



## TECHNICAL DATA

### DELUGE VALVE, MODEL F-2 HALAR® COATED STRAIGHT THROUGH STYLE 2-1/2" (DN65) - 8" (DN200)

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

Viking Deluge Valves are quick opening, differential diaphragm flood valves with one moving mechanism.

The Viking Model F-2 Halar® Coated Deluge Valve is identical to the Viking Model F-1 Deluge Valve, except the Model F-2 is manufactured with specially coated components.

The body and cover of the Model F-2 Deluge Valve is coated inside and outside with Halar® Coating consisting of ethylene chlorotrifluoroethylene (ECTFE). The coating makes the valve suitable for use in corrosive environments similar to those found on offshore platforms and many industrial chemical facilities. Coatings on internal operating parts of the valve also include Teflon®, Electroless Nickel plating, and Tin plating. The Halar® Coated valve may be used to control water flow in deluge and preaction systems supplied by brackish or salt water when operation is controlled by fixed temperature hydraulic release systems. The Viking Stainless Steel Conventional Trim package is recommended for brackish or seawater applications. Also, the Viking Halar® Coated Deluge Valve has been satisfactorily evaluated as a Foam Concentrate Control Valve for use with AFFF or ATC foam in fixed foam/water sprinkler systems.



#### FEATURES

1. HALAR® COATING:
  - a. Exceeds performance of Epoxy Coating or Kynar Coating
  - b. Mechanical strength and toughness.
  - c. High thermal stability
  - d. High dielectric strength
  - e. Resistant to most chemicals and solvents
  - f. Resistant to cobalt 60 radiation
  - g. All wetted surfaces are coated including pipe threads
2. VALVE:
  - a. Field replaceable Diaphragm and Seat Rubbers
  - b. Designed for installation in vertical or horizontal position
  - c. Designed to be reset without opening the valve
  - d. Compatible with Hydraulic Pneumatic and Electric Detection Systems

#### 2. LISTINGS AND APPROVALS:

**U.L. Listed:** Guide Numbers VLFT & VLJH

**FM Approved:** Deluge Sprinkler Systems, Pre-action Sprinkler Systems, Refrigerated Area Sprinkler Systems, On-Off Multi-Cycle Sprinkler Systems

**American Bureau of Shipping (ABS):** Certificate No. 05-HS502910C-PDA

**NYC Dept. of Buildings:** MEA 89-92-E Vol. XXXI

**CE:** Pressure Equipment Directive 97/23/EC

#### 3. TECHNICAL DATA

##### Specifications:

Maximum Working Water Pressure: 250 PSI (17.4 bar)

Style: Straight through pattern

Connections available: See Table 1

Factory tested to 500 PSI (33.5 bar)

Valve differential: Approximately 2:1 (priming chamber to inlet chamber)

Priming chamber supply restriction (required): 0.0625" (1.6 mm)

Color of Halar® Coated Valve: Black

Friction Loss: Refer to Table 1

C<sub>v</sub> Factor: Refer to Table 1

Coating Specifications: Refer to Table 2

##### Material Standards:

Refer to Figure 2

##### Ordering Information:

Part Numbers: Refer to Table 1

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.

	<h1 style="margin: 0;">TECHNICAL DATA</h1>	<p><b>DELUGE VALVE, MODEL F-2</b>  <b>HALAR® COATED</b>  <b>STRAIGHT THROUGH STYLE</b>  <b>2-1/2" (DN65) - 8" (DN200)</b></p>
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DESCRIPTION	NOMINAL SIZE	PART NUMBER	FRICTION LOSS*	CV FACTOR	SHIPPING WEIGHT
<b>Threaded</b> <u>Pipe OD</u> NPT 65mm	2½"	12402Q/B	12 ft. (3.6 m)	155	66 lbs (30 kg)
<b>Flange/Flange</b> <u>Flange Drilling</u>					
ANSI <sup>1</sup> 3"	3"	12015Q/B	12 ft. (3.6 m)	228	82 lbs (37 kg)
ANSI <sup>1</sup> 4"	4"	11960Q/B	21 ft. (6.4 m)	416	146 lbs (66 kg)
ANSI <sup>1</sup> 6"	6"	11962Q/B	39 ft. (11.9 m)	884	271 lbs (122 kg)
ANSI <sup>1</sup> 8"	8"	11992Q/B	57 ft. (17.4 m)	1500	466 lbs (211 kg)
PN10/16 DN80	DN80	12027Q/B	12 ft. (3.6 m)	228	82 lbs (37 kg)
PN10/16 DN100	DN100	11966Q/B	21 ft. (6.4 m)	416	146 lbs (66 kg)
PN10/16 DN150	DN150	11963Q/B	39 ft. (11.9 m)	884	271 lbs (122 kg)
PN10	DN200	11996Q/B	57 ft. (17.4 m)	1500	466 lbs (211 kg)
PN16	DN200	12000Q/B	57 ft. (17.4 m)	1500	466 lbs (211 kg)
<b>Flange/Groove</b> <u>Flange Drilling / Pipe O.D.</u>					
ANSI / 89 mm <sup>1</sup>	3"	12019Q/B	12 ft. (3.6 m)	228	75 lbs (34 kg)
ANSI / 114 mm <sup>1</sup>	4"	11959Q/B	21 ft. (6.4 m)	416	136 lbs (62 kg)
ANSI / 168 mm <sup>1</sup>	6"	11961Q/B	39 ft. (11.9 m)	884	261 lbs (119 kg)
PN10/16 / 89 mm	DN80	12644Q/B	12 ft. (3.6 m)	228	75 lbs (34 kg)
PN10/16 / 114 mm	DN100	12645Q/B	21 ft. (6.4 m)	416	136 lbs (62 kg)
PN10/16 / 165 mm	DN150	12641Q/B	39 ft. (11.9 m)	884	261 lbs (119 kg)
PN10/16 / 168 mm	DN150	11961Q/B	39 ft. (11.9 m)	884	261 lbs (119 kg)
<b>Groove/Groove</b> <u>Pipe O.D.</u>					
73 mm	2½" / DN65	12404Q/B	12 ft. (3.6 m)	155	66 lbs (30 kg)
76 mm	DN65	12730Q/B	12 ft. (3.6 m)	228	64 lbs (29 kg)
89 mm	3" / DN80	12023Q/B	12 ft. (3.6 m)	228	64 lbs (29 kg)
114 mm	4" / DN100	11514Q/B	21 ft. (6.4 m)	416	127 lbs (57 kg)
165 mm	DN150	11911Q/B	39 ft. (11.9 m)	884	245 lbs (111 kg)
168 mm	6" / DN150	11525Q/B	39 ft. (11.9 m)	884	245 lbs (111 kg)
219 mm	8" / DN200	11118Q/B	57 ft. (17.4 m)	1500	403 lbs (182 kg)

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

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

**Table 1 - Valve Part Numbers and Specifications**

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

<sup>1</sup>Valves marked with ANSI for drilling patterns indicate ANSI B16.42 Class 150. Systems with water working pressures above 175 PSI (12 bar) may require extra-heavy pattern fittings. ANSI B16.42 Class 150 flanges are NOT compatible with ANSI Class 250 or Class 300 flanges. To mate the Model F-2 Deluge Valve with ANSI Class 250 or Class 300 flanges, use listed flange adapters of the appropriate pressure rating. For piping with grooved connections, the valve may be installed with listed grooved couplings of the appropriate pressure rating.

8" - Available Since 2002  
 4" & 6" - Available since 2003  
 2-1/2" & 3" - Available since 2004  
 Shipping weight: Refer to Table 1

**ACCESSORIES:**

Refer to Current VIKING PRICE LIST for Part Numbers.

1. A STANDARD TRIM package is available. When the Halar® Coated Deluge Valve is used on systems with fresh water supplies, Viking F Deluge Valve trim sets may be used. The trim sets include the VALVE ACCESSORY package and the fittings and nipples shown on the F Deluge Valve Trim Charts. (See Table 2)
2. Where brackish or seawater is used, it is recommended that Viking Stainless Steel Trim package be used. This includes 316 stainless steel valves, pipe and fittings with brass electroless nickel-plated devices.
3. A special trim package is available for use when the Halar® Coated Deluge Valve is used as a FOAM CONCENTRATE CONTROL VALVE for AFFF or ATC Foam Concentrate. See the Viking Foam Engineering and Design Data book.

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

**4. INSTALLATION**

**NOTE: FOR INSTALLATION INSTRUCTIONS FOR USING THE HALAR® COATED DELUGE VALVE AS A FOAM CONCENTRATE CONTROL VALVE, REFER TO THE VIKING FOAM ENGINEERING DESIGN AND DATA BOOK.**



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### A. General Instruction

1. Viking Deluge Valves may be installed in the horizontal or vertical position.
2. When the Viking Halar® Coated Deluge Valve is used on systems supplied with brackish water, salt water, foam/water (pre-mixed) solution, or any other corrosive water supply, consult Table 3 for trim material specifications. Check with manufacturer prior to using this valve with fluids other than fresh water and those listed in Table 3.
3. When the Halar® coated deluge valve is supplied with anything other than clean fresh water, such as salt water or brackish water, conventional trim should not be utilized. Stainless steel or brass Trim should be used for installations that are supplied with water supplies other than clean fresh water.
4. Use caution when using wrenches on or around Halar® Coated Valves. Halar® Coating may chip when struck with hard or sharp objects. If the Halar® coating becomes chipped, immediately repair the damaged area to inhibit the potential for corrosion. Refer to paragraph 6.III.D - Halar® Coating Repair instructions.
5. Halar® Coating is black in color. Due to its chemical resistance paint will not adhere to Halar® Coating sufficiently to resist abrasion.
6. The valve must be installed in an area not subject to freezing temperatures or physical damage.
7. The valve must be trimmed according to current Viking Trim Charts and appropriate instructions for the application. Trim Charts are printed in the *Viking Engineering and Design Data* book, the *Viking Foam Engineering and Design Data* book, and are provided with trim packages.
  - a. When the Halar® Coated Deluge Valve is used on deluge or preaction systems where standard trim is required and allowed, the valve must be trimmed according to Viking Model F Trim Charts for the system used. For additional trim connections, refer to technical data describing the system being installed.

**TRIM NOTE: DISCHARGE PIPING FROM THE AUXILIARY DRAIN VALVE, THE MAIN DRAIN VALVE IN THE DELUGE VALVE TRIM, AND ALL SYSTEM DRAINS SHOULD BE KEPT SEPARATE TO PREVENT UNWANTED OPERATION OF THE DELUGE VALVE. WHEN DRAINS ARE INTERCONNECTED AND THE AUXILIARY DRAIN IS DAMAGED OR NOT CLOSED TIGHTLY, DISCHARGE FROM ANY OTHER DRAIN, COULD FLOOD THE OUTLET CHAMBER OF THE DELUGE VALVE, PRESSURIZE THE P.O.R.V. TO OPERATE THE DELUGE VALVE OR FLOOD THE SYSTEM PIPING. ALSO TO PREVENT UNWANTED OPERATION OF THE DELUGE VALVE, DO NOT CONNECT THE OUTLET OF THE DRIP CHECK TO ANY OTHER DRAIN.**

8. The priming line must be connected upstream of the system water supply main control valve or to a constant source of water at a pressure equal to the system water supply.
9. After the Deluge Valve is set, operation of the Deluge Valve requires the release of priming water from the priming chamber. This may be by automatic or manual operation of the release system. Viking Deluge Valves are compatible with hydraulic, pneumatic, and electric release systems. For specific Trim arrangements refer to Technical Data describing the system being installed.
  - a. Hydraulic Release Systems: See Figures 3 - 6 for the maximum allowable elevation of hydraulic release piping above the Deluge Valve.
  - b. Pneumatic Release Systems: A Viking Pneumatic Actuator is required between the Emergency Release in the Deluge Valve Trim and the pneumatic release piping.
  - c. Electric Release: Solenoid Valves, Release Control Panels, and Electrical Detectors must be compatible. Consult appropriate listing and/or approval guides.

**CAUTION: OPERATION OF VIKING DELUGE VALVES BY PRESSURIZING THE PRIMING CHAMBER WITH AIR PRESSURE OR ANY OTHER PRESSURIZED GAS IS NOT RECOMMENDED.**

### B. Placing the Valve in Service

1. Verify that the system water supply main control valve is closed, and the Halar® Coated Deluge Valve is trimmed according to current Viking Trim Charts, and schematic drawings for the system being installed.
2. Open the main drain valve in the Deluge Valve Trim.
3. Open the auxiliary drain valve in the Deluge Valve trim. Drain all water from the outlet chamber of the Deluge Valve.
4. For preaction systems, open the system main drain located on (or down stream from) the rubber seated check valve in the sprinkler system riser being supplied by the Deluge Valve.
5. Verify that all water has been drained from the system. Open all auxiliary drains and the system test valve to vent the system and drain any water contained in low points of the system piping. Allow enough time for the system to drain completely.
6. After the sprinkler system has completely drained, close all drains opened in steps No. 4 and 5 above. Keep the auxiliary drain valve and the main drain valve in the Deluge Valve trim open.
7. Set the release system. (See release system description and Technical Data for the system used). The Emergency Release must be closed.
8. Open the priming line supply valve and pressurize the priming chamber. The pressure on the priming chamber water pressure gauge must be equal to the system water supply pressure.
9. Close the auxiliary drain valve in the Deluge Valve trim.



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10. Partially open the water supply main control valve. When water flows from the main drain, slowly close the main drain valve.
11. Open the water supply main control valve completely and secure.
12. Depress the drip check to drain any remaining water from the outlet chamber of the Deluge Valve.
13. Verify:
  - a. the auxiliary drain valve in the Deluge Valve trim is CLOSED.
  - b. the main drain valve in the Deluge Valve trim is CLOSED.
  - c. the alarm test shut-off valve in the Deluge Valve trim is CLOSED.
  - d. all other valves are in their normal operating position and secure.
  - e. the water supply main control valve is fully OPEN and properly locked or supervised.
  - f. all equipment is adequately heated and protected to prevent freezing and physical damage.
  - g. check for, and repair all leaks.
14. On new installations, those systems that have been placed out of service, or where new equipment has been installed, trip test the system to verify that all equipment functions properly. See ANNUAL maintenance instructions.

**CAUTION! PERFORMING A TRIP TEST RESULTS IN OPERATION OF THE DELUGE VALVE. WATER WILL FLOW INTO THE SPRINKLER PIPING. TAKE NECESSARY PRECAUTIONS TO PREVENT DAMAGE.**

15. After completing a trip test, perform SEMI-ANNUAL maintenance.

### C. Valve Removed From Service

**NOTE: WHEN A VALVE HAS BEEN REMOVED FROM SERVICE AND IS SUBJECT TO FREEZING OR WILL BE OUT OF SERVICE FOR AN EXTENDED PERIOD OF TIME, ALL WATER MUST BE REMOVED FROM THE PRIMING CHAMBER, TRIM PIPING, WATER SUPPLY PIPING AND OTHER TRAPPED AREAS.**

## 5. OPERATION (Refer to Figure 2)

**NOTE: FOR OPERATION OF THE HALAR® COATED DELUGE VALVE USED AS A FOAM CONCENTRATE CONTROL VALVE, REFER TO THE VIKING FOAM ENGINEERING AND DESIGN DATA BOOK.**

The deluge valve has an inlet, outlet and priming chamber. The inlet and outlet are separated from the priming chamber by the valve clapper (5) and upper diaphragm (6).

### In the set condition:

System pressure is supplied to the priming chamber through a restricted priming line (trim) equipped with a check valve. System water supply pressure trapped in the priming chamber holds the clapper (5) on seat (2) due to area differential design. Clapper (5) separates the inlet chamber from the outlet chamber, keeping the outlet chamber and system piping dry.

### In fire conditions:

When the release system operates, pressure is released from the priming chamber faster than it is supplied through the restricted priming line. Water supply pressure in the inlet chamber forces the clapper (5) off from seat (2), allowing water to flow through the outlet and into the system and alarm devices.

### For Deluge Valves equipped with Conventional Trim:

When the deluge valve operates, the air side of the PORV loses pressure, causing the PORV to operate. When the PORV operates, it continually vents the priming chamber to prevent the deluge valve from resetting even if the open releasing devices close. The deluge valve can only be reset after the system is taken out of service, and the outlet chamber of the deluge valve and associated trim piping is depressurized and drained.

## 6. INSPECTIONS, TESTS AND MAINTENANCE

**NOTICE: THE OWNER IS RESPONSIBLE FOR MAINTAINING THE FIRE PROTECTION SYSTEM AND DEVICES IN PROPER OPERATING CONDITION. THE DELUGE VALVE MUST BE KEPT FROM FREEZING CONDITIONS AND PHYSICAL DAMAGE THAT COULD IMPAIR ITS OPERATION.**

**WARNING: ANY SYSTEM MAINTENANCE WHICH 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 AUTHORITIES HAVING JURISDICTION. CONSIDERATION SHOULD BE GIVEN TO EMPLOYMENT OF A FIRE PATROL IN THE AFFECTED AREAS.**

### I. Inspection

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 or corrosive atmospheres. Also, the alarm devices, detection systems or other connected trim may require a more frequent schedule. For minimum maintenance and inspection requirements, refer to NFPA 25. In addition, the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements which must be followed. The following recommendations are minimum requirements.

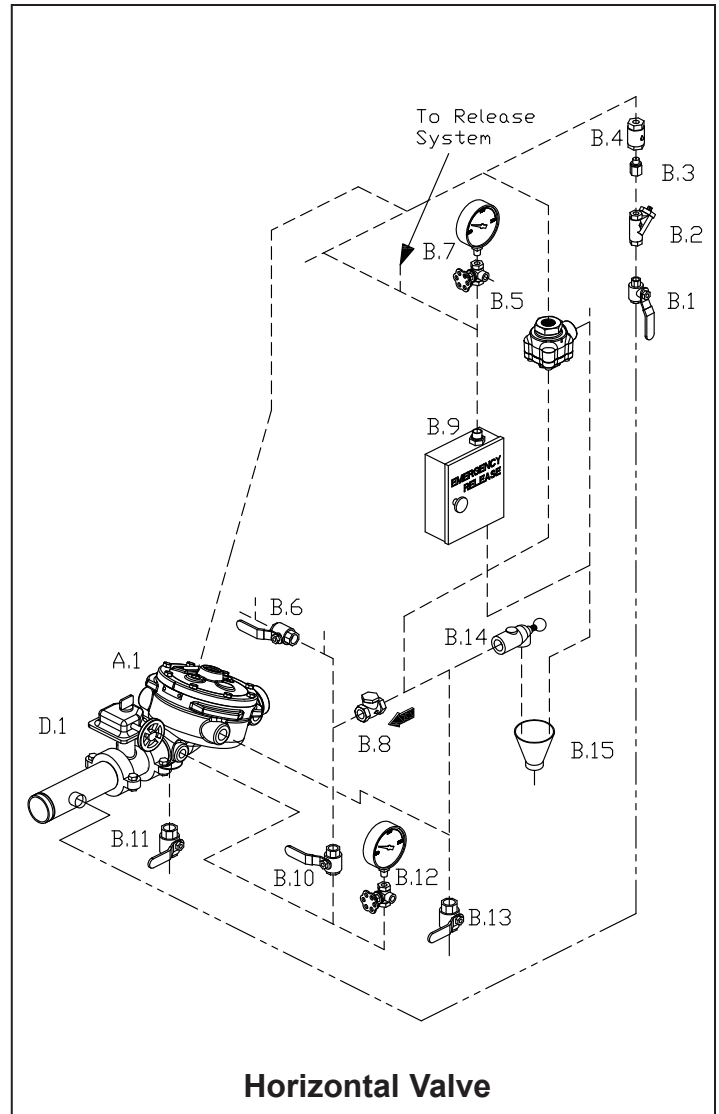
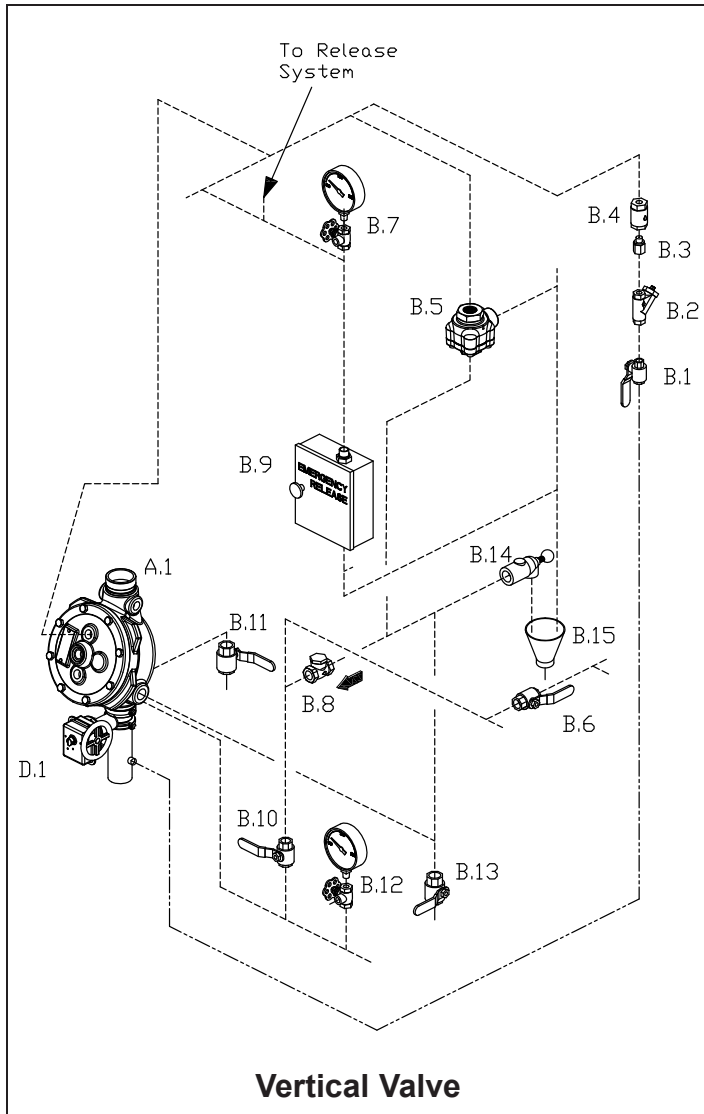


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----- Dashed lines indicate nipples and fittings included with trim.

----- Phantom lines indicate piping required, but not included with trim.

**Figure 1 - Conventional Trim Components**

- |     |  |      |   |
|-----|--|------|---|
| A.1 | Deluge Valve                           | B.9  | Emergency Release                           |
| B.1 | Priming Valve (Normally Open)          | B.10 | Alarm Test Valve (Normally Closed)          |
| B.2 | Strainer                               | B.11 | Flow Test Valve (Normally Closed)           |
| B.3 | 1/16" Restricted Orifice               | B.12 | Water Supply Pressure Water Gauge and Valve |
| B.4 | Spring Loaded Check Valve              | B.13 | Auxiliary Drain Valve (Normally Closed)     |
| B.5 | Pressure Operated Relief Valve (PORV)  | B.14 | Drip Check Valve                            |
| B.6 | Alarm Shut Off Valve (Normally Open)   | B.15 | Drain Cup                                   |
| B.7 | Priming Pressure Water Gauge and Valve | D.1  | Water Supply Control Valve                  |
| B.8 | Drain Check Valve                      |      |   |



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### II. Tests

#### A. Quarterly Water Flow Alarm Test

1. Notify the Authority Having Jurisdiction and those in the area affected by the test.
2. To test the local electric alarm (if provided) and/or mechanical water motor alarm (if provided), OPEN the alarm test valve (B.5) in the deluge valve trim.
  - a. Electric alarm pressure switches (if provided) should activate.
  - b. Electric local alarms should be audible.
  - c. The local water motor gong should be audible.
  - d. If equipped with remote station alarm signaling devices, verify that alarm signals were received.
3. When testing is complete, CLOSE the alarm test valve (B.5).
4. Verify:
  - a. All local alarms stop sounding and alarm panels (if provided) reset.
  - b. All remote station alarms reset.
  - c. Supply piping to water motor alarm properly drains.
5. Verify that the alarm shut-off valve (B.9) is OPEN, and the alarm test valve (B.5) is CLOSED.
6. Verify that the outlet chamber is free of water. No water should flow from the drip check (B.7) when the plunger is pushed.
7. Notify the Authority Having Jurisdiction and those in the affected area that testing is complete.

#### B. Quarterly Main Drain Test

1. Notify the Authority Having Jurisdiction and those in the area affected by the test.
2. Record pressure reading from the water supply pressure gauge (B.13).
3. Verify that the outlet chamber of the deluge valve is free of water. No water should flow from the drip check (B.7) when the plunger is pushed.
4. Fully OPEN the flow test valve (B.15).
5. When a full flow is developed from the flow test valve (B.15), record the residual pressure from the water supply pressure gauge (B.13).
6. When the test is complete, SLOWLY CLOSE the flow test valve.
7. Compare test results with previous flow information. If deterioration of the water supply is detected, take appropriate steps to restore adequate water supply.
8. Verify:
  - a. Normal water supply pressure has been restored to the inlet chamber, the priming chamber, and the release system. The pressure on the priming chamber water pressure gauge should equal the system water supply pressure.
  - b. All alarm devices, and valves are secured in normal\*\* operating position.
9. Notify the Authority Having Jurisdiction that the test is complete. Record and/or provide notification of test results as required by the Authority Having Jurisdiction.

\*\* For normal operating position, refer to Figure 1 and/or Trim Charts and System Data for the system used.

#### C. Annual Trip Test:

**CAUTION! PERFORMING THIS TEST RESULTS IN OPERATION OF THE DELUGE VALVE. WATER WILL FLOW INTO THE SPRINKLER PIPING AND FROM ANY OPEN SPRINKLERS AND/OR NOZZLES. TAKE NECESSARY PRECAUTIONS TO PREVENT DAMAGE.**

1. Notify the Authority Having Jurisdiction and those in the area affected by the test.
2. Fully open the flow test valve (B.15) to flush away any accumulation of foreign material.
3. Close the flow test valve (B.15).
4. Trip the system by operating the release system. Allow a full flow to pass through the deluge valve. Water flow alarms should operate.
5. When test is complete:
  - a. Close the main water supply control valve (D.1).
  - b. Close the priming valve (B.1).
  - c. Open the auxiliary drain valve (B.6).
  - d. Open all system main drains and auxiliary drains. Allow the system to drain completely.
6. Perform SEMI-ANNUAL maintenance. Refer to paragraph 6.III.B SEMI-ANNUAL MAINTENANCE.
7. Place the system in service. Refer to Item 4.B, INSTALLATION: PLACING THE VALVE IN SERVICE.

**NOTE: DELUGE VALVES SUPPLIED BY BRACKISH WATER, SALT WATER, FOAM, FOAM/WATER SOLUTION, OR ANY OTHER CORROSIVE WATER SUPPLY, SHOULD BE FLUSHED WITH GOOD QUALITY FRESH WATER BEFORE BEING RETURNED TO SERVICE.**

8. Notify the Authority Having Jurisdiction that the test is complete. Record and/or provide notification of test results as required by the Authority Having Jurisdiction.



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### III. Maintenance

**NOTICE: THE OWNER IS RESPONSIBLE FOR MAINTAINING THE FIRE PROTECTION SYSTEM AND DEVICES IN PROPER OPERATING CONDITION. THE DELUGE VALVE MUST BE KEPT FROM FREEZING CONDITIONS AND PHYSICAL DAMAGE THAT COULD IMPAIR ITS OPERATION.**

Where difficulty in performance is experienced, the valve manufacturer or his authorized representative shall be contacted if any field adjustment is to be made.

**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 AUTHORITIES HAVING JURISDICTION. CONSIDERATION SHOULD BE GIVEN TO EMPLOYMENT OF A FIRE PATROL IN THE AFFECTED AREAS.**

#### A. After Each Operation:

1. Sprinkler systems that have been subjected to a fire must be returned to service as soon as possible. The entire system must be inspected for damage, and repaired or replaced as necessary.
2. Deluge valves and trim that have been subjected to brackish water, salt water, foam, foam/water solution, or any other corrosive water supply, should be flushed with good quality fresh water before being returned to service.
3. Perform SEMI-ANNUAL maintenance after every operation.

#### B. Semi-Annual Maintenance:

1. Remove the system from service. (Refer to Deluge or Preaction System Data that describes systems with the release system used for additional information.)
  - a. Close the main water supply control valve (D.1) and priming valve (B.1).
  - b. Open the auxiliary drain valve (B.6).
  - c. Relieve pressure in the priming chamber by opening the emergency release valve (B.11).
2. Inspect all trim for signs of corrosion and/or blockage. Clean and/or replace as required.
3. Clean and/or replace all strainer screens (including B.2).
4. Check Halar® coating of the Deluge Valve for physical damage. If necessary, make repairs to the affected area to inhibit potential corrosion. Refer to paragraph 6.III.D - Halar® Coating Repair instructions.
5. Refer to Item 4.B: INSTALLATION: PLACING THE VALVE IN SERVICE.

#### C. Every Fifth Year

1. Internal inspection of deluge valves is recommended every five years unless inspections and tests indicate more frequent internal inspections are required. Refer to DISASSEMBLY instructions provided below.
2. Internal inspection of strainers, and restricted orifices is recommended every five years unless inspections and tests indicate more frequent internal inspections are required.
3. Record and provide notification of inspection results as required by the Authority Having Jurisdiction.

#### D. Halar® Coating Repair

If the Halar® coating becomes chipped, immediately repair the damaged area to inhibit the potential for corrosion. Follow instructions below:

1. Wipe clean and prepare the area to be repaired as instructed.
2. Using a hand held torch, gently heat the Halar® coating around the area needing repair to the melting point of the Halar®.
3. Allow the heated Halar® to flow together.
4. Allow the coating to cool as directed in the instructions.

#### E. Valve Disassembly

1. Remove the valve from service (see the release system description and Technical Data for additional information). Close the main control valve, open the main drain valve. Release the pressure in the priming chamber by opening the Emergency Release Valve.
2. Remove trim as required to allow removal of cover (4).
3. Remove screws (9).
4. Lift cover (4) from body (1).
5. Remove clapper assembly (3, 5, 6, 7, 10, 12) by lifting it from the body (1).
6. Inspect seat (2). If replacement is necessary, remove screws (12). Remove old seat (2) and o-ring (13). Replace with new seat (2) and o-ring (13). Replace screws (12).
7. To replace the upper diaphragm (6), remove the circle of screws (10). Remove the clamp ring (3) and remove the diaphragm rubber (6).
8. To replace the seat rubber/ring (7), remove the clapper assembly (3, 5, 6, 7, 10, 12) from the valve. Remove the circle of screws (11) and remove the seat rubber/ring (7).

	<h1 style="margin: 0;">TECHNICAL DATA</h1>	<p><b>DELUGE VALVE, MODEL F-2</b>  <b>HALAR® COATED</b>  <b>STRAIGHT THROUGH STYLE</b>  <b>2-1/2" (DN65) - 8" (DN200)</b></p>
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**NOTE: PRIOR TO INSTALLING A NEW CLAPPER RUBBER (6) OR SEAT RUBBER/RING (7), MAKE CERTAIN THAT ALL SURFACES ARE CLEAN AND FREE OF FOREIGN MATTER. THE PLATED SEAT (2) MUST BE SMOOTH AND FREE OF NICKS, BURRS OR INDENTATIONS.**

**F. Valve Reassembly**

1. Prior to reassembly flush the valve of all foreign matter.
2. To reassemble valve, reverse disassembly procedure.

**7. AVAILABILITY AND SERVICE**

The Halar® Coated Viking Deluge Valve and accessories are available through a network of Domestic, Canadian, and International Distributors. See the Viking Corp. Web site for closest distributor or contact The Viking Corporation.

**8. GUARANTEES**

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

**Table 2 - Coating and Plating Specifications**

**Halar® Coating specification:** Viking Specification SPF02-Q06 - Ethylene and Chlorotrifluoroethylene (Powder)

Total Thickness: .008"-.010" (.20 mm - .25 mm) applied as follows:

1. Parts are cleaned and sandblasted for proper adhesion and performance
2. Primer base powder and Halar® clear powder coat applied using Electrostatic Spray system
3. Powder is fusion bonded and cured in oven, and allowed to cool

**Electroless Nickel Plating Specification:** Viking Specification SPF02-J07

Total thickness: .002" - .0025" (.05 mm - .06 mm) applied for corrosion resistance as follows:

1. Parts are cleaned and rinsed for proper adhesion
2. Parts are chemically activated for adhesion of plating
3. Finish plate with .002"-.0025" (.05 mm - .06 mm) Electroless Nickel Phosphorus plating
4. Apply .0002" - .0003" (.005 mm - .007 mm) Tin/Lead plating to seat/rubber contact surface

**Teflon® Coating Specification:** Viking Specification SPF02-N05 - Teflon® Powder Coating

Total thickness: .002" - .0025" (.05 mm - .06 mm) Teflon® Powder Coating applied as follows:

1. Parts are cleaned and burned off in oven
2. Parts are etched for adhesion by grit blasting
3. Teflon® Powder is electrostatically applied to .002" - .0025" (.05 mm - .06 mm)
4. Powder is fusion bonded and cured in oven, and allowed to cool

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Teflon® is a registered trademark of E.I. Dupont Corp.

**Table 3 - Trim Piping Materials Chart**

VALVE CONTROLLING:	TRIM PIPING MATERIAL
Fresh Water Only	Standard - See Note 1
Sea Water Only AFFF/Sea Water Premix Solution ARC/Sea Water Premix Solution	316 Stainless Steel or 400 Monel. See Notes 2 & 4
AFFF/Fresh Water Premix Solution	Black Steel, Copper, Stainless Steel or 400 Monel. See Notes 3 & 4
AFFF/Fresh Water Premix Solution	Black Steel, Copper, Stainless Steel or 400 Monel. See Notes 3 & 4
AFFF Foam Concentrate in pipes 2" (DN50) & larger	Black Steel, Copper, Stainless Steel or 400 Monel. See Notes 3 & 4
AFFF Foam Concentrate in pipes smaller than 2" (DN50)	Copper 316, Stainless Steel or 400 Monel. See Note 4
ARC Foam Concentrate	Stainless Steel or 400 Monel. See Notes 4 & 5

Note 1 - Standard Trim sets available from Viking consist of galvanized nipples and fittings. Includes ACCESSORY PACKAGE.

Note 2 - After operation, the valve and trim should be flushed with good quality fresh water before being returned to service.

Note 3 - Copper trim sets are not available from Viking. They may be manufactured by installer. Refer to Model F Deluge Valve Trim Charts provided in the *Viking Engineering and Design Data* book for required configuration of trim, sizes and lengths of nipples and components required.

Note 4 - Monel trim sets are not available from Viking. They may be manufactured by installer. Refer to Model F Deluge Valve Valve Trim Charts provided in the *Viking Engineering and Design Data* book for required configuration of trim, sizes and lengths of nipples and components required.

Note 5 - DO NOT allow ARC Foam Concentrate to enter the priming chamber of the Deluge Valve. When using the Halar® Coated Deluge Valve as a Foam Concentrate Control Valve, refer to the *Viking Foam Engineering and Design Data* book for trim charts, technical data and special instructions



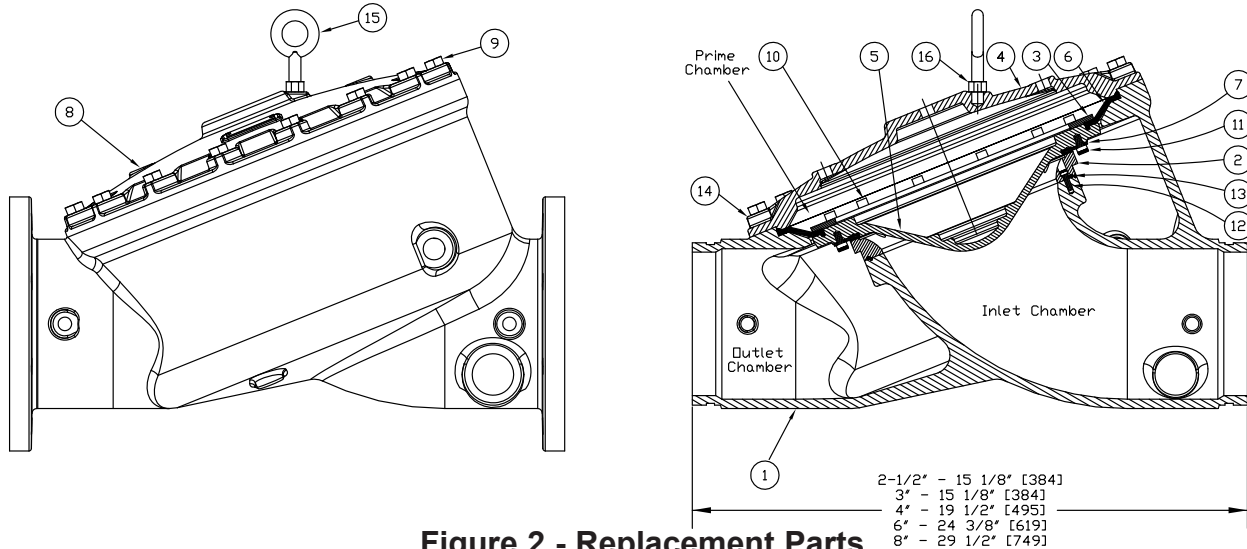


# TECHNICAL DATA

**DELUGE VALVE, MODEL F-2  
HALAR® COATED  
STRAIGHT THROUGH STYLE  
2-1/2" (DN65) - 8" (DN200)**

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**Figure 2 - Replacement Parts**

ITEM NO.	PART NUMBER				DESCRIPTION	MATERIAL	NO. REQ'D.			
	2-1/2" (DN65) & 3" (DN80)	4" (DN100)	6" (DN150)	8" (DN200)			2-1/2" (DN65) & 3" (DN80)	4" (DN100)	6" (DN150)	8" (DN200)
1	--	--	--	--	Body	Ductile Iron, Halar® Coated	1	1	1	1
2	*	*	*	*	Seat	Brass UNS-C84400, Electroless Nickel, Tin Plated	1	1	1	1
3	02493BN	02378BN	05704BN	10514N	Ring Clamp, Upper Diaphragm	Teflon® Coated, Bronze UNS-C84400	1	1	1	1
4	--	--	--	--	Cover	Ductile Iron, Halar® Coated	1	1	1	1
5	08846N	08844N	08570N	10518N/B	Clapper	Ductile Iron, Halar® Coated	1	1	1	1
6	12012	11560	11561	10510	Upper Diaphragm	EPDM - ASTM D-2000	1	1	1	1
7	02497B	02382B	02176B	10512	Rubber Seat Assembly	EPDM - ASTM D-2000 & Stainless Steel UNS-S30400	1	1	1	1
8	--	--	--	--	Data Plate	Aluminum Etched	1	1	1	1
9	08081				Screw, H.H.C. <sup>1</sup> , 1/2-13 x 1-1/4 (32)	Stainless Steel, UNS-S30400	10			
		08083			Screw, H.H.C. <sup>1</sup> , 1/2-13 x 1 1/2 (38)	Stainless Steel, UNS-S30400		12		
			08085	08085	Screw, H.H.C. <sup>1</sup> , 5/8-11 x 1 3/4 (44)	Stainless Steel, UNS-S30400			15	16
10	08215				Screw, R.H. <sup>3</sup> , 10-24 x 3/8 (9.5)	#400 Monel	6			
		08217			Screw, H.H.C. <sup>1</sup> , 5/16-18 x 1/2 (13)	#400 Monel		8		
			08882		Screw, H.H.C. <sup>1</sup> , 3/8-16 x 1/2 (13)	#400 Monel			12	
11				11117	Screw, S.H.C. <sup>2</sup> , 3/8-16 x 3/4 (19.1)	#400 Monel				12
	08214				Screw, R.H. <sup>3</sup> , 10-24 x 1/2 (12.7)	#400 Monel	6			
		08217			Screw, H.H.C. <sup>1</sup> , 5/16-18 x 1/2 (13)	#400 Monel		8		
			08218		Screw, H.H.C. <sup>1</sup> , 3/8-16 x 5/8 (16)	#400 Monel			12	
12				11116	Screw, S.H.C. <sup>2</sup> , 3/8-16 x 1/2 (13)	#400 Monel				12
	*				Screw, R.H. <sup>3</sup> , 10-24 x 5/8 (16)	#400 Monel	4			
		*			Screw, S.H.C. <sup>2</sup> , 10-24 x 3/4 (19.1)	#400 Monel		6		
13	*	*	*	*	Screw, S.H.C. <sup>2</sup> , 1/4-20 x 3/4 (19.1)	#400 Monel			8	6
14	08413	08413	08414	08414	O-Ring	#400 Monel	1	1	1	1
15				11570	Washer	300 Series Stainless Steel	10	12	15	16
16				F01256	Eye Bolt, 5/8-11-UNC	Carbon Steel				1
					Nut, 5/8-11-UNC	Stainless Steel				1

-- Indicates replacement part not available

\* Indicates part available only in sub-assembly listed below

**SUB-ASSEMBLY**

2, 12, 13	14712-3	14712-4	14712-6	14712-8	Seat Replacement Kit*
3, 5-7, 9-11, 14	13489	13491	13493	13485	Clapper Assembly Kit

<sup>1</sup> Hex Head Cap Screw

<sup>2</sup> Socket Head Cap Screw, (8" Valve - #10 & 11 must be S.H.C. for clearance with seat)

<sup>3</sup> Round Head, Phillips Drive Screw

\*Note: Includes o-ring lubricant to be added to ring groove in seat.



**TECHNICAL DATA**

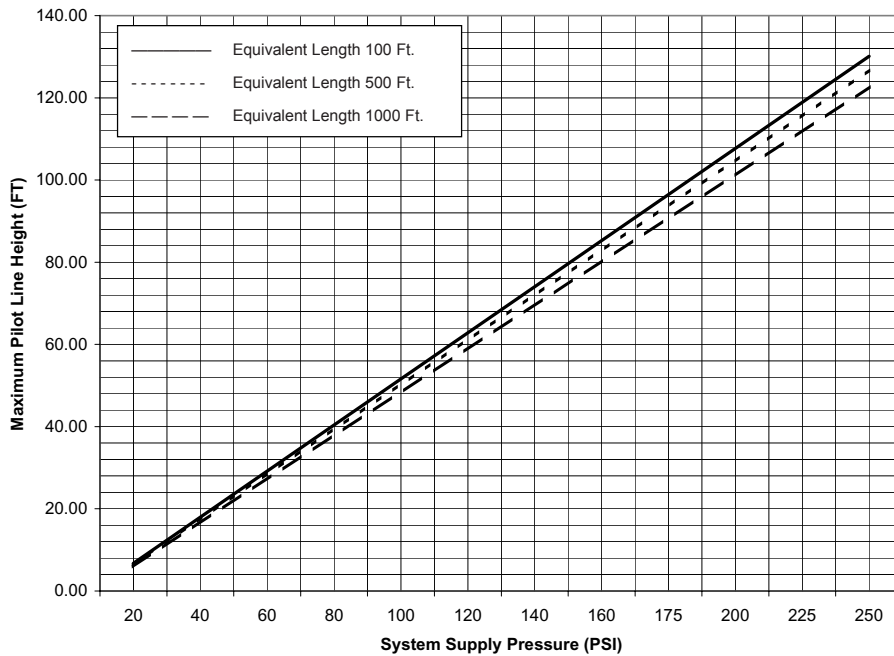
**DELUGE VALVE, MODEL F-2  
HALAR® COATED  
STRAIGHT THROUGH STYLE  
2-1/2" (DN65) - 8" (DN200)**

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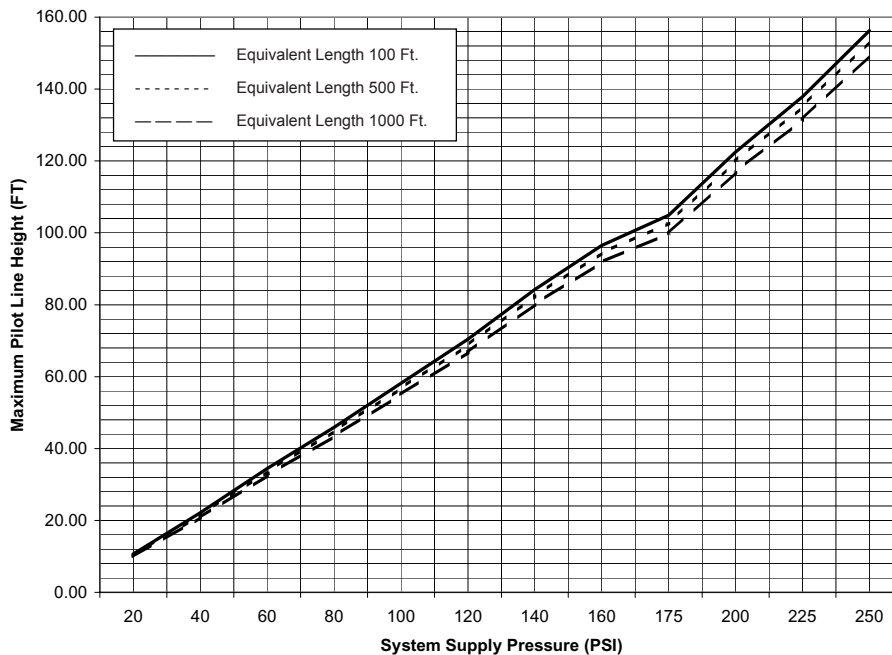
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**Maximum Allowable Pilot Heights for Select Equivalent Lengths of Hydraulic Release Piping  
Model F-2 Deluge Valves with 1/16" (1.6 mm) Restricted Orifice**

Graph is based on 1/2" (15 mm) pilot sprinklers installed on 1/2" (15 mm) schedule 40 galvanized release system piping.  
If the maximum height of hydraulic release piping exceeds the limits shown on the graph, use Pneumatic or Electric Release System.



**Figure 3 - 2-1/2" (DN65) & 3" (DN80) Model F-1 Deluge Valves**



**Figure 4 - 4" (DN100) Model F-1 Deluge Valves**



**TECHNICAL DATA**

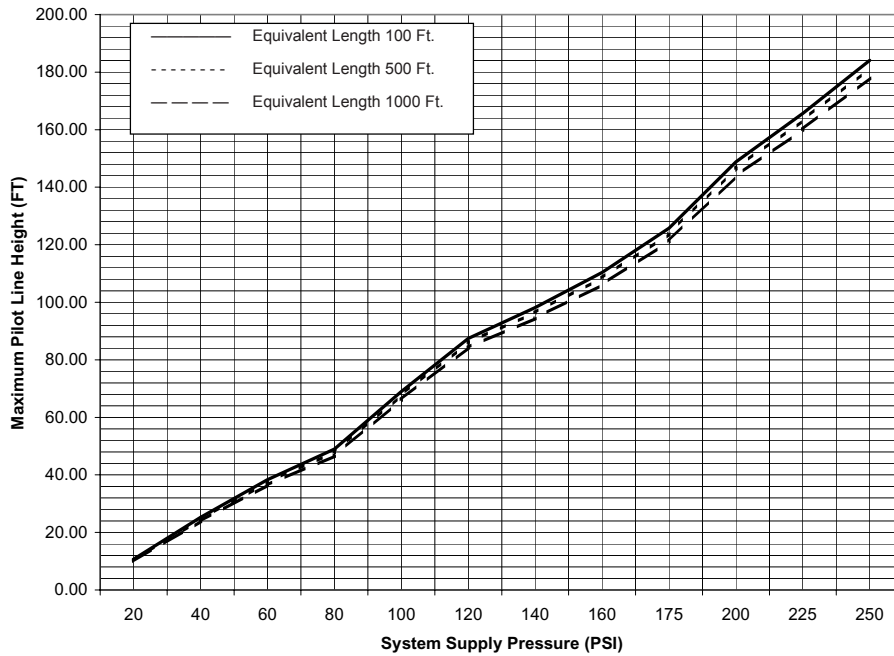
**DELUGE VALVE, MODEL F-2  
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2-1/2" (DN65) - 8" (DN200)**

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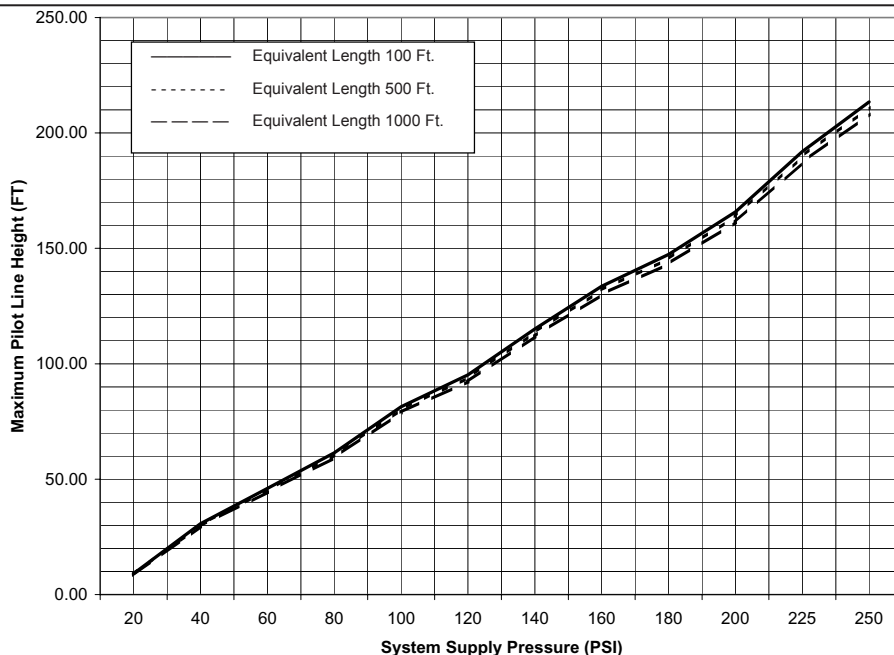
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**Figure 5 - 6" (DN150)  
Model F-1 Deluge Valves**



**Figure 6 - 8" (DN200)  
Model F-1 Deluge Valves**

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