



TECHNICAL DATA

WET PIPE FOAM/WATER
MANIFOLD SYSTEM
SUPPLIED BY FOAM PUMP

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

With the Wet Pipe Foam/Water Manifold System Supplied by Foam Pump, multiple risers can be supplied from a single proportioning device. A riser manifold is installed with various riser types and sizes that are to supply foam solution to their hazard areas. A proportioning device is located upstream of the riser manifold. Foam solution is supplied to any or all risers where a water flow is present. If the desire is install a completely mechanical proportioning system, an alarm check valve will be required upstream of the proportioning device.

A foam pump can supply foam concentrate to an individual In-line Balanced Proportioning Assembly (ILBP) (B) serving multiple risers in a manifold. A single proportioning device supplying multiple risers can be an economical method of providing foam risers.

2. LISTINGS AND APPROVALS

No formal approval as a system. Main component approvals listed below.

- Alarm Check Valve and Trim
 - UL Listed - Guide VPLX
 - FM - Waterflow Alarm Valves
- In-line Balanced Pressure Proportioner (ILBP)
 - UL Listed - Guide GFGV
 - FM Approved - Low Expansion Foam Systems
- Halar® Coated Concentrate Control Valve (CCV)
 - UL Listed - Guide VLFT
 - FM Approved - Automatic Water Control Valve as standard deluge valve. No formal approval available for coating.
- Foam Concentrate
 - UL Listed - Guide GFGV
 - FM Approved - Low Expansion Foam Systems

3. TECHNICAL DATA

Specifications:

Refer to individual component technical data pages.

Material Standards:

Refer to individual component technical data pages.

Ordering Information:

Refer to Tables 1 and 2.

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.

4. INSTALLATION

A. Discharge Devices

Discharge devices will differ for different types of systems. In general, wet systems, dry systems, and preaction systems will utilize automatic sprinklers and hose reels as discharge devices. Deluge systems have a wider range of discharge devices that include: open sprinkler heads, foam chambers, foam makers, fixed monitors, oscillating monitors, and open spray nozzles.

Listed discharge devices are tested with specific concentrates and may have different listed densities that what is listed in various NFPA standards. AR-AFFF foam concentrates are listed with specific discharge devices and the fuels they are to protect.

B. General Instructions and Warnings

1. Refer to Warnings and General Notes on page 2a-d in the "Foam Design" section of the *Viking Foam Systems Engineering and Design Data* book.
2. Refer to specific technical data sheets, acceptable installation standards, applicable codes, and Authority Having Jurisdiction for additional installation, operation, and maintenance instructions.
3. Inspections – It is imperative that the system is inspected and tested on a regular basis. See Section 6 - Inspections, Tests, and Maintenance.
4. **Warning** - Any system maintenance or testing that involves placing a control valve or detection system out of service may eliminate the fire protection of that system. Prior to proceeding, notify all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the effected area.
5. The valve, trim, and assembly must be installed in an area not subject to freezing temperatures or physical damage.



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C. Installation

Warning: Locate all portions of the foam/water system subject to freezing in a heated area.

1. Refer to the Special Notes section on page 13f and the Warnings and General Notes on page 2a-d in the "Foam Design" section of the Viking foam data book.
2. Install the alarm valve and trim (A) in accordance with *Viking Engineering and Design Data Book*.
3. Install the proportioning device, ILBP assembly (B), in the riser at least 5 pipe diameters past the alarm valve. (The ILBP assembly must be installed 5 pipe diameters of straight piping past a valve or change of direction. The same 5 pipe diameters of straight pipe are required on the discharge side of the ILBP as well to ensure proper proportioning)
4. Install solution test header isolation valve (3) and solution test valve header (4). These valves are required to facilitate annual foam proportioning tests. The solution test header isolation valve (3) is in the normally closed position when the system(s) are in operation. The solution test valve header (4) has its individual test valves closed when the system(s) are in operation. When the system is to be tested annually for proportioning, the solution test header isolation valve (3) is opened to allow foam water solution to enter the solution test header (4). The solution test header (4) test valves are opened when discharge tests are to be performed. The solution test header is normally sized the same size as the manifold piping to accept the design flow of the system(s). The discharge of the solution test valve is normally piped to a test header with 2½" angle valves to aid in controlling the discharge of affluent.
5. Install the hydraulically actuated Halar® coated CCV valve (C) and associated trim as indicated on trim charts or technical data pages.
6. A concentrate shut-off valve (2) located upstream of the Halar® coated CCV valve (C) is required to isolate the Halar® coated concentrate control valve when setting up the system or when repairs are to be made to the wet foam system.
7. Install the foam pump skid assembly and atmospheric storage tank in accordance with manufacturer's instructions.
 - a. Install the foam pump skid and foam atmospheric storage tank. Install the concentrate piping from the discharge of the foam pump skid to the concentrate shut-off valve (2). Locate the concentrate shut-off valve as close as practical to the ILBP assembly. Note: Allow enough room around the foam pump and atmospheric storage tank for service.
 - b. Allow access to atmospheric storage tank for filling from barrels of foam concentrate.
 - c. All valves and devices should be located for easy access for operation and maintenance.
8. Placing System in Service:
 - a. Verify that the water supply control valve (1) is closed, then place alarm valve (A) in service as follows (see instructions on Viking Technical Data Sheet). Open System isolation valve (4) if closed. Close solution test valve (3) if open.
 - b. Prime the Halar® coated CCV valve (C) by opening the ½" ball valve located on the priming connection. The priming connection for the Halar® coated CCV valve (C) should be supplied upstream of the alarm check valve. Water will pass through the ½" priming valve, ½" Y strainer, ½" swing check valve, 1/8" restricted orifice, PORV (10) valve to the priming chamber of the Halar® coated CCV valve (C). Priming pressure will be present on the priming pressure gauge located as part of the CCV trim package. Bleed off any air pressure trapped in the priming line (6) to the Viking Halar® coated CCV (C) by opening the 3-way pressure gauge valve (5).
 - c. Open the water supply control valve (1) to the alarm valve after the CCV valve (C) has been primed. The PORV isolation valve (9) should be in the closed position when filling the sprinkler system with water, closing this valve will ensure that the concentrate control valve is not opened due to water flowing through the system. The alarm shut-off valve may be closed during this time as well to eliminate activation of alarms or the water motor alarm.
 - d. Place foam pumping system in service. The concentrate shut-off valve (2) will be in the closed position until foam pump system is placed in service. Foam concentrate pressure will be indicated on the foam concentrate pressure gauge (7) located upstream of the of the concentrate shut-off valve (2). Once pressure is indicated on concentrate pressure gauge (7), slowly open foam concentrate shut-off valve.
 - e. Once foam concentrate shut-off valve (2) is opened, verify that foam concentrate is not passing by the Halar® coated CCV valve (C) by opening the ½" foam concentrate auxiliary drain valve (8). If foam concentrate appears, close concentrate shut-off valve (2) immediately. If foam concentrate is passing by the Halar® coated CCV valve (C), the valve is not seating and is most likely fouled. Debris must be removed from seat of Halar® Coated CCV valve (C).
9. Removing the System From Service:
 - a. Close the water supply control valve (1).
 - b. Close the concentrate shut-off valve (2).
 - c. Open the main drain valve on the alarm valve.
 - d. Leave the system isolation valve (4) open.
 - e. Refer to instructions for removing the alarm valve (C) from service in the *Viking Engineering and Design Data Book*.
 - f. Perform maintenance and service on the system and riser piping.

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g. If maintenance is required to be performed on concentrate piping, remove the foam pump and foam jockey pump if applicable from service. Open the concentrate drain valve to relieve pressure from concentrate supply piping.

NOTE: If repairs or modifications are required on the foam concentrate supply piping, the sprinkler systems may be kept in service for protection, while repairs to the foam system concentrate piping are performed.

5. OPERATION

Once a water flow is present in one of the risers located in the manifold, the alarm valve opens exposing the ported seat, allowing water to enter the alarm trim piping. The PORV (10) located in the priming connection is pressurized on its sensing side, opening the priming line of the concentrate control valve (CCV) (C) to open drain. Once the CCV priming line is vented, the CCV valve (C) will open and foam concentrate will flow into the inlet of the ILBP (B) assembly. The foam concentrate is supplied by the foam pump which is supplied from an atmospheric storage tank. The foam pump will provide foam concentrate at a higher pressure than the water pressure passing through the riser. The pressures will be balanced by the spool balancing valve that is integral to the ILBP. The foam pump is normally started on a pressure loss in the concentrate piping line. The foam pump may also start through the water pressure switch on the alarm valve trim. If more than 50' (15.2 m) of overhead concentrate piping is present on the discharge side of the foam pump or if any of the piping is installed underground, a means of checking the tightness of the piping is required per NFPA; this necessitates a foam jockey pump to maintain the pressure on the concentrate line.

Once water passes through the concentrate controller, foam concentrate is discharged into the concentrate controller through an orifice listed and approved for the foam concentrate to be utilized. The foam and water mix and create a foam/water solution. A foam blanket is created once it has discharged through the discharge device(s). A foam blanket is produced through one of two actions, agitation, as in when discharged through a standard sprinkler head, or aeration, as in when discharged through a foam chamber or foam maker. The foam blanket that is created by the discharge device is part of the listing or approval obtained with the foam concentrate testing.

6. INSPECTIONS, TESTS, AND MAINTENANCE

NOTICE: The owner is responsible for maintaining the fire protection system and devices in proper operating condition. For minimum maintenance and inspection requirements, refer to recognized standards such as those produced by NFPA, LPC, and VdS, which describe care and maintenance of sprinkler systems. In addition, the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

WARNING: Any system maintenance or testing that involves placing a control valve or detection system out of service may eliminate the fire protection of that system. Prior to proceeding, notify all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the affected area.

Inspections: It is imperative that the system is 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 Authority Having Jurisdiction for minimum requirements. Prior to testing the equipment, notify appropriate personnel.

7. AVAILABILITY

The Wet Pipe Foam/Water Manifold System Supplied by Foam Pump is available through a network of domestic and international distributors. See the Viking Corp. web site for closest distributor or contact The Viking Corporation.

8. GUARANTEE

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



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RISER MANIFOLD SUPPLIED FROM FOAM PUMP

- A. Alarm Check Valve and Trim
 - B. In-line Balanced Pressure Proportioner
 - C. Halar Coated Concentrate Control Valve
- (*Angle Style and Straight Thru Style CCV available.)
1. Water Supply Control Valve
 2. Foam Concentrate Shut-off Valve
 3. Solution Isolation Valve
 4. Solution Test Header
 5. CCV Priming Pressure Gauge
 6. Priming Line
 7. Foam Concentrate Pressure Gauge
 8. Foam Concentrate Auxiliary Drain Valve
 9. P.O.R.V. Isolation Valve
 10. P.O.R.V.

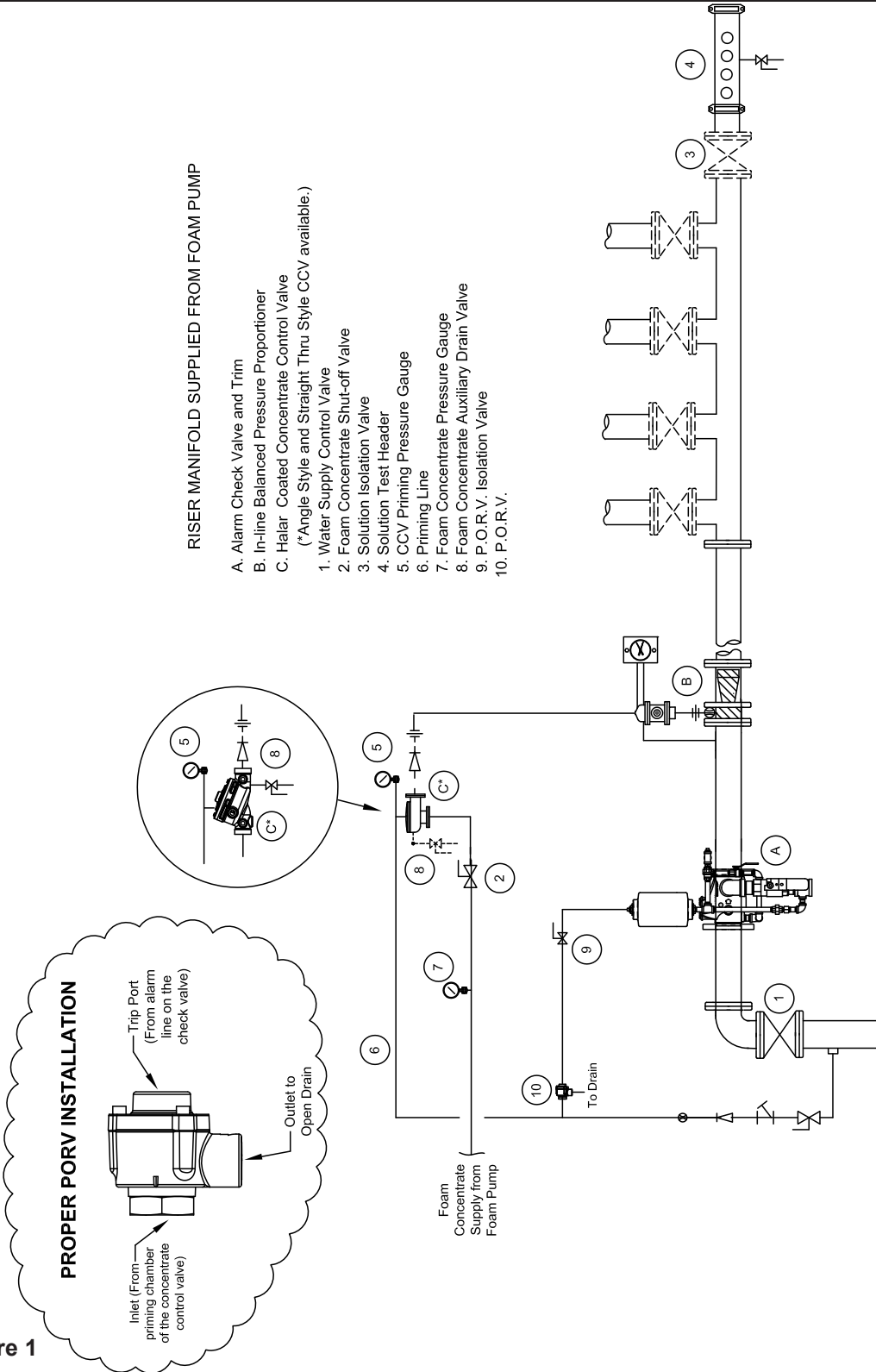


Figure 1



TECHNICAL DATA

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For a complete Wet Pipe Foam/Water Manifold System Supplied by Foam Pump, select Alarm Valve and Trim, Retard Chamber and Circuit Closer Vent Trim, Pilot Operated Pressure Control Valve, Foam Concentrate Control Valve and Trim, Foam Concentrate, Controller, Bladder Tank and Accessories.

DESCRIPTION	NOMINAL SIZE	PART NUMBER	DATA PAGE	
ALARM CHECK VALVE				
Flange/ Flange	Flange Drilling	Model J-1		
	ANSI	3"	08235	
	ANSI	4"	08238	
	ANSI	6"	08241	
	ANSI	8"	08244	
	PN10/16	DN80	09108	26 a-g
	PN10/16	DN100	09109	
	PN10/16	DN150	09110	
Flange/ Groove	PN10	DN200	09111	
	PN16	DN200	12388	
	Flange Drilling / Pipe O.D.	Model J-1		
	ANSI / 89mm	3"	08236	
	ANSI / 114mm	4"	08239	
	ANSI / 168mm	6"	08242	
	ANSI / 219mm	8"	08245	
	PN10/16 / 89mm	DN80	09535	26 a-g
PN10/16 / 114mm	DN100	09536		
PN10/16 / 168mm	DN150	09874		
PN10 / 219mm	DN200	09877		
PN16 / 219mm	DN200	12389		
Groove/ Groove	Pipe O.D.	Model J-1		
	89mm	3" / DN80	08237	
	114mm	4" / DN100	08240	
	165mm	DN150	09405	26 a-g
	168mm	6" / DN150	08243	
219mm	8" / DN200	08246		
MODEL J-1 ALARM VALVE TRIM BRASS				
Vertical	3" / DN80	11428		
	4" / DN100	11429		
	6" / DN150	11430	27 a-c	
	8" / DN200	11431		
Horizontal	3" / DN80	11432		
	4" / DN100	11433		
	6" / DN150	11434	28 a-c	
	8" / DN200	11435		

DESCRIPTION	NOMINAL SIZE	PART NUMBER	DATA PAGE
CIRCUIT CLOSER VENT BRASS TRIM		08220	
MODEL C-1 RETARDING CHAMBER (not included in the trim)		05904B	38 a-b

FOAM CONCENTRATE CONTROL VALVE HALAR® COATED			
Angle Style			
Threaded NPT	Model & Pipe O.D.		
	Model E-4 48mm	1½" / DN40	09890Q/B
	Model E-2 60mm	2" / DN50	08361Q/B
Threaded NPT	Straight Through		61 a-f
	Pipe O.D.	Model F-2	
Groove/ Groove	NPT 65mm	2½"	12402Q/B
	Pipe O.D.	Model F-2	
	48mm	1½" / DN40	12127Q/B
	60mm	2" / DN50	12058Q/B
	73mm	2½" / DN65	12404Q/B

FOAM CONCENTRATE CONTROL VALVE TRIM			
Use with Angle Style Valve	Galvanized		
	1½" / DN40	08098	
	2" / DN50	08099	
	Brass		
	1½" / DN40	09694	
	2" / DN50	09695	
Use with Straight Through Valves	Galvanized		
	1½" / DN40	12848-1	61 a-f
	2" / DN50	12848-1	
	2½" / DN65	12929-1	
	Brass		
	1½" / DN40	12848-2	
	2" / DN50	12848-2	
	2½" / DN65	12929-2	

Table 1



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DESCRIPTION	NOMINAL SIZE	PART NUMBER	DATA PAGE
FOAM CONCENTRATE SWING CHECK VALVE			
	1½" / DN40	99S-0150	-
	2" / DN50	99S-0200	-
	2½" / DN65	05497C	803 a-d
FOAM SOLUTION TEST VALVE			
Grooved Butterfly Valve	2½" / DN65	01G-0250	-
	3" / DN80	01G-0300	
	4" / DN100	01G-0400	
	6" / DN150	01G-0600	
	8" / DN200	01G-0800	
SYSTEM ISOLATION VALVE			
Grooved Butterfly Valve	2½" / DN65	01G-0250	-
	3" / DN80	01G-0300	
	4" / DN100	01G-0400	
	6" / DN150	01G-0600	
	8" / DN200	01G-0800	
WATER SUPPLY CONTROL VALVE			
OS & Y	2½" / DN65	8068A-0250	-
	3" / DN80	8068A-0300	
	4" / DN100	8068A-0400	
	6" / DN150	8068A-0600	
	8" / DN200	8068A-0800	
FOAM CONCENTRATE SHUT-OFF VALVE			
Ball Valve	1½" / DN40	T595Y66-0150	-
	2" / DN50	T595Y66-0200	
ACCESSORIES FOR FOAM/WATER SPRINKLER SYSTEMS			
MODEL D-1 PORV	½" / DN15	13598	287 a-b
1/8" / 3MM RESTRICTED ORIFICE	½" / DN15	06555A	-
SOFT SEAT CHECK VALVE	½" / DN15	03945A	-
Y STRAINER	½" / DN15	01054A	-
BALL VALVE	½" / DN15	10355	-
CONCENTRATE CONTROL VALVE PRIMING CONNECTION PKG.			
Required to connect priming chamber		10985	-
FOAM CONCENTRATE SHUT OFF VALVE			
Ball Valve	1½" / DN40	WBV-0150	-
Ball Valve	2" / DN50	WBV-0200	
OS & Y	2½" / DN65	8068A-0250	
OS & Y	3" / DN80	8068A-0300	

FOAM CONCENTRATES AND ILBP ASSEMBLIES					
FOAM CONCENTRATE			ILBP ASSEMBLY		
DESCRIPTION	BASE PART NUMBER	FOAM CONCENTRATE DATA PAGE	NOMINAL SIZE	VIKING PART NUMBER	ILBP DATA PAGE
1% AFFF C103	F14969	100 a-b	2½"	F15006/A	171 a-d
			3"	F15012/A	
			4"	F15018/A	
			6"	F15025/A	
			8"	F15032/A	
3% AFFF C303	F14970	101 a-b	2½"	F15006/B	
			3"	F15012/B	
			4"	F15018/B	
			6"	F15025/B	
			8"	F15032/B	
3% AFFF MS C301 MS	F14971	102 a-b	2½"	F15006/C	
			3"	F15012/C	
			4"	F15018/C	
			6"	F15025/C	
			8"	F15032/C	
3% - 6% AFFF @ 3% C363	F14973	103 a-b	2½"	F15006/D	
			3"	F15012/D	
			4"	F15018/D	
			6"	F15025/D	
			8"	F15032/D	
3% - 6% AFFF @ 3% C363	F14973	103 a-b	2½"	F15006/E	
			3"	F15012/E	
			4"	F15018/E	
			6"	F15025/E	
			8"	F15032/E	
3% AR-AFFF CUG	F14972	104 a-b	2½"	F15006/J	
			3"	F15012/J	
			4"	F15018/J	
			6"	F15025/J	
			8"	F15032/J	
2% Hi Ex C2	F14974	105 a-b	2½"	F15006/H	
			3"	F15012/H	
			4"	F15018/H	
			6"	F15025/H	
			8"	F15032/H	

Table 2