



## TECHNICAL DATA

### SINGLE INTERLOCKED PREACTION SYSTEM WITH PNEUMATIC RELEASE

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

(Refer to Figures 1-3.)

Viking supervised Single Interlocked Preaction Systems utilize a Viking Deluge Valve and a pneumatically pressurized automatic sprinkler system. The system piping is pneumatically pressurized for supervisory purposes only. This feature serves to prevent undetected leaks. If the system piping or a sprinkler is damaged, supervisory pressure is reduced and a "low air" alarm is activated.

Pneumatically controlled preaction systems require a pneumatic release system, equipped with thermostatic (rate of rise) releases, and/or fixed temperature releases, and/or pilot heads. Release trim for the pneumatically controlled deluge valve requires a pneumatic actuator normally held closed by pressure maintained in the pneumatic release system.

In fire conditions, operation of the pneumatic release system opens the deluge valve to fill the system with water. If any sprinklers have opened, water will flow from the system. If sprinklers have not opened, water will remain in the sprinkler system piping until the sprinkler operates. A sprinkler head must open before water flows from the system.

Single Interlocked Preaction Systems are commonly used where the sprinkler system piping and/or sprinkler may be subject to damage. The most common applications are very large dry systems, which exceed the capacity normally permitted on a dry valve, and in system applications where it is important to control accidental water discharge due to damaged sprinkler piping.

## 2. LISTINGS AND APPROVALS



**FM Approved:** The Viking supervised, pneumatically controlled Single Interlocked Preaction System is FM Approved when installed with specific components. Refer to the current FM Approval Guide. Consult the manufacturer for any component approvals too recent to appear in the FM Approval Guide.

## 3. SYSTEM OPERATION

(Refer to Figures 4-6.)

### A. IN THE SET CONDITION

System water supply pressure enters the priming chamber of the deluge valve through the 1/4" (8 mm) priming line, which includes a normally open priming valve (B.1), strainer (B.2), restricted orifice (B.3) and check valve (B.4). In the SET condition, water supply pressure is trapped in the priming chamber by the check valve and pneumatic actuator (F.1). The pneumatic actuator is held closed by pressure maintained in the pneumatic release system. The pressure in the priming chamber holds the deluge valve clapper closed, keeping the outlet chamber and system piping dry.

### B. IN FIRE CONDITIONS

In fire conditions, when a releasing device operates, pressure in the pneumatic release system escapes, causing alarms controlled by the Air Supervisory Switch to activate and pneumatic actuator to open. When the pneumatic actuator opens, pressure is released from the priming chamber to the open drain cup faster than it is supplied through the restricted orifice. The deluge valve clapper opens to allow water to flow into the system piping and alarm devices, causing the water motor alarm and water flow alarms connected to the alarm pressure switch to activate. When a sprinkler head opens, water will flow from the system.

When the deluge valve operates, the sensing end of PORV (B.10) is pressurized, causing the PORV (B.10) to operate. When the PORV (B.10) 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 has been taken out of service, and the outlet chamber of the deluge valve and associated trim piping are depressurized and drained.

### C. TROUBLE CONDITIONS

In the event of an air supply failure and slow leakage of air from the pneumatic release system, alarms connected to air supervisory switch (F.5) will signal a low air pressure condition. Failure to restore air supply to the pneumatic release system will result in operation of the pneumatic actuator (F.1) and the deluge valve (A.1) will open. Similarly, if the release system operates due to mechanical damage or malfunction, the deluge valve (A.1) will open. Water will flow from any open sprinklers and/or spray nozzles on the system. The water motor alarm (C.2) and alarms connected to the alarm pressure switch (C.1) will activate.

### D. MANUAL OPERATION

Any time the handle inside the emergency release is pulled, pressure is released from the priming chamber; the deluge valve will open but the water will be contained in the sprinkler piping. The water motor alarm and alarms connected to the alarm pressure switch will activate. If a sprinkler head opens, water will flow from the system.



**WARNING:** Cancer and Reproductive Harm-  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

## 4. INSTALLATION

Refer to current Viking Technical Data describing individual components of the Viking Single Interlocked Preaction System. Technical Data describing the Viking Deluge Valve, and other system components are packed with product and in the *Viking Engineering and Design Data* book. Also, refer to applicable installation standards, codes, and Authorities Having Jurisdiction.



# TECHNICAL DATA

## SINGLE INTERLOCKED PREACTION SYSTEM WITH PNEUMATIC RELEASE

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

**TABLE 1: AIR PRESSURE SETTINGS FOR GIVEN WATER SUPPLY PRESSURES**

DEVICE	UP TO 175 PSI (12 BAR) SET TO MAINTAIN:	175 PSI (12 BAR) TO 250 PSI (17 BAR) SET TO MAINTAIN:
Air Compressor On/Off Switch (G.2)	30 PSI (2 bar) / 40 PSI (2.8 bar)	50 PSI (3.4 bar) / 60 PSI (4.1 bar)
Air Maintenance Device (G.7)	30 PSI (2 bar)	50 PSI (3.4 bar)
Air Maintenance Device (G.6)	20 PSI (1.4 bar)	20 PSI (1.4 bar)
Air Pressure Supervisory Switch (F.5)	25 PSI (1.7 bar)	45 PSI (2.4 bar)
Air Pressure Supervisory Switch (E.3)	15 PSI (1 bar)	15 PSI (1 bar)

### A. IMPORTANT SETTINGS

(Also refer to Table 1 above.)

- Provide a minimum 30 PSI (2 bar) of pneumatic pressure to the pneumatic release system and pneumatic actuator for system water pressures of 175 PSI (12 bar) or less. For system water pressures above 175 PSI, up to a maximum of 250 PSI (17 bar), provide a minimum of 50 PSI (3.4 bar) pneumatic pressure to the pneumatic release system and pneumatic actuator.
- Set the release system air pressure supervisory switch to activate at 25 PSI (1.7 bar) on pressure drop for system water pressures of 175 PSI (12 bar) or less. For system water pressures above 175 PSI, up to a maximum of 250 PSI (17 bar), set the air pressure supervisory switch to activate at 45 PSI (2.4 bar) on pressure drop. The air pressure supervisory switch should be wired to activate an alarm to signal a low air pressure condition. Activation of an alarm to signal a high pressure condition may be required. Refer to applicable installation standards and the Authority Having Jurisdiction.
- Recommended supervisory pressure in the closed sprinkler piping is 20 PSI (1.4 bar).
  - Where the supervisory pressure is maintained at 20 PSI (1.4 bar), set the air supervisory switch to activate at 15 PSI (1.03 bar) on pressure drop.
  - The air supervisory switch should be wired to activate an alarm to signal a "low air" pressure condition. Activation of an alarm to signal a high pressure condition may be required. Refer to applicable installation standards and the Authority Having Jurisdiction.

**NOTE: Installation Standards may allow supervisory pressures lower than those recommended above. When using supervisory pressures lower than the recommended setting noted above, verify that the air regulation equipment and air supervisory switches used are compatible with the supervisory pressure setting used.**

- The alarm pressure switch should activate when pressurized to 4 to 8 PSI (0.3 to 0.6 bar) on pressure rise and should be wired to activate the water flow alarm.

### B. AIR SUPPLY DESIGN

#### 1. Air Compressor Size

Viking recommends tank mounted air compressors be supplies for Single Interlock Pneumatic Release Preaction Systems. The pneumatic actuator requires at least 30 psi (2.1 bar) of air pressure be established within the pneumatic release for systems with water pressure up to 175 psi (12.1 bar) and 50 psi (2.1 bar) of air pressure for systems with water pressures up to 250 psi (17.2 bar).

NFPA 13 requires that the air supply be capable of filling the entire sprinkler system to its required air pressure within 30 minutes. A common method of sizing an air compressor is to use the following formula:

Compressor Size (cfm) = $\frac{V \times P}{7.48 \times 14.7 \times T}$	<b>Where:</b> V = Volume P = Required Air Pressure T = Fill time (typically 30 min.) 7.48 = gal. / ft. <sup>3</sup> 14.7 = atmospheric pressure	<b>Example:</b> System volume as determined by table 1 = 750 gallons Required Air pressure = 30 psi  Compressor Size (cfm) = $\frac{(750 \times 30)}{7.48 \times 14.7 \times 30} = 6.8$ cfm
--	--	---

Therefore, the compressor shall be capable of providing 7 cfm.

#### 2. Nitrogen Cylinder Gas Supply (See Figure 1)

Nitrogen may be used in place of air compressors. Nitrogen is supplied in pressurized cylinders in various sizes and pressures. Some of the most common are 122 Cu. Ft. at 1900 PSI (3455 Ltrs. at 13100 kPa), 225 Cu. Ft. at 2100 PSI (6372 Ltrs. at 14480 kPa), and 280 Cu. Ft. at 2300 PSI (7930 Ltrs. at 15859 bar).



# TECHNICAL DATA

## SINGLE INTERLOCKED PREACTION SYSTEM WITH PNEUMATIC RELEASE

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

**English Units**

$$V_c = \frac{V_s \times P}{100}$$

**Where:**  
 V<sub>c</sub> = Volume of Cylinder (ft<sup>3</sup>)  
 P = Required Nitrogen Pressure (psig)  
 V = Volume of System (gal)

**Metric Units**

$$V_c = \frac{V_s \times P}{108}$$

**Where:**  
 V<sub>c</sub> = Volume of Cylinder (L)  
 P = Required Nitrogen Pressure (kPa)  
 V = Volume of System (L)

When nitrogen cylinders are used as a primary air supply, spare cylinders should be furnished and located at the valve location. To determine the approximate amount of nitrogen to be furnished, the following formula may be used:

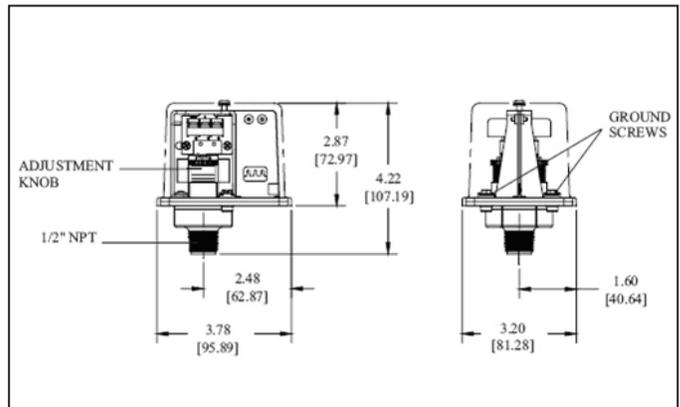
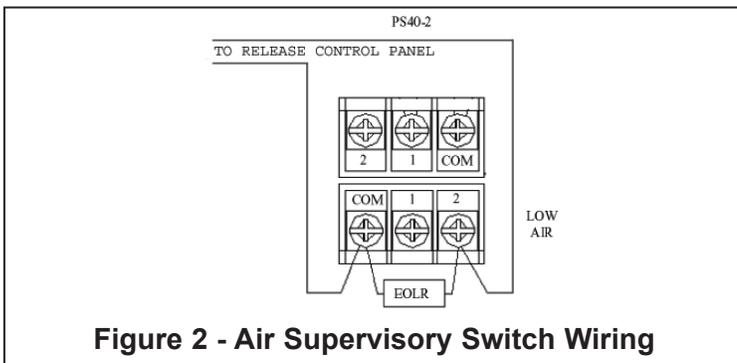
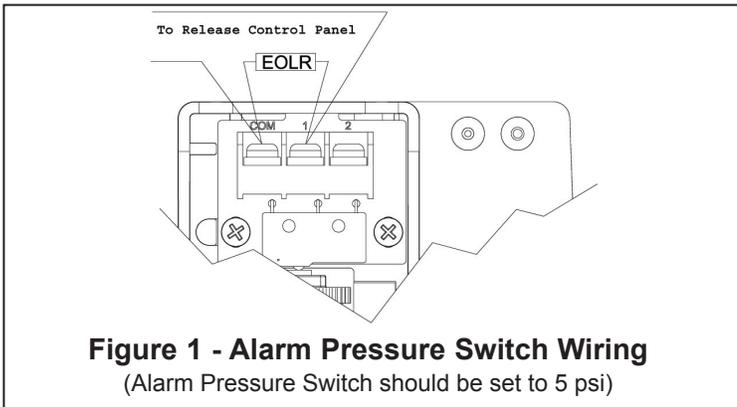
Special attention must be given to systems employing a bottled-gas supply. Because only a limited amount of gas is available, small leaks which normally would go unnoticed in systems being supplied by mechanical compressors, can become critical to the system's overall performance. If the system is to function at temperatures as low as -40 °F (-40 °C), and, if bottled nitrogen is the gas supply, the system is particularly susceptible to leakage, and special care should be taken to ensure against leaks throughout the entire system.

**C. AIR SUPPLY INSTALLATION**

1. Install the required air supply as described in section 4.B. The size of the compressor and amount of air required should be determined in accordance with Tables 1, 2 & 3. The air or nitrogen supply to the Preaction System must be clean, dry, and oil free.
2. Automatic air supplies must be regulated, restricted, and from a continuous source. A Viking Air Maintenance Device should be installed on each system equipped with a tank mounted compressor, plant air or nitrogen. For compressors with a capacity less than 5.5 ft<sup>3</sup>/min at 10 psig, NFPA 13 does not require an air maintenance device. The use of an air maintenance device with riser mounted compressors can lead to compressor "short cycling". Viking always recommends that a tank mounted compressor with air maintenance device be used. This can become critical when accelerators are installed on the system.

**D. PRESSURE SWITCH WIRING**

Wire the Alarm Pressure Switch (PS10) and Air Supervisory Switch (PS40), and adjust pressure settings as shown in Figures 1 - 3.



**Figure 3 - Pressure Adjustment**



## TECHNICAL DATA

### SINGLE INTERLOCKED PREACTION SYSTEM WITH PNEUMATIC RELEASE

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

#### E. HYDROSTATIC TEST

The Preaction System, including Sprinkler Piping and Sprinklers shall be hydrostatically tested at 200 psi (13.79 bar) and maintained for 2 hours, in accordance with NFPA 13. Systems normally subjected to working system pressures in excess of 150 psi (10.34 bar) shall be tested at a pressure of 50 psi (3.45 bar) in excess of system working pressure.

#### 5. PLACING THE SYSTEM IN SERVICE

(Refer to Figures 4-6.)

**NOTE: REFER TO INSTRUCTIONS PROVIDED IN TECHNICAL DATA DESCRIBING THE VIKING DELUGE VALVE AND OTHER SYSTEM COMPONENTS. (SEE SECTION 8)**

##### To Return a System to Service:

1. Verify that the system has been properly drained. The system main drain and auxiliary drain should be open. The priming valve should be closed. Verify that the emergency release is closed.
2. Close the system main drain.
3. Restore pneumatic pressure to the release system. Maintain 30 PSI (2 bar) or 50 PSI (3.4 bar) as required by the pneumatic actuator. Refer to section 4. INSTALLATION.
4. Restore supervisory pressure to sprinkler piping.
  - a. Verify that the 1/2" valve in the air maintenance device by-pass trim is closed and that both 1/4" valves are open.
5. Open the priming valve.
6. Open the flow test valve.
7. Partially open the main water supply control valve.
8. When full flow develops from the flow test valve, close the flow test valve.
  - a. Verify that there is no flow from the open auxiliary drain.
9. Close the auxiliary drain.
10. Fully open and secure the main water supply control valve.
11. Verify that the alarm shut-off valve is open and that all other valves are in their normal operating position.
12. Depress the plunger of drip check. No water should flow from the drip check when the plunger is pushed.

#### 6. EMERGENCY INSTRUCTIONS

(Refer to Figures 4-6.)

### WARNING

Any system maintenance that involves placing a control valve or detection system out of service will impair the fire protection capabilities of that system. Prior to proceeding, appropriate impairment procedures per NFPA 25 shall be followed with the notification of all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the affected areas.

**Failure to follow these instructions could cause improper system operation, resulting in serious personal injury and/or property damage.**

##### To Take System Out of Service:

After a fire, verify that the fire is OUT and that placing the system out of service has been authorized by the appropriate Authority Having Jurisdiction.

1. Close the water supply valve.
2. Open the system main drain.
3. Silence alarms (optional).
  - a. To silence electric alarms controlled by the pressure switch and to silence the water motor alarm, close the alarm shut-off valve.

**NOTE: ELECTRIC ALARMS CONTROLLED BY A PRESSURE SWITCH INSTALLED IN THE 1/2" (15 MM) NPT CONNECTION FOR A NON-INTERRUPTIBLE ALARM PRESSURE SWITCH CANNOT BE SHUT OFF UNTIL THE DELUGE VALVE IS RESET OR TAKEN OUT OF SERVICE.**

4. Shut off the air supply (optional).
5. Open the auxiliary drain.
6. Close the priming valve.

**NOTE: 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.**

7. Replace any thermostatic releases that have been damaged. Replace any fixed temperature releases or pilot heads that have operated.



## TECHNICAL DATA

### SINGLE INTERLOCKED PREACTION SYSTEM WITH PNEUMATIC RELEASE

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

8. Replace any sprinklers that have opened, been damaged, or have been exposed to fire conditions.
9. Perform all maintenance procedures recommended in Technical Data describing individual components of the system that have operated.
10. Return the system to service as soon as possible. Refer to section 5. PLACING THE SYSTEM IN SERVICE.

## 7. INSPECTIONS AND TESTS

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

It is imperative that the system is inspected and tested on a regular basis in accordance with NFPA 25. Refer to INSPECTIONS and TESTS recommended in current Viking Technical Data describing individual components of the Viking Single Interlocked Preaction System used. (See section 8 for hyperlinks to Viking Technical Data.)

The frequency of the inspections may vary due to contaminated water supplies, corrosive water supplies, corrosive atmospheres, as well as the condition of the air supply to the system. 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.

**WARNING:** Any system maintenance that involves placing a control valve or detection system out of service will impair the fire protection capabilities of that system. Prior to proceeding, appropriate impairment procedures per NFPA 25 shall be followed with the notification of all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the affected areas.

**Failure to follow these instructions could cause improper system operation, resulting in serious personal injury and/or property damage.**

### Low Air Pressure Alarm Test

Quarterly testing of low air alarms is recommended.

#### To Test Pneumatic Release System "Low Air" Alarm:

1. To prevent operation of the deluge valve and filling of the sprinkler piping with water during the test, CLOSE main water supply control valve and OPEN the auxiliary drain.
2. Fully open the test valve on the system being tested.
3. Verify that low air alarms operate within an acceptable time period and continue without interruption.
4. Close the test valve.
5. Close priming valve.
6. Establish recommended pneumatic pressure to be maintained. Refer to section 4. INSTALLATION.
7. Alarms should stop.
8. Open the priming valve.

#### To Test Sprinkler System "Low Air" Alarm:

9. Repeat steps 2, 3, 4, 6, and 7 above, operating the sprinkler system inspector's test valve.
10. Verify that the priming valve is open.

**When testing is complete, return the system to service following steps 1 through 8 below.**

**CAUTION! This procedure applies only when done in conjunction with "Low Air" Alarm testing described above.**

1. Verify that the pressure indicated on priming pressure water gauge indicates that the priming chamber is pressurized with system water supply pressure.
  - a. Verify that the auxiliary drain is open.
2. Open the flow test valve.
3. Partially open the main water supply control valve.
4. When full flow develops from the flow test valve, close the flow test valve.
  - a. Verify that there is no flow from the open auxiliary drain.
5. Close the auxiliary drain.
6. Fully open and secure the main water supply control valve.
7. Verify that the alarm shut-off valve is open and that all other valves are in their normal operating position.
8. Depress the plunger of drip check. No water should flow from the drip check when the plunger is pushed.

### Full Flow Trip Test

Performance of a trip test is recommended annually during warm weather. Consider coordinating this test with operation testing of the releasing devices.

**CAUTION! Performance of this test will cause the deluge valve to open and the sprinkler system to fill with water.**

#### To Trip Test the Pneumatically Controlled Single Interlocked Preaction System:

1. Notify the Authority Having Jurisdiction and those in the area affected by the test.
2. Trip the deluge valve by performing option "a", "b", or "c" below.
  - a. Operate a releasing device according to the manufacturer's instructions.
  - b. Open the pneumatic release system test valve to simulate operation of a releasing device.
  - c. Open the door of the emergency release and pull the handle.
3. The deluge valve should open, filling the sprinkler system with water.
  - a. Water flow alarms should operate.

#### When Trip Testing is Complete:

5. Perform steps 1 through 10 of section 6. EMERGENCY INSTRUCTIONS to take the system out of service.
6. Perform steps 1 through 12 of section 5. PLACING THE SYSTEM IN SERVICE to return the system to service.
7. Notify the Authority Having Jurisdiction and those in the affected area that testing is complete.

## 8. ORDERING INSTRUCTIONS

To order a complete Single Interlocked Preaction System with Pneumatic Release, the following components must be purchased: Deluge Valve, Conventional Trim, and a Release Trim package.



# TECHNICAL DATA

## SINGLE INTERLOCKED PREACTION SYSTEM WITH PNEUMATIC RELEASE

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

### VALVE PART NUMBERS

DELUGE VALVE, ANGLE STYLE				
DESCRIPTION		NOMINAL SIZE	PART NUMBERS	
			Painted Red	Halar®
Threaded NPT	Pipe O.D.		Model E-3	----
	48 mm	1½" / DN40	<a href="#">09889</a>	----
			Model E-1	Model E-2
	260 mm	2" / DN50	<a href="#">05852C</a>	<a href="#">08361Q/B</a>
Flange / Flange	Flange Drilling		Model E-1	Model E-2
	ANSI	3"	<a href="#">05912C</a>	<a href="#">08362Q/B</a>
	ANSI	4"	<a href="#">05909C</a>	<a href="#">08363Q/B</a>
	ANSI	6"	<a href="#">05906C</a>	<a href="#">08364Q/B</a>
	ANSI/Japan	6"	<a href="#">07136</a>	----
	PN10/16	DN80	<a href="#">08626</a>	<a href="#">08862Q/B</a>
	PN10/16	DN100	<a href="#">08629</a>	<a href="#">08863Q/B</a>
PN10/16	DN150	<a href="#">08631</a>	<a href="#">08864Q/B</a>	
Flange / Groove	Flange Drilling / Pipe O.D.		Model E-1	Model E-2
	ANSI / 89 mm	3"	<a href="#">05835C</a>	<a href="#">11064Q/B</a>
	ANSI / 114 mm	4"	<a href="#">05839C</a>	<a href="#">11065Q/B</a>
	ANSI / 168 mm	6"	<a href="#">05456C</a>	<a href="#">11001 Q/B</a>
	PN10/16 / 89 mm	DN80	<a href="#">09539</a>	----
	PN10/16 / 114 mm	DN100	<a href="#">09540</a>	----
PN10/16 / 168 mm	DN150	<a href="#">05456C</a>	<a href="#">11001Q/B</a>	

DELUGE VALVE, STRAIGHT THROUGH STYLE					
DESCRIPTION		NOMINAL SIZE	PART NUMBERS		
			Painted Red	Halar®	
Threaded NPT	Pipe O.D.		Model F-1	Model F-2	
	NPT 48 mm	1½"	<a href="#">12126</a>	----	
	NPT 60 mm	2"	<a href="#">12059</a>	----	
	NPT 65 mm	2½"	<a href="#">12401</a>	<a href="#">12402Q/B</a>	
	BSP 48 mm	DN40	<a href="#">12682</a>	----	
	BSP 60 mm	DN50	<a href="#">12686</a>	----	
Flange / Flange	Flange Drilling		Model F-1	Model F-2	
	ANSI	3"	<a href="#">12014</a>	<a href="#">12015Q/B</a>	
	ANSI	4"	<a href="#">11953</a>	<a href="#">11960Q/B</a>	
	ANSI	6"	<a href="#">11955</a>	<a href="#">11962Q/B</a>	
	ANSI	8"	<a href="#">11991</a>	<a href="#">11992Q/B</a>	
	ANSI/Japan	6"	<a href="#">11964</a>	----	
	PN10/16	DN80	<a href="#">12026</a>	<a href="#">12027Q/B</a>	
	PN10/16	DN100	<a href="#">11965</a>	<a href="#">11966Q/B</a>	
	PN10/16	DN150	<a href="#">11956</a>	<a href="#">11963Q/B</a>	
	PN10	DN200	<a href="#">11995</a>	<a href="#">11996Q/B</a>	
	PN16	DN200	<a href="#">11999</a>	<a href="#">12000Q/B</a>	
	Flange / Groove	Flange Drilling / Pipe O.D.		Model F-1	Model F-2
		ANSI / 89 mm	3"	<a href="#">12018</a>	<a href="#">12019Q/B</a>
ANSI / 114 mm		4"	<a href="#">11952</a>	<a href="#">11959Q/B</a>	
ANSI / 168 mm		6"	<a href="#">11954</a>	<a href="#">11961Q/B</a>	
PN10/16 / 89 mm		DN80	<a href="#">12030</a>	<a href="#">12644Q/B</a>	
PN10/16 / 114 mm		DN100	<a href="#">11958</a>	<a href="#">12645Q/B</a>	
PN10/16 / 165 mm		DN150	<a href="#">12640</a>	<a href="#">12641Q/B</a>	
PN10/16 / 168 mm		DN150	<a href="#">11954</a>	<a href="#">11961Q/B</a>	
Groove / Groove	Pipe O.D.		Model F-1	Model F-2	
	48 mm	1½" / DN40	<a href="#">12125</a>	<a href="#">12127Q/B</a>	
	60 mm	2" / DN50	<a href="#">12057</a>	<a href="#">12058Q/B</a>	
	73 mm	2½" / DN65	<a href="#">12403</a>	<a href="#">12404Q/B</a>	
	76 mm	DN80	<a href="#">12729</a>	<a href="#">12730Q/B</a>	
	89 mm	3" / DN80	<a href="#">12022</a>	<a href="#">12023Q/B</a>	
	114 mm	4" / DN100	<a href="#">11513</a>	<a href="#">11514Q/B</a>	
	165 mm	DN150	<a href="#">11910</a>	<a href="#">11911Q/B</a>	
	168 mm	6" / DN150	<a href="#">11524</a>	<a href="#">11525Q/B</a>	
	219 mm	8" / DN200	<a href="#">11018</a>	<a href="#">11118Q/B</a>	

### VALVE TRIM PACKAGE PART NUMBERS

DESCRIPTION		NOMINAL SIZE	PART NUMBERS	
Use with Angle Style Valves			Galvanized	Brass
		1½" / DN40	<a href="#">14629-1</a>	<a href="#">14629-2</a>
		2" / DN50	<a href="#">14630-1</a>	<a href="#">14630-2</a>
		3" / DN80	<a href="#">14631-1</a>	<a href="#">14631-2</a>
		4" / DN100	<a href="#">14632-1</a>	<a href="#">14632-2</a>
		6" / DN150	<a href="#">14633-1</a>	<a href="#">14633-2</a>
Use with Straight Through Valves	Horizontal Arrangement		Galvanized	Brass
		1½" / DN40	<a href="#">14635-1</a>	<a href="#">14635-2</a>
		2" / DN50	<a href="#">14635-1</a>	<a href="#">14635-2</a>
		2½" / DN65	<a href="#">14637-1</a>	<a href="#">14637-2</a>
		3" / DN80	<a href="#">14637-1</a>	<a href="#">14637-2</a>
		4" / DN100	<a href="#">14638-1</a>	<a href="#">14638-2</a>
		6" / DN150	<a href="#">14640-1</a>	<a href="#">14640-2</a>
		8" / DN200	<a href="#">14643-1</a>	<a href="#">14643-2</a>
	Vertical Arrangement	1½" / DN40	<a href="#">14634-1</a>	<a href="#">14634-2</a>
		2" / DN50	<a href="#">14634-1</a>	<a href="#">14634-2</a>
		2½" / DN65	<a href="#">14636-1</a>	<a href="#">14636-2</a>
		3" / DN80	<a href="#">14636-1</a>	<a href="#">14636-2</a>
		4" / DN100	<a href="#">14639-1</a>	<a href="#">14639-2</a>
		6" / DN150	<a href="#">14641-1</a>	<a href="#">14641-2</a>
8" / DN200	<a href="#">14642-1</a>	<a href="#">14642-2</a>		

NOTE: When viewing this data page online, part numbers displayed in **BLUE** are hyperlinks. Clicking the part number will open the corresponding technical data page.



# TECHNICAL DATA

## SINGLE INTERLOCKED PREACTION SYSTEM WITH PNEUMATIC RELEASE

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

### RELEASE TRIM AND PNEUMATIC ACTUATOR PART NUMBERS

DESCRIPTION	PART NUMBERS	
Release Trim	Galvanized	Brass
	10809	10811
Pneumatic Acuator	H-1	R-1 Corrosion Resistant
	06459b	09733

### CHECK VALVE TRIM PACKAGE PART NUMBERS

DESCRIPTION	NOMINAL SIZE	PART NUMBER
Check Valve Trim	1½" / DN40	12960
	2" / DN50	12960
	2½" / DN65	13776
	3", 4", 6", 8" / DN80, DN100, DN150, DN200	13777

### CHECK VALVE PART NUMBERS

DESCRIPTION	NOMINAL SIZE	PART NUMBER
<b>IN-LINE CHECK VALVE</b>		
Groove / Groove	Model L-1	1-1/2" / DN40 2" / DN50
		11054 11059
Threaded NPT	Model K-1	1-1/2" / DN40 2" / DN50
		10659 10667
<b>EASY RISER® SWING CHECK VALVE</b>		
Flange / Flange	Flange Drilling	Model F-1
	ANSI	3"
	ANSI	4"
	ANSI	6"
	ANSI/Japan	DN100
	ANSI/Japan	DN150
	ANSI/Japan	DN200
	PN10/16	DN80
	PN10/16	DN100
	PN10/16	DN150
	PN10	DN200
	PN16	DN200
Flange / Groove	Flange Drilling / Pipe O.D.	Model F-1
	ANSI / 89 mm	3"
	ANSI / 114 mm	4"
	ANSI / 168 mm	6"
	ANSI / 219 mm	8"
	PN10/16 / 89 mm	DN80
	PN10/16 / 114 mm	DN100
	PN10/16 / 165 mm	DN150
	PN10/16 / 168 mm	DN150
	PN10 / 219 mm	DN200
	PN16 / 219 mm	DN200
Groove / Groove	Pipe O.D.	Model E-1
	73 mm	2½" / DN65
		Model F-1
	89 mm	3" / DN80
	114 mm	4" / DN100
	165 mm	DN150
	168 mm	6" / DN150
219 mm	8" / DN200	

### AIR MAINTENANCE DEVICE AND SUPERVISORY SWITCH PART NUMBERS

DESCRIPTION	MODEL	PART NUMBER
AIR PRESSURE MAINTENANCE DEVICE Complete with Trim	D-2	07459
PRESSURE SUPERVISORY SWITCH 1/2" / DN15 Adjustable Range 10-175 PSI (0.7-12 bar)	Single SPDT	PS40-1A
	Dual SPDT	PS40-2A

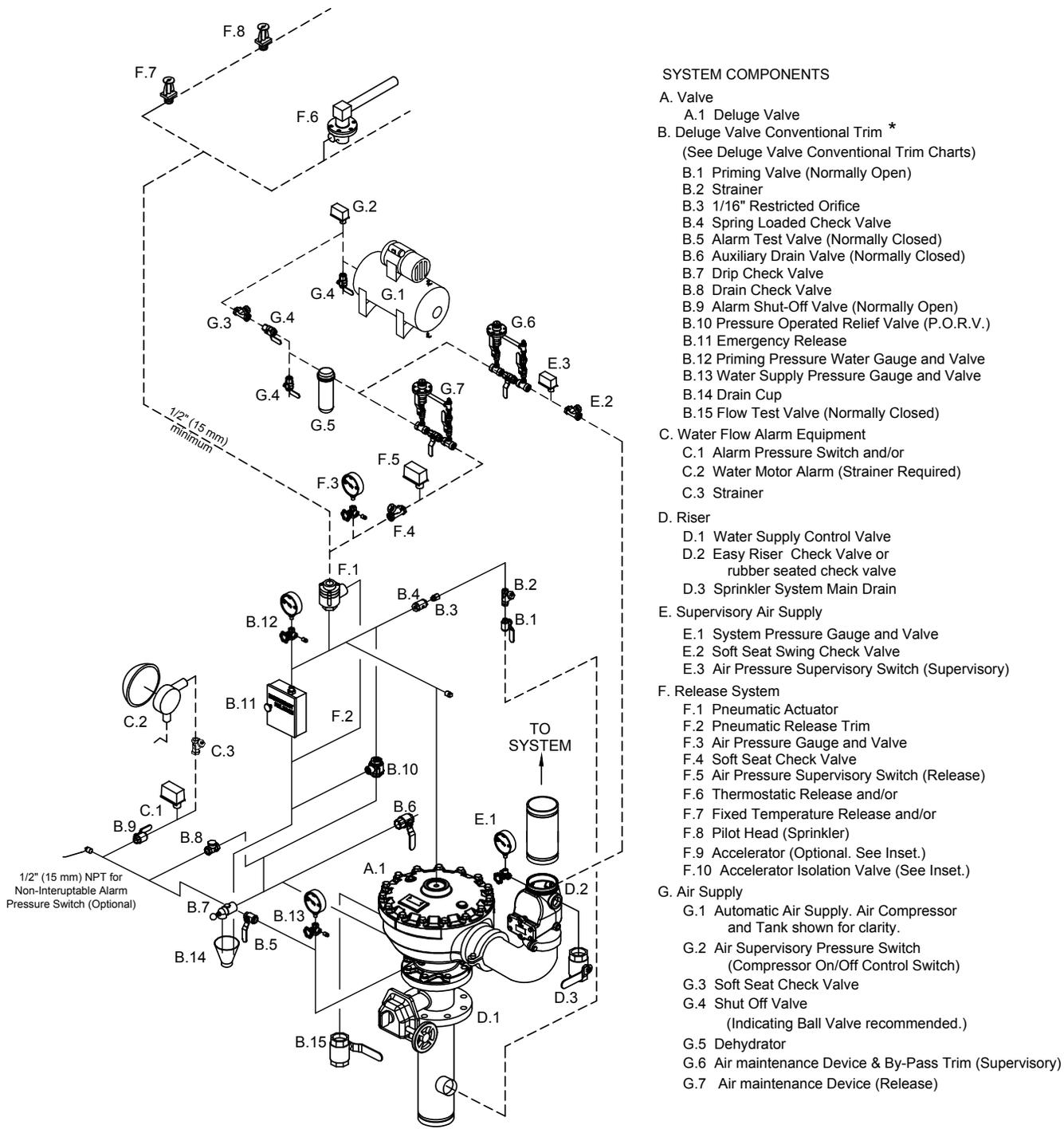


# TECHNICAL DATA

## SINGLE INTERLOCKED PREACTION SYSTEM WITH PNEUMATIC RELEASE

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



**SYSTEM COMPONENTS**

- A. Valve
  - A.1 Deluge Valve
- B. Deluge Valve Conventional Trim \*
  - (See Deluge Valve Conventional Trim Charts)
  - B.1 Priming Valve (Normally Open)
  - B.2 Strainer
  - B.3 1/16" Restricted Orifice
  - 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 Pressure Operated Relief Valve (P.O.R.V.)
  - B.11 Emergency Release
  - B.12 Priming Pressure Water Gauge and Valve
  - B.13 Water Supply Pressure Gauge and Valve
  - B.14 Drain Cup
  - B.15 Flow Test Valve (Normally Closed)
- C. Water Flow Alarm Equipment
  - C.1 Alarm Pressure Switch and/or
  - C.2 Water Motor Alarm (Strainer Required)
  - C.3 Strainer
- D. Riser
  - D.1 Water Supply Control Valve
  - D.2 Easy Riser Check Valve or rubber seated check valve
  - D.3 Sprinkler System Main Drain
- E. Supervisory Air Supply
  - E.1 System Pressure Gauge and Valve
  - E.2 Soft Seat Swing Check Valve
  - E.3 Air Pressure Supervisory Switch (Supervisory)
- F. Release System
  - F.1 Pneumatic Actuator
  - F.2 Pneumatic Release Trim
  - F.3 Air Pressure Gauge and Valve
  - F.4 Soft Seat Check Valve
  - F.5 Air Pressure Supervisory Switch (Release)
  - F.6 Thermostatic Release and/or
  - F.7 Fixed Temperature Release and/or
  - F.8 Pilot Head (Sprinkler)
  - F.9 Accelerator (Optional. See Inset.)
  - F.10 Accelerator Isolation Valve (See Inset.)
- G. Air Supply
  - G.1 Automatic Air Supply, Air Compressor and Tank shown for clarity.
  - G.2 Air Supervisory Pressure Switch (Compressor On/Off Control Switch)
  - G.3 Soft Seat Check Valve
  - G.4 Shut Off Valve (Indicating Ball Valve recommended.)
  - G.5 Dehydrator
  - G.6 Air maintenance Device & By-Pass Trim (Supervisory)
  - G.7 Air maintenance Device (Release)

--- Dashed lines indicate pipe required but not listed in "System Components" Table.

\* Viking Deluge Valve Trim Packages contain items B.1 through B.15 and associated nipples.  
 Viking Accessory Package for Conventional Deluge Valve Trim contains B.2 through B.5, B.7 through B.11, and B.14.

**FIGURE 6: ANGLE DELUGE VALVE  
(6" Valve Shown)**

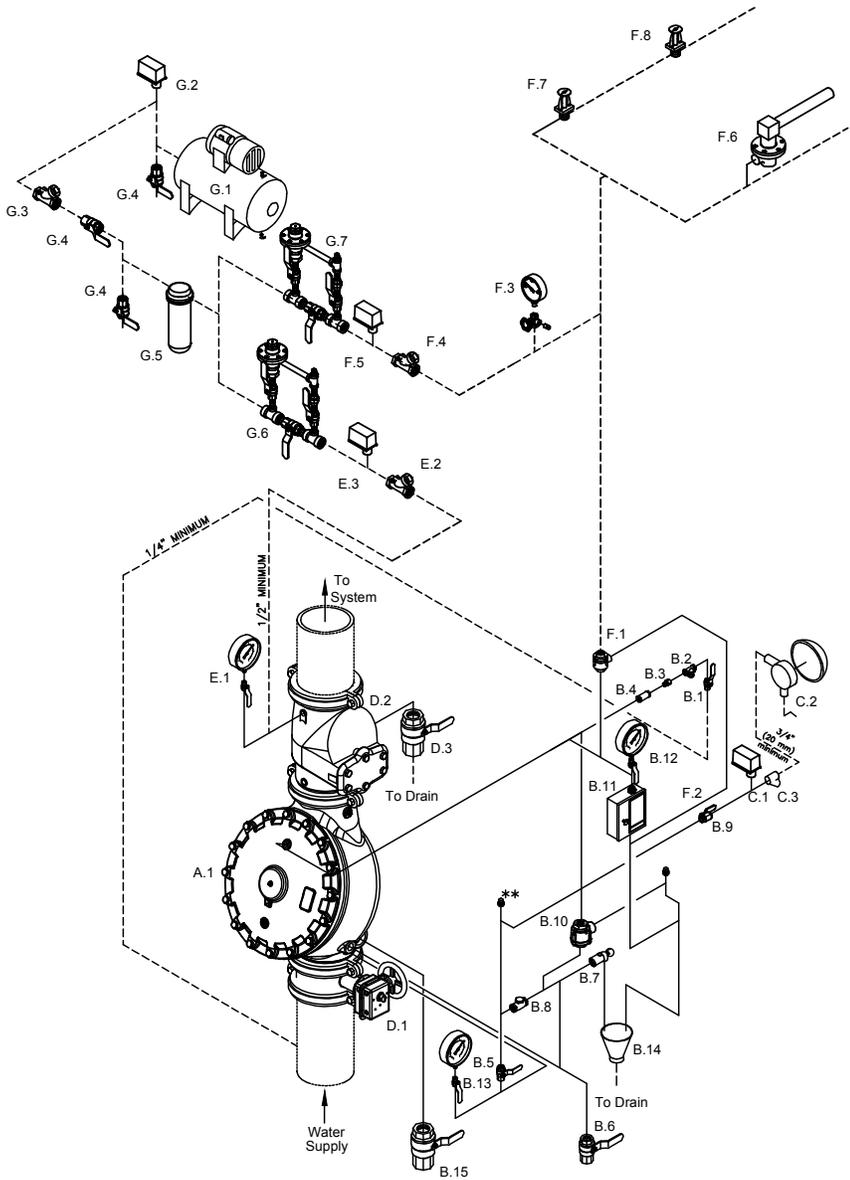


# TECHNICAL DATA

## SINGLE INTERLOCKED PREACTION SYSTEM WITH PNEUMATIC RELEASE

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



**SYSTEM COMPONENTS**

- A. Valve
  - A.1 Deluge Valve
- B. Deluge Valve Conventional Trim \*
  - (See Deluge Valve Conventional Trim Charts)
  - B.1 Priming Valve (Normally Open)
  - B.2 Strainer
  - B.3 1/16" Restricted Orifice
  - 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 Pressure Operated Relief Valve (P.O.R.V.)
  - B.11 Emergency Release
  - B.12 Priming Pressure Water Gauge and Valve
  - B.13 Water Supply Pressure Gauge and Valve
  - B.14 Drain Cup
  - B.15 Flow Test Valve (Normally Closed)
- C. Water Flow Alarm Equipment
  - C.1 Alarm Pressure Switch and/or
  - C.2 Water Motor Alarm (Strainer Required)
  - C.3 Strainer
- D. Riser
  - D.1 Water Supply Control Valve
  - D.2 Easy Riser Check Valve or rubber seated check valve
  - D.3 Sprinkler System Main Drain
- E. Supervisory Air Supply
  - E.1 System Pressure Gauge and Valve
  - E.2 Soft Seat Swing Check Valve
  - E.3 Air Pressure Supervisory Switch (Supervisory)
- F. Release System
  - F.1 Pneumatic Actuator
  - F.2 Pneumatic Release Trim
  - F.3 Air Pressure Gauge and Valve
  - F.4 Soft Seat Check Valve
  - F.5 Air Pressure Supervisory Switch (Release)
  - F.6 Thermostatic Release and/or
  - F.7 Fixed Temperature Release and/or
  - F.8 Pilot Head (Sprinkler)
  - F.9 Accelerator (Optional. See Inset.)
  - F.10 Accelerator Isolation Valve (See Inset.)
- G. Air Supply
  - G.1 Automatic Air Supply. Air Compressor and Tank shown for clarity.
  - G.2 Air Supervisory Pressure Switch (Compressor On/Off Control Switch)
  - G.3 Soft Seat Check Valve (Indicating Ball Valve recommended.)
  - G.4 Shut Off Valve
  - G.5 Dehydrator
  - G.6 Air maintenance Device & By-Pass Trim (Supervisory)
  - G.7 Air maintenance Device (Release)

----- Dashed lines indicate pipe required but not included with Deluge Valve Conventional Trim and Easy Riser Check Valve Trim Packages.

\* Viking Deluge Valve Trim Packages contain items B.1 through B.15 and associated nipples. Viking Accessory Package for Conventional Deluge Valve Trim contains B.2 through B.5, B.7 through B.11, and B.14.

\*\* 1/2" (15 mm) NPT for Non-Interuptable Alarm Pressure Switch (Optional)

**FIGURE 5: VERTICAL DELUGE VALVE  
(6" Valve Shown)**



# TECHNICAL DATA

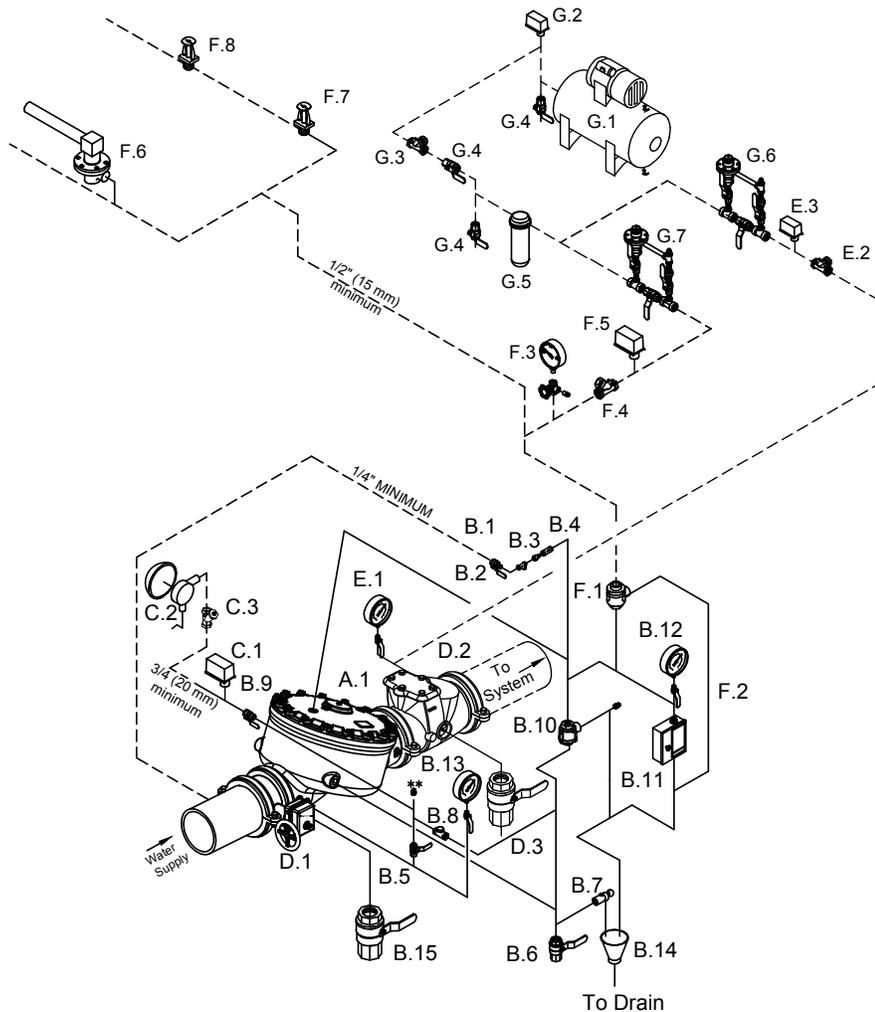
## SINGLE INTERLOCKED PREACTION SYSTEM WITH PNEUMATIC RELEASE

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

### SYSTEM COMPONENTS

- A. Valve
  - A.1 Deluge Valve
- B. Deluge Valve Conventional Trim \*
  - (See Deluge Valve Conventional Trim Charts)
  - B.1 Priming Valve (Normally Open)
  - B.2 Strainer
  - B.3 1/16" Restricted Orifice
  - 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 Pressure Operated Relief Valve (P.O.R.V.)
  - B.11 Emergency Release
  - B.12 Priming Pressure Water Gauge and Valve
  - B.13 Water Supply Pressure Gauge and Valve
  - B.14 Drain Cup
  - B.15 Flow Test Valve (Normally Closed)
- C. Water Flow Alarm Equipment
  - C.1 Alarm Pressure Switch and/or
  - C.2 Water Motor Alarm (Strainer Required)
  - C.3 Strainer
- D. Riser
  - D.1 Water Supply Control Valve
  - D.2 Easy Riser Check Valve or rubber seated check valve
  - D.3 Sprinkler System Main Drain
- E. Supervisory Air Supply
  - E.1 System Pressure Gauge and Valve
  - E.2 Soft Seat Swing Check Valve
  - E.3 Air Pressure Supervisory Switch (Supervisory)
- F. Release System
  - F.1 Pneumatic Actuator
  - F.2 Pneumatic Release Trim
  - F.3 Air Pressure Gauge and Valve
  - F.4 Soft Seat Check Valve
  - F.5 Air Pressure Supervisory Switch (Release)
  - F.6 Thermostatic Release and/or
  - F.7 Fixed Temperature Release and/or
  - F.8 Pilot Head (Sprinkler)
  - F.9 Accelerator (Optional. See Inset.)
  - F.10 Accelerator Isolation Valve (See Inset.)
- G. Air Supply
  - G.1 Automatic Air Supply. Air Compressor and Tank shown for clarity.
  - G.2 Air Supervisory Pressure Switch (Compressor On/Off Control Switch)
  - G.3 Soft Seat Check Valve
  - G.4 Shut Off Valve (Indicating Ball Valve recommended.)
  - G.5 Dehydrator
  - G.6 Air maintenance Device & By-Pass Trim (Supervisory)
  - G.7 Air maintenance Device (Release)



--- Dashed lines indicate pipe required but not listed in "System Components" Table.

\* Viking Deluge Valve Trim Packages contain items B.1 through B.15 and associated nipples. Viking Accessory Package for Conventional Deluge Valve Trim contains B.2 through B.5, B.7 through B.11, and B.14.

\*\* 1/2" (15 mm) NPT for Non-Interruptable Alarm Pressure Switch (Optional)

**FIGURE 6: HORIZONTAL DELUGE VALVE  
(6" Valve Shown)**