pressure needed to keep the dry pipe valve closed is only a fraction of that of the water supply. Table 1 gives the recommended air pressure for various water supply pressures for both sizes of Model D Dry Pipe Valves.

## Valve Description

Water Pressure in Supply Line psi (bar)	Air Pressure psi (bar) To be Pumped into System	
	Maximum	Not less than
20 (1.38)	10 (0.68)	20 (1.37)
50 (3.44)	15 (1.03)	25 (1.72)
75 (5.17)	20 (1.37)	30 (2.06)
100 (6.89)	25 (1.72)	35 (2.41)
125 (8.62)	30 (2.06)	40 (2.75)
150 (10.34)	35 (2.41)	45 (3.10)
175 (12.06)	40 (2.75)	50 (3.44)

When one or more automatic sprinklers operate due to fire, the air pressure in the system piping above the dry pipe valve is reduced. The pressure of the water supply, now by exerting the greater force, raises and rotates the clapper to its open position, permitting the water to flow to the operated sprinkler(s). Water also flows from the alarm outlet of the dry pipe valve through a strainer to the Reliable Mechanical Sprinkler Alarm and Electric Alarm Switch to automatically actuate mechanical and electrical alarms.

Reliable Model D Dry Pipe Valves can be reset quickly and easily without the use of special tools.

## Quick Opening Devices

When an automatic sprinkler operates, the resulting air pressure decay is inversely proportional to the size of the dry system – the larger the system, the slower the air pressure decays which slows the operation of the Dry Pipe Valve. NFPA 13, Installation of Sprinkler Systems, specifies that quick opening devices may be required in dry systems having capacities of more than 500 gallons.

Reliable's Model B1 Accelerator is an approved quick opening device that is easily attached to Reliable's Dry Pipe Valves. The accelerator is sensitive to small drops in system pressure and its quick operation allows the system air to pass through to the alarm outlet and the underside of the clapper. Here the air pressure build-up, coupled with the pressure of the water supply, opens the dry pipe valve clapper permitting the water to flow instantly to the operated sprinkler(s).

Reliable's Model B1 Accelerator is described in greater detail in Bulletin 323.

## Valve Description

1. Rated working pressure 175 psi (12.1 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.
    - Threaded openings per ANSI B 2.1.
  - b. US Standard Flanged Inlet and Grooved Outlet (Fig. 3):
    - Inlet flange mates with ANSI B 16.1 (125 lb.) flange.
    - Outlet Groove per ANSI/AWWA C606.

### U.S. Flange Dimensions in Inches

Valve Size	Bolt Circle Dia.	Bolt Hole Dia.	Flange Outside Dia.	Flange Thickness	No. Bolts
4" (100mm)	7½	¾	9	15/16	8
6" (150mm)	9½	1/8	11	1	8

- Reliable's standard trim sets are compatible with US Flanged Valves.
- Color — Black.

### U.S. Groove Dimensions in Inches

Valve Size	Outlet Dia.	Groove Dia.	Groove Width	Outlet Face to Groove
4" (100mm)	4.500	4.334	3/8	5/8
6" (150mm)	6.625	6.455	3/8	5/8

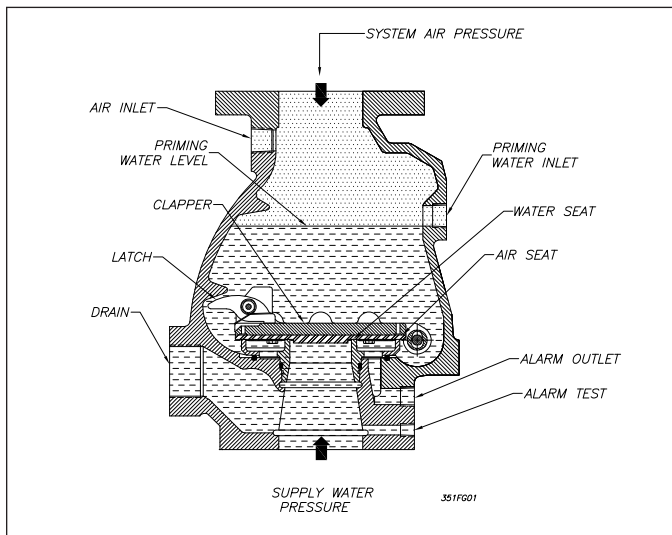


Figure 1—Closed

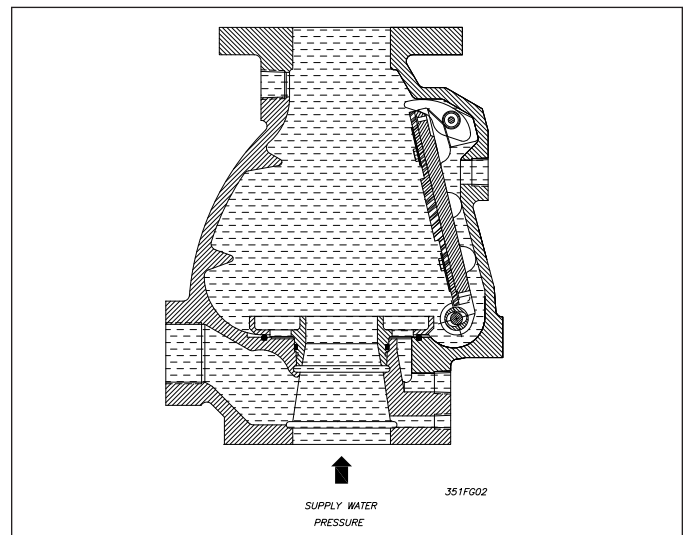


Figure 2—Open

- Threaded opening 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 EN 1092-2,
  - NF-E-29-282 and BS 4504 PN16 Fla
  - Threaded openings per ISO 7/1-R.

Metric Flange Dimensions in Millimeters					
Valve Size	Bolt Circle Dia.	Bolt Hole Dia.	Flange Outside	Flange Thickness	No. Bolts
100mm	180	18.3	229	23.8	8
150mm	241	22.2	279	25.4	8

- Reliable's standard trim sets may be used with metric valves providing trim is assembled carefully and extra thread sealant is applied to connections between valves and trim.
  - Color— Red.
4. Face to Face Dimension:
- The 4" (100 mm) Valve — 16" (406 mm)
  - The 6" (150 mm) Valve — 19" (482 mm)

5. Shipping Weight:

Valve Size	Flanged Inlet and Outlet	Flanged Inlet and Grooved Outlet
4" (100 mm)	120 lb. (54.5 kg)	110 lb. (49.83 kg)
6" (150 mm)	242 lb. (109.5 kg)	228 lb. (103.28 kg)

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

Size	Equiv. Length
4" (100 mm)	28 ft (8.51 m)
6" (150 mm)	47 ft (14.29 m)

7. Installation Position: Vertical.

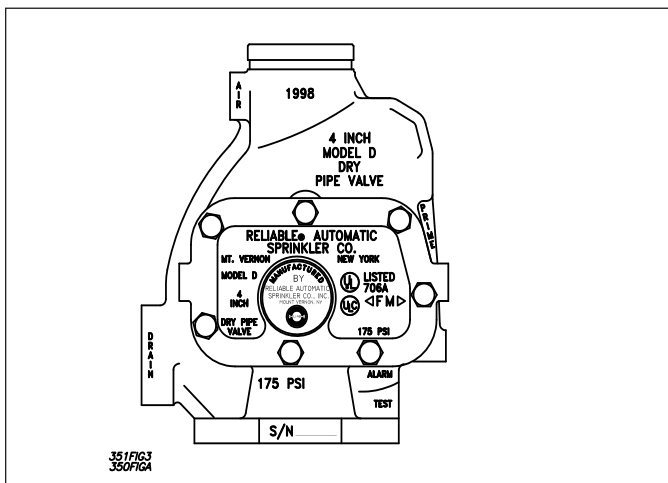


Figure 3

### Trim Description

The trimmings for Reliable Model D Dry Pipe Valves (Fig 4) are arranged for rapid, easy and compact attachment and serve as connection points to Reliable Alarm and other devices. They also serve as a means of setting and resetting the dry pipe valve prior to and after operation as well as allowing testing of the alarm devices without causing the system to operate.

The Model D Basic Trim Set is shown in Fig. 4 (The electric sprinkler alarm switch is not part of the trim set and must be separately ordered.) This trim set provides the air supply, drain, priming level and alarm connections. An alarm test valve, which allows the alarm devices to be tested without operating the dry pipe valve, is included. The basic trim set includes all items such as ball drip valves, pressure gauges, etc which are needed to enable proper dry pipe valve operation.

The basic trim set is available in either black or galvanized in one of three forms: loose, segmentally assembled trim or factory trimmed on the valve.

Two additional trimming attachments are offered: the priming chamber attachment and the fill line attachment. The priming chamber attachment allows the priming level to be maintained while the system remains pressurized. The fill line attachment provides a source of water for maintaining the prime level.

The trimmings, connection, operation and maintenance of the additional items which comprise a dry pipe valve system, such as air maintenance devices, air compressors, accelerators, electric alarm switches, mechanical sprinkler alarms, etc., are described in detail in the individual bulletins for these products.

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

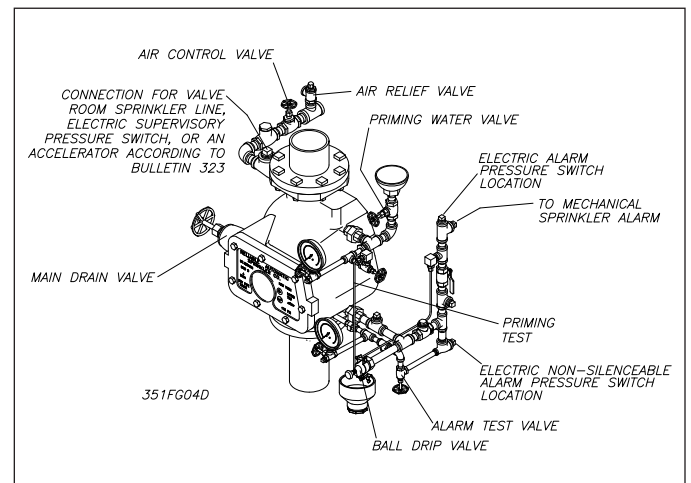


Figure 4 — Model D Dry Pipe Valve  
Model D Basic Trimming

## Ordering Information

Specify

- Valve Size: Either 4" (100 mm) or 6" (150 mm). When size is specified in mm, a metric valve per 3(c) will be supplied.
- Inlet and Outlet Connection — Either
- Flanged/Flanged or Flanged/Grooved.
- Trim — Basic Trim

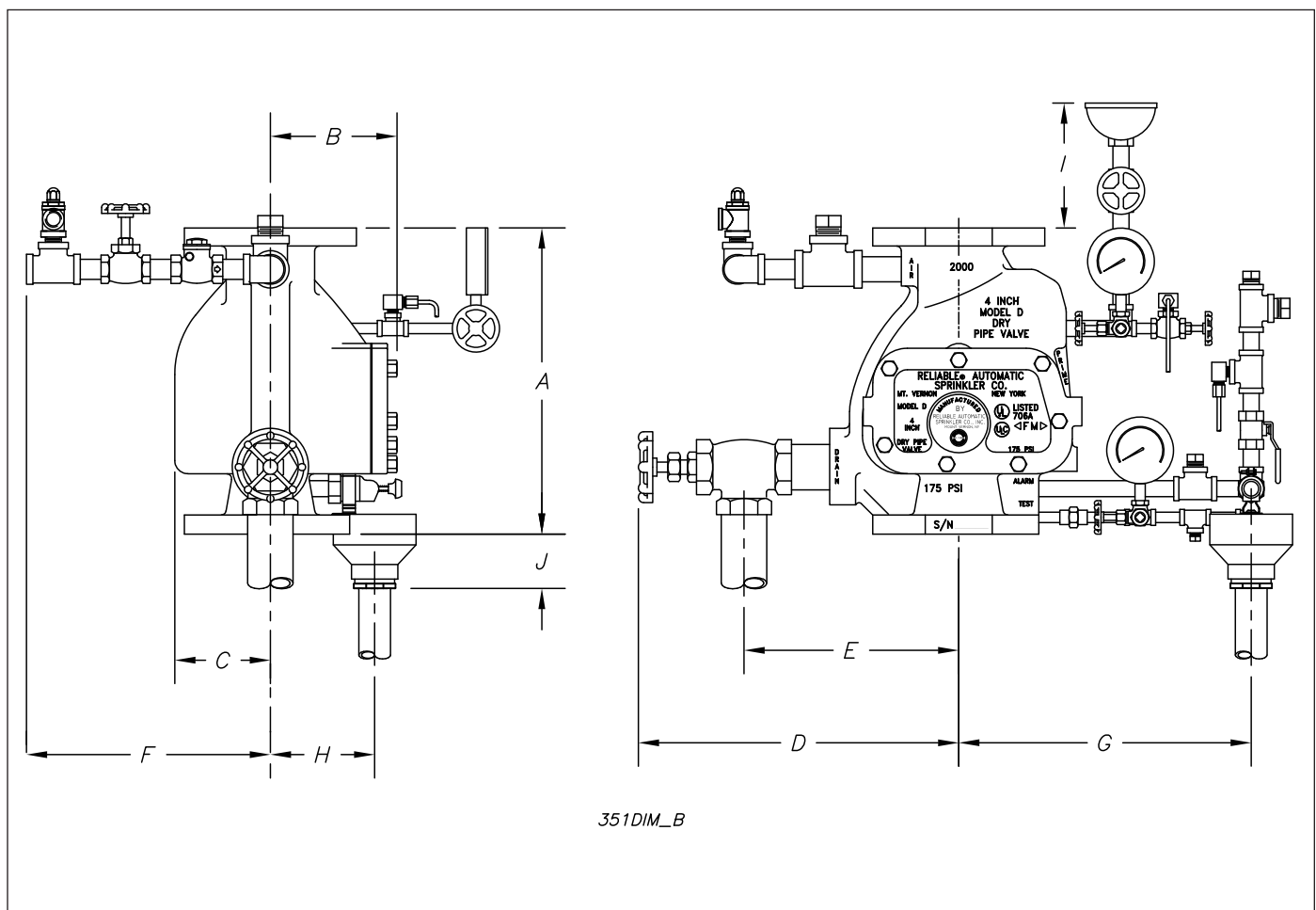
Priming Chamber Attachment

Fill Line Attachment

- Galvanized or Black Trim.
- Style of Trim - Loose Individual part trim or segmentally assembled trim or factory trimmed valve.
- Additional Equipment—Air Maintenance Devices, Air Compressors, Accelerators, Electric Sprinkler Alarm Switches and Mechanical Sprinkler Alarms must be separately ordered.

Installation Measurement in Inches										
Valve	A	B	C	D	E	F	G	H	I	J
4"(100mm)	16	6½	5	17	10	11	15	4½	2½	3½
6"(150mm)	19	8 <sup>3</sup> / <sub>8</sub>	6 <sup>5</sup> / <sub>8</sub>	18 <sup>5</sup> / <sub>8</sub>	11 <sup>5</sup> / <sub>8</sub>	11	15 <sup>7</sup> / <sub>8</sub>	4½	—	3½

## Installation Dimensions for 4" (100mm) & 6" (150mm) sizes



The equipment presented in this bulletin is to be installed in accordance with the latest published 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 90 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®

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