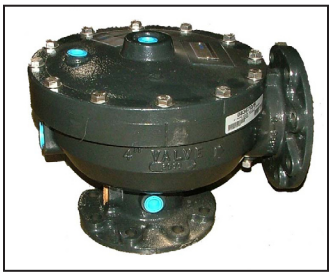
TECHNICAL DATA

FLOW CONTROL VALVE
MODEL H-2 HALAR COATED
3" (DN80) - 6" (DN150)

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



The Viking Flow Control Valve is a quick opening, differential type flood valve with a spring loaded rolling diaphragm clapper. The Flow Control Valve can be used to facilitate manual or automatic on/off control. As an on/off control valve it may be used on Deluge Systems, Sprinkler Systems or to automatically fill tanks or reservoirs. The Viking Flow Control valve is an integral part of the Viking Firecycle® System.

The Viking Model H-2 Halar® Coated Flow Control Valve is identical to the Viking Model H-3 Flow Control Valve, except the Model H-2 is manufactured with specially coated components. The body and cover of the Model H-2 Flow Control 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 Flow Control and preaction systems supplied by brackish or salt water when operation is controlled by fixed temperature hydraulic release systems. Also, the Viking Coated Flow Control 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

I. Valve

1. Field replaceable Diaphragms and Rubber Seated Clapper Assembly
2. Designed to be reset without opening the valve
3. Compatible with Hydraulic, Pneumatic and/or Electric Release Systems

II. Halar® Coating:

1. Exceeds performance of Epoxy Coating or Kynar Coating
2. Mechanical strength and toughness
3. High thermal stability
4. High dielectric strength
5. Resistant to most chemicals and solvents
6. Resistant to cobalt 60 radiation
7. All wetted surfaces are coated including pipe threads

2. LISTINGS AND APPROVALS

UL Listed - VLFT
C-UL Listed
FM Approved - On-Off Multi Cycle Sprinkler Systems
ABS Approved - 04-CH557068-X

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

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

Description	Nominal Size	Part Number	Friction Loss*	C_V Factor	Shipping Weight
Flange/Flange					
Flange Drilling	**Model H-2**				
ANSI	3"	08366Q/B	22 ft (6.7 m)	200	73 lbs (33 kg)
ANSI	4"	08367Q/B	16 ft (4.9 m)	471	123 lbs (56 kg)
ANSI	6"	08368Q/B	31 ft (9.4 m)	987	251 lbs (114 kg)
PN10/16	DN80	08873Q/B	22 ft (6.7 m)	200	74 lbs (34 kg)
PN10/16	DN100	08874Q/B	16 ft (4.9 m)	471	120 lbs (54 kg)
PN10/16	DN150	08875Q/B	31 ft (9.4 m)	987	250 lbs (113 kg)
Flange/Groove					
HALAR®					
Flange Drilling / Pipe O.D.	**Model H-2**				
ANSI / 89 mm	3"	11207Q/B	22 ft (6.7 m)	200	65 lbs (30 kg)
ANSI / 114 mm	4"	11208Q/B	16 ft (4.9 m)	471	111 lbs (54 kg)
ANSI / 168 mm	6"	11209Q/B	31 ft (9.4 m)	987	236 lbs (107 kg)
PN10/16 / 168 mm	DN150	11209Q/B	31 ft (9.4 m)	987	236 lbs (107 kg)

* Expressed in equivalent length of pipe based on Hazen & Williams Formula C = 120.

Table 1 - Valve Part Numbers and Specifications

Revised page replaces page 504a-k, dated July 30, 2010.
(2" Threaded Valve Part No. 08365Q/B is obsolete.)

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3. TECHNICAL DATA

Specifications

Style: 90 Degree Pattern (inlet to outlet)
Connections: See Table 1.
Rated to: 250 psi (17.2 bar) water working pressure
Factory tested to: 500 psi (345 bar)
Priming chamber supply restriction (required): 1/8” (3.2 mm)
Color of Valve: Black
C_V Factor: See Table 1.
Friction Loss: See Table 1.

Material Standards

Refer to Figure 7.
Halar® Coating Specification: Refer to Figure 2.
Electroless Nickel and Tin Plating Specifications: Refer to Figure 2.

Ordering Information

Manufactured since 1994
Part No: See Table 1.
Shipping weight: See Table 1.

Systems with water working pressures above 175 PSI (12 bar) may require extra-heavy pattern fittings. Viking Model H-2 Flow Control Valve flanges are Ductile Iron ANSI B16.42 Class 150 with a maximum water working pressure of 250 PSI (17.2 bar). ANSI B16.42 Class 150 flanges are NOT compatible with ANSI Class 250 or Class 300 flanges. To mate the Model H-2 Flow Control Valve with ANSI Class 250 or Class 300 flanges, use the grooved-outlet style valve, installed with listed grooved/flange adapters of the appropriate pressure rating. For piping with grooved connections, the grooved-outlet style valve may be installed with listed grooved couplings of the appropriate pressure rating.

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.

Accessories:

- Model H Flow Control Conventional Trim package for use when the Flow Control Valve is used for on/off control. The trim package includes all necessary fittings, nipples, and devices shown on the Viking Model H Flow Control Valve Conventional Trim Chart. Trim Charts are provided in trim packages and the *Viking Engineering and Design Data* book. For optional pre-assembled “modular” trim packages, refer to the Viking list price schedule or contact the manufacturer.
- A Flow Control Valve Accessory Package includes required trim components. This package is needed when Viking trim packages are not used.
- A special trim package is available for use when the Halar® Coated Flow Control Valve is used as a FOAM CONCENTRATE CONTROL VALVE for AFFF or ARC Foam Concentrate. See the *Viking Foam Systems Engineering and Design Data* book.
- Auxiliary Components are required for specific valve functions. For complete operating trim requirements refer to system data for the system used.

NOTE: FOR PART NUMBERS OF ACCESSORIES, REFER TO VIKING’S LIST PRICE SCHEDULE

4. INSTALLATION

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

When Valve Trim is used, to maintain listings and approvals, trim must be installed according to Viking Model H Flow Control Valve Conventional Trim Charts specifically labeled “Maximum 250 PSI (17 bar) Water Working Pressure.” Refer to page 511a-c and 512a-c. Order 250 PSI (17.2 bar) trim separately. Where difficulty in performance is experienced, make sure that the valve is trimmed properly. Contact Viking or Viking’s authorized representative before any field adjustments are made.

A. General Instruction

1. Viking Flow Control Valves must be installed in an area not subject to freezing temperatures or physical damage.
2. The valve must be trimmed according to current Viking Trim Charts and appropriate instructions for the system used. Trim Charts are printed in the *Viking Engineering and Design Data* book, and are provided with trim packages. When the Halar® Coated Flow Control Valve is used on Flow Control or preaction systems where standard trim is required and allowed, the valve must be trimmed according to Viking Model H Trim Charts for the system used. For additional trim connections, refer to technical data describing the system being installed.
3. 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.
4. After the Flow Control Valve is set, operation of the Flow Control Valve requires the release of priming water from the priming chamber. This may be by automatic or manual operation of the release system. Viking Flow Control Valves are compatible with hydraulic, pneumatic, and electric release systems.
   a. Hydraulic Release Systems: See Figures 3-6 for the maximum allowable elevation of hydraulic release piping above the Flow Control Valve. If the maximum height of hydraulic release piping exceeds the limit shown in Figures 3-6, use a Pneumatic or Electric Release System.
   b. Pneumatic Release Systems: A Viking Pneumatic Actuator is required between the release system connection provided on Flow Control Trim and pneumatic release system piping.

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CAUTION: WHEN RELEASING DEVICES CAPABLE OF AUTOMATICALLY RESETTING ARE USED ON THE PNEUMATIC RELEASE SYSTEM OF A FLOW CONTROL VALVE, VIKING MODEL E DELUGE VALVE CONVENTIONAL TRIM, COMPLETE WITH PORV, IS REQUIRED.

NOTE: THIS ARRANGEMENT WILL NOT ALLOW THE FLOW CONTROL VALVE TO AUTOMATICALLY RESET.

c. Electric Release: Solenoid Valves, Release Control Panels, and Electrical Detectors must be compatible. Consult appropriate listings and/or approval guides.

5. The Viking Flow Control Valve can be trimmed to automatically reset electrically or manually. For specific Trim arrangements refer to System Data describing the system being installed.

NOTE: DO NOT INSTALL ANY RELEASING DEVICE, OR VALVE USED TO AUTOMATICALLY RESET THE FLOW CONTROL VALVE, ON PNEUMATIC RELEASE PIPING.

For pneumatic release systems, any releasing valve or device used to automatically reset the Flow Control Valve must be installed in the trim piping between the Pneumatic Actuator and the priming chamber outlet.

CAUTION: OPERATION OF VIKING FLOW CONTROL VALVES BY PRESSURIZING THE PRIMING CHAMBER WITH AIR OR ANY OTHER PRESSURIZED GAS IS NOT RECOMMENDED OR APPROVED.

6. When the Viking Halar® Coated Flow Control Valve is used on systems supplied with brackish water, salt water, foam/water (pre-mixed) solution, or any other corrosive water supply, consult Table 2 for trim material specifications. Check with manufacturer prior to using this valve with fluids other than fresh water and those listed in Table 2.
7. Fixed temperature hydraulic release systems must be used to operate Flow Control and preaction systems equipped with Halar® Coated Flow Control Valves supplied by sea water. Contact manufacturer for special trim considerations.
8. 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.C.I, Halar® Coating Repair instructions.
9. Halar® Coating is black in color. Due to its chemical resistance paint will not adhere to Halar® Coating sufficiently to resist abrasion.

B. Placing the Valve in Service (Refer to Figure 1.)

1. Verify:
   a. The system Main Water Supply Control Valve (D.1) is closed and the Flow Control Valve is trimmed according to current Viking Trim Charts and schematic drawings for the system used.
   b. The system has been properly drained.
   c. The Auxiliary Drain (B.6) is open.
   d. The Emergency Release (B.10) is closed.
   e. The system water supply piping is pressurized up to the closed Main Water Supply Control Valve (D.1) and the priming line is pressurized up to closed Priming Valve (B.1).
2. For Systems equipped with:
   a. Hydraulic Release System
      i. Verify that all releasing devices are set and that any Inspector’s Test Valve and/or auxiliary drain valves are closed.
      ii. Open Priming Valve (B.1) Proceed to step 3.
   b. Pneumatic Release Systems:
      i. Set the release system.
      ii. Opening Priming Valve (B.1). Proceed to step 3.
   c. Electric Release Systems:
      i. Open Priming Valve (B.1)
      ii. Set the electric release system. Proceed to step 3.
3. Open Flow Test Valve (B.14).
4. Partially open Main Water Supply Control Valve (D.1).
5. When full flow develops from Flow Test Valve (B.14), close the Flow Test Valve. Verify that there is no flow from open Auxiliary Drain (B.6).
6. Close Auxiliary Drain (B.6).
7. Fully open and secure the Main Water Supply Control Valve (D.1).
8. Verify that the Alarm Shut-off Valve (B.9) is open and that all other valves are in their normal operating position.
9. Depress the plunger of Drip Check (B.7). No water should flow from the Drip Check when the plunger is pushed.
10. Check for, and repair all leaks.
11. 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. Refer to paragraph 6.B: Annual tests.

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

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

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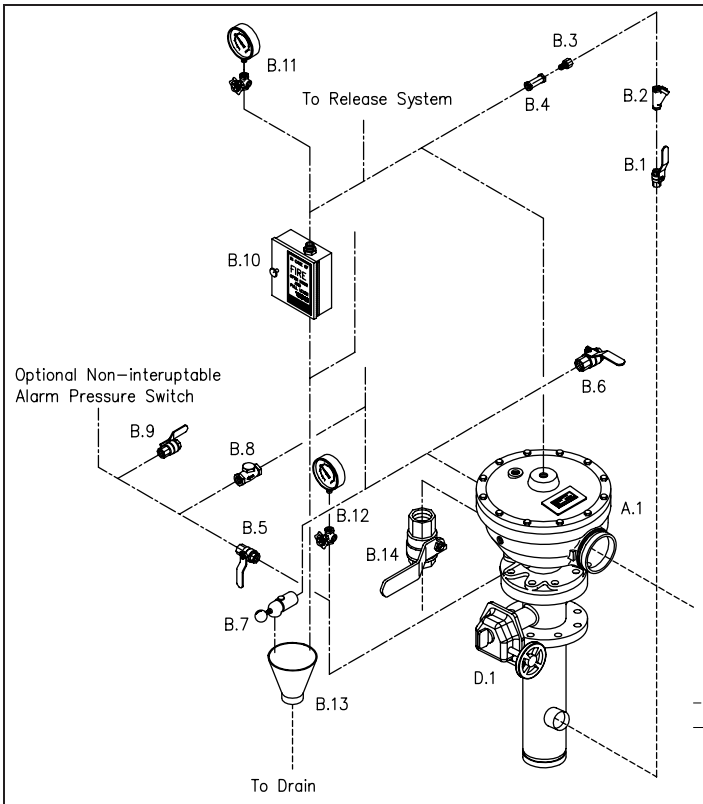

A.1 Flow Control Valve
B.1 Priming Valve
B.2 Strainer
B.3 1/16” Restriction
B.4 Spring Loaded Check Valve
B.5 Alarm Test Valve (Normally Closed)
B.6 Auxiliary Drain Valve (Normally Closed)
B.7 Drip Check Valve
B.8 Drain Check Valve
B.9 Alarm Shut-Off Valve (Normally Open)
B.10 Emergency Release
B.11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

– – – – – Dashed lines indicate nipples and fittings included with trim.
—·—·— Phantom lines indicate piping required, but not included with trim.

Figure 1 - Trim Components

C. Automatic Resetting (Refer to Figure 1.)

To automatically reset the Flow Control Valve after it has operated:

1. DO NOT close the water supply main control valve (D.1)
2. Automatically or manually reset any open devices on the hydraulic release system to stop all flow of water out of the priming chamber.

CAUTION: RESETTING OR CLOSING RELEASING DEVICES OR VALVES ON PNEUMATIC RELEASE PIPING WILL NOT AUTOMATICALLY CAUSE THE FLOW CONTROL VALVE TO RESET.

DO NOT install any releasing device or valve used to automatically reset the Flow Control Valve, on pneumatic release piping.

3. System supply pressure will enter the priming chamber through the restricted priming line connected to the priming chamber inlet.
4. When the combined force of spring pressure and system supply pressure entering the priming chamber overcomes the velocity pressure of water flowing through the valve, the clapper will close.
5. Flow through the valve will stop.
6. To reactivate the system, open a releasing device. Priming water will escape from the priming chamber faster than it is replaced through the restricted priming line, allowing the Flow Control Valve to open.

D. 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 7.)

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

The Model H-1 Flow Control valve has an inlet chamber, an outlet chamber, and a priming chamber. The inlet chamber and outlet chamber are separated from the priming chamber by the clapper (13) and diaphragm (2). System pressure enters the priming chamber through a restricted priming line (trim) equipped with a check valve.

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In the SET position:
System pressure is trapped in the priming chamber to hold the clapper (13) on the seat due to area differential of the clapper, and spring (4) pressure. The clapper (13) separates the inlet from from the outlet, keeping the 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 (13) off from seat allowing water to flow through the outlet and into the system piping and alarm devices.

6. INSPECTIONS, TESTS, AND MAINTENANCE (Refer to Figures 1 and 7.)

A. 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 that must be followed. The following recommendations are minimum requirements.

Weekly - Weekly visual inspection of the Viking Flow Control Valve is recommended.

1. Verify that the Main Water Supply Control Valve (D.1) is open and that all other valves are in their normal** operating position and appropriately secured.
2. Check for signs of mechanical damage, leakage, and/or corrosive activity. If detected, perform maintenance as required. If necessary, replace the device.
3. Verify that the valve and trim are adequately heated and protected from freezing and physical damage.

B. Tests

Quarterly - Quarterly testing of water flow alarms and performance of a Main Drain Test is recommended and may be required by the Authority Having Jurisdiction.

I. 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 Flow Control 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). 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.
4. Verify that the alarm shut-off valve (B.9) is OPEN, and the alarm test valve (B.5) is CLOSED.
5. Verify that the outlet chamber is free of water. No water should flow from the drip check (B.7) when the plunger is pushed.
6. Notify the Authority Having Jurisdiction and those in the affected area that testing is complete.

II. 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.12).
3. Verify that the outlet chamber of the Flow Control 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.14).
5. When a full flow is developed from the Flow Test Valve (B.14), record the residual pressure from the water supply pressure gauge (B.12).
6. When the test is complete, SLOWLY CLOSE the Flow Test Valve (B.14).
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.

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Annual - Annual Trip Tests are recommended.

CAUTION! PERFORMING THIS TEST RESULTS IN OPERATION OF THE FLOW CONTROL 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.14) to flush away any accumulation of foreign material.
3. Close the Flow Test Valve (B.14).
4. Trip the system by operating the release system. Allow a full flow to pass through the Flow Control Valve. Water flow alarms should operate.

When test is complete:

5. For Flow Control Valves equipped with:
   a. Hydraulic or Electric Release:
      i. Re-set the Release System. Pressure in the priming chamber should gradually be restored. Flow through the Flow Control Valve should stop. Proceed to step 6.
   b. Pneumatic Release Systems:
      i. Close the Main Water Supply Control Valve (D.1) and Priming Valve (B.1).
      ii. Open Auxiliary Drain Valve (B.6).
      iii. Open all system main drains and auxiliary drains. Allow the system to drain completely Proceed to step 6.
6. Perform SEMI-ANNUAL maintenance. Refer to paragraph 6.C.III.
7. Place the system in service. Refer to paragraph 4.B.

NOTE: FLOW CONTROL 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.

C. Maintenance (Refer to Figure 1.)

NOTICE: THE OWNER IS RESPONSIBLE FOR MAINTAINING THE FIRE PROTECTION SYSTEM AND DEVICES IN PROPER OPERATING CONDITION. THE FLOW CONTROL 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 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. 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.
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.

II. 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. Flow Control 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.

III. Semi-Annual Maintenance:

1. Remove the system from service. (See release system description and technical data 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). Allow the outlet chamber of the Flow Control Valve to drain completely.
   c. Release pressure in the priming chamber by opening the Emergency Release Valve (B.10).
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.
4. Refer to Item 4.B, INSTALLATION: PLACING THE VALVE IN SERVICE.

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IV. Every Fifth Year

1. Internal inspection of Flow Control 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.

V. Valve Disassembly (Refer to Figures 1 and 7.)

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. Disconnect and remove necessary trim from the cover.
3. Remove the cover (3):
   a. Remove each of the cap screws (7) and break the seal of the cover.
      i. For 3” and 4” valves, use a Socket Wrench with a 3/4” socket.
      ii. For 6” valves, use a Socket Wrench with a 15/16” socket.
   b. Lift the cover (3) off the valve body (1) and gently set it aside.

VI. Installing Replacement Parts and Valve Reassembly (Refer to Figure 7.)

1. To replace the entire clapper assembly, which is ordered pre-assembled:
   a. Remove the old clapper assembly (2, 4, 5, 6, 7, 8, and 10) by placing a flat head screwdriver between the body (1) and the diaphragm rubber and then lifting the clapper assembly from valve body (1).
   b. Inspect the seat (9).

NOTE: Prior to reassembly, flush the valve of all foreign matter. The valve seat (9) must be clean and free from all marks and scratches.

   c. Install the new clapper assembly kit (2, 4, 5, 6, 7, 8, and 10).

If the entire clapper assembly does not need to be replaced, each of the parts of the clapper assembly kit are offered individually for replacement.

2. To replace the clamp ring (4):
   a. Remove each of the screws (5):
      i. For 3” valves, use a Phillips head screwdriver.
      ii. For 4” valves, use a Socket Wrench with a 1/2” socket.
      iii. For 6” valves, use a Socket Wrench with a 9/16” socket.
   b. Remove the existing clamp ring from the diaphragm rubber (2).

NOTE: When replacing the clamp ring (4) on the 3” size only, notice there is a groove in the seat of the clamp ring (4). This groove must be placed into the raised groove of the diaphragm rubber (2). On the 4” and 6” valves, the clamp ring (4) doesn’t have a grooved seat; there is a rounded edge and there is a sharp edge on the clamp ring (4). When installing the clamp ring (4) on the 4” and 6” valves, the rounded edge of the clamp ring (4) needs to be facing down towards the clapper (6).

   c. When installing the new clamp ring (4), install the new screws (5) in a star-shaped pattern using the tools indicated in Step 2a above.

3. To replace the diaphragm rubber (2):
   a. Remove the diaphragm rubber (2) by removing the clamp ring (4) as indicated in Step 2 above and then removing the diaphragm rubber (2) from the clapper assembly.

NOTE: In the 3” valve, the diaphragm rubber (2) has a raised groove, which fits into the grooved seat of the clamp ring (4). With the 4” and 6” valves, there is no grooved seat in the clamp ring (4) or a raised edge on the top of the diaphragm rubber (2). The raised edge on the diaphragm rubber (2) is on the bottom and it fits into the grooved seat of the clapper (6) itself.

   b. To install the new diaphragm rubber (2) on the 3” valve, simply fit it into the clapper (6). To install the new diaphragm rubber (2) on the 4” and 6” valves, install the groove of the diaphragm rubber (2) into the clapper (6) itself.

NOTE: PRIOR TO INSTALLING A NEW DIAPHRAGM RUBBER (2) OR SEAT RUBBER ASSEMBLY (8), MAKE CERTAIN THAT ALL SURFACES ARE CLEAN AND FREE OF FOREIGN MATTER. THE SEAT (9) MUST BE SMOOTH AND FREE OF NICKS, BURRS OR INDENTATIONS.

4. To replace the seat rubber assembly (8):
   a. Remove each of the screws (10).
      i. For 3” valves, use a Phillips head screwdriver.
      ii. For 4” valves, use a Socket Wrench with a 1/2” socket.
      iii. For 6” valves, use a Socket Wrench with a 9/16” socket.
   b. Remove the old seat rubber assembly (8) from the clapper (6).
   c. Install the new seat rubber assembly (8).

NOTE: There is a raised edge on the rubber itself. Install with the raised edge facing down into the grooved seat of the clapper (6).

   d. Install the new screws (10) into the seat rubber assembly (8) in a star-shaped pattern using the wrenches indicated in Step 4a above.

VIKING®

TECHNICAL DATA

FLOW CONTROL VALVE
MODEL H-2 HALAR COATED
3” (DN80) - 6” (DN150)

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

5. To replace the clapper (6) itself:
   a. First, remove the clamp ring (4), diaphragm rubber (2), and the seat rubber assembly (8) from the old clapper (6) as described in the previous steps and then install them onto the new clapper (6).
6. To re-install the cover (3):
   a. Place the spring (11) on the clapper (6).
   b. Line up the holes and install the cap screws (7) into the cover (3) in a star-shaped pattern.
      i. For 3” and 4” valves, use a Socket Wrench with a 3/4” socket.
      ii. For 6” valves, use a 15/16” Socket Wrench with a 15/16” socket.

7. AVAILABILITY

The Viking Flow Control Valve and accessories are available through a network of Domestic, Canadian, and International Distributors.

8. GUARANTEES

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

Figure 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.

Halar® is a registered trademark of Ausimont USA, Inc.
Teflon® is a registered trademark of E.I. Dupont Corp.

Table 2 - 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 and 4.
AFFF/Fresh Water Premix Solution	Black Steel, Copper, Stainless Steel or 400 Monel. See Notes 3 and 4.
AFFF/Fresh Water Premix Solution	Black Steel, Copper, Stainless Steel or 400 Monel. See Notes 3 and 4.
AFFF Foam Concentrate in pipes 2” (DN50) and larger	Black Steel, Copper, Stainless Steel or 400 Monel. See Notes 3 and 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 and 5.

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

Note 2 - After operation, the valve & 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 H-2 Flow Control Valve Trim Charts provided in the *Viking Engineering and Design Data* book for required configuration of trim, sizes and llengths of nipples and components required.

Note 4 - Monel trim sets are not available from Viking. They may be manufactured by installer. Refer to Model H-2 Flow Control 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 Flow Control Valve. When using the Halar® Coated Flow Control Valve as a Foam Concentrate Control Valve, refer to the *Viking Foam Systems Engineering and Design Data* book for trim charts, technical data and special instructions.

TECHNICAL DATA

FLOW CONTROL VALVE MODEL H-2 HALAR COATED 3” (DN80) - 6” (DN150)

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Size	A	B	C	D	E	F*
3” (DN80)	7” (178)	5” (127)	4-1/4” (108)	5-3/8” (137)	7-1/2” (190.5)	3/4” (19.05)
4” (DN100)	9” (229)	6-1/2” (165)	5-1/4” (133)	7” (178)	9” (228.6)	15/16” (23.81)
6” (DN150)	12” (304)	8” (203)	7” (178)	9-1/8” (232)	11” (279.4)	1” (25.4)

Dimensions shown in parentheses are millimeter.
*4” & 6” valves manufactured with sculptured flanges.
Dimensions indicate thickness of flange at bolt holes.

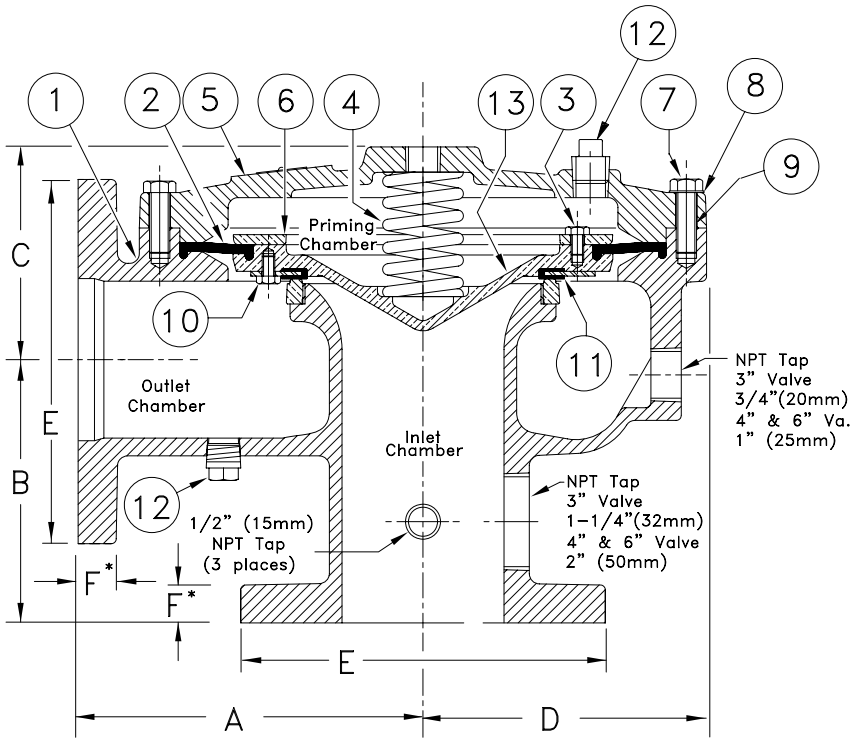

Figure 2 - Valve Dimensions and Components

ITEM NO.	PART NUMBERS 3" (DN80)	4" (DN100)	6" (DN150)	DESCRIPTION	MATERIAL	NO. REQ'D 3" (DN80)	4" (DN100)	6" (DN150)
1	—	—	—	Body	Halar® Coated Ductile Iron: 60-40-18 or	1	1	1
2	02492C	02377B	01974C	Diaphragm Rubber	EPDM ASTM D-2000	1	1	1
3				Screw, R.H., No. 10-24 x 1/2" (12.7 mm) Lg.	#400 Monel			
	08214			Screw, R.H., No. 10-24 x 1/2" (12.7 mm) Lg.	#400 Monel	6		
		08217		Screw, H.H.C., 5/16"-18 x 1/2" (12.7 mm) Lg.	#400 Monel		8	
			08218	Screw, H.H.C., 3/8"-16 x 5/8" (15.9 mm) Lg.	#400 Monel			12
4	05838A	05842A	01920A	Spring	Stainless Steel	1	1	1
5	--	--	--	Cover	Ductile Iron Ductile Iron: 65-45-12	1	1	1
6	02493B	02378B	05704B	Clamp Ring	Teflon® Coated Bronze: UNS-C84400	1	1	1
7				Screw, H.H.C., 3/8" - 16 x 1-1/8" (28.6 mm)	Stainless Steel: UNS-S30400			
	08081			Screw, H.H.C., ½"-13 x 1-1/4" (31.8 mm) Lg.	Stainless Steel: UNS-S30400	10		
		08083		Screw, H.H.C., ½"-13 x 1-1/2" (38.1 mm) Lg.	Stainless Steel: UNS-S30400		12	
			08085	Screw, H.H.C., 5/8"-11 x 1-3/4" (44.5 mm) Lg.	Stainless Steel: UNS-S30400			15
8	08413	08413	08414	Washer	Stainless Steel: UNS-S30400	10	12	15
9	—	—	—	Lithium Grease	Lithium Grease	--	--	--
10				Screw, R.H., No. 10-24 x 1/2" (12.7 mm) Lg.	# 400 Monel			
	08215			Screw, R.H., No. 10-24 x 3/8" (9.5 mm) Lg.	# 400 Monel	6		
		08217		Screw, H.H.C., 5/16"-18 x 1/2" (12.7 mm) Lg.	# 400 Monel		8	
			08882	Screw, H.H.C., 3/8" - 16 x 1/2" (12.7 mm) Lg.	# 400 Monel			12
11	02497B	02382B	02176B	Seat Rubber	EPDM ASTM D-2000 & St. Stl. UNS-S30400	1	1	1
12	—	—	—	Plug, 1/2" NPT	Stainless Steel	1	1	1
13	*	*	*	Clapper	Teflon® Coated Ductile Iron 65-45-12 or Brass UNS-C84400	1	1	1
14	--	--	--	Seat	Brass UNS-C84400	1	1	1

Note: -- Indicates replacement part not available
* Indicates part is available in Sub-Assembly only - see Sub-Assembly list

SUB-ASSEMBLY LIST

2-3. 6-8, 10, 11,	13398	13481	13483	Clapper Assembly Kit

TECHNICAL DATA

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Maximum Allowable Pilot Heights for Select Equivalent Lengths of Hydraulic Release Piping
Model H-2 Flow Control Valves with 1/8” (3.2 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.

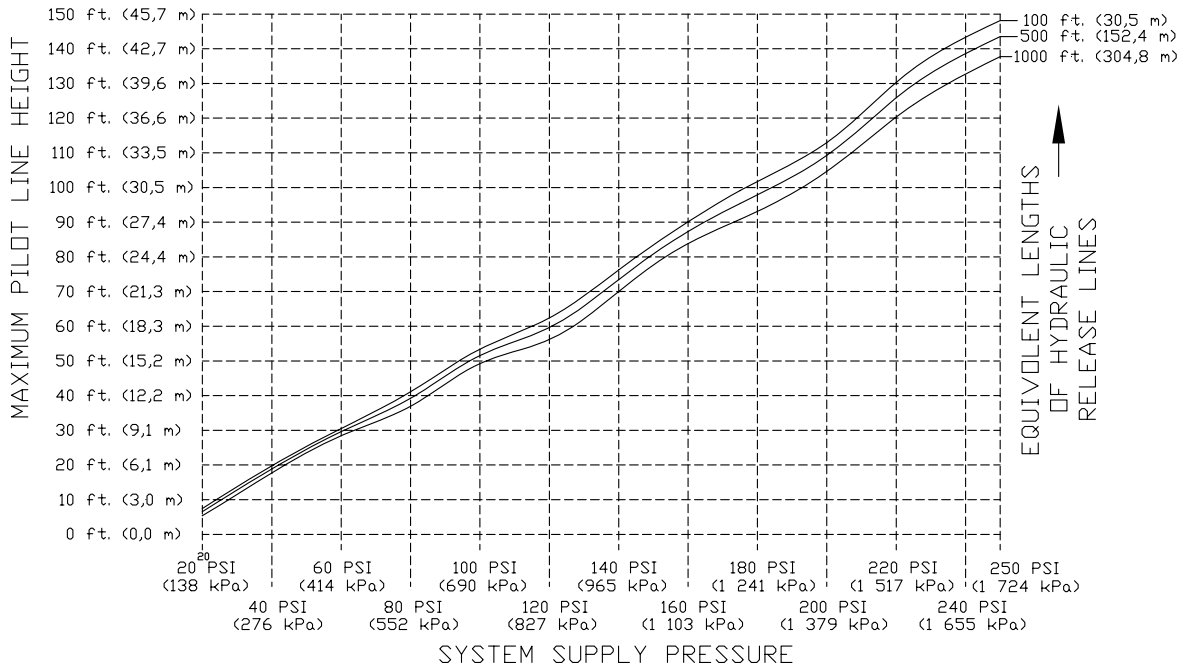

Figure 3 - 3” Valve

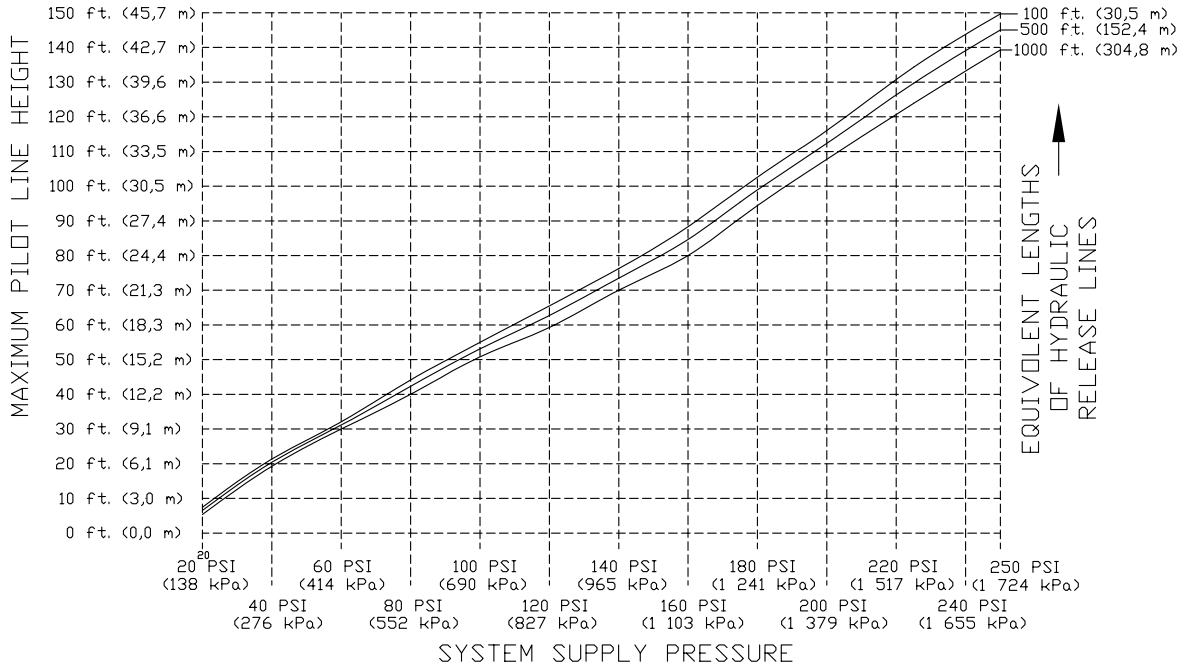

Figure 4 - 4” Valve

TECHNICAL DATA

FLOW CONTROL VALVE
MODEL H-2 HALAR COATED
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Maximum Allowable Pilot Heights for Select Equivalent Lengths of Hydraulic Release Piping
Model H-2 Flow Control Valves with 1/8” (3.2 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.
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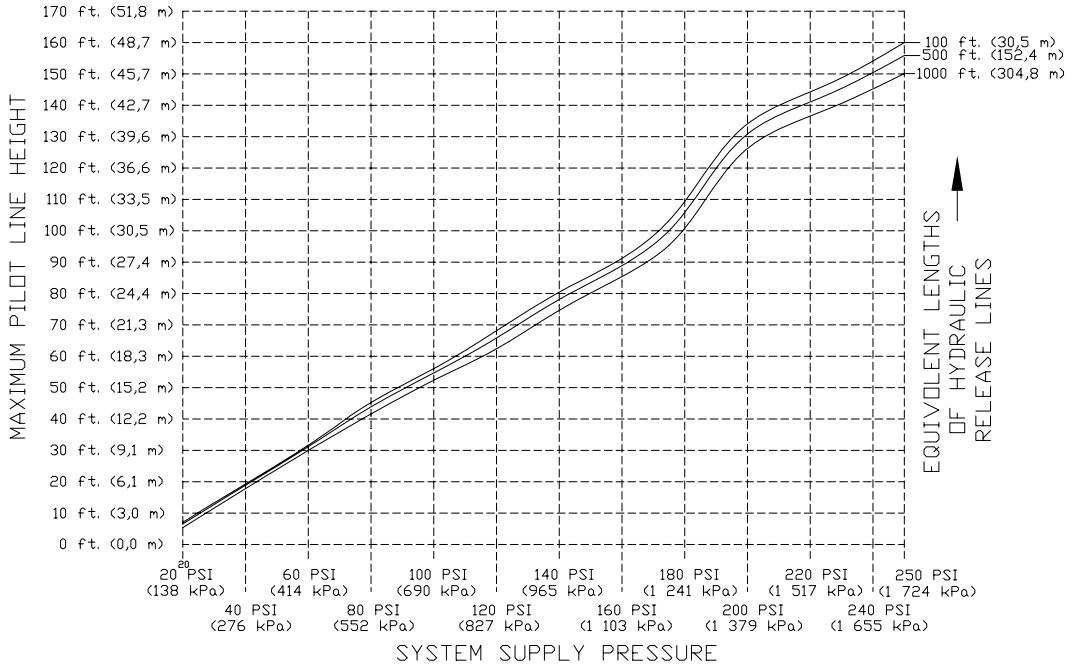

Figure 5 - 6” Valve

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Revised page replaces page 504a-k, dated July 30, 2010.
(2” Threaded Valve Part No. 08365Q/B is obsolete.)