



## TECHNICAL DATA

### PILOT PRESSURE REGULATED FLOW CONTROL SYSTEM CONTROLLED BY ELECTRIC 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, 2 or 3.)

A Viking Pilot Pressure Regulated Flow Control System utilizes a Viking Flow Control Valve to control water flow into the flow control system. The flow control valve must be installed with pilot regulating flow control trim. Release trim for electrically operated systems utilizes an electric solenoid valve controlled by an approved system control panel and compatible detection system.

The pilot pressure regulated flow control system is recommended where it is necessary to maintain a predetermined discharge pressure after the system operates. This feature allows regulation of total system demand and can be used to limit excess flow from flow control systems with high pressure water supplies. The system is also recommended where a reduction of pressure surges and/or water hammer is desired. A flow control system provides the ability for a remote shut-down of the system. This option is used when post operation aborts are required.

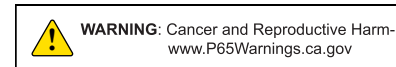
## 2. LISTINGS AND APPROVALS



The Viking electrically controlled Pilot Pressure Regulated Flow Control System is UL Listed on a component basis. Refer to the current UL Listing Guide. Consult the manufacturer for any component approvals too recent to appear in the UL Listing Guide.

## 3. SYSTEM OPERATION

(Refer to Figures 1, 2 or 3.)



### A. IN THE SET CONDITION

System water supply pressure enters the priming chamber of the flow control valve (A.1) through the 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 (B.4) and normally closed solenoid valve (G.1) in the release trim. The pressure in the priming chamber holds the flow control valve clapper closed, keeping the atmospheric chamber and flow control system piping dry.

### B. IN FIRE CONDITIONS

In fire conditions, when the detection system (G.4) operates, system control panel (G.3) energizes solenoid valve (G.1) open. Pressure is released from the priming chamber faster than it is supplied through restricted orifice (B.3). The flow control valve clapper opens to allow water to flow into the system piping and alarm devices (C.1, C.2).

### C. PRESSURE REGULATION

When the flow control valve (A.1) operates, water released from its priming chamber enters the inlet of pilot pressure regulating valve (F.1). The sensing line (F.2) connects the flow control system piping, downstream of flow control valve (A.1), to the outlet chamber of the pilot pressure regulating valve (F.1). When downstream pressure rises above the set point of the pilot pressure regulating valve (F.1), flow through the pilot pressure regulating valve is stopped. When downstream pressure falls below the set point, flow through the pilot pressure regulating valve resumes. The regulated flow through the pilot pressure regulating valve controls the pressure in the priming chamber of the flow control valve to open or close the clapper as required to regulate downstream system pressure.

## 4. INSTALLATION

Systems must be installed and maintained in accordance with applicable NFPA 13, NFPA 14, and NFPA 25, local Authorities Having Jurisdiction, and Viking Technical Data referenced below.

**Refer to current Viking Technical Data** describing individual components of the Viking Pilot Pressure Regulated Flow Control System. Technical Data describing the Viking Flow Control Valve, the Viking Pilot Pressure Regulating Valve, the Viking Speed Control Assembly, Pilot Regulating Flow Control Trim, and other system components are packed with product and in the *Viking Engineering and Design Data* book.



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### 5. PLACING THE SYSTEM IN SERVICE

(Refer to Figures 1, 2 or 3.)

**NOTE: FOR NEW INSTALLATIONS, OR IF ADJUSTMENT OF OPENING OR CLOSING SPEED OF THE FLOW CONTROL VALVE IS NECESSARY, OR IF DOWNSTREAM PRESSURE ADJUSTMENT IS NECESSARY, REFER TO INSTRUCTIONS PROVIDED IN TECHNICAL DATA DESCRIBING THE VIKING FLOW CONTROL VALVE, THE VIKING SPEED CONTROL ASSEMBLY, AND THE VIKING PILOT PRESSURE REGULATING VALVE.**

#### To Return a System to Service:

1. Verify that the system has been properly drained. The system main drain (D.2) and auxiliary drain (B.6) should be open. Verify that the emergency release (B.10) is closed.
2. Close the system main drain (D.2).
3. Open the priming valve (B.1).
4. Reset the system control panel (G.3). The solenoid valve (G.1) should close.
5. Open the flow test valve (B.14).
6. Partially open the main water supply control valve (D.1).
7. When full flow develops from the flow test valve (B.14), close the flow test valve.
  - a. Verify that there is no flow from the open auxiliary drain (B.6).
8. Close the auxiliary drain (B.6).
9. Fully open and secure the main water supply control valve (D.1).
10. Verify that the alarm shut-off valve (B.9) is open and that all other valves are in their normal operating position.
 

**CAUTION:** Any air in the water supply or air trapped in the priming chamber of the flow control valve may result in severe water hammer and cycling, which can cause damage to the valve, connected piping, and associated equipment.
11. To ensure smooth regulation, all air must be removed from the priming chamber of the flow control valve.
  - a. Temporarily close the three-way globe valve at the highest water gauge connection (B.11) in the flow control valve trim and remove the 1/4" plug.
  - b. Open the three-way globe valve (water will flow from the opening).
  - c. When all air has been removed, close the three-way globe valve and replace the 1/4" plug.
  - d. Open the three-way globe valve.
12. To verify downstream pressure adjustment, refer to section 7. VERIFY DOWNSTREAM PRESSURE ADJUSTMENT.

### 6. EMERGENCY INSTRUCTIONS

(Refer to Figures 1, 2 or 3.)

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

**WARNING: PLACING A CONTROL VALVE OR DETECTION SYSTEM OUT OF SERVICE MAY ELIMINATE THE FIRE PROTECTION CAPABILITIES OF THE SYSTEM. PRIOR TO PROCEEDING, NOTIFY ALL AUTHORITIES HAVING JURISDICTION. CONSIDERATION SHOULD BE GIVEN TO EMPLOYMENT OF A FIRE PATROL IN THE AFFECTED AREAS.**

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 main water supply valve (D.1).
2. Open the system main drain (D.2).
3. Silence alarms (optional).
  - a. To silence the water motor alarm (C.2), close the alarm shut-off valve (B.9).

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

4. Open the auxiliary drain (B.6).
5. Close the priming valve (B.1).

**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.**

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



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## 7. VERIFY DOWNSTREAM PRESSURE ADJUSTMENT

(Refer to Figures 1, 2 or 3.)

It is recommended that the desired discharge pressure of the system be adjusted with a minimum flow of 25 GPM (95 LPM) or greater flowing through the flow control valve.

For flow control systems, where flow through open sprinklers and/or nozzles is not practical, a test valve (D.5 - Model H Valve and D.4 - Model J Valve) with discharge pipe must be provided in the riser between the flow control valve (A.1) and an isolation valve (D.4 Model H Valve and D.3 - Model J Valve).

1. For flow control systems, where flow through open sprinklers and/or nozzles is not practical, CLOSE the system isolation valve (D.4 - Model H Valve and D.3 - Model J Valve) and OPEN the system test valve (D.5 - Model H Valve and D.4 - Model J Valve).
2. Open and pull the handle of the emergency release (B.10) to open the flow control valve. Establish a minimum flow of 25 GPM (95 LPM) or greater and observe the downstream pressure gauge.
3. If adjustment of the pilot pressure regulating valve is necessary, refer to instructions provided in Technical Data describing the pilot pressure regulating valve.
4. When downstream pressure adjustment has been verified:
  - a. Close the main water supply control valve (D.1).
  - b. Close the emergency release (B.10).
  - c. If closed in step 1, open the system isolation valve (D.4 - Model H Valve and D.3 - Model J Valve) and close the system test valve (D.5 - Model H Valve and D.4 - Model J Valve).

**NOTE:** The pressure gauge (F.3) installed on outlet piping from the pilot pressure regulating valve may indicate static pressure approximately 8 to 10 PSIG higher than the outlet "set" pressure determined above. This is due to changes in flow velocity that may occur when flow through the system is stopped. Actual "set" pressure should not be affected.

5. To return the system to service, perform steps 1 through 10 of section 5. PLACING THE SYSTEM IN SERVICE.

## 8. 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 be 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 Pilot Pressure Regulated Flow Control System used. (See section 9 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 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.

## 9. ORDERING INFORMATION

To order a complete Electric Release Pilot Pressure Regulated Flow Control System, order the following: Pressure Regulation Trim Package (includes Flow Control Valve Conventional Trim, and Pilot Regulator Trim, as well as the Speed Control Assembly, and Pilot Pressure Regulating Valve). Order the following separately: Flow Control Valve, Solenoid Valve, Release Control Panel, and Electric Release Trim package.



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## Flow Control Valve Part Numbers

ANGLE STYLE VALVES				
DESCRIPTION		NOMINAL SIZE	PART NUMBERS	
			Painted Red	HALAR®
Threaded NPT	Pipe O.D.		Model H-3	Model H-4
	48 mm	1½" / DN40	<a href="#">09894</a>	<a href="#">09895Q/B</a>
	60 mm	2" / DN50	<a href="#">05856C</a>	<a href="#">08365Q/B</a>
Flange/ Flange	Flange Drilling		Model H-1	Model H-2
	ANSI	3"	<a href="#">05914C</a>	<a href="#">08366Q/B</a>
	ANSI	4"	<a href="#">05911C</a>	<a href="#">08367Q/B</a>
	ANSI	6"	<a href="#">05908C</a>	<a href="#">08368Q/B</a>
	ANSI/Japan	4"	<a href="#">09037</a>	----
	ANSI/Japan	6"	<a href="#">09386</a>	----
	PN10/16	DN80	<a href="#">08627</a>	<a href="#">08873Q/B</a>
Flange/ Groove	Flange Drilling / Pipe O.D.		Model H-1	Model H-2
	ANSI / 89 mm	3"	<a href="#">05837C</a>	<a href="#">11207Q/B</a>
	ANSI / 114 mm	4"	<a href="#">05841C</a>	<a href="#">11208Q/B</a>
	ANSI / 168 mm	6"	<a href="#">05458C</a>	<a href="#">11209Q/B</a>
	PN10/16 / 89 mm	DN80	<a href="#">11658</a>	----
	PN10/16 / 114 mm	DN100	<a href="#">11811</a>	----
PN10/16 / 168 mm	DN150	<a href="#">05458C</a>	<a href="#">11209Q/B</a>	

STRAIGHT THROUGH VALVES				
DESCRIPTION		NOMINAL SIZE	PART NUMBERS	
			Painted Red	HALAR®
Threaded NPT	Pipe O.D.		Model J-1	Model J-2
	NPT 48 mm	1½"	<a href="#">12130</a>	----
	NPT 60 mm	2"	<a href="#">12063</a>	----
	NPT 65 mm	2½"	<a href="#">12405</a>	<a href="#">12406Q/B</a>
	BSP 48 mm	DN40	<a href="#">12684</a>	----
	BSP 60 mm	DN50	<a href="#">12688</a>	----
Flange/ Flange	Flange Drilling		Model J-1	Model J-2
	ANSI	3"	<a href="#">12016</a>	<a href="#">12017Q/B</a>
	ANSI	4"	<a href="#">11968</a>	<a href="#">11977Q/B</a>
	ANSI	6"	<a href="#">11970</a>	<a href="#">11979Q/B</a>
	ANSI	8"	<a href="#">11993</a>	<a href="#">11994Q/B</a>
	ANSI/Japan	4"	<a href="#">11975</a>	----
	ANSI/Japan	6"	<a href="#">11981</a>	----
	PN10/16	DN80	<a href="#">12028</a>	<a href="#">12029Q/B</a>
	PN10/16	DN100	<a href="#">11973</a>	<a href="#">11982Q/B</a>
	PN10/16	DN150	<a href="#">11971</a>	<a href="#">11980Q/B</a>
	PN10	DN200	<a href="#">11997</a>	<a href="#">11998Q/B</a>
PN16	DN200	<a href="#">12001</a>	<a href="#">12002Q/B</a>	
Flange/ Groove	Flange Drilling / Pipe O.D.		Model J-1	Model J-2
	ANSI / 89 mm	3"	<a href="#">12020</a>	<a href="#">12021Q/B</a>
	ANSI / 114 mm	4"	<a href="#">11967</a>	<a href="#">11976Q/B</a>
	ANSI / 168 mm	6"	<a href="#">11969</a>	<a href="#">11978Q/B</a>
	PN10/16 / 89 mm	DN80	<a href="#">12031</a>	<a href="#">12646Q/B</a>
	PN10/16 / 114 mm	DN100	<a href="#">11974</a>	<a href="#">12647Q/B</a>
	PN10/16 / 165 mm	DN150	<a href="#">12642</a>	<a href="#">12643Q/B</a>
	PN10/16 / 168 mm	DN150	<a href="#">11969</a>	<a href="#">11978Q/B</a>
Groove/ Groove	Pipe O.D.		Model J-1	Model J-2
	48 mm	1½" / DN40	<a href="#">12129</a>	<a href="#">12131Q/B</a>
	60 mm	2" / DN50	<a href="#">12061</a>	<a href="#">12062Q/B</a>
	73 mm	2½" / DN65	<a href="#">12407</a>	<a href="#">12408Q/B</a>
	76 mm	DN80	<a href="#">12731</a>	<a href="#">12732Q/B</a>
	89 mm	3" / DN80	<a href="#">12024</a>	<a href="#">12025Q/B</a>
	114 mm	4" / DN100	<a href="#">11516</a>	<a href="#">11517Q/B</a>
	165 mm	DN150	<a href="#">11912</a>	<a href="#">11913Q/B</a>
	168 mm	6" / DN150	<a href="#">11527</a>	<a href="#">11528Q/B</a>
219 mm	8" / DN200	<a href="#">11019</a>	<a href="#">11119Q/B</a>	

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## Pressure Regulating Trim (Includes Conventional Trim)

## Release Trim Package Part Numbers

DESCRIPTION	NOMINAL SIZE	PART NUMBER		
<b>PRESSURE REGULATING TRIM</b> Includes Flow Control Valve Conventional Trim	Rated to 250 psi (17 bar)			
	Use with Angle Style Valves			
	<b>Galvanized</b>	<b>Loose</b>	<b>Modular</b>	
	1½" / DN40	----	----	
	2" / DN50	<a href="#">14764-1</a>	<a href="#">14764-1P</a>	
	2½" / DN65	----	----	
	3" / DN80	<a href="#">14765-1</a>	<a href="#">14765-1P</a>	
	4" / DN100	<a href="#">14766-1</a>	<a href="#">14766-1P</a>	
	6" / DN150	<a href="#">14767-1</a>	<a href="#">14767-1P</a>	
	<b>Brass</b>	<b>Loose</b>	<b>Modular</b>	
	1½" / DN40	----	----	
	2" / DN50	<a href="#">14764-2</a>	<a href="#">14764-2P</a>	
	2½" / DN65	----	----	
	3" / DN80	<a href="#">14765-2</a>	<a href="#">14765-2P</a>	
	4" / DN100	<a href="#">14766-2</a>	<a href="#">14766-2P</a>	
	6" / DN150	<a href="#">14767-2</a>	<a href="#">14767-2P</a>	
	Use with Straight Through Valves			
	<b>Vertical</b>	<b>Galvanized</b>	<b>Loose</b>	<b>Modular</b>
		1½" / DN40	<a href="#">14768-1</a>	<a href="#">14768-1P</a>
		2" / DN50	<a href="#">14768-1</a>	<a href="#">14768-1P</a>
2½" / DN65		<a href="#">14769-1</a>	<a href="#">14769-1P</a>	
3" / DN80		<a href="#">14769-1</a>	<a href="#">14769-1P</a>	
4" / DN100		<a href="#">14770-1</a>	<a href="#">14770-1P</a>	
6" / DN150		<a href="#">14771-1</a>	<a href="#">14771-1P</a>	
8" / DN200		<a href="#">14772-1</a>	<a href="#">14772-1P</a>	
<b>Vertical</b>	<b>Brass</b>			
	1½" / DN40	<a href="#">14768-2</a>	<a href="#">14768-2P</a>	
	2" / DN50	<a href="#">14768-2</a>	<a href="#">14768-2P</a>	
	2½" / DN65	<a href="#">14769-2</a>	<a href="#">14769-2P</a>	
	3" / DN80	<a href="#">14769-2</a>	<a href="#">14769-2P</a>	
	4" / DN100	<a href="#">14770-2</a>	<a href="#">14770-2P</a>	
	6" / DN150	<a href="#">14771-2</a>	<a href="#">14771-2P</a>	
	8" / DN200	<a href="#">14772-2</a>	<a href="#">14772-2P</a>	

ELECTRIC RELEASE TRIM PACKAGES		
Finish	Part Number	
Use with Straight Through and Angle Style Valves		
	<b>Loose</b>	<b>Modular</b>
<b>Galvanized</b>	<a href="#">10830</a>	<a href="#">10830-P</a>
<b>Brass</b>	<a href="#">10832</a>	<a href="#">10832-P</a>
<b>NOTE: Solenoid Valve must be ordered separately.</b>		
<b>Solenoid Valve</b>	<a href="#">11601</a>	

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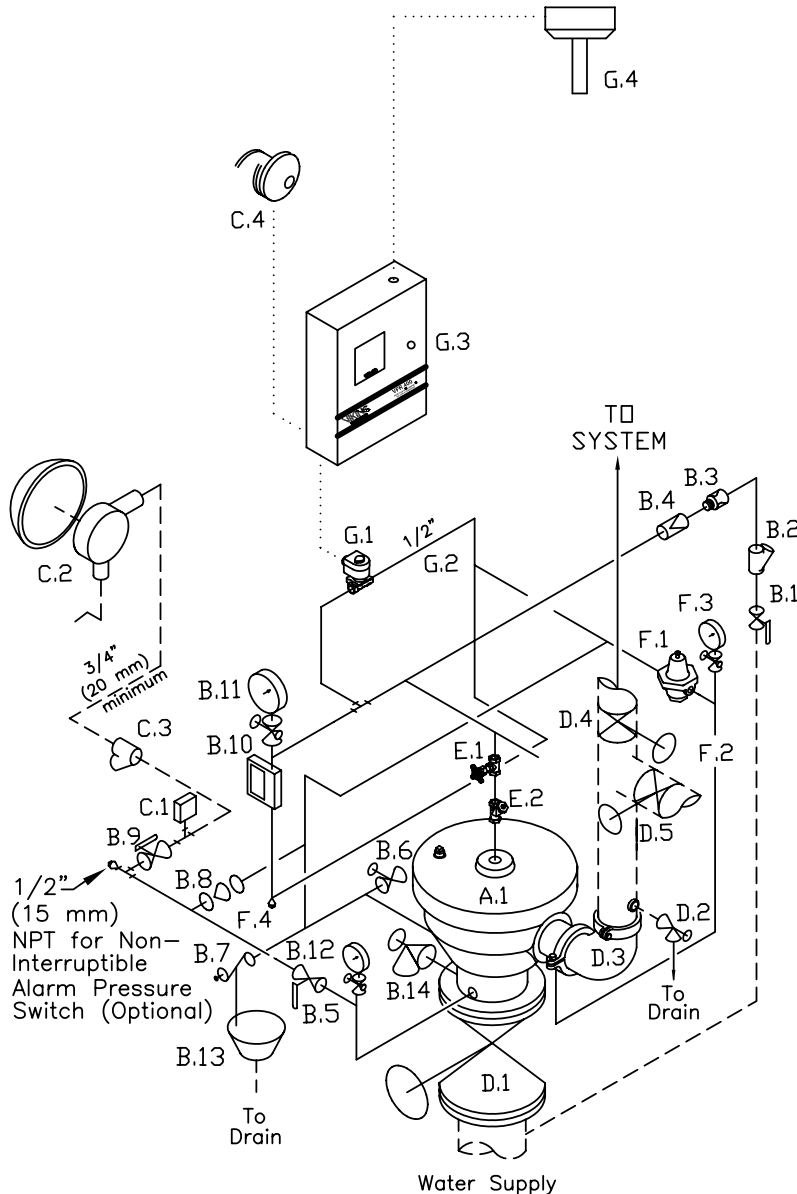
# VIKING®

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#### SYSTEM COMPONENTS\*

- A. Valve
  - A.1 Viking Flow Control Valve
- B. Flow Control Valve Conventional Trim  
(See Flow Control Valve Conventional Trim Charts)
  - B.1 Priming Valve (Normally Open)
  - B.2 Strainer
  - B.3 1/8" 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
- C. Water Flow Alarm Equipment
  - C.1 Alarm Pressure Switch and/or
  - C.2 Water Motor Alarm (Strainer Required)
  - C.3 Strainer
  - C.4 Electric Alarm Bell
- D. Riser
  - D.1 Water Supply Control Valve
  - D.2 Deluge System Main Drain Valve
  - D.3 90 Ell. (Grooved Ell Shown. Deluge Valve also available with Flanged Outlet.)
  - D.4 Optional System Isolation Valve (Normally Open)
  - D.5 Optional System Test Valve (Normally Closed) and Discharge piping.
- E. Speed Control
  - E.1 Viking Speed Control Valve
  - E.2 Strainer
- F. Pressure Regulating Valve
  - F.1 Viking Pressure Regulating Pilot Valve
  - F.2 Pressure Regulating Valve Trim
  - F.3 Sensing Line Pressure Gauge and Valve
  - F.4 1/2" (15 mm) NPT Plug
- G. Release System
  - G.1 Solenoid Valve
  - G.2 Electric Release Modul Trim
  - G.3 System Control Panel configured for Single Zone Deluge Valve Operation
  - G.4 Electric Detection System. Heat Detector shown for clarity.

--- Dashed lines indicate pipe required but not included with Pilot Regulating Flow Control Trim

..... Dotted lines indicate electrical detection system wiring required but not included with the "System Components". For additional wiring requirements, refer to technical data for components used.

\* Viking Pressure Regulating Trim Packages contain items B.1 through B.14, E.1, E.2 and F.1 through F.4, and associated nipples required to install the Viking Pilot Pressure Regulating Valve on a Viking Flow Control Valve equipped with Flow Control Valve Conventional Trim.

**FIGURE 1: PILOT PRESSURE REGULATED FLOW CONTROL SYSTEM  
CONTROLLED BY ELECTRIC RELEASE SHOWN WITH CONVENTIONAL TRIM**





# TECHNICAL DATA

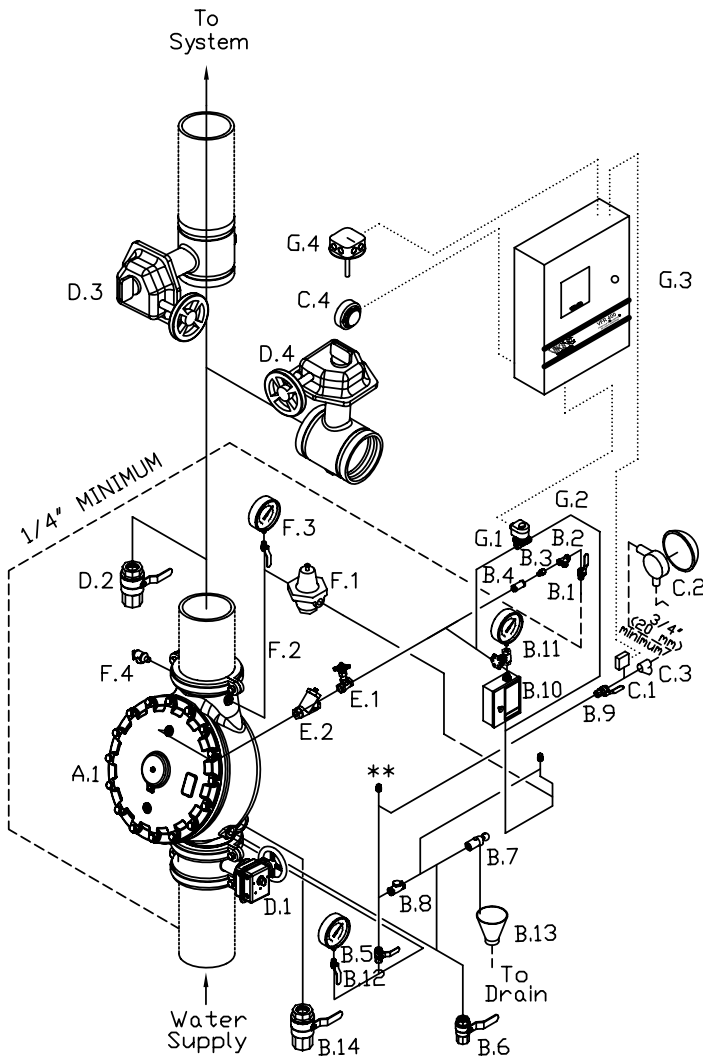
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### SYSTEM COMPONENTS\*

- A. Valve
  - A.1 Flow Control Valve
- B. Flow Control Valve Conventional Trim  
(See Flow Control Valve Conventional Trim Charts)
  - B.1 Priming Valve (Normally Open)
  - B.2 Strainer
  - B.3 1/8" 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)
- C. Water Flow Alarm Equipment
  - C.1 Alarm Pressure Switch and/or
  - C.2 Water Motor Alarm (Strainer Required)
  - C.3 Strainer
  - C.4 Electric Alarm Bell
- D. Riser
  - D.1 Water Supply Control Valve
  - D.2 Deluge System Main Drain Valve
  - D.3 Optional System Isolation Valve, Normally Open
  - D.4 Optional System Test Valve, Normally Closed
- E. Speed Control
  - E.1 Speed Control Valve
  - E.2 Strainer
- F. Pressure Regulating Valve
  - F.1 Viking Pressure Regulating Pilot Valve
  - F.2 Pressure Regulating Valve Trim
  - F.3 Sensing Line Pressure Gauge and Valve
  - F.4 Pressure Relief Valve
- G. Release System
  - G.1 Solenoid Valve
  - G.2 Electric Release Module (See Electric Release Module Trim Chart)
  - G.3 System Control Panel configured for Single Zone Deluge operation.
  - G.4 Electric Detection System. Heat Detector shown for clarity.



---Dashed lines indicate pipe required but not included with Pilot Regulating Flow Control Trim.

.....Dotted lines indicate electrical detection system wiring required but not included with the "System Components". For additional wiring requirements refer to technical data for components used.

\* Viking Pressure Regulating Trim Packages contain items B.1 through B.15, E.1, E.2, and F.1 through F.4, and associated nipples required to install the Viking Pilot Pressure Regulating Valve on a Viking Flow Control Valve equipped with Flow Control Valve Conventional Trim.

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

**FIGURE 2: PILOT PRESSURE REGULATED FLOW CONTROL SYSTEM  
CONTROLLED BY ELECTRIC RELEASE SHOWN WITH STRAIGHT THROUGH VERTICAL TRIM**