



TECHNICAL DATA

WET PIPE SPRINKLER SYSTEM

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

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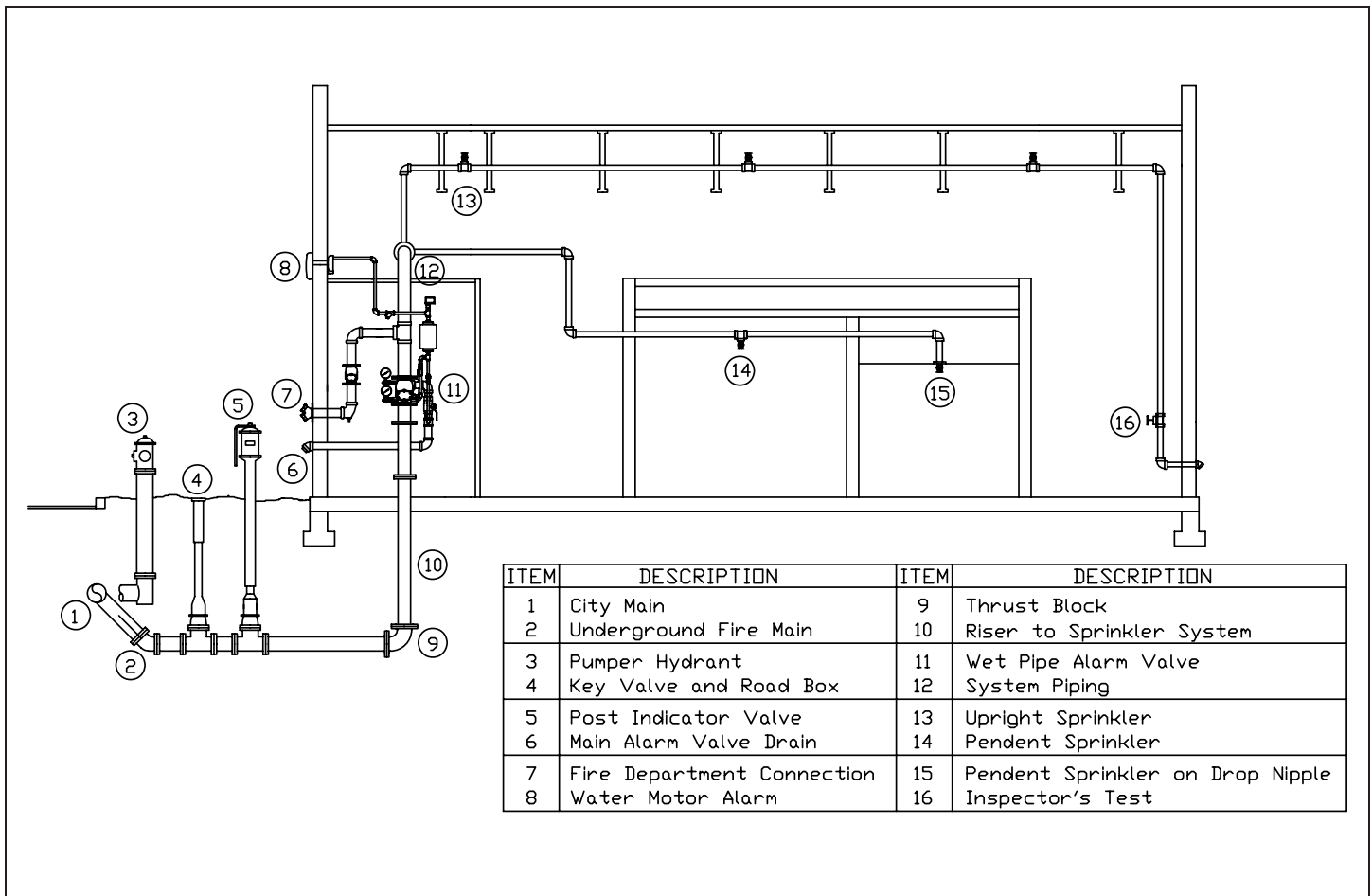
1. DESCRIPTION

A wet pipe sprinkler system is fixed fire protection using piping filled with pressurized water supplied from a dependable source. Closed heat sensitive automatic sprinklers spaced and located in accordance with recognized installation standards are used to detect a fire. Upon operation, the sprinklers distribute the water over a specific area to control or extinguish the fire. As the water flows through the system, an alarm is activated to indicate the system is operating. Only those sprinklers immediately over or adjacent to the fire operate, minimizing water damage.

2. APPLICATIONS

A wet pipe sprinkler system may be installed in any structure not subject to freezing to automatically protect the structure, contents, and/or personnel from loss due to fire. The structure must be substantial enough to support the piping system filled with water. Using water as its extinguishing agent, one wet system may cover as much as 52,000 square feet in a single fire area. The system should be designed by qualified fire protection engineers in conjunction with insuring bodies. Sprinkler systems are engineered to meet the standards of National Fire Protection Association (see N.F.P.A. Pamphlet 13, "The Installation of Sprinkler Systems"), Factory Mutual (F.M.), Loss Prevention Council (FOC), Assemblée Pleniére, Verband der Sachversicherer or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards where applicable.

Small unheated areas of a building may be protected by a wet system if an antifreeze-loop or auxiliary dry system is installed. For rules and limitations, see appropriate codes and standards.





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3. WET PIPE SPRINKLER SYSTEM WITH VIKING ALARM VALVE

A. SYSTEM OPERATION

In the normal set condition, the system piping is filled with water. When a fire occurs, the heat operates a sprinkler allowing the water to flow. The alarm valve clapper is opened by the flow of water allowing pressurized water to enter the alarm port to activate the connected alarm devices. When using variable pressure water supply, the water flowing through the alarm port overcomes the retard chamber's drain restriction, filling the retard chamber then activating the connected alarm devices. The alarms will continue to sound until the flow of water is manually turned off.

B. NORMAL CONDITIONS

1. All water supply control valves open and secured.
2. Alarm test shut-off valve in ALARM position.
3. Water gauge valves open.
4. The water supply pressure gauge (lower gauge) equals that of the known service-line pressure. The system pressure gauge (upper gauge) reading is equal to or greater than the water supply pressure gauge reading.
5. Incoming power to all alarm switches on.
6. Main-drain valve, auxiliary drain valves and inspectors test valves tightly closed.
7. The sprinkler head cabinet contains appropriate replacement sprinklers and wrenches.
8. Temperature maintained above freezing for entire system.
9. If Fire Department connection is used, make sure the automatic drip valve is free, allowing accumulated water to escape.
10. Sprinklers in good condition and unobstructed.

C. SYSTEM TEST

INSPECTIONS: It is imperative that the system be inspected and tested on a regular basis. The following recommendations are minimum requirements. The frequency of the inspections may vary due to contaminated or corrosive water supplies and corrosive atmospheres. In addition, the alarm devices or other connected equipment may require more frequent inspections. Refer to the technical data, system description, applicable codes, and the authority having jurisdiction for minimum requirements. Prior to testing the equipment, notify appropriate personnel.

1. **Alarm Test:** At least quarterly, test all connected alarm devices by opening the remote inspectors test valve. When weather conditions or other circumstances prohibit using the inspectors' test valve, the alarms shall be tested by turning the alarm test shut-off valve to the TEST position. When testing is complete return the valve to the ALARM position.
2. **Riser Flow Test:** At least quarterly, perform a riser flow test. Observe and record the supply pressure gauge reading. Open the main drain valve fully. The alarm should sound. Again observe and record the supply pressure gauge reading. Close the main drain valve. If the readings vary significantly from those previously established or from normal, check the main supply line for obstructions or closed valves and correct.
3. **General:** During all inspections, testing, and maintenance activities the valve, trim, piping, alarm devices, and connected equipment must be visually inspected for physical damage, freezing, corrosion, or other conditions that may inhibit the proper operation of the system.

D. TROUBLESHOOTING

1. General
 - a. Alarm fails to sound on test: clean water motor and strainers in the alarm line. Check bell for obstructions. If the alarm still fails, call your Viking representative.
 - b. Water supply pressure gauge drops on the flow test: immediately check roadway valve and post indicator or control valve. If both are open, immediately call your Viking representative, as a line obstruction is indicated.
 - c. Alarm sounds immediately on alarm test: clean orifice tee or retarding chamber drain restriction.
2. Intermittent alarms: bleed air from the high points of the system. If system pressure is seldom, if ever, greater than supply pressure, drain the system and check the alarm valve rubber and by-pass check valve rubber for cold flow and sealing efficiency. Clean valve seats and replace rubbers as necessary.
3. **False Alarms:** If water pressure surges produce false alarms, check the following:
 - a. Make sure the valve has been trimmed exactly as shown on Viking trim sheets with no deviations. The trim size and fitting arrangement is required for proper operation.
 - b. Air trapped in the sprinkler piping can cause false alarms, the alarms to cycle on and off during testing, and other nuisance problems. To correct, bleed as much air as possible from the trapped high points of system piping. This condition can be minimized by opening the remote inspector test valve and slowly filling the system with water when placing the system in service.



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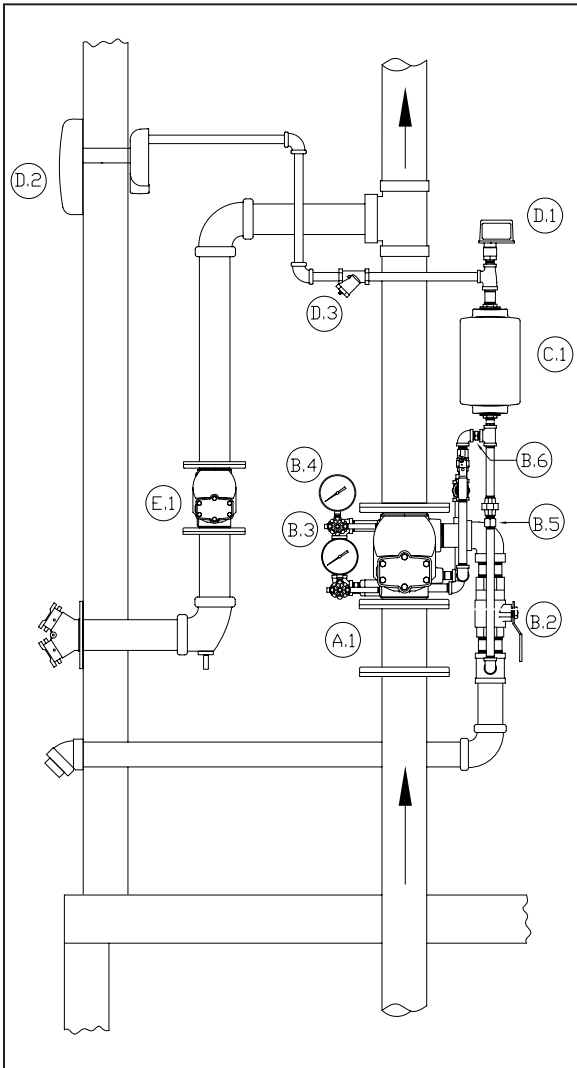
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- c. Clean drain restriction on retard chamber trim.
- d. Clean or replace check valve on external by-pass trim.
- e. Clean or replace alarm valve clapper rubber.
- f. Add retard chamber and drain restriction if not provided.

E. REMOVING THE SYSTEM FROM SERVICE

WARNING: The system should be placed out of service only for repairs. The work to be done must be completed in a manner to minimize the time that the system must be out of service. All hazardous activities in the effected area shall be terminated until the system is placed back in service. Any system impairment shall be coordinated with the owner, local authority having jurisdiction, and other related parties. Place a roving fire patrol in the area covered by the system until the system is back in service. Prior to turning off any valves or activating any alarms, notify local security guards and/or central alarm station (if used) so that a false alarm will not be signaled and result in a local fire department response.

1. Close the water supply control valve.
2. Open the main drain valve.
3. Open all auxiliary drain valves and inspectors test valve.
4. System and supply pressure gauges should now read zero.
5. If system will be subject to freezing, drain any trapped water in the system, devices, valve, and trim.
6. Place a system-out-of-service sign in a visible location.



	Component	Description	Part Numbers	Corresponding Data Pages
A	System Valve			
	A.1	Alarm Check Valve	Various	26a-g
B	Check Valve Trim including:			
	B.1	Check Valve (not shown)	Various	or 28a-c
	B.2	Main Drain Valve		
	B.3	Side Outlet Valve		
	B.4	Water Gauge		
	B.5	Restriction		
	B.6	Restricted Orifice		
B.7	Restricted Orifice (not shown)			
C	C.1	Retard Chamber	05904B	38a-b
D	Water Flow Alarm Equipment			
	D.1	Alarm Pressure Switch	PS101A, PS102A	--
	D.2	Water Motor Alarm	07862	711a-d
	D.3	Alarm Line Strainer	01489A	711a-d
E	Check Valve			
	E.1	Swing Check Valve	Various	803a-d

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4. WET PIPE SPRINKLER SYSTEM WITH VIKING EASY RISER® SWING CHECK VALVE AND WATERFLOW INDICATOR

A. SYSTEM OPERATION

In the normal set condition, the system piping is filled with water. When a fire occurs, the heat operates a sprinkler allowing the water flow. The waterflow indicator is activated by the water flow. The paddle, which normally lies motionless inside the pipe, is forced up, thereby activating the pneumatic time delay mechanism which closes or opens a microswitch after the preset retard time has elapsed. This action causes an electric alarm to sound. All alarms will continue to sound as long as there is a flow of water in the system. The water will continue to flow until it is shut off manually.

B. NORMAL CONDITIONS

1. All water supply control valves open and secured.
2. Water gauge valves open.
3. The water supply pressure gauge (lower gauge) equals that of the known service-line pressure. The system pressure gauge (upper gauge) reading is equal to or greater than the water supply pressure gauge reading.
4. Incoming power to all alarm switches on.
5. Main-drain valve, auxiliary drain valves, and inspectors test valves tightly closed.
6. The sprinkler head cabinet contains appropriate replacement sprinklers and wrenches.
7. Temperature maintained above freezing for entire system.
8. If Fire Department connection is used, make sure the automatic drip valve is free, allowing accumulated water to escape.
9. Sprinklers in good condition and unobstructed.

C. SYSTEM TEST

INSPECTIONS: It is imperative that the system be inspected and tested on a regular basis. The following recommendations are minimum requirements. The frequency of the inspections may vary due to contaminated or corrosive water supplies and corrosive atmospheres. In addition, the alarm devices or other connected equipment may require more frequent inspections.

Refer to the technical data, system description, applicable codes, and the authority having jurisdiction for minimum requirements. Prior to testing the equipment, notify appropriate personnel.

1. **Alarm Test:** At least quarterly, test all connected alarm devices by opening the remote inspectors test valve
2. **Riser Flow Test:** At least quarterly perform a riser flow test. Observe and record the supply pressure gauge reading. Open the main drain valve fully. Again observe and record the supply pressure gauge reading. Close the main drain valve. If the readings vary significantly from those previously established or from normal, check the main supply line for obstructions or closed valves and correct.
3. **General:** During all inspections, testing, and maintenance activities, the valve, trim, piping, alarm devices, and connected equipment must be visually inspected for physical damage, freezing, corrosion, or other conditions that may inhibit the proper operation of the system.

D. TROUBLESHOOTING

1. General
 - a. Alarm fails to sound on test: Check bell for obstructions. Check power source and wiring. If the alarm still fails, call your Viking representative.
 - b. Water supply pressure gauge drops on the flow test: immediately check roadway valve and post indicator or control valve. If both are open, immediately call your Viking representative, since a line obstruction is indicated.
 - c. Alarm sounds immediately on alarm test: During surges, the paddle will move. The switch mechanism is provided with a pneumatic time delay to prevent closing of the alarm line circuit. The time delay can be adjusted from 0 to 90 seconds (see the waterflow indicator device page).
 - d. Intermittent alarms - bleed air from the high points of the system. If system pressure is seldom, if ever, greater than supply pressure, drain the system and check the check valve rubber for cold flow and sealing efficiency. Clean valve seats and replace rubbers as necessary.
2. **False Alarms:** If water pressure surges produce false alarms, check the following:
 - a. Air trapped in the sprinkler piping can cause false alarms, the alarms to cycle on and off during testing and other nuisance problems. To correct bleed as much air as possible from the trapped high points of system piping. This condition can be minimized by opening the remote inspector test valve and slowly filling the system with water when placing the system in service.



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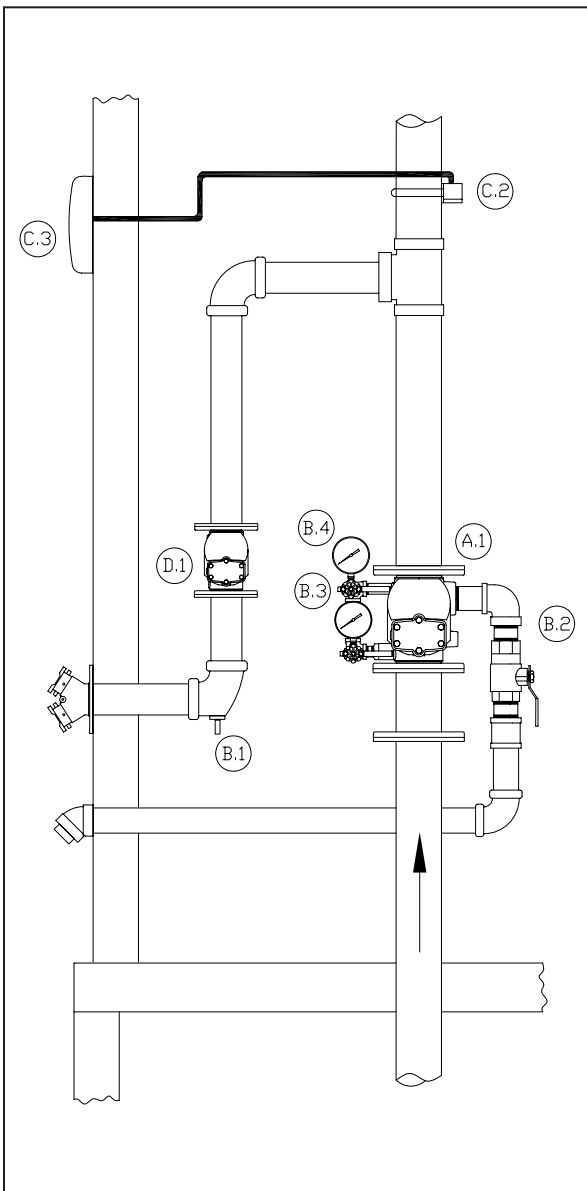
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Prior to turning off any valves or activating any alarms, notify local security guards and/or central alarm station (if used) so that a false alarm will not be signaled and result in a local fire department response.

1. Close the water supply control valve.
2. Open the main drain valve.
3. Open all auxiliary drain valves and inspectors test valve.
4. System and supply pressure gauges should now read zero.
5. If system will be subject to freezing, drain any trapped water in the system, devices, valve, and trim.
6. Place a system-out-of-service sign in a visible location.



Component	Description	Part Numbers	Corresponding Data Pages
System Valve			
A	A.1 Easy Riser® Check Valve	Various	815a-f
Check Valve Trim including:			
B	B.1 Automatic Drip Valve	Various	815a-f
	B.2 Main Drain Valve		
	B.3 Side Outlet Valve		
	B.4 Water Gauge		
Water Flow Alarm Equipment			
C	C.1 Alarm Pressure Switch or	PS101A, PS102A	--
	C.2 Water Flow Indicator	Various	703a-b
	C.3 Electric Alarm Bell	--	--
Check Valve			
D	D.1 Swing Check Valve	Various	803a-d

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